Illustrated Identification GUIDE to Adults and Larvae of Northeastern North American Ground Beetles (Coleoptera: Carabidae)

Yves Bousquet
Cover illustration: *Cicindela lepida*, photo taken by Olivier Lalonde.
To Henri

For introducing me to the world of carabids

For the color habitus photographs pictured in this book

and

For his contagious love for entomology
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Introduction

The Carabidae, commonly referred to as ground beetles, are one of the most popular groups of insects among amateurs and professionals. They are numerous in terms of species (about 34,000 are compiled in Lorenz (2005) latest catalogue), geographically widespread, ecologically diverse, easily collected by hands and pitfall traps, taxonomically quite well known at least in the Northern Hemisphere, and to many of us, very attractive! Therefore, it is not surprising that carabids have over the past 50 years been one of the most extensively used groups of terrestrial invertebrates for biodiversity assessments in Canada and other parts of the world. Such widespread interest creates of course an ongoing demand for updated nomenclatural works on carabids with well-illustrated identification keys.

This publication consists in large part of dichotomous keys, accompanied by line drawings and photographs, for the identification of adults (genera and species) and larvae (known genera) of Carabidae occurring in northeastern North America. The area includes the states of Vermont, New Hampshire, and Maine of the United States of America, the Canadian provinces of Quebec, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland (including Labrador), and the French overseas department of Saint-Pierre and Miquelon. In the text, this region is referred to as “the northeast” and the species-group taxa as “the northeastern species.”

The keys are essentially artificial and therefore do not reflect the natural classification of the taxa included. Their purpose is to guide the user to the proper taxon in the easiest and most efficient way. When possible, multiple character states are used to differentiate the taxa. Their sequence within the couplet is from the easiest discernible and/or more stable character state to the most difficult observable and/or least stable. In some instances additional character states are listed in square brackets to help improve the reliability of the identification. The characters listed describe the external surface. The genitalia, either male or female, are only exceptionally described. Although an excellent way to separate many taxa, genitalia study requires careful extraction and is time consuming.

Acknowledgments

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Generalities

1. – Biology

Unless otherwise noted, information about the natural history provided here pertains to northeastern carabid taxa and is not necessarily characteristic of the entire family. The information is kept to a minimum and the reader is referred to Thiele (1977), Luff (1987), Forsythe (1987), Lövei and Sunderland (1996), Dajoz (2002), and Luff (2003) for more details.

In the northeast almost all carabid species are terrestrial, although some species live exclusively under the bark of fallen trees (e.g., *Tachyta* species, *Mioptachys flavicauda*, *Gastrellarius honestus*) and some species could be called “subaquatic,” like *Blethisa multipunctata* (Arens and Bauer 1987), *Blethisa quadricollis* (Landry and Anctil 1975), and *Lachnocrepis parallela* (Landry 1976). The region also has three arboreal inhabitants: *Dromius piceus*, *Cymindis limbata*, and *Cymindis platicollis*.

**Oviposition.** Carabids usually lay their eggs isolated from one another. One exception among northeastern species is *Pterostichus diligendus* which deposit their eggs in a heap (Bousquet 1983). The number of eggs laid in a reproductive season varies among species. Based on laboratory observations of a few European species, the number depends on the age and density of individuals, temperature, and quantity of food available. A female of *Poecilus lucublandus* can lay up to 462 eggs in rearing containers (Kirk 1971b) while a female of *Sphaeroderus canadensis* will lay about 30 eggs in similar conditions (personal observation). As noted by Forsythe (1987: 5), species living in unstable habitats, such as flooded or wet places, seem to produce a greater number of eggs during a season than those living in stable environment, such as mature forests.

Most species apparently deposit their eggs on or in the ground or inside rotten logs without special care. In some species the female encloses her eggs separately in mud cells which are attached to either various litter components or to the underside of leaves on living plants as in *Chlaenius impunctifrons* (Claassen 1919; King 1919). Apparently, the mud around the egg serves mainly as a protective agent against fungal attacks. In some Pterostichini, the female lays her eggs in a small cell dug in the soil or in a rotten log, then stays by them until the larvae hatch and become pigmented. During that period, the female appears neither to feed nor react in defence (Thiele 1977). The continued interaction of the adult with the eggs apparently prevents fungi from attacking the eggs. The only known northeastern species that demonstrates such attentive behaviour is *Pterostichus diligendus* (Bousquet 1983).

**Larval Development.** As far as known, most northeastern carabids have three larval instars although some species, particularly in the genus *Amara*, have only two. Ectoparasitoid larvae (see section “Nutrition”) of the genus *Lebia* have two instars while those of some species of the genus *Brachinus* have five instars. In both of these genera, only the first instar is carabidlike and active while subsequent instars are highly modified and passive.

**Nutrition.** The diet of several carabid species living in the Northern Hemisphere have been studied by analyzing the digestive tract contents of field specimens, by observing food preferences in the laboratory, and by implementing radioactive isotopes and serological analysis. Such studies reveal that adults of a relatively large proportion of species are omnivorous,
and consume both animal and plant materials. Most species do not show specialization in their diet. They are opportunistic and feed on whatever invertebrates are available such as mites, spiders, caterpillars, ants, aphids, springtails, and beetle eggs, larvae, and pupae. However, some species tend to specialize in their choice of prey. Adults of *Leistus* and *Loricera*, for example, feed mainly on springtails and mites. Adults of *Cychrini* attack mainly snails and slugs while adults of *Calosoma* dine mainly on caterpillars.

A number of studies in Europe and North America have shown that some carabids are exclusively phytophagous and feed only on seeds. Adults of *Amara* and *Harpalus* seem to prefer mainly plant materials in their diet (see Lavigne 1979).

Diets of carabid larvae are not well known but some observations suggest that in many species the larvae may be more carnivorous than adults. Larvae of some species are ectoparasitoid. For example, a few independent observations indicate that *Brachinus* larvae are ectoparasitoid on carabid and water beetle pupae and those of *Lebia* on flea beetle pupae. Larvae of some European species are known to be exclusively phytophagous.

Adults of all northeastern species and larvae of most species, as far as known, actively move in search of food. Larvae of *Cicindela*, however, are passive. They live in ground burrows and wait at the entrance to size upon passing prey.

**Daily Rhythm.** Only a handful of species have been studied with regard to their daily activity. Most species living in covered places are mainly nocturnal with their activity peak occurring during the first hours after sunset. Many species living in open places are mainly diurnal. The daily activity of some species varies according to atmospheric conditions and seasons.

**Seasonal Rhythm.** There is no evidence that any northeastern carabid has more than one generation per year. Two main patterns of seasonal activity related to breeding have been described for temperate and boreal carabids. “Spring breeders” display two activity periods in the year. The first period, which occurs in spring and early summer, is devoted chiefly to breeding while the second period, mainly autumnal, is devoted largely to feeding. Between the two activity periods few adults are trapped, although it is possible to collect some by hand. Hibernation for the spring breeders occurs in the adult stage. “Autumn breeders” have a single activity period which occurs mainly during the summer. Hibernation occurs in the larval stage and, for most species, also in the adult stage.

### 2. – Suprageneric Classification

The phylogenetic classification of Carabidae, like in all of zoological systematics, is in a constant state of flux depending on conjectured synthesis of the latest findings from a global perspective. The following table gives the suprageneric classification used for the northeastern fauna. It follows a disputable consensus among taxonomists except for the supertribe groupings of the Harpalinae tribes. Otherwise, carabid classification is not an important issue in this book.
Supraspecific divisions of northeastern Carabidae

Subfamily Nebriinae
   Tribe Pelophilini
   Tribe Nebrini
   Tribe Notiophilini
Subfamily Carabinae
   Tribe Cychrini
   Tribe Carabini
Subfamily Cicindelinae
   Tribe Cicindelini
Subfamily Loricerinae
   Tribe Loricerini
Subfamily Elaphrinae
   Tribe Elaphrini
Subfamily Omophroninae
   Tribe Omophronini
Subfamily Scaritinae
   Tribe Scaritini
   Tribe Clivinini
Subfamily Broscinae
   Tribe Broscini
Subfamily Trechinae
   Tribe Trechini
   Tribe Bembidiini
      Subtribe Bembidiina
      Subtribe Xystosomina
      Subtribe Tachyina
Subfamily Patrobiniae
Subfamily Psydrinae
   Tribe Psydrini
Subfamily Brachininae
   Tribe Brachinini
Subfamily Harpalinae
   Supertribe Pterostichitae
      Tribe Pterostichini
      Tribe Zabrini
      Tribe Oodini
      Tribe Chlaeniini
   Supertribe Harpalitae
      Tribe Licinini
      Tribe Harpalini
         Subtribe Anisodactylina
         Subtribe Stenolophina
         Subtribe Harpalina
      Tribe Pentagonicini
      Tribe Platynini
3. – LISTS OF NORTHEASTERN SPECIES

**Phylogenetic list.** – The following is a list of all 565 species-group taxa found in the northeast. For almost all of them the author has seen at least one specimen definitely collected within the region. The inclusion of the other species, about 30, relies on the literature which, in some cases, is based on a single but reliable record.

**Pelophilini**
1. *Pelophila borealis* (Paykull, 1790)
2. *Pelophila rudis* (LeConte, 1863)

**Nebriini**
3. *Leistus (Leistus) ferrugineus* (Linné, 1758)
4. *Nebria (Nebria) brevicollis* (Fabricius, 1792)
5. *Nebria (Boreonebria) gyllenbali castanipes* (Kirby, 1837)
6. *Nebria (Boreonebria) lacustris lacustris* Casey, 1913
7. *Nebria (Boreonebria) nivalis* (Paykull, 1790)
8. *Nebria (Reductonebria) pallipes* Say, 1823
9. *Nebria (Reductonebria) suturalis* LeConte, 1850

**Notiophilini**
10. *Notiophilus aeneus* (Herbst, 1806)
11. *Notiophilus aquaticus* (Linné, 1758)
12. *Notiophilus biguttatus* (Fabricius, 1779)
13. *Notiophilus borealis* Harris, 1869
15. *Notiophilus nemoralis* Fall, 1906
16. *Notiophilus novemstriatus* LeConte, 1847
17. *Notiophilus palustris* (Duftschmid, 1812)
18. *Notiophilus semistriatus* Say, 1823

**Cychrini**
19. *Scaphinotus (Nomaretus) bilobus* (Say, 1823)
20. *Scaphinotus (Scaphinotus) viduus* (Dejean, 1826)
21. *Scaphinotus (Scaphinotus) elevatus elevatus* (Fabricius, 1787)
22. Sphaeroderus canadensis canadensis Chaudoir, 1861
23. Sphaeroderus nitidicollis Guérin-Ménéville, 1829
24. Sphaeroderus stenostomus lecontei Dejean, 1826

**CARABINI**
25. Calosoma (Calosoma) frigidum Kirby, 1837
26. Calosoma (Calosoma) sycophanta (Linné, 1758)
27. Calosoma (Calodrepæ) scrutator (Fabricius, 1775)
28. Calosoma (Calodrepæ) wilcoxii LeConte, 1847
29. Calosoma (Callitropæ) externum (Say, 1823)
30. Calosoma (Chrysostigma) calidum (Fabricius 1775)
31. Carabus (Carabus) granulatus granulatus Linné, 1758
32. Carabus (Carabus) goryi Dejean, 1831
33. Carabus (Tomocarabus) chamissonis Fischer von Waldheim, 1820
34. Carabus (Archicarabus) nemoralis O.F. Müller, 1764
35. Carabus (Hemicarabus) serratus Say, 1823
36. Carabus (Homocarabus) maeander maeander Fischer von Waldheim, 1820
37. Carabus (Tachypus) auratus auratus Linné, 1761
38. Carabus (Tanaocarabus) sylvosus Say, 1823
39. Carabus (Tanaocarabus) taedatus agassii LeConte, 1850

**CICINDELINI**
40. Cicindela (Ellipsoptera) lepida Dejean, 1831
41. Cicindela (Ellipsoptera) marginata Fabricius, 1775
42. Cicindela (Ellipsoptera) puritana Horn, 1871
43. Cicindela (Cicindelidia) marginipennis Dejean, 1831
44. Cicindela (Cicindelidia) punctulata punctulata Olivier, 1790
45. Cicindela (Cicindelidia) rufiventris rufiventris Dejean, 1825
46. Cicindela (Cicindela) aneciscomensis Harris, 1852
47. Cicindela (Cicindela) duodecimguttata Dejean, 1825
48. Cicindela (Cicindela) formosa generosa Dejean, 1831
49. Cicindela (Cicindela) birticolis rhodensis Calder, 1916
50. Cicindela (Cicindela) limbalis Klug, 1834
51. Cicindela (Cicindela) limbata labradorensis Johnson, 1990
52. Cicindela (Cicindela) longilabris longilabris Say, 1824
53. Cicindela (Cicindela) patruea patruea Dejean, 1825
54. Cicindela (Cicindela) purpurea purpurea Olivier, 1790
55. Cicindela (Cicindela) repanda repanda Dejean, 1825
56. Cicindela (Cicindela) scutellaris lecontei Haldeman, 1853
57. Cicindela (Cicindela) sexguttata Fabricius, 1775
58. Cicindela (Cicindela) tranquebarica tranquebarica Herbst, 1806

**LORICERINI**
59. Loricera (Loricera) pilicornis pilicornis (Fabricius, 1775)

**ELAPHRINI**
60. Diacheila arctica amoena (Faldermann, 1835)
61. Blethisa julii LeConte, 1863
62. Blethisa multipunctata hudsonica Casey, 1924
63. Blethisa quadricollis Haldeman, 1847
64. Elaphorus (Arctelaphorus) lapponicus lapponicus Gyllenhal, 1810
65. *Elaphrus* (*Neoelaphrus*) *cicatricosus* LeConte, 1847
66. *Elaphrus* (*Neoelaphrus*) *clairvillei* Kirby, 1837
67. *Elaphrus* (*Neoelaphrus*) *fuliginosus* Say, 1830
68. *Elaphrus* (*Neoelaphrus*) *olivaceus* LeConte, 1863
69. *Elaphrus* (*Elaphrus*) *americanus americanus* Dejean, 1831
70. *Elaphrus* (*Elaphrus*) *californicus* Mannerheim, 1843
71. *Elaphrus* (*Elaphrus*) *trossulus* Semenov, 1904
72. *Elaphrus* (*Elaphrus*) *ruscarius* Say, 1830

**OMOPHRONINI**
73. *Omophron* (*Omophron*) *americanum* Dejean, 1831
74. *Omophron* (*Omophron*) *labiatum* (Fabricius, 1801)
75. *Omophron* (*Omophron*) *tessellatum* Say, 1823

**SCARITINI**
76. *Scarites* (*Scarites*) *subterraneus* Fabricius, 1775

**CLIVININI**
77. *Clivina* (*Clivina*) *collaris* (Herbst, 1784)
78. *Clivina* (*Clivina*) *fossor* (Linné, 1758)
79. *Clivina* (*Clivina*) *impressifrons* LeConte, 1844
80. *Clivina* (*Clivina*) *pallida* Say, 1823
81. *Clivina* (*Leucocara*) *americana* Dejean, 1831
82. *Paraclivina bipustulata* (Fabricius, 1798)
83. *Schizogenius* (*Schizogenius*) *sulcifrons* Putzeys, 1846
84. *Schizogenius* (*Schizogenius*) *ferruginus* Putzeys, 1846
85. *Schizogenius* (*Schizogenius*) *lineolatus* (Say, 1823)
86. *Schizogenius* (*Schizogenius*) *amphibius* (Haldeman, 1843)
87. *Dyschirius affinis* Fall, 1901
88. *Dyschirius baemorrhoidalis* (Dejean, 1831)
89. *Dyschirius brevispinus* LeConte, 1878
90. *Dyschirius curtispinus* Putzeys, 1846
91. *Dyschirius montanus* LeConte, 1879
92. *Dyschirius sublaevis* Putzeys, 1846
93. *Dyschirius aeneolus* LeConte, 1850
94. *Dyschirius degeani* Putzeys, 1846
95. *Dyschirius globulosus* (Say, 1823)
96. *Dyschirius longulus* LeConte, 1850
97. *Dyschirius biemalis* Bousquet, 1987
98. *Dyschirius pilosus* LeConte, 1857
99. *Dyschirius setosus* LeConte, 1857
100. *Dyschirius erythrocerus* LeConte, 1857
101. *Dyschirius larochellei* Bousquet, 1988
102. *Dyschirius politus* (Dejean, 1825)
103. *Dyschirius sphaericollis* (Say, 1823)
104. *Dyschirius pallipennis* (Say, 1823)
105. *Dyschirius sellatus* LeConte, 1857

**BROSCINI**
106. *Miscodera arctica* (Paykull, 1798)
107. *Broscus cephalotes* (Linné, 1758)
**Trechinae**

108. *Trechus (Trechus) apicalis* Motschulsky, 1845
110. *Trechus (Trechus) quadristriatus* (Schrank, 1781)
111. *Trechus (Trechus) rubens* Fabricius, 1792
112. *Blemus discus* (Fabricius, 1792)

**Bembidini**

113. *Asaphidion curtum* (Heyden, 1870)
114. *Bembidion (Bracteon) carinula* Chaudoir, 1868
115. *Bembidion (Bracteon) inaequale* Say, 1823
116. *Bembidion (Bracteon) levetii* Casey, 1918
117. *Bembidion (Bracteon) punctatostriatum* Say, 1823
118. *Bembidion (Odontium) aenulum* Hayward, 1901
119. *Bembidion (Odontium) confusum* Hayward, 1897
120. *Bembidion (Odontium) robusticola* Hayward, 1897
121. *Bembidion (Pseudopyraphus) antiquum* Dejean, 1831
122. *Bembidion (Pseudopyraphus) bellorum* Maddison, 2008
123. *Bembidion (Pseudopyraphus) chalceum* Dejean, 1831
124. *Bembidion (Pseudopyraphus) bonestum* Say, 1823
125. *Bembidion (Pseudopyraphus) louisella* Maddison, 2008
126. *Bembidion (Pseudopyraphus) rothschildi* Maddison, 2008
127. *Bembidion (Pseudopyraphus) rusfoinctum* Chaudoir, 1868
128. *Bembidion (Ochthebromus) americanus* Dejean, 1831
129. *Bembidion (Ochthebromus) cheyennense* Casey, 1918
130. *Bembidion (Eurytrachelus) interventor* Lindroth, 1963
131. *Bembidion (Eurytrachelus) nitidum* (Kirby, 1837)
132. *Bembidion (Hydrius) levigatum* Say, 1823
133. *Bembidion (Leja) lampros* (Herbst, 1784)
134. *Bembidion (Leja) properans* (Stephens, 1827)
135. *Bembidion (Plataphus) obtusum* Audinet-Serville, 1821
136. *Bembidion (Plataphus) occultator* Notman, 1919
137. *Bembidion (Plataphus) basicorne* Notman, 1920
138. *Bembidion (Plataphus) carolinense* Casey, 1924
139. *Bembidion (Plataphus) planatum* (LeConte, 1847)
140. *Bembidion (Plataphus) rusticum* rusticum Casey, 1918
141. *Bembidion (Plataphus) simplex* Hayward, 1897
142. *Bembidion (Plataphus) sulcipterus prasinoides* Lindroth, 1963
143. *Bembidion (Blepharoplataphus) bastii* C.R. Sahlberg, 1827
144. *Bembidion (Trichoplataphus) fugax* (LeConte, 1848)
145. *Bembidion (Trichoplataphus) planum* (Haldeman, 1843)
146. *Bembidion (Trichoplataphus) rolandi* Fall, 1922
147. *Bembidion (Hirmoplataphus) concolor* (Kirby, 1837)
148. *Bembidion (Hirmoplataphus) nigres* Say, 1823
149. *Bembidion (Hirmoplataphus) salbratum* (LeConte, 1847)
150. *Bembidion (Hydromicrus) quadratum* Notman, 1919
151. *Bembidion (Hydromicrus) semistriatum* (Haldeman, 1843)
152. *Bembidion (Peryphaneus) tvarii* Gyllenhal, 1827
153. Bembidion (Peryphanes) lacunarium (Zimmermann, 1869)
154. Bembidion (Peryphanes) stephensii Crotch, 1866
155. Bembidion (Peryphanes) yukonum Fall, 1926
156. Bembidion (Asioperyphus) postremum Say, 1830
157. Bembidion (Asioperyphus) sordidum (Kirby, 1837)
158. Bembidion (Peryphus) bruecellense Wesmael, 1845
159. Bembidion (Peryphus) femoratum Sturm, 1825
160. Bembidion (Peryphus) obscurellum (Kirby, 1837)
161. Bembidion (Peryphus) petrosum petrosum Gebler, 1833
162. Bembidion (Peryphus) sejunctum sejunctum Casey, 1918
163. Bembidion (Peryphus) tetracolum Say, 1823
164. Bembidion (Peryphus) transversale Dejean, 1831
165. Bembidion (Ocydromus) scopulinum (Kirby, 1837)
166. Bembidion (Eupetedromus) graciliforme Hayward, 1897
167. Bembidion (Eupetedromus) immaturum Lindroth, 1954
168. Bembidion (Eupetedromus) incrematum LeConte, 1860
169. Bembidion (Eupetedromus) iridipenne Bousquet & Webster, 2006
170. Bembidion (Eupetedromus) variegatum Say, 1823
171. Bembidion (Notaphus) castor Lindroth, 1963
172. Bembidion (Notaphus) constrictum (LeConte, 1847)
173. Bembidion (Notaphus) contractum Say, 1823
174. Bembidion (Notaphus) cordatum (LeConte, 1847)
175. Bembidion (Notaphus) intermedium (Kirby, 1837)
176. Bembidion (Notaphus) nigripes (Kirby, 1837)
177. Bembidion (Notaphus) oberthueri Hayward, 1901
178. Bembidion (Notaphus) patrule Dejean, 1831
179. Bembidion (Notaphus) rapidum (LeConte, 1847)
180. Bembidion (Notaphus) versatum LeConte, 1878
181. Bembidion (Bembidion) mntatum Gemminger & Harold, 1868
182. Bembidion (Bembidion) quadrimaculatum oppositum Say, 1823
183. Bembidion (Furcacampa) affine Say, 1823
184. Bembidion (Furcacampa) impotens Casey, 1918
185. Bembidion (Furcacampa) minus Hayward, 1897
186. Bembidion (Furcacampa) versicolor (LeConte, 1847)
187. Bembidion (Semicampa) morulunm LeConte, 1863
188. Bembidion (Semicampa) musciola Hayward, 1897
189. Bembidion (Semicampa) nigrivestis Bousquet, 2006
190. Bembidion (Semicampa) praticola Lindroth, 1963
191. Bembidion (Semicampa) semicinctum Notman, 1919
192. Bembidion (Diplocampa) transparens (Gebler, 1829)
193. Bembidion (Trepanedoris) canadianum Casey, 1924
194. Bembidion (Trepanedoris) concretum Casey, 1918
195. Bembidion (Trepanedoris) fortestriatum (Motschulsky, 1845)
196. Bembidion (Trepanedoris) frontale (LeConte, 1847)
197. Bembidion (Trepanedoris) pseudocantum Lindroth, 1963
198. Bembidion (Amerizus) wingatei Bland, 1864
199. Mioptactys flavicuda (Say, 1823)
200. *Tachyta* (*Tachyta*) *angulata* Casey, 1918
201. *Tachyta* (*Tachyta*) *inornata* (Say, 1823)
202. *Tachyta* (*Tachyta*) *kirbyi* Casey, 1918
203. *Elaphropus* *anceps* (LeConte, 1848)
204. *Elaphropus* *capax* (LeConte, 1863)
205. *Elaphropus* *dolosus* (LeConte, 1848)
206. *Elaphropus* *granarius* (Dejean, 1831)
207. *Elaphropus* *incursus* (Say, 1830)
208. *Elaphropus* *saturatus* (Casey, 1918)
209. *Elaphropus* *tripunctatus* (Say, 1830)
210. *Elaphropus* *verniciatus* (Casey, 1918)
211. *Elaphropus* *vivax* (LeConte, 1848)
212. *Elaphropus* *xanthopus* (Dejean, 1831)
213. *Pericompsus* (*Pericompsus*) *ephippiatus* (Say, 1830)
214. *Paratachys* *bisulcatus* (Nicolai, 1822)
215. *Polyderis* *laevis* (Say, 1823)
216. *Paratachys* *oblitus* (Casey, 1918)
217. *Paratachys* *proximus* (Say, 1823)
218. *Paratachys* *pumilus* (Dejean, 1831)
219. *Paratachys* *rhodeanus* (Casey, 1818)
220. *Paratachys* *scitulus* (LeConte, 1848)

**Patrobinini**
221. *Diplous* *rugicollis* (Randall, 1838)
222. *Patrobus* *longicornis* (Say, 1823)
223. *Patrobus* *foveocollis* (Eschscholtz, 1823)
224. *Patrobus* *lecontei* Chaudoir, 1871
225. *Patrobus* *septentrionis* Dejean, 1828
226. *Patrobus* *stygicus* Chaudoir, 1871
227. *Platypatrobus* *lacustris* Darlington, 1938

**Psyrini**
228. *Nomius* *pygmaeus* (Dejean, 1831)
229. *Psydrus* *picens* LeConte, 1846

**Brachinini**
230. *Brachinus* (*Neobrachinus*) *cordicollis* Dejean, 1826
231. *Brachinus* (*Neobrachinus*) *cyanipennis* Say, 1823
232. *Brachinus* (*Neobrachinus*) *cyanobroaticus* Erwin, 1969
233. *Brachinus* (*Neobrachinus*) *fulminatus* Erwin, 1969
234. *Brachinus* (*Neobrachinus*) *fumans* (Fabricius, 1781)
235. *Brachinus* (*Neobrachinus*) *janthinipennis* (Dejean, 1826)
236. *Brachinus* (*Neobrachinus*) *medius* Harris, 1828
237. *Brachinus* (*Neobrachinus*) *ovipennis* LeConte, 1862
238. *Brachinus* (*Neobrachinus*) *patruelis* LeConte, 1844
239. *Brachinus* (*Neobrachinus*) *quadripennis* Dejean, 1825
240. *Brachinus* (*Neobrachinus*) *tenuicollis* LeConte, 1844
241. *Brachinus* (*Neobrachinus*) *vulcanoides* Erwin, 1969

**Pterostichini**
242. *Poecilus* (*Poecilus*) *chalcites* (Say, 1823)
243. Poecilus (Poecilus) lucublandus (Say, 1823)
244. Lophoglossus scrutator (LeConte, 1846)
245. Lophoglossus vernix Casey, 1913
246. Gastrellarius bonestus (Say, 1823)
247. Stomis pumicatus (Panzer, 1795)
248. Stereocerus haematopus (Dejean, 1831)
249. Myas (Trigonognatha) coracinus (Say, 1823)
250. Myas (Trigonognatha) cyanescens Dejean, 1828
251. Pterostichus (Argutor) commutabilis (Motschulsky, 1866)
252. Pterostichus (Argutor) praetermissus (Chaudoir, 1868)
253. Pterostichus (Argutor) vernalis (Panzer)
254. Pterostichus (Phonias) corrusculus LeConte, 1873
255. Pterostichus (Phonias) femoralis (Kirby, 1837)
256. Pterostichus (Phonias) patruelis (Dejean, 1831)
257. Pterostichus (Phonias) strennus (Panzer, 1797)
258. Pterostichus (Bothriopterus) adstrictus Eschscholtz, 1823
259. Pterostichus (Bothriopterus) mutus (Say, 1823)
260. Pterostichus (Bothriopterus) pennsylvanicas LeConte, 1873
261. Pterostichus (Melanius) castor Goulet & Bousquet, 1983
262. Pterostichus (Melanius) corvinus (Dejean, 1828)
263. Pterostichus (Pseudomasenus) luctuosus (Dejean, 1828)
264. Pterostichus (Pseudomasenus) tennis (Casey, 1924)
265. Pterostichus (Monoferonia) diligendus (Chaudoir, 1868)
266. Pterostichus (Morphnosoma) melanarius (Illiger, 1798)
267. Pterostichus (Euforonia) coracinus (Newman, 1838)
268. Pterostichus (Euforonia) laevigatus (Newman, 1838)
269. Pterostichus (Euforonia) novus Straneo, 1944
270. Pterostichus (Euforonia) stygnus (Say, 1823)
271. Pterostichus (Lenapterus) punctatissimus (Randall, 1838)
272. Pterostichus (Lamenus) candidalis (Say, 1823)
273. Pterostichus (Cylindrocharis) rostratus (Newman, 1838)
274. Pterostichus (Hypherpes) adocus (Say, 1823)
275. Pterostichus (Hypherpes) tristis (Dejean, 1828)
276. Pterostichus (Cryobius) arcticola (Chaudoir, 1868)
277. Pterostichus (Cryobius) brevicornis (Kirby, 1837)
278. Pterostichus (Cryobius) pinguedinensis (Eschscholtz, 1823)
279. Cyclotrachelus (Evarthrus) sodalis sodalis (LeConte, 1846)
280. Abax (Abax) parallelepipedus (Piller & Mitterpacher, 1783)

ZABRINI
281. Pseudamara arenaria (LeConte, 1847)
282. Amara (Curtonotus) alpina (Paykull, 1790)
283. Amara (Curtonotus) aulica (Panzer, 1797)
284. Amara (Curtonotus) carinata (LeConte, 1847)
285. Amara (Curtonotus) hyperborea Dejean, 1831
286. Amara (Curtonotus) lacustris LeConte, 1855
287. Amara (Curtonotus) pennsylvanica Hayward, 1908
288. Amara (Curtonotus) torrida (Panzer, 1797)
289. Amara (Bradytus) apricaria (Paykull, 1790)
290. Amara (Bradytus) avida (Say, 1823)
291. Amara (Bradytus) exarata Dejean, 1828
292. Amara (Bradytus) fulva (O.F. Müller, 1776)
293. Amara (Bradytus) glacialis (Mannerheim, 1853)
294. Amara (Bradytus) lattior (Kirby, 1837)
295. Amara (Bradytus) lindrothi Hieke, 1990
296. Amara (Bradytus) schwarzi Hayward, 1908
297. Amara (Percosia) obesa (Say, 1823)
298. Amara (Xenocelia) chalcea Dejean, 1828
299. Amara (Xenocelia) gibba (LeConte, 1847)
300. Amara (Celia) bifrons (Gyllenhal, 1810)
301. Amara (Celia) ellipsis (Casey, 1918)
302. Amara (Celia) erratica (Duftschmid, 1812)
303. Amara (Celia) laevipennis Kirby, 1837
304. Amara (Celia) musculus (Say, 1823)
305. Amara (Celia) patruelis Dejean, 1831
306. Amara (Celia) pseudo brunnea Lindroth, 1968
307. Amara (Celia) rubrica Haldeman, 1843
308. Amara (Celia) sinnosa (Casey, 1918)
309. Amara (Amara) aenea (DeGeer, 1774)
310. Amara (Amara) aeneopolita Casey, 1918
311. Amara (Amara) basilaris (Say, 1823)
312. Amara (Amara) communis (Panzer, 1797)
313. Amara (Amara) convexa LeConte, 1847
314. Amara (Amara) crassispina LeConte, 1855
315. Amara (Amara) cuproelata Putzeys, 1866
316. Amara (Amara) eurynota (Panzer, 1797)
317. Amara (Amara) familiaris (Duftschmid, 1812)
318. Amara (Amara) impuncticollis (Say, 1823)
319. Amara (Amara) laticollis Mannerheim, 1843
320. Amara (Amara) lunicollis Schiodte, 1837
321. Amara (Amara) neoscotica Casey, 1924
322. Amara (Amara) otiosa Casey, 1918
323. Amara (Amara) ovata (Fabricius, 1792)
324. Amara (Amara) turbata Casey, 1918
325. Amara (Para celia) quenseli (Schönherr, 1806)
326. Amara (Zezea) angustata (Say, 1823)
327. Amara (Zezea) angustatoides Hieke, 2000
328. Amara (Zezea) flebilis (Casey, 1918)
329. Amara (Zezea) pallipes Kirby, 1837

OODINI
330. Oodes amaroides Dejean, 1831
331. Oodes brevis Lindroth, 1957
332. Oodes fluviatis LeConte, 1863
333. Lachnocrepis parallela (Say, 1830)
334. Anatrichis minuta (Dejean, 1831)
Chlaeniini

335. Chlaenius (Eurydactylus) tomentosus (Say, 1823)
336. Chlaenius (Anomoglossus) emarginatus Say, 1823
337. Chlaenius (Chlaenius) aestivus Say, 1823
338. Chlaenius (Chlaenius) laticollis Say, 1823
339. Chlaenius (Chlaenius) sericeus (Forster, 1771)
340. Chlaenius (Lithochlaenius) cordicollis Kirby, 1837
341. Chlaenius (Chlaeniellus) brevitarsis LeConte, 1847
342. Chlaenius (Chlaeniellus) impunctifrons Say, 1823
343. Chlaenius (Chlaeniellus) pennsylvanicus Say, 1823
344. Chlaenius (Chlaeniellus) tricolor Dejean, 1826
345. Chlaenius (Brachylobus) lithophilus Say, 1823
346. Chlaenius (Agostenus) alternatus Horn, 1871
347. Chlaenius (Agostenus) niger Randall, 1838
348. Chlaenius purpuricollis Randall, 1838

Licina

349. Diplocheila (Isorembus) assimilis (LeConte, 1844)
350. Diplocheila (Isorembus) impressicollis (Dejean, 1831)
351. Diplocheila (Isorembus) obtusa (LeConte, 1847)
352. Diplocheila (Isorembus) striatopunctata (LeConte, 1844)
353. Dicaelus (Paradicaelus) dilatatus dilatatus Say, 1823
354. Dicaelus (Paradicaelus) elongatus Bonelli, 1813
355. Dicaelus (Paradicaelus) politus Dejean, 1826
356. Dicaelus (Paradicaelus) teter Bonelli, 1813
357. Badister (Badister) neopulchellus Lindroth, 1954
358. Badister (Badister) notatus Haldeman, 1843
359. Badister (Badister) obtusus LeConte, 1878
360. Badister (Bandia) grandiceps Casey, 1920
361. Badister (Bandia) ocularis Casey, 1920
362. Badister (Bandia) parviceps Ball, 1959
363. Badister (Bandia) transversus Casey, 1920

Harpalini

364. Notiobia (Anisotarsus) nitidipennis (LeConte, 1847)
365. Notiobia (Anisotarsus) sayi (Blatchley, 1910)
366. Notiobia (Anisotarsus) terminata (Say, 1823)
367. Xestonotus lugubris (Dejean, 1829)
368. Anisodactylus (Anisodactylus) agricola (Say, 1823)
369. Anisodactylus (Anisodactylus) carbonarius (Say, 1823)
370. Anisodactylus (Anisodactylus) harrii LeConte, 1863
371. Anisodactylus (Anisodactylus) kirbyi Lindroth, 1953
372. Anisodactylus (Anisodactylus) melanopus (Haldeman, 1843)
373. Anisodactylus (Anisodactylus) nigerrimus (Dejean, 1831)
374. Anisodactylus (Anisodactylus) nigrita Dejean, 1829
375. Anisodactylus (Anisodactylus) pseudagricola Noonan, 1996
376. Anisodactylus (Anadaptus) discoidens Dejean, 1831
377. Anisodactylus (Anadaptus) sanctaeeruci (Fabricius, 1798)
378. Anisodactylus (Gynandrotarsus) melula (Germar, 1824)
379. Anisodactylus (Gynandrotarsus) rusticus (Say, 1823)
380. Anisodactylus (Spongopus) verticalis (LeConte, 1847)
381. Geopinus incrassatus (Dejean, 1829)
382. Amphasia (Psandamphia) sericea (Harris, 1828)
383. Amphasia (Amphasia) interstitialis (Say, 1823)
384. Dicheirotrichus (Trichocellus) cognatus (Gyllenhal, 1827)
385. Dicheirotrichus (Oreocebus) mannerheimii (R.F. Sahlberg, 1844)
386. Bradycellus (Catharellus) lecontei Csiki, 1932
387. Bradycellus (Stenocellus) congener (LeConte, 1847)
388. Bradycellus (Stenocellus) insulsus (Casey, 1914)
389. Bradycellus (Stenocellus) neglectus (LeConte, 1847)
390. Bradycellus (Stenocellus) nigriceps LeConte, 1868
391. Bradycellus (Stenocellus) rupestris (Say, 1823)
392. Bradycellus (Stenocellus) tantillus (Dejean, 1829)
393. Bradycellus (Lipalocellus) nigrinus (Dejean, 1829)
394. Bradycellus (Lipalocellus) semipubescens Lindroth, 1968
395. Bradycellus (Triliarthrus) atrimedeus (Say, 1823)
396. Bradycellus (Triliarthrus) badipennis (Haldeman, 1843)
397. Bradycellus (Triliarthrus) kirbyi (Horn, 1883)
398. Bradycellus (Triliarthrus) lugubris (LeConte, 1847)
399. Stenolophus (Stenolophus) carbo Bousquet, 1993
400. Stenolophus (Stenolophus) fuliginosus Dejean, 1829
401. Stenolophus (Stenolophus) fuscatus Dejean, 1829
402. Stenolophus (Stenolophus) humidus Hamilton, 1893
403. Stenolophus (Stenolophus) megacephalus Lindroth, 1968
404. Stenolophus (Stenolophus) ochropezus (Say, 1823)
405. Stenolophus (Stenolophus) plebejus Dejean, 1829
406. Stenolophus (Agonoderus) comma (Fabricius, 1775)
407. Stenolophus (Agonoderus) lecontei (Chaudoir, 1868)
408. Stenolophus (Agonoderus) lineola (Fabricius, 1775)
409. Stenolophus (Agonoleptus) conjunctus (Say, 1823)
410. Stenolophus (Agonoleptus) rotundicollis (Haldeman, 1843)
411. Acupalpus (Philodes) alternans (LeConte, 1853)
412. Acupalpus (Philodes) rectangularis (Chaudoir, 1868)
413. Acupalpus (Acupalpus) canadensis Casey, 1924
414. Acupalpus (Acupalpus) carus (LeConte, 1863)
415. Acupalpus (Acupalpus) hydroicus (LeConte, 1863)
416. Acupalpus (Acupalpus) meridianus (Linné, 1761)
417. Acupalpus (Acupalpus) nanellus Casey, 1914
418. Acupalpus (Acupalpus) pumilus Lindroth, 1968
419. Acupalpus (Tachistodes) partarius (Say, 1823)
420. Acupalpus (Tachistodes) pumilus Dejean, 1829
421. Acupalpus (Tachistodes) testaceus Dejean, 1829
422. Ophonus (Metophonus) puncticeps Stephens, 1828
423. Ophonus (Metophonus) raflbarbis (Fabricius, 1792)
424. Harpalus (Pseudoophonus) compar LeConte, 1847
425. Harpalus (Pseudoophonus) erythropus Dejean, 1829
426. Harpalus (Pseudoophonus) faunus Say, 1823
427. Harpalus (Pseudoophonus) pensylvanicus (DeGeer, 1774)
428. Harpalus (Pseudoophonus) rufipes (DeGeer, 1774)
429. Harpalus (Pseudoophonus) vagans LeConte, 1865
430. Harpalus (Megapangus) caliginosus (Fabricius, 1775)
431. Harpalus (Plectralidus) erraticus Say, 1823
432. Harpalus (Opadius) fulvilibris Mannerheim, 1853
433. Harpalus (Opadius) indigens Casey, 1924
434. Harpalus (Opadius) laevipes Zetterstedt, 1828
435. Harpalus (Opadius) lewisii LeConte, 1865
436. Harpalus (Opadius) megacephalus LeConte, 1847
437. Harpalus (Opadius) nigritarsis C.R. Sahlberg, 1827
438. Harpalus (Opadius) providens Casey, 1914
439. Harpalus (Opadius) reversus Casey, 1924
440. Harpalus (Opadius) spadiceus Dejean, 1829
441. Harpalus (Opadius) affinis (Schrank, 1781)
442. Harpalus (Opadius) herbivagus Say, 1823
443. Harpalus (Opadius) innocens LeConte, 1863
444. Harpalus (Opadius) ochropus Kirby, 1837
445. Harpalus (Opadius) opacipennis (Haldeman, 1843)
446. Harpalus (Opadius) plenalis Casey, 1914
447. Harpalus (Opadius) rubripes (Duftschmid, 1812)
448. Harpalus (Opadius) solitarius Dejean, 1829
449. Harpalus (Opadius) somnulentus Dejean, 1829
450. Harpalus (Opadius) alindus Say, 1823
451. Harpalus (Opadius) fascipalpis Sturm, 1818
452. Trichotichnus (Iridessus) antumnalis (Say, 1823)
453. Trichotichnus (Trichotichnus) dichrous (Dejean, 1829)
454. Trichotichnus (Trichotichnus) vulpeculus (Say, 1823)
455. Selenophorus (Celtamorphus) ellipticus Dejean, 1829
456. Selenophorus (Selenophorus) gagatinus Dejean, 1829
457. Selenophorus (Selenophorus) bylasis (Say, 1823)
458. Selenophorus (Selenophorus) opalinus (LeConte, 1863)
459. Discoderus parallelus (Haldeman, 1843)
460. Pentagonica picticornis Bates, 1883

PENTAGONICINI

461. Laemostenus (Pristonychus) terricola terricola (Herbst, 1784)
462. Calathus (Neocalathus) gregarius (Say, 1823)
463. Calathus (Neocalathus) ingratus Dejean, 1828
464. Calathus (Neocalathus) opaculus LeConte, 1854
465. Azalathus (Procalathus) advena (LeConte, 1846)
466. Synchius (Synchius) impunctatus (Say, 1823)
467. Olisthopus micans LeConte, 1846
468. Olisthopus parmatus (Say, 1823)
469. Sericoda obsoleta (Say, 1823)
470. Sericoda quadrípunctata (DeGeer, 1774)
471. *Tetraleucus picticornis* (Newman, 1844)
472. *Paranchus albipes* (Fabricius, 1796)
473. *Oxypselaphus pusillus* (LeConte, 1854)
474. *Agonum (Europhilus) anchomenoides* Randall, 1838
475. *Agonum (Europhilus) canadense* Goulet, 1969
476. *Agonum (Europhilus) consimile* (Gyllenhal, 1810)
477. *Agonum (Europhilus) darlingtoni* Lindroth, 1954
478. *Agonum (Europhilus) gratiosum* (Mannerheim, 1853)
479. *Agonum (Europhilus) lutulentum* (LeConte, 1854)
480. *Agonum (Europhilus) palustre* Goulet, 1969
481. *Agonum (Europhilus) picicornoides* Lindroth, 1966
482. *Agonum (Europhilus) retractum* LeConte, 1846
483. *Agonum (Europhilus) sordens* Kirby, 1837
484. *Agonum (Europhilus) superioris* Lindroth, 1966
485. *Agonum (Europhilus) thoreyi* Dejean, 1828
486. *Agonum (Platynomicrus) nigriceps* LeConte, 1846
487. *Agonum (Olisares) aeruginosum* Dejean, 1828
488. *Agonum (Olisares) affinis* Kirby, 1837
489. *Agonum (Olisares) albicus* Dejean, 1828
490. *Agonum (Olisares) corvus* (LeConte, 1860)
491. *Agonum (Olisares) crenistriatum* (LeConte, 1863)
492. *Agonum (Olisares) cupreum* Dejean, 1831
493. *Agonum (Olisares) cupripenne* (Say, 1823)
494. *Agonum (Olisares) deceptivum* (LeConte, 1879)
495. *Agonum (Olisares) decorum* (Say, 1823)
496. *Agonum (Olisares) errans* (Say, 1823)
497. *Agonum (Olisares) excavatum* Dejean, 1828
498. *Agonum (Olisares) extensicolle* (Say, 1823)
499. *Agonum (Olisares) ferreum* (Haldeman, 1843)
500. *Agonum (Olisares) fidele* Casey, 1920
501. *Agonum (Olisares) harriii* LeConte, 1846
502. *Agonum (Olisares) melanarium* Dejean, 1828
503. *Agonum (Olisares) metallescens* (LeConte, 1854)
504. *Agonum (Olisares) moerns* Dejean, 1828
505. *Agonum (Olisares) mutatum* (Gemminger & Harold, 1868)
506. *Agonum (Olisares) nutans* (Say, 1823)
507. *Agonum (Olisares) octopunctatum* (Fabricius, 1798)
508. *Agonum (Olisares) propinquum* (Gemminger & Harold, 1868)
509. *Agonum (Olisares) punctiforme* (Say, 1823)
510. *Agonum (Olisares) quinquepunctatum* Motschulsky, 1844
511. *Agonum (Olisares) rupees* Dejean, 1828
512. *Agonum (Olisares) tenue* (LeConte, 1854)
513. *Agonum (Olisares) trigeminum* Lindroth, 1954
514. *Agonum (Agonum) muelleri* (Herbst, 1784)
515. *Agonum (Agonum) piculum* (LeConte, 1879)
516. *Agonum (Agonum) placidum* (Say, 1823)
517. *Platynus (Platynus) desens* (Say, 1823)
519. *Platynus* (*Platynus*) *opaculus* LeConte, 1863
520. *Platynus* (*Platynus*) *parmarginatus* Hamilton, 1893
521. *Platynus* (*Platynus*) *tenuicollis* (LeConte, 1846)
522. *Platynus* (*Batenus*) *cincticollis* (Say, 1823)
523. *Platynus* (*Batenus*) *hypolithos* (Say, 1823)
524. *Platynus* (*Batenus*) *mannerheimii* (Dejean, 1828)

**ATRANINI**
525. *Atranus pubescens* (Dejean, 1828)

**PERIGONINI**
526. *Perigona nigripes* (Dejean, 1831)
527. *Perigona pallipennis* (LeConte, 1853)

**ODACANTHINI**
528. *Colliuris* (*Casonia*) *pensylvanica* (Linné, 1767)

**CYCLOSOMINI**
529. *Tetragonoderus* (*Peronoscelis*) *fasciatus* (Haldeman, 1843)

**LEBIINI**
530. *Cymindis* (*Cymindis*) *americana* Dejean, 1826
531. *Cymindis* (*Cymindis*) *borealis* LeConte, 1863
532. *Cymindis* (*Cymindis*) *cribricollis* Dejean, 1831
533. *Cymindis* (*Cymindis*) *neglecta* Haldeman, 1843
534. *Cymindis* (*Cymindis*) *pilosa* Say, 1823
535. *Cymindis* (*Cymindis*) *planipennis* LeConte, 1863
536. *Cymindis* (*Cymindis*) *unicolor* Kirby, 1837
537. *Cymindis* (*Pinacoderia*) *limbata* Dejean, 1831
538. *Cymindis* (*Pinacoderia*) *platicollis* (Say, 1823)
539. *Dromius* (*Dromius*) *fenestratus* (Fabricius, 1794)
540. *Dromius* (*Dromius*) *piceus* Dejean, 1831
541. *Axinopalpus biptagiatius* (Dejean, 1825)
542. *Apristus latens* (LeConte, 1846)
543. *Apristus subsulcatus* (Dejean, 1826)
544. *Microkestes linearis* (LeConte, 1851)
545. *Syntomus americanus* (Dejean, 1831)
546. *Lebia* (*Loxopeza*) *atriventris* Say, 1823
547. *Lebia* (*Loxopeza*) *grandis* Hentz, 1830
548. *Lebia* (*Loxopeza*) *trivolor* Say, 1823
549. *Lebia* (*Lebia*) *analis* Dejean, 1825
550. *Lebia* (*Lebia*) *fuscata* Dejean, 1825
551. *Lebia* (*Lebia*) *moesta* LeConte, 1850
552. *Lebia* (*Lebia*) *ornata* Say, 1823
553. *Lebia* (*Lebia*) *pectita* Horn, 1885
554. *Lebia* (*Lebia*) *pleuritica* LeConte, 1846
555. *Lebia* (*Lebia*) *pulchella* Dejean, 1826
556. *Lebia* (*Lebia*) *pumila* Dejean, 1831
557. *Lebia* (*Lebia*) *solea* Hentz, 1830
558. *Lebia* (*Lebia*) *viridipennis* Dejean, 1826
559. *Lebia* (*Lebia*) *viridis* Say, 1823
560. Lebia (Lebia) vittata (Fabricius, 1777)
561. Plochionus (Menidius) timidus Haldeman, 1843
562. Calleida (Calleida) punctata LeConte, 1846
563. Calleida (Calleida) purpurea (Say, 1823)

**Galeritini**

564. Galerita (Progalerita) janus (Fabricius, 1792)

**Helluoionini**

565. Hellomorphoides praestus bicolor (Harris, 1828)

*Alphabetic list.* – The following is an alphabetic list with distributional records of the northeastern species. A name followed by a dagger (†) indicates that the species is adventive in North America. Abbreviations used for the political entries are: LB (Labrador), ME (Maine), NB (New Brunswick), NF (Newfoundland), NH (New Hampshire), NS (Nova Scotia), PE (Prince Edward Island), PM (Saint Pierre and Miquelon), QC (Québec), and VT (Vermont).

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<td>SPECIES NAME</td>
<td>PROVINCE / STATE RECORDS FOR THE NORTHEAST</td>
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<td>QC NB NS PE — — — — — — — — — — — — — — ME NH VT</td>
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<td>QC NB NS PE — NF — — — — ME NH VT</td>
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<td><em>Stenolophus fuscatus</em></td>
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<td><em>Stomis punicatus</em>†</td>
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<td><em>Tachyta inornata</em></td>
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<td><em>Tachyta kirbyi</em></td>
<td>QC — — — — — — — — — — — — — — ME NH VT</td>
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<td><em>Trechus crassiscapus</em></td>
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<td><em>Trechus quadristriatus†</em></td>
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<td><em>Trichotichnus diebrus</em></td>
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<tr>
<td><em>Trichotichnus vulpeculus</em></td>
<td>QC NB — — — — — — — — — — — — — — NH VT</td>
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<tr>
<td><em>Xestonotus lugubris</em></td>
<td>QC NB NS PE — — — — — — — — ME NH VT</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>474 327 292 171 96 178 66 364 453 417</td>
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<tr>
<td><strong>% NORTHEAST FAUNA</strong></td>
<td>83.9 57.9 51.7 30.3 17.0 31.5 11.7 64.4 80.2 73.8</td>
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SECTION A

ADULTS
Generalities

1. – Information Included

This section includes a discussion of the morphological characters used and the identification keys to adults. The first key will distinguish all northeastern genera except for the externally similar duos Pterostichus / Lophoglossus and Agonum / Sericoda. Separations of these genera are most reliably achieved by examining characters of the genitalia. Consequently, in the key to species the two northeastern species of Lophoglossus are keyed with those of Pterostichus and the two northeastern species of Sericoda with those of Agonum. The large tribes Bembidiini, Pterostichini, Harpalini, Platynini, and Lebiini each begin with a key to genera. Keys to species are included for all genera represented in the northeast by more than one species.

To make the book more useful, the following information is included under each species: biogeographic categories; bioclimatic zones; habitat requirements; seasonal activity; occurrence; dispersal power; and geographical divisions.

Biogeographic categories [BC]. For the purpose of this book, the species have been classified into three categories according to their natural geographical distribution. Endemic: the species is found only in North America. As far as known, there is no native northeastern species that are adventive in other parts of the world. Holarctic: the species occurs naturally in both North America and the Palaearctic Region. Exotic: the species is native outside of North America and, through man activities, has been introduced, either accidentally or purposely, to North America. Most exotic species found in the northeast were introduced from Europe. All but two, Calosoma sycophanta and Carabus auratus, were introduced accidentally. When known, the year of the first eastern North American record of these species is listed.

Bioclimatic zones [BZ]. For the purpose of this book, the northeast is divided into four bioclimatic zones. Temperate: this zone has the highest mean annual temperature and obviously has the greatest carabid diversity of the four defined zones. It roughly corresponds to the deciduous forest formation of eastern North America and includes in our area most of the New England states, most of New Brunswick and Prince Edward Island, part of Nova Scotia, and southern Quebec as far north as the Saint Lawrence estuary near the Island of Orleans. Many carabid species found in the northeast are restricted to this zone. Boreal: this zone corresponds roughly to the coniferous forest zone of Rousseau (1952), the main boreal forest zone of Hare (1950), and zone 4 of Rousseau (1974). The distribution of many species found in the temperate zone extends into the boreal region and that of a few species found in the arctic zone also extends into this zone. Arctic: this region, which includes the hemiarctic region for practical reasons, is found in the northeast only in Quebec and Labrador and encompasses roughly the northern third of the above-mentioned territory [zones 1 and 2 of Rousseau (1974)]. About 50 carabid species are quite regularly found in this zone but relatively few, such as Nebria sutilalis, Amara glacialis, and Dicheirotrichus mannerheimii, are confined to it. Obviously this bioclimatic area has been the least studied in terms of carabid communities. Alpine: this region covers the top of high mountains, such as the Shickshocks in Quebec, Mount Washington in New Hampshire, and Mount Katahdin in Maine, where climatic conditions are close to those of the arctic region.
A number of northeastern species are found in this bioclimatic zone but only one, *Pterostichus pinguedineus*, occurs exclusively in this zone.

The bioclimatic zone placed in square brackets is less likely to be occupied by a particular species as compared to the other zone(s) cited.

**Habitat requirements [HR]**. Most northeastern carabids have relatively specific habitat requirements which, for the purpose of this book, break down to the following basic divisions.

**Covered places**: this category includes forests, forest edges, and wooded areas. The species are found mainly under the loose bark of fallen trees or logs, in or beneath rotten logs, under rocks, or in leaf litter. Some species, such as *Pterostichus diligendus*, inhabit only wet places near brooks and streams in covered places. This division also extends to arboreal species. Examples of northeastern species regularly encountered in this type of habitat are members of *Cychrini*, *Amerizus*, *Myas*, *Hypherpes*, and *Monoferonia*. **Open places**: this category applies to cultivated fields, dumping grounds, deserted fields, road ditches, sand and gravel pits, alpine meadows, and alvars. Here adults are found during the daytime either running on the ground, hiding under any kind of cover, or searching for food on flowers. Examples of species living in such conditions are members of *Poecilus*, *Pseudoophonus*, and *Curtonotus*. **Wet places**: this category includes marshes, swamps, bogs, fens, and beaver houses. Carabids are best collected in these habitats by treading on the vegetation in water or the mud around the water source. Examples of northeastern species living in such wet areas are members of *Platypatrobus*, *Pseudomaseus*, *Europhilus* (except *A. retractum*), Odini, and some *Chlaenius*. A number of species that fit this category are also regularly found in the next division. **Flooded places**: this category applies to river and lake banks as well as ocean beaches. Many of the species living in flooded places have specific requirements and are found only on sand, clay, or among gravel. Some are found close to the water edge, other much farther. Examples of species living in flooded places include members of *Omnopon*, most *Dyschirius*, *Schizogenius*, *Bracteon*, *Hirmoplataphus*, and *Notaphus*.

Habitat requirements pertain essentially to the reproductive habitat. Many species, particularly those living in wet and flooded places, spend the winter in different habitat types. Requirements shown in square brackets for a particular species are poorly known, often based on a few collecting records only.

**Seasonal activity [SA]**. There are two basic types of seasonal activities among northeastern carabids: spring and autumn breeders. The spring breeder species reproduce during spring through the first part of summer. The larvae develop mainly during summer and the adults of the new generation appear during late summer through the fall. These adults reproduce only during the next spring. In this type of breeding, hibernation occurs only in the adult stage. Autumn breeders on the other hand reproduce, at least in the temperate and boreal regions of the northeast, mainly during the summer and the larvae do not complete their development until the next spring or summer. At least for many species of *Pterostichus*, the adults of the new generation do not reproduce until the following year. However, there is evidence that in some species, such as *Synuchus impunctatus*, the adults of the new generation reproduce the same year as they emerge. For autumn breeding species, the larvae hibernate, along with adults in most species.

The division into two seasonal activity types is surely an oversimplification of the natural complexity of carabid reproduction and development. Several factors, such as the photoperiod and temperature, play an important role in the larval and sexual developments. However, it is possible to fit most of the northeastern species into one of the two reproductive types. An exception is *Sphaeroderus nitidicolli* (see Bousquet and Pilon 1980). At least in Quebec, the species reproduces much later in the fall than typical autumn breeders and some observations made in the laboratory suggest that hibernation possibly occurs in part in the egg stage. As our know-
ledge of seasonal activity increases, a number of species would probably not fit into the two categories described above. Recent European studies have shown that in some species part of the population act as spring breeder and the remaining part as autumn breeder. Furthermore some species are apparently spring breeders in some regions and autumn breeders in others.

Two points should be stressed concerning the seasonal activity cycles. First, closely related species usually have the same type of seasonal activity. For example, all species of *Elaphrus*, *Dyschirius*, *Diplous*, *Bracteon*, *Bothriopterus*, *Psseudamaseus*, *Phonias*, and *Europhilus* for which there is information are spring breeders. On the other hand, available information on species of *Nebria*, *Scaphinotus*, *Patrobus*, *Enferonia*, and *Hypherpes* indicates they are autumn breeders. An exception is found in the three species of *Sphaeroderus* occurring in the northeast. Two of them are typical spring breeders while the third one, *S. nitidicollis*, behaves like an autumn breeder (but see preceding paragraph). Second, there is a correlation between the habitat and the seasonal activity type. A large proportion of species living in wet and flooded places are spring breeders while most species that live in covered places, thus in a more stable environment, are autumn breeders. Both type of seasonal activity are found more or less equally among species living in open places. The spring breeding type is likely the primitive condition among temperate and boreal species and there is certainly an advantage for most species that invaded stable habitats to become autumn breeders.

The type of seasonal activity is listed for all species for which there is adequate information. An activity listed in brackets is suggested by correlation factors alone. A question mark (?) indicates a total lack of information on the seasonal activity type.

**Occurrence [OC]**. It does not take long for collectors to realize that some species are common and others relatively rare. Two elements are introduced to express the “collecting occurrence” of northeastern species. First is the **locality frequency [LF]** which refers to the approximate number of localities where a species has been collected in the northeast. The following are used: ++++ (more than 50 localities); +++ (16 – 50 localities); ++ (4 – 15 localities); + (less than 4 localities). Two locality frequencies separated by a “/” indicate that the approximate number of localities is between the two numbers given.

The second element is the **relative abundance [RA]** of a species. It is a rough estimate of the number of specimens usually collected by hand in the right habitat during a two to three hour period. The estimate is based on about 40 years of collecting experience by the author mainly in Quebec. The following are used: ++++ (often more than 25 specimens thus suggesting gregarious nature); +++ (usually between 7-25 specimens); ++ (usually between 3 – 6 specimens); + (usually 1 or 2 specimens). It is interesting to note that some species are local [LF+] but very abundant [RA++++] at the proper habitat. This is the case of *Dyschirius montanus* which is known from only four or five localities in Quebec but represented by more than 300 specimens in collections seen. On the other hand, some species are known from more than 75 localities in Quebec [LF++++] but collectors usually found only a few specimens during two or three hours of search [RA+]. This is the case of *Dyschirius globulosus*. It is worth noting that the relative abundance can change over the years. For example only a few specimens of *Calosoma frigidum* are found on average in the right habitat within a two or three hour collecting period. However, when outbreaks occur some years, several dozen individuals could be found in the same period given the right time and place. Some species, such as *Pterostichus lachrymosus* and *Chlaenius purpuricollis*, are difficult to find by hand but can be collected in relatively large numbers using pitfall traps.

**Dynamic power [DP]**. Flight is certainly an important aspect of the dispersal ability for many carabid species. Hind wing development is addressed in the following ways for each
species. Wings (-) denotes reduced wings, i.e., shorter than the elytra and without reflexed apices. In most such cases the wings are reduced to tiny stubs. These species are, of course, flightless and designated brachypterous or micropterous. Wings (+) denotes fully developed wings, i.e., with reflexed apices and, when unfolded, at least as long as the elytra. These species are referred to as macropterous. Finally, some species are dimorphic in that some individuals are macropterous and others are brachypterous. When the proportion of the two wing states is not overwhelmingly in favour of one, the expression wings (±) is used. When the proportions of macropterous to brachypterous are wide apart (at least 4 : 1 or 1 : 4), the expressions wings (+ -) or wings (- +) are used respectively. The sign ± used in square brackets denotes that the proportion of macropterous to brachypterous individuals in that species is not established.

The presence of fully developed hind wings does not necessarily mean that a species can or will fly. Some macropterous species very rarely use their wings or cannot use them because their flight muscles are atrophied. For example, many species of *Pterostichus* are macropterous and yet most of them have never been seen in flight. This condition is denoted as flight (-). A number of species, denoted flight (++), use flight readily to escape danger as in many species of *Cicindela* and some species of *Bembidion*. However, the majority of macropterous species that fly, do it mainly for dispersal. These species, denoted flight (+), may be attracted to various light sources or seen in flight particularly during warm days in spring.

*Geographical divisions* [GD]. The occurrence of each species in the political divisions of the northeast is denoted by the following standard abbreviations: LB [Labrador]; ME [Maine]; NB [New Brunswick]; NF [Newfoundland]; NH [New Hampshire]; NS [Nova Scotia]; PE [Prince Edward Island]; PM [Saint-Pierre et Miquelon]; QC [Quebec]; VT [Vermont].

Finally for each species, references pertaining to taxonomy or natural history are listed under the heading “References.” For common European species introduced to North America, the list of references is selective.

### 2. Identification

Three elements are usually required to make accurate identifications of carabids: a) proper preparation of the specimens, especially those belonging to taxonomically difficult groups; b) appropriate equipment; c) identification books. A fourth element, access to a reference collection, is often useful but not available to everyone.

*Preparation of specimens.* Everyone doing routine carabid identifications knows how much easier it is to work with well-prepared and cleaned specimens. There are two basic ways of mounting carabids: on cards or pinned / pointed. The first method (mounted on cards) is used extensively by Europeans. The specimen is glued, usually using water-soluble glue, to a card of the appropriate size with its antennae and legs spread in a proper manner (see Martin 1977: Fig. 122). The second method (pinned / pointed) is favoured by North Americans and consists of pinning relatively large specimens (usually more than 9 mm) directly through the base of the right elytron and gluing smaller specimens to the tip of a small triangular thin card (called point) which is then transfixed by an entomological pin (see Martin 1977: Figs 94, 121). The “European” way is certainly more aesthetic but less practical for identification because the specimen has to be removed to study characters from the ventral side. When using the “American” method it is important to spread the legs and the antennae of the specimen just enough so that structural details of the ventral surface are not obscured. Appendages that are too widely spread increase the risk of accidental breakage during routine specimen handling.
The ability to spread the legs and antennae depends in large part on the agent used to kill the beetles. It is recommended to use drops of ethyl acetate in a glass tube partly filled with sawdust to kill ground-beetles, instead of drowning them in alcohol.

A nightmare for those making carabid identifications is the presence of “grease” on the surface of the specimens which obscures many important characters such as the punctation and the microsculpture. The greasy substance lies inside the insect body and, under certain conditions, spread over the surface. One way to remove it is to roll up a little piece of disposable paper tissue, saturated with isopropyl alcohol, at the extremity of a forceps and gently rub the surface of the specimen. Another convenient way that simultaneously relaxes, cleans, and degreases a specimen is to briefly soak it in ammonia solution which is readily available as household concentration (4%) or, better yet, as janitorial concentration (10%).

**Instruments.** Except for species with highly characteristic facies, such as *Colliuris pensylvanica*, or with strong, unusual lustre, such as *Calosoma scapha* and *Agonum cupripenne*, identifications of most carabid species require the use of a binocular stereomicroscope with a good light source. Since many carabids are small (less than 3 mm) and some structural features, such as microsculpture, are really tiny, it is recommended to use a stereomicroscope that magnifies at least up to 80 times. As pointed out by Lindroth (1969b: xxxiii) after years of experience, some students can make positive identifications of many, if not most, species with the use of a hand-lens of about 12 times of magnification.

Light directed on specimens is often partly reflected as shiny glare which tends to obscure minute structures. To overcome such harsh reflections, it is suggested to diffuse the light before it reaches the specimen by using a drafting film (also referred to as mylar) between the light source and the specimen. A simple stage can be devised that holds the pinned specimen in front of the attached drafting film which can then be moved close to the light source. Since much of the light intensity is lost through the “diffuser”, the use of a powerful light source, such as fibre optic, is essential and the specimen should be handle as close as possible to the drafting film.

The size of a specimen is often a useful character state for its identification. Specimens can be measured with the aid of an oculur micrometer in a stereomicroscope or with a small millimeter scale under naked eyes. The size ranges of the species treated here are those of the apparent body length, measured from the tip of the mandibles to the apex of the elytra, and are taken in most cases from Lindroth’s publication (1961-1969a).

**Identification tools.** Besides this book, there are three publications that could be used for identification of most species found in the northeast. The best and certainly most well-known is by Carl H. Lindroth, published in six parts between 1961 and 1969, which covers the carabid fauna of Canada and Alaska (minus cicindelines). Many species found only in the United States were also treated and the vast majority of the species found today in the northeast are included in Lindroth’s masterpiece. The originality and clarity of the keys as well as the numerous, well-executed line drawings of not only the external structures used in the keys but also of the male genitalia make this publication exceptional. In addition, the work is embellished by 100 accurate habitus illustrations, most executed by Lindroth itself. The publication also contains brief but perceptive descriptions of all taxa treated and pertinent information about the distribution, habitat requirement, and dispersal power of the species. I have no doubt that Lindroth’s publication (1961-1969b) has been the trigging factor behind the interest in taxonomy and ecology of North American Carabidae that arose in the mid-60.

The second publication to mention is by Larochelle (1976a). It is essentially a French translation of Lindroth’s keys that are modified to include only the species found in Quebec.
A convenient aspect of Larochelle’s work is that schematic line drawings of most character states lie opposite the page of corresponding couplets in the identification key. The book is to be used in conjunction with another publication by the same author (Larochelle 1975a) in which the distribution and habitat are detailed for the carabid species of Quebec. A photographic guide to the carabids of Quebec was also published at about the same time (Gariépy et al. 1977). It contained habitus photographs of almost all species found in the province. Unfortunately the printing is of poor quality and several structural details, often essential for species recognition, are indistinct in the photographs.

The third publication is by Downie and Arnett (1996) which covers the carabids of northeastern North America. The authors’ wider definition of “northeastern” includes the political regions covered in this book plus Greenland, the province of Ontario, and the states of Wisconsin, Michigan, New York, Massachusetts, Connecticut, Illinois, Indiana, Ohio, Pennsylvania, New Jersey, Maryland, Delaware, and the District of Columbia. I agree with Ball and Bousquet (2001: 34) that this publication “provides a useful though rather superficial means for species identification.” There are almost no drawings to assist in the use of the keys. This publication was preceded by an earlier, less complete version (Downie and Arnett 1994).

At the supraspecific level, the most recent compilation of the Nearctic carabid fauna is by Ball and Bousquet (2001) which appeared in the first volume of American Beetles edited by Ross H. Arnett, Jr. and Michael C. Thomas. The keys are difficult to use, not only because there are few included drawings, but because they cover the entire North American fauna.

The latest catalogue of the Carabidae of North America (north of Mexico) is by Bousquet and Larochelle (1993) in which the species distributions are expressed by state and / or province and territory designations. Freitag (1999) recently published a detailed catalogue of the tiger beetles (subfamily Cicindelinae) of Canada and United States.

Reference collection. Even with years of experience in dealing with carabid identification, there are often a number of groups that an experienced carabidologist is less familiar with or finds difficult. It is recommended that students build a reference collection of specimens identified by “specialists” that can then be used for comparisons of difficult species. The Canadian National Collection of Insects, Arachnids, and Nematods, located on the Central Experimental Farm in Ottawa, Ontario, is certainly the best reference collection for northeastern Carabidae mainly because a large proportion of its specimens were identified by Carl H. Lindroth.

3. – STRUCTURES AND TERMS

It is assumed that students using this book are familiar with the basic morphology of carabid beetles. Introductions to this subject are provided by Jeannel (1941: 12-48), Machado (1992: 63-75), or Coulon et al. (2001: 27-41). To better understand the keys, morphologic terms that relate to character states are defined and further elaborated upon in this section.

Articles (segments) of appendages are designated by the name of the appendage followed by the suffix “mere”. For example, the articles of the antenna are designated as antennomeres; those of the palpi as palpomeres. Furthermore, an article with a trailing number as in “antennomere 3” refers specifically to the third article relative to the basal (first) article. Anatomic parts of the front, middle, and hind legs are respectively prefixed by “pro,” “meso,” and “meta.” So for example, the metatarsomeres are the tarsi of the hind leg and protarsomere 1 is the tarsal article attached to the protibia. When two symmetrically opposite pairs of structures
occur on a sclerite (a fundamental section of the exterior), such as the two pairs of impressions that are often seen on the base of pronotum, the “medial” pair lies closer to the midline while the “lateral” pair lies closer to the side of the beetle.

**Abdominal sternum.** In carabids, the first (basal) abdominal sternum is atrophied which makes the first visible abdominal sternum actually the second one. For simplification, the text refers only to the consecutively numbered visible abdominal sternum.

**Aedeagus.** The aedeagi (male genitalia) are used only exceptionally in this book. Nevertheless, a few remarks are worthwhile. The carabid aedeagus consists of a median lobe, usually tubelike, and a pair of lateral parameres. In many publications (e.g., Lindroth 1961-1969) the median lobe is illustrated on its left lateral side. The apex of the median lobe (see apical lamella) is taxonomically important because its shape and length vary substantially between closely related species of some groups.

**Adhesive setae.** A large proportion of carabids are easily sexed externally. Unlike females, the first (e.g., some *Paratachys*), first two (e.g., Bembidiini), first three (e.g., most Pterostichini), or first four protarsomeres (e.g., some Elaphrini) of the males are expanded and bear adhesive setae underneath. There are two basic types of adhesive setae. Those that are aligned into either one (e.g., Trechini) or two rows (e.g., Pterostichini, Harpalina) are referred to as the “seriate” type (squamo-seta type of Stork 1980; type série of Jeannel 1941) (Fig. 1) and those that are randomly distributed (e.g., Anisodactylina, Oodini) are referred to as the “spongy” type (articulo-seta type of Stork; type spongieux of Jeannel) (Fig. 2). In several taxa, some of the basal mesotarsomeres are also dilated and bear (e.g., *Harpalus*) or not (e.g., *Dicheirotrichus*) adhesive setae as on the protarsomeres. These structures are “adhesive” because they help in clasping the male tarsi onto the female during copulation.

**Ambulatory setae.** Pair of long, paramedian setae on each of the abdominal sterna 3-5 in many taxa (as, Fig. 30).

**Anterior angle [of pronotum].** This angle is not as useful taxonomically as the posterior one. Nevertheless, in some groups, such as *Amara*, its projection can be of value. In some species, the angle is at the same level as the anterior edge of the pronotum at middle and so is not projecting anteriad (e.g., *Amara apricaria*, Fig. 41). In others, the angle projects further anteriad than the anterior edge at middle and could be either slightly (e.g., *Amara bifrons*, Fig. 47), moderately (e.g., *Amara gibba*, Fig. 49), or markedly (e.g., *Amara littoralis*, Fig. 45) projecting forward. Here it is important to view the pronotum perpendicularly from above as lower angle viewing from behind gives the illusion of more projecting anterior angles.

ANTEROTRANSVERSE IMPRESSION. See entry pronotum.

APICAL LAMELLA. Apex of the median lobe (see aedeagus) seen in dorsal aspect, that is, on its convex side (Figs 221-223).

APICAL STYLOMERE. See entry stylomere. Also called gonocoxite II or stylomere 2 in some works.

APPARENT BODY LENGTH [ABL]. The length of the body measured from the tip of the mandibles to the apex of the abdomen. It is simply referred to as “body length” in most works, including this one. Opposed to “standard body length” [q.v.].

BASAL IMPRESSION. Small depressed area near the base on each side of the pronotum. In some species, two basal impressions occur on each side in which case the medial one closer to the median sulcus is the medial impression (mi, Fig. 220) and the lateral one closer to the side is the lateral impression (li, Fig. 220). The shape and distinctness of the basal impressions are taxonomically useful in several groups.

CLAWS. Paired, small, hooked structures at the end of each leg. The ventral edges of the claws are smooth (Fig. 49) in most taxa. In others they could be either pectinate (Fig. 53), with relatively long and regular toothlike processes like a comb (e.g., Calliida punctata), or denticulate (Fig. 50), with small, more or less irregular toothlike processes which are often worn down in aged individuals (e.g., Microlestes linearis).

CLIP SETAE. Sigmoid (S-curved) setae at the base of the protibial cleaning organ in many groups (Figs 226, 227). These setae serve to guide the antenna and to clamp it against the cleaning organ (Hlavac 1971). They are absent in the more basal grade groups of carabids. When present, their number varies from 1 to 6 and could be useful for the identification of some externally similar species (e.g., Pterostichus adstrictus vs. P. pensylvanicus).

CLYPEOFRONTAL SUTURE. The impressed line separating the clypeus from the frons (cf, Fig. 111). Its sharpness and shape are sometimes useful for species recognition (e.g., Dyschirini).

COLOUR. The integument colouration is an important specific feature in many groups. However it should be used with care because the variation observed in some species is important. Furthermore, the colour may be altered by the killing agent. For example, specimens killed in alcohol are often darker than usual, particularly if they were stored in alcohol for a long period. Also, teneral specimens are much paler than mature ones.

In this publication only the following expressions are used: white, whitish-yellow (yellow with whitish overtones), yellowish (flavous), brownish-yellow (yellow with brownish overtones; testaceous), reddish-yellow (yellow with reddish overtones; fulvous), reddish (rufous), yellowish-red (red with yellowish overtones), brownish-red (red with brownish overtones), reddish-brown (dusky brown with reddish overtones), reddish-black (black with reddish overtones; rufopiceous, fuscous), brownish-black (almost black with brownish overtones; piceous), and black (ebineous).

CLOSED. See entry procoxa.

CONJUNCT. See entry mesocoxa.

DECUMBENT SETAE. Setae bending down.

DENTICULATE. See entry claws.

DISJUNCT. See entry mesocoxa.

DISCAL SETAE. Setae found in the interval 3 on the disc of the elytron in many species, as well as setae found in the intervals 5 and 7 present in some species.

DISTAL SETAE. See entry umbilical setae.

ELYTRAL Plica. In several groups such as most Pterostichini and Zabrini, the elytral epipleuron toward the apex is folded (i.e., crossed; Fig. 45). This fold, produced by the junction of a carina on the underside of the elytra with the epipleuron, is the elytral plica.
ELYTRON. This structure possesses several surface features that are important for genus and species identifications. These include the scutellar stria \( q.v. \), striae \( q.v. \), intervals \( q.v. \), humeral tooth \( q.v. \) and subbasal ridge \( q.v. \). The lateral edge is more or less rounded posteriorly in many taxa and thus the apex is the region narrowly surrounding the posterior extremity of the suture \( q.v. \). In some species (e.g., those included under the informal name Truncatipennis) the edge is more or less truncate posteriorly and delimits a vague angle laterally, the posterolateral angle. This angle may be projecting posteriad as a small toothlike process (e.g., females of *Harpalus erraticus*, Fig. 323), the lateral tooth. In many species, the edge has a shallow, moderate, or deep preapical sinuation before the apex (\( ps \), Fig. 38). At the apex the edge and the suture form an angle, the sutural angle, which is usually rounded, but could be obliquely truncate (e.g., *Nebria lacustris*, Fig. 66) or projecting posteriad into a small toothlike process (e.g., females of *Harpalus erraticus*), the sutural tooth. The edge may also be serrulate in the region of the humerus (e.g., *Carabus serratus*) or toward the apex (several species of *Cicindela*, Fig. 73).

EYE. The eyes are developed in all species found in the northeast, though reduced in a few (e.g., *Bembidion wingatei*, Fig. 127). They are prominent in most species, sometimes markedly so (e.g., *Notiophilus, Bembidion rapidum*) but rather flat and only slightly protruding in some taxa (e.g., *Amara aenea*, Fig. 258).

FIXED SETAE. See entry seta.

FOVEOLATE. Surrounded by a depression.

FRONS. In this work, the frons represents the dorsal surface of the head from the clypeofrontal suture \( q.v. \) to an imaginary line joining the posterior edge of each eye.

FRONTAL FURROWS. Paired longitudinal impressions on the frons (\( ff \), Fig. 117). The frontal furrows are particularly useful taxonomically in the genus *Bembidion*. In several groups (subgenera *Bracteon, Plataphodes, Notaphus*, etc.) they are confined to the frons (Fig. 131) but in some they are prolonged on the clypeus (e.g., subgenera *Emphanes* and *Semicampa*, Fig. 130). The frontal furrows can also be entirely (subgenus *Diplocampa*, Fig. 151) or partly doubled (*Bembidion affine*, Fig. 152). When doubled, the second set of frontal furrows is located along the supraorbital setigerous punctures. In members of the subgenus *Trepanedoris*, the frontal furrows are deeply impressed and markedly convergent up to the anterior edge of the clypeus.

FRONTO-OCULAR LINES \( = \) clypeo-ocular lines of Lindroth. The pair of very fine linear impressions that run obliquely on the frons of some taxa like *Anisodactylus*. Such lines originate at the frontoclypeal suture medially and extend posterolaterally toward the eyes. This structure is important taxonomically almost exclusively for some groups of Harpalini.

GENA. The cheek portions of the head below the eyes that extend to the gular sutures.

GLOSSAL SCLERITE. Following Ball and Shpeley (1983), this term is used for the structure referred to as the *ligula* by many authors. The shape of the glossal sclerite is rarely used in this work but the number of setae along its anterior edge is useful in some groups.

GRANULATE. Refers to a type of microsculpture \( q.v. \) in which the meshes are of the isodiametric \( q.v. \) type and the sculpticells distinctly convex.

HUMERAL ANGLE. Angle produced by the junction of the subbasal ridge \( q.v. \) and the lateral edge of the elytron.

HUMERAL EXTENSION. In many Bembidini, the lateral margin of the elytron stops at or near the humerus (Figs 135, 144, 145). In some groups, the margin is prolonged medially toward the scutellum to various degrees. In such case, the lateral edge is said to be extended and the prolongation is the humeral extension. The extension may be more or less parallel to the base of elytra (e.g., *Bembidion simplex*, Fig. 133), angulate (e.g., *Bembidion nitidum*, Fig. 134), or more or less concave. It can also be somewhat raised in some species.
HUMERAL GROOVE. The depression associated with the humeral extension \[q.v.\] in some species.

HUMERAL SETAE. See entry umbilical setae.

HUMERAL TOOTH \[=\] shoulder tooth of Lindroth. In some species, the humeral angle \[q.v.\] is protruding laterad; the protrusion is the humeral tooth \((ht, \text{Fig. 293)}\).

HUMERUS \[=\] shoulder of Lindroth. The undefined anterolateral region of the elytron. The humerus is not the edge itself but the area around it.

INFUSCATED. Denotes a surface that is darkened or obscured with brownish to brownish-black tinge, in comparison with the surrounding paler areas.

INTERVAL. The longitudinal area of the elytra between two consecutive striae and between the suture and first stria. Intervals are numbered consecutively from the medial suture to the lateral edge.

ISODIAMETRIC. Refers to a type of microsculpture \[q.v.\] in which the meshes form more or less regular pentagonal or hexagonal polygons and the sculpticells flat \((\text{Fig. 3)}\).

LABIAL PITS. See entry mentum.

LATERAL BEAD. The ridgelike elevation that delimits the dorsolateral edge of the pronotum \((lb, \text{Fig. 199)}\). This structure could be absent, more or less evident, thin, or coarse as in Myas coracinus. In some species, the bead varies in thickness along its course.

LATERAL DEPRESSION \(=\) lateral explanation of Lindroth. The depression along the lateral edge of the pronotum \((ld, \text{Fig. 137)}\). The width or extent of this depression is used diagnostically in some groups \(\text{e.g.,} \) Dyschiriini).

LATERAL IMPRESSION. See entry basal impression.

LATERAL LOBE. See entry mentum.

LATERAL MARGIN. See entry pronotum.

LATERAL TOOTH. See entry elytron.

LATEROBASAL CARINA. See entry pronotum.

MANDIBLE SCROBE. The shallow but relatively wide groove on the basal half of the mandible laterally. In some species the scrobe bears a seta.

MEDIAL IMPRESSION. See entry basal impression.

MEDIAN SULCUS. See entry pronotum.

MENTUM. In most carabids, the anterior edge of the mentum is emarginate at middle and bears at the bottom a toothlike projection, the mentum tooth. Such a tooth may be entire \(\text{with its anterior edge more or less rounded or truncate, Fig. 56)}\) or bifid \(\text{with its anterior edge emarginate at middle, Fig. 215)}\). The area of the mentum lateral to the tooth forms the lateral lobe whose shape is diagnostically useful in some groups such as certain species of Cryobius \((\text{Figs 200-202)}\). In several taxa the median portion of the mentum bears a pair of labial pits \((lp, \text{Fig. 215)}\) which are sometimes markedly large as in Paratachys \((\text{Fig. 21)}\). These pits are sensory organs of some kind or simply external manifestations of apodemes that strengthen the labium.

MENTUM TOOTH. See entry mentum.

MESHES. See entry microsculpture.

MESOCOXA. In many carabid groups, the mesepimeron reaches the mesocoaxal cavity \((\text{Fig. 25)}\) and the mesocoxae are said to be “disjunct” \((\text{Caraboidea disjuncta of Jeannel 1941)}\). In the remaining groups, the mesepimeron does not reach the coxal cavity \((\text{Fig. 26)}\) which is closed by the meeting of the mesosternum and metasternum. In such cases, the mesocoxae are said to be “conjunct” \((\text{Caraboidea conjuncta of Jeannel)}\).

METASTERNAL PROCESS. The narrow process of the metasternum that extends anteriorly between the mesocoxae. In some groups, like in Bembidion, this process is useful taxonomically
depending on whether it appears unmargined (Fig. 142) or margined (entirely or just laterally) by a delimiting proximal line (Fig. 143).

**MICROSCULPTURE.** The microsculpture is a network of very fine lines (microlines) on the surface of the integument. The microlines are interconnected to produce meshes which enclose surface units called sculpticells which are either flat or convex. In several groups, the microsculpture is the best character for species identification. The mesh pattern often varies substantially between closely related species while the intraspecific variation is minimal compared to several other external features. Microsculpture falls into five defined mesh patterns: isodiametric \([q.v.]\), transverse \([q.v.]\), striate \([q.v.]\), stretched \([q.v.]\), or granulate \([q.v.]\).

The microlines may be barely, moderately, or markedly impressed on the integument. These expressions denote the sharpness of the meshes when the specimen is viewed perpendicularly. When the specimen is viewed at a lower angle, the sharpness is often expressed differently. The microsculpture on a given structure (e.g., pronotal disc) is spotty when its sharpness varies significantly from one area to another on that structure. The microsculpture on elytral intervals near the edges may differ from the intervals located near the suture. Unless otherwise noted, the description of elytral microsculpture applies to interval 2 or 3 just anterior to the middle of the elytra.

**MIDLATERAL SETAE.** Setae located along the lateral edge of the pronotum anterior to any posterolateral seta that may occur at or near the posterior angles. Most taxa have only one midlateral seta on each side but some have more than one as in *Chlaenius tomentosus*. These setae are missing in some taxa.

**Figs 3-6.** Elytral microsculpture. 3: *Agonum placidum*; 4: *Bembidion castor*. 5: *Bembidion planum*; 6: *Harpalus plenalis*.
MIRRORS. Dark shiny spots on the elytra without or with much reduced microsculpture meshes as compared to the surrounding area. Such spots are found, for example, in most members of *Bracteon* (Fig. 119) of the genus *Bembidion*.

OPEN. See entry *procoxa*.

PARASCUTELLAR SETA. Seta found at the base of the elytron near the scutellum in the vast majority of Carabidae (*ps*, Fig. 371).

PECTINATE. See entry *claws*.

POSTERIOR ANGLE [of pronotum]. The shape of this angle is very important for distinguishing species in many groups. In some species, such as *Pterostichus commutabilis* (Fig. 7), the side of the pronotum is widely rounded in the basal half and the demarcation between the lateral and posterior edges is not at all evident. In such cases the angle is conventionally said to be *rounded*. However, in many species the demarcation of the lateral and posterior edges is distinct. For these the angle may be moderately or slightly *obtuse* (Fig. 8), right (Fig. 9), or *acute* (Fig. 10). Occasionally the demarcation between the two edges is poorly defined and the angle is said to be *obtusely rounded* (Fig. 257). A setigerous puncture, the posterolateral seta [*q.v.*], is located at or near the angle in many taxa.

POSTEROANGULAR REGION [of pronotum]. See entry *pronotum*.

POSTEROLATERAL ANGLE [of elytron]. See entry *elytron*.

POSTEROLATERAL SETAE. Setae adjacent to the posterior angles of the pronotum. In some groups, as in most Harpalini, these setae are missing.

PREAPICAL SETAE. Setae located near the elytral apex along stria 7 (Fig. 229).

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PREAPICAL SINUATION [of elytron]. See entry elytron.

PROCoxA. In many taxa, the proepimeron, located at the posterior end of the propisternum, is prolonged narrowly mediad and connects with the prosternal apophysis [q.e.] (Fig. 24). In such cases, the procoxae are said to be “closed” (Caraboidea clusa of Jeannel 1941). In some carabids, the median extension of the proepimeron does not reach the prosternal apophysis (Fig. 23) and so the procoxae are said to be “open” (Caraboidea aperta of Jeannel).

PRONOTUM. The pronotum is usually the first structure that students examine for species identification. There are several features of the pronotum that vary substantially among species. The most important are the anterior and posterior angles [q.e.], the side (or lateral edge) [q.e.], the lateral bead [q.e.] along the side, the lateral depression [q.e.] along the bead, and the basal impression [q.e.]. The middle of the pronotum is impressed by a shallow, narrow sulcus, the median sulcus (= median line of many authors), which do not reach the anterior edge and, in the vast majority of species, the posterior edge (exception Patrobus). Most taxa have a vague, narrow, transverse depression at the anterior end of the median sulcus directed toward the anterior edge, the anterotransverse impression, which can be markedly delineated and sulciform as in Patrobus longicornis (Fig. 184).

There are several regions of the pronotum that need to be differentiated for practical purposes. The disc is the center and corresponds to the whole surface of the pronotum excluding roughly the lateral third on each side and the anterior and posterior fifths. The term lateral margin denotes here about the lateral third of the pronotum on each side. The area between the basal impression (or the laterobasal impression when two impressions occur on each side) and the side near the posterior angle is the posteroangular region which could be depressed, flat, or convex. In some species, this area is so markedly convex as to take the shape of a carina, the laterobasal carina.

PROSTERNAL APOPHYSIS. The narrow process of the prosternum that extends between the coxae. The prosternal apophysis could be margined apically (Fig. 231) and / or laterally, with (Fig. 232) or without (Figs 230, 231) setae near the apex.

PUNCTULATE. Covered with small punctures or punctulae.

RECURRENT STRIA. Apical extension of the first elytral stria (Figs 19, 20). Characteristic of certain groups (e.g., Tachyina), this extension could be more or less parallel to the adjacent elytral edge (Fig. 20) or curved forwardly toward the disc where, in some taxa, it ends up in a small hook (Fig. 19).

SCULPTICELL. See entry microsculpture.

SCUtileLLA STRIA. This abbreviated stria is located between the suture and the first stria or between the first two striae (s, Fig. 310). If present, it rarely extends posteriorly beyond the basal third of the elytra (exception Pelopidea) and it is not counted in the numbering system for elytral striae. In some groups the length and continuity of this extra stria is variable interspecifically (e.g., Pterostichus) or even intraspecifically (e.g., some members of Cryobius).

SERiate SETAE. See entry adhesive setae.

SETA. For practical purposes, the term seta is used in this book to denote the hair itself and setigerous puncture to refer to the hair and the pore at the base of the hair. The expression “fixed setae” (versus “accessory setae”) is used in the carabid literature to indicate collectively those setae that are found in the same position across many taxa. Examples are the supraorbital setae [q.e.] on the dorsum of the head; midlateral [q.e.] and posterolateral setae [q.e.] on the pronotum; parascutellar setae [q.e.], discal setae [q.e.], preapical setae [q.e.], and umbilical setae [q.e.] of the elytron; and the ambulatory setae [q.e.] on some abdominal sterna.

SETigerous Puncture. See entry seta.
SIDE [of pronotum]. The lateral edge of the pronotum. The outline of the side in the posterior half of the pronotum is very characteristic in some species. The side is qualified as widely (Agonum mutatum, Fig. 11) or narrowly (Platynus mannerheimii, Fig. 12) rounded, slightly divergent (Amara euryrnota, Fig. 13), subparallel (Pterostichus permundus, Fig. 14), rectilinearly convergent (Pterostichus patruelis, Fig. 15), and shallowly (Amara apricaria, Fig. 16), moderately (Chlaenius tricolor, Fig. 17), or deeply (Ophonus rufibarbis, Fig. 18) sinuate (i.e., with shallow, moderate, or deep sinuation).

SPONGY SETAE. See entry adhesive setae.

SPOTTY. See entry microsculpture.

STANDARD BODY LENGTH [SBL]. Measurement obtained by the addition of the length of the head (measured from the anterior edge of the clypeus at middle to an imaginary line between the posterior edges of the eyes), plus the length of the pronotum at middle, plus the length of the elytra (measured from the tip of the scutellum to the apex of the right or left elytron). This measurement averages about 10% less than the corresponding “apparent body length” [q.v.].

STRETCHED. Refers to a type of microsculpture [q.v.] in which the meshes are longitudinally stretched so that their long axes are more or less parallel to the long axis of the body.

STRIA. Complete, abbreviated or intermittent longitudinal grooves or rows of punctures on the elytra. A few groups (e.g., the Cicindelinae) have no striae but the vast majority of carabids have at least one stria, usually six to nine on each elytron. The striae are numbered from the suture to the lateral edge. The seventh stria bears the preapical setae [q.v.].

STRIATE. Refers to a type of microsculpture [q.v.] in which the microlines are more or less parallel with few or no anastomoses (Fig. 5). This type of surface microsculpture reflects iridescence (colours of the rainbow) which is most apparent to the observer when the surface is tilted back and forth under strong light. If only slightly striate, the microlines are distinct at high magnification, but if markedly striate (as in Bembidion graciliformis and several species of Loxandrus), the microlines are indistinct even at high magnification and the iridescence is stronger.

STYLOMEROES. Paired, unsegmented or bi-segmented structures at the extremity of the female ovipositor. In the segmented type, the two sections are referred to as the basal and apical stylomeres or stylomere 1 and 2. In many taxa, the base of the apical stylomere bears short spiniform structures on each side.

SUBBASAL RIDGE. Transverse ridgelike line running near and roughly parallel to the base of the elytron (sr, Fig. 371). The ridge meets the lateral edge of the elytron at level of the humerus to produce the humeral angle [q.v.], which, if protruding, forms the humeral tooth [q.v.]. The ridge is said to be complete when it extends medially to the parascutellar setae or scutellar stria (Fig. 371) and incomplete when it does not (Fig. 372).

SUBHUMERAL SETAE. See entry umbilical setae.

SUPRAORBITAL SETAE. Fixed setae along the medial edge of each eye (see Figs 31, 32). Most groups of carabids possess two pairs of supraorbital setae, the anterior and the posterior ones
according to their position. In some taxa, one of these pairs of setae, either the anterior or posterior one, is missing.

**Sutural Angle [of elytron].** See entry elytron.

**Sutural Tooth [of elytron].** See entry elytron.

**Suture.** The line of junction of the elytra.

**Transverse.** Refers to a type of microsculpture [q.v.] in which the meshes are transversely stretched so that their long axes are perpendicular to the long axis of the body (Fig. 4). The qualifiers *slightly* (meshes on average about twice as wide as long), *moderately* (meshes about three or four times as wide as long), and *markedly* (meshes more than four times as wide as long) are used in the text for precision.

**Umbilical Setae.** The longitudinal series of setae in the ninth elytral interval along the lateral edge. In many groups, the number of umbilical setae is relatively high (from 15 to about 50) and often intraspecifically variable. In some groups, such as Trechini and Bembidiini, the number is reduced, usually to eight or nine setae, and constant; they are also distinctly divided into two groups, one in the anterior half, the **humeral or subhumeral setae**, one in the posterior half, the **distal setae**.

**Vertex.** For the purpose of this book, *vertex* represents the dorsal surface of the head behind an imaginary line joining the posterior edge of each eye. In some species, the vertex is **constricted** as in Patrobini, sometimes markedly so as in *Galerita*.

### 4. Abbreviations Used

The following abbreviations are used in this section: WH: maximum width of head including eyes; LP: length of pronotum along midline; WP: maximum width of pronotum; WPb: width of pronotum at level of posterior angles; WP*: minimum width of pronotum at level of the sinuations along the sides in posterior half; LE: length of elytra from apex of scutellum to sutural apex of right elytron; LW: length of unfolded wing.
# Key to Genera

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<th>Step</th>
<th>Description</th>
<th>Genera</th>
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<tr>
<td>1</td>
<td>Apical maxillary palpomere rudimentary, much shorter (at least two times) than penultimate palpomere [body length less than 8.5 mm] [tribe Bembidiini]</td>
<td>Asaphidion, Gozis</td>
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<tr>
<td>–</td>
<td>Apical maxillary palpomere longer, as long as or only slightly shorter (less than two times) than penultimate palpomere</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Apical maxillary palpomere longer, as long as or only slightly shorter (less than two times) than penultimate palpomere</td>
<td>Bembidion Latreille</td>
</tr>
<tr>
<td>3</td>
<td>Elytron without recurrent stria. Protibia with apex transversely truncate or rounded</td>
<td>Bembidion Latreille</td>
</tr>
<tr>
<td>–</td>
<td>Elytron without recurrent stria. Protibia with apex obliquely truncate</td>
<td>Bembidion Latreille</td>
</tr>
<tr>
<td>4</td>
<td>Mentum with two deep, circular foveae (labial pits)</td>
<td>Micratopus Casey</td>
</tr>
<tr>
<td>–</td>
<td>Mentum without foveae (labial pits)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Body length less than 1.8 mm. Elytron with only one (sutural) stria distinct. Elytral microsculpture irregularly isodiametric to slightly transverse [one species: 1.3-1.6 mm; Plate 26]</td>
<td>Polyderis Motschulsky</td>
</tr>
<tr>
<td>–</td>
<td>Body length more than 2.1 mm. Elytron with at least three evident striae. Elytral microsculpture striate or absent</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Elytra flat; striae impunctate or almost so. Recurrent stria long, hooked apically, enclosing posterior discal seta (Fig. 19) [five species: 2.1-3.1 mm; Plate 26]</td>
<td>Paratachys Casey</td>
</tr>
<tr>
<td>–</td>
<td>Elytra more or less convex; striae punctate. Recurrent stria shorter, not hooked, not enclosing posterior discal seta</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Elytron with only three or four sparsely, finely punctate striae. Elytron without central infuscate area [one species: 2.8-3.2 mm; Plate 26]</td>
<td>Perotachys Netolitzky</td>
</tr>
<tr>
<td>–</td>
<td>Elytron with six densely, relatively coarsely punctate striae. Elytron with large, central, infuscate area [one species: 2.3-3.0 mm; Plate 26]</td>
<td>Pericompsus LeConte</td>
</tr>
<tr>
<td>8</td>
<td>Frons with one supraorbital seta on each side. Anterior edge of labrum deeply emarginate [one species, M. aenescens (LeConte), 2.1-2.5 mm, not yet found in the northeast but recorded from Connecticut]</td>
<td>Micratopus Casey</td>
</tr>
</tbody>
</table>

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1 This key is intended primarily for species found in the northeast and may not work for taxa outside the area. Species- and genus-group taxa placed in square brackets in the keys and lists of northeastern species (inserted before the keys to species) have not yet been found in the northeast to my knowledge. They are included because they have been found in nearby states or provinces.

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Frons with two supraorbital setae on each side. Anterior edge of labrum not or only slightly emarginate..............................................................9

9 [8]. Elytra without microsculpture. Body convex [ten species: 1.9-3.2 mm; Plate 25]......
..................................................................................................................Elaphropus Motschulsky

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Elytra with microsculpture. Body flat.........................................................................10

10 [9]. Pronotum with lateral depression broad, translucent. Elytra with transverse micro-
sculpture meshes. Pronotum with scattered small setae, elytral intervals each with a row of erect setae [one species: 1.5-1.8 mm; Plate 25].................Miestachys Bates

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Pronotum with lateral depression narrow, not translucent. Elytra with irregularly isodiametric microsculpture meshes. Pronotum without small setae, elytral intervals each with a row of minute, indistinct setae [three species: 2.6-3.2 mm; Plate 25]......
..................................................................................................................Tachyta Kirby

11 [1]. Scutellum concealed by median lobe of pronotum. Prosternum expanded apically, covering mesosternum completely. Body broadly oval [elytron with 14 or 15 more or less complete striae but without scutellar stria] [tribe Omophronini; three species: 5.1-7.0 mm; Plate 17].................................................................Omophron Latreille

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Scutellum exposed. Prosternum not expanded apically, not covering mesosternum entirely. Body not broadly oval ........................................................................................................12
12 [11]. Antennomeres 2-6 with several long, erect setae [elytron with 12 regular striae, without scutellar stria] [tribe Loricerini; one species: 7.0-8.5 mm; Plate 1] .......... *Loriceria* Latreille
  – Antennomeres 2-6 without long, erect setae .................................................. 13

13 [12]. Procoxa open (Fig. 23) ........................................................................................ 14
  – Procoxa closed (Fig. 24) ....................................................................................... 23

14 [13]. Elytra without striae. Clypeus wider than distance between antennal insertions [tribe Cicindelini] ..................................................................................................... 15
  – Elytra with striae or longitudinally arranged ridges, tubercles, or foveae. Clypeus narrower than distance between antennal insertions ................................................. 16

15 [14]. Anterior angle of pronotum (seen ventrally) projecting anteriad beyond level of anterior edge of prosternum. Penultimate maxillary palpomere slightly longer than apical palpomere [one species, *M. carolina carolina* (Linné), 13.8-19.0 mm, not yet found in the northeast but recorded from Connecticut] .......... *Megacephala* Latreille
  – Anterior angle of pronotum (seen ventrally) not projecting anteriad beyond level of anterior edge of prosternum. Penultimate maxillary palpomere slightly shorter than apical palpomere [19 species: 8-18 mm; Plates 9-13] ............................... *Cicindela* Linné

16 [14]. Frons with six or more carinae. Protibia with deep preapical incision (cleaning organ) between the two apical spurs. Mesocoxa conjunct (i.e., mesepimeron not reaching coxa) (as in Fig. 26) [tribe Notiophilini; nine species: 4.3-6.0 mm; Plate 3]. .......................................................................................................................... *Notiophilus* Duméril
  – Frons without carinae. Protibia without preapical incision between the two apical spurs. Mesocoxa disjunct (i.e., mesepimeron reaching coxa) (Fig. 25) ..................... 17

17 [16]. Mandible with laterobasal seta ........................................................................... 18
  – Mandible without laterobasal seta ....................................................................... 20

18 [17]. Elytron with scutellar stria extended well beyond middle of elytra [tribe Pelophilini; two species: 8.3-14.2 mm; Plate 1] ......................................................... *Pelophila* Dejean
  – Elytron with scutellar stria not extended to middle of elytra [tribe Nebriini] ........ 19

19. Maxillary stipes with five or six processes along lateral edge, each bearing a stout seta. Gula with transverse, curved row of long, stout setae. Penultimate labial palpomere longer than apical palpomere [one species: 5.5-7.0 mm; Plate 1].

   – Maxillary stipes without processes along lateral edge. Gula without row of stout setae. Penultimate labial palpomere subequal in length or shorter than apical palpomere [six species: 8.6-14.2 mm; Plate 2].

20. Metacoxae contiguous along midline [tribe Carabini].

   – Metacoxae separated along midline [tribe Cychrini].

21. Antennomere 3 at most about twice as long as antennomere 2. Mandible dorsally smooth, not corrugate [nine species: 12.4-28.0 mm; Plates 6-8].

   – Antennomere 3 more than twice as long as antennomere 2. Mandible dorsally transversely corrugate at least at base [six species: 17-36 mm; Plates 5, 6].

22. Labrum with four setae. Clypeus concave medially. Penultimate labial palpomere with two setae [three species: 10.0-17.8 mm; Plates 4, 8].

   – Labrum with six setae. Clypeus not concave medially. Penultimate labial palpomere with three or more setae [three species: 10-33 mm; Plate 4].

23. Mesocoxa disjunct (i.e., mesepimeron reaching coxa) (Fig. 25).

   – Mesocoxa conjunct (i.e., mesepimeron not reaching coxa) (Fig. 26).


   – Mandible with laterobasal seta. Body not pedunculate. Protibia without apicolateral spine [tribe Elaphrini].

25. Frons with one supraorbital seta (posterior one) on each side. Body length more than 14 mm [tribe Scaritini].

   – Frons with two supraorbital setae on each side. Body length less than 8 mm [tribe Clivinini].

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26 [25]. Clypeus with a pair of setae. Antennomere 1 without setae. Body relatively narrow, more or less cylindrical [one species: 16-20 mm; Plate 18] ............... *Scarites* Fabricius

– Clypeus without setae. Antennomere 1 with long, dorsal seta. Body relatively large, more or less oval [one species, *P. sublaevis* (Palisot de Beauvois), 24-32 mm, not yet found in the northeast but recorded from Massachusetts] ........... [Pasimachus Bonelli]

27 [25]. Pronotum with a pair of longitudinal furrows on disc. Frons with three pairs of parallel ridges [four species: 3.5-5.2 mm; Plate 18] ...................... *Schizogenius* Putzeys

– Pronotum without longitudinal furrows. Frons without parallel ridges ................... 28

28 [27]. Strial punctures each bearing a relatively long seta. Metacoxae separated, median posterior section of metasternum in contact with anterior section of abdominal sternum. Pleurite VII with small projection on each side fitting into elytral plica [one species, *S. viridis* (Say), 5.0-6.5 mm, not yet found in the northeast but recorded from New York] ................................................................. [Semiardistomis Kult]

– Strial punctures without seta. Metacoxae not separated anteriorly, median posterior section of metasternum not in contact with anterior section of abdominal sternum. Pleurite VII without small projections ........................................................................ 29

29 [28]. Umbilical setae widely interrupted, separated in two distinct groups. Lateral bead of pronotum at most only slightly extended behind posterolateral seta (Fig. 110) [19 species: 2.5-5.2 mm; Plate 19] .......................... *Dyschirius* Bonelli

– Umbilical setae more or less contiguous, not forming two distinct groups. Lateral bead of pronotum clearly extended behind posterolateral seta .................................. 30

30 [29]. Lateral bead of pronotum without denticle at level of posterior seta, and not reaching basal edge but running more or less parallel in front of it (Fig. 27). Elytron with two setae on interval/stria 3. Medial setae on last abdominal sternum proximate, distance between them shorter than between medial and lateral setae on each side (Fig. 29) [one species: 5.8-7.5 mm; Plate 18] ........................................... *Paracilina* Kult

– Lateral bead of pronotum with denticle at level of posterior seta, and reaching basal edge (Fig. 28). Elytron with four or five setae on interval/stria 3. Medial setae on last abdominal sternum distant, distance between them equal to or longer than between medial and lateral setae (Fig. 30) [five species: 4.7-7.0 mm; Plate 18] ............................................................................. *Clivina* Latreille

31 [24]. Pronotum without midlateral setae (Figs 88-90). Elytron with striae absent or at most suggested near base only. Mesocoxa with numerous setae. Elytron with three rows of round, ocellate foveae separated, at least along medial row, by mirrors [nine species: 6.3-11.2 mm; Plates 15, 16] ........................................... *Elaphrus* Fabricius

– Pronotum with midlateral setae. Elytron with striae at least on disc. Mesocoxa with one or two setae. Elytron without rows of ocellate foveae separated by mirrors ........................................................................... 32

32 [31]. Head with frontal furrows deeply impressed and eight-shaped. Mentum with two pairs of setae. Body length more than 9.5 mm [three species: 10.0-17.8 mm; Plate 14] .................................................................................. *Blethisa* Bonelli

Figs 29-30. Abdominal sterna 5 and 6. 29: *Paraclivina bipustulata*; 30: *Clivina fossor*. *as* – ambulatory seta

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Head with frontal furrows shallowly impressed and linear. Mentum with one pair of setae. Body length less than 9.5 mm [one species: 7.0-9.0 mm; Plate 14].............

...........................................................................................................

*Diacheila* Motschulsky

\( \text{33 [23].} \)

Apical maxillary palpomere inserted preapically into penultimate palpomere [tribe Panagaeci; one species, *P. fasciatus* Say, 8.0-9.5 mm, covered with long erect setae, the elytra reddish-orange with transverse black band behind middle; not yet found in the northeast but recorded from Connecticut; Plate 36] ........... [*Panagaecus* Latreille]

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Apical maxillary palpomere inserted apically into penultimate palpomere............\( \text{34} \)

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\( \text{34 [33].} \)

Frons with one supraorbital seta on each side\(^1\) (Fig. 31)............................\( \text{35} \)

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Frons with two supraorbital setae on each side (Fig. 32)...............................\( \text{59} \)

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\( \text{35 [34].} \)

Pronotum with posterolateral setae....................................................................\( \text{36} \)

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Pronotum without posterolateral setae............................................................\( \text{41} \)

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\(^1\) In *Anatrichis* the anterior supraorbital puncture is present but the seta is so small and thin as to be very difficult to detect. The genus is treated in both sections.
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES


36 [38]. Body pedunculate. Body length 18 mm or more [mandible with laterobasal seta] [tribe Broscini, in part; one species: 18-22 mm; Plate 20] ............... *Broscus* Panzer
   – Body not pedunculate. Body length 18 mm or less ........................................ 37

37 [36]. Body length less than 5.5 mm [at least pronotum in part and elytra pubescent; elytral epipleuron not crossed toward apex] [tribe Harpalini, in part; two species: 3.2-5.2 mm; Plate 46] ........................................... *Dicheirotrichus* Jacquelin du Val
   – Body length more than 5.5 mm ........................................................................... 38

38 [37]. Body length less than 5.5 mm [at least pronotum in part and elytra pubescent; elytral epipleuron not crossed toward apex] [tribe Harpalini, in part; two species: 3.2-5.2 mm; Plate 46] ........................................... *Dicheirotrichus* Jacquelin du Val
   – Body length more than 5.5 mm ........................................................................... 38

39 [38]. Mandible without laterobasal seta. Elytral epipleuron with plica (as in Fig. 45). Abdomen with six visible sterna [tribe Chlaeniini; 14 species: 8.0-18.0 mm; Plates 36-39] .......................................................... *Chlaenius* Bonelli
   – Mandible with long laterobasal seta and several small ones. Elytral epipleuron without plica (as in Fig. 46). Abdomen with seven (♀) or eight (♂) visible sterna [tribe Brachinini; 12 species: 5.7-16.1 mm; Plate 17] .................................. *Brachinus* Weber

40 [38]. Pronotum with midlateral setae. Elytron with one discal seta on interval 3 [tribe Pterostichini, in part; one species: 7.0-8.5 mm; Plate 28] ............... *Gastrellarius* Casey
   – Pronotum without midlateral setae. Elytron without discal setae on interval 3 [tribe Zabrini, in part; one species (*A. hyperborea*): 9.0-13.0 mm] ....... *Amara* Bonelli [in part]

41 [38]. Pronotum without midlateral setae. Lateral edge of metepisternum overlapping rim of elytral epipleuron [tribe Oodini] .......................................................... 42
   – Pronotum with midlateral setae. Lateral edge of metepisternum not overlapping rim of elytral epipleuron .......................................................... 44

42 [41]. Clypeus without setae. Body length less than 7 mm. Last sternum of male without apical setae [one species: 5.0-6.5 mm; Plate 35] ............... *Anatrachis* LeConte [in part]
   – Clypeus with one pair of setae. Body length more than 7.5 mm. Last sternum of male with two apical setae .......................... 43
43 [42]. Meso- and metatarsomeres 1-4 with dense, yellowish setae on ventral surface. Pronotum brownish-black to black with extreme base, apex and sides obliquely in basal half reddish [one species: 8.3-11.2 mm; Plate 35] ..................... *Lachnocrepis* LeConte
   – Meso- and metatarsomeres 1-4 without yellowish setae on ventral surface. Pronotum entirely black [three species: 7.9-14.8 mm; Plate 35] ..................... *Oodes* Bonelli

44 [41]. Base of elytron with transverse row of four small foveae. Body pedunculate [upper surface without microsculpture] [tribe Broscri, in part; one species: 6.2-9.8 mm; Plate 19] ................................................................. *Miscodera* Eschscholtz
   – Base of elytron without foveae. Body not pedunculate [tribe Harpalini, in part] .... 45

45 [44]. Elytral intervals 5 and 7 with several long setae. Protibia with long digitiform protuberance at apex laterally [one species, *E. grossus* (Say), 10.5-15.8 mm, not yet found in the northeast but recorded from Ontario; Plate 51] ..................... *Euryderus* LeConte
   – Elytral intervals 5 and 7 without long setae. Protibia without digitiform protuberance at apex laterally ................................................................. 46

46 [45]. Elytron with rows of short setae along striae 2, 5, and 7 ........................................ 47
   – Elytron without rows of short setae along striae 2, 5, and 7 ................................... 48

47 [46]. Protibia with one to three short spines along lateral edge (Fig. 33). Abdominal sterna (except last sternum in some specimens) more or less iridescent, microsculpture striate over lateral half [four species: 5.3-10.7 mm; Plate 50] .............. *Selenophorus* Dejean
   – Protibia with six or more short spines along lateral edge (Fig. 34). Abdominal sterna markedly opaque, microsculpture isodiametric or granulate [one species: 6.0-7.5 mm; Plate 50] ..................................................................................... *Discoderus* LeConte

48 [46]. Penultimate labial palpomere with two or three setae along anterior edge (Fig. 35)
   [body length less than 9.5 mm] ......................................................................................... 49
   – Penultimate labial palpomere with more than three setae along anterior edge (Fig. 36).............................................................................................................. 52

49 [48]. Mentum with tooth .................................................................................................................. 50
   – Mentum without tooth ........................................................................................................... 51

50 [49]. Pronotum with lateral edge crenulate toward base; median sulcus markedly deep
ever entire length. Mandible proportionally markedly elongate [one species, *A. linearis* (LeConte), 4.0-5.0 mm, not yet found in the northeast but recorded from Massachusetts and southern Ontario] ................................................. *Amerinus* Casey
   – Pronotum with lateral edge not crenulate; median sulcus relatively shallow, at least over anterior half. Mandible proportionally less elongate [13 species: 2.8-6.3 mm; Plate 47] ................................................................................. *Bradycellus* Erichson

51 [49]. Posterior group of eight umbilical setae of elytron clearly divided in two groups of
four setae each (Fig. 37) [12 species: 3.2-9.1 mm; Plates 45, 46] ........................................ *Stenolophus* Dejean
   – Posterior group of eight umbilical setae of elytron more or less uniformly distributed (Fig. 38) [11 species: 2.4-4.1 mm; Plate 46] .................................................................. *Acupalpus* Latreille
Figs 33-34. Protibia and tarsomere 1. 33: Selenophorus gagatinus; 34: Discoderus parallelus.
Figs 35-36. Labium. 35: Bradycellus kirbyi; 36: Anisodactylus nigrita.
Figs 37-38. Apical half of left elytron. 37: Stenolophus conjunctus; 38: Aemupalpus partarius. ps—preapical sinuation

52 [48]. Mentum and submentum partially (at level of lateral lobes) or entirely fused, not separated completely by suture (Fig. 39) [protarsomeres 1-3 of male with spongy adhesive vestiture ventrally].................................................................53
– Mentum and submentum entirely separated by suture (Fig. 40) ......................................56

53 [52]. Forebody dorsally and all elytral intervals with dense pubescence [two species: 8.5-11.0 mm; Plate 40] ...............................................................Amphasia Newman
– Forebody dorsally and at least medial elytral intervals without pubescence............54
Figs 41-42. Glossal sclerite. 41: *Xestonotus lugubris*; 42: *Anisodactylus nigerrimus*.
Figs 43-44. Apex of metatibia and tarsomere 1. 43: *Notiobia terminata*; 44: *Harpalus nigritarsis*.

**54** [53]. Glossal sclerite narrow at apex medially (Fig. 41). Protibia with apical spur not swollen at base [body black, without metallic lustre; posterior angle of pronotum rounded] [one species: 9.2-11.0 mm; Plate 42] ........................................... *Xestonotus* LeConte

Glossal sclerite wide at apex medially (Fig. 42). Protibia with apical spur trifid or at least swollen at base in all but one more or less metallic species with posterior angle right or slightly obtuse.................................................................**55**
55 [54]. Protibia with large excavate dilatation at apex laterally. Head with broad sulcus in front of each eye for reception of first antennomere in repose [upper surface pal- lid with disc of pronotum and usually medial intervals infuscate; elytral interval 3 without setae] [one species: 13-17 mm; Plate 44] ......................... *Geopinus* LeConte
  – Protibia without dilatation at apex. Head without preocular sulcus [13 species: 8.3-14.0 mm; Plates 42-44] ......................................................... *Anisodactylus* Dejean

56 [52]. Elytra iridescent, microsculpture striate. Fronto-ocular line present, though difficult to observe in many specimens [metatarsomere 1 distinctly longer than apical spur of metatibia] [three species: 6.5-11.0 mm; Plate 51] .................... *Trichotichnus* Morawitz
  – Elytra not iridescent, microsculpture isodiametric in most species, transverse or absent in some species. Fronto-ocular line absent .......................... 57

57 [56]. Metatarsomere 1 distinctly longer than longest apical spur of metatibia (Fig. 43). Protarsomeres 1-3 of male with spongy adhesive setae ventrally (as in Fig. 2) [three species: 7.8-11.0 mm; Plate 42] ............................. *Notiobia* Perty
  – Metatarsomere 1 not or barely longer than longest apical spur of metatibia (Fig. 44). Protarsomeres 1-3 of male with seriate adhesive setae ventrally (as in Fig. 1) ...........

58 [57]. Frons and temple with small setae [all elytral intervals with pubescence; elytral interval 3 without discal setae] [two species: 6.2-9.5 mm; Plate 48] .......... *Ophonus* Dejean
  – Frons and temple without small setae [28 species: 6.5-34.5 mm; Plates 48, 49] ........

59 [34]. Mandible with laterobasal seta ................................................................. 60
  – Mandible without laterobasal seta ............................................................... 66

60 [59]. Frontal furrows markedly diverging posteriad, circularly surrounding posterior edges of eyes. Head dorsally without transverse impression behind eyes. Elytron with recurrent stria. Body length 6.5 mm or less [tribe Trechini] ......................... 61
  – Frontal furrows short, not surrounding posterior edges of eyes. Head dorsally with transverse impression behind eyes. Elytron without recurrent stria. Body length more than 6.5 mm in most species ................................. 62

61 [60]. Elytra with pubescence. Elytra bright reddish-yellow with broad, dark, transverse fascia behind middle [one species: 4.4-5.5 mm; Plate 20] .................... *Blemus* Dejean
  – Elytra without pubescence. Elytra not reddish-yellow and without fascia [four species: 3.6-6.5 mm; Plate 20] ...................................................... *Treichus* Clairville

62 [60]. Elytron without scutellar stria. Antennomeres 6-10 moniliform (i.e., not much longer than wide) [pronotum with two, rarely three, midlateral setae on each side; abdominal sterna pubescent, sterna 4-6 each with deeply impressed line parallel to posterior edge] [tribe Psydrini] .............................. 63
  – Elytron with scutellar stria. Antennomeres 6-10 filiform (i.e., much longer than wide) [tribe Patrobini] .............................................. 64
63 [62]. Antennomeres 1 and 2 with pubescence. Pronotum with one toothlike projection at posterolateral angle. Elytral interval 3 with one or two discal setae [one species: 5.5-6.2 mm; Plate 28].

– Antennomeres 1 and 2 without pubescence. Pronotum with two toothlike projections around posterolateral angle. Elytral interval 3 without discal setae [one species: 6.0-7.7 mm; Plate 28].

64 [62]. Pronotum with four or more midlateral setae on each side. Elytral interval 3 with 11-12 setae, intervals 1 and 5 with setae at least in anterior half [one species: 10.6-12.4 mm; Plate 27].

– Pronotum with one midlateral seta on each side. Elytral interval 3 with three or four setae, intervals 1 and 5 without setae.

65 [64]. Pronotum with median sulcus widened basally, reaching posterior edge (Figs 184-187). Elytral microsculpture transverse, rarely in part irregularly isodiametric [five species: 8.0-14.8 mm; Plate 27].

– Pronotum with median sulcus not widened basally, not reaching posterior edge. Elytral microsculpture isodiametric [one species: 9.5-12.2 mm; Plate 27].

66 [59]. Elytral plica present (Fig. 45).

– Elytral plica absent (Fig. 46).

67 [66]. Pronotum without midlateral setae. Clypeus without setae. Lateral edge of metepisternum overlapping rim of elytral epipleuron [tribe Oodini, in part; one species: 5.0-6.5 mm; Plate 35].

– Pronotum with midlateral setae. Clypeus with pair of setae. Lateral edge of metepisternum not overlapping rim of elytral epipleuron.

68 [67]. Penultimate labial palpomere with three or more setae along anterior edge.

– Penultimate labial palpomere with two setae along anterior edge.

69 [68]. Elytral interval 3 without discal seta. Metatrochanter with seta [tribe Zabrini, in part; 47 species: 3.9-14.2 mm; Plates 33, 34].

– Elytral interval 3 with discal seta. Metatrochanter without seta [tribe Zabrini, in part].

– Elytral interval with one discal seta. Metatrochanter without seta [tribe Pterostichini, in part; one species: 12.5-20.0 mm; Plate 32] .......... **Cyclotrachelus*** Chaudoir

70 [68]. Elytral interval 3 without discal setae .................................................. 71
– Elytral interval 3 with one to seven discal setae ............................................. 76

71 [70]. Antennomere 1 at least as long as antennomeres 2 and 3 combined. Lacinia with apex blunt [mandible elongate; penultimate maxillary palpomere with row of five or six apical setae; scutellar stria absent] [one species: 6.8-8.3 mm; Plate 28]..............

– Antennomere 1 shorter than antennomeres 2 and 3 combined. Lacinia with apex toothlike.......................................................... 72

72 [71]. Glossal sclerite with four to six setae along anterior edge. Apical labial palpomere conspicuously widened toward apex. Elytra with strong metallic lustre [tribe Pterostichini, in part; two species: 13.5-20.0 mm; Plate 29] .................. **Myas*** Sturm

– Glossal sclerite with two setae along anterior edge. Apical labial palpomere not widened toward apex. Elytra with metallic lustre only in one species of less than 13 mm .......................................................... 73

73 [72]. Apical labial and maxillary palpomeres with numerous, moderately long setae. Body length less than 6 mm [tribe Zabrini, in part; one species: 5.0-5.8 mm; Plate 35] .............. **Pseudamara** Lindroth [in part]

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– Tarsomere 5 of each leg without setae underneath. Head impunctate dorsally. Metepisternum with lateral edge subequal in length or shorter than anterior edge. Elytra without metallic lustre [three species: 11.3-18.0 mm] .......... **Pterostichus** Bonelli [in part]

76 [70]. Elytral interval 3 with one seta only; elytra without distinct microsculpture meshes [two species, *L. brevicolle* (LeConte) and *L. vitiosus* Allen, 6.0-11.5 mm, not yet found in the northeast but recorded from Massachusetts and Connecticut respectively] ....

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**Section A – Adults | Key to Genera**

**Figs 47-48. Apical half of elytra. 47: *Agonum ferreum*; 48: *Apristus subsulcatus.***

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tr>
<td>78 [66].</td>
<td>Edge of elytron more or less rounded toward apex, though with preapical sinuation in most taxa (Fig. 47).</td>
</tr>
<tr>
<td>79</td>
<td>Edge of elytron truncate or obliquely truncate toward apex (Fig. 48).</td>
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<td>79 [78].</td>
<td>Antennomeres 8-11 abruptly white, markedly contrasting with preceding antennomeres. Pronotum without posterolateral setae [tribe Platynini, in part; one species: 7.3-9.0 mm; Plate 53].</td>
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<tr>
<td>80 [79].</td>
<td>All elytral intervals with pubescence.</td>
</tr>
<tr>
<td>80</td>
<td>At least medial elytral intervals without pubescence.</td>
</tr>
<tr>
<td>81 [80].</td>
<td>Mentum tooth bifid at apex. Pronotum and elytra with transverse microsculpture [tribe Atranini; one species: 5.0-7.0 mm; Plate 41].</td>
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<tr>
<td>82 [81].</td>
<td>Pronotum and elytra without microsculpture. Pronotum and head of same coloration. Body length less than 7 mm [one species: 5.3-6.8 mm; Plate 56].</td>
</tr>
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<td>83 [80].</td>
<td>Lateralmost elytral intervals with pubescence. Elytral stria 8 sulcate in posterior half. Body length less than 3 mm [tribe Perigonini; two species: 2.0-2.5 mm; Plate 57].</td>
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   .................................................................................................................... Synuchus Gyllenhal
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   .................................................................................................................. Pseudamara Lindroth [in part]

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- Body length less than 6 mm. Upper surface more or less uniformly coloured though pronotum somewhat paler than head and elytra. Clypeus with single pair of long setae [tribe Zuphiini; one species, Z. delectum Liebke, about 4.2 mm, not yet found in the northeast but recorded, and still only known from Massachusetts (see Mateu 1981)] ................................................................. [Zuphiium Latreille]

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(LeConte), 3.3-3.8 mm, not yet found in the northeast but recorded from Connecticut...[Philorhizus Hope]

108 [104]. Sutural field of elytron expanded at apex (Fig. 57). Second of three umbilical setae at lateroapical angle of elytron farther from lateral edge than two nearby setae (Fig. 59) [pronotum with posterior edge lobate medially] [15 species: 2.5-10.5 mm; Plates 61-64]...........................................................................Lebia Latreille
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– Elytra without metallic lustre. Elytron with subbasal ridge incomplete, reaching level of stria 4. Glossal sclerite with four setae along anterior edge [one species: 6.5-7.5 mm; Plate 65]..............................................................................Plochionus Dejean

111 [109]. Apical labial palpomere dilated apically, somewhat triangularly shaped. Pronotum with posterior edge lobate medially (Fig. 63) [one species, A. sinuatus (Say), 6.5-7.7 mm, not yet found in the northeast but recorded from Connecticut]............................ Auburn LeConte.
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112 [111]. Mentum without tooth. Elytra with strong greenish or bluish metallic lustre. Mesotibia of male with preapical notch on medial side [one species, C. aerata Dejean, 5.5-6.5 mm, not yet found in the northeast but recorded from Connecticut]..........
..........................................................................................................................Coptodera Dejean

Figs 63-64. Basal half of pronotum. 63: Apenes sinuata; 64: Cymindis neglecta.
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113 [112]. Body length less than 4 mm. Upper surface uniformly black, elytra without macula [one species: 2.7-3.5 mm; Plate 61] .......................................................... Syntomus Hope

– Body length more than 8 mm. Upper surface reddish-black to brownish-black, elytra with humeral macula in almost all specimens [two species: 8.5-10.5 mm; Plate 58] ......................... Cymindis Latreille [in part] (subgenus Pinacodera Schaum)
Comments and Keys to Species

**Tribe Pelophilini**

**Genus Pelophila Dejean, 1821**

The two species of *Pelophila* can be recognized from other northeastern carabids on their facies alone. For inexperience students, they may be confused with some species of *Nebria*, *Amara*, and *Harpalus*. From the first genus, they are best recognized by their long, though often intermittent, scutellar stria which reach at least the middle of the elytron. From the other two genera, they can also be distinguished by the presence of a seta on each mandible scrobe, lacking in adults of *Amara* and *Harpalus*.

Males are recognized by having the protarsomeres 1-3 markedly expanded and covered with spongy adhesive setae underneath.

**List of northeastern species of Pelophila**

- *P. borealis* (Paykull, 1790)
- *P. rudis* (LeConte, 1863)

**Key to northeastern species of Pelophila**

1. Elytral striae not interrupted; strial punctures not or only slightly foveolate. Elytra black with faint brassy lustre or brownish-red with medial intervals black. Side of pronotum in basal half with deeper sinuation on average (WP/WP₉ = 1.23-1.31; mean = 1.27; n = 20) [8.3-13.0 mm; Plate 1] .................................................*

   - *P. borealis* (Paykull)

   [**BC**: holarctic; **BZ**: boreal/arctic; **HR**: wet places: swamps, marshes, ponds, pools, marshy places along rivers and lakes, usually on muddy soils rich in organic debris; **SA**: ?; **OC**: LF+++; **RA+++:** **DP**: wings (+); flight (+); **GD**: LB NF QC; **References**: Johnson and Carpenter (1898) – biology; Lindroth (1955b: 38-39, as *P. borealis ulkei*); Lindroth (1961: 57-59); Larochelle and Larivière (2003: 366) – bionomics; Erwin (2007: 20-21) – bionomics]

   – Elytral striae regularly interrupted; strial punctures distinctly foveolate. Elytra uniformly deep black, without lustre. Side of pronotum in basal half with shallower sinuation on average (WP/WP₉ = 1.16-1.27; mean = 1.21; n = 20) [11.8-14.2 mm; Plate 1] .................................................................*

   - *P. rudis* (LeConte)

   [**BC**: endemic; **BZ**: boreal/arctic; **HR**: wet places: edges of swamps, marshes; **SA**: ?; **OC**: LF+; **RA+++;** **DP**: wings (+); flight (+); **GD**: NF; **References**: Lindroth (1955b: 39); Lindroth (1961: 59-60); Larochelle and Larivière (2003: 366) – bionomics; Erwin (2007: 21) – bionomics]
TRIBE NEBRIINI

GENUS LEISTUS FRÖLICH, 1799

The sole northeastern species of this genus, *L. ferrugineus* (Linné, 1758) [Plate 1], is easily distinguished by the presence of several long, fingerlike processes, each bearing a stout spine apically, on the lateroventral edge of the stipes, by the presence of a semicircular row of long, stout setae on the submentum, and by the markedly long palpi.

The males differ from the females by having the protarsomeres 1-3 expanded and with spongy adhesive setae underneath and by the presence of one pair of setae (two in females) along the apical margin of the last abdominal sternum.

[BC: exotic (1977); BZ: temperate; HR: covered/open places; open woodlands, forest edges, bushes, vacant fields, meadows, hedges, usually on quite dry, sandy or gravelly soils; SA: autumn breeder; OC: LF+; RA+; DP: wings (+); flight (-); GD: NF; References: Larochelle and Larivière (2003: 307) – bionomics; Erwin (2007: 22-23) – bionomics]

GENUS NEBRIA LATREILLE, 1806

The northeastern species of *Nebria* are rather easily distinguished from those of other genera on their facies alone. Superficially, they resemble those of *Pelophila* but are recognized by their short scutellar stria; in *Pelophila* the scutellar stria is long and reached at least the middle of the elytron.

The males differ from the females by having the protarsomeres 1-3 expanded and with spongy adhesive setae underneath and by the presence of one pair of setae (two in females) along the apical margin of the last abdominal sternum.

**List of northeastern species of *Nebria***

- *N. brevicollis* (Fabricius, 1792)
- *N. gyllenbali castanipes* (Kirby, 1837)
- *N. lacustris lacustris* Casey, 1913
- *N. nivalis* (Paykull, 1790)
- *N. gyllenhali castanipes* (Kirby, 1837)
- *N. pallipes* Say, 1823
- *N. lacustris lacustris* Casey, 1913
- *N. suturalis* LeConte, 1850

**Key to northeastern species of *Nebria***

1. Pronotum without midlateral seta.................................................................2
   – Pronotum with midlateral seta.................................................................3

2 (1). Antenna pale, reddish-yellow. Metacoxa with two setae, abdominal sterna 3-5 each with one pair of setae [10.0-11.5 mm; legs pale; frons with two reddish spots; apex of elytron (Fig. 65) more or less rounded to slightly oblique at suture (versus *N. lacustris lacustris*); Plate 2] ........................................... *N. (Reductonebria) pallipes* Say
   [BC: endemic; BZ: temperate/boreal; HR: flooded places: usually banks of clear, swift rivers and brooks, on gravelly-stony bare soils; SA: autumn breeder; OC: LF++++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1961: 76-77); Larochelle and Larivière (2003: 335) – bionomics- Erwin (2007: 43) – bionomics]
   – Antenna dark, brownish-black. Metacoxa and abdominal sterna 3-5 with several setae [10-11 mm; upper surface brownish-black to black, elytra reddish-brown in many specimens; Plate 2] ........................................... *N. (Reductonebria) suturalis* LeConte
**SECTION A – ADULTS | COMMENTS AND KEYS TO SPECIES**

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**BC:** endemic; **BZ:** boreal/arctic/alpine; **HR:** [open places]: deep crevices; loose talus; edges of brooks; **SA:** [autumn breeder]; **OC:** LF++; RA++; **DP:** wings (+); flight (-);

**GD:** LB ME NH QC VT; **References:** Lindroth (1961: 73-74); Bell (1978) – habitat; Larochelle and Larivière (2003: 337-338) – bionomics; Erwin (2007: 47-48) – bionomics

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3 [1]. Femur, also tibia and tarsomeres, yellow to reddish. Apex of elytron obliquely truncate at suture (Fig. 66) [9.5-11.7 mm; frons without reddish spots (versus N. pallipes)]

**[BC:** endemic; **BZ:** temperate/boreal; **HR:** flooded places: usually banks of rivers and brooks; on gravelly-stony bare soils; **SA:** autumn breeder; **OC:** LF+++/RA++; **DP:** wings (+); flight (-); **GD:** ME NB NH QC VT; **References:** Lindroth (1961: 77); Larochelle and Larivière (2003: 332) – bionomics; Erwin (2007: 38) – bionomics]

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4 [3]. Meso- and metatarsomeres 1-4 with sparse small setae on dorsal surface. Prosternal apophysis coarsely margined at apex [10-14 mm; frons without reddish spots; elytral striae deep, coarsely punctate]

**[BC:** exotic but probably not established in the northeast; **BZ:** temperate; **HR:** covered places: deciduous forests, forest edges, usually in leaf litter and moss or under the bark of tree stumps; also in gardens and parks; **SA:** autumn breeder; **OC:** LF+; RA+; **DP:** wings (+); flight (-); **GD:** PM QC; **References:** Lindroth (1955b: 42); Lindroth (1961: 78); Jørum (1976) – biology; Larochelle and Larivière (2003: 326) – bionomics; Erwin (2007: 27) – bionomics]

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5 [4]. Elytral interval 5 with one to four discal setae. Pronotum with small tubercle medial to and adjoining midlateral seta. Tibia brownish-black to black [9.0-12.2 mm; Plate 2].

**[BC:** holarctic; **BZ:** arctic/alpine; **HR:** flooded places: edges of cold rivers and brooks; alpine meadows; **SA:** [autumn breeder]; **OC:** LF++; RA++; **DP:** wings (+); flight (-);
GENUS *NOTIOPHILUS* DUMÉRIL, 1805

Members of this genus are easily distinguished from those of other northeastern genera by their characteristic facies, particularly the voluminous eyes, presence of carinae on frons, and markedly wide elytral interval 2.

Males are distinguished from females by having the protarsomeres 1-3 and mesotarsomere 1 more or less expanded and with spongy pubescence ventrally; the mesotarsomere 2 also bears a few adhesive setae at apex in most species. Males have one pair of setae, females two, along the apical margin of the last abdominal sternum. In addition, the apical palpomeres of males, particularly the labial ones, are more or less dilated apically, in some species quite distinctly so, compared to those of females.

List of northeastern species of *Notiophilus*

- *N. aeneus* (Herbst, 1806)
- *N. nemoralis* Fall, 1906
- *N. aquaticus* (Linné, 1758)
- *N. novemstriatus* LeConte, 1847
- *N. biguttatus* (Fabricius, 1779)
- *N. palustris* (Duftschmid, 1812)
- *N. borealis* Harris, 1869
- *N. semistriatus* Say, 1823
- *N. intermedius* Lindroth, 1954

Key to northeastern species of *Notiophilus*

1. Antenna and femur pale, reddish-yellow [5.0-5.7 mm; pronotum markedly constricted at base; elytral disc with two setigerous punctures near apex; Plate 3]..........

   /[BC: holarctic; BZ: boreal/arctic/alpine; HR: flooded places: edges of cold rivers, brooks and rivulets; SA: [autumn breeder]; OC: LF++++; RA++++; DP: wings (+); flight (-); GD: LB ME NH QC; References: Lindroth (1955b: 40-42); Lindroth (1961: 78-79); Larochelle and Larivière (2003: 330) – bionomics; Erwin (2007: 54) – bionomics/]

   – At least antennomeres 7-11 and femur dark, brownish-black to black

   ...............................................................

   N. (Boreonebria) gyllenbali castanipes (Kirby)

   /[BC: holarctic; BZ: boreal/arctic/alpine; HR: flooded places: edges of cold rivers, brooks and rivulets; SA: [autumn breeder]; OC: LF++++; RA++++; DP: wings (+); flight (-); GD: LB ME NH QC; References: Lindroth (1955b: 40-42); Lindroth (1961: 78-79); Larochelle and Larivière (2003: 330) – bionomics; Erwin (2007: 54) – bionomics/]

   – Elytral interval 5 without discal setae. Pronotum without small tubercle medial to and adjoining midlateral seta. Tibia reddish in most specimens [8.6-12.0 mm; Plate 2]..................

   ..................................................................................................................

   N. aeneus (Herbst)

   /[BC: endemic; BZ: temperate/boreal; HR: covered places: deciduous and mixed forests, usually in leaf litter; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1961: 93-94); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 343) – bionomics; Erwin (2007: 54) – bionomics/]

   – At least antennomeres 7-11 and femur dark, brownish-black to black

   ...............................................................

   N. (Boreonebria) gyllenbali castanipes (Kirby)
2 [1]. Elytron with one preapical setigerous puncture (Fig. 67) ............................................. 3
– Elytron with two preapical setigerous punctures (Fig. 68) ............................................. 5

3 [2]. Penultimate labial palpomere distinctly paler than apical palpomere even on apical half. Tibia paler, yellow to red or reddish-brown, though with apex infuscate in many specimens. Male protarsomereres 1 and 2 and mesotarsomere 1 with adhesive setae restricted to apical half [4.7-5.4 mm] ............................................. N. semistriatus Say

– Penultimate labial palpomere not clearly paler than apical palpomere at least over apical half. Tibia darker, brownish-black to black though in many species with centre reddish-black. Male protarsomereres 1 and 2 and mesotarsomere 1 with adhesive setae covering also part of basal half [two similar species often difficult to identify confidently] .......................................................................................................................... 4

4 [3]. Apex of elytron with microsculpture meshes clearly impressed covering entire apex and continued anteriorly along intervals 5-7; meshes in basal half of intervals 4-7 clearly impressed on most specimens. Abdominal sternum 1-3 with distinct, though in a few specimens poorly impressed, microsculpture meshes laterally [4.7-5.7 mm]...

.................................................................................................................... N. borealis Harris

[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: moraines, roadsides, vacant fields, alpine meadows, forest edges; SA: [spring breeder]; OC: LF++; RA+; DP: wings (- +); flight (-); GD: LB ME NF NH QC VT; References: Lindroth (1955b: 34, 36); Lindroth (1961: 96-97); Larochelle and Larivière (2003: 344) – bionomics; Erwin (2007: 56) – bionomics]
– Apex of elytron with microsculpture meshes less impressed, restricted mostly to lateral half and continued anteriorly only along interval 7; meshes in basal half of intervals 4-7 indistinct or poorly impressed in most specimens. Abdominal sternum 2, in most specimens also 1 and 3, without apparent microsculpture meshes laterally in most specimens [4.5-6.0 mm; Plate 3]........................................................................... N. aquaticus (Linné)

Figs 67-68. Apical half of elytra. 67: Notiophilus aquaticus; 68: Notiophilus biguttatus.
5 [2]. Elytral intervals 3-7, at least over apical half, and apex of interval 2 contrastingly paler than intervals 1 and 2 and lateral margin [elytral intervals 3-7 with microsculpture meshes over entire length]. .................................6

– Elytral intervals without colour contrast, except in *N. novemstriatus* with apical fourth of intervals 3-7 and apex of interval 2 more or less paler, but without microsculpture meshes on intervals 3-7 or with rudiments of meshes on basal third only......7

6 [5]. Elytral intervals 8 and 9 with well-impressed microsculpture meshes over entire length. Elytral interval 2 narrower, its width behind discal seta subequal to width of intervals 3-5 combined. Elytral intervals 3-7 contrastingly paler than intervals 1 and 2 even in basal half [5.4-6.0 mm] ..............................................*N. nemoralis* Fall

[BC: endemic; BZ: temperate; HR: covered places: forests, usually near streams and ponds; SA: [spring breeder]; OC: LF++; RA++; DP: wings (-); GD: ME NH VT; References: Lindroth (1961: 100); Larochelle and Larivière (2003: 345) – bionomics; Erwin (2007: 57) – bionomics]

– Elytral intervals 8 and 9 without microsculpture meshes. Elytral interval 2 wider, its width behind discal seta subequal to width of intervals 3-6 combined. Elytral intervals 3-7 more or less paler than intervals 1 and 2 in basal half [4.7-6.0 mm; Plate 3] ...........................................................................................................................................

7 [5]. Elytral intervals 4-7 with well-impressed isodiametric microsculpture meshes over entire length [4.3-5.0 mm] ..............................................*N. intermedius* Lindroth


– Elytral intervals 4-7 without microsculpture meshes (except at apex) or at most with rudiments of meshes on basal fourth.............................................8

8 [7]. Elytron with apex of interval 2 and apical fourth of intervals 3-7 somewhat paler than disc. Side of pronotum with shallow sinuation in basal half (WP/WPb = 1.17-1.21; mean = 1.21; n = 20). Body length less than 5.0 mm [3.8-4.6 mm] ..................

.........................................................................................................................*N. novemstriatus* LeConte

[BC: endemic; BZ: temperate; HR: covered places: forests, mainly coniferous ones in pine needles, forest edges and thickets; SA: [spring breeder]; OC: LF++; RA?; DP:
wings (+); flight (+); GD: ME NH VT; References: Lindroth (1961: 101); Larochelle and Larivière (2003: 345) – bionomics; Erwin (2007: 57-58) – bionomics]

Elytron with apex not paler than disc. Side of pronotum with deep sinuation in basal half (WP/WPb = 1.27-1.35; mean = 1.31; n = 10). Body length 5.0 mm or more [5.0-6.1 mm; Plate 3]..................................................... N. palustris (Duftschmid)

[BC: exotic (1967); BZ: temperate; HR: open places: fields; SA: spring breeder; OC: LF++; RA++; DP: wings (±); flight (-); GD: NS PE; References: Larochelle and Larivière (1990: 211-212); Larochelle and Larivière (2003: 345-346) – bionomics; Erwin (2007: 58) – bionomics]

TRIBE CYCHRINI

GENUS SCAPHINOTUS DEJEAN, 1826

Two of the three northeastern species of Scaphinotus are readily distinguished by their large size (15-33 mm) and general appearance. The other species, S. bilobus (10-14 mm), looks like members of Sphaeroderus but is readily distinguished by the presence of four or more (two in Sphaeroderus) setae on each side of the pronotum and by having the antennomeres 3 and 4 pubescent (glabrous, except for the usual apical setae, in Sphaeroderus).

Males of the northeastern species differ from females in having the protarsomeres 1-3 moderately dilated and with spongy adhesive setae underneath and the apical edge of the last abdominal sternum slightly to moderately (S. bilobus) emarginate at middle. In addition, the apical palpomeres of the males are more dilated and excavate than those of females.

List of northeastern species of Scaphinotus

S. bilobus (Say, 1823)  
S. vidus (Dejean, 1826)  
S. elevatus elevatus (Fabricius, 1787)

Key to northeastern species of Scaphinotus

1. Pronotum with four or more setae on each side. Body length less than 14 mm [10.0-13.7 mm; Plate 4] ................................................................. S. (Nomaretus) bilobus (Say)


– Pronotum without or at most with two setae on each side. Body length more than 15 mm........................................................................................................... 2

2. Pronotum without lateral setae (aberrant specimens with one midlateral seta are known). Side of pronotum not sinuate in basal half. Body length less than 24 mm [15.4-23.0 mm] ......................................................... S. (Scaphinotus) elevatus elevatus (Fabricius)

Pronotum with two lateral setae on each side. Side of pronotum sinuate in basal half. Body length more than 25 mm [26-33 mm; Plate 4].

\[S. (Scaphinotus) viduus\] (Dejean)

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests and adjacent areas; SA: summer breeder; OC: LF; RA:; DP: wings ( ); GD: ME NB NH NS QC VT; References: Lindroth (1961: 18); Larochelle and Larivière (2003: 462-463) – bionomics; Erwin (2007: 166) – bionomics]

**Genus Sphaeroderus Dejean, 1826**

The three northeastern species of this genus are easily recognized from other Carabidae, except *Scaphinotus bilobus*, by their facies and size (between 10 and 18 mm). They differ from *S. bilobus* by the presence of only two lateral setae on each side of the pronotum.

Contrary to females, males have the protarsomeres 1-3 markedly expanded and covered underneath with spongy adhesive setae. In addition, the apical labial and maxillary palpomeres are more widened apically and somewhat secuform in the males.

**List of northeastern species of Sphaeroderus**

*S. canadensis canadensis* Chaudoir, 1861

*S. stenostomus lecontei* Dejean, 1826

*S. nitidicollis* Guérin-Méneville, 1829

**Key to northeastern species of Sphaeroderus**

1. Elytra with 11 or 12 striae regular up to beyond middle of elytra; intervals with depressions mainly on apical third of elytron. Palpomeres and tarsomeres yellowish-brown or pale reddish-brown [10-13 mm; Plate 8].

\[S. canadensis canadensis\] Chaudoir


2 [1]. Punctuation at base of pronotum not reaching lateral bead. Elytron with lateral striae distinct in basal half. Proepisternum with punctures restricted to base [12-17 mm; Plate 4].

\[S. stenostomus lecontei\] Dejean

Punctation at base of pronotum reaching lateral bead. Elytron with lateral striae indistinct in basal half. Proepisternum with a few punctures also near middle [14.1-17.8 mm; Plate 4] .............................................................. *S. nitidicollis* Guérin-Méneville  

**[BC]: endemic; [BZ]: temperate/boreal; [HR]: covered places: mixed and coniferous forests, mainly under logs and in leaf litter; **[SA]: “autumn breeder”; **[OC]: LF++++; RA++; **[GD]: ME NB NH NS QC VT; **[References]: Lindroth (1955b: 22-23); Lindroth (1961: 29-30); Larochelle (1975b: 93) – habitat; Bousquet and Pilon (1980: 183-184) – habitat and seasonal activity; Larochelle and Lariviére (2003: 479-480) – bionomics; Erwin (2007: 169-170) – bionomics; **[Note]: two subspecies are recognized by most authors, *S. nitidicollis brevoorti* LeConte and the nominotypical taxon. The only relatively constant structural difference known is the size: 12.5-13.8 mm in *S. n. brevoorti* and 14.1-17.8 mm in *S. n. nitidicollis*. The nominotypical subspecies is found in Newfoundland and on Anticosti Island and adjacent mainland in Quebec, according to Larochelle (1975a: 107)]

**TRIBE CARABINI**

**GENUS CALOSOMA** Weber, 1801

Members of this genus can be confused only with those of some species of *Carabus*. The best character to separate these two genera, at least regarding the northeastern species, is the comparative length of antennomeres 2 and 3: in *Calosoma* the length of antennomere 3 is about three times that of antennomere 2 while in *Carabus* it is two times or less that of antennomere 2. In addition, all northeastern species of *Calosoma* have fully developed wings and are good flyers while the *Carabus* species in our territory, except for very rare specimens of *C. granulatus*, *C. maeander*, and *C. serratus*, have highly reduced wings and do not fly.

Males are distinguished from females in having the protarsomeres 1-3 (*C. calidum* and *C. sycophanta*) or 1-4 (remaining species) dilated and with spongy adhesive setae underneath, and, except for *C. wilcoxi*, a brush of stout setae on the apical half of the medial side of the mesotibia. A similar brush is also present on the metabitia of *C. scrutator* males. Females of *C. externum* have a preapical band of short, erect setae on the last abdominal sternum which is missing in the males.

**List of northeastern species of Calosoma**

*C. calidum* (Fabricius, 1775)  
*C. scrutator* (Fabricius, 1775)  
*C. externum* (Say, 1823)  
*C. sycophanta* (Linné, 1758)  
*C. frigidum* Kirby, 1837  
*C. wilcoxi* LeConte, 1847

**Key to northeastern species of Calosoma**

1. Elytra brilliantly coloured, metallic green with purple, red or green margins ............ 2
   – Elytra not brilliantly coloured, at most with foveolae or margins metallic ............. 4

2 [1]. Foveolae on elytral intervals 4, 8 and 12 relatively large, touching or almost so adjoining striae. Pronotum with bead along anterior edge defined even at middle, though in some specimens faintly so. Mesotibia of male barely arcuate, without brush of closely set setae at apex. Body length less than 25 mm [17-24 mm; Plate 5] ..............  

............................................................................................................................................ *C. (Calodrepa) wilcoxi* LeConte

Foveolae on elytral intervals 4, 8 and 12 smaller, distinctly not touching adjoining striae. Pronotum with bead along anterior edge obsolete at middle. Mesotibia of male arcuate, with brush of closely set setae at apex on medial side. Body length greater than 25 mm in most specimens ...........................................................................3

3 [2].

Elytron with purple lustre near lateral edge, different in colour from the green or dark green lustre on disc. Femur brownish-red to reddish-brown, with faint green or bluish metallic lustre. Protarsomere 4 of male with spongy pubescence underneath [25-36 mm; Plate 5].................................C. (Calodrepa) scrutator (Fabricius)

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, forest edges, clearings, adjacent fields; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: NB NH NS QC; References: Gidaspow (1959: 249-251); Lindroth (1961: 46); Larochelle and Larivière (2003: 182) – bionomics; Erwin (2007: 104) – bionomics]

Elytron with green lustre near lateral edge, of same colouration than lustre on disc. Femur black, without lustre. Protarsomere 4 of male without spongy pubescence underneath [21-35 mm; Plate 5]......................................C. (Calosoma) sycophanta (Linné)

[BC: exotic (1905-10); BZ: temperate; HR: covered places: deciduous forests, forest edges, clearings, adjacent fields; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NH VT; References: Burgess (1911) – biology; Gidaspow (1959: 244-245); Lindroth (1961: 46); Schaefer et al. (1999) – geographical distribution; Larochelle and Larivière (2003: 183-184) – bionomics; Erwin (2007: 105-106) – bionomics]

4 [1].

Ventral surface with green or purple lustre. Apical maxillary palpomere at least twice as long as its maximum width, and as long as penultimate palpomere [17-27 mm; Plate 6].................................C. (Calosoma) frigidum Kirby

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, often climbing trees; SA: spring breeder; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Gidaspow (1959: 245-246); Lindroth (1961: 46); Snider and Snider (1997) – biology; Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 178) – bionomics; Erwin (2007: 92-93) – bionomics]

Ventral surface without lustre. Apical maxillary palpomere less than twice as long as its maximum width, and shorter than penultimate palpomere ........................................5

5 [4].

Elytron without or with almost indistinct foveolae; striae coarsely punctate. Proepisternum smooth. Last abdominal sternum of female pubescent near apex. Protarsomere 4 of male with spongy pubescence underneath. Body length greater than 25 mm in most specimens [24-35 mm; Plate 5]..............C. (Callitropa) externum (Say)

[BC: endemic; BZ: temperate; HR: open places: fields, forest edges and clearings; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: VT; References: Gidaspow (1959: 273-274); Lindroth (1961: 49); Larochelle and Larivière (2003: 177-178) – bionomics; Erwin (2007: 92) – bionomics]

Elytron with large, golden, coppery or green foveolae on intervals 4, 8, and 12; striae impunctate or minutely punctate. Proepisternum punctate and wrinkled. Last
abdominal sternum of female not pubescent near apex. Protarsomere 4 of male without spongy pubescence underneath. Body length 25 mm or less [19-25 mm; Plate 6] ........................................................................ C. (Chrysostigma) calidum (Fabricius) [BC: endemic; BZ: temperate/boreal; HR: open places: vacant fields, sand and gravel pits, road sides; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PM QC VT; References: Gidaspow (1959: 265-266); Lindroth (1961: 46); Landry and Chamberland (1976) – biology; Larochelle and Larivière (2003: 176-177) – bionomics; Erwin (2007: 75) – bionomics]

GENUS CARABUS LINNÉ, 1758
Northeastern members of this genus, which is extremely diversified in the Palaearctic Region, can be confused by inexperience students with those of Calosoma but differ mainly by the absence of wings (except rare individuals) and shorter antennomere 3 (see under Calosoma).

Males of northeastern species are easily recognized from females by having the protarsomeres 1-4 dilated and with spongy adhesive setae underneath and by having a brush of setae on the apical half of the medial side of the mesotibia. Females of some species also have setae on the medial side of the mesotibia but they are more restricted and do not really form a brush.

List of northeastern species of Carabus

C. auratus auratus Linné, 1761
C. maeander maeander F. Waldheim, 1820
C. nemoralis O.F. Müller, 1764
C. goryi Dejean, 1831
limatus Say, 1823
C. serratus Say, 1823
C. sylvosus Say, 1823
C. granulatus granulatus Linné, 1758
hibernicus Lindroth, 1956
C. taedatus agassii LeConte, 1850 [C. vinctus (Weber, 1801)]

Key to northeastern species of Carabus

– Antennomeres 1-4, femur and tibia black. Upper surface without or with less conspicuous, not bright green, metallic lustre. ........................................................... 2

2 [1]. Elytron with four or five conspicuous longitudinal ridges, some of them interrupted [elytral striae indistinct] ................................................................. 3
– Elytron without ridges, though in some species the intervals are convex and some are interrupted .................................................................................................................. 4

3 [2]. Antennomere 2 cylindrical, antennomere 3 at most slightly compressed on basal half. Elytral edge without serrations behind humerus [16-24 mm; Plate 6] ................................. C. (Carabus) granulatus granulatus Linné
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

[BC: exotic (1890); BZ: temperate; HR: wet places: marshes, swamps, pools, also roadside ditches; SA: spring breeder; OC: LF++; RA+/++; DP: wings (- +); flight (+); GD: NB NF NS PE PM QC; References: Lindroth (1961: 36-37); Larochelle and Larivière (2003: 187) – bionomics; Erwin (2007: 111-112) – bionomics]

Antennomere 2 compressed along medial side, antennomere 3 carinate on basal half. Elytral edge with a few serrations behind humerus in most specimens [15-24 mm; Plate 6].................C. (Homoeocarabus) maeander maeander Fischer von Waldheim


4 [2]. Elytral edge serrate behind humerus. Protibia with digitiform process laterally at apex [16-24 mm; upper surface black with lateral margins of pronotum and elytra bluish or violaceous; elytral striae distinct, represented by rows of punctures; Plate 8]..........................................................................................C. (Hemicarabus) serratus Say


– Elytral edge smooth behind humerus. Protibia without process laterally at apex or at most with a small projection..........................................................5

5 [4]. Elytral striae distinct, either impressed and punctate or simply punctate [intervals moderately convex, some of them regularly interrupted]...........................................6

– Elytral striae indistinct.............................................................................................................................................7

6 [5]. Pronotum and elytra with uniform bronzy lustre. Some elytral intervals, including the interrupted ones, slightly wider and more convex (and so more conspicuous) than others. Elytral microsculpture granulate [20-25 mm; elytral shape slightly oval]..........................................................C. (Carabus) vinctus Weber


– Pronotum and elytra with bluish or violaceous lustre only along lateral sides. Elytral intervals uniformly convex. Elytral microsculpture isodiametric [20-25 mm; elytral shape distinctly oval; Plate 7].................................................................................C. (Carabus) gory Dejean


– Pronotum and elytra with bluish or violaceous lustre only along lateral sides. Elytral intervals uniformly convex. Elytral microsculpture isodiametric [20-25 mm; elytral shape distinctly oval, Plate 7].................................................................................C. (Carabus) gory Dejean

7 [5]. Apical labial and maxillary palpomeres markedly expanded apically, three to four times (♀) or five to six times (♂) (Fig. 69) wider at apex than at base [24-28 mm;
margins of pronotum and elytra with violaceous lustre; mentum tooth strong, reaching apex of lateral lobe; Plate 7]...............................C. (Tanaocarabus) sylvosus Say [BC: endemic; BZ: temperate; HR: covered places: forests, mainly deciduous ones, and adjacent fields; SA: autumn breeder; OC: LF++; RA+/++; DP: wings (); GD: ME NH QC VT; References: Lindroth (1961: 41); Larochelle and Larivière (2003: 189-190) – bionomics; Erwin (2007: 115) – bionomics]

– Apical labial and maxillary palpomeres moderately expanded apically, two to three times (♀) or two to four times (♂) (Fig. 70) wider at apex than at base...............8

8 [7]. Body length less than 17 mm. Posterior angle of pronotum only slightly projecting posteriad and somewhat bent [12.4-16.5 mm; Plate 8]...................................................


– Body length 17 mm or more. Posterior angle of pronotum moderately projecting posteriad, not bent..............................................................................................................9
Mentum tooth very small, indistinct in many specimens, not reaching apex of lateral lobe (Fig. 71). Upper surface of body with metallic lustre [21-26 mm; Plate 7]......................... C. (Archicarabus) nemoralis O.F. Müller


– Mentum tooth long, reaching apex of lateral lobe (Fig. 72). Upper surface without metallic lustre [17-26 mm; Plate 7]............... C. (Tanaocarabus) taedatus agassii LeConte


TRIBE CICINDELINI

GENUS CICINDELA LINNÉ, 1758

Adults of northeastern Cicindela are readily distinctive by their peculiar facies. They cannot be confused with those of any other genus occurring in this area.

Males differ from females in having the protarsomeres 1-3 slightly expanded and covered with spongy adhesive setae underneath. In addition, the apical edge of the last abdominal sternum has a deep median emargination in the males, contrary to females. Females have a groove or pit on the mesepisternum (coupling sulcus), which is missing in the males (see Freitag 1974).

Species identifications of Cicindela rely in large part on the elytral markings. The nomenclature of the markings is indicated on Figure 73.

List of northeastern species of Cicindela

C. ancoissonensis T.W. Harris, 1852
C. duodecimguttata Dejean, 1825
C. formosa generosa Dejean, 1831
C. birticollis rhodensis Calder, 1916
C. lepida Dejean, 1831
C. limbalis Klug, 1834
C. limbata labradoresensis Johnson, 1990
C. longilabris longilabris Say, 1824
C. marginata Fabricius, 1775
C. marginipennis Dejean, 1831
C. patrula patrula Dejean, 1825
C. punctulata punctulata Olivier, 1790
C. puritana Horn, 1871
C. purpurea purpurea Olivier, 1790
C. repanda repanda Dejean, 1825
C. sexguttata Fabricius, 1775
C. tranquebarica tranquebarica Herbst, 1806

Key to northeastern species of Cicindela

1. Pro- and mesotrochanters without setae. Last two abdominal sterna, in some specimens all sterna, reddish-yellow to yellowish-red [frons, clypeus, gena, and prosternum without accessory setae]]].......................................................... 2
Fig. 73. Elytra of *Cicindela birticollis*.

– Pro- and mesotrochanters each with one (rarely two or three) apical seta. Last two abdominal sterna, or at least last one, brownish-black to black, often with lustre...3

2 [1]. Elytron with marginal band uninterrupted. Elytral edge serrulate toward apex [12-14 mm; Plate 9].......................... *C. (Cicindelidia) marginipennis* Dejean

[BC: endemic; BZ: temperate; HR: flooded places: beaches of vegetated islands in large river, usually on cobblestone, pebbles or gravel with patches of sand; SA: summer species; OC: LF++; RA++; DP: wings (+); flight (++); GD: NB NH VT; References: Leonard and Bell (1999: 135-137); Larochelle and Larivièrè (2001: 92) – bionomics; Pearson *et al.* (2005: 133-134); Erwin and Pearson (2008: 155) – bionomics]

– Elytron with marginal band interrupted. Elytral edge not serrulate toward apex [9-12 mm; body dull black above; Plate 9]..... *C. (Cicindelidia) rufiventris rufiventris* Dejean

[BC: endemic; BZ: temperate; HR: open places: hilly outcrops, rocks, and ledges, usually on rocky bare soils with patches of moss and lichen; SA: summer species with one-year life cycle; OC: LF++; RA++; DP: wings (+); flight (++); GD: VT; References: Knisley and Schultz (1997: 124-125); Leonard and Bell (1999: 102-105); Larochelle and Larivièrè (2001: 123) – bionomics; Pearson *et al.* (2005: 130-131); Erwin and Pearson (2008: 180) – bionomics]

3 [1]. Clypeus with several white, decumbent setae [frons and gena with setae] ..............4
Clypeus without or with only one or two isolated decumbent setae, in some specimens with one or two erect setae ................................................................. 6

4 [3]. Elytra white with small, poorly defined brownish markings. Antennomeres 1-3 white [8-12 mm; Plate 9] .......................................................... C. (Ellipsoptera) lepida Dejean

[BC: endemic; BZ: temperate; HR: open places: pits, hills, dunes, roadsides, vacant fields, on dry loose, shifting white sand; SA: summer species with two-year life cycle; two broods, adults of each brood emerging on alternating year; OC: LF++; RA++; DP: wings (+); flight (++); GD: QC; References: Wallis (1961: 67-68); Larochelle (1974: 66-68) – bionomics; Knisley and Schultz (1997: 112-114); Leonard and Bell (1999: 145-149); Larochelle and Larivière (2001: 82-84) – bionomics; Pearson et al. (2005: 172-173); Erwin and Pearson (2008: 231) – bionomics]

– Elytra brown to black, with large, well-defined white markings. Antennomeres 1-3 black with lustre ........................................................................................................... 5

5 [4]. Prosternum and mesosternum covered with dense, decumbent, white setae [11-14 mm; body with bronze to green-bronze ground colour above; Plate 9] .......................................................... C. (Ellipsoptera) marginata Fabricius

[BC: endemic; BZ: temperate; HR: flooded places: coastal flats, lagoons, beaches, ponds, usually on bare muddy or sandy-muddy soils; SA: ?; OC: LF++; RA?; DP: wings (+); flight (++); GD: ME NH NS; References: Knisley and Schultz (1997: 115-116); Leonard and Bell (1999: 84-87); Larochelle and Larivière (2001: 90-92) – bionomics; Pearson et al. (2005: 163); Erwin and Pearson (2008: 232) – bionomics]

– Prosternum and mesosternum without setae [12-14 mm; body with greenish-bronze background colour above; Plate 10] .......................................................... C. (Ellipsoptera) puritana Horn

[BC: endemic; BZ: temperate; HR: flooded places: along coastal rivers and brooks, beaches, usually on soft sandy soils; SA: summer species (July-August) with two-year life cycle; OC: LF++; RA++; DP: wings (+); flight (++); GD: ME NH VT; References: Knisley and Schultz (1997: 119-121); Leonard and Bell (1999: 73-78); Omland (2002) – larval habitat; Pearson et al. (2005: 169-170); Erwin and Pearson (2008: 236-237) – bionomics; Note: threatened species]

6 [3]. Frons without, or at most with one or two setae beside supraorbital ones .......... 7

– Frons with several setae besides supraorbital ones .................................................. 10

7 [6]. Antennomere 1 with one seta only. Penultimate labial palpomere contrastingly paler than apical palpomere. Elytral setae blush-violet, contrasting with background [11-14 mm; Plate 10] .................................................. C. (Cicindelidia) punctulata punctulata Olivier

[BC: endemic; BZ: temperate; HR: open places: paths, roads, eroded gullies, cultivated fields, clearings, flats in or around forests, usually on sandy soils; SA: summer species with one-year life cycle; OC: LF+++/?+++; RA++; DP: wings (+); flight (+++); GD: ME NB NH QC VT; References: Wallis (1961: 61); Knisley and Schultz (1997: 118-119); Leonard and Bell (1999: 111-115); Larochelle and Larivière (2001: 113-115) – bionomics; Pearson et al. (2005: 122-124); Erwin and Pearson (2008: 173) – bionomics]

– Antennomere 1 with three to six setae. Penultimate labial palpomere not or only very slightly paler than apical palpomere. Elytral setae more or less concolour with background ........................................................................................................... 8
Labrum proportionally long, its median length subequal to or slightly longer than half its width. Elytral edge not serrulate toward apex. Upper surface brownish-black to black, rarely green [15-17 mm; Plate 11]............................................................................................

C. (Cicindela) longilabris longilabris Say

[BC: endemic; BZ: temperate/boreal/arctic; HR: open places: paths, roadsides, flats, clearings, sand pits, usually on sandy soils often at edges of coniferous forests; SA: spring-fall species with three-year life cycle; OC: LF+++; RA++; DP: wings (+); flight (++); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 19); Wallis (1961: 46-49); Leonard and Bell (1999: 106-110); Larochelle and Larivière (2001: 88-89) – bionomics; Pearson et al. (2005: 62-64); Erwin and Pearson (2008: 154) – bionomics]

Labrum shorter, its median length distinctly shorter than half its width. Elytral edge serrulate toward apex in most specimens. Upper surface vividly green, blue or greenish-blue....................................................................................................................

C. (Cicindela) patruela patruela Dejean

[BC: endemic; BZ: temperate; HR: covered places: paths, trails, clearings, eroded slopes in mixed forests, usually on dry sandy soils; SA: spring-fall species (mid-April to end June, mid-August to September) with two-year life cycle; OC: LF++; RA?; DP: wings (+); flight (++); GD: NH QC VT; References: Wallis (1961: 33, 35-36); Knisley and Schultz (1997: 117-118); Leonard and Bell (1999: 45-49); Larochelle and Larivière (2001: 107-108) – bionomics; Pearson et al. (2005: 96-97); Erwin and Pearson (2008: 167) – bionomics]

Elytra dull, with sparse, minute granules. Elytron with middle band complete; humeral spot present [12.0-14.5 mm; body dull metallic green above; Plate 12]..............

C. (Cicindela) sexguttata Fabricius

[BC: endemic; BZ: temperate/[boreal]; HR: open/covers places: roads, roadsides, paths, trails, pastures, vacant fields, forest edges, shady trails, usually on loam; SA: mainly spring species (most common in May and June) with two-year life cycle; OC: LF+++; RA++; DP: wings (+); flight (++); GD: ME NB NH NS QC VT; References: Wallis (1961: 30-33); Knisley and Schultz (1997: 127-129); Leonard and Bell (1999: 40-44); Larochelle and Larivière (2001: 131-133) – bionomics; Pearson et al. (2005: 94-95); Erwin and Pearson (2008: 187-188) – bionomics]
– Elytral markings with large humeral lunule and elongate median band. Penultimate labial palpomere distinctly paler than apical palpomere .............................................. 12

12 [11]. Humeral lunule of elytron with posterior section transverse and, in most specimens, somewhat curled up at extremity, not reaching middle of elytron (Fig. 73). Antennomere 1 with six setae or less (in most specimens only one to three) [13-14 mm; lateral edge of elytron clearly serrulate toward apex and with toothlike projection at sutural apex; Plate 11]....................................................... C. (Cicindela) hirticollis rhodensis Calder [BC: endemic; BZ: temperate/boreal; HR: flooded places: river and lake banks, ocean beaches, usually on sand; SA: spring-fall species with two-year life cycle; OC: LF++++; RA+++; DP: wings (+); flight (++); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 18); Wallis (1961: 25-27); Leonard and Bell (1999: 94-95); Larochelle and Larivière (2001: 76-77) – bionomics; Pearson et al. (2005: 106-109); Erwin and Pearson (2008: 195-196) – bionomics]

– Humeral lunule of elytron with posterior section oblique, reaching (or almost so) middle of elytron. Antennomere 1 with 10 setae or more [14.0-17.5 mm; lateral edge of elytron not or barely serrulate toward apex and without or with more or less distinct toothlike projection at sutural apex; Plate 11]....................................................... C. (Cicindela) tranquebarica tranquebarica Herbst [in part] [BC: endemic; BZ: temperate/boreal; HR: open places: flats, roads, pathways, roadside blowouts, pits, dunes, usually on sand, occasionally on mud, clay or fine gravel; SA: spring-fall species with two-year life cycle; OC: LF++++; RA++/+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 18-19); Knisley and Schultz (1997: 132-133); Larochelle and Larivière (2001: 142-144) – bionomics; Pearson et al. (2005: 106-109); Erwin and Pearson (2008: 195-196) – bionomics]

13 [10]. Anterior edge of labrum with single median toothlike process (more or less abraded in some specimens) (Fig. 74)........................................................................................................ 14

– Anterior edge of labrum with three toothlike processes (lateral ones more or less abraded in some specimens) (Fig. 75)........................................................................ 16

Figs 74-75. Labrum. 74: Cicindela repanda; 75: Cicindela limbalis.
14 [13]. Elytral markings broken into disconnected spots; humeral lunule broken into two spots in most specimens and marginal band absent. Elytral epipleuron dark over entire length [12-15 mm; Plate 12].................. C. (Cicindela) duodecimguttata Dejean
[BC: endemic; BZ: temperate/boreal; HR: flooded places: edges of lakes, rivers, ponds, usually on sand or clay; SA: spring-fall species probably with two-year life cycle; OC: LF++++; RA++; DP: wings (+); flight (+++); GD: LB ME NB NF NS PE PM QC VT; References: Lindroth (1955b: 16-17); Wallis (1961: 20-22); Knisley and Schultz (1997: 105-106); Leonard and Bell (1999: 96-100); Larochelle and Larivière (2001: 62-63) – bionomics; Pearson et al. (2005: 66-67); Erwin and Pearson (2008: 132-133) – bionomics]

– Elytral markings more or less complete; humeral band C-shaped (though in rare specimens broken near posterior end) and marginal band present (though interrupted in some specimens). Elytral epipleuron white at least over posterior half ..............15

15 [14]. Elytron with marginal band uninterrupted; posterior extremity of humeral lunule connected to or almost touching middle band [10-12 mm; Plate 12]................................. C. (Cicindela) limbata labradorensis Johnson
[BC: endemic; BZ: arctic; HR: open places: trails, roads, ditches, pits, usually on sand; SA: ?; OC: LF++; RA?; DP: wings (+); flight (+++); GD: LB (Goose Bay); References: Larson (1986) – habitat, geographical distribution; Leonard and Bell (1999: 88-91); Larochelle and Larivière (2001: 85) – bionomics; Pearson et al. (2005: 75-77); Erwin and Pearson (2008: 151) – bionomics]

– Elytron with marginal band interrupted between median band and apical lunule; posterior extremity of humeral lunule clearly distant from middle band [11-13 mm; body with greenish-brown ground colour above; Plate 12]................................. C. (Cicindela) repanda repanda Dejean
[BC: endemic; BZ: temperate; HR: open/flooded places: sand pits, cultivated fields, roads, river and lake banks, ocean beaches, usually on sand; SA: spring-fall species with two-year life cycle; OC: LF++++; RA++; DP: wings (+); flight (+++); GD: LB ME NB NF NS PE QC VT; References: Lindroth (1955b: 17-18); Wallis (1961: 18-20); Knisley and Schultz (1997: 122-124); Leonard and Bell (1999: 52-56); Larochelle and Larivière (2001: 119-122) – bionomics; Pearson et al. (2005: 64-66); Erwin and Pearson (2008: 176-177) – bionomics]

16 [13]. Elytron with marginal band uninterrupted [16-18 mm; Plate 13]................................. C. (Cicindela) formosa generosa Dejean

– Elytron with marginal band interrupted at both ends of middle band..............17

17 [16]. Elytron with humeral lunule distinct and undivided. Upper surface without distinct lustre.................................................................18

– Elytron with humeral lunule absent or divided in two spots. Upper surface with strong lustre .................................................................19
18 [17]. Humeral lunule of elytron with posterior section long, oblique, reaching or almost so middle of elytra [14.0-17.5 mm; Plate 11]...................................................

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TRIBE ELAPHRINI

GENUS DIACHEILA MOTSCHULSKY, 1844
The sole species of this genus occurring in the northeast, *D. arctica amoena* (Faldermann, 1835) [Plate 14], has a rather distinct facies. Superficially, the adults look like those of *Miscodera arctica* but are immediately recognizable by the non pedunculate body and the presence of punctures on the head and pronotum.

Males have the protarsomeres 1-4 very slightly expanded and covered with spongy adhesive setae underneath.


GENUS BLETHISA BONELLI, 1810
Members of *Blethisa* are distinctive by their eight-shaped frontal furrows. They may be confused by inexperience students with some species of *Pterostichus* (e.g., *P. corvinus*) but they differ by several character states including presence of a laterobasal seta on each mandible, disjunct mesocoxae, and absence of elytral plica.

Males have the protarsomeres 1-4 expanded and covered with spongy adhesive setae underneath. Males of *B. quadricollis* also differ from females in having a large multitoothed protuberance at middle on the anterior surface of the profemur and a tuft of setae at middle of each abdominal sternum 2-5.

**List of northeastern species of Blethisa**

*B. julii* LeConte, 1863  
*B. quadricollis* Haldeman, 1847  
*B. multipunctata budsonica* Casey, 1924

**Key to northeastern species of Blethisa**

1. Body length more than 15 mm. Pronotum with posterior angles rounded. Profemur of male with large protuberance (Fig. 76) [15.5-17.8 mm; Plate 14]  
   [BC: endemic; BZ: temperate/boreal; HR: wet places: mainly sphagnum bogs; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 31-33); Lindroth (1961: 105-106); Larochelle and Larivière (2003: 149) – bionomics]  
   – Body length less than 14 mm. Pronotum with posterior angles right or obtuse. Profemur of male without protuberance (Fig. 77) .................................................................

2 [1]. Metacoxa with tuft of long yellowish setae on medial half (Fig. 78). Elytron with intervals 3 and 5 much more convex and usually wider than interval 2 [10.7-13.0 mm;
dorsal surface in most specimens with bluish, greenish, coppery or golden lustre; Plate 14]........................................................................................................... B. julii LeConte

[BC: endemic; BZ: temperate/boreal; HR: wet places: marshes, pools, ponds, usually on wet muddy soils; SA: [spring breeder]; OC: LF++; RA+; DP: wings (+); flight (+); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 30-31); Lindroth (1961: 107-108); Larochelle and Larivière (2003: 148) – bionomics]

– Metacoxa with two setae only (Fig. 79). Elytron with intervals 3 and 5 not more convex nor wider than interval 2 [10.0-13.5 mm; dorsal surface with bronze lustre and lateral margins often with greenish, bluish or golden lustre; Plate 14] .................

........................................................................................................... B. multipunctata hudsonica Casey

[BC: endemic; BZ: temperate/boreal/[arctic]; HR: wet places: edges of marshes, ponds, pools, swamps, also marshy places in roadside ditches or along lakes, usually on muddy or clayish soils rich in organic debris and covered with rich vegetation; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 31); Lindroth (1961: 106-107); Larochelle and Larivière (2003: 148) – bionomics]
GENUS *Elaphrus* Fabricius, 1775
Members of this genus are very easily distinguished from other northeastern carabids by their characteristic facies, particularly the elytral sculpture which consists of rows of large ocellate foveae, each bearing a seta in its centre and separated, at least on the medial rows, by smoother and shinier areas (mirrors).

Males have the protarsomeres 1-3 (*E. ruscarius*, *E. californicus*, *E. lecontei*, *E. americanus*, *E. trossulus*) or 1-4 (*E. lapponicus*, *E. cicatricosus*, *E. clairvillei*, *E. fuliginosus*, *E. olivaceus*) slightly expanded and with spongy adhesive setae underneath. Other sexual distinctions are found in some of our species.

**List of northeastern species of Elaphrus**

- *E. americanus americanus* Dejean, 1831
- *E. californicus* Mannerheim, 1843
- *E. cicatricosus* LeConte, 1847
- *E. clairvillei* Kirby, 1837
- *E. fuliginosus* Say, 1830
- *E. lapponicus lapponicus* Gyllenhal, 1810
- *E. lecontei* Crotch, 1876
- *E. olivaceus* LeConte, 1863
- *E. ruscarius* Say, 1830
- *E. trossulus* Semenov, 1904
- *E. parviceps* Van Dyke, 1925

**Key to northeastern species of Elaphrus**

1. Clypeus with four to six setae. Fringe of small setae along posterior edge of pronotum extended to posterior angle. Metacoxa with several setae more or less uniformly distributed .................................................

   - Clypeus with two setae. Fringe of small setae along posterior edge of pronotum not extended to posterior angle. Metacoxa with few setae located mainly on medial half .................................................................

   2 [1]. Pronotum markedly wide, its width subequal to or slightly greater than width of head including eyes (WP/WH = 0.98-1.10; n = 10). Antennomere 3 with several small setae (more than 30 mostly along posterior surface) on apical half [7.5-10.0 mm].................................................................

   [BC: endemic; BZ: temperate/boreal/arctic; HR: flooded places: alkaline beaches of lakes, marshes and creeks; SA: [spring breeder]; DP: wings (+); flight (-); GD: not yet found in the northeast but recorded along the James Bay in northeastern Ontario; References: Lindroth (1961: 114-115); Goulet (1983: 295-299); Larochelle and Larivière (2003: 265) – bionomics]

   - Pronotum moderately wide, its width smaller than width of head including eyes (WP/WH = 0.83-0.97; n = 30). Antennomere 3 without or with fewer small setae (less than 20) on apical half .................................................................

   3 [2]. Abdominal sterna 4 and 5 without punctate lateral area on each side, accessory setae extended to lateral edge or almost so (Fig. 80) [6.5-8.0 mm].................................................................

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Abdominal sterna 4 and 5 with punctate lateral area on each side, accessory setae not extended to lateral edge, not even reaching lateral punctate area (Fig. 81) .......... 4

4 [3].
Punctures on proepisternum and abdominal sterna coarse, sparse, deep: first and third abdominal sterna each with about 35-45 punctures on each side (Fig. 82) [6.7-7.2 mm; Plate 15] .......................................................... E. (Elaphrus) muscarius Say
[BC: endemic; BZ: temperate; HR: flooded places: mostly river banks on wet silt; SA: [spring breeder]; OC: LF++++; RA?: DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1961: 119); Goulet (1983: 293-295); Larochelle and Larivière (2003: 266-267) – bionomics]

− Punctures on proepisternum and abdominal sterna finer, denser, shallower on average: first and third abdominal sterna each with more than 50 punctures on each side (Fig. 83) ........................................................................................................ 5

5 [4].
Metafemur with 5-11 white setae along medial surface (including posterior edge) on apical third (Fig. 84). Elytra proportionally shorter (LE/WE = 1.18-1.25; mean = 1.21; n = 20) [6.3-8.0 mm; Plate 15] .......... E. (Elaphrus) californicus Mannerheim
[BC: endemic; BZ: temperate/boreal; HR: flooded places: near brooks, rivers, ponds, lakes, ditches, usually on wet clayish soils; SA: [spring breeder]; OC: LF++++; RA+++++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1961: 118-119); Goulet (1964-65) – habitat ; Goulet (1983: 299-303); Larochelle and Larivière (2003: 262-263) – bionomics]

− Metafemur without or with one to three white setae along medial surface on apical third (Fig. 85). Elytra proportionally longer (LE/WE = 1.27-1.36; mean = 1.30; n = 20) [7.1-8.6 mm; Plate 15] ............................................................... E. (Elaphrus) americanus americanus Dejean
[BC: endemic; BZ: temperate/boreal/arctic; HR: wet places: near slow brooks, ponds, marshes, rivers, lakes, usually on coarse sand or clay soils, also mud flats in sand and gravel pits; SA: [spring breeder]; OC: LF++++; DP: wings (+); GD: LB ME NB NF NH NS PE QC; References: Lindroth (1955b: 29-30, as E. riparius); Lindroth (1961: 111-112); Goulet (1983: 242-244); Larochelle and Larivière (2003: 264-265) – bionomics]

6 [1].
Prosternum with setae at middle. Frons without central fovea. Elytral pits each with one to six irregularly placed punctures [7.8-11.2 mm; Plate 15] ............................................................. E. (Arctelaphrus) lapponicus lapponicus Gyllenhal
[BC: holarctic; BZ: arctic/alpine; HR: flooded places; near springs, brooks, small ponds on wet thick moss carpets; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: LB ME NB NF NH NS PE QC; References: Lindroth (1955b: 29-30, as E. riparius); Lindroth (1961: 111-112); Goulet (1983: 242-244); Larochelle and Larivière (2003: 264-265) – bionomics]

− Prosternum without setae at middle. Frons with central fovea in most specimens. Elytral pits each with eight or more regularly placed punctures .......... 7

7 [6].
Antennomeres 1-3 brownish-yellow to brownish-red at least along ventral surface [7.2-8.0 mm; dorsal surface olive or dark brown-olive in the vast majority of specimens; disc of pronotum with green spot medial to paramedian fovea (versus E. clairvillei); Plate 16] ............................................................. E. (Neoelaphrus) olivaceus LeConte
[BC: endemic; BZ: temperate; HR: wet places: Typha marshes, ponds, Carex swamps, edges of bogs, usually on wet, organic mud flats; SA: [spring breeder]; OC: LF++++;
Figs 80-81. Abdominal sterna 3-6. 80: Elaphrus trossulus; 81: Elaphrus californicus.
Figs 82-83. Abdominal sterna 1-3 (left half). 82: Elaphrus ruscarius; 83: Elaphrus americanus.
Figs 84-85. Apical half of metafemur. 84: Elaphrus californicus; 85: Elaphrus americanus.

RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References:
Lindroth (1955b: 29); Lindroth (1961: 113); Goulet (1983: 276-280); Larochelle and Larivière (2003: 266) – bionomics

Antennomeres 1-3 entirely black, with metallic lustre ......................................................... 8

8 [7]. Circular ridges around elytral pits uninterrupted (Fig. 86). Pronotum (Fig. 88) moderately constricted toward base (WP/ WPₘ = 1.16-1.24; n = 20); disc without pit or
coloured spot medial to paramedian fovea. Protibia of male without projection at base of posterior spur [8.3-9.9 mm; Plate 16].

$E$. (Neoelaphrus) clairvillei Kirby [BC: endemic; BZ: temperate; HR: wet/flooded places: edges of eutrophic marshes, bogs, pools, bogs, river and lake banks, usually on wet, muddy soils rich in organic debris; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 28-29); Lindroth (1961: 112-113); Goulet (1983: 271-276); Larochelle and Larivière (2003: 263-264) – bionomics]

Figs 86-87. Elytral foveae. 86: Elaphrus clairvillei; 87: Elaphrus fuliginosus.

Circular ridges around most elytral pits clearly interrupted anteriorly and posteriorly (Fig. 87). Pronotum (Figs 89, 90) markedly constricted toward base (WP/WP, = 1.28-1.48; n = 16); disc with small pit or green spot medial to paramedian fovea. Protibia of male with large projection at base of posterior spur.

Pronotum (Fig. 89) with lateral bead thin, indistinct toward anterior angle; disc with shallow fovea lateroposterior to paramedian fovea and small pit medial to paramedian fovea. Protrochanter with one seta. Upper surface with faint coppery lustre. Last abdominal sternum of male without accessory setae.

E. (Neoelaphrus) cicatricosus LeConte
[BC: endemic; BZ: temperate; HR: flooded places: edges of brooks, usually on muddy soils where alders commonly grow; SA: spring breeder; OC: LF++; RA+: DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1961: 114); Goulet (1983: 262-264); Larochelle and Larivière (2003: 263) – bionomics]

Pronotum (Fig. 90) with lateral bead thick, distinct also toward anterior angle; disc without fovea lateroposterior to paramedian fovea, with small green spot medial to paramedian fovea. Protrochanter with two setae. Upper surface with dark green lustre. Last abdominal sternum of male with several setae medially.

E. (Neoelaphrus) fuliginosus Say
[BC: endemic; BZ: temperate; HR: flooded places: edges of pools and ponds, particularly in sand pits; SA: spring breeder; OC: LF++; RA: DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1961: 114); Larochelle (1976b) – habitat; Goulet (1983: 260-262); Larochelle and Larivière (2003: 264) – bionomics]

**TRIBE OMOPHRONINI**

**GENUS OMOPHRON LATREILLE, 1802**

The characteristic, subcircular body with concealed scutellum distinguish members of *Omophron* from all other northeastern carabids.

Males differ from females in having the protarsomeres 1 and 2 and mesotarsomere 1 expanded and covered underneath with spongy adhesive setae. The microsculpture is also different between the sexes in some species. In females of the three northeastern species, the elytral meshes are well impressed, isodiametric. In males of *O. americanum* the elytral meshes are absent; in males of *O. tessellatum* they are poorly impressed and more or less evident over the dark areas of the lateral half, absent over the pale areas and the dark areas of the medial half; in *O. labiatum* they are well impressed, isodiametric all over the elytra.

**List of northeastern species of Omophron**

*O. americanum* Dejean, 1831
*O. tessellatum* Say, 1823
*O. labiatum* (Fabricius, 1801)

**Key to northeastern species of Omophron**

1. Pale area on head M-shaped (Fig. 91). Dark central area of pronotum not reaching anterior and posterior edges [5.4-7.0 mm; Plate 17].........................*O. tessellatum* Say
Illustrated Identification Guide to Adults and Larvae of Northeastern North American Ground Beetles

[BC: endemic; BZ: temperate; HR: flooded places: lake and river banks, edges of ponds and pools, sea beaches, usually on sandy or clayish soils; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (?); GD: ME NB NH NS PE QC VT; References: Benschoter and Cook (1956: 422, 424); Lindroth (1961: 12); Larochelle and Larivière (2003: 350) – bionomics; Erwin (2007: 69) – bionomics]

– Pale area on head V-shaped (Fig. 92). Dark central area of pronotum reaching anterior and posterior edges..................................................................................................

2 [1]. Dark areas of elytron without metallic lustre. Pale areas of elytron more or less restricted to lateral and apical margins. Elytral microsculpture meshes well impressed, isodiametric in male [4.8-6.3 mm; Plate 17].............................................O. labiatum (Fabricius)

[BC: endemic; BZ: temperate; HR: flooded places: mainly sea beaches on sand; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NS; References: Benschoter and Cook (1956: 418-419); Lindroth (1969a: 1108); Larochelle and Larivière (2003: 349) – bionomics; Erwin (2007: 66) – bionomics]

– Dark areas of elytron with greenish metallic lustre. Pale areas of elytron not restricted to lateral and apical margins but reaching medial intervals in places. Elytral microsculpture meshes absent in male [5.1-7.0 mm; Plate 17]..........O. americanum Dejean

[BC: endemic; BZ: temperate/boreal; HR: flooded places: mainly river banks, on sand and silt; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 150); Benschoter and Cook (1956: 426-428); Lindroth (1961: 12-13); Larochelle and Larivière (2003: 348) – bionomics; Erwin (2007: 64) – bionomics]

**Tribe Scaritini**

**Genus Scarites Fabricius, 1775**

The sole northeastern species of this genus, Scarites subterraneus Fabricius, 1775 [Plate 18], is easily recognized on its large size (16-20 mm) and pedunculate body. It could not be confused with any other species in the region.

I am not aware of any external differences in this species that could separate the sexes easily. Lindroth (1961: 129) mentioned that in the female the four subapical setae on the last...
abdominal sternum are equidistant while in the male the two median ones are more widely spaced. Although there may be a tendency in the male to have the median setae slightly more spaced than in the female, this character could not be used unequivocally for sex identification.

[BC: endemic; BZ: temperate; HR: open places: gardens, roadsides, cultivated and vacant fields, often near water, on sandy soils; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: NH VT; References: Lindroth (1961: 128-130); Larochelle and Larivière (2003: 464-465) – bionomics]

TRIBE CLIVININI

GENUS CLIVINA LATREILLE, 1802

Because of their characteristic facies, adults of *Clivina* can really be confused among north-eastern carabids only with those of *Paraclivina* and *Schizogenius*. They differ from those of *Paraclivina* by the presence of 4 or 5 discal setigerous punctures on the elytron and by the lateral bead of pronotum attaining the basal edge. They differ from adults of *Schizogenius* in having no frontal and pronotal sulci.

As far as known, there are no external characters to separate males from females.

List of northeastern species of *Clivina*

<table>
<thead>
<tr>
<th>Species</th>
<th>Year</th>
</tr>
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<tbody>
<tr>
<td><em>C. americana</em> Dejean, 1831</td>
<td></td>
</tr>
<tr>
<td><em>C. collaris</em> (Herbst, 1784)</td>
<td></td>
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<tr>
<td>[<em>C. dentipes</em> Dejean, 1825]</td>
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<tr>
<td><em>C. fossor</em> (Linné, 1758)</td>
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<tr>
<td><em>C. impressifrons</em> LeConte, 1844</td>
<td></td>
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<tr>
<td><em>C. pallida</em> Say, 1823</td>
<td></td>
</tr>
<tr>
<td>[<em>C. rubicunda</em> LeConte, 1857]</td>
<td></td>
</tr>
</tbody>
</table>

Key to northeastern species of *Clivina*

1. Mesotibia (Fig. 93) with small, nonacuminate preapical protuberance; seta located apicad on protuberance [4.7-6.0 mm; abdominal sternum 2 with coxal lines medially] .................................................................................... *C. (Leucocara) americana* Dejean [BC: endemic; BZ: temperate; HR: wet places; edges of marshes, ponds, swamps, also lake and river banks, occasionally in beaver houses; SA: [spring breeder]; OC: LF++++/++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1961: 160-161); Larochelle and Larivière (2003: 205) – bionomics]

Figs 93-94. Mesotibia. 93: *Clivina americana* (ventral view); 94: *Clivina fossor* (dorsal view).
– Mesotibia (Fig. 94) with long, acuminate preapical protuberance; seta located laterad on protuberance ................................................................. 2

2 [1]. Proepisternum with narrow sculptured band running more or less parallel to lateral edge (Fig. 95). Profemur with posteroapical toothlike process. Elytron with five setae on interval 3 [8.0-9.5 mm] ........................................... [C. (Semiclivina) dentipes Dejean]

[BC: endemic; BZ: temperate; HR: flooded places: margins of rivers, lakes, sloughs, brooks; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet found in the northeast; References: Bousquet (1987a: 119); Larochelle and Larivière (2003: 206) – bionomics]

– Proepisternum without sculptured band (Fig. 96). Profemur without process or with posteroapical rounded process. Elytron with four (exceptionally five) setae on interval 3 .................................................................................. 3

3 [2]. Side of pronotum with two denticles toward base. Abdominal sternum 2 with coxal lines medially (Fig. 97). Elytral edge serrulate at or near humerus [4.2-4.6 mm] ................................................................. [C. (Antroforceps) rubicunda LeConte]

[BC: endemic; BZ: temperate; HR: ?; SA: ?; DP: wings (?); flight (+); GD: not yet found in the northeast; References: Ball (2001: 145-147); Larochelle and Larivière (2003: 210) – bionomics]

– Side of pronotum with one denticle toward base. Abdominal sternum 2 without coxal lines (Fig. 98). Elytral edge not serrulate at or near humerus ......................... 4

4 [3]. Eye reduced, longitudinal length less than 1.5 times that of temple. Elytral striae wide with wavy edges, punctures at most suggested. Mentum tooth not acuminate [4.8-5.2 mm] ........................................................................................................ C. (Clivina) pallida Say


– Eye larger, longitudinal length greater than 1.5 times that of temple. Elytral striae narrow with even edges, punctures distinct at least in anterior half. Mentum tooth somewhat acuminate .............................................. 5

5 [4]. Abdominal sternum 4, usually also 3, 5 and 6, without microsculpture meshes between ambulatory setae, except along anterior edge (Fig. 99) [5.9-7.0 mm; body dorsally reddish-brown though forebody slightly darker in some specimens] .............................................................. [BC: endemic; BZ: temperate; HR: open places: cultivated fields, also river banks; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Phillips (1909) – biology; Lindroth (1961: 163-164); Pausch and Pausch (1980) – biology; Larochelle and Larivière (2003: 208) – bionomics]

– Abdominal sternum 4, usually also 3, 5 and 6, with microsculpture meshes between ambulatory setae, except along posterior edge in most specimens (Fig. 100) .......... 6

6 [5]. Disc of pronotum distinctly darker than disc of elytra; elytral disc reddish-yellow to reddish, with darker sutural macula on apical half in most specimens. Sculpticells markedly convex at middle of last abdominal sternum [5.0-5.5 mm] .............................................................. [BC: endemic; BZ: temperate; HR: open places: cultivated fields, also river banks; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Phillips (1909) – biology; Lindroth (1961: 163-164); Pausch and Pausch (1980) – biology; Larochelle and Larivière (2003: 208) – bionomics]

– Proepisternum without sculptured band (Fig. 96). Profemur without process or with posteroapical rounded process. Elytron with four (exceptionally five) setae on interval 3 .................................................................................. 3

– Side of pronotum with two denticles toward base. Abdominal sternum 2 with coxal lines medially (Fig. 97). Elytral edge serrulate at or near humerus [4.2-4.6 mm] ................................................................. [C. (Antroforceps) rubicunda LeConte]

[BC: endemic; BZ: temperate; HR: ?; SA: ?; DP: wings (?); flight (+); GD: not yet found in the northeast; References: Ball (2001: 145-147); Larochelle and Larivière (2003: 210) – bionomics]

– Side of pronotum with one denticle toward base. Abdominal sternum 2 without coxal lines (Fig. 98). Elytral edge not serrulate at or near humerus ......................... 4

– Eye reduced, longitudinal length less than 1.5 times that of temple. Elytral striae wide with wavy edges, punctures at most suggested. Mentum tooth not acuminate [4.8-5.2 mm] ........................................................................................................ C. (Clivina) pallida Say


– Eye larger, longitudinal length greater than 1.5 times that of temple. Elytral striae narrow with even edges, punctures distinct at least in anterior half. Mentum tooth somewhat acuminate .............................................. 5

– Abdominal sternum 4, usually also 3, 5 and 6, without microsculpture meshes between ambulatory setae, except along anterior edge (Fig. 99) [5.9-7.0 mm; body dorsally reddish-brown though forebody slightly darker in some specimens] .............................................................. [BC: endemic; BZ: temperate; HR: open places: cultivated fields, also river banks; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Phillips (1909) – biology; Lindroth (1961: 163-164); Pausch and Pausch (1980) – biology; Larochelle and Larivière (2003: 208) – bionomics]

– Abdominal sternum 4, usually also 3, 5 and 6, with microsculpture meshes between ambulatory setae, except along posterior edge in most specimens (Fig. 100) .......... 6

– Disc of pronotum distinctly darker than disc of elytra; elytral disc reddish-yellow to reddish, with darker sutural macula on apical half in most specimens. Sculpticells markedly convex at middle of last abdominal sternum [5.0-5.5 mm] .............................................................. [BC: endemic; BZ: temperate; HR: open places: cultivated fields, also river banks; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Phillips (1909) – biology; Lindroth (1961: 163-164); Pausch and Pausch (1980) – biology; Larochelle and Larivière (2003: 208) – bionomics]

– Abdominal sternum 4, usually also 3, 5 and 6, with microsculpture meshes between ambulatory setae, except along posterior edge in most specimens (Fig. 100) .......... 6
Figs 95-96. Proepisternum. 95: Clivina dentipes; 96: Clivina fossor.

Figs 97-98. Median region of abdominal sternum 2. 97: Clivina rubicunda; 98: Clivina fossor.

Figs 99-100. Median region of abdominal sterna 3 and 4. 99: Clivina impressifrons; 100: Clivina fossor.

[BC: exotic (< 1838); BZ: temperate; HR: open places: cultivated and abandoned fields, gravel pits; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: NH QC; References: Lindroth (1961: 162); Larochelle and Larivière (2003: 206) – bionomics]

Disc of pronotum of same colouration or paler than disc of elytra; elytral disc without sutural macula. Sculpticells flat at middle of last abdominal sternum [5.5-6.5 mm; Plate 18] ........................................................... C. (Clivina) fossor (Linné)
hands, rivers, ponds, forest edges and clearings; **SA**: spring breeder; **OC**: LF+++/++; **RA+++/+++**; **DP**: wings (+); flight (+); **GD**: ME NB NH NS PE PM QC VT; **References**: Lindroth (1955b: 45-46); Lindroth (1961: 161-162); Desender (1983) -biology; Desender and Pollet (1985) – biology; Larochelle and Larivière (2003: 207-208) – bionomics]

**GENUS PARACLIVINA KULT, 1947**

Adults of the sole northeastern species of this genus, *Paraclivina bipustulata* (Fabricius, 1798) [Plate 18], are easily distinguished from those of *Clivina*, to which they superficially resemble most, by having the lateral bead of pronotum not denticulate at level of the posterior seta and not reaching the basal edge; instead the lateral bead runs more or less parallel in front of it (Fig. 27). In addition, the elytral interval/stria 3 bears only two setae.

There are no external characters to separate males from females.

[**BC**: endemic; **BZ**: temperate; **HR**: flooded places: river banks, edges of ponds, usually on silt soils, among roots of grasses; **SA**: [spring breeder]; **OC**: LF+; **RA?**; **DP**: wings (+); flight (+); **GD**: NH; **References**: Lindroth (1961: 160); Larochelle and Larivière (2003: 205-206) – bionomics]

**GENUS SCHIZOGENIUS PUTZEYS, 1846**

The North American species of this genus are easily recognized on their facies along with the presence of parallel ridges on the frons and of sharp longitudinal furrows on the pronotal disc.

Males of northeastern species are distinguished from females in having an extra pair of paramedian setae, besides the four apical setae, on the last abdominal sternum which are lacking in females.

**List of northeastern species of Schizogenius**

*S. amphibius* (Haldeman, 1843)  
*S. lineolatus* (Say, 1823)  
*S. ferrugineus* Putzeys, 1846  
*S. sulcifrons* Putzeys, 1846  
*S. planulatus* LeConte, 1863

**Key to northeastern species of Schizogenius**

1. Elytra black, with aeneous lustre. Abdominal sterna without microsculpture laterally .................................................................................................................................. 2

2 [1]. Pronotum and elytra of same colouration. Elytral intervals 3 and 5 each with seven to eleven (usually eight or more) discal setae, interval 7 with five to eight setae. Pronotal denticle along lateral edge poorly developed [3.9-5.0 mm] ................................................................................................................. S. (*Schizogenius*) *sulcifrons* Putzeys

[**BC**: endemic; **BZ**: temperate; **HR**: flooded places: river banks on gravelly soils; **SA**: [spring breeder]; **OC**: LF+++; **RA+++**; **DP**: wings (+); flight (+); **GD**: ME NB NH QC VT; **References**: Lindroth (1961: 167); Whitehead (1972: 265-268); Larochelle and Larivière (2003: 469) – bionomics]
Pronotum somewhat paler than elytra. Elytral intervals 3 and 5 each with five to nine (usually seven or less) discal setae, interval 7 each with two to five setae. Pronotal denticle along lateral edge well developed [4.5-5.8 mm; Plate 18] ......................
..............................................................................................S. (Schizogenius) lineolatus (Say)
[BC: endemic; BZ: temperate; HR: flooded places: river banks on gravelly bare soils; SA: spring breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1961: 166); Whitehead (1972: 246-251); Larochelle and Larivière (2003: 467) – bionomics]

3 [3]. Elytral intervals 3 and 5 each with five to seven discal setae, interval 7 with three to five setae. Antennomeres 5-10 about as wide as long. Pronotal denticle along lateral edge poorly developed. Pronotum and elytra markedly convex [3.6-4.1 mm]..............
..............................................................................................S. (Schizogenius) ferrugineus Putzeys
[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, ocean beaches, usually on moist sandy soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1961: 168-169); Whitehead (1972: 179-181); Larochelle and Larivière (2003: 467) – bionomics]

4 [3]. Body length less than 4.5 mm. Proepisternum with punctures. Apical edge of last abdominal sternum not or (rarely) only finely serrulate in female [3.7-4.2 mm] ........
..............................................................................................S. (Schizogenius) amphibius (Haldeman)
[BC: endemic; BZ: temperate; HR: flooded places: river banks, mainly on gravelly soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1961: 168); Whitehead (1972: 236-238); Larochelle and Larivière (2003: 465) – bionomics]

– Body length more than 5.5 mm. Proepisternum without punctures. Apical edge of last abdominal sternum markedly serrulate in female [5.6-6.4 mm] .........................
..............................................................................................S. (Schizogenius) planulatus LeConte
[BC: endemic; BZ: temperate; HR: flooded places: river banks on gravelly soils; SA: [spring breeder]; DP: wings (+); flight (-); GD: not yet found in the northeast but recorded from New York; References: Lindroth (1961: 166); Whitehead (1972: 238-240); Larochelle and Larivière (2003: 468) – bionomics]

Genus Dyschirius Bonelli, 1810
Members of this genus are recognized on their small size (less than 6 mm in the northeast) and more or less cylindrical, pedunculate body. From those of Clivina and Schizogenius, adults of Dyschirius are easily distinguished by numerous character states, including the separation of the umbilical setae into two groups, one in the anterior half (subhumeral group), one in the posterior half (distal group).

Males can be differentiated from females by the presence of an oval sensory depression on the ventral side of the apical labial and maxillary palpomeres. The size of the sensory depression varies between the species and occupies about 50-90% of the ventral surface on the labial palpomere, and between 10-60% on the maxillary palpomere.
List of northeastern species of *Dyschirius*

- *D. aeneolus* LeConte, 1850
- *D. frigidus* Mannerheim, 1853
- *D. affinis* Fall, 1901
- *D. brevispinus* LeConte, 1878
- *D. curvispinus* Putzeys, 1846
- *D. dejeanii* Putzeys, 1846
- *D. integer* LeConte, 1852
- *D. sellatus* LeConte, 1857
- *D. erythrocerus* LeConte, 1857
- *D. setosus* LeConte, 1857
- *D. globulosus* (Say, 1823)
- *D. hiemalis* Bousquet, 1987
- *D. larochellei* Bousquet, 1988
- *D. pallipennis* (Say, 1823)
- *D. sextoni* Bousquet, 1987
- *D. haemorrhoidalis* (Dejean, 1831)
- *D. sphaericollis* (Say, 1823)
- *D. haemorrhoidalis* (Dejean, 1831)
- *D. sphaericollis* (Say, 1823)
- *D. hiemalis* Bousquet, 1987
- *D. sublaevis* Putzeys, 1846
- *D. pilosus* LeConte, 1857
- *D. dejeanii* Putzeys, 1846
- *D. politus* (Dejean, 1825)
- *D. pumilus* (Dejean, 1825)
- *D. brevispinus* LeConte, 1878
- *D. pilosus* LeConte, 1857
- *D. curvispinus* Putzeys, 1846
- *D. politus* (Dejean, 1825)
- *D. brevispinus* LeConte, 1878
- *D. pilosus* LeConte, 1857
- *D. curvispinus* Putzeys, 1846
- *D. politus* (Dejean, 1825)
- *D. brevispinus* LeConte, 1878
- *D. pilosus* LeConte, 1857
- *D. curvispinus* Putzeys, 1846
- *D. politus* (Dejean, 1825)
- *D. brevispinus* LeConte, 1878
- *D. pilosus* LeConte, 1857
- *D. curvispinus* Putzeys, 1846
- *D. politus* (Dejean, 1825)

**Key to northeastern species of *Dyschirius***

1. Elytron with intervals 3, 5 and 7 (usually also 1) with row of setae.................................2
   – Elytron with intervals 1, 5 and 7 without setae, interval 3 without or with one to three setae............................................................................................................................3

2 [1]. Pronotum with three or more setae along each side. Lateral depression of pronotum extended to level of posterolateral seta [2.5-3.2 mm]........... *D. setosus* LeConte
   [BC: endemic; BZ: temperate; HR: flooded places: mainly river banks on clay soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1961: 157); Larochelle and Larivière (2003: 253) – bionomics]
   – Pronotum with two setae along each side. Lateral depression of pronotum not extended to level of posterolateral seta [2.7-3.2 mm].......................... *D. pilosus* LeConte
   [BC: endemic; BZ: temperate; HR: flooded places: mainly river banks on wet clayish soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH QC VT; References: Lindroth (1961: 156-157); Bousquet (1988: 377-378); Larochelle and Larivière (2003: 251) – bionomics]

3 [1]. Elytron without discal setae on interval 3.................................................................4
   – Elytron with one to three discal setae on interval 3..........................................................9

4 [3]. Elytra yellowish, usually with darker cloud around middle. Elytron without subhumeral setae. Elytral striae smooth or faintly punctate [3.6-4.2 mm; Plate 19]..........
   ................................................................................................................................. *D. pallipennis* (Say)
   [BC: endemic; BZ: temperate; HR: flooded places: mainly river banks on sand; also along edges of ponds in sand pits; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: QC; References: Lindroth (1961: 142); Larochelle and Larivière (2003: 251) – bionomics]
– Elytra brown to brownish-black, at most with apex paler. Elytron with one to three subhumeral setae. Elytral striae distinctly punctate in basal half ..........................................5

5 [4]. Elytron with two or three subhumeral setae..........................................................................................6
– Elytron with one subhumeral seta.............................................................................................................7

6 [5]. Body length more than 4.3 mm [4.5-5.5 mm] ..................[D. sextoni Bousquet]
[BC: endemic; BZ: temperate; HR: ?; SA: [spring breeder]; DP: wings (+); flight (-);
GD: not yet found in the northeast but recorded from Ontario; References: Bousquet (1987a:113)]
– Body length less than 4.0 mm [3.2-3.8 mm] ..................[D. pumilus (Dejean)]
[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, usually on sand; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet known from the northeast; References: Lindroth (1961: 141-142, as D. dentiger); Larochelle and Larivière (2003: 252) – bionomics]

7 [5]. Clypeus extended medially on frons into a short carina (as in Fig. 107) [2.7-3.4 mm; Plate 19] ..............................................................................................D. montanus LeConte
[BC: endemic; BZ: temperate; HR: flooded places: river banks on fine sand; SA: [spring breeder]; OC: LF++; RA++++; DP: wings (+); flight (+); GD: QC; References: Lindroth (1961: 141); Larochelle and Larivière (2003: 250) – bionomics]
– Clypeus not prolonged on frons.............................................................................................................8

8 [7]. Apical spur of protibia slightly curved. Elytron with one preapical seta [2.8-3.4 mm].................................D. sublaevis Putzeys
[BC: endemic; BZ: temperate; HR: [flooded places]: sea beaches, sand flats; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: ME NH; References: Lindroth (1961: 140-141, as D. filiformis); Larochelle and Larivière (2003: 247, as D. filiformis) – bionomics]
– Apical spur of protibia markedly curved. Elytron with two preapical setae [2.9-3.3 mm]........................................................................................................................................D. curvispinus Putzeys
[BC: endemic; BZ: temperate; HR: [flooded places]: river banks on sand; SA: [spring breeder]; OC: LF+; RA?; DP: wings (+); flight (-); GD: ME; References: Larochelle and Larivière (2003: 246) – bionomics]

9 [3]. Elytron with one or two discal setae on interval 3 ..........................................................10
– Elytron with three discal setae on interval 3 .........................................................................................15

10 [9]. Elytron without subhumeral setae. Elytra reddish-yellow [4.3-5.0 mm]...........................
...............................................................................................................................D. sellatus LeConte
[BC: endemic; BZ: temperate; HR: flooded places: sea beaches, lagoons, saline ponds, on sandy saline soils; SA: [spring breeder]; OC: LF++; RA++++; DP: wings (+); flight (+); GD: NB NF NS PE QC; References: Lindroth (1955b: 45); Lindroth (1961: 142-143); Larochelle and Larivière (2003: 253) – bionomics]
– Elytron with one to three subhumeral setae. Elytra brown to black.................................11
11 [10]. Elytron with three subhumeral setae. Elytron with anterior discal seta present on interval 3. Apical spur of protibia shorter than protarsomere 1 (Fig. 101) [3.4-4.2 mm]  

[BC: endemic; BZ: temperate; HR: open places: gravel pits, gardens; SA: [spring breeder]; OC: LF++; RA+; DP: wings (+); GD: QC VT; References: Lindroth (1961: 139); Larochelle and Larivière (2003: 245) – bionomics]  

- Elytron with one subhumeral seta. Elytron with anterior discal seta on interval 3 absent. Apical spur of protibia longer than protarsomere 1 (Fig. 102) .................. 12

12 [11]. Elytron with one discal seta on interval 3. Lateral depression of pronotum extended to level of anterolateral seta (Fig. 103) [4.3-4.9 mm]  

[BC: endemic; BZ: temperate; HR: flooded places: ocean beaches, lagoons and bays on clayed or muddy soils; SA: [spring breeder]; OC: LF++; RA++++; DP: wings (+); flight (-); GD: NB NF NH NS; References: Lindroth (1955b: 44-45, as D. erythrocerus); Bousquet (1988: 374-375); Larochelle and Larivière (2003: 249-250) – bionomics]  

- Elytron with two discal setae on interval 3. Lateral depression of pronotum extended beyond level of anterolateral seta (Fig. 104) .................................................. 13

13 [12]. Elytral striae coarsely punctate in basal half, depression around median discal seta on interval 3 about same size as most punctures of stria 3. Lateral depression of pronotum not quite extended to level of posterolateral seta [4.4-4.9 mm] ...............  

[BC: endemic; BZ: temperate; HR: flooded places: river banks on clayish or muddy soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1961: 147-148); Bousquet (1988: 375-376); Larochelle and Larivière (2003: 246-247) – bionomics]  

- Elytral striae more finely punctate in basal half, depression around median discal seta on interval 3 slightly larger than most punctures of stria 3. Lateral depression of pronotum extended to level of posterolateral seta (Fig. 104) [two species often difficult to separate with confidence] ................................. 14

14 [13]. Anterior edge of clypeus truncate to slightly rounded at middle (Fig. 108). Elytra more parallel-sided, only slightly widened behind humeri [3.4-4.9 mm] ...............  

[D. politus (Dejean)]

Fig. 103-104. Right half of pronotum. 103: Dyschirius larochellei; 104: Dyschirius sphaericollis.

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[BC: holarctic; BZ: temperate/boreal; HR: flooded places: river and lake banks, ponds, pools; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH QC VT; References: Lindroth (1955b: 44); Lindroth (1961: 146-147); Larochelle and Larivière (2003: 252) – bionomics; Note: the fact that this “holarctic” species is not found in the arctic region of North America suggests that the Nearctic specimens may represent a distinct species from the Palaearctic specimens]

– Anterior edge of clypeus acutely rounded at middle in most specimens (Fig. 109). Elytra somewhat oviform, distinctly widened behind humeri [4.2-5.2 mm; Plate 19] ................................................................................................................................. D. sphaericollis (Say)

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river banks, usually on silty sand; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 44); Lindroth (1961: 145); Larochelle and Larivière (2003: 254) – bionomics]

15 [9]. Elytra dark but with apex distinctly paler........................................................................ 16
– Elytra entirely dark, apex not paler ...................................................................................... 18

16 [15]. Frons smooth (Fig. 110). Elytral striae densely and coarsely punctate in basal half, depression around anterior discal seta on interval 3 about as large as most strial punctures in basal half [2.7-3.0 mm] ............................................................................................................................. D. haemorrhoidalis (Dejean)

[BC: endemic; BZ: temperate; HR: flooded places: river banks, on silt soils; SA: [spring breeder]; OC: LF+; RA?; DP: wings (+); flight (+); GD: NH; References: Lindroth (1961: 136); Larochelle and Larivière (2003: 248) – bionomics]

– Frons punctate (Fig. 111) or more or less rugose (Fig. 112). Elytral striae sparsely and finely punctate in basal half, depression around anterior discal seta on interval 3 larger than most strial punctures in basal half ...................................................................................... 17

17 [16]. Lateral edge of pronotum projecting ventrally at level of anterior angle (Fig. 105). Clypeofrontal suture distinct (Fig. 111) [3.0-3.4 mm] ............ [D. terminatus LeConte]

[BC: endemic; BZ: temperate; HR: flooded places: river banks on sandy bare soils; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet found in the northeast; References: Lindroth (1961: 136); Larochelle and Larivière (2003: 255) – bionomics]
Lateral edge of pronotum not projecting ventrally at level of anterior angle (Fig. 106). Clypeofrontal suture indistinct or almost so (Fig. 112) [2.7-3.0 mm]......

\[BC\]: endemic; \[BZ\]: temperate; \[HR\]: flooded places: mainly river banks on sandy or sandy-clayed bare soils; \[SA\]: [spring breeder]; \[OC\]: LF++; RA++; \[DP\]: wings (+); flight (+); \[GD\]: ME NH QC VT; References: Lindroth (1961: 157-158); Larochelle and Larivière (2003: 244) – bionomics\]

D. affinis Fall

18 [15]. Elytron with one or two subhumeral setae.......................................................................... 19

– Elytron with three subhumeral setae .......................................................................................... 20

19 [18]. Lateral bead of pronotum not quite extended to level of posterolateral seta. Body length over 3.3 mm [3.4-3.7 mm]..................................................D. aeneolus LeConte

\[BC\]: endemic; \[BZ\]: temperate/boreal; \[HR\]: ?; \[SA\]: [spring breeder]; \[OC\]: LF++; RA+; \[DP\]: wings (+); flight (-); \[GD\]: LB QC; References: Lindroth (1961: 152, as D. frigidus); Larochelle and Larivière (2003: 244) – bionomics\]

– Lateral bead of pronotum extended to level of posterolateral seta. Body length less than 3.1 mm [2.6-3.0 mm] ..............................................................................D. hiemalis Bousquet

\[BC\]: endemic; \[BZ\]: arctic/alpine; \[HR\]: [open places]; \[SA\]: [spring breeder]; \[OC\]: LF+/++; RA++; \[DP\]: wings (-); \[GD\]: LB QC; References: Bousquet (1987a: 116-117); Larochelle and Larivière (2003: 203) – bionomics\]

20 [18]. Clypeus prolonged medially on frons into a short carina (Fig. 107) [2.7-4.2 mm] ....

.................................................................................................................D. dejeanii Putzeys

\[BC\]: endemic; \[BZ\]: temperate/boreal; \[HR\]: flooded/wet places: river and lake banks, swamps, edges of eutrophic marshes, usually on muddy or clayish soils rich in organic debris; \[SA\]: [spring breeder]; \[OC\]: LF++++; RA++; \[DP\]: wings (+); flight (+); \[GD\]: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 42, as D. nigripes); Lindroth (1961: 149-150, as D. integer); Larochelle and Larivière (2003: 249, as D. integer) – bionomics\]

– Clypeus not prolonged on frons [2.5-3.2 mm] [two species which I cannot separate with confidence on external characters].................................................................

.................................................................................................................D. globulosus (Say)\(^a\) / D. longulus LeConte\(^b\)

Figs 105-106. Anterior half of prothorax (lateral view). 105: Dyschirius terminatus; 106: Dyschirius affinis.

^BC: endemic; BZ: temperate/arctic; HR: open places: pastures, fields, roadsides, forest edges, usually on sandy or sandy-clayish soils; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (±); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1961: 154-155); Larochelle and Larivière (2003: 248) – bionomics

^BC: endemic; BZ: boreal; HR: [open places]; SA: [spring breeder]; OC: LF++; RA+++; DP: wings (±); GD: NF QC; References: Lindroth (1955b: 43-44); Lindroth (1961: 156); Larochelle and Larivière (2003: 250) – bionomics
**Tribe Broscini**

**Genus Miscodera** Eschscholtz, 1830

The sole species in this genus, *M. arctica* (Paykull, 1798) [Plate 19], is easily recognized by its size (6.2-9.8 mm) and appearance: the body is pedunculate and without microsculpture. Superficially, the species looks like a large ant.

The males are distinguished from females in having the protarsomeres 1-3 and the mesotarsomeres 1 and 2 slightly expanded and with spongy adhesive setae underneath.

[BC: holarctic; BZ: temperate/boreal/arctic; HR: open places: moraines, sand pits, gravel-pits, roadsides; SA: [autumn breeder]; OC: LF+++; RA+/++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PM QC VT; References: Lindroth (1955b: 132-133, as *M. arctica americana*); Lindroth (1961: 170-171); Larochelle and Larivière (2003: 322-323) – bionomics]

**Genus Broscus** Panzer, 1813

This genus includes a single, rather large (16-23 mm) species in the northeast, *B. cephalotes* (Linneé, 1758) [Plate 20]. For experienced students, the species is quite distinct by its facies. For inexperienced ones, it could be easily confused for a large *Pterostichus* but differs readily by the presence of only one supraorbital seta on each side of the frons, absence of subbasal ridge on the elytron and by the very finely impressed striae.

Males have the protarsomeres 1-3 expanded and with spongy adhesive setae underneath and only two setae (four in females) along the apical margin of the last abdominal sternum.


**Tribe Trechini**

**Genus Trechus** Clairville, 1806

The four northeastern species of this large genus could be confused with some members of Bembidini and small Harpalini. From the former group, they differ readily by their long apical maxillary palpomere and from the latter one by the presence of two supraorbital setae on each side of the frons and of a seta at each posterior angle of the pronotum (absent in all micro Harpalini but *Dicheirotrichus*).

Males have the protarsomeres 1 and 2 greatly expanded on the medial side and with seriate adhesive setae underneath and only two setae (four or more in females) along the apical margin of the last abdominal sternum.

**List of northeastern species of Trechus**

*T. apicalis* Motschulsky, 1845
*T. quadriradiatus* (Schrank, 1781)
*T. crassiscapus* Lindroth, 1955
*T. rubens* (Fabricius, 1801)

**Key to northeastern species of Trechus**

1. Body length more than 5 mm. Side of pronotum with long sinuation in front of posterior angle (Fig. 113) [5.1-6.5 mm] ......................... *T. (Trechus) rubens* (Fabricius)
3 [2]. Body flat, upper surface (particularly elytra) light brown, more or less pigmented. Pronotum (Fig. 115) not or barely sinuate before posterior angle [3.9-4.7 mm; Plate 20]........................................................................... T. (Trechus) apicalis Motschulsky
[BC: endemic; BZ: temperate/boreal/alpine; HR: covered places: mostly forests, but also meadows and vacant lots, usually along brooks and ponds, also along rivers and lakes; SA: autumn breeder; OC: LF++++; RA++/+++; DP: wings (- +); flight (+); GD: LB ME NB NF NH NS PM QC VT; References: Lindroth (1955b: 78-80, as T. apicalis micans); Lindroth (1961: 202); Chiolino (1970) – wing development; Larochelle and Larivière (2003: 502) – bionomics]
– Body convex, upper surface (particularly elytra) darker, brownish-black to black. Pronotum (Fig. 116) shortly but clearly sinuate before posterior angle [4.2-4.6 mm]........................................................................................ T. (Trechus) crassiscapus Lindroth
[BC: endemic; BZ: temperate/boreal/arctic/alpine; HR: wet places: marshes, fens, pools, swamps often in woody areas, often on moss or in leaf litter; occasionally forest clearings and along rivers and lakes; SA: [autumn breeder]; OC: LF+++; RA++; DP: wings (-); GD: LB ME NB NF NH NS QC VT; References: Lindroth (1955b: 80-81, as T. chalybaeus crassiscapus); Lindroth (1961: 200); Larochelle and Larivière (2003: 504) – bionomics]

GENUS BLEMUS DEJEAN, 1821 [syn.: Lasiotrechus Ganglbauer, 1892]
This genus includes a single species, B. discus (Fabricius, 1792) [Plate 20], which is well characterized by its small size (4.4-5.5 mm) and pubescent, bright reddish-yellow (with a broad transverse fascia behind the middle) elytra.

Males have the protarsomeres 1 and 2 expanded and with seriate adhesive setae underneath and two subapical setae (four in females) along the margin of the last abdominal sternum.
[BC: exotic (1933); BZ: temperate; HR: flooded/wet/open places: edges of ponds, river banks, on sandy or sandy-clayed soils; occasionally beaver houses; also gravel pits, roadsides, cultivated and vacant fields; SA: autumn breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1961: 194); Larochelle and Larivière (2003: 147) – bionomics]

TRIBE BEMBIDIINI
KEY TO GENERA

1. Elytron without striae [one species: 3.6-4.7 mm; Plate 20] .................. Asaphidion Gozis
– Elytron with at least one stria (first one) well impressed............................................... 2

2 [1]. Elytron without recurrent stria. Protibia with apex transversely truncate or rounded [80 species: 2.3-8.3 mm; Plates 21-24].................................................. Bembidion Latreille
– Elytron with recurrent stria (Figs 19, 20). Protibia with apex obliquely truncate [body length less than 3.0 mm]........................................................................................... 3

3 [2]. Mentum with two deep, circular foveae (labial pits) (Fig. 21)......................... 4
– Mentum without foveae (Fig. 22).................................................................................. 7

4 [3]. Body length less than 1.8 mm. Elytron with only one (sutural) stria distinct. Elytral microsculpture irregularly isodiametric or slightly transverse [one species: 1.3-1.6 mm; Plate 26].................................................. Polyderis Motschulsky
– Body length more than 2.1 mm. Elytron with at least three evident striae. Elytral microsculpture striate or absent........................................5

5 [4]. Elytra flat; striae impunctate or almost so. Recurrent stria long, hooked, enclosing posterior discal seta (Fig. 19) [five species: 2.1-3.1 mm; Plate 26]......Paratachys Casey
– Elytra more or less convex; striae distinctly punctate. Recurrent stria shorter, not hooked, not enclosing posterior discal seta........................................6

6 [5]. Elytron with only three or four sparsely, finely punctate striae. Elytra without central infuscate area [one species: 2.8-3.2 mm; upper surface uniformly yellowish-red; Plate 26]...........................................Porotachys Netolitzky
– Elytron with six densely, relatively coarsely punctate striae. Elytra with large, central, infuscate area [one species: 2.3-3.0 mm; Plate 26]........Pericompsus LeConte

7 [3]. Frons with one supraorbital seta on each side. Anterior edge of labrum deeply emarginate [one species, M. aenescens (LeConte), 2.1-2.5 mm, not yet found in the northeast but recorded from Connecticut].................................[Micratopus Casey]
– Frons with two supraorbital setae on each side. Anterior edge of labrum not or only slightly emarginate..............................8

8 [7]. Elytra without microsculpture. Body convex [11 species: 1.9-3.2 mm; Plate 25]......
– Elytra with microsculpture. Body flat..................................................Elaphropus Motschulsky

9 [8]. Pronotum with lateral depression broad, translucent. Elytra with transverse microsculpture meshes. Pronotum with scattered small setae, elytral intervals each with row of erect setae [one species: 1.5-1.8 mm; Plate 25]...........................Mioptachys Bates
– Pronotum with lateral depression narrow, not translucent. Elytra with irregularly isodiametric microsculpture meshes. Pronotum without small setae, elytral intervals each with a row of minute, indistinct setae [three species: 2.6-3.2 mm; Plate 25]......

SUBTRIBE BEMBIDIINA
GENUS ASAPHIDION GOZIS, 1886
The sole northeastern species of this genus, A. curtum (Heyden, 1870) [Plate 20], in the past referred in the North American literature to as A. flavipes (Linne), is easily recognized on its general appearance and small size (3.6-4.7 mm). Superficially, the adults resemble those of a small Elaphrus and like them have no elytral striae.

Males have the protarsomeres 1 and 2 expanded and with seriate adhesive setae underneath.

[BC: exotic (1930); BZ: temperate; HR: wet/flooded places: often in leaf litter or mud beds along streams, ponds; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: ME NH; References: Larochelle and Larivière (2003: 84, as A. flavipes) – bionomics]

GENUS BEMBIDION LATREILLE, 1802
This worldwide genus is the most numerous in term of species in the northeast with 85 species. The rudimentary apical maxillary palpomere will distinguish members of this genus from
those of other genera in the northeast except *Asaphidion* and tachyines. The easiest character for separating members of *Bembidion* from those of tachyines is the absence of the elytral recurrent stria in *Bembidion*. Adults of *Bembidion* can be distinguished from those of *Asaphidion* by the presence of striae on the elytra.

Males have the protarsomeres 1 and 2 dilated and with seriate adhesive setae underneath disposed on two rows (tarsomeres 1) or one or two rows (tarsomeres 2) and two major sub-apical setae (four in females) on the last abdominal sternum (Maddison 1993: 155). In several species, the elytral microsculpture is also sexually different, the meshes being less impressed, more restricted or even absent in males.

**List of northeastern species of *Bembidion***

- *B. aenulum* Hayward, 1901
- *B. affine* Say, 1823
- *B. americanum* Dejean, 1831
- *B. antiquum* Dejean, 1831
- *B. basicorne* Notman, 1920
- *B. bellorum* Maddison, 2008
- *B. bruxellense* Wesmael, 1845
- *B. canadiannum* Casey, 1924
- *B. carinula* Chaudoir, 1868
- *B. carolinense* Casey, 1924
- *B. castor* Lindroth, 1963
- *B. chalceum* Dejean, 1831
- *B. cheyennense* Casey, 1918
  - *bifossulatum* sensu Lindroth [in part]
- *B. concord* (Kirby, 1837)
- *B. concrctum* Casey, 1918
- *B. confusum* Hayward, 1897
- *B. constrictum* (LeConte, 1847)
- *B. contractum* Say, 1823
- *B. cordatum* (LeConte, 1847)
- *B. cocxendex* Say, 1823
- *B. femoratum* Sturm, 1825
- *B. fortestriatum* (Motschulsky, 1845)
- *B. frontale* (LeConte, 1847)
- *B. fugax* (LeConte, 1848)
- *B. graciliforme* Hayward, 1897
- *B. grapii* Gyllenhal, 1827
- *B. hastii* C.R. Sahlberg, 1827
- *B. honestum* Say, 1823
- *B. immaturum* Lindroth, 1954
- *B. impotens* Casey, 1918
- *B. inaequal* Say, 1823
- *B. incrematum* LeConte, 1860
- *B. intermedium* (Kirby, 1837)
- *B. intervenor* Lindroth, 1963
- *B. iridipenne* Bousquet & Webster, 2006
- *B. lacunarium* (Zimmermann, 1869)
- *B. lampros* (Herbst, 1784)
- *B. levettei* Casey, 1918
- *B. levigatum* Say, 1823
- *B. louisella* Maddison, 2008
- *B. minus* Hayward, 1897
- *B. morulum* LeConte, 1863
- *B. muscicola* Hayward, 1897
- *B. mutatum* Gemminger & Harold, 1868
- *B. nigripes* (Kirby, 1837)
- *B. nigriestis* Bousquet, 2006
  - *pratitola* sensu Lindroth [in part]
- *B. nigrum* Say, 1823
- *B. nitidum* (Kirby, 1837)
- *B. obertherii* Hayward, 1901
- *B. obscurellum* (Motschulsky, 1845)
- *B. obtusum* Audinet-Serville, 1821
- *B. occilator* Notman, 1919
- *B. patruel* Dejean, 1831
- *B. petrosum petrosum* Gebler, 1833
- *B. planatum* (LeConte, 1847)
- *B. planum* (Haldeman, 1843)
- *B. postreemen* Say, 1830
- *B. pratitola* Lindroth, 1963
- *B. properans* (Stephens, 1827)
- *B. pseudocautum* Lindroth, 1963
- *B. punctatostritatum* Say, 1823
- *B. quadratus* Notman, 1919
- *B. quadratusculatum oppositum* Say, 1823
- *B. rapidum* (LeConte, 1847)
- *B. robusticolle* Hayward, 1897
- *B. rolandi* Fall, 1922
- *B. rothfelsi* Maddison, 2008
- *B. rufotinctum* Chaudoir, 1868
Key to northeastern species of *Bembidion*

1. Frontal furrows markedly deep, slightly but regularly convergent from level of posterior edges of eyes to anterior edge of clypeus (Figs 117, 118) .................................................. 2
   – Frontal furrows shallow to moderately deep, more or less parallel at least on frons. ............................................................................................................................................. 6

2 [1]. Anterior transverse impression of pronotum with few but rather large, elongate punctures. Mentum without transverse carina. Body length less than 2.7 mm [2.2-2.6 mm; frontal furrows prolonged around posterior edges of eyes] ......................................................... B. (*Trepanedoris*) *frontale* (LeConte)  
   [BC: endemic; BZ: temperate/boreal; HR: wet places: marshes, swamps, streams, woody areas along lakes and rivers; SA: [spring breeder]; OC: LF++++; RA++++; 
   DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1963: 402); Larochelle and Larivière (2003: 108) – bionomics]
   – Anterior transverse impression of pronotum without distinct punctures. Mentum with sharp transverse carina. Body length more than 2.8 mm ........................................ 3

3 [2]. Frontal furrows prolonged around posterior edges of eyes (Fig. 117) [3.4-3.7 mm; elytral microsculpture evident (♀) or suggested (♂) on apical fourth of elytra only] ......................................................... B. (*Trepanedoris*) *canadianum* Casey  
   [BC: endemic; BZ: boreal; HR: [flooded/open places]: edges of streams, rivers; roadside ditches; SA: [spring breeder]; OC: LF++; RA++; DP: wings (±); flight (–); GD: QC; References: Lindroth (1963: 399-400); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 98) – bionomics]
   – Frontal furrows not prolonged around posterior edges of eyes (Fig. 118) .............. 4

4 [3]. Elytra with isodiametric microsculpture, meshes well impressed over entire surface (♀) or on apical half only (♂). Lateral margin of pronotum with well-impressed microsculpture meshes [3.2-4.2 mm; Plate 24] .................. B. (*Trepanedoris*) *concretum* Casey  
   [BC: endemic; BZ: temperate/boreal; HR: wet places: swamps, marshes, bogs, beaver houses, occasionally roadside ditches, usually on muddy or clayish soils rich in organic matter; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 76-77, as *B. anguliferum*, in part); Lindroth (1963: 402); Larochelle and Larivière (2003: 101) – bionomics]
1 Elytra without evident microsculpture meshes. Lateral margin of pronotum without or with poorly impressed, spotty microsculpture meshes .......................... 5

5 [4]. Eye slightly more protruding (WH/WP = 0.89-0.92; mean = 0.91; n = 10 specimens determined by Lindroth¹). Antennomeres 2 and 3 rather pale, only lightly infuscate over apical half in most specimens [3.2-3.7 mm] ............................................. 5

B. (Trepanedoris) pseudocautum Lindroth
[BC: endemic; BZ: temperate; HR: wet places: swamps, marshes, edges of brooks;
SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1963: 397-399); Larochelle and Larivière (2003: 131) – bionomics]

Eye slightly less protruding (WH/WP = 0.83-0.88; mean = 0.86; n = 10 specimens identified by Lindroth). Antennomeres 2 and 3 usually darker, rather deeply infuscate over apical half on upper surface in most specimens, sometimes more or less infuscate over most surface [2.9-3.6 mm] ............ B. (Trepanedoris) fortesstriatum (Motschulsky)
[BC: endemic; BZ: temperate/boreal; HR: wet places: swamps, marshes, ponds, woody edges of rivers; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 76-77, as B. anguliferum, in part); Lindroth (1963: 396-397); Larochelle and Larivière (2003: 107-108) – bionomics]

6 [1]. Elytral intervals each with row of setae .......................................................... 7

– Elytral intervals without rows of setae, at most interval 3 with two or three setae..... 8

7 [6]. Body length more than 5 mm. Side of pronotum without distinct sinuation in front of posterior angle [5.5-7.2 mm] ..................................................... 7

B. (Hydrium) levigatum Say
[BC: endemic; BZ: temperate; HR: flooded places: near water bodies such as river banks, usually on coarse sand and silt gravel; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (++); GD: NH; References: Lindroth (1963: 254); Larochelle and Larivière (2003: 118) – bionomics]

¹ One specimen identified by Lindroth as B. pseudocautum in the Canadian National Collection has a WH/WP of 0.87 and could belong to B. fortesstriatum.
– Body length less than 4.5 mm. Side of pronotum with long sinuation in front of posterior angle [3.5-4.2 mm; legs yellow]......B. (Hydriomirus) semistriatum (Haldeman)

[BC: endemic; BZ: temperate; HR: flooded places: river edges, among gravel; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (-); GD: ME NB NH NS QC VT;
References: Lindroth (1963: 306); Larochelle and Larivière (2003: 139) – bionomics]

8 [6]. Discal setae in elytral interval 3 each surrounded by distinct, dull, more densely microsculptured patch (Fig. 119) ................................................................. 9
– Elytral interval 3 without or with uniform microsculpture, without more densely microsculptured patches .................................................................................. 12

9 [8]. Elytron with mirror behind middle on intervals 6 and 7 (Fig. 119). Elytral stria 4 with deep sinuation in basal half in most specimens (Fig. 119) ................................ 10
– Elytron without mirror on intervals 6 and 7, lustre more or less uniform. Elytral stria 4 without or with shallow sinuation in basal half ............................................ 11

10 [9]. Pronotum wide (WP/LP = 1.32-1.40; mean = 1.37; n = 20), side with midlateral seta. Tibia entirely dark. Mirror on intervals 6 and 7 connected to mirror on medial intervals (Fig. 120) [5.4-6.3 mm]......................................................... B. (Bracteon) levettei Casey

[BC: endemic; BZ: temperate; HR: flooded places: river and lake shores, usually on sandy, bare soils, also along pond in sand pits; SA: [spring breeder]; OC: LF+++;
RA+++; DP: wings (+); flight (++); GD: LB ME NF NH NS QC VT; Ref-
Pronotum narrow (WP/LP = 1.14-1.22; mean = 1.18; n = 20), side without midlateral seta. Tibia in part more or less pale. Mirror on intervals 6 and 7 more or less isolated from mirror on medial intervals (Fig. 121) [4.6-5.6 mm] ................................................................. B. (Bracteon) inaequale Say

[BC: endemic; BZ: temperate; HR: flooded places: river banks, on clay or sandy-clayed, bare soils; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (++); GD: ME NB NH NS PE QC VT; References: Lindroth (1963: 233-234); Maddison (1993: 180-182); Larochelle and Larivière (2003: 98) – bionomics]

11 [9]. Pronotum (Fig. 122) with laterobasal carina more or less developed, not reaching basal edge. Mentum tooth huge, convex, reaching (or almost so) level of lobe apex (Fig. 124). Body length 6.0 mm or more [6.0-7.5 mm; Plate 21] ................................................................. B. (Bracteon) punctatosriatum Say

[BC: endemic; BZ: temperate; HR: flooded places: river banks, occasionally lake margins, usually on sandy-clayed soils; SA: [spring breeder]; OC: LF++++/+++++; RA++; DP: wings (+); flight (++); GD: ME NB NH NS QC VT; References: Lindroth (1963: 236-237); Maddison (1993: 180-182); Larochelle and Larivière (2003: 111) – bionomics]

12 [8]. Elytron without defined spots, at most with apex somewhat diffusely paler (more so in many specimens of B. confusum, with strong humeral extension) ......................13 

– Elytron with distinct spot(s), even with mosaic pattern in many taxa [humeral extension absent] .................................................................54

13 [12]. Abdominal sterna 3-5 with several short accessory setae beside ambulatory ones (Fig. 126) .................................................................14

– Abdominal sterna 3-5 without accessory setae ........................................17

14 [13]. Elytral microsculpture irregularly isodiametric to slightly transverse. Pronotum with laterobasal carina well defined [4.1-5.4 mm] ................................................................. B. (Blepharoplatus) hastii C.R. Sahlberg

[BC: holarctic; BZ: arctic; HR: flooded places: mostly along rivers and lakes on bare, gravelly soils; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: LB QC; References: Lindroth (1963: 297-298); Larochelle and Larivière (2003: 111) – bionomics]

1 Bembidion rufotinctum is treated under both couplet
Figs 120-121. Median area of elytra. 120: Bembidion levettei; 121: Bembidion inaequale.
Figs 122-123. Pronotum. 122: Bembidion punctatostriatum; 123: Bembidion carinula.

Elytral microsculpture striate. Pronotum with laterobasal carina indistinct or poorly defined ............................................................. 15

15 [14]. Side of pronotum with deep sinuation in front of posterior angle (Fig. 128). Micro-lines of elytral microsculpture very fine but distinct at high magnification in most specimens [5.1-6.0 mm] ............................................. B. (Trichoplatus) roandi Fall
Side of pronotum without or with shallow sinuation in front of posterior angle (Fig. 129). Microlines of elytral microsculpture indistinct even at high magnification ................................................................. 16

16 [15]. Elytral stria 6 not or barely impressed in basal half, punctures (if distinct) quite distinctly smaller than those of stria 5. Pronotum with distinct microsculpture meshes near median sulcus [4.5-5.6 mm; pronotum proportionally narrower on average] ....
.............................................................................................................. B. (Trichoplataphysus) planum (Haldeman)

[BC: endemic; BZ: temperate; HR: flooded places: river banks, among gravel and small pebbles; SA: [spring breeder]; OC: LF+++; RA++++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1963: 298-299); Landry (1976) – behaviour; Larochelle and Larivière (2003: 129) – bionomics]

Elytral stria 6 impressed in basal half, punctures as large (or almost so) as those of stria 5. Pronotum without or with poorly impressed microsculpture meshes near median sulcus [5.0-6.0 mm; pronotum proportionally wider on average] ................
.............................................................................................................. B. (Trichoplataphysus) fugax (LeConte)
17 [13]. Frontal furrows extended on clypeus (Fig. 130) [body length 3.5 mm or less].............. 18
   – Frontal furrows not extended on clypeus (as in Fig. 131) .............................................. 21

18 [17]. Elytra without microsculpture meshes [2.8-3.2 mm]....................................................... B. (Semicampa) morulum LeConte
   [BC: endemic; BZ: boreal/arctic; HR: [flooded places]: edges of brooks; SA: ?; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1955b: 73-75, as B. browni); Lindroth (1963: 389); Larochelle and Larivière (2003: 120) – bionomics]
   – Elytra with evident microsculpture meshes ......................................................................... 19

19 [18]. Pronotum with impressed microsculpture meshes even near median sulcus [2.6-3.2 mm; margins of pronotum and elytra reddish-brown, disc of pronotum slightly darker in most specimens; elytra more or less iridescent, microsculpture striate]..............
   .................................................................................................................. B. (Semicampa) muscicola Hayward
   [BC: endemic; BZ: boreal/arctic; HR: wet places: marshes, fens, swamps, ponds, brooks,
   usually on muddy or clayish soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (- +); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1955: 387-388); Larochelle and Larivière (2003: 120-121) – bionomics]

20 [19]. Pronotum and elytra reddish-black to black (intervals 1 slightly paler), not really paler
   than head dorsally. Head, compared to pronotum, wider on average (WH/WP = 0.80-0.86; mean = 0.82; n = 20). Pronotum shorter on average (LP/WP = 0.69-0.75; mean = 0.72; n = 20). Body smaller on average (standard body length = 2.27-2.72 mm; mean = 2.53 mm; n = 20) [2.5-3.0 mm] .......................
   B. (Semicampa) nigrivestis Bousquet
   [BC: endemic; BZ: boreal/arctic; HR: ?: SA: [spring breeder]; OC: LF++; RA++; DP: wings (- +); flight (-); GD: NB NH QC; References: Bousquet and Webster (2006: 24-28)]
Pronotum and elytra reddish-brown, quite distinctly paler than head dorsally. Head, compared to pronotum, narrower on average (WH/WP = 0.72-0.82; mean = 0.78; n = 20). Pronotum longer on average (LP/WP = 0.72-0.79; mean = 0.76; n = 20). Body longer on average (standard body length = 2.58-3.18 mm; mean = 2.94 mm; n = 20).

21 [17]. Body more or less depigmented, reddish-brown dorsally. Eye small, not protruding (Fig. 127). Apical maxillary palpomere longer, about one-third length of penultimate palpomere [4.6-5.3 mm; mandible elongate; elytral interval 3 with one to three discal setae not adjoining stria 3; metasternal process completely margined; Plate 24] ...................................................

22 [21]. Elytral striae impunctate or finely punctate .........................................................

Elytral striae moderately to markedly punctate ....................................................

23 [22]. Elytra with isodiametric microsculpture. Body length 6.2 mm or more [6.2-8.3 mm] ......................................................

24 [23]. Lateral edge of elytron prolonged medial to humerus, humeral extension long, reaching level of stria 4 (Fig. 132). Antennomere 1 reddish-black to black (except at both ends in some specimens). Pronotum convex, side without sinuation in basal half [4.2-4.5 mm; elytra distinctly paler than forebody] ..................
neath. Pronotum rather flat, side with sinuation in basal half in most specimens [five species often difficult to separate]...........................................................................................................25

25 [24]. Elytra iridescent, microsculpture striate, microlines not or barely distinct..........26

– Elytra not iridescent, microsculpture transverse (though markedly so in some speci-
mens), meshes distinct .....................................................................................................27

26 [25]. Forebody with faint greenish, rarely bronzy, lustre. Elytra, except medial intervals in
some specimens, reddish-yellow to reddish-brown, more or less distinctly paler than
pronotum in the vast majority of specimens [4.0-4.8 mm; side of pronotum without
or with shallow sinuation in basal half in most specimens, lateral depression rather
wide].........................................................................................................................................B. (Plataphus) simplex Hayward
[BC: endemic; BZ: temperate; HR: flooded places: banks of rivers and brooks, usually
on gravelly bare soils; SA: [spring breeder]; OC: LF+++; RA?: DP: wings (+);
flight (-); GD: ME NH QC VT; References: Lindroth (1963: 268-269); Larochelle and
Larivière (2003: 139) – bionomics; Note: I believe this species is closely related to B.
basicorne and place it in the subgenus Plataphus]

– Forebody without lustre. Elytra more or less black or reddish-black at least over
disc in anterior half, not or barely paler than pronotum [3.8-4.1 mm; side of pro-
notum with deeper sinuation in basal half in most specimens, lateral depression
rather narrow].......................................................................................................................B. (Plataphus) basicorne Notman
[BC: endemic; BZ: temperate; HR: flooded places: margins of cold, swift forest
streams, usually on gravelly bare soils; SA: [spring breeder]; OC: LF+++; RA?: DP:
wings (+); flight (-); GD: ME NH NS QC VT; References: Lindroth (1963: 297);
Larochelle and Larivière (2003: 96) – bionomics]

27 [25]. Body length less than 4.5 mm [3.4-4.4 mm; antennomere 1 more or less uniformly
reddish-brown to reddish-black dorsally in most specimens, only slightly paler than
antennomere 2; elytra more or less uniformly reddish-brown; elytral microsculpture
markedly transverse; metasternum without setae behind mesocoxae] .............................
..............................................................................................................................B. (Plataphus) carolinense Casey
[BC: endemic; BZ: temperate/boreal; HR: flooded places: edges of cold, swift riv-
ers and brooks, usually on gravelly bare soils; SA: [spring breeder]; OC: LF+++;

Figs 132-133. Left humeral region. 132: Bembidion occultator; 133: Bembidion simplex.
RA++++; DP: wings (+); flight (++); GD: ME NB NF NH NS PM QC VT; References: Lindroth (1955b: 54-55, as B. flebile carolinense); Lindroth (1963: 296-297); Larochelle and Larivière (2003: 98) – bionomics

Body length 4.5 mm or more in the vast majority of specimens; if less than 4.5 mm (e.g., some specimens of B. rusticum rusticum), elytra paler, quite distinctly reddish-yellow ..................................................................................................................................

28 [27]. Body length 5.0 mm or more in the vast majority of specimens. Metasternum without setae behind mesocoxae. Elytral microsculpture rather slightly transverse [4.8-5.5 mm].................................................. B. (Plataphus) sulcipenne prasinoides Lindroth

[BC: endemic; BZ: [temperate]/boreal; HR: flooded places: edges of cold, swift rivers and brooks, usually on gravelly bare soils; SA: [spring breeder]; OC: LF+++; RA++++; DP: wings (+); flight (++); GD: LB NB NF NS QC; References: Lindroth (1955b: 52-53, as B. lenense); Lindroth (1963: 293-294, as B. lenense prasinoides); Larochelle and Larivière (2003: 141-142) – bionomics]

29 [22]. Elytron with lateral margin angular at level of humerus and extended mediad for appreciable distance (Fig. 134)..................................................................................................................30

– Elytron with lateral margin rounded at level of humerus, not or extended only for short distance (Fig. 135)..........................................................................................................................40

30 [29]. Pronotum and elytra without evident microsculpture meshes ........................................31

– Pronotum, at least over lateral areas, and elytra with evident microsculpture meshes .................................................................................................................................34

31 [30]. Side of pronotum without or with shallow sinuation in front of posterior angle (Fig. 136). Pronotum without marginal setae near anterior angle ........................................32
  – Side of pronotum with short but markedly deep sinuation in front of posterior angle (Fig. 137). Pronotum with small, marginal setae near anterior angle ..............33

32 [31]. Body length greater than 4 mm. Upper surface black with brassy lustre. Pronotum with anterior angle projecting anteriad; laterobasal carina well developed, long. Elytra without microsculpture [4.1-5.3 mm; body shape resembling a Amara; Plate 21] ............................................................................. B. (Eurytrachelus) nitidum (Kirby)
  [BC: endemic; BZ: temperate/[boreal/alpine]; HR: open places: cultivated and vacant fields, sand pits, gravel pits, roadsides, usually on dry sandy soils; SA: [spring breeder];
  OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH PE QC VT; References: Lindroth (1963: 251-252); Larochelle and Larivière (2003: 123) – bionomics]
  – Body length less than 3.8 mm. Upper surface brown or reddish-brown, without lustre. Pronotum (Fig. 136) with anterior angle not projecting anteriad; laterobasal carina poorly developed, indistinct or very short. Elytra with markedly striate microsculpture (microlines indistinct or almost so) [2.8-3.5 mm; Plate 21] ................
  ......................................................................................
  ....................................................................................................
  ....................................................................................................
  ....................................................................................................

33 [31]. Frontal furrows slightly sinuate between clypeofrontal suture and level of anterior supraorbital setae. Elytral stria 7 indistinct or represented in basal half by very fine punctures much smaller than those of stria 6 [3.0-4.4 mm] .................................................................B. (Phyla) obtusum Audinet-Serville
  [BC: exotic (1956); BZ: temperate; HR: open places: vacant fields, cultivated fields, clover and alfalfa fields, roadside ditches, often on clayish soils; SA: spring breeder;
  OC: LF+/+++; RA?; DP: wings (- +); flight (-); GD: PE QC VT; References: Lindroth (1963: 258); Hoebeke et al. (1991) – habitat, wing development, distribution; Larochelle and Larivière (2003: 125-126) – bionomics]

Figs 136-137. Pronotum. 136: Bembidion obtusum; 137: Bembidion properans. ld – lateral depression
– Frontal furrows straight between elypeofrontal suture and level of anterior supra-orbital setae. Elytral stria 7 distinct in basal half, represented by punctures as large or almost so as those of stria 6 [3.5-4.2 mm; Plate 22]........ B. (Lejus) properans (Stephens)  
[BC: exotic (1947); BZ: temperate; HR: open places: cultivated and vacant fields, sand pits, roadsides; SA: spring breeder; OC: LF++/+++; RA:; DP: wings (+); GD: ME NB NS PE QC; References: Lindroth (1963: 256-258); Larochelle and Larivière (2003: 131) – bionomics]

34 [30]. Elytron with only first stria well impressed near apex [4.8-7.2 mm; body shape resembling a small Amara; antennomeres 1-3 or 1-4 reddish at least underneath]........ B. (Eurytrachelus) interventor Lindroth  
[BC: endemic; BZ: temperate/boreal; HR: flooded places: along large rivers, usually on clayish sandy soils with sparse vegetation; SA: [spring breeder]; OC: LF+; RA+: DP: wings (+); flight (-); GD: QC; References: Lindroth (1963: 252-254); Larochelle and Larivière (2003: 114) – bionomics]

35 [34]. Elytral interval 3 with discal setigerous punctures clearly foveolate. Gena with several setae; submentum with more than eight long setae. Metasternal process with complete, transverse line at base [pronotum markedly cordiform, without laterobasal carina].................................B. (Ochthéromus) americanum Dejean  
[BC: endemic; BZ: temperate; HR: flooded places: river banks, among gravel or sandy silt soils; SA: [spring breeder]; OC: LF++/+++; RA+++; DP: wings (+); flight (++); GD: ME NB NH QC VT; References: Lindroth (1963: 249-250); Larochelle and Larivière (2003: 94) – bionomics]

36 [38]. Antennomere 1 more or less reddish-brown dorsally, paler than apex of antennomere 2. Eye not protruding posteriorly. Pronotum less constricted basally on average (WP_p/WP = 0.77-0.81; n = 20), side with very short sinuation in basal half [5.0-6.0 mm].................................B. (Ochthéromus) cheyennense Casey  
[BC: endemic; BZ: temperate; HR: flooded places: river banks, among gravel or sandy silt soils; SA: [spring breeder]; OC: LF++/+++; RA+++; DP: wings (+); flight (++); GD: NH NS QC VT; References: Lindroth (1963: 250); Larochelle and Larivière (2003: 96) – bionomics]

37 [35]. Pronotum narrow (WP/LP = 1.22; n = 2), without laterobasal carina (Fig. 138). Body length less than 4.5 mm [4.0-4.3 mm]........... B. (Odonthium) aenulum Hayward  
[BC: endemic; BZ: temperate; HR: flooded places: river banks, on sandy or sandy-clayed soils; SA: [spring breeder]; OC: LF+; RA+++; DP: wings (+); flight (++); GD: NH; References: Lindroth (1963: 246); Choate and Miliotis (1979) – habitat; Larochelle and Larivière (2003: 93) – bionomics]
Pronotum wider (WP/LP = 1.30-1.48; n = 20) with laterobasal carina (Fig. 139), though rudimentary in some specimens. Body length 4.5 mm or more.  

38 [37]. Femur pale, reddish-yellow to reddish-brown. Elytron with strong bicolour metallic lustre: interval 1, striae, and lateral margin bright green, remaining intervals reddish [4.5-6.7 mm; Plate 22] .................... B. (Odontium) confusum Hayward  
  [BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, on bare sandy-clayed soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (++); GD: ME NB NH QC VT; References: Lindroth (1963: 245); Kaufmann (1986) – biology; Larochelle and Larivière (2003: 102) – bionomics]  

39 [38]. Body less robust (Fig. 140), proportionally narrower (WE/LE = 0.66-0.68; n = 10). Pronotum usually with weak laterobasal carina, even rudimentary in some specimens. Humeral extension shorter, reaching about level of stria 5 [4.5-6.7 mm]........ 
  [BC: endemic; BZ: temperate; HR: flooded places: river banks; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (++); GD: not yet recorded from the northeast; previous records were based on misidentified specimens; References: Lindroth (1963: 243-244); Larochelle and Larivière (2003: 104) – bionomics]  

40 [29]. First abdominal sternum with isodiametric microsculpture meshes laterally. Pronotum without laterobasal carina. Body length more than 4.6 mm [metasternal process unmarginated (as in Fig. 142)].
First abdominal sternum without or with transverse microsculpture meshes laterally. Pronotum with laterobasal carina except in two species with body length less than 4.6 mm.

41 [40]. Elytra with diffuse central reddish spot on apical third [4.7-7.3 mm; appendages thick and short; pronotum aeneous, with basal impressions bluish] .......................................................... B. (Pseudoperyphus) rufotinctum Chaudoir [in part]

[BC: endemic; BZ: temperate; HR: flooded places: around dams, rocky gorges, and waterfalls of wooded rivers and large streams, usually in cracks of emergent bedrock; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1963: 249); Davidson (1981) – habitat; Larochelle and Larivière (2003: 135) – bionomics; Maddison (2008: 179)]

– Elytra without diffuse spot on apical third ................................................................. 42

42 [41]. Pronotum with lateral depression markedly narrow, behind middle narrower than diameter of midlateral pore.................................................................................. 43

– Pronotum with lateral depression wider (though very superficial in B. honestum), behind middle at least as wide as diameter of midlateral pore.............................................. 44

43 [42]. Elytral striae 2-7 well engraved at apex. Forebody without distinct bluish reflection [4.8-5.7 mm]........................................................................ B. (Pseudoperyphus) chalcemum Dejean

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river banks, usually among gravel and cobble; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 48-49); Lindroth (1963: 247); Larochelle and Larivière (2003: 99) – bionomics; Maddison (2008: 166-167)]
– Elytral striae 2-7 poorly engraved and more or less erased at apex. Forebody often with bluish reflection [5.7-6.2 mm] .................... B. (*Pseudoperyphus*) *rothfelsi* Maddison

[BC: endemic; BZ: temperate; HR: flooded places: river and creek banks, usually among gravel and cobble; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (++); GD: ME NB NH NS QC VT; References: Maddison (2008: 167, 169-170)]

44 [42]. Disc of pronotum dull, with deeply impressed microsculpture meshes even near median sulcus. Pronotum flat; lateral depression very superficial, indistinct anterior to midlateral seta [5.3-6.2 mm; antennomere 1 reddish, at most slightly infuscate dorsally; femora reddish, in some specimens slightly infuscate at apex] ....................

.......................................................................................... B. (*Pseudoperyphus*) *honestum* Say

[BC: endemic; BZ: temperate; HR: flooded places: large and slowly flowing river banks, usually among gravel; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (++); GD: ME NB NH NS QC VT; References: Lindroth (1963: 248-249); Larochelle and Larivière (2003: 111) – bionomics; Maddison (2008: 179-181)]

– Disc of pronotum relatively shiny, with less impressed microsculpture meshes, at least meshes in part more or less erased near median sulcus. Pronotum relatively convex; lateral depression distinct even anterior to midlateral seta [three species difficult to distinguish on external structures; characters of the median lobe are require for confirmation] .............................................................................................................. 45

45 [44]. Lateral edge of pronotum with indistinct sinuation in front of posterior angle; widest point of pronotum often slightly behind midlateral setae [5.6-6.6 mm; apex of median lobe (in lateral view) straight, not curled up] ....................

.......................................................................................... B. (*Pseudoperyphus*) *antiquum* Dejean

[BC: endemic; BZ: temperate; HR: flooded places: river and creek banks, usually among gravel and cobble; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (++); GD: ME NB NH NS QC VT; References: Maddison (2008: 175-177)]

– Lateral edge of pronotum with distinct sinuation in front of posterior angle; widest point of pronotum usually at or slightly in front of midlateral setae [apex of median lobe (in lateral view) curled up] .............................................................................................................. 46

46 [45]. Body smaller on average, 5.8 mm or less. Femora not or only slightly infuscate over apical half [5.1-5.8 mm] .................... B. (*Pseudoperyphus*) *bellorum* Maddison

[BC: endemic; BZ: temperate; HR: flooded places: river banks, usually among gravel; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (++); GD: ME NH VT; References: Maddison (2008: 170, 174-175)]

– Body larger on average, 5.6 mm or more. Femora clearly infuscate ventrally, at least over apical half [5.6-6.6 mm] .................... B. (*Pseudoperyphus*) *louisella* Maddison

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river banks, usually among gravel and cobble; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (++); GD: ME NB NF NH NS QC VT; References: Maddison (2008: 177-179)]

47 [40]. Metasternal process unmargined (Fig. 142) ........................................................................ 48

– Metasternal process widely margined all around (Fig. 143) ........................................................................ 51
48. Disc of pronotum with microsculpture, though meshes more or less spotty near median sulcus in some specimens. Frons with distinct microsculpture meshes. Humeral groove markedly deep [3.7-4.9 mm; upper surface with aeneous, greenish or bluish lustre though elytra more or less brown in some specimens] .................................. B. \( Hirmoplataphus \) \( salebratum \) (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river banks, on sandy, gravelly or clayish bare soils; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (++); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 55-56); Lindroth (1963: 302); Larochelle and Larivière (2003: 136) – bionomics]

– Disc of pronotum without microsculpture meshes. Frons without microsculpture meshes, except for traces in frontal furrows in some specimens. Humeral groove moderately deep .................................................................

49. Elytra without microsculpture meshes. Abdominal sterna, except last one, without microsculpture meshes laterally [3.3-3.9 mm; pronotum with long laterobasal carina] .................................................................................................................. B. \( Hydriomicrus \) \( quadratulum \) Notman

[BC: endemic; BZ: temperate/boreal; HR: wet places: sphagnum bogs; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (-); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 50); Lindroth (1963: 306-307); Landry (1978) – habitat; Larochelle and Larivière (2003: 132) – bionomics]

– Elytra with microsculpture meshes, at least near apex (except in rare specimens of \( B. nigrum \), without laterobasal carina on the pronotum). Abdominal sterna with transverse microsculpture laterally, though meshes more or less spotty on one or more sterna in some specimens .................................................................

50. Pronotum without laterobasal carina; lateral depression narrow, narrower at middle than diameter of midlateral setigerous puncture. Antennomere 1 (in most specimens also 2) and tibia yellow though with brown overtone in some specimens [3.7-4.4 mm; body, particularly elytra, markedly convex; pronotum proportionally shorter, with rather shallow sinuation along side in basal half; elytral striae more or less impressed toward apex; Plate 22] .................................. B. \( Hirmoplataphus \) \( nigrum \) Say

[BC: endemic; BZ: temperate; HR: flooded places: river banks, among gravel and small pebbles; also along small brooks, steep banks; SA: [spring breeder]; OC: LF++++;
RA+++; **DP**: wings (+); flight (+); **GD**: ME NB NH NS PE QC VT; **References**: Lindroth (1963: 301-302); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 122-123) – biomics

- Pronotum with long, thin laterobasal carina, though relatively flat and more or less distinct in some specimens; lateral depression relatively wide, wider at middle than diameter of midlateral setigerous puncture. Antennomeres 1 and 2 and tibia darker, rather reddish-brown to brownish-black [3.7-4.9 mm; body less convex; pronotum proportionally longer with slightly deeper sinuation along side in most specimens; elytral striae more impressed toward apex].

**B. (Hirmoplatus) concolor** (Kirby)

[**BC**: endemic; **BZ**: temperate/boreal; **HR**: flooded places: river banks, usually on gravelly or sandy wet bare soils, occasionally along lake shores or brooks; **SA**: [spring breeder]; **OC**: LF+++; RA+++; **DP**: wings (+); flight (-); **GD**: NB NF NS QC; **References**: Lindroth (1955b: 56-57, as *B. longulum*); Lindroth (1963: 304); Chiolino (1970) – wing development; Larochelle and Larivière (2003: 110) – biomics]

Palpi at least partly infuscate; antennomere 3, in many specimens also 2, infuscate over apical half .......................................................... 52

- Palpi entirely pale; antennomeres 1-3 entirely pale ............................................. 53

52 [51]. Pronotum with distinct but rather weakly impressed microsculpture meshes over lateral margins; elytral microsculpture striate. Upper surface, except head, without metallic lustre [4.0-4.8 mm; head brownish-black to black with greenish lustre, pronotum (at least margins) and elytra reddish-brown to reddish-black, disc of pronotum black in some specimens].

**B. (Peryphanes) grapii** Gyllenhal

[**BC**: holarctic; **BZ**: boreal/arctic/alpine; **HR**: open places: alpine meadows, roadsides, gravel pits, vacant lots; **SA**: [spring breeder]; **OC**: LF+++; RA+++; **DP**: wings (+); flight (-); **GD**: LB ME NB NF NH NS PM QC VT; **References**: Lindroth (1955b: 57); Lindroth (1963: 319-321, under the spelling *B. grapei*); Chiolino (1970) – wing development; Larochelle and Larivière (2003: 110) – biomics]

- Pronotum without distinct microsculpture meshes; elytral microsculpture transverse (♀) or absent, except at apex (♂). Upper surface with greenish or bluish metallic lustre [4.0-6.1 mm].

**B. (Peryphanes) yukonum** Fall

[**BC**: holarctic; **BZ**: boreal/arctic; **HR**: flooded places: river banks, pool margins, wastelands; **SA**: ?; **OC**: LF+; RA?; **DP**: wings (+); flight (-); **GD**: QC; **References**: Lindroth (1963: 321); Larochelle et Larivière (2003: 147) – biomics]

53 [51]. Pronotum with laterobasal carina curved posteriorly, reaching lateral bead before level of posterior setigerous puncture (Fig. 144). Punctures of elytral stria 7 much finer than those of stria 6 [4.7-6.0 mm; Plate 22].

**B. (Peryphanes) lacunarium** (Zimmermann)

[**BC**: endemic; **BZ**: temperate; **HR**: flooded places: edges of cold, swift rivers and streams, usually on gravelly soils or under stones; **SA**: [spring breeder]; **OC**: LF+++; RA+++; **DP**: wings (+); flight (-); **GD**: ME NB NH QC VT; **References**: Lindroth (1963: 325); Larochelle et Larivière (2003: 116) – biomics]

- Pronotum with laterobasal carina straight posteriorly, not reaching lateral bead but usually attaining level of posterior setigerous puncture (Fig. 145). Punctures of elytral stria 7 of same size or only slightly finer than those of stria 6 [5.2-6.1 mm].

.................................................................................................................. **B. (Peryphanes) stephensii** Crotch
Posterior edge of pronotum with short but deep sinuation near posterior angle (Fig. 146). Lateral margin of elytron extended along base well beyond humerus. Base of pronotum between basal impressions with transverse series of small but deep and well-defined punctures [elytra with spots at least near humeri].

Posterior edge of pronotum straight or at most with very shallow sinuation near posterior angle (Fig. 147). Lateral margin of elytron not extended along base beyond humerus. Base of pronotum between basal impressions without punctures or with random punctures.

Elytron with two spots. Elytra without microsculpture [2.8-3.7 mm; Plate 23].

**B. (Bembidion) quadrimaculatum oppositum** Say

**References:** Lindroth (1955b: 57-58); Lindroth (1963: 323); Larochelle and Larivière (2003: 141) – bionomics

**Figures:**

144-145. Posterolateral region of pronotum. 144: *Bembidion lacunarium*; 145: *Bembidion stephensii*.

146-147. Pronotum. 146: *Bembidion quadrimaculatum oppositum*; 147: *Bembidion incrematum*.
flight (+); GD: ME NB NF NH NS PE VT; References: Lindroth (1955b: 72-73); Lindroth (1963: 383-385); Larochelle and Larivière (2003: 132-133) – bionomics

– Elytron with one spot (near humerus). Elytra with evident, more or less isodiametric microsculpture [2.7-3.5 mm] ...........

B. (*Bembidion*) *mutatum* Gemminger & Harold [BC: endemic; BZ: temperate/boreal; HR: open places: any kind of fields, roadsides, gravel and sand pits, usually on more or less sandy soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 73); Lindroth (1963: 386-387); Larochelle and Larivière (2003: 121) – bionomics]

56 [54]. Elytron with anterior discal setigerous puncture located in, or touching, stria 3 ...

– Elytron with anterior discal setigerous puncture located in interval 3, though in many specimens closer to stria 3 than stria 2 .................................................................

57 [56]. Metasternal process unmarginated (as in Fig. 142). Elytra with diffuse central reddish spot on apical third [4.7-7.3 mm] .... B. (*Pseudoperyphus*) *rufotinctum* Chaudoir [in part] [BC: endemic; BZ: temperate; HR: flooded places: around dams, rocky gorges, and waterfalls of wooded rivers and large streams, usually on wet, rocky soils; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1963: 249); Davidson (1981) – habitat; Larochelle and Larivière (2003: 135) – bionomics; Maddison (2008: 179)]

– Metasternal process entirely margined. Elytra with two or more spots ................

58 [57]. Head with rather coarse punctures medially near posterior edges of eyes [4.1-5.3 mm; pronotum narrow, without well-defined laterosabral carina; pronotum without microsculpture, elytra without or with poorly impressed transverse meshes].....

B. (*Ocydromus*) *scopulinum* (Kirby) [BC: holarctic; BZ: temperate/arctic; HR: flooded places: margins of rivers, lakes, brooks, ponds, usually on clayish or gravelly soils; occasionally in cultivated fields or gravel pits; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PM QC VT; References: Lindroth (1955b: 58-59); Lindroth (1963: 342-343); Larochelle and Larivière (2003: 137) – bionomics]

– Head without coarse punctures medially near posterior edges of eyes .............

59 [58]. Lateral lobe of mentum with strong toothlike process (Fig. 148). Elytra without pale spots in basal half ...........................................................

– Lateral lobe of mentum without or with very small toothlike process (Fig. 149). Elytra with pale spots also in basal half ...........................................

60 [59]. Pronotum markedly convex, somewhat suddenly depressed toward base; side markedly rounded (WP/WP b = 1.41-1.48; mean = 1.45; n = 10). Disc of pronotum without microsculpture; elytra with striate microsculpture. Elytra with strong bluish metallic lustre in almost all specimens seen [6.5-7.2 mm; Plate 23]........

B. (*Asiopyris*) *postremum* Say [BC: endemic; BZ: temperate; HR: flooded places: river banks, usually on sandy or silt soils; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NH QC VT; References: Lindroth (1963: 330); Larochelle and Larivière (2003: 130) – bionomics]
Illustrated Identification Guide to Adults and Larvae of Northeastern North American Ground Beetles

Pronotum less convex, not quite depressed toward base; side moderately rounded (WP/WP₀ = 1.26–1.38; mean = 1.33; n = 10). Disc of pronotum with microsculpture, though meshes poorly impressed and distinct only at certain light angles in most specimens; elytral microsculpture transverse or striate (but still microlines more distinct than in B. postremum). Elytra without metallic lustre in almost all specimens seen [5.2-7.3 mm] .............................................. B. (Asiopyrhus) sordidum (Kirby)

[B]: endemic; [BZ]: temperate/boreal/arctic; [HR]: flooded places: banks of large rivers, usually on clayish soils; [SA]: ?; [OC]: LF+++; RA++; [DP]: wings (+); flight (+); [GD]: LB QC; References: Lindroth (1963: 328-329); Larochelle and Larivière (2003: 140)

– bionomics; Note: this taxon is highly variable and it is possible that more than one species are involved in the northeast]

61 [59]. Pronotum without or with poorly developed laterobasal carina. Body length more than 6.0 mm [6.1-7.9 mm; side of pronotum not or barely sinuate in basal half; elytral microsculpture transverse].................................................. B. (Peryphus) transversale Dejean

[B]: endemic; [BZ]: temperate/boreal; [HR]: flooded places: river and lake banks, sea beaches, usually in gravel or coarse sand; [SA]: [spring breeder]; [OC]: LF++++; RA++++; [DP]: wings (+); flight (+); [GD]: LB NB NF NS QC; References: Lindroth (1955b: 59-60); Lindroth (1963: 341-342); Larochelle and Larivière (2003: 143)

– Pronotum with well-developed laterobasal carina. Body length less than 6.0 mm in many specimens ....................................................................................................................62

62 [61]. Disc of pronotum with transverse microsculpture [4.0-5.2 mm; antennomere 3 infuscate at apex; elytral microsculpture striate]........... B. (Peryphus) bruxellense Wasmal

[B]: exotic (1907); [BZ]: temperate/boreal; [HR]: open places: gardens, roadside ditches, vacant fields, sand and gravel pits, usually on sandy or gravelly soils; occasionally borders of marshes and temporary pools, also in beaver houses; [SA]: [spring breeder]; [OC]: LF++++; RA+++; [DP]: wings (+); flight (+); [GD]: ME NB NF NS PE PM QC; References: Lindroth (1955b: 61, as B. rupestre); Lindroth (1963: 332); Larochelle and Larivière (2003: 97) – bionomics]

– Disc of pronotum without microsculpture ........................................................................63
Pale elytral spots more or less connected along lateral margin. Antennomeres 1-4 not or barely infuscate apically.

Pale elytral spots isolated along lateral margin, though narrowly so in some specimens. Antennomere 4, often also antennomeres 2 and/or 3, quite distinctly infuscate over apical half, except in some specimens of *B. rupicola*.

Body length more than 5.3 mm. Elytra with slightly transverse microsculpture [5.5-7.2 mm].

Body length less than 5.3 mm. Elytra with isodiametric microsculpture [3.9-5.1 mm].

Lateral margin of pronotum without microsculpture. Elytra without (♂) or with moderately transverse (♀) microsculpture [4.1-5.5 mm].

Penultimate labial and maxillary palpomeres dark, reddish-black to brownish-black; antennomeres 2 and 3 quite clearly infuscate on apical half. Punctures along elytral stria 7 fine, rather distinctly smaller than those along stria 6. Body length 5.0 mm or less [4.3-5.0 mm].

Penultimate labial and maxillary palpomeres dark, reddish-black to brownish-black; antennomeres 2 and 3 quite clearly infuscate on apical half. Punctures along elytral stria 7 fine, rather distinctly smaller than those along stria 6. Body length 5.0 mm or less [4.3-5.0 mm].

Penultimate labial and maxillary palpomeres (particularly labial one) pale in most specimens; antennomeres 2, often also 3, not or barely infuscate at apex. Punctures along elytral stria 7 coarser, at most only slightly smaller than those along stria 6. Body length more than 5.0 mm in most specimens.

Elytral microsculpture striate, more densely so in male than in female [4.9-6.1 mm; elytra more or less oviform].
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

[BC: exotic (< 1823); BZ: temperate/boreal; HR: open places: vacant and cultivated fields, meadows, gardens, gravel and sand pits, often on wet clayish soils; occasionally along river and lake banks; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 62, as B. ustulatum); Lindroth (1963: 331-332); Larochelle and Larivière (2003: 142) – bionomics]

Elytral microsculpture transverse, more so in male than in female [4.7-6.7 mm; elytra parallel-sided; Plate 23]. ........................................... B. (Peryphus) petrosum petrosum Gebler

[BC: holartic; BZ: temperate/boreal; HR: flooded places: river and lake banks, seashore, usually on sandy soils; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 60-61); Lindroth (1963: 332-335); Larochelle and Larivière (2003: 128) – bionomics]

68 [56]. Frontal furrows extended on clypeus (Figs 150-152) ....................................................... 69

– Frontal furrows not extended on clypeus (Fig. 153) .................................................................... 77

69 [68]. Body length 4.0 mm or more. Mentum tooth huge, reaching level of lateral lobe apex, markedly convex (Fig. 154) [4.0-4.5 mm; antennomeres 2 and 3 of same colouration as antennomere 1 (versus B. versutum); frons and pronotum with isodiametric or slightly transverse (middle of pronotum) microsculpture; elytra with striate microsculpture] ....................................................... B. (Notaphus) oberthueri Hayward

Figs 154-155. Mentum and submentum. 154: *Bembidion oberthueri*; 155: *Bembidion transparens.*
wings (–); GD: ME NB NH NS QC VT; References: Lindroth (1963: 390-391); Larochelle and Larivière (2003: 138) – bionomics]

– Elytron with mosaic pattern. Elytral microsculpture absent or isodiametric....73

73 [72]. Clypeus, frons, pronotum (except base) and elytra without microsculpture [2.4-3.2 mm]........................................................................................................................................... B. (Furcacampa) impotens Casey

[BC: endemic; BZ: temperate; HR: flooded places: margins of rivers, lakes, ponds, pools, usually on clayish or sandy soils; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: NB QC VT; References: Lindroth (1963: 380-381); Larochelle and Larivière (2003: 112) – bionomics]

– Clypeus, frons, pronotum (though meshes more or less impressed along median sulcus in some specimens) and at least some of the lateral elytral intervals with microsculpture..................................................................................................................74

74 [73]. Protarsomeres 1 and 2 dilated and with seriate adhesive setae underneath along lateral side. Last abdominal sternum with two setae near apical margin [♂]...........75

– Protarsomeres 1 and 2 not dilated and without adhesive setae underneath. Last abdominal sternum with four setae near apical margin [♀].......................................76

75 [74]. Elytral microsculpture meshes impressed on all intervals. Side of pronotum with shallow sinuation before posterior angle in most specimens (Fig. 156). Antennomere 2 dorsally in part somewhat pale in most specimens [2.3-3.5 mm] .......................... B. (Furcacampa) mimus Hayward [in part]

[BC: endemic; BZ: temperate/[boreal]; HR: wet/flooded places: swamps, beaver houses; river banks, ponds, marshes, usually on peaty, clayish or sandy soils; occasionally in cultivated fields; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 71-72); Lindroth (1963: 380); Larochelle and Larivière (2003: 119-120) – bionomics]

– Elytral microsculpture meshes more or less impressed on lateral intervals, absent on medial intervals. Side of pronotum with rather deep sinuation before posterior angle (Fig. 157). Antennomere 2 dorsally more or less uniformly dark [2.8-3.6 mm; Plate 24]..................................................................................................B. (Furcacampa) versicolor (LeConte) [in part]

Elytral interval 1 with well-impressed isodiametric microsculpture meshes even in anterior half. Side of pronotum with shallow sinuation before posterior angle in most specimens (Fig. 156). Antennomere 2 dorsally in part somewhat pale in most specimens [2.3-3.5 mm]. B. (Furcacampa) mimus Hayward [in part] [BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: swamps, ponds, marshes, beaver houses; river banks, brooks, irrigation canals; occasionally in cultivated fields, lawns; SA: [spring breeder]; OC: LF++++; RA++/+; DP: wings (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 71-72); Lindroth (1963: 377-378); Larochelle and Larivière (2003: 119-120) – bionomics]

Elytral interval 1 with barely impressed, usually more or less distinct, microsculpture meshes over anterior half. Side of pronotum with rather deep sinuation before posterior angle (Fig. 157). Antennomere 2 dorsally more or less uniformly dark [2.8-3.6 mm; Plate 24]. B. (Furcacampa) versicolor (LeConte) [in part] [BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: swamps, ponds, marshes, beaver houses; river banks, brooks, irrigation canals; occasionally in cultivated fields, lawns; SA: [spring breeder]; OC: LF++++; RA++/+; DP: wings (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 71-72); Lindroth (1963: 377-378); Larochelle and Larivière (2003: 145) – bionomics]
Metasternal process margined anteriorly (Fig. 160). Antennomeres 1-3 entirely yellow in most specimens or antennomeres 1 yellow and 2 and 3 slightly infuscate in a few specimens [4.6-5.7 mm; femur entirely pale, yellow] ............................................................ B. (Eupetedromus) variegatum Say [in part]

[BC: endemic; BZ: temperate; HR: flooded places: river banks, usually on clayish or sandy-clayish soils; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+);
GD: ME NB NH QC VT; References: Lindroth (1963: 360); Larochelle and Larivière (2003: 144) – bionomics]

– Metasternal process not margined anteriorly (Fig. 161). Antennomeres 1-3 or at least 2 and 3 clearly infuscate on dorsal side .............................................................

Pronotum markedly constricted at base (WP/WP_b = 1.33-1.39; n = 10), side markedly widely rounded (Fig. 162) [5.1-5.8 mm; Plate 23] .............................................................................................................. B. (Eupetedromus) graciliforme Hayward

[BC: endemic; BZ: temperate; HR: wet places: around marshes, swamps, ponds, usually on muddy soils with rich vegetation; SA: [spring breeder]; OC: LF++++; RA+++;
DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1963: 350-351); Larochelle and Larivière (2003: 109) – bionomics]

– Pronotum less constricted at base (WP/WP_b = 1.13-1.26; n = 50), side less widely rounded (Fig. 163) .................................................................
80 [79]. Pronotum entirely or largely reddish-brown or brown, clearly not as dark as head dorsally; femur entirely pale. Submedian pale marking of elytral interval 5 quite distinctly set off from markings on adjacent intervals (Fig. 165) [4.5-5.5 mm; pronotum slightly convex] ............................................. B. (Eupetedromus) immaturum Lindroth

[BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: edges of ponds, marshes, rivers, and lakes, usually on muddy soils; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 64, 66-67); Lindroth (1963: 349); Larochelle and Larivière (2003: 112) – bionomics]

– Pronotum entirely or largely reddish-black to black, as dark as head dorsally; femur infuscate, at least around middle, in the vast majority of specimens. Submedian pale marking of elytral interval 5 not clearly set off from markings on adjacent intervals (Fig. 164)............................................................................................................................. 81

81 [80]. Pronotum more constricted at base (WP/WP = 1.21-1.29; mean = 1.24; n = 20); basal edge truncate to slightly oblique toward posterior angle; lateral depression better defined in most specimens, without or with poorly impressed microsculpture meshes. Microsculpture on head and lateral margins of pronotum isodiametric. Submedian dark marking on elytral interval 2 quite distinctly extended anteriorly to near scutellum; dark marking on elytral interval 4 reaching basal fourth of elytra [4.7-6.3 mm; greenish lustre less pronounced on pronotum than on head in most specimens]................................................................. B. (Eupetedromus) incrematum LeConte

[BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: around ponds, eutrophic marshes, along river and lake banks, usually on muddy soils with vegetation; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 63-64); Lindroth (1963: 348-349); Larochelle and Larivière (2003: 113) – bionomics]
Pronotum less constricted at base (WP/WP_b = 1.13-1.18; mean = 1.15; n = 20); basal edge moderately oblique toward posterior angle; lateral depression less defined, with microsculpture meshes more distinct. Microsculpture on head and lateral margins of pronotum more or less granulate. Submedian dark marking on elytral interval 2 not or not quite distinctly extended anteriorly; dark marking on elytral interval 4 not reaching basal fourth of elytra or widely interrupted behind level of anterior discal seta [5.6-6.1 mm; lustre as pronounced on pronotum than on head in most specimens].......................... B. (Eupetedromus) iridipenne Bousquet & Webster

[B: endemic; BZ: temperate/boreal; HR: wet places: around large streams and ponds on bare muddy-clayish soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: NB NH QC VT; References: Bousquet and Webster (2006: 29-31)]

Elytra with pale spots restricted to posterior half [3.8-4.4 mm; eyes markedly developed, hemispherical; side of pronotum without or with shallow sinuation in basal half, laterobasal carina long; elytral striae coarsely punctate and distinctly impressed even at apex; elytral microsculpture meshes transverse, more so in male] .............................................. B. (Notaphus) rapidum (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: flooded/open places: lake, river and brook banks, cultivated fields, meadows, orchards; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1963: 363-364); Larochelle and Larivière (2003: 133-134) – bionomics]

Elytra with pale (yellow to red) spots present also in basal half, at least over lateral and basal margins near humeri .......................................................................................83

Surface around anterior supraorbital setigerous punctuation elevated, more or less shinier than adjacent areas (as in Fig. 158). Humeral region, including intervals 5 and 6 over anterior half, widely pale [4.6-5.7 mm; elytral pattern more pale than dark; elytral microsculpture striate, microlines barely distinct]........................... B. (Eupetedromus) variegatum Say [in part]

[BC: endemic; BZ: temperate; HR: flooded places: river banks, usually on clayish or sandy-clayish soils; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1963: 360); Larochelle and Larivière (2003: 144) – bionomics]

Surface around anterior supraorbital punctures elevated or not, but as dull as adjacent areas (Fig. 159). Humeral region entirely or partly dark, or (species with body length less than 4.5 mm) at least intervals 5 and 6 partly infuscate over anterior half .................................................................84

Elytral striae 3-7 poorly impressed and obsolete near apex. Elytral pale markings less contrasting, rather dark red, and more restricted, not really distinct on intervals 3 and 4 [4.1-5.4 mm] .....................................................................................................................85

Elytral striae 3-7 well impressed and distinct near apex. Elytral pale markings more contrasting, yellow to yellowish-red, and more expanded, present on parts of intervals 3 and 4 .................................................................................................................................88

Protarsomeres 1 and 2 dilated and with seriate adhesive setae underneath along lateral side. Last abdominal sternum with two setae near apical margin [♂]........86
Protarsomeres 1 and 2 not dilated and without adhesive setae underneath. Last abdominal sternum with four setae near apical margin [♀] ...............................87

86 [85]. Elytral microsculpture markedly transverse or striate. Disc of pronotum with isodiametric microsculpture [4.1-4.9 mm] .......... B. (Notaphus) constrictum (LeConte) [in part]  
[BC: endemic; BZ: temperate; HR: flooded places: sea beaches and neighbouring salt marshes and ponds, usually on clayish soils in cracks and mats of dead algae; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE; References: Lindroth (1963: 373); Larochelle and Larivière (2003: 103) – bionomics]

87 [85]. Elytral microsculpture moderately transverse. Disc of pronotum with isodiametric microsculpture [4.1-4.9 mm] .......................................................... B. (Notaphus) constrictum (LeConte) [in part]  
[BC: endemic; BZ: temperate; HR: flooded places: sea beaches and neighbouring salt marshes and ponds, usually on clayish soils in cracks and mats of dead algae and grass; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE; References: Lindroth (1963: 373); Larochelle and Larivière (2003: 103) – bionomics]

88 [84]. Body length 5.0 mm or more. Pronotum (Fig. 166) markedly constricted at base; side markedly rounded. Elytral microsculpture irregularly isodiametric to slightly transverse [5.0-6.2 mm] .................................................. B. (Notaphus) cordatum (LeConte)  
[BC: endemic; BZ: temperate; HR: [flooded places]: edges of ponds and lakes, usually on muddy soils; SA: [spring breeder]; OC: LF++; RA; DP: wings (+); flight (+); GD: NH VT; References: Lindroth (1963: 362); Larochelle and Larivière (2003: 104) – bionomics]

89 [88]. Mentum tooth huge, markedly convex; anterior edge of lateral lobe forming prominent toothlike process near median tooth (Fig. 168). Dark areas of elytra brownish,
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at most moderately contrasting against pale areas [4.3-4.8 mm; antennomeres 2 and 3 clearly darker on apical half than antennomere 1 (versus B. obertueri); elytra with transverse microsculpture; pronotum narrow, only slightly wider than head].............

...........................................................................................

B. (Notaphus) versatum LeConte

[BC: endemic; BZ: temperate/boreal; HR: flooded places: edges of rivers, brooks, lakes, ponds, on sandy and/or clayed soils; SA: [spring breeder]; OC: LF++; RA+++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1963: 360); Larochelle and Larivière (2003: 145) – bionomics]

Mentum tooth smaller, more or less flat (moderately convex in B. patruele), anterior edge of lateral lobe rounded or forming a small toothlike process near median tooth (Figs 169, 170). Dark areas of elytra blackish, contrasting against pale areas.............90

90 [89]. Mentum with strong transverse carina on each side at base of tooth (Fig. 169); tooth moderately convex. Depression around anterior supraorbital setigerous puncture not reaching medial carinate edge of eye in the vast majority of specimens (Fig. 171) [3.4-4.4 mm; elytral microsculpture striate, more densely so in male; humerus dark (versus B. intermedium)]............................................................B. (Notaphus) patruele Dejean

[BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: swamps, beaver houses, river banks, edges of lakes, pools, roadside ditches, meadows, usually on muddy wet soils rich in organic debris; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 68, as B. posticum); Lindroth (1963: 371-372); Larochelle and Larivière (2003: 127) – bionomics]

Mentum without or at most with faint, short carina on each side at base of tooth (Fig. 170); tooth flat. Depression around anterior supraorbital setigerous puncture reaching carinate edge of eye (Fig. 172).................................................................91

91 [90]. Elytral microsculpture markedly transverse or striate. Disc of pronotum with moderately transverse microsculpture. Humerus pale [3.6-4.4 mm]...............................................................B. (Notaphus) intermedium (Kirby)

[BC: endemic; BZ: temperate; HR: flooded places: river banks, lake shores, ponds, pools, usually on clayish sandy soils; SA: [spring breeder]; OC: LF++; RA?; DP: wings
(+); flight (+); GD: QC VT; References: Lindroth (1963: 365-366); Larochelle and Larivière (2003: 114) – bionomics

Elytral microsculpture slightly to moderately transverse, in some specimens in part more transverse. Disc of pronotum with isodiametric or slightly transverse microsculpture. Humerus dark in the vast majority of specimens..........................92

92 [91]. Antennomeres 2 and 3 at least partly pale dorsally; femur and tibia mainly pale, reddish-yellow to brownish-red [3.4-4.3 mm] ................. B. (Notaphus) castor Lindroth [BC: endemic; BZ: temperate/[boreal]; HR: flooded places: river banks, edges of lakes, ponds, sea beaches, usually on clayish sandy soils with sparse or no vegetation;

Figs 171-172. Region of anterior supraorbital seta. 171: Bembidion patrule; 172: Bembidion castor.
Illustrated Identification Guide to Adults and Larvae of Northeastern North American Ground Beetles

SA: [spring breeder]; OC: LF++++; RA++++/++++; DP: wings (+); flight (+); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 69, as B. intermedium); Lindroth (1963: 366-367); Larochelle and Larivière (2003: 99) – bionomics

Antennomerones 2 and 3 entirely dark dorsally; femur and tibia mainly dark, reddish-black to brownish-black [3.0-4.2 mm] ......................... B. (Notaphus) nigripes (Kirby) [BC: holarctic; BZ: temperate/boreal/arctic; HR: flooded places: sea beaches, lake shores, edges of eutrophic marshes and rivers, usually on clayish soils with sparse vegetation; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: LB ME NB NF NS PE PM QC; References: Lindroth (1955b: 67); Lindroth (1963: 369-371); Larochelle and Larivière (2003: 122) – bionomics]

Subtribe Xystosolina

Genus Mioptachys Bates, 1882 [Tachys sensu Lindroth, in part]
The sole northeastern species of this genus, M. flavicauda (Say, 1823) [Plate 25], is easily recognized by its small size (1.5-1.8 mm) and its relatively deep, wide and translucent lateral depressions of pronotum.

Males have the protarsomeres 1 and 2 expanded and with seriate adhesive setae underneath. In addition, males have two subapical setae, instead of four, on the last abdominal sternum.

[BC: endemic; BZ: temperate; HR: covered places: under loose bark of fallen hardwood trees; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 441); Larochelle and Larivière (2003: 322) – bionomics]

Subtribe Tachyina

Genus Tachyta Kirby, 1837 [Tachys sensu Lindroth, in part]
The northeastern species of this genus are distinguished from all other small (less than 3.5 mm) species by their distinctive facies, particularly the relative flat and markedly microsculptured body. Two of the taxa found in the northeast, T. kirbyi and T. inornata, are usually regarded as subspecies of T. nana but I believe they are better treated as distinct species.

Males have the protarsomeres 1 and 2 expanded medially and with seriate adhesive setae underneath. In addition, males have two setae (four in females) along the apical margin of the last abdominal sternum.

List of northeastern species of Tachyta

T. angulata Casey, 1918
T. kirbyi Casey, 1918
T. inornata (Say, 1823) nana sensu Lindroth [in part] [T. parvicornis Notman]

Key to northeastern species of Tachyta

1. Elytron with lateralmost stria along the umbilical setae well impressed and sulciform over entire length [2.3-2.8 mm; side of pronotum with shallow sinuation in basal half; laterobasal carina of pronotum indistinct or almost so].......................... [T. (Tachyta) parvicornis Notman]

[BC: endemic; BZ: temperate; HR: covered places: under loose bark of fallen or standing trees; SA: ?; DP: wings (+); flight (-); GD: not yet found in the northeast]
but recorded from Massachusetts; References: Erwin (1975: 50, 52); Larochelle and Larivière (2003: 497) – bionomics

– Elytron with lateralmost stria poorly impressed before middle, sulciform only along anterior fifth and posterior half ........................................................................................................

2 [1]. Pronotum (Fig. 173) without laterobasal carina; side usually without sinuation, rarely with very shallow sinuation in basal half [2.3-3.2 mm].... *T. (Tachyta) inornata* (Say)  
[BC: endemic; BZ: temperate/boreal; HR: covered places: under loose bark of fallen or dying trees; SA: ?; OC: LF+; RA+; DP: wings (+); flight (+); GD: ME NH QC VT; References: Erwin (1975: 45, 47-48, as *T. nana inornata*); Larochelle and Larivière (2003: 496, as *T. nana inornata*) – bionomics]

– Pronotum (Fig. 174) with small but distinct laterobasal carina; side with shallow to moderate sinuation in basal half [two species difficult to separate on external characters]....

3 [2]. Frons between frontal furrows flat. Side of pronotum with moderately deep, longer sinuation in basal half in most specimens; posterior angle slightly acute to right [2.6-3.1 mm].......................................................................................................................

[BC: endemic; BZ: temperate/boreal; HR: covered places: under loose bark of fallen or dying trees; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS QC VT; References: Lindroth (1966: 439-440); Erwin (1975: 39, 41-43); Larochelle and Larivière (2003: 496) – bionomics; Note: Lindroth (1966: 439) mentioned that this species is more stretched than *T. kirbyi*. This is possibly an illusion due to the flatter body. Measurements taken on ten specimens identified by Lindroth or Erwin in the Canadian National Collection of *T. angulata* (LE/WE = 1.42-1.51; mean = 1.48) and of *T. kirbyi* (LE/WE = 1.44-1.50; mean = 1.48) indicate that there is no significant difference in the relative length of the elytra]  
– Frons between frontal furrows slightly convex medially. Side of pronotum with shallow, shorter sinuation in basal half in most specimens; posterior angle often slightly obtuse [2.6-3.0 mm; body more convex than *T. angulata*; Plate 25]..........................

[BC: endemic; BZ: temperate; HR: covered places: under loose bark of fallen or dying trees; SA: ?; OC: LF; RA2; DP: wings (+); flight (-); GD: ME NH QC VT; References: Erwin (1975: 48, 50, as *T. nana kirbyi*); Larochelle and Larivière (2003: 496, as *T. nana kirbyi*) – bionomics]
GENUS Elaphropus Motschulsky, 1839 [Tachys sensu Lindroth, in part]

Adults of *Elaphropus* are relatively easy to recognize among tachyines, except from those of *Porotachys*, by their broad, convex, and shiny body. Contrary to members of *Porotachys*, those of *Elaphropus* do not have large labial pits on the mentum.

Males have the protarsomeres 1 and 2 very slightly expanded and with seriate adhesive setae underneath and two setae, four in females, along the apical margin of the last abdominal sternum.

**List of northeastern species of Elaphropus**

- *E. anceps* (LeConte, 1848)
- *E. capax* (LeConte, 1863)
- *E. dolosus* (LeConte, 1848)
- *E. ferrugineus* (Dejean, 1831)]
- *E. granarius* (Dejean, 1831)
- *E. incurvus* (Say, 1830)
- *E. saturatus* (Casey, 1918)
- *E. tripunctatus* (Say, 1830)
- *E. vernicatus* (Casey, 1918)
- *E. vivax* (LeConte, 1848)

**Key to northeastern species of Elaphropus**

1. Eye reduced, temple bulky and more than half as long as longitudinal diameter of eye (Fig. 175) [2.5-3.1 mm; body dorsally entirely reddish, antennae and legs yellow; elytra markedly convex; elytral stria 1 well impressed and with relatively coarse punctures; striae 2-4 more or less impressed, impunctate; wings highly reduced] ....

2. Elytron with stria 2 at most suggested, much less impressed at middle than stria 1....3

3. Humeral extension short (Fig. 177), only slightly surpassing level of laterobasal carina of pronotum. Upper surface uniformly brownish-yellow to reddish-yellow. Elytra elongate (LE/WE = 1.53-1.58; n = 5) [2.4-2.8 mm; antennomeres not infuscate; side of pronotum with sinuation in basal half]..............*E. dolosus* (LeConte)

4. Humeral extension longer (Fig. 178), distinctly surpassing level of laterobasal carina of pronotum. Upper surface not uniformly coloured, at least with parts (particularly head) darker, red to reddish-black. Elytra less elongate (LE/WE = 1.28-1.45; n = 50) ............................................................................................................
Elytra rather oval (LE/WE = 1.28-1.34; n = 20), without colour contrast [1.9-2.3 mm; frons without microsculpture meshes behind clypeofrontal suture; carina delimiting frontal furrow laterally rather distinct].............................. *E. granarius* (Dejean)

[BC: endemic; BZ: temperate; HR: open places: roadsides, fields, gravel and sand pits, mostly on dry sandy soils; also upper zone of river banks; SA: ?; OC: LF+++; RA++; DP: wings (); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 414-416); Larochelle and Larivière (2003: 258) – bionomics]

Elytra more elongate (LE/WE = 1.38-1.45; n = 30), with lateral intervals, at least in part, paler than medial intervals in basal half.................................................................5

Frons without microsculpture meshes behind clypeofrontal suture. Antennomeres more or less uniformly coloured, apical antennomeres not really darker than basal ones. Elytron reddish-black to black, with humeral and apical spots well defined, in most specimens clearly separated [2.4-2.7 mm].............................. *E. vernicatus* (Casey)

[BC: endemic; BZ: temperate; HR: flooded places: river banks, brooks, lakes, ponds, flood plain usually on sandy-clayed or sandy-silt soils; occasionally roadsides, sand pits, fields; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS QC VT; References: Lindroth (1966: 419, as *Tachys unionis*); Larochelle and Larivière (2003: 261) – bionomics]
Frongs with microsculpture meshes behind clypeofrontal suture, though often difficult to see under certain light angles. Antennomeres 7-11 infuscate, at least slightly darker than antennomeres 1-3 in most specimens. Elytron paler, yellow to deep reddish-brown, with humeral and apical spots usually more or less connected laterally [two species often difficult to separate on external characters]

6 [5]. Sides of pronotum with shallow sinuation in basal half in most specimens. Antennae proportionally longer, antennomere 9 1.5-1.8 x longer than wide. Frongs of same colour as disc of pronotum [2.2-2.7 mm].................................E. anceps (LeConte)

[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, pools in gravel and sand pits or roadside ditches, flood plains, usually on silt, coarse sandy silt or sandy-clayed soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 417-419); Larochelle and Larivière (2003: 256) – bionomics]

7 [2]. Body slightly convex, elytra proportionally long (LE/LP = 2.83-3.06; n = 20), almost parallel-sided. Elytral striae 4 and 5 relatively well impressed at middle, as much or almost so as stria 2; stria 1 not reaching parascutellar setigerous puncture [2.6-3.2 mm; Plate 25] .............................................................................E. tripunctatus (Say)

[BC: endemic; BZ: temperate; HR: flooded places: river banks, lakes, ponds, pools, roadside ditches, usually on coarse sandy silt or sandy-clayed soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 416-417); Larochelle and Larivière (2003: 258-259) – bionomics]

8 [7]. Frons without or with very poorly impressed microsculpture meshes behind clypeofrontal suture. Sides of pronotum more or less rounded in basal half .................................................E. capax (LeConte)

[BC: endemic; BZ: temperate; HR: [wet places]: around marshes, swamps, pools, usually on muddy soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: VT; References: Bousquet (1987a: 122-123); Larochelle and Larivière (2003: 257) – bionomics]

9 [8]. Body length 2.6 mm or more. Elytra more or less uniformly dark, not or only slightly paler in apical half than in basal half [2.6-3.1 mm] .................................E. xanthopus (Dejean)

[BC: endemic; BZ: temperate; HR: [wet places]: around marshes, swamps, pools, usually on muddy soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: VT; References: Bousquet (1987a: 122-123); Larochelle and Larivière (2003: 257) – bionomics]
[BC: endemic; BZ: temperate; HR: [flooded places]: river banks, lake shores, pools; 
SA: [spring breeder]; OC: LF++/+++; RA?: DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Lindroth (1966: 420-422); Larochelle and Larivière (2003: 261) – bionomics]

10. Antennomeres 4-11 and penultimate maxillary palpomere infuscate. Forebody darker, reddish-brown to brown [2.3-2.6 mm]...........................................E. saturatus (Casey) 
[BC: endemic; BZ: temperate; HR: [flooded places]; river banks, lake shores, around marshes, ponds, usually on coarse sandy soils; SA: [spring breeder]; OC: LF+++; RA?: DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Lindroth (1966: 422); Larochelle and Larivière (2003: 260) – bionomics] 

– Antennomeres 4-11 and penultimate maxillary palpomere entirely yellow. Forebody paler, yellowish-red to red [2.4-2.9 mm]...........................................E. vivax (LeConte) 
[BC: endemic; BZ: temperate; HR: flooded places: river banks, lake shores, ponds, usually on sandy silt or sandy-clayed soils; SA: [spring breeder]; OC: LF?; RA?: DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Lindroth (1966: 422-423); Larochelle and Larivière (2003: 261) – bionomics] 

**GENUS PERICOMPSUS LeConte, 1852**
The sole northeastern species of this genus, *P. ephippiatus* (Say, 1830) [Plate 26], is easily distinguished by its small size (2.3-3.0 mm), the pale colouration (in most specimens yellow to reddish-yellow) with a large, central, darker cloud on the elytra, and the presence of six densely and coarsely punctate elytral striae.

Males have the protarsomere 1 slightly expanded medially and with a few seriate setae underneath at apex, and only two setae (four in females) along the apical margin of the last abdominal sternum.

[BC: endemic; BZ: temperate; HR: flooded places: river banks usually on sandy-clayed soils; SA: [spring breeder]; OC: LF?; RA?: DP: wings (+); flight (+); GD: NH VT; References: Erwin (1974: 41, 44-45); Larochelle and Larivière (2003: 367) – bionomics]

**GENUS POROTACHYS Netolitzky, 1914** [*Tachys* sensu Lindroth, in part]
The sole species includes in this genus, *P. bisulcatus* (Nicolai, 1822) [Plate 26], resemble superficially those of the genera *Elaphropus* and *Pericompsus*. It differs from *Elaphropus* species by the presence of a pair of large labial pits on the mentum and from *Pericompsus ephippiatus* by the presence of only three or four sparsely, more finely punctate striae and absence of a central darker cloud on the elytra.

Males have the protarsomeres 1 and 2 expanded medially and with seriate adhesive setae underneath, and two setae, instead of four, along the apical margin of the last abdominal sternum.

[BC: exotic (< 1900); BZ: temperate; HR: [covered places]: mainly coniferous forests in wood shavings, near sawmills; occasionally in beaver houses, river banks and vacant lots; SA?: OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 424); Liard and Garneau (1977) – habitat; Larochelle and Larivière (2003: 381) – bionomics]

**GENUS POLYDERIS Motchulsky, 1862** [*Tachys* sensu Lindroth, in part]
The only northeastern species placed in this genus, *P. laevis* (Say, 1823) [Plate 26], is easily recognized on its very small size alone (1.3-1.5 mm). Except for *Myoptachys flavicauda* (1.5-1.8 mm), all other carabids in the northeast are over 1.8 mm.
Males have the protarsomeres 1 and 2 slightly expanded medially with seriate adhesive setae underneath difficult to see. The last abdominal sternum bears two setae along the apical edge in the male, four in the female with the extra pair located more anteriad than the other one.

[BC: endemic; BZ: temperate; HR: [open places]: vacant lots, sand dunes, gravel pits, refuse pile of ant nests; mud or moss near streams, creeks; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 426, under the spelling laevus); Larochelle and Larivière (2003: 380-381) – bionomics]

**GENUS *Paratachys* CASEY, 1918 [Tachys sensu Lindroth, in part]**
The five northeastern species of this genus are relatively easy to recognize by their small size (2.2-3.2 mm), flat body, and markedly iridescent elytra.

Males have the protarsomere 1 (*P. oblitus*, *P. pumilus* and *P. scitulus*) or 1 and 2 (*P. proximus* and *P. rhodeanus*) slightly expanded medially, with seriate adhesive setae underneath. Males also have only two setae along the apical margin of the last abdominal sternum; females have four setae, the extra pair being located more anteriad than the other one.

**List of northeastern species of *Paratachys***

- *P. oblitus* (Casey, 1918)
- *P. pumilus* (Dejean, 1831)
- *P. proximus* (Say, 1823)
- *P. scitulus* (LeConte, 1848)
- *P. rhodeanus* (Casey, 1918)

**Key to northeastern species of *Paratachys***

1. Pronotum with microsculpture transverse, meshes more open than on elytra [2.1-2.4 mm; upper surface uniformly brown, elytra without central darker cloud; elytron with striae 1 and 2 impressed] ............................................................ *P. pumilus* (Dejean)
   - Pronotum with microsculpture striate, similar to that on elytra ........................................ 2

2 [1].

Elytron with striae 2 and 3 suggested only, less impressed than stria 1. Pronotum (Fig. 179) with posterior edge moderately oblique near angle; posterior angle markedly obtuse and more or less rounded; base behind median transverse impression almost smooth. Elytra without distinct darker central cloud [2.4-2.6 mm]............ *P. oblitus* (Casey)
   - Elytron with striae 1 and 2 or 1-3 impressed, at least stria 2 as impressed as stria 1 at middle. Pronotum (Figs 180, 181) with posterior edge only slightly oblique near angle; posterior angle less obtuse in most specimens; base behind median transverse impression more or less rugose. Elytra with darker central cloud..............................3
3 [2]. Eye smaller, less convex (Fig. 182). Side of pronotum (Fig. 180) with short but evident sinuation before posterior angle; posterior angle slightly acute to about right [2.8-3.0 mm]...........................................................................................................P. rhodeanus (Casey)

[BC: endemic; BZ: temperate; HR: flooded/wet places; river banks and lake shores, usually on sandy or sandy-clayed soils, under deep-lying stones; around eutrophic marshes; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1966: 432-433); Landry (1975) – habitat; Laroche and Larivière (2003: 359) – bionomics]

Eye larger, more convex (Fig. 183). Side of pronotum (Fig. 181) without or with more or less evident sinuation before posterior angle; posterior angle obtuse, in some specimens slightly so.

4 [3]. Pronotum and elytra of same colouration, pale. Frons with slightly to moderately transverse microsculpture anterior to level of anterior supraorbital setigerous puncture, meshes coarse. Male with protarsomere 1 expanded [2.6-3.0 mm] ..................

4. Pronotum darker than elytra. Frons with markedly transverse microsculpture anterior to level of anterior supraorbital setigerous puncture, meshes fine. Male with protarsomereres 1 and 2 expanded [2.6-3.1 mm; Plate 26] ....................

**TRIBE PATROBINI**

**GENUS DIPLOUS MOTSCHULSKY, 1850**
The sole northeastern species of this genus, *D. rugicollis* (Randall, 1838) [Plate 27], is quite characteristic by its elongate (9.5-12.2 mm) and rather flat body, associated with the presence of a basal constriction of the head, absence of subbasal ridge on the elytron, and isodiametric elytral microsculpture.

Males have the protarsomereres 1 and 2 expanded and with seriate adhesive setae underneath. Furthermore, they have only two setae (four in females) along the apical edge of the last abdominal sternum.

**GENUS PATROBUS DEJEAN, 1821**
This genus includes five northeastern species. Except for *P. longicornis* which is quite characteristic by its general appearance, other species are more likely to be confused with some species of *Pterostichus*, particularly those of subgenera *Pseudomaseus* and *Melanus*, or even with some *Platynus* species. They differ from the *Pterostichini* and *Platynini* in having no subbasal ridge on the elytron and the median sulcus of the pronotum widened basally and extended to the posterior edge.

Males have the protarsomereres 1 and 2 expanded and with seriate adhesive setae underneath as well as only two setae (four in females) over the apical margin of the last abdominal sternum.
List of northeastern species of *Patrobus*

*P. longicornis* (Say, 1823)
*P. septentrionis* Dejean, 1828
*P. foveicollis* (Eschscholtz, 1823)
*P. stygicus* Chaudoir, 1871
*P. lecontei* Chaudoir, 1871

**Key to northeastern species of *Patrobus***

1. Pronotum (Fig. 184) with anterotransverse impression deep, complete (i.e., extending from median sulcus to anterior edge), impunctate. Elytral microsculpture markedly transverse or striate [9.2-14.8 mm; legs yellow to red; Plate 27] ..................

   .............................................................................................................................................. *P. longicornis* (Say)

   [BC: endemic; BZ: temperate/boreal; HR: flooded/wet/open places: margins of rivers, lakes, ponds, pools, in roadside ditches, around marshes and swamps, cultivated and vacant fields; SA: autumn breeder; OC: LF++++; RA +++/+++; DP: wings (- +); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 82); Lindroth (1961: 180); Chiolino (1970) – wing development; Larochelle (1973b) – wing development; Larochelle and Larivière (2003: 364-365) – bionomics]

   – Pronotum (Figs 185-188) with anterotransverse impression shallower, indistinct medially. Elytral microsculpture isodiametric to moderately transverse ..................
2 [1]. Tarsomere 5 of each leg with setae underneath. Metasternum short, length behind mesocoxa shorter than length of metacoxa along the same line [8.0-11.6 mm; frontal furrows rather deep; antennomere 3 subequal in length to or very slightly longer than antennomere 1; anterotransverse impression of pronotum sulciform near anterior edge (Fig. 185); prosternum with coarse punctures, at least laterally; Plate 27] .......................................................... 

\( P. foveocollis \) (Eschscholtz)

[BC: holarctic; BZ: boreal/arctic/alpine; HR: wet/flooded places: around marshes, swamps, ponds, rivers, lakes, usually among leaves under bushes; also mixed forests in leaf litter, on meadows; less hygrophilous than other \( P. \) \( foveocollis \) species; SA: autumn breeder; OC: LF+++; RA+++; DP: wings (+); GD: LB ME NB NF NH QC VT; \References: \ Lindroth (1955b: 85-86); Lindroth (1961: 185-186); Carter (1981) – biology; Larochelle and Larivière (2003: 363-364) – bionomics]

– Tarsomere 5 of each leg without setae underneath. Metasternum longer, length behind mesocoxa subequal to or longer than metacoxa along the same line............3

3 [2]. Pronotum (as in Fig. 185) with anterotransverse impression distinctly sulciform toward anterior edge, with punctures medially. Prosternum with coarse punctures, at least laterally. Elytral microsculpture isodiametric [8.2-11.7 mm; frontal furrows shallow] .............................................................. 

\( P. septentrionis \) Dejean

[BC: holarctic; BZ: boreal/arctic/alpine; HR: mainly wet/flooded places: edges of lakes, ponds, marshes and slow streams, usually on clayish soils with vegetation; also meadows; SA: autumn breeder; OC: LF++/+++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH QC; \References: \ Lindroth (1955b: 84-85, as \( P. \) \( septentrionis \) labradorinus); Lindroth (1961: 183-185); Carter (1981) – biology; Larochelle and Larivière (2003: 365) – bionomics]

– Pronotum (Figs 186, 187) with anterotransverse impression indistinct toward anterior edge, without punctures medially. Prosternum without punctures or at most with few, rather fine punctures laterally. Elytral microsculpture slightly to moderately transverse ...............................................................4

4 [3]. Femur and tibia brownish-red to reddish-black. Pronotum (Fig. 186) narrower on average (\( WP/LP = 1.20-1.34; \) mean = 1.27; \( n = 20 \)), maximum width at or slightly anterior to level of midlateral setae [8.0-11.0 mm but most specimens under 10 mm; pronotum with narrow, shallow lateral depression] ......................... 

\( P. stygicus \) Chaudoir

[BC: endemic; BZ: boreal/arctic; HR: wet/flooded places: marshes, swamps, sedge clumps, edges of rivers, lakes, ponds; SA: autumn breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: LB ME NF QC; \References: \ Lindroth (1955b: 83-84, as \( P. \) \( fossifrons \) \( stygicus \)); Lindroth (1961: 182-183); Carter (1981) – biology; Pohl (1998); Larochelle and Larivière (2003: 365) – bionomics]

Femur and tibia pure reddish-yellow to yellowish-red. Pronotum (Fig. 187) wider on average (\( WP/LP = 1.30-1.48; \) mean = 1.37; \( n = 20 \)), maximum width slightly posterior to level of midlateral setae [9.8-13.5 mm; pronotum with rather wide, deeper lateral depression] ...................................................... 

\( P. lecontei \) Chaudoir

[BC: endemic; BZ: boreal/arctic; HR: wet places: edges of marshes, swamps, pools, ponds; occasionally on cultivated fields; SA: autumn breeder; OC: LF+++; RA++; DP: wings (±); flight (+); GD: NB NF PM QC; \References: \ Lindroth (1955b: 82-83); Lindroth (1961: 180-181); Carter (1981) – biology; Larochelle and Larivière (2003: 364) – bionomics]
**Genus Platypatrobus Darlington, 1938**

The sole species in this genus, *P. lacustris* Darlington, 1938 [Plate 27], is easily differentiated by the presence of numerous setae along the sides of the pronotum and in the elytral intervals 1, 3, 5, and 7. The species was regarded as an old relict (Lindroth 1961: 177) because of its great rarity until its habitat requirements were discovered.

Males have the protarsomeres 1 and 2 expanded and with seriate adhesive setae underneath as well as two setae (four in females) along the apical edge of the last abdominal sternum.


---

**Tribe Psydrini**

**Genus Nomius Laporte, 1835**

Two species belong to this genus. One is found in Africa, the other one, *N. pygmaeus* (Dejean, 1831) [Plate 28], occur in North America as well as in Europe, northern Africa, and western Asia. The species was apparently relatively common in the northeast in the past but it is now a rarity. It is easily recognized on its general appearance and presence of more than one mid-lateral setae on the pronotum and two small toothlike projections near each posterior angle. The species is well known for the strong fetid odour it emits when alarmed which could last for only a few seconds or for half an hour or more (Barrows 1897).

As far as known, there are no external sexual differences.

**References**: Lindroth (1961: 175); Larochelle and Larivière (2003: 340) – bionomics

---

**Genus Psydrus LeConte, 1846**

This genus contains a single species, *P. piceus* LeConte, 1846 [Plate 28], which is distinguished among northeastern carabids by its general appearance. The species superficially looks like a small Patrobiini but is immediately recognized by the extensive punctuation on the dorsum of the body, each puncture bearing a small seta. Like the preceding species, *P. piceus* is a rarity in the northeast.

The males have the protarsomeres 1-3 expanded and with spongy adhesive setae underneath.

**References**: Lindroth (1961: 175); Larochelle and Larivière (2003: 405) – bionomics

---

**Tribe Brachinini**

**Genus Brachinus Weber, 1801**

Members of *Brachinus* are easily distinguished by their facies and colouration from other carabids in the northeast. The head and pronotum are narrow and pale and the elytra wide, pubescent, apically truncate, and brownish-black to black, usually with bluish lustre. In addi-
tion, *Brachinus* species are the only carabids in the area with more than six visible abdominal sternae (seven in ♀, eight in ♂).

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath disposed on two rows. In addition, males have eight abdominal sternae: the seventh is small and distinctly emarginate at middle, the eighth is also small and exposed medially between the lobes of the seventh sternum (see Lindroth 1969a: Fig. 548a). The females have seven abdominal sternae and the last one is not emarginate at middle (see Lindroth 1969a: Fig. 548b).

**List of northeastern species of *Brachinus***

<table>
<thead>
<tr>
<th>[B. adustipennis Erwin, 1969]</th>
<th>B. janthinipennis (Dejean, 1831)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[B. alternans Dejean, 1825]</td>
<td>B. medius Harris, 1828</td>
</tr>
<tr>
<td><em>B. cordicollis</em> Dejean, 1826</td>
<td>B. ovipennis LeConte, 1862</td>
</tr>
<tr>
<td><em>B. cyanipennis</em> Say, 1823</td>
<td>B. patruelis LeConte, 1844</td>
</tr>
<tr>
<td><em>B. cyanochroaticus</em> Erwin, 1969</td>
<td>B. quadriptenius Dejean, 1825</td>
</tr>
<tr>
<td><em>B. fulminatus</em> Erwin, 1969</td>
<td>B. tenuicollis LeConte, 1844</td>
</tr>
<tr>
<td><em>B. fumans</em> (Fabricius, 1781)</td>
<td>B. vulcanoides Erwin, 1969</td>
</tr>
</tbody>
</table>

**Key to northeastern species of *Brachinus***

1. Elytron dull, without lustre; lateral margin (more so apically) and epipleuron distinctly paler than elytral disc. Femur narrowly infuscate at apex [6.6-11.2 mm]...

   ........................................................................................................... [B. adustipennis Erwin]

   [BC: endemic; BZ: temperate; HR: [flooded/wet places]: river banks, edges of marshes; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet recorded from the northeast; References: Lindroth (1969a: 1098); Erwin (1970: 81-83); Larochelle and Larivière (2003: 149-150) – bionomics]

   – Elytron with bluish lustre; lateral margin and epipleuron not paler than elytral disc. Femur entirely brownish-yellow; not infuscate at apex

2 [1]. Mentum with several small setae at middle and a few laterally on each lobe [12.6-18.1 mm]...

   ........................................................................................................... [B. alternans Dejean]

   [BC: endemic; BZ: temperate; HR: ?; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet recorded from the northeast; References: Lindroth (1969a: 1099); Erwin (1970: 88-90); Larochelle and Larivière (2003: 150) – bionomics]

   – Mentum without or (rarely) at most with 1-3 small setae at middle

3 [2]. Metasternum entirely pale

   – Metasternum infuscate over lateral half

4 [3]. Abdominal sternae 5-6 dark, at most with narrow median area somewhat paler

   – Abdominal sternae 5-6 (usually all sternae) entirely pale or at most with more or less narrow dark areas along lateral edges

5 [4]. Antennomere 3 mainly dark, at most with basal third pale. Proepisternum glabrous or at most with five or six scattered small setae [5.7-8.0 mm]
[BC: endemic; BZ: temperate; HR: flooded/wet places: margins of lakes and rivers, marshes, swamps, usually on muddy soils; SA: [spring breeder]; OC: LF+++; RA++++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1969a: 1103-1105); Erwin (1970: 129-131); Larochelle and Larivière (2003: 155) – bionomics]

Antennomere 3 mainly pale, at most with apical half dark. Proepisternum pubescent [7.2-11.0 mm] .................................................. B. cordinollis Dejean

[BC: endemic; BZ: temperate; HR: flooded places: river banks, under stones and debris on sandy clayed soils; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1969a: 1105-1106); Erwin (1970: 144, 146-147); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 151) – bionomics]

6 [4]. Metepisternum entirely pale [5.8-9.7 mm; elytra without row of erect, slightly longer setae along stria 3] ............................................. B. janthinipennis (Dejean)

[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1969a: 1106-1107); Erwin (1970: 156, 158-159); Larochelle and Larivière (2003: 154) – bionomics]

7 [6]. Elytron with row of sparse, slightly longer (compared to pubescence), erect setae along stria 3. Metepisternum not quite as dark as elytral epipleuron [8.0-13.0 mm; ventral surface of head without setae on each side near gular sutures] ...............................................................

B. cyanipennis Say

[BC: endemic; BZ: temperate; HR: flooded places: river banks, under stones and debris on sandy clayed soils; occasionally in beaver houses; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS QC VT; References: Lindroth (1969a: 1103); Erwin (1970: 127-129); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 151) – bionomics]

8 [7]. Mentum and submentum without small setae. Side of pronotum with deeper sinuation (WPb/WPs = 1.09-1.16; n = 13), posterior angle more or less acute in most specimens. Body length more than 11.5 mm in the vast majority of specimens [10.5-15.3 mm; antennal scape robust, slightly widened apically] ........ B. fumans (Fabricius)

[BC: endemic; BZ: temperate; HR: flooded places: near all sorts of water bodies, in gravel and stony areas; SA: spring breeder; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1969a: 1105); Erwin (1970: 134, 136, 138-140); Larochelle and Larivière (2003: 152-153) – bionomics]

8 [7]. Mentum with one to four small setae at middle, submentum with setae. Side of pronotum with shallower sinuation (WPb/WPs = 1.02-1.09; n=13), posterior angle more or less right in most specimens. Body length less than 11.5 mm [8.2-11.3 mm] .................................................. B. ovipennis LeConte
Mesepisternum dark. Body length more than 13 mm [13.2-16.1 mm; elytra with distinct costae; Plate 17] ........................................................................ 9 [3]. B. tenuicollis LeConte

Mesepisternum pale. Body length less than 12.5 mm .................................................................................. 10

Antennomere 3 mainly pale, at most with apical half dark [7.8-12.4 mm] .................................................. 10 [9]. B. cyanochroaticus Erwin

Metasternum proportionally short, its length behind mesocoxa shorter than length of metacoxa along the same line. Humerus moderately sloping (Fig. 188) [6.3-9.1 mm] ........................................................................... 11 [10]. B. patruelis LeConte

Metasternum proportionally much longer, its length behind mesocoxa longer than length of metacoxa along the same line. Humerus only slightly sloping (Fig. 189) ................................................................................. 12 [11]. B. vulcanoides Erwin

Anterior surface of protibia strigose, without distinct punctures (Fig. 191) .............................................. 13 [12]. B. medius Harris [in part]
Figs 188-189. Humeral area. 188: *Brachinus patruelis*; 189: *Brachinus medius*.


**14**

- Body length 8.1 mm or more. Proepisternum with four or more setae on anterior third and posterior third .............................................................................................................

**14** [13] Antennomeres 3 and 4 darker than antennomeres 7-11. Tibia, at least over apical third or fourth, darker than femur; tarsomeres infuscate [8.6-12.1 mm] ....................

.................................................................................................................................................. *B. quadripennis* Dejean

[BC: endemic; BZ: temperate; HR: [flooded places]: edges of lakes, ponds; SA: [spring breeder]; OC: LF+; RA?; DP: wings (+); flight (+); GD: NH; References: Lindroth (1969a: 1101-1102); Erwin (1970: 99, 101, 103-104); Larochelle and Larivière (2003: 157) – bionomics]

- Antennomeres 3 and 4 of same colouration as antennomeres 7-11. Tibia of same colouration as femur; tarsomeres pale, not infuscate [8.1-11.0 mm; pronotum subquadrate (LP/WP = 0.97-1.01; n = 4) though appearing distinctly elongate] .........

.................................................................................................................................................. *B. fulminatus* Erwin

[BC: endemic; BZ: temperate; HR: ?; SA: [spring breeder]; OC: LF+; RA?; DP: wings (+); flight (-); GD: NH; References: Erwin (1970: 151, 153); Larochelle and Larivière (2003: 152) – bionomics]
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

TRIBE PTEROSTICHINI

KEY TO GENERA

1. Elytral interval 3 without discal setae ................................................................. 2
   – Elytral interval 3 with one to seven discal setae ............................................. 6

2 [1]. Antennomere 1 as long as antennomeres 2 and 3 combined. Lacinia with apex blunt
   [mandible elongate; penultimate maxillary palpomere with row of five or six apical
   setae; scutellar stria absent] [one species: 6.8-8.3 mm; Plate 28] ............... Stonis Clairville
   – Antennomere 1 shorter than antennomeres 2 and 3 combined. Lacinia with apex
toothlike .............................................................................................................. 3

3 [2]. Glossal sclerite with four to six setae along anterior edge. Apical labial palpomere
   conspicuously widened toward apex. Elytra with strong metallic lustre [two species:
   13.5-20.0 mm; Plate 29] ................................................................. Myas Sturm
   – Glossal sclerite with two setae along anterior edge. Apical labial palpomere
   not widened toward apex. Elytra with metallic lustre only in Sterocerus haematopus...... 4

   Body length more than 17 mm [one species: 18-22 mm; Plate 32]............. Abax Bonelli
   – Mesotrochanter with seta. Elytral interval 7 not carinate. Body length less than
   17 mm in most specimens ................................................................................... 5

5 [4]. Tarsomere 5 of each leg with setae underneath. Head punctate dorsally. Metepister-
   num with lateral edge distinctly longer than anterior edge. Elytra with metallic lustre
   in most specimens [one species: 9.5-12.5 mm; Plate 29] .................. Sterocerus Kirby
   – Tarsomere 5 of each leg without setae underneath. Head impunctate dorsally.
   Metepisternum with lateral edge subequal in length or shorter than anterior edge. Ely-
   tra without metallic lustre [three species: 11.3-18.0 mm] ............... Pterostichus Bonelli [in part]

6 [1]. Upper surface with strong metallic lustre. Antennomeres 2 and 3 carinate medially.
   Submentum with one pair of setae [two species: 9.0-14.0 mm; Plate 29] ...........
   ..................................................................................................................... Poecilus Bonelli
   – Upper surface without metallic lustre. Antennomeres 2 and 3 not carinate. Sub-
   mentum with two pairs of setae (only exceptionally with one pair) .................. 7

7 [6]. Frons with one supraorbital seta along medial edge of each eye [elytron with one
   discal seta on interval 3] [one species: 7.0-8.5 mm; Plate 28] ............... Gastrellarius Casey
   – Frons with two supraorbital setae along medial edge of each eye ............... 8

8 [7]. Penultimate labial palpomere with three or more setae along anterior edge [ely-
   tral interval 3 with one discal seta; metatrochanter without seta] [one species: 12.5-
   20.0 mm; Plate 32] ................................................................. Cyclotrachelus Chaudoir
   – Penultimate labial palpomere with two setae along anterior edge .................. 9

9 [8]. Pronotum with anterotransverse impression complete, more or less sulciform; lat-
   eral bead widening toward posterior angle; base without laterobasal carina. Last
abdominal sternum of male with posterior edge emarginate at middle [two species: 13.7-15.6 mm; Plate 29] ................................................................. Lophoglossus LeConte
– Pronotum either with anterotransverse impression incomplete and not sulciform or lateral bead not widening toward posterior angle or base with laterobasal carina. Last abdominal sternum of male with posterior edge not emarginate at middle [24 species: 4.5-18.0 mm; Plates 30-32] .................................................. Pterostichus Bonelli [in part]

Genus Poecilus Bonelli, 1810 [Pterostichus sensu Lindroth, in part]
This genus includes only two species in the northeastern, both belonging to the subgenus Poecilus s.str. The two species are easily separated from those of Pterostichus and Lophoglossus by the strong metallic lustre on the upper surface of the body as well as by the carinate basal antennomeres.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae and by the presence of two setae (four in females) near the apical edge of the last abdominal sternum.

List of northeastern species of Poecilus

P. chalcites (Say, 1823)  
P. lucublandus (Say, 1823)

Key to northeastern species of Poecilus

1. Pronotum (Fig. 192) with sides narrowly rounded, posterior angle acute. Elytron with two (rarely one or three) discal setae on interval 3 [10.5-13.0 mm] .......................... .......................... ............................................................... P. (Poecilus) chalcites (Say)  
[BC: endemic; BZ: temperate; HR: open places: cultivated fields, vacant lots, orchards, gravel pits, roadsides; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1966: 479-480); Kirk (1975b) – biology; Bousquet (1998: 100) – habitat; Larochelle and Larivière (2003: 376) – bionomics]
– Pronotum (Fig. 193) with sides widely rounded, posterior angle rounded. Elytron with three to five discal setae on interval 3 [9.0-14.0 mm; Plate 29] .......................................................... .......................... .......................................................... P. (Poecilus) lucublandus (Say)

ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES


GENUS LOPHOGLOSSUS CASEY, 1852 [Pterostichus sensu Lindroth, in part]

This endemic North American genus contains two species reaching the northeast. For experienced carabidologists, members of Lophoglossus are recognized on their facies alone but for beginners they could easily be confused with several, large Pterostichus species, particularly those of subgenera Euferonia and Morphnosoma. They are more brilliant, particularly the elytra, and live in wet places, not in covered or open habitats like Euferonia and Morphnosoma species.

Males are recognized by the expanded protarsomeres 1-3 bearing seriate adhesive setae underneath, the presence of two setae (four in females) over the apical margin of the last abdominal sternum, and by the presence of a deep, median notch on the apical edge of the last abdominal sternum. In addition, males of the two northeastern species have a preapical spinelike projection on the mesotibia.

List of northeastern species of Lophoglossus

L. scrutator (LeConte, 1846) L. vernix Casey, 1913

Key to northeastern species of Lophoglossus

[see also key to species of Pterostichus]

1. Elytron without depression at apex of striae 3-5. Apex of median lobe wide apically (Fig. 194) [13.8-15.6 mm; Plate 29] .................................................. L. scrutator (LeConte) [BC: endemic; BZ: temperate; HR: wet places: mainly around swamps and eutrophic marshes; SA: spring breeder; OC: LF++++; RA+++/++; DP: wings (+); flight (-); GD: QC VT; References: Lindroth (1966: 497-498); Bousquet (1998: 100) – habitat; Will (1999: 269-270); Larochelle and Larivière (2003: 309) – bionomics]

– Elytron with depression at apex of striae 3-5. Apex of median lobe narrow apically (Fig. 195) [13.7-14.0 mm].

L. vernix Casey

[BC: endemic; BZ: temperate; HR: [wet places]; SA: [spring breeder]; OC: LF+; RA+; DP: wings (+); flight (-); GD: NH; References: Lindroth (1966: 498); Will (1999: 267-268); Larochelle and Larivière (2003: 310) – bionomics]

GENUS GASTRELLARIUS Casey, 1918 [Pterostichus sensu Lindroth, in part]
The genus includes a single species in the northeast, G. honestus (Say, 1823) [Plate 28], which differs from all other Pterostichini by lacking the anterior pair of supraorbital setigerous punctures on the frons.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae and by the presence of two setae, instead of four, in females, near the apical edge of the last abdominal sternum.


GENUS STOMIS Clairville, 1806
The sole northeastern species of this genus, S. pumicatus (Panzer, 1795) [Plate 28], is easily recognized on its general appearance alone. From the other Pterostichini in the region, it differs by the elongate mandible, the elongate antennomere 1, and the blunt apex of the lacinia.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae. In addition, males have only two setae, instead of four, along the apical edge of the last abdominal sternum.


GENUS STEREOCERUS Kirby, 1837 [Pterostichus sensu Lindroth, in part]
Two species are included in this genus, one of them, S. haematopus (Dejean, 1831) [Plate 29], is found in the northeast. Most specimens (particularly males) of that species (length 9.5-12.5 mm) are readily differentiated by the rather strong bluish, greenish, brassy or coppery metallic lustre on the elytra. However, some specimens (particularly females) have brownish, unmetallic elytra. These are very easily confused with adults of several species of Curtonotus (genus Amara) to the point that at some time the species was included by some authors in Curtonotus. Beside the number of setae on the anterior edge of the penultimate labial palpomere (two in Stereocerus, three or more in Curtonotus), the species is best differentiated by details of the pronotum.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae and by the presence of two setae, instead of four, along the apical edge of the last abdominal sternum.

GENUS *MYAS* STURM, 1826

The two northeastern species of the genus *Myas* are quite easily distinguished from those of other *Pterostichini* by the strong elytral metallic lustre, widened apical labial and maxillary palpomeres, and presence of four setae, instead of two, along the anterior edge of the glos sal sclerite.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae. Males of *M. coracinus* and of some specimens of *M. cyanescens* have two setae along the apical edge of the last abdominal sternum, while most specimens of *M. cyanescens* and females of both species have four setae.

**List of northeastern species of *Myas***

*M. coracinus* (Say, 1823)  
*M. cyanescens* Dejean, 1828

**Key to northeastern species of *Myas***

1. **Elytral striae impunctate. Elytra with moderately transverse microsculpture. Pronotum with posteroangular region markedly convex. Pronotum with lateral bead not particularly widened in basal half [13.5-15.5 mm; elytra usually with violaceous lustre; Plate 29]** ...................................................................................

   *M. cyanescens* Dejean


---

Elytral striae punctate. Elytra with striate microsculpture. Pronotum with posteroangular region flat. Pronotum with lateral bead clearly widened in basal half (not so near posterior angle) [14-20 mm; elytra usually with purple lustre] ........................

..................................................................................................................

..................................................................................................................

*M. coracinus* (Say)

[BC: endemic; BZ: temperate; HR: covered places: deciduous and mixed forests; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (•); GD: VT; References: Lindroth (1966: 444); Allen (1980: 19-20); Larochelle and Larivière (2003: 323) – bionomics]

GENUS *PTEROSTICHUS* BONELLI, 1810

As far as know, there is no single external character that would distinguish all northeastern species of *Pterostichus* from those of other *pterostichines*.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae and by the presence of two setae, instead of four in females, over the apical margin of the last abdominal sternum. In addition, males of some species (e.g., *P. diligendus*, *P. rostratus*, *P. tristis*, and *P. adoxus*) have sexual modification near the apex of the last abdominal sternum, such as a depression and/or carina.

This genus includes 26 species in the northeast which are easy to differentiate on external characters alone. Adults of some species of subgenus *Euferonia* (particularly *P. coracinus* – *P. novus*) are more difficult to distinguish; fortunately the apex of the median lobe of the male almost always protrudes at the apex of the abdomen and offers good interspecific structural characters.
List of northeastern species of *Pterostichus*

- *P. adoxus* (Say, 1823)
- *P. adstrictus* Eschschoitz, 1823
- *P. arctica* (Chaudoir, 1868)
- *P. brevicornis* (Kirby, 1837)
- *P. castor* Goulet & Bousquet, 1983
- *P. caudicus* (Say, 1823)
- *P. commutabilis* (Motschulsky, 1866)
- *P. coracinus* (Newman, 1838)
- *P. corculus* LeConte, 1873
- *P. corvinus* Dejean, 1828
- *P. crassus* Chaudoir, 1868
- *P. femoralis* (Kirby, 1837)
- *P. lachrymosus* (Newman, 1838)
- *P. luctuosus* (Dejean, 1828)
- *P. luctuosus* (Chaudoir, 1868)
- *P. melanarius* (Illiger, 1798)
- *P. mutus* (Say, 1823)
- *P. novus* Straneo, 1944
- *P. patrevis* (Dejean, 1831)
- *P. pennsylvanicus* LeConte, 1873
- *P. permundus* (Say, 1830)
- *P. pinguedinens* (Eschschoitz, 1823)
- *P. praeternissus* (Chaudoir, 1868)
- *P. punctatissimus* (Randall, 1838)
- *P. rostratus* (Newman, 1838)
- *P. strensus* (Panzer, 1797)
- *P. streptus* (Casey, 1924)
- *P. stipicous* (Say, 1823)
- *P. strenus* (Panzer, 1797)
- *P. stronguos* sensu Lindroth [in part]
- *P. transtissimus* (Randall, 1838)
- *P. tristis* (Dejean, 1828)
- *P. tristis* (Say, 1823)
- *P. tristis* (Dejean, 1828)
- *P. tristis* (Lutshnik, 1922)
- *P. vernalis* (Panzer)
- *P. vernalis* (Panzer)

**Key to northeastern species of *Pterostichus* and *Lophoglossus***

1. Metacoxa with three setae (Fig. 196), additional seta located near meeting of coxae.
   - Metacoxa with two setae (Fig. 197) ................................................................. 6

2 [1]. Tarsomere 5 of each leg without setae underneath. Elytron without discal setae on interval 3. Body length more than 10 mm. ................................................................. 3
   - Tarsomere 5 of each leg with setae underneath. Elytron with two to five discal setae on interval 3. Body length less than 9 mm................................................................. 4

3 [2]. Pronotum with posterior angle rather obtuse and blunt, the posterior seta far from basal edge (Fig. 198). Base of pronotum slightly rugose at middle. Mesofemur with three posterior setae [12.9-15.2 mm] ................................. *P. (Hypherpes) adoxus* (Say)
   - Pronotum with posterior angle right or slightly acute, the posterior seta close to basal edge (Fig. 199). Base of pronotum smooth at middle. Mesofemur usually with two posterior setae [11.1-13.7 mm; Plate 30] .......................... *P. (Hypherpes) tristis* (Dejean)
   [BC: endemic; BZ: temperate; HR: covered places: deciduous and mixed forests, mainly under bark of fallen trees or inside and under rotten logs, often associated with *P. adoxus*, SA: autumn breeder; OC: LF++; RA/+++; DP: wings (); GD: ME NB NH NS PE QC VT; References: Bousquet (1986: 300. 302) – seasonal activity; Bousquet (1998: 107) – habitat; Larochelle and Larivière (2003: 441) – bionomics]
4 [2]. Side of mentum more or less oblique (Fig. 200). Elytron with three to five discal setae on interval 3 [4.5-6.5 mm] ............................................. P. (Cryobius) breicornis (Kirby)


– Side of mentum rounded (Figs 201, 202). Elytron with two, rarely one or three, discal setae on interval 3 .................................................................

5 [4]. Side of mentum narrowly rounded, tooth rather short (Fig. 201). Elytron with parascutellar seta usually absent, scutellar stria usually present [6.3-8.5 mm; Plate 31].....

............................................................................. P. (Cryobius) pinguedinus (Eschscholtz)

Side of mentum widely rounded, tooth rather long (Fig. 202). Elytron with parascutellar seta usually present, scutellar stria usually absent [5.2-7.3 mm].

**P. (Cryobius) arcticola** (Chaudoir)


6 [1]. Elytral sculpture irregular: striae more or less sinuate, intervals convex and interrupted by numerous small depressions [15-18 mm; Plate 32] .................................................................

**P. (Lenapherus) punctatissimus** (Randall)

[BC: endemic; BZ: [temperate]/boreal/[arctic/alpine]; HR: covered places: mixed and coniferous forests, often inside and under small rotten logs, also in leaf litter; SA: autumn breeder; OC: LF++++; RA++; DP: wings (;) GD: LB ME NB NF NH NS QC VT; References: Lindroth (1955b: 87); Lindroth (1966: 526-527); Bousquet (1998: 106) – habitat; Larochelle and Larivière (2003: 434) – bionomics]

– Elytral sculpture regular: striae straight, intervals without depressions ................

7 [6]. Elytron without discal setae on interval 3 [12.7-18.0 mm; head large with elongate mandible, eye rather small and temple more or less bulky; elytra with isodiametric microsculpture; Plate 31] .....................................................

**P. (Cylindrocharis) rostratus** (Newman)

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[BC: endemic; BZ: temperate; HR: covered places: deciduous and mixed forests, mainly inside or under rotten logs or under the bark, also under rocks; SA: autumn breeder; OC: LF+++; RA++; DP: wings (-); GD: ME NB NH QC VT; References: Lindroth (1966: 457-458); Barr (1971: 4, 6-7); Bousquet (1986: 300) – seasonal activity; Bousquet (1998: 106) – habitat; Larochelle and Larivière (2003: 435) – bionomics]

- Elytron with at least one discal seta on interval 3..........................................................8

8 [7].

Elytron with one discal seta on interval 3 [10.7-14.0 mm; posterior angle of pronotum obtusely rounded; last abdominal sternum of male with large, rounded depression flanked anteriorly by transverse elevation; Plate 31]........................................

........................................................................................................................................P. (Monoferonia) diligendus (Chaudoir)


- Elytron with at least two discal setae on interval 3........................................................9

9 [8].

Metatrochanter with seta ..............................................................10

- Metatrochanter without seta ...........................................................21

10 [9].

Posterior angle of pronotum widely rounded (Figs 203, 204)........................................

- Posterior angle of pronotum slightly obtuse, right, acute or denticulate.............12

11 [10].

Pronotum without trace of basal bead (Fig. 203); lateral bead relatively well defined toward posterior angle in the vast majority of specimens. Femur reddish-yellow to reddish [7.0-8.6 mm]..................................................P. (Argutor) commutabils (Motschulsky)

[BC: endemic; BZ: temperate; HR: open places: usually on sandy soils near ponds or pools; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 502, as P. leconteianus); Bousquet (1998: 101) – habitat; Larochelle and Larivière (2003: 413-414) – bionomics; Bousquet and Webster (2004: 649-651)]

- Pronotum with basal bead laterally (Fig. 204), though relatively short in a few specimens; lateral bead not or poorly defined toward posterior angle in the vast majority of specimens. Femur reddish-black to brownish-black [7.8-9.1 mm; Plate 30]........

........................................................................................................................................P. (Argutor) praetermissus (Chaudoir)

[BC: endemic; BZ: temperate; HR: wet places: around marshes; SA: [spring breeder]; OC: LF; RA7; DP: wings (+); flight (?); GD: ME NH QC VT; References: Bousquet and Webster (2004: 651-652, 655-657)]

12 [10].

Elytron without scutellar stria. Metatarsomeres 1-3 with median carina dorsally (Fig. 205) [6.0-7.5 mm]..................................................P. (Phonias) vernalis (Panzer)

[BC: exotic (1999); BZ: temperate; HR: open places: wet meadows; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (?); GD: QC VT; References: Lindroth (1966: 503); Bousquet and Webster (2004: 657-658)]

- Elytron with scutellar stria. Metatarsomeres 1-3 without median carina dorsally (Fig. 206)........................................................................................................................................13
13 [12]. Basal impression on each side of pronotum linear, without associated lateral carina (Figs 209, 210). Parascutellar seta on elytron usually absent. Body length less than 8 mm ................................................................. 14

- Basal impression on each side of pronotum rounded, with associated lateral carina. Parascutellar seta on elytron present. Body length more than 8 mm .................... 17

14 [13]. Side of mentum sinuate, tooth short and wide (Fig. 207). Tarsomere 5 of each leg without distinct setae underneath [6.0-7.5 mm; elytral striae distinctly punctate at least over basal half]................................. P. (Phonias) femoralis (Kirby)

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, gravel pits, forest edges, usually on more or less sandy soils; SA: spring breeder; OC: LF+++; RA+/++; DP: wings (- +); flight (+); GD: NB NH QC VT; References: Lindroth (1966: 504); Larochelle (1972e) – wing dimorphism; Bousquet (1998: 101) – habitat; Larochelle and Larivière (2003: 418) – bionomics]

- Side of mentum not sinuate, tooth slightly longer and narrower (Fig. 208). Tarsomere 5 of each leg with small but distinct setae underneath ........................................ 15

15 [14]. Elytral microsculpture striate, microlines barely distinct. Pronotum (Fig. 209) with posterior angle obtuse; side rounded, without sinuation before posterior angle. Body length less than 6 mm [4.9-5.7 mm] .................... P. (Phonias) corruscatus LeConte
[BC: endemic; BZ: temperate; HR: [wet places]: mainly swamps; SA: [spring breeder];

Elytral microsculpture transverse, meshes distinct though poorly impressed in some specimens. Pronotum (Fig. 210) with posterior angle more or less right; side often with short, shallow sinuation just before posterior angle. Body length 6 mm or more [6.1-8.0 mm] .......................................................................................................................


16 [15]. Proepisternum and prosternum impunctate. Elytral striae impunctate or very finely punctate. Pronotum with transverse microsculpture [6.0-8.0 mm; elytral micro-
sculpture usually more transverse in male than in female] .......................................................................................................................

.................................................................................................................................................................................. P. (Phoinias) patruelis (Dejean)
Proepisternum over anterior half and usually pro sternum laterally punctate. Elytral striae distinctly punctate. Pronotum without microsculpture [6.0-7.2 mm] P. (Phonias) strenuus (Panzer) [BG: exotic (1937); BZ: [boreal]; HR: open places: grasslands, cultivated fields, usually on clayish soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (;) GD: NF; References: Lindroth (1955b: 91-92); Lindroth (1966: 504-505); Larochelle and Larivière (2003: 438) – bionomics]

17 [13]. Lateral carina on metatarsus barely distinct on tarsomere 2 (Fig. 211), not distinct on tarsomere 3. Metepisternum smooth or finely punctate .......................................................... 18
– Lateral carina on metatarsus distinct on tarsomeres 1-3 (Fig. 212). Metepisternum markedly punctate .......................................................... 20

18 [17]. Elytra rather parallel-sided and more or less flat, iridescent; striae slightly less impressed at apex than at base. Size of most specimens over 14 mm [13.5-14.8 mm; Plate 30] .......................................................... P. (Melanius) castor Goulet & Bousquet [BC: endemic; BZ: temperate; HR: wet places: exclusively inhabited or recently deserted beaver houses; SA: spring breeder; OC: LF++++++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Goulet and Bousquet (1983: 281-284); Bousquet (1998: 103) – habitat; Larochelle and Larivière (2003: 412) – bionomics]
– Elytra rather elongate-oval and convex, not iridescent; striae as impressed at apex than at base. Size less than 14 mm .................................................................................. 19

19 [18]. Pronotum (Fig. 213) moderately constricted at base (WP/WP = 1.30-1.37; mean = 1.33; n = 20) [11.5-13.9 mm; apical lamella of median lobe short, rounded; apical stylomere with lateral spines] .......................................................... P. (Melanius) corvinus (Dejean) [BC: endemic; BZ: temperate; HR: wet/flooded places: marshes, swamps, ponds, beaver houses; also along river and lake banks under debris, usually on clayish or muddy soils; SA: spring breeder; OC: LF++++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 499-500); Bousquet (1986: 300) – seasonal activity; Bousquet (1998: 103) – habitat; Larochelle and Larivière (2003: 415) – bionomics]
– Pronotum (Fig. 214) markedly constricted at base (WP/WP = 1.37-1.49; mean = 1.45; n = 20) [10.0-13.0 mm; apical lamella of median lobe much longer and deflected; apical stylomere without lateral spines] .................. P. (Lamenius) candidalis (Say) [BC: endemic; BZ: temperate/boreal; HR: wet/flooded places: marshes, swamps, river and lake banks under debris, usually on clayish or muddy soils; SA: spring breeder; OC: LF++++++; RA++; DP: wings (+); flight (;); GD: ME: NF NH QC VT; References: Lindroth (1955b: 89-90); Lindroth (1966: 500); Epstein and Kulman (1990) – seasonal activity; Bousquet (1998: 103) – habitat; Larochelle and Larivière (2003: 412-413) – bionomics]

20 [17]. Mentum tooth wide (Fig. 215). Wings proportionally longer (LW/LE = 1.57-1.69; mean = 1.61; n = 26) [8.6-10.5 mm; right paramere widened at middle and apex] .......................................................... P. (Pseudomaseus) tenuis (Casey) [BC: endemic; BZ: temperate/boreal; HR: wet places: mainly margins of bogs, but also around swamps and eutrophic marshes; SA: spring breeder; OC: LF++; RA++;
DP: wings (+); flight (+); **GD**: ME NB NF NH NS PE QC VT; **References**: Bousquet and Pilon (1983); Davidson (1988) – habitat; Bousquet (1998: 104) – habitat; Larochelle and Larivière (2003: 440) – bionomics

- Mentum tooth narrow (Fig. 216). Wings proportionally shorter (LW/LE = 1.13-1.37; mean = 1.24; n = 85) [9.1-10.8 mm; right paramere narrow over entire length; Plate 31].................................................P. (Pseudomaseus) luctuosus (Dejean)

**BC**: endemic; **BZ**: temperate/boreal; **HR**: wet/flooded places: margins of marshes, swamps, in beaver houses, along river and lake banks under debris, usually on clayish or
muddy soils; often with *P. corvinus*. **SA:** spring breeder; **OC:** LF++++; RA++/+++; **DP:** wings (+); flight (+); **GD:** ME NB NF NH NS PE PM QC VT; **References:** Lindroth (1955b: 90); Lindroth (1966: 501); Bousquet and Pilon (1983); Bousquet (1986: 300) – seasonal activity; Bousquet (1998: 104) – habitat; Larochelle and Larivière (2003: 424) – bionomics.

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21 **[9]**. Posterior angle of pronotum rounded (Fig. 217).

> Posterior angle of pronotum obtuse (Fig. 219), right (Fig. 220), acute or denticulate (Fig. 218), though in some specimens somewhat rounded at tip.

22 **[21]**. Basal impression of pronotum with tubercle at middle. Apical lamella of median lobe more or less symmetrical (Fig. 221) [12.5–18 mm]..... *P. (Euferonia) stygicus* (Say)

[**BC:** endemic; **BZ:** temperate; **HR:** covered/open places: deciduous and mixed forests, forest edges, mainly in leaf litter and under rocks; also cultivated fields and grasslands; **SA:** autumn breeder; **OC:** LF++++; RA++; **DP:** wings (+); **GD:** ME NH QC VT; **References:** Lindroth (1966: 492-494); Bousquet (1998: 106) – habitat; Larochelle and Larivière (2003: 438-439) – bionomics]

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23 [22]. Elytral microsculpture irregularly isodiametric, particularly near striae. Apical lamella of median lobe projecting on right side (Fig. 222) [12.5-18.0 mm].

P. (Euferonia) coracinus (Newman)


– Elytral microsculpture distinctly transverse, particularly near striae. Apical lamella of median lobe projecting on left side (Fig. 223) [16.0-19.5 mm].

P. (Euferonia) novus Straneo


24 [21]. Pronotum (Fig. 218) with laterobasal carina; posterior angle denticulate [12.0-19.0 mm]; elytra with isodiametric microsculpture; Plate 32].

P. (Morphnosoma) melanarius (Illiger)


– Pronotum without laterobasal carina (Figs 219, 220); posterior angle not denticulate.

25 [24]. Tarsomere 5 of each leg with setae underneath.

26

– Tarsomere 5 of each leg without setae underneath.

27

26 [25]. Elytra not iridescent; microsculpture isodiametric. Pronotum (Fig. 219) with sides more or less convergent in basal half; anterior angle not protruding anteriad [14.5-17.0 mm].

P. (Euferonia) lacrymosus (Newman)


– Elytra markedly iridescent; microsculpture markedly striate. Pronotum (Fig. 220) with sides subparallel in basal half; anterior angle protruding anteriad [13-17 mm].

P. (Abacidus) permundus (Say)
[BC: endemic; BZ: temperate; HR: covered/open places: open forests, cultivated and vacant fields; SA: autumn breeder; DP: wings (-); GD: the single specimen labelled from Mont Royal, QC (Larochelle 1975a: 31), is suspect in my opinion; otherwise the species is not known from the northeast; References: Lindroth (1966: 535-536); Larochelle and Larivière (2003: 431-432) – bionomics]

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27 [25]. Lateral bead of pronotum wide, particularly toward base. Elytral microsculpture transverse. Body length more than 13.5 mm [genus *Lophoglossus* LeConte].................28

-- Lateral bead of pronotum narrow, not widening toward base. Elytral microsculpture isodiametric. Body length 13.5 mm or less..........................................................29

28 [27]. Elytron without depression at apex of striae 3-5 [13.8-15.6 mm; apex of median lobe wide apically (Fig. 194); Plate 29].................................*Lophoglossus scrutator* (LeConte)

[BC: endemic; BZ: temperate; HR: wet places: mainly around swamps and eutrophic marshes; SA: spring breeder; OC: LF+++; RA+/++; DP: wings (+); flight (-); GD: QC VT; References: Lindroth (1966: 497-498); Bousquet (1998: 100) – habitat; Will (1999: 269-270); Larochelle and Larivière (2003: 309) – bionomics]

-- Elytron with depression at apex of striae 3-5 [13.7-14.0 mm; apex of median lobe narrow apically (Fig. 195)]..........................................................*Lophoglossus vernix* Casey
Elytron with three (rarely two) non foveolate setigerous punctures on interval 3. Metatibia of male with brush of closely set setae on distal half of medial surface (Fig. 224) [9.5-13.5 mm].

\[ P. \text{(Bothriopterus) mutus} \text{(Say)} \]

- Elytron with at least four (often five or six) slightly to distinctly foveolate setigerous punctures on interval 3. Metatibia of male without brush of setae (Fig. 225)

\[ P. \text{(Bothriopterus) pensylvanicus} \text{LeConte} \]
**GENUS CYCLOTRACHELUS CHAUDOIR, 1838**

[syn: *Evarthrus* LeConte, 1852; *Pterostichus* sensu Lindroth, in part]

This genus of 43 species endemic to North America includes a single species, *C. sodalis sodalis* (LeConte, 1846) [Plate 32], in the northeast. The species, with a size range between 12.5 and 20.0 mm, differs from all other *Pterostichini* treated by the presence of three or more setae along the anterior edge of the penultimate labial palpomere. Females also have only two setae along the apical edge of the last abdominal sternum while females of all other northeastern *Pterostichini* have four apical setae.

Males are distinguishing by having the protarsomerter 1-3 dilated and covered underneath with seriate adhesive setae.

**List of northeastern species of Cyclotrachelus**

* [C. sigillatus (Say, 1823)]

**Key to northeastern species of Cyclotrachelus**

1. Side of pronotum with short but rather deep sinuation in front of posterior angle; posterior angle slightly acute to slightly obtuse. Anterotransverse impression of pronotum obsolete medially [13.5-19.0 mm; Plate 32]...... *C. sodalis sodalis* (LeConte)  
   **[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, roadsides, lawns, also open forests; SA: [autumn breeder]; OC: LF+, RA++; DP: wings (;)]**

   **GD: VT (see Bell and Nielsen 1978); References: Lindroth (1966: 474, as *Pterostichus fatuos*); Freitag (1969: 146-150); Epstein and Kulman (1990) – seasonal activity; Larochelle and Larivière (2003: 221) – bionomics]  

   – Side of pronotum without or with very shallow sinuation in front of posterior angle; posterior angle obtuse rounded to rounded. Anterotransverse impression of pronotum deeply impressed medially [15.2-19.8 mm] .......................... *C. sigillatus* (Say)  

   **[BC: endemnic; BZ: temperate; HR: open places: cultivated and vacant fields, roadsides, lawns, also open forests; SA: [autumn breeder]; OC: LF, RA++; DP: wings (;)]**

   **GD: VT (see Bell and Nielsen 1978); References: Lindroth (1966: 474, as *Pterostichus fatuos*); Freitag (1969: 146-150); Epstein and Kulman (1990) – seasonal activity; Larochelle and Larivière (2003: 221) – bionomics]**
**GENUS ABAX BONELLI, 1810**

This European genus contains a single exotic species, *A. parallelepipedus* (Piller & Mitterpacher, 1783) [Plate 32], in North America. The large size (18-22 mm) and quite characteristic facies make the species readily recognizable.

Males are distinguishing by having the protarsomeres 1-3 dilated and covered underneath with seriate adhesive setae and by the presence of two setae, instead of four in females, along the apical edge of the last abdominal sternum.

**GENUS PSEUDAMARA LINDROTH, 1968 [syn.: Disamara Lindroth, 1976]**

The sole species includes in this genus, *P. arenaria* (LeConte, 1847) [Plate 35], is easily recognized by its characteristic facies. The relatively small species (body length 5.0-5.8 mm) differs from all species of *Amara* by several character states, including the presence of only two setae on the anterior edge of the penultimate labial palpmere (three or more in *Amara*), presence of dense small setae on the apical labial and maxillary palpmeres (sparse small setae in *Amara*), and much less evident elytral plica. Superficially the species resembles *Notiobia nitidipennis* but is easily separated by the presence of two pairs of supraorbital setae on the frons and the presence of posterolateral setae on the pronotum.

Males differ from females in having the protarsomeres 1-3 slightly dilated and with seriate adhesive setae underneath. In addition, males have only two setae (four in females) along the apical edge of the last abdominal sternum.

**GENUS AMARA BONELLI, 1810**

This large genus includes 48 species in the northeast. The facies of an *Amara* is relatively characteristic and members of the genus can be easily recognized by those who have a certain experience with carabids. The combination of the followings character states will separate members of *Amara* from those of other genera in the northeast to which they could be confused by inexperienced carabidologists: elytral plica present, elytral disc without setigerous puncture; posterolateral setae of pronotum present, subbasal ridge of elytron distinct, and anterior edge of penultimate labial palpmere with three or more setae.

Males are distinguished from females by having the protarsomeres 1-3 expanded and covered underneath with seriate adhesive setae. Males also have only two setae (four in *A. quenseli*,...
A. chalcea, and A. gibba) along the apical edge of the last sternum while females of most species have four setae (exceptions are A. communis and A. lunicollis with two setae like males). In addition, many species show sexual differences on other structures. The prosternum of the male may have a depression or a group of minute punctures at middle (A. exarata, A. latior, A. lindrothi, A. apricaria, A. chalcea, A. gibba and A. quenseli). The mesotibia of the male of some species is armed with a toothlike process near the middle and often also bear one or two small tubercles closer to the apex (subgenus Curtonotus); in some other species (A. exarata, A. fulva, A. latior, A. apricaria, A. schwarzi, A. glacialis) the mesotibia of the male is somewhat arcuate and possess two or three small tubercles near the apex. In many species, the male can be distinguished also by the presence of a brush of setae along the apical half of the medial side of the metatibia (A. exarata, A. fulva, A. latior, A. apricaria, A. schwarzi, A. glacialis, A. lunicollis, A. aenea, A. aeneopolita, A. impuncticollis, A. otiosa, A. litoralis, A. turbata, A. familiaris, A. aenea, A. cupreolata, A. convexus, A. angustata, A. angustatoides, and A. pallipes). Finally, in many species the microsculpture meshes of the female are more impressed than in the male.

### List of northeastern species of *Amara*

<table>
<thead>
<tr>
<th>Species</th>
<th>Year</th>
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<td>A. aenea (DeGeer, 1774)</td>
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<tr>
<td>A. aeneopolita Casey, 1918</td>
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<td>A. alpina (Paykull, 1790)</td>
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<td>A. angustata (Say, 1823)</td>
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<td>A. angustatoides Hieke, 2000</td>
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<td>A. apricaria (Paykull, 1790)</td>
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<td>A. chalcea Dejean, 1828</td>
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<td>A. lindrothi Hieke, 1990</td>
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<td>A. musculus (Say, 1823)</td>
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<tr>
<td>A. neocotica Casey, 1924</td>
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<tr>
<td>A. ovata (Fabricius, 1792)</td>
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<tr>
<td>A. pallipes Kirby, 1837</td>
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<td>A. patrnels Dejean, 1831</td>
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<td>A. pennsylvanica Hayward, 1908</td>
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<td>A. psuedobrunnea Lindroth, 1968</td>
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<tr>
<td>A. quenseli (Schönherr, 1806)</td>
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<td>A. rubrica Haldeman, 1843</td>
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<td>A. schwarzi Hayward, 1908</td>
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<td>A. sinuosa (Casey, 1918)</td>
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<tr>
<td>A. torrida (Panzer, 1797)</td>
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<tr>
<td>A. turvata Casey, 1918</td>
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<tr>
<td>A. littoralis sensu Lindroth [in part]</td>
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<tr>
<td>A. discors sensu Lindroth [in part]</td>
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Key to northeastern species of *Amara*

1. Elytron without or with only one preapical seta (Fig. 228) ........................................ 2
   - Elytron with two or three preapical setae (apicalmost usually small and rather close to the suture) (Fig. 229) ................................................................. 16

2 [1].
   Prosternal apophysis unmargined (Fig. 230). Mesotibia of male with spinelike projection along medial surface near middle and one or two additional smaller ones on apical half. Body length more than 9.5 mm in many specimens [pronojun with laterobasal carina]................................................................................................................ 3
   - Prosternal apophysis margined apically (less evidently so in some specimens of *A. avida* without laterobasal carina on pronotum) (Fig. 231). Mesotibia of male without spinelike projection but with two or three small tubercles in many species. Body length less than 9.5 mm in many specimens .............................................................................. 9

3 [2].
   Frons without posterior supraorbital setae. Pronotum without midlateral setae [9-13 mm; side of pronotum barely sinuate before posterior angle].................................
   - Frons with both pairs of supraorbital setae. Pronotum with midlateral setae ..........

4 [3].
   Pronotum (Fig. 233) with posterior angle protruding laterad, acute; lateral bead confluent with laterobasal carina at base [11.0-14.3 mm; base of pronotum densely punctate; Plate 33].................................................................
   - Pronotum (Figs 234-236) with posterior angle not or only slightly protruding laterad, right or obtuse in most specimens; lateral bead not confluent with laterobasal carina at base...

5 [4].
   Apical labial and maxillary palpomeres (except at apex) infuscate. Side of pronotum (Fig. 234) without or with very shallow sinuation in front of posterior angle [7.3-11.5 mm; elytra more or less brown in many specimens, clear red in some specimens].................................................................
   - Apical labial and maxillary palpomeres entirely pale. Side of pronotum (Figs 235, 236) with more or less deep sinuation in front of posterior angle in most specimens

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*Amara* (Curtonotus) hyperborea Dejean


*Amara* (Curtonotus) vulpina (Panzer)

[BC: exotic (1929); BZ: temperate; HR: open places: vacant lots, roadsides, pastures, meadows, gravel pits, usually on dry, sandy soils; SA: autumn breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NS PE PM QC; References: Lindroth (1955b: 95); Lindroth (1968: 665-666); Larochelle and Larivière (2003: 42) – bionomics]

*Amara* (Curtonotus) alpina (Paykull)

[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: moraines, vacant lots, meadows, usually on dry, sandy soils; SA: autumn breeder; OC: LF+++; RA++; DP: wings (+); flight (-); GD: LB ME NF NH QC VT; References: Lindroth (1955b: 97-98, as *A. alpina brunipennis*); Lindroth (1968: 673-676); Larochelle and Larivière (2003: 40) – bionomics]

*Amara* (Curtonotus) brunipennis (Paykull)

[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: gravel and sand pits, meadows, moraines, vacant fields, usually on dry, sandy soils; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (-); GD: LB ME NF NH QC VT; References: Lindroth (1955b: 97-98, as *A. alpina brunipennis*); Lindroth (1968: 673-676); Larochelle and Larivière (2003: 40) – bionomics]
6 [5]. Pronotum (Fig. 235) only slightly constricted at base (WP_b/WP = 0.84-0.90; n = 20). Abdominal sterna 2 and 3, often also 4, with distinct punctures laterally. Mentum tooth very small, truncate apically [10.0-11.7 mm; pronotum impunctate anteriorly] ................................................................. *Curtonotus* pennsylvanica* Hayward

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, sand and gravel pits, usually on dry sandy soils; SA: [autumn breeder]; OC: LF++; RA+/++;
DP: wings (+); flight (+); GD: NH NS QC; References: Lindroth (1968: 677-678); Larochelle and Larivière (2003: 59) – bionomics]
– Pronotum (Fig. 236) more constricted at base (WP₀/⟨WP ≤ 0.80; n = 30). Abdominal sterna 2 and 3, or at least 3, without or with very small punctures laterally. Mentum tooth proportionally longer and slightly bifid apically in most specimens

........................................................................................................................................7

7 [6]. Laterobasal carina of pronotum poorly defined, short, not reaching anterior extremity of impression (Fig. 237). Body length less than 11 mm in vast majority of specimens. Humeral denticle indistinct (Fig. 237) [9.0-11.2 mm; boreal, arctic, alpine regions; commonly collected]...A. (Curtonotus) torrida (Panzer)

[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: meadows, moraines, vacant lots, cultivated fields, roadsides, usually on rather dry soils; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB NB NF NH NS PM QC; References: Lindroth (1955b: 95-97); Lindroth (1968: 671-673); Larochelle and Larivière (2003: 63) – bionomics]

– Laterobasal carina of pronotum well defined, long, reaching (or almost so) anterior extremity of specimens (Fig. 238). Body length 11 mm or more in the vast majority of specimens. Humeral denticle small but distinct in most specimens (Fig. 238) [mainly temperate regions; rarely collected in the northeast]........8

8 [7]. Pronotum proportionally shorter (LP/LE = 0.31-0.33; n = 20). Eye markedly convex (maximum width of eye / length of antennomere 1 = 0.72-0.87; n = 20). Clypeus and frons concolour in the vast majority of specimens [10.6-12.8 mm] ..................A. (Curtonotus) lacustris LeConte

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, grasslands, vicinity of lakes, usually on more or less dry, clayish soils; SA: [autumn breeder]; OC: LF++; RA+; DP: wings (+); flight (+); GD: NB NS; References: Lindroth (1968: 669-671); Larochelle and Lariviére (2003: 54) – bionomics. Note: Lindroth (1968: 668, 670) mentioned that the metasternum is, as a rule, virtually impunctate in A. lacustris and with coarse, rather sparse punctures (rarely almost impunctate) in A. carinata. Examination of many specimens of both species showed that the character is too variable to be diagnostically useful]

– Pronotum proportionally longer (LP/LE = 0.35-0.38; n = 20). Eye moderately convex (maximum width of eye / length of antennomere 1 = 0.55-0.70; n = 20). Clypeus paler than frons in the vast majority of specimens [11.0-14.2 mm] .................A. (Curtonotus) carinata (LeConte)

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, gardens, wastelands, sand pits, usually on sandy or clayish soils; SA: [autumn breeder]; OC: LF++; RA+/++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1968: 668-669); Larochelle and Lariviére (2003: 45) – bionomics]

9 [2]. Pronotum without convexity or carina lateral to basal impression [base and lateral margins of pronotum clearly punctate].................................10

– Pronotum with convexity or carina lateral to basal impression..................................11

10 [9]. Apical maxillary and labial palpomeres (except at apex) and antennomeres (except first one) brownish-black to black. Mentum tooth bifid. Elytral microsculpture isodiametric. Metatibia of male with brush of closely set setae on distal half of medial
surface [6.3-8.5 mm; upper surface with pronounced aeneous, more rarely blue or green, lustre] ............................................................ A. (Bradyntus) glacialis (Mannerheim)

[BC: holarctic; BZ: boreal/arctic; HR: [flooded places]: river banks and lake shores, usually on sandy soils; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: LB QC; References: Lindroth (1968: 684-686); Larochelle and Lari-vire (2003: 51-52) – bionomics]

Figs 237-238. Left humeral region. 237: Amara torrida; 238: Amara carinata.
– Apical maxillary and labial palpomeres and antennomeres (except first one) paler, reddish-yellow. Mentum tooth truncate. Elytral microsculpture transverse. Metatibia of male without brush of closely set setae on medial surface [7.4-9.8 mm; basal impression of pronotum indistinct; Plate 33] ..........................A. (Bradytus) avida (Say)  
[BC: endemic; BZ: temperate/boreal; HR: open places: disturbed areas, cultivated and fallow fields, orchards, sand and gravel pits, usually on sandy soils; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 99-100); Lindroth (1968: 689-690); Larochelle and Larivière (2003: 43) – bionomics]

11 [9]. Scutellar stria of elytron absent or markedly short. Pronotum with more or less distinct microsculpture meshes. Elytra without microsculpture in male [7.3-10.0 mm; elytral striae deeply impressed, intervals convex]...........A. (Bradytus) exarata Dejean  
[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, sand pits, forest edges, also sandy places in forests; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NH; References: Lindroth (1968: 680); Larochelle and Larivière (2003: 49) – bionomics]

– Scutellar stria of elytron relatively long. Pronotum with evident microsculpture meshes. Elytra with microsculpture in male .............................................. 12

12 [11]. Upper surface brownish-red. Pronotum (Fig. 239) with laterobasal carinae distinctly converging anteriad; side moderately sinuate in front of posterior angle. Submentum with one pair of setae [8.0-10.4 mm; prosternum of male with punctate median area] .................................................................A. (Bradytus) fulva (O.F. Müller)  
[BC: exotic (1905); BZ: temperate/boreal; HR: open places: vacant fields, upper zone of sea beaches and river banks, usually on dry sandy soils; SA: autumn breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB NB NF PE QC; References: Lindroth (1955b: 101-102); Lindroth (1968: 680-681); Larochelle and Larivière (2003: 51) – bionomics]

– Upper surface reddish-black to black. Pronotum (Fig. 240) with laterobasal carinae more or less parallel; side not or only slightly sinuate in front of posterior angle. Submentum with two pairs of setae in most specimens .............................................. 13

13 [12]. Elytral striae more or less coarsely punctate, punctures clearly wider than striae. Pronotum with posterior angle slightly acute; anterior angle not or only slightly projecting anteriad in most specimens; side with very shallow but usually distinct sinuation just in front of posterior angle [6.5-9.0 mm; metepisternum and side of metasternum coarsely punctate; prosternum of male with punctate median area] ....  
.................................A. (Bradytus) apricaria (Paykull)  
[BC: exotic (< 1865); BZ: temperate/boreal/arctic/alpine; HR: open places: cultivated and abandoned fields, gardens, parks, sand and gravel pits, moraines, meadows, roadsides, forest clearings, usually on more or less dry sandy soils; SA: autumn breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 100-101); Lindroth (1968: 683); Larochelle and Larivière (2003: 41-42) – bionomics]

– Elytral striae impunctate or finely punctate, punctures not or barely wider than striae. Pronotum with posterior angle somewhat obtuse; anterior angle moder-
Figs 239-240. Pronotum. 235: *Amara fulva*; 236: *Amara apricaria*.
Figs 243-244. Apical half of protibia. 243: *Amara pallipes*; 244: *Amara lunicolis*.

ately to markedly projecting anteriad; side without sinuation in front of posterior angle

14 [13]. Metasternum without punctures. Prosternum of male with punctate median area. Body length more than 8 mm [8.1-10.8 mm].......................... *A. (Bradytus) latior* (Kirby)

[BC: endemic; BZ: temperate/boreal; HR: open places: sand and gravel pits, cultivated and vacant fields, roadsides, meadows, forest edges and clearings, usually on more
or less dry sandy soils; \textbf{SA}: autumn breeder; \textbf{OC}: LF\;++\;++; \textbf{RA}++; \textbf{DP}: wings (+); \textbf{GD}: ME NB NF NH NS PE QC VT; \textbf{References}: Lindroth (1955b: 102); Lindroth (1968: 682-683); Larochelle and Larivière (2003: 55) – bionomics

– Metasternum with punctures laterally. Prosternum of male without median punctate area, at most with median depression. Body length less than 8.0 mm in many specimens .......................................................... 15

15 [14]. Mentum tooth short, wide (Fig. 241). Metatibia of male with brush of setae along apical half of medial side. Prosternum of male without depression \[6.8-8.0 \text{ mm}] ..  .......................................................... \textbf{A}. (\textit{Bradytus}) \textit{schwarzi} Hayward

\hfill \textbf{BC}: endemic; \textbf{BZ}: boreal/arctic; \textbf{HR}: [open places]; \textbf{SA}: \text{?}; \textbf{OC}: LF+; RA+; \textbf{DP}: wings (+); flight (;) \hfill \textbf{GD}: QC; \textbf{References}: Lindroth (1968: 684); Larochelle and Larivière (2003: 61) – bionomics

– Mentum tooth long, narrow (Fig. 242). Metatibia of male without brush of setae along apical half of medial side. Prosternum of male with impunctate, shallow median depression \[7.6-8.6 \text{ mm}] ........................................ \textbf{A}. (\textit{Bradytus}) \textit{lindrothi} Hieke

\hfill \textbf{BC}: endemic; \textbf{BZ}: arctic; \textbf{HR}: ?; \textbf{SA}: ?; \textbf{OC}: LF+; RA+; \textbf{DP}: wings (+); flight (;) \textbf{GD}: LB; \textbf{References}: Hieke (1990: 234-237)

16 [1]. Protibia with apical spur trifid (Fig. 243) \hfill \text{[elytron with parascutellar seta]}........ 17

– Protibia with apical spur simple (Fig. 244) .......................................................... 20

17 [16]. Pronotum (Fig. 245) with posterior angle slightly acute or right though somewhat rounded at extremity; posterolateral setigerous puncture close to lateral bead, separated from it by diameter of pore or slightly more. Pronotum proportionally narrow \((LP/WP = 0.69-0.75; n = 15) \hfill [6.2-8.0 \text{ mm}];\) disc of pronotum with distinct microsculpture meshes around median sulcus; elytra with isodiametric to irregularly isodiametric microsculpture meshes; basal edge of pronotum deeply sinuate each side of middle; sides of pronotum subparallel to slightly rectilinearly convergent in basal half in most specimens; Plate 34] .................................................. \textbf{A}. (\textit{Zezea}) \textit{pallipes} Kirby

\hfill \textbf{BC}: endemic; \textbf{BZ}: temperate/boreal; \textbf{HR}: open places: cultivated and vacant fields, meadows, roadsides, sand and gravel pits, often near water, usually on soils with grasses; \textbf{SA}: ?; \textbf{OC}: LF\;++\;++; RA++; \textbf{DP}: wings (+); flight (;) \textbf{GD}: ME NB NH NS QC VT; \textbf{References}: Lindroth (1968: 737-739); Larochelle and Larivière (2003: 58) – bionomics

– Pronotum (Fig. 246) with posterior angle slightly obtusely rounded to rounded; posterolateral setigerous puncture farther from lateral bead, separated from it by two diameters of pore or more. Pronotum proportionally wider on average \((LP/WP = 0.61-0.70; n = 30) \hfill [5.8-7.4 \text{ mm}] .......................................................... 18

18 [17]. Elytral microsculpture moderately to markedly transverse. Base of pronotum with deep punctures around medial impression and usually also around lateral impression \([5.4-7.4 \text{ mm}];\) disc of pronotum with indistinct microsculpture meshes around median sulcus (erased in \(\delta\), faint in \(\varphi\)) .................................................. \textbf{A}. (\textit{Zezea}) \textit{flebilis} Casey

\hfill \textbf{BC}: endemic; \textbf{BZ}: temperate; \textbf{HR}: [open places]; \textbf{SA}: ?; \textbf{OC}: LF\;++\;++; RA ?; \textbf{DP}: wings (+); flight (?); \textbf{GD}: ME NB NH NS QC VT; \textbf{References}: Hieke (2000: 53-55); Larochelle and Larivière (2003: 51) - bionomics
Elytral microsculpture isodiametric to slightly transverse. Base of pronotum without punctures in most specimens, with rather shallow punctures mostly around medial impression in some specimens [two species very difficult to separate]...... 19

Disc of pronotum without or with indistinct microsculpture meshes around median sulcus. Pronotum with green metallic lustre [5.4-7.8 mm; front angles of pronotum more protruding than in A. angustata; commonly collected in the northeast]..........

A. (Zezea) angustatoides Hieke

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, meadows, moraines, gardens, orchards, gravel pits, roadsides, usually on soils covered with grasses; SA: ?; OC: LF+; RA?; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Hieke (2000: 49-53)]

Disc of pronotum with distinct microsculpture meshes around median sulcus. Pronotum with bronze lustre in most specimens [5.8-7.0 mm; rarely collected in the northeast] ..................................................................................A. (Zezea) angustata (Say)

[BC: endemic; BZ: temperate; HR: open places; SA: ?; OC: LF?; RA?; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1968: 736-737); Hieke (2000: 49-53); Larochelle and Larivière (2003: 41) – bionomics]

Elytron with parascutellar seta ........................................................................................ 21

Elytron without parascutellar seta .................................................................................. 27

Antennomeres 4-11 not infuscate, yellow to yellowish-red as antennomeres 1-3. Body length less than 6.5 mm. Metatibia of male without brush of setae along apical half of medial side. Elytra without microsculpture in male [5.0-6.1 mm; side of pronotum evenly rounded, posterior angle rounded].................................................................................. A. (Celia) pseudobrunnea Lindroth

[BC: endemic; BZ: boreal/arctic/alpine; HR: open places: vacant lots, moraines, roadsides, also open forests, usually on rather dry sandy soils; SA: ?; OC: LF++; RA+; DP: wings (+); flight (-); GD: LB QC; References: Lindroth (1968: 706-707); Larochelle and Larivière (2003: 59-60) – bionomics]
22 [21]. Tibia not or barely paler than femur .................................................................23
– Tibia paler than femur [four similar species requiring in most cases examination of the median lobe for positive identifications] ......................................................24

23 [22]. Pronotum (Fig. 247) with sides subparallel or slightly divergent in basal half; posterior angle slightly projecting posteriad; medial impression short but well impressed. Antennomeres 2 and 3 carinate. Body length 9.5 mm or more in most specimens [9.0-11.0 mm] .......................................................... A. (Amara) eurynota (Panzer)
[BC: exotic (1971); BZ: boreal; HR: open places; SA: ?; OC: LF+; RA++; DP: wings (+); flight (+); GD: NF; References: Bousquet (1987a: 128); Larochelle and Larivière (2003: 49-50) – bionomics]
– Pronotum (Fig. 248) with sides slightly but evenly rounded in basal half; posterior angle not projecting posteriad; medial impression more or less impressed in many specimens. Antennomere 2 not carinate, antennomere 3 at most slightly carinate at base. Body length less than 9.5 mm [7.8-9.3 mm; elytral intervals more convex and striae deeper toward apex than in A. eurynota] ................................ A. (Amara) ovata (Fabricius)

24 [22]. Pronotum (Fig. 249) with sides subparallel or even slightly divergent in posterior half; posterior angle right or slightly acute though more or less rounded at extremity; posterolateral setigerous puncture roughly equidistant from lateral bead and basal edge in most specimens [7.5-8.5 mm; penis including endophalic structures, see Hieke (2000: Figs 35-37)] ........................................ A. (Amara) littoralis Mannerheim
[BC: endemic; BZ: temperate/boreal; HR: open places: gravel and sand pits, pastures, cultivated and vacant fields, roadsides, gardens, usually on or more or less dry sandy soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NF NH NS PE QC VT References: Lindroth (1968: 730-731); Hieke (2000: 65-67); Larochelle and Larivière (2003: 55-56) – bionomics]
– Pronotum (Fig. 250) with sides slightly to moderately rounded in posterior half; posterior angle more or less obtusely rounded to widely rounded; posterolateral setigerous puncture slightly farther from lateral bead than basal edge in most specimens ..............................................................................................................25

25 [24]. Body length 8.5 mm or more. Pronotum with basal edge slightly sinuate around level of medial impression in most specimens; lateral impression very shallow but traceable [8.5-9.8 mm; median lobe (in dorsal view) with apical half more deflected on left side than related species (see Hieke 2000: Figs 59-61); rarely collected in the northeast] .................................................................................... A. (Amara) turbata Casey
[BC: endemic; BZ: temperate; HR: [open places]; SA: ?; OC: LF++; RA++; DP: wings (+); flight (-); GD: NH QC; References: Hieke (1994: 337-342); Hieke (2000: 75-79)]
– Body length less than 8.5 mm in the vast majority of specimens. Pronotum with basal edge not sinuate near level of medial impression in most specimens; lateral impression indistinct in most specimens...............................................................26

26 [25]. Maximum width of pronotum removed from posterior angles; posterior angle widely rounded [6.5-9.0 mm; penis including endophalic structures, see Hieke (2000: Figs 51-53); commonly collected in the northeast; Plate 34]...................

A. (Amara) otiosa Casey
[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, gravel and sand pits, meadows, roadsides, forest edges and clearings, usually on rather dry sandy soils with grasses; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 110, as A. impuncticol-]s); Hieke (2000: 71-74)]

– Maximum width of pronotum very close to posterior angles; posterior angle narrowly rounded [7.2-8.0 mm; penis including endophalic structures, see Hieke (2000: Figs 43-45); rarely collected in the northeast]......A. (Amara) impuncticollis (Say)
[BC: endemic; BZ: temperate; HR: [open places]; SA: ?; OC: LF+; RA+; DP: wings (+); flight (-); GD: ME NH QC; References: Hieke (2000: 67-70)]

27 [20]. Antenna entirely pale, yellow to red. Apical maxillary and labial palpomeres pale or (more rarely) brownish-black [femur pale, at most more or less infuscate]............28
– Antennomeres 4-11, in some species all antennomeres, infuscate. Apical maxillary and labial palpomeres (except apex) black.................................................................38

28 [27]. Body length 9.0 mm or more. Prosternal apophysis with six or more setae along apical and lateral edges. Meso- and metafemora each with six or more long posterior setae [9.0-13.0 mm; Plate 33] ..........................................................................................A. (Perozia) obesa (Say)

[BC: endemic; BZ: temperate/boreal/[alpine]; HR: open places: cultivated and vacant fields, road- sides, meadows, sand and gravel pits, usually on sandy soils; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (- +); flight (-); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 102); Lindroth (1968: 690-691); Larochelle (1977d) – wing dimorphism; Heie (1978: 285-289); Larochelle and Larivière (2003: 57-58) – bionomics]

– Body length less than 8.5 mm. Prosternal apophysis without or (A. quenseli) with one to four setae along apical edge only. Meso- and metafemora each with four or less long posterior setae ......................................................................................................................

29 [28]. Pronotum with isodiametric to slightly transverse microsculpture meshes over lateral third. Prosternum with median group of punctures in the male (except in A. bifrons). Last abdominal sternum of male with two pairs of setae along apical edge (except in A. bifrons)......................................................................................................................30

– Pronotum without or with moderately to markedly transverse microsculpture meshes over lateral third. Prosternum without median group of punctures in the male. Last abdominal sternum of male with one pair of setae along apical edge ............33

30 [29]. Prosternal apophysis with one to four apical setae (Fig. 232). Meso- and metafemora each with three or four long posterior setae. Pronotum with lateral depression distinctly widened in basal half [5.2-8.4 mm (but usually under 8 mm); eye relatively flat; Plate 34] ..........................................................................................A. (Paracelia) quenseli (Schönherr)

[BC: holarctic; BZ: temperate/boreal/arctic/alpine; HR: open places: gravel and sand pits, pastures, meadows, cultivated and vacant fields, roadsides, usually on rather dry sandy soils; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (±); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 102-103); Lindroth (1968: 694-696); Bengtson and Erikstad (1984) – wing dimorphism; Larochelle and Larivière (2003: 60) – bionomics]

– Prosternal apophysis without setae. Meso- and metafemora each with two long posterior setae. Pronotum with lateral depression very narrow, not widened in basal half .................................................................

31 [30]. Pronotum (Fig. 251) with base more coarsely punctate, punctures reaching median sulcus or almost so. Prosternum of male without median punctate area. Last abdominal sternum of male with one pair of setae along apical edge [5.2-7.2 mm; anterior angle of pronotum not projecting anteriad]..........................................................A. (Celia) bifrons (Gyllenhal) [in part]

1 A. bifrons is keyed in both section. Most specimens will key to the second part of the couplet but in some specimens the microsculpture meshes over the lateral third are at least in part only slightly transverse.

[BC: exotic (1929); BZ: temperate/boreal; HR: open places: sand and gravel pits, pastures, meadows, vacant lots, roadsides, usually on dry sandy soils; SA: autumn breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC; References: Lindroth (1955b: 105); Lindroth (1968: 700-701); Larochelle and Larivière (2003: 43-44) – bionomics]

- Pronotum (Figs 252, 253) with base less coarsely punctate, punctures not reaching median sulcus. Prosternum of male with median punctate area. Last abdominal sternum of male with two pairs of setae along apical edge.
Pronotum (Fig. 252) with anterior angle not or barely projecting anteriad; side slightly to moderately rounded in basal half; posterior angle somewhat rounded, not or only slightly denticulate [6.3-7.6 mm] .........................A. (Xenocelia) chaleea Dejean
[BC: endemic; BZ: temperate; HR: open places: sand pits, vacant fields; SA: ?; OC: LF++; RA+; DP: wings (+); flight (+); GD: ME NH VT; References: Lindroth (1968: 700); Hieke (2001: 114-116); Larochelle and Larivière (2003: 45) – bionomics]
– Pronotum (Fig. 253) with anterior angle projecting anteriad; side not or barely rounded in basal half in most specimens; posterior angle obtuse, denticulate in most specimens [6.0-8.2 mm] ........................................A. (Xenocelia) gibba (LeConte)

33 [29]. Mentum lobe with toothlike process (Fig. 254). Anterior angle of pronotum projecting anteriad, distinctly extended beyond anterior edge at middle [5.4-7.8 mm]; side of pronotum little rounded in basal half; elytra with evident more or less transverse microsculpture meshes even in the male] .........................A. (Celia) sinuosa (Casey)
[BC: endemic; BZ: temperate/boreal/[alpine]; HR: open places: gravel and sand pits, cultivated and vacant fields, moraines, roadsides, railway embankments, usually on dry, sandy or gravelly soils with sparse vegetation; SA: autumn breeder; OC: LF++++; RA+++; DP: wings (+); flight (-); GD: LB ME NB NF NH PE; PM QC; References: Lindroth (1955b: 104-105, as A. subaenescens); Lindroth (1968: 701-703); Larochelle and Larivière (2003: 61-62) – bionomics]
– Mentum lobe without toothlike process (Fig. 255). Anterior angle of pronotum not or only slightly projecting anteriad, at most slightly extended beyond anterior edge at middle.................................................................34

34 [33]. Pronotum (Fig. 251) with sides subparallel in basal half; base with extensive punctuation, punctures reaching median sulcus or almost so [5.2-7.2 mm].............................. A. (Celia) bifrons (Gyllenhal) [in part]
[BC: exotic (1929); BZ: temperate/boreal; HR: open places: sand and gravel pits, pastures, meadows, vacant lots, roadsides, usually on dry sandy soils; SA: autumn breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC; References: Lindroth (1955b: 105); Lindroth (1968: 701-703); Larochelle and Larivière (2003: 43-44) – bionomics]
– Pronotum with sides distinctly rounded in basal half; base in most specimens with relatively few punctures not reaching median sulcus ..................................................35

35 [34]. Protarsomeres 1-3 dilated and with adhesive setae ventrally. Last abdominal sternum with two setae along apical margin [♂] ..................................................36
– Protarsomeres 1-3 not dilated and without adhesive setae ventrally. Last abdominal sternum with four setae along apical margin [♀] ..................................................37

36 [38]. Elytra without microsculpture meshes [5.2-7.3 mm] ....A. (Celia) rubrica Haldeman [in part]
[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, meadows, sand and gravel pits, usually on dry sandy soils; regularly found on Solidago
flowers; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 708-710); Larochelle and Larivière (2003: 60-61) – bionomics

– Elytra with slightly impressed but distinct microsculpture meshes over lateralmost intervals and apical fourth [3.9-6.5 mm; Plate 33] ................................................. A. (Celia) musculis (Say) [in part] [BC: endemic; BZ: temperate/boreal/alpine]; HR: open places: sand and gravel pits, cultivated and vacant fields, orchards, forest edges and clearings, meadows, usually on dry sandy soils with sparse vegetation; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 707-708); Larochelle and Larivière (2003: 56-57) – bionomics

37 [35]. Pronotum without microsculpture meshes along lateral depression or at most with poorly impressed meshes toward posterior angle [5.2-7.3 mm] .................................................................................................................................. A. (Celia) rubrica Haldeman [in part] [BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, meadows, sand and gravel pits, usually on dry sandy soils; regularly found on Solidago flowers; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 708-710); Larochelle and Larivière (2003: 60-61) – bionomics

– Pronotum with microsculpture meshes along lateral depression, meshes distinctly impressed particularly toward posterior angle [3.9-6.5 mm; Plate 33] .................................................................................................................................. A. (Celia) musculis (Say) [in part] [BC: endemic; BZ: temperate/boreal/alpine]; HR: open places: sand and gravel pits, cultivated and vacant fields, orchards, forest edges and clearings, meadows, usually on dry sandy soils with sparse vegetation; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 707-708); Larochelle and Larivière (2003: 56-57) – bionomics

38 [27]. Antennomeres 1-3 pale, though antennomere 3 infuscate in apical half in some specimens ........................................................................................................................................39

– Antennomere 3, in some specimens antennomeres 1 and 2 also, entirely dark.....46

39 [38]. Pronotum with base extensively punctate; anterior angle not or only slightly projecting anteriad. Abdominal sterna 1 and 2 distinctly punctate toward lateral edge. Elytra without distinct microsculpture meshes on medial intervals in basal half in the male [7.0-8.5 mm] .................................................................................................................................. A. (Amara) basillaris (Say) [BC: endemic; BZ: temperate; HR: ?; SA: ?; OC: LF++; RA++; DP: wings (+); flight (;); GD: NH; References: Lindroth (1968: 735); Larochelle and Larivière (2003: 43) – bionomics

– Pronotum with base impunctate or at most with few punctures; anterior angle moderately to markedly projecting anteriad. Abdominal sterna 1 and 2 impunctate or at most with few, small punctures near lateral edge. Elytra with microsculpture meshes also on medial intervals in basal half in the male ........................................................................40

40 [39]. Antennomere 3 infuscate over apical half or third. Last abdominal sternum with only two subapical setae in the female [6.0-7.5 mm; pronotum elongate, the sides more or less parallel in basal half, the anterior angles markedly projecting; base of
pronotum punctate around basal impressions; elytron with three preapical setae; striae deepened apically] ....................................................A. (Amara) communis (Panzer)


– Antennomere 3 not infuscate over apical half¹. Last abdominal sternum with four subapical setae in the female ................................................................. 41

41  [40]. Femur and tibia pale, yellow to reddish-yellow [5.6-7.2; sides of pronotum subparallel in basal half; elytron with three preapical setae] .................................................................................................................. A. (Amara) familiaris (Duftschiem)

[BC: exotic (1915); BZ: temperate/boreal/alpine; HR: open places: cultivated and vacant fields, orchards, sand and gravel pits, roadsides, meadows, forest edges and clearings, usually on sandy soils; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE PM QC VT; References: Lindroth (1955b: 110-111); Lindroth (1968: 731-732); Hieke (1990: 207-209); Larochelle and Larivière (2003: 50) – bionomics]

– Femur, in some specimens also tibia, dark, reddish-black to black........................................ 42

42  [41]. Elytron with two preapical setae. Pronotum (Figs 256, 257) with sides rounded in basal half, particularly near posterior angles; medial impression oblique [three species difficult to differentiate on external characters] ..................................................... 43

– Elytron with three preapical setae. Pronotum with sides subparallel in basal half; medial impression parallel with median sulcus ........................................................................ 45

43  [42]. Protibia with apical spur rounded apically and not or only very slightly bent. Pronotum with bead conspicuous medial to anterior angle, raised (compared to adjacent area). Microsculpture meshes on pronotal disc well impressed even near median sulcus [7.2-8.8 mm] ...................................................... A. (Amara) crassispina LeConte

[BC: endemic; BZ: temperate; HR: open places; SA: ?; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NH; References: Lindroth (1968: 734); Hieke (2003: 207); Larochelle and Larivière (2003: 47) – bionomics]

– Protibia with apical spur acute apically and distinctly bent. Pronotum with bead less conspicuous medial to anterior angle, not raised (compared to adjacent area). Microsculpture meshes on pronotum not (most ♂) or poorly impressed (most ♀) near median sulcus [6.5-9.0 mm] .................................................................................... 44

44  [43]. Posterior setigerous puncture on pronotum located close to posterior edge, depression around pore touching basal bead in almost all specimens (Fig 256). Body length over 7.5 mm in most specimens [7.2-8.5 mm] ......... A. (Amara) neoscotica Casey

[BC: endemic; BZ: temperate; HR: open places: vacant lots, sometimes on Solidago flowers; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NS QC VT; References: Hieke (2003: 205-206)]

¹ Specimens kill and preserved in ethanol could have the apex of the antennomere 3 darkened.
Posterior setigerous puncture on pronotum located farther from posterior edge, depression around pore not touching basal bead (Fig. 257). Body length less than 7.5 mm in most specimens [6.5-8.0 mm]...............A. (Amara) capreolata Putzeys

[BC: endemic; BZ: temperate/boreal; HR: open places: cultivated and vacant fields, orchards, meadows, roadsides, sand and gravel pits, usually on dry sandy soils, occasionally found on Solidago flowers; SA: ; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Levesque et al. (1979) – seasonal activity; Epstein and Kulman (1990) – seasonal activity; Hieke (2003: 204-205); Larochelle and Larivière (2003: 47-48) – bionomics; Note: Hieke (2003: 207) recorded A. tenax Casey from “Vermont” without more precision but I have not seen any specimen from the northeast. The species can be distinguished with confidence from A. capreolata only by details of the male genitalia (see Hieke 2003)]

45 [42]. Eye flat (Fig. 258). Pronotum without distinct laterobasal impression; anterior angle markedly, triangularly projecting anteriad (Fig. 258). Last abdominal sternum of female with subapical setae more or less equidistantly separated [6.2-8.8 mm]..........

....................................................................................................................A. (Amara) aenea (DeGeer)

[BC: exotic (< 1828); BZ: temperate/boreal; HR: open places: cultivated and abandoned fields, orchards, roadsides, sand pits, usually on dry sandy soils; occasionally on


Figs 258-259. Lateral half of head and anterolateral region of pronotum. 258: Amara aenea, 259: Amara convexa.
Eye markedly convex (Fig. 259). Pronotum with distinct, oblique, more or less linear laterobasal impression; anterior angle moderately, roundly projecting anteriad (Fig. 259). Last abdominal sternum of female with subapical setae on each side closer to one another than between medial ones [5.3-8.0 mm] ........................................ A. (Amara) convexa LeConte [BC: endemic; BZ: temperate/boreal; HR: open places: cultivated and abandoned fields, roadsides, sand and gravel pits, meadows, grasslands, usually on dry sandy soils; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Lindroth (1955b: 111); Lindroth (1968: 732); Hieke (1990: 201-204); Hůrka and Jarošík (2003) – larval diet; Larochelle and Larivière (2003: 39-40) – bionomics]

Elytral intervals quite extensively corrugated, uneven (i.e., with small, shallow irregular depressions). Elytron with three subapical setae. Pronotum somewhat flattened in basal half medial to lateral depression [7.0-10.3 mm; metatibia of male without brush of closely set setae on medial surface; Plate 34] ........................................ A. (Celia) patruelis Dejean [BC: holarctic; BZ: temperate/boreal/arctic; HR: open places: cultivated and vacant fields, roadsides, meadows, sand and gravel pits, forest edges and clearings, usually on dry sandy soils; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 106-107); Lindroth (1968: 714-715); Larochelle and Larivière (2003: 59) – bionomics]
49 [48]. Body length more than 7.0 mm. Elytral striae deeply impressed, particularly toward apex [7.3-9.0 mm] .................................................. A. (Amara) lunicollis Schiodte [in part] 

[BC: holarctic; BZ: temperate/boreal/arctic; HR: open places: cultivated and abandoned fields, orchards, gravel pits; forest edges and clearings, usually on gravelly or peaty soils with vegetation; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 109); Lindroth (1968: 720-722); Larochelle and Larivière (2003: 56) – bionomics. Note: the apex of the protibia has on each side of the apical spur a small spine-like structure and, between the apical spur and the lateral spine-like structure, a small acute projection. Lindroth (1968: 720) used the presence of this acute projection as a character state to separate this species from A. aeneopolita. Examination of several specimens identified by Lindroth in the Canadian National Collection showed that the character is too variable to be useful for distinguishing the two species. Nevertheless, in general the acute projection is more developed in members of A. lunicollis than in those of A. aeneopolita.

– Body length less than 7.0 mm. Elytral striae shallowly impressed [6.0-6.8 mm] .......

........................................................................................ A. (Amara) aeneopolita Casey [in part]

[BC: endemic; BZ: boreal/arctic; HR: open places: vacant lots, meadows, grasslands, moraines; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: NB QC; References: Lindroth (1968: 718); Larochelle and Larivière (2003: 48) – bionomics]

50 [48]. Eye more or less flat. Antennomere 1 not or very slightly swollen in basal half and quite clearly paler dorsally than antennomere 3 [7.0-9.0 mm] .............................................................................. A. (Celia) ellipsis (Casey) [in part]

[BC: endemic; BZ: temperate/boreal; HR: open places: vacant lots, roadsides, meadows, forest edges and clearings; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NB QC; References: Lindroth (1968: 718); Larochelle and Larivière (2003: 48) – bionomics]

– Eye convex though slightly so in some specimens. Antennomere 1 quite clearly swollen in basal half and not or only slightly paler dorsally than antennomere 3 ..........51

51 [50]. Antennomere 2 quite dark ventrally, not really paler than antennomere 3 in most specimens; tibia reddish-black to black in most specimens. Anterior angle of pronotum only slightly projecting anteriad [6.5-8.7 mm] .............................................................................. A. (Celia) erraticia (Duftschmid) [in part]

[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: vacant lots, roadsides, meadows, forest edges and clearings; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: LB ME NB NF NH PM QC VT; References: Lindroth (1955b: 107-108); Lindroth (1968: 716-717); Bílý (1971) – biology; Larochelle and Larivière (2003: 49) – bionomics]

– Antennomere 2 paler ventrally in most specimens, often paler than antennomere 3; tibia reddish-brown in most specimens. Anterior angle of pronotum moderately projecting anteriad in most specimens [5.8-7.1 mm] .............................................................................. A. (Celia) laevipennis Kirby [in part]

[BC: endemic; BZ: temperate/boreal/arctic; HR: open places: cultivated and abandoned fields, roadsides, sand and gravel pits, forest edges and clearings, usually on dry sandy soils; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NF
Last abdominal sternum with two subapical setae. Elytral striae deeply impressed, particularly toward apex [7.3-9.0 mm] ............ A. (Amara) lunicollis Schiodte [in part]

(BC: holarctic; BZ: temperate/boreal/arctic; HR: open places: cultivated and abandoned fields, orchards, gravel pits; forest edges and clearings, usually on gravelly or peaty soils with vegetation SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 109); Lindroth (1968: 720-722); Larochelle and Larivière (2003: 56) – bionomics)

Last abdominal sternum with four subapical setae (exceptionally three). Elytral striae shallowly impressed

Eye more or less flat, convexity not extended beyond width of temple. Sculpticells on elytra slightly convex, microsculpture more or less granulate [7.0-9.0 mm]..........

................................................................................................ A. (Celia) ellipsis (Casey) [in part]

(BC: endemic; BZ: temperate/boreal; HR: open fields; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: NB QC; References: Lindroth (1968: 718); Larochelle and Larivière (2003: 48) – bionomics)

Eye convex, convexity extended beyond width of temple. Sculpticells on elytra flat, microsculpture irregularly isodiametric

Pronotum (Fig. 262) with sides rounded in basal half, particularly near angles; posterior angle rounded or obtusely rounded. Antennomere 1 not swollen, or almost so, in basal half [6.0-6.8 mm].........................A. (Amara) aeneopolita Casey [in part]

(BC: endemic; BZ: boreal/arctic; HR: open places: vacant lots, meadows, grasslands, moraines; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: LB ME NB NF NH QC VT; References: Lindroth (1955b: 108-109); Lindroth (1968: 722-723); Larochelle and Larivière (2003: 40) – bionomics)

Pronotum (Fig. 263) with sides subparallel in basal half; posterior angle right or slightly obtuse. Antennomere 1 swollen in basal half [two species very difficult to separate on external characters]
Antennomere 2 quite dark ventrally, not really paler than antennomere 3 in most specimens; tibia reddish-black to black in most specimens. Anterior angle of pronotum slightly projecting anteriad in most specimens [6.5-8.7 mm]..........................

A. (Celia) erratica (Duftschmid) [in part]  
[BC: holarctic; BZ: boreal/arctic/alpine; HR: open places: vacant lots, roadsides, meadows, forest edges and clearings; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (-); GD: LB ME NB NF NH PM QC VT; References: Lindroth (1955b: 107-108); Lindroth (1968: 716-717); Larochelle and Larivière (2003: 49) – bionomics]

Antennomere 2 paler ventrally in most specimens, often paler than antennomere 3; tibia reddish-brown in most specimens. Anterior angle of pronotum moderately projecting anteriad [5.8-7.1 mm]..........................

A. (Celia) laevipennis Kirby [in part]  
[BC: endemic; BZ: temperate/boreal/arctic; HR: open places: cultivated and abandoned fields, roadsides, sand and gravel pits, forest edges and clearings, usually on dry sandy soils; SA: ; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1968: 717-718); Larochelle and Larivière (2003: 54-55) – bionomics]

TRIBE OODINI

GENUS OODES BONELLI, 1810

The northeastern members of Oodes are rather distinctive by their facies, particularly the shape of the pronotum which widen near the base. Inexperienced students may confuse them with some species of Amara, Diplocheila, and Chlaenius. From these genera, adults of Oodes differ readily by the absence of lateral setae on the pronotum.

Males are distinguishing from females by having the protarsomeres 1-3 slightly to moderately expanded and with spongy adhesive setae underneath (see Bousquet 1996a: Figs 153, 154) and by the presence of only two setae (four in females) near the posterior edge of the last abdominal sternum.

List of northeastern species of Oodes

O. amaroides Dejean, 1831  
O. fluvialis LeConte, 1863  
O. brevis Lindroth, 1957  
O. americanus sensu Lindroth [in part]

Key to northeastern species of Oodes

1. Body length less than 10.5 mm. Submentum with two setae on each side (Fig. 264) [7.9-10.0 mm].............................................................. O. amaroides Dejean  
[BC: endemic; BZ: temperate; HR: wet places: swamps, marshes, edges of ponds, usually on wet, muddy or silt soils rich in organic debris; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NH; References: Lindroth (1969a: 1000-1001); Bousquet (1996a: 471-472); Larochelle and Larivière (2003: 351) – bionomics]

– Body length more than 11 mm. Submentum with one seta on each side (Fig. 265) ..............................................................................2
2 [1]. Metepisternum and abdominal sterna laterally iridescent, microsculpture striate. Protarsomeres 1-3 of male markedly expanded (Fig. 266) [12.2-13.3 mm] ..............
..................................................................................................................
O. brevis Lindroth

[BC: endemic; BZ: temperate; HR: wet places: swamps, eutrophic marshes, ponds, usually on very wet, muddy soils rich in organic debris; SA: [spring breeder]; DP: wings (+); flight (+); GD: NH; References: Lindroth (1969a: 999-1000); Bousquet (1996a: 477); Larochelle and Larivière (2003: 352) – bionomics]

– Metepisternum and abdominal sterna laterally not iridescent, microsculpture irregularly isodiametric to slightly transverse. Protarsomeres 1-3 of male moderately expanded (Fig. 267) [11.6-14.8 mm; Plate 35] ...........................................O. fluvialis LeConte

[BC: endemic; BZ: temperate; HR: wet places: mainly Typha marshes, occasionally beaver houses; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1969a: 997-999, as O. americanus); Bousquet (1996a: 473-474); Larochelle and Larivière (2003: 352) – bionomics]

**GENUS LACHNOCREPSIS LECONTE, 1853 [Oodes sensu Lindroth, in part]**
The sole North American species includes in this genus, *L. parallela* (Say, 1830) [Plate 35], is quite distinctive by its facies and presence of dense yellowish setae underneath the meso- and metatarsomeres 1-4.

Males have the protarsomeres 1-3 slightly expanded and with spongy adhesive setae underneath and only two setae (four in females) along the apical margin of the last abdominal sternum.

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**Figs 264-265.** Mentum and submentum. 264: *Oodes amaroides*; 265: *Oodes fluvialis*.
**Figs 266-267.** Protarsomeres (dorsal view). 266: *Oodes brevis*; 267: *Oodes fluvialis*. 
GENUS _ANATRICHIS_ LeConte, 1853

The only northeastern species in this genus, _A. minuta_ (Dejean, 1831) [Plate 35], is recognized by its small size (5.0-6.5 mm) and the presence of six setae along the anterior edge of the labrum, with the four median ones close to one another, in connection with the absence of setae on the clypeus.

Males differ from females in having the protarsomeres 1-3 with a few spongy adhesive setae underneath (see Bousquet 1996a: Figs 149, 150), no setae along the apical edge of the last abdominal sternum (four setae in females), and a depression near the centre of the mesotibia along the medial side.

**Tribe Chlaeniini**

GENUS _CHLAENIUS_ Bonelli, 1810

Most northeastern species of _Chlaenius_ are relatively easy to pick up on the pubescence on the pronotum and elytra; in addition most species have a metallic lustre dorsally. For inexperienced students, members of _Galerita_ could be confused with some _Chlaenius_ but they have the head constricted basally contrary to _Chlaenius_. The non-metallic species, such as _C. niger_, may be confused with _Pelophila_, _Diplocheila_, _Oodes_, and some _Pterostichus_ but in all these groups the body is glabrous dorsally.

Contrary to females, males have the protarsomeres 1-3 markedly expanded and covered underneath with spongy adhesive setae. In several species (e.g., _C. sericeus_, _C. emarginatus_, _C. tomentosus_), the male has a small toothlike projection at the base of the medial spur (the longer one) of the mesotibia. In most species the apical edge of the last abdominal sternum is more narrowly rounded in the male than in the female and bears two long setae, instead of four.

**List of northeastern species of _Chlaenius_**

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<tr>
<td><em>C. prasius</em> (Forster, 1771)</td>
<td></td>
</tr>
<tr>
<td><em>C. tomentosus</em> (Say, 1823)</td>
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<tr>
<td><em>C. tricolor</em> Dejean, 1826</td>
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</table>
Key to northeastern species of *Chlaenius*

1. Pronotum with four or more midlateral setae on each side. Last three abdominal sterna smooth and glabrous [12.5-18.0 mm; upper surface with bronze or green lustre; Plate 36] ................................................................. *C. (Eurydactylus) tomentosus* (Say)
   
   [BC: endemic; BZ: temperate; HR: open places: gravel and sand pits, sandy hills, often under rocks, usually on dry sandy soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Bell (1960: 103-105); Lindroth (1969a: 974-975); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 203) – bionomics]
   
   – Pronotum with one midlateral seta on each side. All abdominal sterna more or less punctate and pubescent ................................................................. 2

2 [1]. Punctuation on pronotum unevenly distributed, disc with extensive smooth areas (Fig. 270) ............................................................................................................................... 3

   – Punctuation on pronotum more evenly distributed, disc without smooth areas (Figs 271, 272) ..................................................................................................................... 6

3 [2]. Body length less than 10 mm. Apical labial and maxillary palpomeres dilated, pear-shaped (Fig. 268) [8.7-9.5 mm; upper surface with violaceous or bluish lustre, restricted to pronotum in some specimens; Plate 36] .................... *C. purpuricollis* Randall

   [BC: endemic; BZ: temperate; HR: open places: alvars, grasslands; SA: [spring breeder]; OC: LF++; RA++/++; DP: wings (+); flight (-); GD: NH QC; References: Bell (1960: 135-136); Lindroth (1969a: 994-995); Bouchard et al. (1999: 21-23) – habitat, biology; Larochelle and Larivière (2003: 201) – bionomics]

   – Body length more than 10 mm. Apical labial and maxillary palpomeres not dilated, fusiform (Fig. 269) .............................................................................................................. 4

4 [3]. Antennomeres 1-3 and palpomeres pale, reddish. Pronotum constricted basally, side sinuate in front of posterior angle (Fig. 270) [12.4-15.3 mm; upper surface with dull green to blue, sometimes violet metallic lustre; Plate 36] .................... *C. (Lithochlaenius) cordicollis* Kirby

   [BC: endemic; BZ: temperate; HR: flooded places: lake and river banks, mostly under rocks or drift material; SA: [spring breeder]; OC: LF+++; RA++/++; DP: wings

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Figs 268-269. Palpi. 268: *Chlaenius purpuricollis*; 269: *Chlaenius cordicollis*. 
(+); flight (+); GD: ME NB NH QC VT; References: Bell (1960: 112-113); Lindroth (1969a: 979-980); Larochelle and Larivière (2003: 193) – bionomics

– All antennomeres and palpomeres dark, brownish-black to black. Pronotum not constricted basally, side not sinuate in front of posterior angle

5 [4]. Elytral striae not interrupted. Upper surface without lustre [11.3-14.8 mm; Plate 37]........................................................................................................C. (Agostenus) niger Randall

[BC: endemic; BZ: temperate; HR: wet places: mainly Typha marshes, also swamps, pools; SA: [spring breeder]; OC: LF+; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 133-134); Bell (1960: 133-134); Lindroth (1969a: 991-992); Larochelle and Larivière (2003: 198) – bionomics]

– Elytral striae interrupted several times. Upper surface with bronzy or coppery lustre, though rather faint in some specimens [10.5-14.0 mm; Plate 37] ..............................................................................................C. (Agostenus) alternatus Horn

[BC: endemic; BZ: boreal; HR: wet/fl ooded places: marshes; also river and lake banks where the vegetation is rich; SA: [spring breeder]; OC: LF+; RA+; DP: wings (+); flight (-); GD: NB NF NS QC; References: Bell (1960: 134); Lindroth (1969a: 992-993); Larochelle and Larivière (2003: 192) – bionomics]

6 [2]. Head with erect pubescence dorsally, at least along sides

– Head without pubescence dorsally........................................................................15

7 [6]. Anterior edge of clypeus markedly emarginate. Mandible proportionally elongate

– Anterior edge of clypeus truncate or almost so. Mandible not particularly elongate

8 [7]. Body length less than 10 mm. Side of pronotum sinuate in front of posterior angle (Fig. 271) [6.0-9.5 mm; body with colouration similar to that of C. emarginatus]

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, edges of forests, usually under stones and logs; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet found in the northeast; References: Bell (1960: 107-108); Lindroth (1969a: 978); Larochelle and Larivière (2003: 201) – bionomics]

– Body length more than 11.5 mm. Side of pronotum not sinuate in front of posterior angle (Fig. 272) [12.1-15.1 mm; upper surface with contrasting lustre: vividly cupreous, bronze or golden green on forebody, faintly blue or violet on elytra; Plate 37]...............................................................................C. (Anomoglossus) emarginatus Say

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, edges of forests, usually under stones and logs; SA: [spring breeder]; DP: wings (+); flight (+); GD: NB NH NS QC VT; References: Bell (1960: 106-107); Lindroth (1969a: 975); Larochelle and Larivière (2003: 194) – bionomics]

9 [7]. Body length less than 10 mm. Mentum without tooth but with markedly large labial pits (Fig. 273) [8.0-9.5 mm; upper surface bright metallic green; Plate 37]........................................................................C. (Brachylobus) lithophilus Say
[BC: endemic; BZ: temperate/boreal; HR: flooded places: river and lake banks, usually on soft mud where the vegetation is rich, also along pools and ponds; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 135); Bell (1960: 137-138); Lindroth (1969a: 988-989); Larochelle and Lariviére (2003: 197) – bionomics]

– Body length more than 11 mm. Mentum with tooth, without or with small labial pits (Fig. 274)............................................................................................................................ 10
10 [9]. Upper surface with contrasting colouration: vividly metallic green or bronze on forebody, without or with faint bluish lustre on elytra. Profemur of male with small, rounded projection along anterior face near base [14.5-16.5 mm; metepisternum short, its anterior edge longer than medial edge; Plate 38].......................... \(C.\) \((Chlaenius)\) \(aestivus\) Say

[BC: endemic; BZ: temperate; HR: flooded places: mainly large river banks, under stones; SA: spring breeder; OC: LF+; RA?: DP: wings (- +); flight (+); GD: NH; References: Bell (1960: 120-121); Lindroth (1969a: 980-981); Larochelle and Larivière (2003: 191) – bionomics]

– Upper surface without or with more or less uniform lustre: vividly green or faint bluish or violet................................................................................................................... 11

11 [10]. Upper surface vividly metallic green..................................................................................................................... 12

– Upper surface without or with faint bluish or violet lustre......................................................................................... 13

12 [11]. Lateral edge of elytron angulate at level of humerus, forming an angle with the subbasal ridge (Fig. 275). Pronotum with punctation as dense on disc than along base. Last abdominal sternum black except along apical margin [11.4-16.1 mm; Plate 38] ................................................................................. \(C.\) \((Chlaenius)\) \(sericeus\) (Forster)

[BC: endemic; BZ: temperate/[boreal]; HR: flooded/wet places: river and lake banks; beaver houses; also corn fields, edges of ponds, pools, marshes; SA: spring breeder;

Figs 275-276. Left humeral region. 275: \(Chlaenius\) \(sericeus\); 276: \(Chlaenius\) \(prasinus\).

Figs 277-278. Pronotum. 277: \(Chlaenius\) \(impunctifrons\); 278: \(Chlaenius\) \(tricolor\).
- Lateral edge of elytron perfectly rounded at level of humerus, merging with the subbasal ridge without producing an angle (Fig. 276). Pronotum with punctuation distinctly sparser on disc than along base. Last abdominal sternum entirely reddish [15.6–17.8 mm] ................................................................. [C. (Chlaenius) prasinus Dejean]

13 [11]. Body length more than 18 mm. Side of pronotum with shallow sinuation in basal half [18.7–23.3 mm; metepisternum long] .......................[C. (Chlaenius) erythrobus Germar]

14 [13]. Wings highly reduced; metepisternum with medial edge shorter than anterior edge. Elytron with distinct depressions at base of intervals 4 and 5 along subbasal ridge. Profemur of male without toothlike projection [12.6–16.8 mm] ...........................................................[C. (Chlaenius) platyderus Chaudoir]

15 [6]. Pronotum (Fig. 277) wide (WP/LP = 1.32–1.52; n = 20), flattened toward lateral edge; anterior angle projecting anteriad [13–16 mm; upper surface bicocoloured: head vividly green (rarely bluish), pronotum dull green with bronze tinge, elytra black, sometimes with faint bluish or violet tinge; Plate 38]............................ [C. (Chlaenius) laticolli Say]
NH QC VT; References: Bell (1960: 136-137); Lindroth (1969a: 983-984); Larochelle and Larivière (2003: 195-196) – bionomics

– Pronotum (Fig. 278) narrower on average (WP/LP = 1.16-1.33; n = 40), not flattened toward lateral edge; anterior angle not or barely projecting anteriad ............... 16

16 [15]. Pronotum with granulate microsculpture, meshes markedly distinct even near median sulcus [10.7-13.0 mm; Plate 39] ...................... [C. (Chlaeniellus) nemoralis Say]

[BC: endemic; BZ: temperate; HR: flooded/open places: river banks and near small bodies of water; also in yards, gardens, cultivated fields; SA: [spring breeder]; OC: LF+; RA?: DP: wings (+); flight (+); GD: not yet confirmed in the northeast but recorded from Connecticut; References: Bell (1960: 140); Lindroth (1969a: 984-985); Larochelle and Larivière (2003: 198) – bionomics]

– Pronotum with isodiametric microsculpture, meshes at least partly erased near median sulcus ................................................................. 17

17 [16]. Labrum with anterior edge distinctly emarginate [9.5-11.9 mm; Plate 39] ................

.................................................. C. (Chlaeniellus) brevilabris LeConte

[BC: endemic; BZ: temperate; HR: [wet/flooded places]: mainly flood-plain forests along rivers, also ponds, marshes, and lake banks; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: NH VT; References: Bell (1960: 142-143); Lindroth (1969a: 986-987); Larochelle and Larivière (2003: 192) – bionomics]

– Labrum with anterior edge truncate or at most very slightly emarginate ............ 18

18 [17]. Elytra dull green; epipleuron reddish at least on apical half [10.4-11.9 mm; Plate 39] ...................... C. (Chlaeniellus) pennsylvanicus Say

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river and lake banks, edges of small ponds in sand or gravel pits, also flood-plain forests, swamps; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 134); Bell (1960: 146-147); Lindroth (1969a: 987-988); Larochelle and Larivière (2003: 199-200) – bionomics]

– Elytra deep blue; epipleuron entirely deep blue [10.1-13.5 mm; Plate 39] ..............

.................................................. C. (Chlaeniellus) tricolor Dejean

[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, often under stones or debris; also cultivated fields, forest edges and clearings; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 134-135); Bell (1960: 141-142); Lindroth (1969a: 985-986); Larochelle and Larivière (2003: 204) – bionomics]

TRIBE LICINIINI

GENUS DIPLOCHEILLA BRULLÉ, 1834

Members of this genus can be recognized at first sight by their facies. They may be mistaken by inexperience students for members of Dicaelus which differ among others by the presence of setae underneath the tarsomere 5 of each leg, or members of some Pterostichus which can be distinguished by the plica on the elytral epipleuron, or for members of Oodes which have no lateral setae on the pronotum.
Males differ from females by having the protarsomeres 1-3 markedly expanded and covered underneath with spongy adhesive setae and only two setae, instead of four, along the apical edge of the last abdominal sternum.

List of northeastern species of *Diplocheila*

- *D. assimilis* (LeConte, 1844)
- *D. obtusa* (LeConte, 1847)
- *D. impressicollis* (Dejean, 1831)
- *D. striatopunctata* (LeConte, 1844)
- *D. major major* (LeConte, 1847)

Key to northeastern species of *Diplocheila*

1. Left mandible with small dorsal tubercle slightly behind middle (Fig. 279). Elytra entirely black or black with intervals 2, 4, 6, sometimes also 8, contrastingly brown or red [12.5-17.9 mm; posterior angle of pronotum obtuse; elytral stria 7 distinct, usually as impressed as stria 6; Plate 40]............... *D. striatopunctata* (LeConte)

   - Left mandible without dorsal tubercle (Fig. 280). Elytra entirely black ........................................ 2

2 [1]. Posterior angles of pronotum rounded, sides more or less rounded in basal half (Fig. 281). Antennomere 1 red to reddish-black at least over basal half. Elytral interval 3 without discal setae in most specimens. Body length less than 12 mm [9.7-11.7 mm; Plate 40] ......................................................... *D. obtusa* (LeConte)

   - Posterior angles of pronotum more or less obtuse, sides rectilinearly convergent to slightly sinuate in basal half (Figs 282, 283). Antennomere 1 black or almost so. Elytral interval 3 with one, rarely two, discal setae. Body length more than 12 mm in most specimens ............................................................................................................ 3

3 [2]. Body length more than 16.5 mm [16.8-20.7 mm; elytral stria 7 indistinct or almost so] .................................................................................................... *D. major major* (LeConte])

   - Body length less than 16.5 mm [two similar species often difficult to distinguish on external characters] ............................................................................................................ 4

4 [3]. Elytral stria 7 indistinct or clearly less impressed than stria 6. Pronotum proportionally narrower on average (WP/LP = 1.42-1.50; mean = 1.46; n = 15 specimens iden-
tified by Lindroth), with maximum width usually slightly behind middle (Fig. 282) [12.2-16.4 mm] ................................................................. D. impressicollis (Dejean)

[BC: endemic; BZ: temperate; HR: wet places: Typha marshes, swamps, marshy banks of rivers; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Ball (1959: 66-71, as D. assimilis); Lindroth (1969a: 944-945); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 237) – bionomics]

– Elytral stria 7 distinct, usually only slightly less impressed than stria 6. Pronotum proportionally wider on average (WP/LP = 1.47-1.56; mean = 1.52; n = 15 speci-

mens identified by Lindroth), with maximum width usually slightly before middle
(Fig. 283) [10.9-14.2 mm]......................................................... $D. assimilis$ (LeConte)

[BC: endemic; BZ: temperate; HR: wet places: Typha marshes, swamps, flood-plain
forests; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB
NH QC VT; References: Ball (1959: 64-66, as $D. modesta$); Lindroth (1969a: 943-944);
Larochelle and Larivière (2003: 236-237) – bionomics]

**GENUS DICAELUS** Bonelli, 1813

Members of *Dicaelus* are easily recognized on their characteristic facies and particularly the
basally convex or carinate elytral interval 7. They look superficially like members of some
large Pterostichini, especially those of *Abax parallelepipedus* who also have a carinate interval
7, but differ readily by having the anterior edge of the clypeus distinctly emarginate and no
elytral plica.

Males have the protarsomeres 1-3 markedly expanded and covered underneath with
spongy adhesive setae and the apical edge of the last abdominal sternum much more narrowly
rounded than females. The number of setae on the last sternum is also sexually dimorphic but
variable, ranging in the specimens studied from two (most specimens of *D. teter* and *D. politus*)
to eight (a few specimens of *D. purpuratus*) in males and from six (most specimens of *D. teter*
and *D. politus*) to 12 (a few specimens of *D. dilatatus*) in females.

**List of northeastern species of Dicaelus**

*D. dilatatus dilatatus* Say, 1823

[D. purpuratus purpuratus* Bonelli, 1813]

*D. elongatus* Bonelli, 1813

*D. teter* Bonelli, 1813

*D. politus* Dejean, 1826

**Key to northeastern species of Dicaelus**

1. Dorsal surface with purplish or violaceous lustre. Penultimate labial palpomere
with four setae on upper surface. Last abdominal sternum with many small setae
on apical third [20.5-25.0 mm]..........................[*D. (Dicaelus) purpuratus* purpuratus Bonelli]

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, mainly inside
and under rotten logs; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); GD: not yet found in the northeast but
recorded from Connecticut and Massachusetts; References: Ball (1959: 153-156);
Lindroth (1969a: 953-954); Larochelle and Larivière (2003: 232) – bionomics]

– Dorsal surface without lustre. Penultimate labial palpomere with two setae on upper
surface. Last abdominal sternum without small setae on apical third ....................2

2 [i]. Body length less than 15 mm. Elytral interval 7 not carinate, only slightly convex
at base. Lateral bead of pronotum distinct over entire length [10.7-14.9 mm; body
dorsally shiny; Plate 40].........................................................*D. (Paradicaelus) politus* Dejean

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, mainly inside
and under rotten logs; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); GD: NH QC VT; References: Ball (1959: 110-112); Lindroth (1969a: 951-952); Larochelle and Larivière (2003: 231-232) – bionomics]

– Body length more than 15 mm. Elytral interval 7 markedly carinate at least at base.
Lateral bead of pronotum indistinct at least over basal third or fourth ..................3
3 [2]. Pronotum with two or more midlateral setae on each side. Elytral interval 7 carinate well into apical half [15-19 mm; Plate 40] ...............D. (Paradicaelus) elongatus Bonelli
[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, usually under stones and logs; SA: [spring breeder]; OC: LF++; RA; DP: wings (); GD: ME NH VT; References: Ball (1959: 106-110); Lindroth (1969a: 950); Larochelle and Larivière (2003: 231) – bionomics]

– Pronotum with one midlateral seta on each side. Elytral interval 7 carinate only over basal half .................................................................

4 [3]. Sides of pronotum subparallel in basal half (Fig. 284). Body markedly wide, bulky. Elytra dull, intervals with granulate microsculpture, except in most specimens at middle of each interval [17.9-26.8 mm] ..............D. (Paradicaelus) dilatatus dilatatus Say
[BC: endemic; BZ: temperate; HR: covered/open places: forests, forest edges, adjacent fields, also stream margins, usually under stones and logs; SA: [spring breeder]; OC: LF++; RA; DP: wings (); GD: ME NH VT; References: Ball (1959: 126-130); Lindroth (1969a: 950); Larochelle and Larivière (2003: 230) – bionomics]

– Sides of pronotum sinuate in basal half (Fig. 285). Body not particularly wide or bulky. Elytra somewhat shiny, intervals with isodiametric microsculpture becoming slightly granulate on each side of interval [14.9-21.4 mm]...........................................................

........................................................................................................
D. (Paradicaelus) teter Bonelli
[BC: endemic; BZ: temperate; HR: covered places: forests, mainly under rocks and rotten logs; SA: [spring breeder]; OC: LF++; RA++; DP: wings (); GD: QC VT; References: Ball (1959: 114-115); Lindroth (1969a: 952); Larochelle and Larivière (2003: 234) – bionomics]

**Genus Badister Clairville, 1806**
The small size (less than 7 mm) associated with the cleft labrum and transverse notch on one or the other mandible make members of this genus easily recognized among northeastern carabids.

Males have the protarsomeres 1-3 markedly expanded and covered underneath with spongy adhesive setae and only two setae, instead of four in females, along the apical edge of the last abdominal sternum.

List of northeastern species of *Badister*

- *B. grandiceps* Casey, 1920
- *B. neopulchellus* Lindroth, 1954
- *B. notatus* Haldeman, 1843
- *B. obtusus* LeConte, 1878
- *B. ocularis* Casey, 1920
- *B. parviceps* Ball, 1959
- *B. transversus* Casey, 1920

**Key to northeastern species of *Badister***

1. Tarsomere 5 of each leg without setae underneath. Disc of pronotum with moderately transverse to striate microsculpture ..........................................................2
   - Tarsomere 5 of each leg with setae underneath. Disc of pronotum without or with isodiametric to slightly transverse microsculpture ..................................................5

2 [1]. Right mandible with notch, left mandible without notch (Fig. 286) [5.1-6.0 mm; elytral edge without preapical sinuation] ............................................. *B. (Baudia) transversus* Casey
   \[BC: endemic; BZ: temperate; HR: wet places: eutrophic marshes, swamps; also wooded river banks, usually on muddy or clayish soils rich in organic debris; SA: [spring breeder]; OC: LF++/+++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Ball (1959: 217-219); Lindroth (1969a: 962-964); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 90-91) – bionomics]
   - Right mandible without notch, left mandible with notch (Fig. 287) ..................................................3

3 [2]. Pronotum with transverse microsculpture on disc, in part somewhat isodiametric over lateral margins; meshes much more open and distinct than on elytra. Elytra with basal half distinctly paler than apical half. Body length less than 4.5 mm [3.4-4.2 mm] ................................................................. *B. (Baudia) parviceps* Ball
   \[BC: endemic; BZ: temperate; HR: flooded/wet places: river banks, along lakes and eutrophic marshes; SA: [spring breeder]; OC: LF+; RA++; DP: wings (+); flight (+); GD: QC; References: Ball (1959: 225-226); Lindroth (1969a: 966-967); Larochelle and Larivière (2003: 90) – bionomics]
   - Pronotum with striate microsculpture on disc, in part markedly transverse over lateral margins; meshes only slightly more open and distinct than on elytra. Elytra not paler in basal half. Body length 4.5 mm or more .............................................4

4 [3]. Pronotum more elongate (LP/WP = 0.70–0.76; n = 20). Side of frons, between anterior and posterior supraorbital setigerous punctures, with elongate microsculpture meshes. Body length less than 5.7 mm [4.6–5.6 mm; Plate 41]..........................

...................................................................................................

B. (Baudia) grandiceps Casey

[BC: endemic; BZ: temperate; HR: wet places: borders of marshes, swamps, ponds, usually on wet, muddy or clayish soils rich in organic debris; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH NS PE QC VT; References: Ball (1959: 224-225); Lindroth (1969a: 964-965); Larochelle and Larivière (2003: 88) – bionomics]

Pronotum less elongate (LP/WP = 0.64–0.68; n = 20). Side of frons, between anterior and posterior supraorbital setigerous punctures, with isodiametric microsculpture meshes. Body length more than 5.7 mm in most specimens [5.4–6.2 mm]........

.......................................................................................................

B. (Baudia) ocularis Casey

[BC: endemic; BZ: temperate; HR: wet places: borders of marshes, swamps, ponds, usually on wet muddy or clayish soils rich in organic debris; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH NS PE QC VT; References: Ball (1959: 226-228); Lindroth (1969a: 965-966); Larochelle and Larivière (2003: 89) – bionomics]

5 [1]. Pronotum without microsculpture meshes. Elytral striae markedly impressed, intervals convex. Wings highly reduced in most specimens. Body length less than 5 mm [3.8–4.7 mm; anterior angle of pronotum not protruding; Plate 41]..........................

...................................................................................................

B. (Badister) notatus Haldeman

[BC: endemic; BZ: temperate; HR: open places: gravel pits, gardens, roadsides, forest edges and clearings, cultivated and vacant fields, often on dry gravelly soils; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (- +); flight (+); GD: ME NB NH QC VT; References: Ball (1959: 215-217); Lindroth (1969a: 957-958); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 89) – bionomics]

Pronotum with evident microsculpture meshes. Elytral striae much less impressed, intervals at most slightly convex. Wings fully developed. Body length more than 5 mm

...................................................................................................

6 [5]. Elytra not iridescent, with transverse microsculpture becoming irregularly isodiametric near base. Elytra more or less reddish but without contrasting markings, at most with diffuse darker central cloud [5.1–6.5 mm]..........................

...................................................................................................

B. (Badister) obtusus LeConte

[BC: endemic; BZ: temperate/boreal; HR: covered places: deciduous forests, in leaf litter usually on dry and gravelly soils; occasionally adjacent fields; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC; References: Ball (1959: 201-202); Lindroth (1969a: 960-961); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 89) – bionomics]

Elytra markedly iridescent, with striate microsculpture. Elytra reddish-yellow with contrasting black markings [5.2–6.1 mm; Plate 41]..........................

...................................................................................................

B. (Badister) neopulchellus Lindroth

[BC: endemic; BZ: temperate; HR: wet places: Typha marshes, swamps, usually on muddy or clayish soils rich in organic debris; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Ball (1959: 195-197); Lindroth (1969a: 959-960); Larochelle and Larivière (2003: 88-89) – bionomics]
TRIBE HARPALINI

KEY TO GENERA

1. Pronotum with seta at posterior angle [two species: 3.2-5.2 mm; Plate 46] ............... .......................... Dicheirotrichus Jacquelin du Val
   – Pronotum without seta at posterior angle .................................................................................. 2

2 [1]. Elytral intervals 5 and 7 with several long setae. Protibia with long digitiform protuberance at apex laterally [one species, E. grossus (Say), 10.5-15.8 mm, not yet found in the northeast but recorded from Ontario; Plate 51] [Euryderus LeConte]
   – Elytral intervals 5 and 7 without long setae. Protibia without digitiform protuberance at apex laterally .... 3

3 [2]. Elytron with rows of short setae along striae 2, 5, and 7 ........................................ 4
   – Elytron without rows of small setae along striae 2, 5, and 7 ................................................... 5

4 [3]. Protibia with one to three short spines along lateral edge (Fig. 33). Abdominal sternae, except last one in some specimens, more or less iridescent, microsculpture striate over lateral half [four species: 5.3-10.7 mm; Plate 50] [Selenophorus Dejean]
   – Protibia with six or more short spines along lateral edge (Fig. 34). Abdominal sternae markedly opaque, microsculpture isodiametric or granulate [one species: 6.0-7.5 mm; Plate 50] .................................................. Discoderus LeConte

5 [3]. Penultimate labial palpomere with two or three setae along anterior edge (Fig. 35) [body length less than 9.5 mm] ................................................................. 6
   – Penultimate labial palpomere with more than three setae along anterior edge (Fig. 36) ............................................................... 9

6 [5]. Mentum with tooth ........................................................................................................... 7
   – Mentum without tooth ............................................................................................................. 8

7 [6]. Pronotum with lateral edge crenulate toward base; median sulcus markedly deep over entire length. Mandible proportionally markedly elongate [one species, A. linearis (LeConte), 4.0-5.0 mm, not yet found in the northeast] [Amerinus Casey]
   – Pronotum with lateral edge not crenulate; median sulcus relatively shallow, at least over anterior half. Mandible not particularly elongate [13 species: 2.8-6.3 mm; Plate 47] ................................................................. Bradycellus Erichson

8 [6]. Posterior group of eight umbilical setae of elytron clearly divided in two groups of four setae each (Fig. 37) [12 species: 3.2-9.1 mm; Plates 45, 46] [Stenolophus Dejean]
   – Posterior group of eight umbilical setae of elytron more or less uniformly distributed (Fig. 38) [11 species: 2.4-4.1 mm; Plate 46] .............................................................. Acupalpus Latreille

9 [5]. Mentum and submentum partially (over lateral lobes) or entirely fused, not completely separated by suture (Fig. 39) [protarsomeres 1-3 of male with spongy adhesive vestiture ventrally] .................................................................................. 10
   – Mentum and submentum entirely separated by suture (Fig. 40) .............................................. 13
10 [9]. Forebody dorsally and all elytral intervals with dense pubescence [two species: 8.5-11.0 mm; Plate 40] ................................................................. *Amphasia* Newman

– Forebody dorsally and at least medial elytral intervals without pubescence........... 11

11 [10]. Glossal sclerite markedly narrow at apex medially (Fig. 41). Protibia with apical spur not swollen at base [one species: 9.2-11.0 mm; body unmetallic black; posterior angle of pronotum rounded; Plate 42] ........................................... *Xestonotus* LeConte

– Glossal sclerite wide at apex medially (Fig. 42). Protibia with apical spur trispid or at least swollen at base in all but one more or less metallic species with posterior angle of pronotum right or slightly obtuse................................................................. 12

12 [11]. Protibia with large excavate dilatation at apex laterally. Head with broad sulcus in front of eye for reception of antennomere 1 in repose [upper surface pallid with disc of pronotum and usually medial elytral intervals infuscate; elytral interval 3 without discal setae] [one species: 13-17 mm; Plate 44] ........................................... *Geopinus* LeConte

– Protibia without dilatation at apex. Head without preocular sulcus [11 species: 8.3-14.0 mm; Plates 42-44] ...................................................................... *Anisodactylus* Dejean

13 [9]. Elytra iridescent, microsculpture striate. Fronto-ocular line present, though difficult to observe in many specimens [metatarsomere 1 distinctly longer than apical spur of metatibia] [three species: 6.5-11.0 mm; Plate 51] ................. *Trichotichnus* Morawitz

– Elytra not iridescent, microsculpture isodiametric in most species, transverse or absent in some species. Fronto-ocular line absent................................................................. 14

14 [13]. Metatarsomere 1 distinctly longer than apical spur of metatibia (Fig. 43). Protarsomeres 1-3 of male with spongy adhesive vestiture ventrally [three species: 7.8-11.0 mm; Plate 42] ................................................................. *Notiobia* Perty

– Metatarsomere 1 not or barely longer than apical spur of metatibia (Fig. 44). Protarsomeres 1-3 of male with biseriate adhesive vestiture ventrally ........................................... 15

15 [14]. Frons and temple with short setae [all elytral intervals with pubescence; interval 3 without discal setae] [two species: 6.2-9.5 mm; Plate 48] ................. *Ophonus* Dejean

– Frons and temple without short setae [28 species: 6.5-34.5 mm; Plates 48, 49].......... ........................................................................ *Harpalus* Latreille

**SUBTRIBE ANISODACTYLINA**

**GENUS NOTIOBIA PERTY, 1830** [Anisotarsus sensu Lindroth]

For experience carabidologists, members of northeastern species of *Notiobia* can be distinguished on their facies alone. For inexperience ones, the use of the key to genera is required. Males differ from females in having the protarsomeres 1-4 and the mesotarsomeres 2-4 expanded laterally and with spongy adhesive setae underneath; such setae are also present at the apex of the first mesotarsomere in many specimens. Males of *N. nitidipennis* and *N. terminata* have two setae (four in females) near the apical edge of the last abdominal sternum; males and females of *A. sayi* have four setae on the last abdominal sternum.
List of northeastern species of Notiobia

*N. nitidipennis* (LeConte, 1847)  
*N. sayi* (Blatchley, 1910)  
*N. terminata* (Say, 1823)  
*N. picea* (LeConte, 1847)

Key to northeastern species of Notiobia

1. Pronotum (Fig. 288) with lateral depression narrow, not widening behind midlateral seta; sides rectilinearly convergent or shallowly sinuate in basal half; posterior angle obtuse. Body length 8.0 mm or less [5.9-8.0 mm; body dark brownish-black to black dorsally with greenish or aeneous lustre in most specimens; Plate 42] ....................

...........................................................................................................N. (*Anisotarsus*) nitidipennis (LeConte)

[BC: endemic; BZ: temperate; HR: covered places: forests, forest edges, and clearings, usually under stones; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME QC VT; References: Lindroth (1968: 865-870); Noonan (1973: 305-306); Larochelle and Larivière (2003: 341) – bionomics]

– Pronotum (Fig. 289) with lateral depression relatively wide, widening behind midlateral seta; sides slightly rounded in basal half; posterior angle obtusely rounded. Body length more than 8.1 mm ........................................2

2 [1]. Pronotal disc with microsculpture meshes near midline. Elytron without humeral tooth. Elytra with greenish, bluish or (more rarely) aeneous lustre in most specimens. Metatarsomeres with few, sparse, small setae on dorsum in most specimens. Male with two setae along apical edge [8.1-9.6 mm; Plate 42] .......... N. (*Anisotarsus*) terminata (Say)

[BC: endemic; BZ: temperate; HR: open places: cultivated and abandoned fields, orchards, sand and gravel pits, forest edges and clearings, usually on dry sandy soils; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1968: 867-868); Noonan (1973: 313-318); Larochelle and Larivière (2003: 342) – bionomics]

– Pronotal disc without distinct microsculpture meshes at middle. Elytron with small (posteriorly directed) humeral tooth. Elytra without lustre. Metatarsomeres without small setae on dorsum in most specimens. Male with four setae along apical edge [8.6-11.3 mm].............................................................................N. (*Anisotarsus*) sayi (Blatchley)

GENUS **XESTONOTUS** LECONTE, 1853 [Anisodactylus sensu Lindroth, in part]
As pointed out by Lindroth (1968: 864), the sole species of this genus, *X. lugubris* (Dejean, 1829) [Plate 42], is superficially similar to *Harpalus fuliginosus* (= *H. solitaris*) but can be differentiated most readily by having the antennomeres 2 and 3 dark, contrasting against the pale antennomere 1. In *H. solitaris*, all antennomeres are more or less uniformly pale.

Males differ from females in having the pro- and mesotarsomere 1-4 laterally expanded and with spongy adhesive setae underneath; these setae are present only at the apex of the mesotarsomere 1.

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, forest edges and clearing, adjacent fields and sand pits, usually in leaf litter or under stones; SA: ?; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 864); Larochelle and Larivière (2003: 513-514) – bionomics]

GENUS **ANISODACTYLUS** DEJEAN, 1829
Members of northeastern *Anisodactylus* are more likely to be confused with those of *Xestonotus* and some species of *Harpalus*. From *Xestonotus*, they are most easily differentiated by having the apical spur of the protibia swollen at base or (subgenus *Gynandrotarsus*) trid instead of narrow at base. From *Harpalus*, they are best separated by having the mentum and submentum partially (usually over the lateral lobes) or entirely fused and spongy adhesive setae underneath some of the pro- and mesotarsomeres of the males. In *Harpalus*, the mentum and submentum are entirely separated by a suture and the adhesive setae underneath some of the pro- and mesotarsomeres of the males are of the seriate type. In addition, some species of *Anisodactylus* have one or two reddish spots on the frons that are absent in northeastern *Harpalus*.

Males have the pro- and mesotarsomeres 2-4 expanded laterally and with spongy adhesive setae underneath. According to species, all or some specimens have adhesive setae at the apex of the pro- and mesotarsomeres 1. In some species, the number of setae along the apical edge of the last abdominal sternum is sexually dimorphic.

**List of northeastern species of Anisodactylus**

- *A. agricola* (Say, 1823)
- *A. caenus* (Say, 1823)
- *A. carbonarius* (Say, 1823)
- *A. discoidens* Dejean, 1831
- *A. harrisii* LeConte, 1863
- *A. kirbyi* Lindroth, 1953
- *A. melanopus* (Haldeman, 1843)
- *A. nigerrimus* (Dejean, 1831)
- *A. nigrita* Dejean, 1829
- *A. pseudagricola* Noonan, 1996
- *A. rusticus* (Say, 1823)
- *A. sanctaecrucis* (Fabricius, 1798)
- *A. verticalis* (LeConte, 1847)

**Key to northeastern species of Anisodactylus**

1. Apical spur of protibia trid (Fig. 290) ................................................................. 2
   - Apical spur of protibia simple, at most swollen at base (Figs 291, 292) ............. 4
2 [1]. Clypeus with two, rarely three, setae on each side. Prosternum with pubescence at middle. Frons with two confluent reddish spots [11.4-13.0 mm; facies of Harpalus] .......................................................A. (Anisodactylus) carbonarius (Say)  
[BC: endemic; BZ: temperate; HR: open places: cultivated and abandoned fields, orchards, roadsides, meadows, grasslands, usually on sandy or clayish soils; SA: ?; OC: LF++; RA+/++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1968: 848-849); Noonan (1996: 68-71); Larochelle and Larivière (2003: 71-72) – bionomics]  
– Clypeus with one seta on each side. Prosternum without pubescence. Frons without reddish spots [facades of Amara] ...................................................................................3

3 [2]. Elytron with small but evident humeral tooth (Fig. 293) [10.3-13.7 mm] .................  
..........................................................................................A. (Gynandrotarsus) merula (Germar)  
[BC: endemic; BZ: temperate; HR: open places: cultivated fields, vacant lots, orchards, roadsides, sand and gravel pits, forest edges and clearings, usually on sandy soils with scattered vegetation; SA: [spring breeder]; OC: LF+++; RA+/++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1968: 845-846); Noonan (1973: 368-370); Larochelle and Larivière (2003: 75-76) – bionomics]  
– Elytron without humeral tooth (Fig. 294) [7.8-12.2 mm; Plate 43]...............................  
..........................................................................................A. (Gynandrotarsus) rusticus (Say)  
[BC: endemic; BZ: temperate/boreal; HR: open places: cultivated and abandoned fields, orchards, sand and gravel pits, forest edges, usually on sandy soils with scattered vegetation; SA: [spring breeder]; OC: LF+++; RA+/++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 843-845); Noonan (1973: 364-366); Larochelle and Larivière (2003: 78) – bionomics]

4 [1]. Upper surface with greenish, aeneous, or bronze lustre. Apical spur on protibia evenly swollen at base (Fig. 291) [7.6-8.5 mm; facies of Amara] .......................................................[A. (Aplocentroides) caenus (Say)]  
[BC: endemic; BZ: temperate; HR: [covered places]: deciduous forests; SA: ?; DP: wings (+); flight (+); GD: not yet found in the northeast but recorded from Connecticut and Massachusetts; References: Lindroth (1968: 860); Larochelle and Larivière (2003: 71) – bionomics]  
– Upper surface without lustre. Apical spur on protibia not evenly swollen at base (Fig. 292) .................................................................................................................................5

5 [4]. Elytra pale in part. Metatarsomere 1 not or only slightly longer than apical spur of tibia ..........................................................................................................................6

– Elytra uniformly black. Metatarsomere 1 distinctly longer than apical spur of tibia. ..............................................................................................................................7

6 [5]. Frons with median reddish spot. Pronotum with lateral depression wide; lateral margin widely paler than disc. Metatarsomere 1 without small setae on dorsal side [9.4-12.7 mm] ..............................................................................A. (Anadaptus) discoideus Dejean  
[BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, usually on clayed-sandy soils; also near ponds; SA: spring breeder; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 839);
Larochelle (1975c: 206) – habitat; Noonan (2001: 312-313); Larochelle and Larivière (2003: 72) – bionomics

- Frons without median spot. Pronotum with lateral depression narrow; lateral margin at most narrowly paler than disc. Metatarsomere 1 with small setae on dorsal side [8.3-10.9 mm; Plate 43] ...............................\[Anadaptus\] sanctaecrucis (Fabricius) [BC: endemic; BZ: temperate; HR: flooded/open places: river and lake banks, edges of marshes and pools, cultivated and abandoned fields, sand and gravel pits, roadsides, usually on more or less sandy soils; SA: spring breeder; OC: LF ++++; RA +++; DP:]

Abdominal sterna 4 and 5 with small setae. Pronotum proportionally small, length of elytra more than three times that of pronotum. Mandible with dorsal surface striate [12.8-14.0 mm; anterior edge of labrum markedly emarginate; Plate 42]......

A. (Spongopus) verticalis (LeConte)

[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, on moist, clayish or muddy soils; SA: ?; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 863-864); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 80) – bionomics]

– Abdominal sterna 4 and 5 without small setae. Pronotum proportionally longer, length of elytra less than three times that of pronotum. Mandible with dorsal surface smooth

Pronotum (Figs 295, 296) with posterior angle rounded [clypeus with two or three, exceptionally only one, setae on each side].................................

A. (Anisodactylus) nigrita Dejean [in part]

[BC: endemic; BZ: temperate; HR: wet/flooded places: marshes, ponds, swamps, beaver houses, also river and lake edges; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 852-853); Noonan (1996: 53-54); Larochelle and Larivière (2003: 76) – bionomics]

– Metasternum with several (more than three) small setae on and anterior to posterior intercoxal process. Elytral intervals flat or only slightly convex, not distinctly punctate

Pronotum (Fig. 295) with lateral depression relatively deep, wide, encompassing midlateral setae, distinctly widening in basal half, and defined even near posterior angle [10.5-13.0 mm; Plate 43].................................A. (Anisodactylus) harrisii LeConte

[BC: endemic; BZ: temperate/[boreal]; HR: wet/[covered/open places: clayish or muddy areas around marshes, swamps, ponds, lakes, rivers, cultivated fields, orchards, gardens, vacant lots, often near water; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 850-851); Noonan (1996: 71-72); Larochelle and Larivière (2003: 73-74) – bionomics]

1 Anisodactylus nigrita, which has the posterior angles of the pronotum obtusely rounded in most specimens, is treated in both couplets.
Pronotum (Fig. 296) with lateral depression shallow, narrow, not encompassing midlateral seta (though depressed toward seta), not distinctly widening in basal half, and not defined near posterior angle [9.2-12.3 mm] .................................................................
.............................................................................

A. (Anisodactylus) nigerrimus (Dejean)

[BC: endemic; BZ: temperate/boreal; HR: open places: cultivated and abandoned fields, roadsides, sand and gravel pits, forests edges and clearings, usually on dry sandy soils with scattered vegetation; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth]
(1955b: 144); Lindroth (1968: 851); Larochelle (1975c: 206) – habitat; Noonan (1996: 65-67); Larochelle and Larivière (2003: 76) – bionomics

11 [8]. Elytral microsculpture markedly transverse or striate on lateral intervals .......... 12
– Elytral microsculpture granulate, isodiametric, irregularly isodiametric, or slightly transverse on lateral intervals .......................................................................................................................... 14

[BC: endemic; BZ: temperate; HR: wet places: edges of marshes, swamps, ponds, lakes, usually on wet muddy soils rich in organic debris; SA: [spring breeder]; OC: LF+; RA?: DP: wings (+); flight (+); GD: VT; References: Lindroth (1968: 856);
Noonan (1996: 48-50); Larochelle and Larivière (2003: 75) – bionomics]
– Clypeus with one seta on each side. Lateral depression of pronotum narrow, more or less defined in apical half .............................................................................................................................. 13

13 [12]. Pronotum (Fig. 297) with sides rectilinearly convergent in basal half [11-13 mm].
................................................................................................................................. A. (Anisodactylus) agricola (Say)
[BC: endemic; BZ: temperate; HR: ; SA: ; OC: LF++; RA+; DP: wings (+); flight (?); GD: ME NH QC; References: Lindroth (1968: 856-857); Noonan (1996: 44-45);
Larochelle and Larivière (2003: 69-70) – bionomics]
– Pronotum with sides rounded in basal half [9.9-11.6 mm] ................................................................................................................................. A. (Anisodactylus) pseudagricola Noonan
[BC: endemic; BZ: temperate; HR: ; SA: ; OC: LF+; RA+; DP: wings (?); flight (?);
GD: NH; References: Noonan (1996: 46-48)]

14 [11]. Clypeus with one seta on each side, very rarely with two on one side or (less than 1%) both sides. Pronotum (Fig. 298) with basal impression relatively deep, more or less linear [9.0-12.8 mm; posterior angle of pronotum slightly acute, right or slightly obtuse in most specimens seen; Plate 44] ................. A. (Anisodactylus) kirbyi Lindroth
[BC: endemic; BZ: temperate; HR: wet places: edges of ponds, marshes, swamps, wet meadows; SA: [spring breeder]; OC: LF++++; RA+/+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 853-854);
– Clypeus with two setae on each side, very rarely with one seta on one side or (less than 0.5%) both sides. Pronotum (Fig. 299) with basal impression shallow, more or less oval [10.5-13.0 mm; posterior angle of pronotum moderately to markedly obtuse in most specimens seen] .......... A. (Anisodactylus) nigrita Dejean [in part]
[BC: endemic; BZ: temperate; HR: wet/flooded places: marshes, ponds, swamps, beaver houses, also river and lake borders; SA: [spring breeder]; OC: LF++++; RA+/+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 852-853); Noonan (1996: 53-54); Larochelle and Larivière (2003: 76) – bionomics]

Genus Geopinus LeConte, 1847
The sole species belonging to this genus, G. incrassatus (Dejean, 1829) [Plate 44], is easily recognized on its relatively large size (13-17 mm), clumsy appearance, and depigmented body.
Despite its unique look, characters of the adults (Noonan 1973) and larvae (Bousquet and Tchang 1992) suggest that the species should be included in the genus *Anisodactylus*.

Males have the protarsomeres 2-4 moderately expanded and with sparsely spongy adhesive setae underneath.

[**BC**: endemic; **BZ**: temperate; **HR**: open places: dunes, sand pits, often along rivers, on sandy soils; **SA**: [spring breeder]; **OC**: LF+++; RA++/+++; **DP**: wings (+); flight (+); **GD**: ME NH QC VT; **References**: Lindroth (1968: 832-833); Larochelle and Larivière (2003: 273) – bionomics]

**GENUS AMPHASIA** NEWMAN, 1838 [*Anisodactylus* sensu Lindroth, in part]

Members of this genus resemble mainly those of *Anisodactylus* but are easily differentiated in having the elytra pubescent; such condition is not found in members of northeastern *Anisodactylus*.

Males differ from females in having the pro- and mesotarsomeres 1-4 expanded laterally and with spongy adhesive setae underneath; these setae are present only at the apex of the mesotarsomere 1. In addition, the last abdominal sternum bears two subapical setae in the males, four in the females.

**List of northeastern species of Amphasia**

*A. interstitialis* (Say, 1823)  
*A. sericea* (Harris, 1828)

**Key to northeastern species of Amphasia**

1. Forebody reddish, elytra black. Elytra shiny, without evident microsculpture meshes [8.5-10.2 mm; Plate 44]..............................................*A. (Amphasia) interstitialis* (Say)

[**BC**: endemic; **BZ**: temperate; **HR**: covered places: deciduous forests, usually in leaf litter, under stones and logs; **SA**: ?; **OC**: LF+++; RA++; **DP**: wings (+); flight (-); **GD**: ME NH QC VT; **References**: Lindroth (1968: 860-861); Larochelle and Larivière (2003: 65) – bionomics]

– Upper surface uniformly black. Elytra opaque, with well-impressed microsculpture meshes [8.8-11.0 mm; Plate 44]..............................................*A. (Pseudamphasia) sericea* (Harris)

[**BC**: endemic; **BZ**: temperate; **HR**: open places: cultivated and vacant fields, orchards, pastures, sand and gravel pits, usually on dry sandy soils; **SA**: ?; **OC**: LF+++; RA+/+++; **DP**: wings (+); flight (+); **GD**: ME NB NH QC VT; **References**: Lindroth (1968: 861); Larochelle and Larivière (2003: 65) – bionomics]

**SUBTRIBE STENOLOPHINA**

**GENUS DICHEIROTRICHUS** JACQUELIN DU VAL, 1855 [*Trichocellus* sensu Lindroth]

The small size (3.2-5.2 mm), presence of only one pair of supraorbital setae (the posterior one) on the frons, presence of a laterobasal seta at each posterior angle of the pronotum and pubescence over several parts of the body are character states that will differentiate the two northeastern species of *Dicheirotrichus* from most other carabids in the region.

Males differ from females in having the protarsomeres 1-4 expanded and covered underneath with seriate adhesive setae. In addition, males have two setae (four in females) along the apical edge of the last sternum. Males of *D. cognatus* are also characterized by the presence of an elongate, densely punctate and pubescent field on the middle of the abdominal sternum 2.
List of northeastern species of *Dicheirotrichus*

*D. cognatus* (Gyllenhal, 1827)  
*D. mannerheimii* (R.F. Sahlberg, 1844)

**Key to northeastern species of *Dicheirotrichus***

1. Elytra with microsculpture, though meshes obsolete on medial intervals in male. Elytra with very short, depressed, not seriately arranged pubescence restricted to lateral intervals and apex; interval 3 with one discal seta. Upper surface brownish-black with margins of pronotum and base and first intervals of elytra usually paler, red or reddish-brown [3.5-5.2 mm; Plate 46] ....... *D. (Trichocellus) cognatus* (Gyllenhal)

   - [BC: holarctic; BZ: temperate/boreal/arctic/alpine; HR: open places: gravel and sand pits, cultivated and abandoned fields, grasslands, moraines, roadways, forest edges and clearings, usually on dry sandy soils with sparse vegetation; SA: ?; OC: LF++++; RA++/+++; DP: wings (+); flight (+); GD: LB ME NF NH NS PE PM QC VT; References: Lindroth (1955b: 145); Lindroth (1968: 875-876); Larochelle and Larivière (2003: 234) – bionomics]

   - Elytra without microsculpture. Elytra with irregular row of more conspicuous, erect short setae on each interval; interval 3 without discal setae. Upper surface brownish-black to black with only first elytral intervals more or less paler [3.2-4.0 mm].......................................................... *D. (Oreoxenus) mannerheimii* (R.F. Sahlberg)


**Genus Bradycellus** Erichson, 1837

Among northeastern members of Harpalini, those of *Bradycellus* are distinguished by their small size (2.8-6.3 mm), presence of mentum tooth, and (versus *Dicheirotrichus*) absence of laterobasal setae on the pronotum.

Males of *B. atrimedeus*, *B. badipennis*, *B. kirbyi*, *B. lugubris*, *B. nigrinus*, *B. semipubescens*, *B. congener*, and *B. rupestris* have the protarsomeres 1-4 expanded and the mesotarsomeres 2-4 slightly expanded, all bearing seriate adhesive setae underneath. Males of all these species, except for the last two-mentioned, have only two subapical setae on the last abdominal sternum. Males of *B. congener* and *B. rupestris* and females of all these species have four subapical setae on the last sternum. The protarsomeres 1-4 in males of *B. insulus*, *B. lecontei*, *B. neglectus*, *B. nigricaps*, and *B. tantillus* are very slightly expanded but do not have adhesive setae underneath, the mesotarsomeres are not expanded and also have no adhesive setae, and the last abdominal sternum bears four setae as in females. However, males of these species have the apical edge of the last abdominal sternum more acutely rounded.

List of northeastern species of *Bradycellus*

*B. atrimedeus* (Say, 1823)  
*B. kirbyi* (Horn, 1883)  
*B. badipennis* (Haldeman, 1843)  
*B. lecontei* Csiki, 1932  
*B. congener* (LeConte, 1847)  
*B. lugubris* (LeConte, 1847)  
*B. insulus* (Casey, 1914)  
*B. neglectus* (LeConte, 1847)
B. nigriceps LeConte, 1868
B. semipubescens Lindroth, 1968
B. nigrinus (Dejean, 1829)  
B. tantillus (Dejean, 1829)
B. rupestris (Say, 1823)

Key to northeastern species of Bradycellus

1. Antennomere 3 glabrous except for usual apical setae [tarsomere 5 of each leg without setae underneath] .................................................................2
   – Antennomere 3 with pubescence over apical half ........................................5

2 [1]. Pronotum (Fig. 300) with posterior angle obtusely rounded or rounded ..........3
   – Pronotum (Fig. 301) with posterior angle acute to slightly obtuse .................4

3 [2]. Elytral microsculpture markedly transverse or striate. Elytron pale reddish-brown over much of basal half, except along medial intervals in some specimens [5.0-5.9 mm] ...................................................... B. (Triliarthrus) badipennis (Haldeman)
   [BC: endemic; BZ: temperate; HR: wet places: swamps in deciduous forests; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 898-899); Larochelle and Larivière (2003: 159-160) – bionomics]
   – Elytral microsculpture irregularly isodiametric to moderately transverse. Elytron (except interval 1) dark reddish-black or black, at most with humeral region pale reddish-brown [5.2-6.1 mm] ...................................................... B. (Triliarthrus) lugubris (LeConte)
   [BC: endemic; BZ: temperate/boreal; HR: wet places: swamps in forests, edges of marshes, roadside ditches; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 146-147, as Triliarthrus protractus); Lindroth (1968: 901-903); Larochelle and Larivière (2003: 163) – bionomics]

4 [2]. Disc of pronotum without microsculpture; area around basal impression without or with poorly impressed microsculpture meshes. Pronotum with large, more or less square, median reddish-black or black spot, leaving all margins widely pale; elytra yellow with oblong dark cloud behind middle along medial intervals [5.2-6.3 mm; elytra with moderately transverse microsculpture, meshes poorly impressed; Plate 47] ................................................................. B. (Triliarthrus) atrimedeus (Say)
   [BC: endemic; BZ: temperate/boreal; HR: flooded places: edges of ponds, lakes, brooks, on clayish or sandy soils usually mixed with organic matter; SA: [spring breeder]; OC: LF++++; RA+/++++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 899); Larochelle (1972a) – habitat; Larochelle and Larivière (2003: 159) – bionomics]
   – Disc of pronotum and area around basal impression with microsculpture meshes. Pronotum reddish-black or black with margins only narrowly pale; elytra reddish-black or black at most with base (in some specimens up to about middle) and first interval on each side paler (reddish-brown) [5.0-5.9 mm; elytra with markedly transverse or striate microsculpture] ........................................ B. (Triliarthrus) kirbyi (Horn)
   [BC: endemic; BZ: temperate; HR: wet places: swamps, edges of marshes, pools, ponds in sand and gravel pits, usually on clayish or muddy soils; SA: [spring breeder];
5 [i]. Elytron without parascutellar seta or discal setae in interval 3 [4.3-5.2 mm; frons with fronto-ocular line reaching medial edge of eye; antennomere 1 quite distinctly paler than antennomere 2; pronotum with well-impressed isodiametric microsculpture meshes even along midline; Plate 47] .......................... B. (Catharellus) lecontei Csiki
[BC: endemic; BZ: temperate/boreal; HR: wet places: swamps, roadside ditches, edges of marshes, pools, ponds, occasionally cultivated fields, usually on clayish soils; SA: ?; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 147); Lindroth (1968: 885); Larochelle and Larivière (2003: 163) – bionomics]

- Elytron with parascutellar seta and one discal seta on interval 3

6 [5].
Antennomere 2 very dark, contrasting against more or less pale antennomere 1. Frons with fronto-ocular line not reaching medial edge of eye. Body length 4.5 mm or more [tarsomere 5 of each leg with setae underneath].

- Antennomere 2 pale as antennomere 1. Frons with fronto-ocular line reaching medial edge of eye. Body length less than 4.5 mm in most specimens

7 [6].
Pronotum (Fig. 302) with sides rectilinearly convergent or slightly sinuate in basal half, posterior angle slightly obtuse. Profemur dark, brownish-black to black, and protibia contrastingly paler, at least at base. Lateral margin of pronotum not or barely paler than disc; base of elytron not paler than disc in most specimens [4.7-6.0 mm; Plate 47].................B. (Lipalocellus) nigrinus (Dejean)

[BC: endemic; BZ: temperate/boreal; HR: wet places: swamps, marshes, roadside ditches, mud flats in sand pits; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 145-146); Lindroth (1968: 896); Larochelle and Larivière (2003: 163) – bionomics]

- Pronotum (Fig. 303) with sides narrowly rounded in basal half, posterior angle obtuse or more or less rounded. Profemur pale, more or less yellow usually with apex slightly infuscate, and protibia not contrastingly paler, at least over basal half. Lateral margin of pronotum quite distinctly paler than disc in most specimens; base of elytron, in some specimens also along medial intervals, at least in part paler than disc [4.5-5.0 mm].....................B. (Lipalocellus) semipubescens Lindroth

[BC: endemic; BZ: temperate/boreal; HR: wet places: swamps, fens, meadows; also under bushes on very moist soils; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 896-898); Larochelle and Larivière (2003: 167) – bionomics]

- Elytral microsculpture isodiametric, meshes well impressed [3.9-4.8 mm; pronotum with posterior angle rounded]..................B. (Stenocellus) congener (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: wet/open places: edges of marshes, swamps, cultivated and vacant fields, roadsidde, sand and gravel pits around ponds; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: NH NS QC VT; References: Lindroth (1968: 888); Larochelle and Larivière (2003: 160-161) – bionomics]

- Elytral microsculpture absent or transverse

8 [6].
Base of pronotum without or with poorly impressed microsculpture meshes toward middle. Frons without microsculpture meshes at least behind clypeofrontal suture. Body length 3.9 mm or more [3.9-5.2 mm; elytron with first and lateral intervals quite distinctly paler than medial intervals in most specimens; pronotum with protruding, blunt denticle at posterior angle; Plate 47]........B. (Stenocellus) rupesris (Say)
Pronotum (Fig. 304) with posterior angle obtusely rounded to rounded, though with a minute jag in a few specimens [3.0-3.8 mm; frons with well-impressed microsculpture meshes even at middle; pronotum more or less reddish-brown though usually infuscate around basal impressions, slightly paler than elytra; elytral microsculpture meshes distinct] ............................................................ B. (Stenocellus) neglectus (LeConte)

Pronotum (Fig. 305) with posterior angle minutely denticulate .......................................... B. (Stenocellus) insulsus (Casey)

– Elytra not or barely iridescent, microlines distinct. Body length less than 3.5 mm in many specimens .................................................. B. (Stenocellus) tantillus (Dejean)
[BC: endemic; BZ: temperate; HR: wet places: edges of marshes, ponds, lakes, usually on clayish or muddy soils; SA: [spring breeder]; DP: wings (+); flight (+); GD: VT; the record from QC (Bousquet and Larochelle 1993: 226) is based on a misidentified specimen of B. nigriceps; References: Lindroth (1968: 892-893); Larochelle and Lari-vièr (2003: 168) – bionomics]

GENUS STENOLOPHUS DEJEAN, 1821
Members of Stenolophus are more likely to be confused with those of Bradycellus and Acupalpus among northeastern carabids. They differ from those of Bradycellus in the absence of a mentum tooth and from those of Acupalpus on size alone for most species (3.2-9.1 mm against 2.4-4.1 mm in Acupalpus). Only members of the subgenus Agonoleptus Casey fall within the size range of Acupalpus species and they can be differentiated on pronotum characters, particularly the evenly rounded sides, markedly rounded posterior angles, punctiform basal impressions, and entirely impunctate base.

Except for one species not found in the northeast, there are no useful external sexual characters for members of the subgenus Agonoderus Dejean. Males of the subgenus Agonoleptus have the protarsomeres 1-4 and mesotarsomeres 2-4 expanded and with seriate adhesive setae underneath. In both males and females, the last sternum bears four setae along the apical edge. In all northeastern species of the nominotypical subgenus the protarsomeres 1-4 are expanded and with seriate adhesive setae underneath though these setae are present only near the apex on the tarsomere 1; in all species but S. ochropezus, the mesotarsomeres 1-4 are also expanded and with seriate setae. Males of some species (e.g., S. fuscatus, S. fuliginosus) have only two setae along the apical edge of the last sternum while others (e.g., S. megacephalus, S. carbo) have four setae like females.

List of northeastern species of Stenolophus

S. carbo Bousquet, 1993
S. lecontei (Chaudoir, 1868)
S. carbonarius Dejean, 1829
S. lineola (Fabricius, 1775)
S. comma (Fabricius, 1775)
S. magacephalus Lindroth, 1968
S. conjunctus (Say, 1823)
S. ochropezus (Say, 1823)
S. ochropezus Dejean, 1829
S. plebejus Dejean, 1829
S. fuliginosus Dejean, 1829
[S. splendidulus Motschulsky, 1864]
S. humidus Hamilton, 1893
S. rotundicollis (Haldeman, 1843)

Key to northeastern species of Stenolophus

1. Tarsomere 5 of each leg with two setae underneath. Body length less than 4.5 mm ............................................................................................................................................2

– Tarsomere 5 of each leg without setae underneath. Body length more than 4.5 mm in almost all specimens..................3

2 [1]. Disc of pronotum with distinct microsculpture meshes; elytra with irregularly isodiametric to slightly transverse microsculpture, meshes distinct on all intervals. Head and disc of pronotum concolour or almost so. Frons with fronto-ocular line distinctly reaching medial edge of eye [3.9-4.2 mm; rarely collected species].......... .................................................................S. (Agonoleptus) rotundicollis (Haldeman)
Disc of pronotum without distinct microsculpture meshes; elytra with more transverse microsculpture, meshes more or less distinct on medial intervals. Head distinctly darker than disc of pronotum. Frons with fronto-ocular line not distinctly reaching medial edge of eye [3.2-4.3 mm; commonly collected species; Plate 46].

...............................................................................................S. (Agonoleptus) conjunctus (Say)

Protibia with five or six spines along laterodorsal edge on apical half. Elytra with isodiametric or irregularly isodiametric microsculpture. Apical spurs of metatibia wide, longest one as long as metatarsomere 1 [elytra yellow with medial intervals (except first one in some specimens) in part black; metatarsomere 1 without carina on lateral side].

...............................................................................................4

Protibia with two or three spines along laterodorsal edge on apical half. Elytra with transverse or striate microsculpture in all but one species (isodiametric in S. carbo with entirely black elytra). Apical spurs of metatibia narrow, longest one shorter than metatarsomere 1.

...............................................................................................6

Head dorsally pale, with transverse dark macula on frons; pronotum pale with two distinct dark spots. Metafemur with five to seven setae along posterior edge on ventral surface. Pronotum with distinct basal bead laterally [7.0-9.1 mm; Plate 45].

...............................................................................................S. (Agonoderus) lineola (Fabricius)

Head dark with two (often confluent) pale spots; pronotum entirely pale or pale with a single dark central spot. Metafemur with two setae along posterior edge on ventral surface. Pronotum without basal bead.

...............................................................................................5

Elytral interval 1 as pale as background colour of elytron; dark macula of elytron not extended anteriorly on interval 2 compared to intervals 3 and 4 (Fig. 308). Pronotum (Fig. 306) with side not sinuate in front of posterior angle; posteroangular region depressed [5.5-7.7 mm; scutellar stria proportionally long].

...............................................................................................S. (Agonoderus) comma (Fabricius)
Elytral interval 1 darker than background colour of elytron; dark macula of elytron extended anteriorly on interval 2 compared to intervals 3 and 4 (Fig. 309). Pronotum (Fig. 307) with side slightly sinuate in front of posterior angle in many specimens; posteroangular region convex [5.3-7.2 mm; scutellar stria proportionally short; Plate 45]...............................................................S. (Agonoderus) lecontei (Chaudoir)

[BC: endemic; BZ: temperate; HR: open/flooded places: cultivated and vacant fields, orchards, roadsides, sand and gravel pits, river, lake and pool edges, usually on sandy soils; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1968: 919-920); Pausch (1979) – biology; Larochelle and Larivière (2003: 487-488) – bionomics]

6 [3]. Last abdominal sternum glabrous. Elytra not iridescent, with isodiametric micro-sculpture [6.9-7.1 mm] .................................................................S. (Stenolophus) carbo Bousquet


[BC: endemic; BZ: temperate; HR: [wet places]; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: NH; References: Lindroth (1968: 908, as S. carbonarius); Larochelle and Larivière (2003: 483) – bionomics]

Last abdominal sternum with small setae besides usual subapical setae. Elytra iridescent, with striate microsculpture.......................................................... 7

7 [6]. Femur (particularly metafemur) and apex of tibia dark, dark reddish-brown to black [5.3-7.2 mm; head black, pronotum black with lateral margins narrowly but contrastingly brownish-yellow, elytra reddish-brown with darker cloud at least over intervals 2 and 3; Plate 45]...................................................... S. (Stenolophus) fuliginosus Dejean

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of marshes, swamps, pools, ponds, rivers, lakes, usually on clayish soils; occasionally beaver houses and mud flats in sand and gravel pits; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 149-150); Lindroth (1968: 909-910); Larochelle and Larivière (2003: 485-486) – bionomics]

– Femur and tibia pale, yellow or brownish-yellow.................................................. 8

8 [7]. Elytron with scutellar stria proportionally long (Fig. 310). Edge of elytron with shallow to indistinct preapical sinuation. Mesotarsomeres 1-4 of male not dilated and without adhesive setae underneath [4.8-6.7 mm; pronotum not iridescent, meshes clearly more open than on elytra; elytra long, parallel-sided; Plate 45].........................

.......................................................................................................................... S. (Stenolophus) ochropezus (Say)

[BC: endemic; BZ: temperate; HR: wet places: edges of Typha marshes, swamps, ponds, mud flats, slow rivers, irrigation canals, roadside ditches, beaver houses; occasionally corn fields; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 911-913); Larochelle and Larivière (2003: 489) – bionomics]

– Elytron with scutellar stria absent or proportionally short (Fig. 311). Edge of elytron with more or less deep preapical sinuation. Mesotarsomeres 1-4 of male dilated and with long, flat adhesive setae underneath (except on tarsomere 1 in some species)........................................................................................................... 9

Figs 310-311. Basal half of elytra. 310: Stenolophus ochropezus; 311: Stenolophus megacephalus. ss – scutellar stria
Antennomere 2 distinctly infuscate ................................................................. 10
Antennomere 2 not or only slightly infuscate ..................................................... 12

Frons with fronto-ocular line incomplete, not reaching medial edge of eye. Microsculpture similar on pronotum and elytra. Elytron with scutellar stria absent in most specimens. Body length 5 mm or less [4.2–5.0 mm; pronotum without defined basal bead laterally] ................................................................. S. (Stenolophus) humidus Hamilton

[BC: endemic; BZ: temperate; HR: wet places: edges of marshes, usually on clayish or muddy soils; SA: [spring breeder]; OC: LF ++/++; RA: ; DP: wings (+); flight (;); GD: ME NH NS QC VT; References: Lindroth (1968: 916); Larochelle and Larivière (2003: 486–487) – bionomics]

Frons with fronto-ocular line complete, reaching medial edge of eye. Microsculpture meshes at least slightly more open on pronotum than elytra. Elytron with scutellar stria present. Body length more than 5 mm .................................................. 11

Pronotum without basal bead. Last abdominal sternum of male with four subapical setae [5.3–5.8 mm] ......................................................... S. (Stenolophus) megacephalus Lindroth

[BC: endemic; BZ: temperate; HR: wet places: edges of Sphagnum-bogs; SA: [spring breeder]; OC: LF ++; RA ++/++; DP: wings (+); flight (+); GD: NH QC; References: Lindroth (1968: 914–916); Larochelle and Larivière (2003: 488–489) – bionomics]

Pronotum with distinct basal bead laterally. Last abdominal sternum of male with two subapical setae [5.2–5.8 mm] .................. S. (Stenolophus) splendidulus Motschulsky]

[BC: endemic; BZ: temperate; HR: ; SA: ; DP: wings (+); flight (+); GD: this species is yet known, besides the type series, only from southern Ontario]

Pronotum with lateral margin broadly pale, disc darker. Pronotum with transverse microsculpture [4.8–5.2 mm] ..................................................... S. (Stenolophus) fuscatus Dejean

[BC: endemic; BZ: temperate; HR: wet places: mostly swamps; SA: [spring breeder]; OC: LF ++; RA ++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 914); Larochelle and Larivière (2003: 486) – bionomics]

Pronotum entire pale or more commonly dark with lateral depression narrowly pale. Pronotum with striate microsculpture [5.0–5.2 mm] ....... S. (Stenolophus) plebejus Dejean

[BC: endemic; BZ: temperate; HR: wet places: marshes, bogs, ponds, swamps, beaver houses; occasionally roadside ditches; SA: [spring breeder]; OC: LF ++; RA ++; DP: wings (+); flight (;); GD: NH QC VT; References: Lindroth (1968: 913–914); Larochelle and Larivière (2003: 49–490) – bionomics]

Genus Acupalpus Latreille, 1829
The northeastern species of Acupalpus are recognized from almost all other Harpalini by their small size (2.4–4.1 mm) and absence of mentum tooth.

In the subgenus Tachistodes the protarsomeres are not expanded in the males and if some of them bear adhesive setae, they are so small as to be indistinct even at 80x of magnification. Both males and females have four setae along the apical edge of the last abdominal sternum. In males of A. (Acupalpus) meridianus, the pro- and mesotarsomeres 1–4 are slightly expanded and bear adhesive setae underneath. In the endemic species of the nominotypical subgenus, the protarsomeres 1–3 are very slightly expanded and seem to bear adhesive setae which are
very difficult to see; the mesotarsomeres are not expanded and have no adhesive setae. The males have two setae (four in females) along the apical edge of the last abdominal sternum, the minute setae on that segment are less evident than in females, and the sinuation lateral to the apical seta on the last abdominal sternum is more pronounced than in females. In the subgenus *Philodes*, the protarsomeres 1-4 and mesotarsomeres 2-4 are slightly expanded and bear seriate adhesive setae underneath in the male.

**List of northeastern species of *Acupalpus***

*A. alternans* (LeConte, 1853)
*A. canadensis* Casey, 1924
*A. carus* (LeConte, 1863)
*A. hydropicus* (LeConte, 1863)
*A. meridianus* (Linné, 1761)
*A. nanellus* Casey, 1914
*A. pauperculus* Dejean, 1829
*A. partiarius* (Say, 1823)
*A. pumilus* Lindroth, 1968
*A. rectangulus* Chaudoir, 1868
*A. testaceus* Dejean, 1829
*A. canadensis* Casey, 1924
*A. pauperculus* Dejean, 1829
*A. carus* (LeConte, 1863)
*A. pumilus* Lindroth, 1968
*A. hydropicus* (LeConte, 1863)
*A. rectangulus* Chaudoir, 1868
*A. meridianus* (Linné, 1761)
*A. testaceus* Dejean, 1829
*A. nanellus* Casey, 1914

**Key to northeastern species of *Acupalpus***

1. Elytral interval 3 with three or more discal setae. Side of pronotum with long and deep sinuation in basal half. Tarsomere 5 without setae underneath ......................
   – Elytral interval 3 with one discal seta. Side of pronotum without or at most with short and shallow sinuation in basal half. Tarsomere 5 with at least one pair of setae underneath near apex ........................................

2 [1].
   – Elytral intervals 5 and 7 with several setae. Elytra with slightly to moderately transverse microsculpture [3.3-4.1 mm; Plate 46]..............A. *(Philodes) alternans* (LeConte)
   – Elytral intervals 5 and 7 without setae. Elytra with striate microsculpture [2.4-3.2 mm]..............................................A. *(Philodes) rectangulus* Chaudoir
   [BC: endemic; BZ: temperate; HR: [wet places]: edges of eutrophic marshes; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: QC VT; References: Lindroth (1968: 928); Larochelle and Lariviére (2003: 17) – bionomics]

3 [1].
   – Elytron dark with sharp spot at humerus reaching suture in most specimens. Elytra without microsculpture [3.2-3.8 mm; antennomere 2 sparsely pubescent; prosternum and abdominal sternum with short, sparse pubescence]..........................................................A. *(Acupalpus) meridianus* (Linné)
   [BC: exotic (1969); BZ: temperate; HR: open places: gardens, vacant lots; SA: [spring breeder]; OC: LF++; RA??; DP: wings (+); flight (+); GD: QC; References: Lindroth (1968: 929-930); Larochelle and Lariviére (2003: 15) – bionomics]
   – Elytron without humeral spot. Elytra with microsculpture, at least at apex ..........

4 [3].
   – Elytra not iridescent, without microsculpture except for isodiametric meshes at apex or laterally at apex. Antennomere 2 glabrous except for usual apical setae (Fig. 312)............................................................................
Elytra iridescent, with striate microsculpture over entire surface, though microlines not or barely distinct. Antennomere 2 sparsely pubescent (Fig. 313). ...........................................

5 [4]. Head pale, reddish-yellow to brownish-red, more or less of same colouration as pronotum. Body length 3 mm or less [2.5-3.0 mm; abdominal sternum 2 without microsculpture meshes at middle (versus A. pauperculus)]. ............................................................

..............................................................................................................

A. (Tachistodes) testaceus Dejean

[BC: endemic; BZ: temperate; HR: [wet/flooded places]; SA: ?; OC: LF++; RA?; DP: wings (+); flight (+); GD: ME NH QC; References: Lindroth (1968: 937-938); Larochelle and Larivière (2003: 17) – bionomics]

– Head dark, brownish-black, contrasting with pale pronotum. Body length more than 3 mm in most specimens ..........................................................

6 [5]. Elytron background colour darker, reddish-brown to brownish-black (contrasting with pronotum), with margin and first interval (at least basally) paler. Abdominal sternum 2 with well-impressed microsculpture meshes at middle [2.9-3.4 mm] .......

..............................................................................................................

A. (Tachistodes) pauperculus Dejean

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of swamps, marshes, cranberry bogs, pools, ponds; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 935-936); Larochelle and Larivière (2003: 16) – bionomics]
— Elytron background colour paler, reddish-yellow as pronotum, in most specimens with a dark, oblong cloud over medial intervals (excluding first one) in posterior half. Abdominal sternum 2 without or with poorly impressed meshes at middle in most specimens [3.0-4.0 mm] ........................................................................A. (Tachistodes) partharius (Say)

[BC: endemic; BZ: temperate; HR: wet/flooded/open places: edges of marshes, ponds, lakes, rivers, also in cultivated fields; SA: ?: OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1968: 937); Larochelle and Larivière (2003: 15-16) – bionomics]

7 [4]. Antennomeres 3-11 entirely pale. Eye relatively small, temple about half longitudinal diameter of eye (Fig. 314). Pronotum (Fig. 314) markedly narrowed basally [2.5-3.1 mm; body dorsally reddish-black with elytra slightly darker in some specimens; head relatively wide; wings reduced, without reflexed apices].................................................................A. (Acupalpus) hydropicus (LeConte)


— Antennomeres 3-11 infuscate. Eye larger, temple less than half longitudinal diameter of eye (Fig. 315). Pronotum (Fig. 315) moderately narrowed basally.................8

8 [7]. Pronotum with transverse microsculpture, meshes distinct. Pronotum at most slightly paler than head in most specimens. Femur more or less infuscate in most specimens [2.6-3.0 mm] .................................................................A. (Acupalpus) canadensis Casey

[BC: endemic; BZ: temperate; HR: wet/flooded places: edges of marshes, swamps, ponds, lakes and rivers, usually on clayish or muddy soils rich in organic debris; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 149); Lindroth (1968: 933-934); Larochelle and Larivière (2003: 13-14) – bionomics]

— Pronotum with striate microsculpture, microlines not or barely distinct. Pronotum quite distinctly paler than head in most specimens. Femur pale [three species extremely difficult to separate on external characters; the character states used here to separate them are taken from Lindroth’s key (1968: 926, couplets 7 and 8)] ............9

9 [8]. Pronotum with posterior angle completely rounded, often virtually disappeared; basal impression delimited laterally by convexity. Elytra short, somewhat widened behind middle. Microsculpture on vertex consisting of open meshes, about twice as wide as long [2.5-3.0 mm; base of pronotum usually impunctate] .................................................................A. (Acupalpus) nanellus Casey

[BC: endemic; BZ: temperate; HR: wet places: edges of marshes, swamps, ponds, bogs, occasionally wet meadows on wet, clayish organic soils with vegetation; SA: ?: OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH NS QC VT; References: Lindroth (1968: 932-933); Larochelle and Larivière (2003: 15) – bionomics]

— Pronotum with posterior angle at least suggested, though very obtuse and rounded at extremity; area lateral to basal impression more deplanate. Elytra normally longer, parallel-sided at middle. Microsculpture on vertex consisting in part of very stretched meshes ......................................................................................................10
10 [9]. Body length 2.9 mm or less. Antennomere 2 and entire leg yellowish. Area lateral to basal impression of pronotum less deplanate and usually with coarser punctures; lateral bead evident to posterior angle and not widened basad [2.5-2.9 mm] .............

A. (Acupalpus) pumilus Lindroth

[BC: endemic; BZ: temperate; HR: wet/flooded places: edges of marshes, swamps, ponds, meadows; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NH NS PE QC; References: Lindroth (1968: 931-932); Larochelle and Larivière (2003: 16) – bionomics]

Subtribe Harpalina

Genus Ophonus Dejean, 1821 [Harpalus sensu Lindroth, in part]
The two northeastern species placed in this genus are relatively easy to recognize among other species of Harpalini by the pubescence on the frons and temples, the base of pronotum, and on all elytral intervals.

Males differ from females by having the pro- and mesotarsomeres 1-4 dilated and with seriate adhesive setae underneath. The last abdominal sternum bears four setae along the apical edge in both sexes.

List of northeastern species of Ophonus

O. puncticeps Stephens, 1828

O. rufibarbis (Fabricius, 1792)

Key to northeastern species of Ophonus

1. Pronotum (Fig. 316) with two to four midlateral setae on each side; disc with sparse punctuation. Humeral tooth slightly protruding. Metasternum laterally with punctures poorly defined [6.2-9.5 mm] ..................... O. (Metophonus) rufibarbis (Fabricius)

[BC: exotic (1953); BZ: temperate; HR: open places: gravel piles near woods; SA: autumn breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: QC; References: Lindroth (1968: 757-758); Larochelle and Larivière (2003: 353-354) – bionomics]

– Pronotum (Fig. 317) with one or two midlateral setae on each side; disc with dense punctuation. Humeral tooth not protruding. Metasternum laterally with punctures well defined [6.5-9.0 mm; Plate 48] ..................... O. (Metophonus) puncticeps Stephens

[BC: exotic (1954); BZ: temperate; HR: open places: gravel and sand pits, vacant lots, cultivated fields, orchards; SA: autumn breeder; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NH NS PE QC VT; References: Lindroth (1968: 757); Zetto Brandmayr and Brandmayr (1975) – biology; Larochelle and Larivière (1989b) – geographical distribution; Larochelle and Larivière (2003: 353) – bionomics]
GENUS *Harpalus* Latreille, 1802 [including *Harpalellus* Lindroth, 1968]

Adults of *Harpalus* can be confused with many other groups of Harpalini. Experienced carabidologists can recognize them by their facies alone but most inexperienced ones will need to use the key to genera.

Males differ from females by having the pro- and mesotarsomeres 1-4 slightly (*H. reversus*) or moderately to markedly dilated and with seriate adhesive setae underneath. Both males and females have two subapical setae on the last abdominal sternum. In some lustred species (*e.g.*, *H. affinis*, *H. fulvilabris*), the metallic lustre on the elytra is usually stronger in the males than in the females.

List of northeastern species of *Harpalus*

*H. affinis* (Schrank, 1781)
*H. balli* Noonan, 1991
*H. caliginosus* (Fabricius, 1775)
*H. compar* LeConte, 1847
*bicolor* (Fabricius, 1775)
*H. erraticus* Say, 1823
*H. erythropus* Dejean, 1829
*H. fannus* Say, 1823
*H. fulgens* Csiki, 1932
*H. fulvilabris* Mannerheim, 1853
*H. fuscepalpis* Sturm, 1818
*Harpalellus basillaris* (Kirby, 1837)
*H. herbivagus* Say, 1823
*H. indigenus* Casey, 1924
*H. innocans* LeConte, 1863
*H. laureipes* Zetterstedt, 1828
*baergi* Csiki, 1932
*egregius* Casey, 1914
*quadripunctatus* Dejean, 1829
*H. laticeps* LeConte, 1850
*H. levisii* LeConte, 1865

*H. megacephalus* LeConte, 1847
*H. nigritarsis* C.R. Sahlberg, 1827
*H. ochropus* Kirby, 1837
*H. opacipennis* (Haldeman, 1843)
*H. pensylvanicus* (DeGeer, 1774)
*H. plenalis* Casey, 1914
*H. providens* Casey, 1914
*viduus* LeConte, 1865
*H. reversus* Casey, 1924
*funerarius* Csiki, 1932
*H. rubripes* (Duftschmid, 1812)
*H. rupeps* (DeGeer, 1774)
*H. solitaris* Dejean, 1829
*fuliginosus* (Duftschmid, 1812)
*H. somnulentus* Dejean, 1829
*fallax* LeConte, 1859
*pleuriticus* Kirby, 1837
*H. spadicens* Dejean, 1829
*H. vagans* LeConte, 1865
*longicollis* LeConte, 1847
Key to northeastern species of *Harpalus*

1. Elytral interval 3 without discal punctures.................................................................2
   – Elytral interval 3 with one (rarely two or three) discal puncture in apical third or
   fourth along stria 2 ........................................................................................................ 12

2 [1]. Pronotum and elytra with greenish, more rarely brassy, coppery or bluish lustre
   [8.5-12.0 mm; humerus rounded, without tooth; lateral elytral intervals with pubescence;
   edge of elytron with deep preapical sinuation in female; abdominal sternum 4 and 5,
   and base of sternum 6, with numerous small accessory setae; Plate 48] .................
   ................................................................................................................... *H. (Harpalus) affinis* (Schrank) [in part]
   
   [BC: exotic (= 1798); BZ: temperate/boreal; HR: open places: gravel and sand pits,
   roadsides, vacant fields, gardens, often with pronounced weed vegetation; SA: spring
   breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH
   NS PE PM QC VT; References: Lindroth (1955b: 136-137); Lindroth (1968: 768-
   769); Larochelle and Larivière (2003: 273-274) – bionomics]
   – Pronotum and elytra without lustre (except in some specimens of *H. megasceofalus*
   with faint lustre on the elytra but without pubescence along lateral elytral intervals)...
   .................................................................................................................. 3

3 [2]. Tarsomeres 5, in many specimens all or some of the other tarsomeres also, with
   small setae on dorsal surface (in some specimens only in apical third) (Fig. 318)...4
   – Tarsomeres without small setae on dorsal surface (except for a pair of setae near
   apex in some specimens) (Fig. 319)........................................................................... 9

4 [3]. Elytral intervals evenly punctate and with dense, yellowish pubescence. Pronotum
   with pubescence at base, small setae distinct even at low magnification. Pronotum
   with posterior angle slightly acute or right [10.0-16.7 mm]. ........................................
   .................................................................................................................. *H. (Pseudoophonus) rufipes* (DeGeer)
   
   [BC: exotic (1937); BZ: temperate/boreal; HR: open places: vacant and cultivated fields,
   pastures, gardens, yards; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (+);
   flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b:
   136); Ball and Anderson (1962: 36-38); Lindroth (1968: 759); Luff (1980b) – biology;
   – Elytral intervals glabrous or at least medial intervals only sparsely, more or less
   distinctly pubescent. Pronotum without distinct pubescence at base, at most with
   minute setae in some specimens (distinct only at high magnification and with the
   specimen placed at angle). Pronotum with posterior angle obtusely rounded or
   rounded ........................................................................................................ 5

5 [4]. Lateral depression of pronotum deep even on anterior third, quite contrastingly
   paler than disc (Fig. 320) [8.4-13.0 mm; pronotum proportionally broad, more or
   less square, with side barely rounded in basal half] ....*H. (Pseudoophonus) faunus* Say
   
   [BC: endemic; BZ: temperate; HR: open places: gravel pits, vacant fields, waste places,
   roadsides, sand pits; SA: [autumn breeder]; OC: LF++/++++; RA++; DP: wings (+);
   flight (-); GD: NH QC VT; References: Ball and Anderson (1962: 38-41); Lindroth
250 ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

(1968: 759-760); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 279) – bionomics]

Lateral depression of pronotum shallow particularly over anterior third, at most slightly paler than disc (Fig. 321) ...................................................................................... 6

6 [5]. Pronotum (Fig. 321) with basal bead interrupted; lateral depression of pronotum rather well defined and widened towards base; base with minute setae (seen only with the specimen placed at angle) [10.1-15.2 mm; Plate 48] ............................... H. (Pseudoophonus) pensylvanicus (DeGeer) [BC: endemic; BZ: temperate; HR: open places: vacant fields, corn fields, roadsides, sand and gravel pits; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Ball and Anderson (1962: 45-51); Lindroth (1968: 760-761); Kirk (1973) – biology; Tomlin (1975) – biology; Larochelle and Larivière (2003: 286-287) – bionomics]

– Pronotum with basal bead not interrupted; lateral depression of pronotum less defined and not or barely widened towards base; base without minute setae in most specimens .......................................................................................................................... 7

7 [6]. Elytral intervals with more expanded punctuation: punctulae present and of similar density at least in basal half of intervals 7 and 8 (in some specimens on most or
even all intervals). Metasternum medially along posterior half with short but quite
distinct pubescence [10.3-13.5 mm; pronotum relatively narrow, sides convergent in
basal half]............................. \textit{H. (Pseudoophonus) vagans} LeConte

\[ \text{BC: endemic; BZ: temperate; HR: open places: gravel and sand pits, roadsides, vacant
and cultivated fields; forest edges and clearings; SA: [autumn breeder]; OC: LF+++;
RA++; DP: wings (+); flight (+); GD: QC VT; References: Ball and Anderson (1962:
63-67); Lindroth (1968: 762-763); Larochelle and Larivière (2003: 284) – bionomics} \]

– Elytral intervals less punctate (particularly in \textit{H. erythropus}): punctulae absent
on interval 7 in most specimens or, if present, sparser than those on interval 8.
Metasternum medially along posterior half without or with only a few, very short
setae [two very similar species; hybridization between the two has been recorded by
Ball and Anderson (1962)].................................................................................. 8

\textbf{8 [7].} Body length more than 13.5 mm. Base of elytral intervals 2-8 punctate in most
specimens [13.6-16.5 mm]........................................ \textit{H. (Pseudoophonus) compar} LeConte

\[ \text{BC: endemic; BZ: temperate/boreal; HR: open places: sand pits, vacant fields,
clearings, often on sandy soils; SA: [autumn breeder]; OC: LF+++; RA++; DP:
wings (+); flight (+); GD: ME NH NS QC VT; References: Ball and Anderson
(1962: 70-73); Lindroth (1968: 763, as \textit{H. bicolor}); Larochelle and Larivière
(2003: 276-277) – bionomics; \textbf{Note: notwithstanding Lindroth (1968: 763) comment,
the head in this species is not “strikingly broad.” For example, the head is not propor-
tionally wider in \textit{H. compar} (WH/WP = 0.71-0.77; mean = 0.74; n = 20 all identified
by Lindroth) than in \textit{H. erythropus} (WH/WP = 0.72-0.76; mean = 0.74; n = 14 all
identified by Lindroth})} \]

– Body length less than 13.5 mm. Base of elytral intervals 2-8 impunctate in most
specimens [10.6-13.2 mm]............................. \textit{H. (Pseudoophonus) erythropus} Dejean [in part]

\[ \text{BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, road-
sides, wastelands, forest edges, usually on rather dry, sandy or clayish soils; occasional
in open woods; SA: [autumn breeder]; OC: LF+++; RA/+++; DP: wings (+); flight
(+); GD: ME NH NS QC VT; References: Ball and Anderson (1962: 76-79); Lin-
droth (1968: 764-765); Larochelle and Larivière (2003: 279) – bionomics} \]

\textbf{9 [3].} Body length 17.5 mm or more. Basal bead of pronotum indistinct or at most only
suggested each side of middle. Head with small punctures medioposterior to supra-
oral orbital seta [17.5-34.5 mm; upper surface uniformly black; Plate 48].............................
........................................................................................................ \textit{H. (Megapangus) caliginosus} (Fabricius)

\[ \text{BC: endemic; BZ: temperate; HR: open places: sand and gravel pits, pastures, vacant
fields, corn fields, usually on sandy soils with sparse vegetation; SA: [autumn breeder];
OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NH NS QC VT; References:
Lindroth (1968: 765-766); Noonan (1991: 128-130); Will (1997: 44-49); Larochelle
and Larivière (2003: 275-276) – bionomics} \]

– Body length less than 17 mm in almost all specimens. Basal bead of pronotum
distinct over entire width. Head smooth medioposterior to supraorbital seta...... \textbf{10}

\textbf{10 [9].} Base of elytron with small setae anterior to subbasal ridge. Edge of elytron with
deep preapical sinuation (Figs 322, 323), delimited laterally by dentiform process
in female (Fig. 323) [11-18 mm; body reddish to brownish-black with elytra usually
darker than forebody; elytra proportionally long and narrow; [Plate 49] ..............

\[HC: endemic; BZ: temperate; HR: open places: vacant fields, sand and gravel pits, dunes, usually on sandy, mostly dry soils; SA: autumn breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1968: 766-767); Kirk (1974) – biology; Noonan (1991: 132-134); Larochelle and Larivière (2003: 278-279) – bionomics] 

\[H. (Plectralidus) erraticus Say\]

- Base of elytron without setae anterior to subbasal ridge. Edge of elytron without or with shallow preapical sinuation, not delimited laterally by dentiform process........ 11

11 [10]. Body length less than 9.5 mm. Lateral depression of pronotum impunctate or punctulate only near base. Pronotum (Fig. 326) with anterior angle projecting anteriad; posterior angle broadly rounded [8.0-9.4 mm; elytra of males and some females with slight brassy or greenish lustre; externally similar to \(H. fulvilabris\) but besides absence of discal punctures on elytra, best separated by having the humeral tooth not protruding at all] .............................................. \(H. (Opadius) megacephalus\) LeConte


- Body length more than 10.5 mm. Lateral depression of pronotum punctulate at least to level of midlateral seta. Pronotum with anterior angle not or barely projecting anteriad; posterior angle obtusely rounded [10.6-13.2 mm; elytra without lustre] .......................................................... \(H. (Pseudophonus) erythropus\) Dejean [in part]

\[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, roadsides, wastelands, forest edges, usually on rather dry, sandy or clayish soils; occasional in open woods; SA: [autumn breeder]; OC: LF++; RA+; DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Ball and Anderson (1962: 76-79); Lindroth (1968: 764-765); Larochelle and Larivière (2003: 279) – bionomics] 

12 [1]. Elytral interval 7 (in some specimens also interval 5) with row of two to six setigerous punctures on apical fourth (Fig. 324) [8.5-12.2 mm; upper surface and particularly elytra with bluish green lustre quite evident in male, not or only slightly so in female; side of pronotum slightly to moderately sinuate in basal half]......................

\[BC: exotic (1981); BZ: temperate; HR: open places: cultivated and vacant fields, roadsides; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Larochelle and Larivière (2003: 289) – bionomics] 

- Elytral interval 7 without rows of setigerous punctures on apical fourth (Fig. 325). ........................................................................................................ 13

13 [12]. Elytral intervals 7-9 with pubescence at least over apical half. Last abdominal sternum with small setae along basal edge [8.5-12.0 mm; upper surface with greenish, more rarely brassy, coppery or bluish lustre; humerus rounded, without tooth; edge of elytron with deep preapical sinuation in female; Plate 48].................................

\[BC: exotic (< 1798); BZ: temperate/boreal; HR: open places: gravel and sand pits, roadsides, vacant fields, gardens, often with pronounced weed vegetation; SA: spring]
breeder; **OC**: LF++++; RA+++; **DP**: wings (+); flight (+); **GD**: LB ME NB NF NH NS PE PM QC VT; **References**: Lindroth (1955b: 136-137); Lindroth (1968: 768-769); Larochelle and Larivière (2003: 273-274) – bionomics

- Elytral intervals without pubescence. Last abdominal sternum without small setae along basal edge...

14 [13]. Femur (in many specimens also tibia) pale, brownish-yellow to reddish............. 15

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**Figs 322-323.** Apical half of elytra of *Harpalus erraticus*. 322: male; 323: female.

**Figs 324-325.** Apical half of left elytron. 324: *Harpalus rubripes*, 325: *Harpalus nigritarsis*.

**Figs 326-327.** Pronotum. 326: *Harpalus megacephalus*, 327: *Harpalus indigens*. 
– Femur (in many specimens also tibia) dark, reddish-black to black.........................27

15 [14]. Apical two maxillary palpomeres infuscate; tarsomere 5, in some specimens all tar-
someres, infuscate or at least darker than femur in all but a few specimens [7.5-
11.9 mm; elytral epipleuron entirely dark; elytral microsculpture obsolete on medial
intervals in ♀] .......................... H. (Opadius) nigritarsis C.R. Sahlberg

[BC: holarctic; BZ: boreal/arctic; HR: open places: vacant fields, meadows, pastures,
roadsides, sand pits; SA: [autumn breeder]; OC: LF++++; RA++/+++; DP: wings
(+); flight (-); GD: LB NB NF NH NS PM QC; References: Lindroth (1955b: 141-
142, as H. nigritarsis proximus); Lindroth (1968: 795-797); Noonan (1991: 100-108);
Larochelle and Larivière (2003: 285) – bionomics]

– Apical two maxillary palpomeres reddish-yellow to yellowish-red, not infuscate; tar-
somere 5 pale, not darker than femur in most specimens.................................16

16 [15]. Side of pronotum with shallow to moderate (Fig. 327) sinuation in posterior half;
posterior angle about right or slightly obtuse, somewhat rounded at tip or not ..........17

– Side of pronotum without sinuation in front of posterior angle or almost so
(Figs 328-331); posterior angle obtuse and somewhat rounded at tip......................18

17 [16]. Side of pronotum with long, moderately deep sinuation in most specimens
(Fig. 327); posteroangular region flat. Microsculpture meshes on elytra well im-
pressed, isodiametric on all intervals. Wings fully developed [6.8-10.5 mm; humeral
tooth prominent]......................................................... H. (Opadius) indigens Casey

[BC: endemic; BZ: temperate; HR: open places: sand and gravel pits, fallow fields,
roadsides, orchards, often on sandy soils with sparse vegetation; SA: [autumn breeder];
OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS QC VT; Refer-
ences: Lindroth (1968: 782-783); Noonan (1991: 83-85); Larochelle and Larivière
(2003: 282) – bionomics]

– Side of pronotum with short, shallow sinuation in most specimens; posteroangular
region convex. Microsculpture meshes on elytra indistinct at least medially over
intervals 1-5 (♂) or slightly transverse (♀). Wings vestigial [7.5-11.9 mm].................
.......................................................... H. (Opadius) spadiceus Dejean [in part]

[BC: endemic; BZ: temperate; HR: [covered places]: forests; SA: ?; OC: LF++; RA?;
DP: wings (-); GD: NH QC VT; References: Lindroth (1968: 780-781); Noonan

18 [16]. Base of pronotum punctulate lateral to impressions (Fig. 328) ....................19

– Base of pronotum not punctulate lateral to impressions (Figs 329-331) ..........20

19 [18]. Elytra with metallic green or brassy lustre, faint and often restricted to lateral mar-
gins in females. Elytral microsculpture meshes absent at least medially on intervals
1-5 (♂) or irregularly isodiametric (♀). Wings vestigial in most specimens [8.1-
11.8 mm]................................................................... H. (Opadius) fulvilabris Mannerheim

[BC: endemic; BZ: temperate/boreal/arctic; HR: covered places: forests, usually in
leaf litter or under stones and logs; also adjacent fields; SA: [autumn breeder]; OC:

1 Harpalus spadiceus treated in both couplet.
LF++++; RA++/+++; DP: wings (- +); flight (-); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 143-144); Lindroth (1968: 783-784); Noonan (1991: 89-92); Larochelle and Larivière (2003: 280) – bionomics

Elytra without metallic lustre. Elytral microsculpture meshes distinct on all intervals in most males, perfectly isodiametric in females. Wings fully developed [7.3-12.5 mm].......................................................

H. (Harpalus) somnulentus Dejean 1 [in part] [BC: endemic; BZ: temperate/boreal/ [arctic]; HR: open places: pastures, meadows, sand and gravel pits, vacant fields, roadsides, usually on dry soils with grasses; also in open woods, edges of forests; occasional on edges of lakes, rivers, ponds, and marshes; SA: [autumn breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 139-141, 139-141, 1955b: 139-141, 1968: 783-784)]

This taxon includes two forms [called morphs by Noonan (1991)] in the northeast that in my opinion probably represent distinct species as treated by Lindroth (1968). Adults of the two forms can be separated as follows:

1. Elytral epipleura yellow to reddish-yellow over entire length. Elytra proportionally longer on average (LE/LP = 2.31-2.49; mean = 2.40; n = 10) ..... H. somnulentus morph pleuriticus Kirby

as \( H. \) \( \text{pleuriticus} \); Lindroth (1968: 792-794, as \( H. \) \( \text{pleuriticus} \) and \( H. \) \( \text{fallax} \)); Levesque et al. (1979, as \( H. \) \( \text{fallax} \)) – seasonal activity; Noonan (1991: 190-211); Larochelle and Larivière (2003: 291) – bionomics]

20 [18]. Elytron without parascutellar seta; scutellar stria very short [6.1-7.9 mm; pronotum without microsculpture, except for rudimentary meshes near posterior angle in some specimens; elytron without microsculpture (except on lateralmost intervals) in most specimens, with transverse, faint and more or less distinct meshes in a few specimens].................................................................................\[H. (\text{Harpalus}) \text{fulgens} \text{Csiki}\]

[BC: endemic; BZ: temperate; HR: open places: cultivated and vacant fields, pastures, roadides, forest edges and clearings; SA: ?; DP: wings (+); flight (+); GD: net yet found in the northeast but recorded from Connecticut and Rhode Island; References: Lindroth (1968: 811); Noonan (1991: 136-138); Larochelle and Larivière (2003: 512, as \( \text{Trichotichnus fulgens} \)) – bionomics; Note: until the evidence is published, I prefer to keep the species in the genus \( \text{Harpalus} \) rather than placed it in \( \text{Trichotichnus} \) as suggested by Kataev in Ball and Bousquet (2001: 96)]

– Elytron with parascutellar seta; scutellar stria well developed ..................................21

21 [20]. Wings vestigial. Elytra without microsculpture meshes on intervals 1-6 or 1-7 and with transverse meshes on intervals 7 and/or 8 (♀) or with slightly transverse meshes on all intervals (♂) [7.5-11.9 mm].............\( H. (\text{Opadius}) \text{spadiceus} \text{Dejean [in part]}\]


– Wings fully developed. Elytra with isodiametric microsculpture meshes on all intervals, though meshes indistinct medially on intervals 1-5 in males of \( H. \) \( \text{ochropus} \) [five species often difficult to separate on external characters alone]..............................22

22 [21]. Elytron with humeral tooth protruding. Sides of pronotum parallel or almost so in basal half (Fig. 330) ........................................................................................................23

– Elytron with humeral tooth not (most specimens) or barely protruding. Sides of pronotum somewhat rounded in basal half in many specimens (Fig. 331).............24

23 [22]. Pronotum narrower (WP/LP = 1.51-1.59; n = 15), distinctly convex; microsculpture meshes indistinct or at least spotty near median sulcus [7.4-9.9 mm].............\[H. (\text{Harpalus}) \text{opacipennis} \text{(Haldeman) [in part]}\]


– Pronotum wider (WP/LP = 1.76; n = 2), only slightly convex; microsculpture meshes well impressed even along median sulcus [7.8-8.4 mm]............................\[H. (\text{Harpalus}) \text{balli} \text{Noonan}\]

[BC: endemic; BZ: temperate; HR: [flooded places]: sandy shores near the ocean; SA: ?; DP: wings (+); flight (-); GD: known only from six specimens collected in Massachusetts; could be found along the Atlantic coast of New Hampshire and Maine;
**References:** Noonan (1991: 151-153); Note: the most recent specimen dated from 1932 and as expressed by Noonan (1991: 153) the species might be extinct because of destruction of ocean side habitats

24 [22]. Mentum tooth absent or at most minute and more or less distinct (Fig. 332). Body length more than 8.5 mm in most specimens ..........................................................25

– Mentum tooth distinct (Fig. 333), though in some specimens of *H. ochropus* small. Body length less than 8.0 mm in most specimens .......................................................26

25 [24]. Humeral tooth indistinct. Posterior angle of pronotum widely rounded. Last metatarsomere usually without small setae before relatively long pair of apicolateral setae [6.8-10.2 mm; side of pronotum rounded in basal half (Fig. 331); lateral depression of pronotum quite evident particularly before and after midlateral seta; pronotal disc without (♂ and some ♀) or with poorly impressed microsculpture meshes (some ♀); elytral microsculpture meshes well impressed on all intervals].....

..............................................................................................................*H. (Harpalus) herbivagus* Say

[BC: endemic; BZ: temperate/boreal; HR: open places: vacant and cultivated fields, roadsides, pastures, sand and gravel pits, often on dry sandy soils with grasses; also on shores of lakes or ponds; SA: [autumn breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1968: 794-795); Noonan (1991: 181-185); Larochelle and Larivière (2003: 281) – bionomics]

– Humeral tooth distinct, well developed. Posterior angle of pronotum obtuse or right though rounded at apex. Last metatarsomere with small setae before relatively long pair of apicolateral setae [7.3-12.5 mm; Plate 49] .........................................................

..............................................................................................................*H. (Harpalus) somnulentus* Dejean [in part]

[BC: endemic; BZ: temperate/boreal/arctic; HR: open places: vacant fields, roadsides, pastures, meadows, sand and gravel pits, vacant fields, roadsides, usually on dry soils with grasses; also in open woods, edges of forests; occasional on edges of lakes, rivers, ponds, and marshes; SA: [autumn breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 139-141, as *H. pleuriticus*); Lindroth (1968: 792-794, as *H. pleuriticus and H. fallax*); Levesque et al. (1979, as *H. fallax*) – seasonal activity; Noonan (1991: 190-211); Larochelle and Larivière (2003: 291) – bionomics]

26 [24]. Frons medially and disc of pronotum with evident microsculpture meshes. Elytral microsculpture meshes well impressed on all intervals, isodiametric (♂) or more or less scaly (delimiting darker patches) (♀). Lateral depression of pronotum indistinct [6.5-8.6 mm] .................................................................*H. (Harpalus) plenus* Casey

[BC: endemic; BZ: temperate/boreal]; HR: open places: vacant fields, pastures, road-sides, sand and gravel pits; SA: [autumn breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 142-143); Lindroth (1968: 807-808); Noonan (1991: 164-166); Larochelle and Larivière (2003: 287-288) – bionomics]

– Frons medially and disc of pronotum without microsculpture meshes. Elytral microsculpture meshes indistinct medially on intervals 1-5 (♂) or distinct and isodiometric on all intervals (♀). Lateral depression of pronotum distinct (particularly around midlateral seta) [7.0-7.8 mm] ........................................*H. (Harpalus) ochropus* Kirby
[BC: endemic; BZ: boreal; HR: [open places]: moraines; SA: ?; OC: LF+; RA+; DP: wings (+); flight (-); GD: QC; References: Lindroth (1968: 808-809); Noonan (1991: 149-151); Larochelle and Larivière (2003: 285) – bionomics]

27 [14]. Abdominal sternae 4 and 5 with conspicuous (at least one-third length of ambulatory setae) accessory setae lateral to ambulatory setae (Fig. 334) .........................................................28

– Abdominal sternae 4 and 5 without conspicuous accessory setae (in some specimens with very short and inconspicuous setae) (Fig. 335) .........................................................30

28 [27]. Antennomeres 5-11 brownish-black to black. Body length less than 10 mm. Sides of pronotum subparallel in basal half [7.3-9.8 mm; elytron with humeral tooth protruding; elytral edge with preapical sinuation rather deep; Plate 49] .......................................................... H. (Harpalobius) fuscipalpis Sturm

[BC: holarctic; BZ: temperate/boreal; HR: open places: gravel pits, vacant fields, usually on dry soils with scarce vegetation; SA: ?; OC: LF++; RA+; DP: wings (+); flight (+); GD: NH NS QC; References: Lindroth (1968: 816-817, as Harpalobius basilaris; Larochelle and Larivière (2003: 280) – bionomics]]

29 [28]. Elytron with humeral tooth protruding. Upper surface brownish-black in most specimens. Elytra with isodiametric microsculpture in females. Elytron without evident sutural tooth in most females [10.2-13.4 mm] .... H. (Opadius) reversus Casey

[BC: endemic; BZ: temperate; HR: open places: sand pits, grasslands, pastures, cultivated fields, forest edges, usually on dry sandy soils with sparse vegetation; SA: [autumn breeder]; OC: LF+++/++; RA++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1968: 779-780, as H. funerarius); Noonan (1991: 66-70, as H. funerarius; Larochelle and Larivière (2003: 289) – bionomics]]

30 [27]. Elytral interval 3 with two or three (unilaterally only one in a few specimens) punctures on apical third [9.7-12.9 mm; pronotum with lateral depression distinct from anterior angle to near posterior angle] .................. H. (Opadius) laevipes Zetterstedt

[BC: holarctic; BZ: temperate/boreal; HR: open places: forest edges and clearings, recently burnt forests, usually on sandy gravelly soils; SA: [autumn breeder]; OC: LF++++; RA++/++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC; References: Lindroth (1955b: 137-138, as H. baergi); Lindroth (1968: 776-777, as H. egregius); Noonan (1991: 58-62, as H. quadripunctatus); Larochelle and Larivière (2003: 283) – bionomics]]

31 [30]. Body length 11 mm or more ................................................................. 32

– Body length 10.6 mm or less ................................................................. 34

32 [31]. Posteroangular region of pronotum convex; basal bead interrupted medially [11.2-14.2 mm; pronotal side nearly straight to moderately rounded in basal half, not sinuate; metafemur with two to five setae on ventral surface] .......................................................... H. (Opadius) providens Casey
33 [32].  Metafemur with two to four setae along posterior margin. Pronotum with side straight to rounded in basal half in most specimens, slightly sinuate in a few specimens; posterior angle obtusely rounded [11.6-16.0 mm; Plate 49] ...............................

-- Posteroangular region of pronotum more or less flat; basal bead complete in most specimens ...........................................................................................................................33

34 [31].  Base of pronotum not or barely punctulate, at least without punctulae lateral to impressions (Fig. 330). Sides of pronotum subparallel in basal half (Fig. 330). Elytron with small but protruding humeral tooth [7.4-9.9 mm] ..................................................

-- Base of pronotum punctulate, punctulae present also lateral to impressions (Figs 336, 337). Sides of pronotum rounded or slightly to moderately rectilinearly convergent in basal half, sinuate in some specimens (Figs 336, 337). Elytron without or with minute humeral tooth........35

35 [34].  Pronotum (Fig. 336) with posterior angle rounded; side rounded in basal half; lateral depression shallow but widened behind midlateral seta. Head proportionally larger (WH/WP = 0.71-0.76; mean = 0.73; n = 20), pronotum proportionally shorter (LP/WP = 0.58-0.67; mean = 0.64; n = 20) [8.5-10.4 mm] .................................

-- Pronotum (Fig. 336) with posterior angle rounded; side rounded in basal half; lateral depression shallow but widened behind midlateral seta. Head proportionally larger (WH/WP = 0.71-0.76; mean = 0.73; n = 20), pronotum proportionally shorter (LP/WP = 0.58-0.67; mean = 0.64; n = 20) [8.5-10.4 mm] ................................. H. (Harpalus) solitaris Dejean

[BC: endemic; BZ: temperate; HR: open places: hills, uplands, clearings, woody roads, forest edges and clearings; occasional roadsides; SA: [autumn breeder]; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NH QC VT; References: Lindroth (1968: 775-776, as H. viduus); Larochelle (1975c: 207, as H. viduus) – habitat; Noonan (1991: 49-52); Larochelle and Larivière (2003: 288) – bionomics]

-- Posteroangular region of pronotum more or less flat; basal bead complete in most specimens ...........................................................................................................................33

33 [32].  Metafemur with two to four setae along posterior margin. Pronotum with side straight to rounded in basal half in most specimens, slightly sinuate in a few specimens; posterior angle obtusely rounded [11.6-16.0 mm; Plate 49] ...............................

-- Posteroangular region of pronotum more or less flat; basal bead complete in most specimens ...........................................................................................................................33

34 [31].  Base of pronotum not or barely punctulate, at least without punctulae lateral to impressions (Fig. 330). Sides of pronotum subparallel in basal half (Fig. 330). Elytron with small but protruding humeral tooth [7.4-9.9 mm] ..................................................

-- Base of pronotum punctulate, punctulae present also lateral to impressions (Figs 336, 337). Sides of pronotum rounded or slightly to moderately rectilinearly convergent in basal half, sinuate in some specimens (Figs 336, 337). Elytron without or with minute humeral tooth........35

35 [34].  Pronotum (Fig. 336) with posterior angle rounded; side rounded in basal half; lateral depression shallow but widened behind midlateral seta. Head proportionally larger (WH/WP = 0.71-0.76; mean = 0.73; n = 20), pronotum proportionally shorter (LP/WP = 0.58-0.67; mean = 0.64; n = 20) [8.5-10.4 mm] .................................

-- Pronotum (Fig. 336) with posterior angle rounded; side rounded in basal half; lateral depression shallow but widened behind midlateral seta. Head proportionally larger (WH/WP = 0.71-0.76; mean = 0.73; n = 20), pronotum proportionally shorter (LP/WP = 0.58-0.67; mean = 0.64; n = 20) [8.5-10.4 mm] ................................. H. (Harpalus) solitaris Dejean

[BC: holarctic; BZ: [temperate]/boreal/arctic; HR: open places: sand and gravel pits, roadsides, vacant fields; SA: [autumn breeder]; OC: LF+++; RA++/+++; DP: wings (+); flight (-); GD: LB ME NF NH PM QC; References: Lindroth (1955b: 142,

### Pronotum (Fig. 337)

- Pronotum with posterior angle obtusely rounded; side rectilinearly convergent to slightly sinuate in basal half in most specimens; lateral depression markedly narrow along entire length. Head proportionally narrower (WH/WP = 0.67-0.70; mean = 0.68; n = 20), pronotum proportionally longer (LP/WP = 0.69-0.73; mean = 0.70; n = 20) [7.7-10.2 mm].

### List of northeastern species of *Trichotichnus*

- *T. autumnalis* (Say, 1823)
- *T. vulpeculus* (Say, 1823)
- *T. dichrous* (Dejean, 1829)

### Key to northeastern species of *Trichotichnus*

1. Body length less than 8.5 mm. Base of pronotum without distinct punctate lateral to impressions. Body dorsally more or less uniformly dark [6.5-8.0 mm; Plate 51]...

   [BC: endemic; BZ: temperate; HR: [covered places]: forests in leaf litter; SA: ; OC: LF++; RA++; DP: wings (+); flight (-); GD: NH QC VT; References: Lindroth (1968: 813-814); Larochelle and Larivière (2003: 512) – bionomics]

2. Body length more than 8.5 mm. Base of pronotum with punctate also lateral to impressions. Body dorsally bicolour in most specimens: forebody pale, reddish-yellow, and elytra darker.

   [BC: endemic; BZ: temperate; HR: [covered places]: deciduous forests, often under the bark of logs or on wet soils near ponds; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1968: 818-819); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 513) – bionomics]
Pronotum (Fig. 339) with side not sinuate in basal half; posterior angle obtusely rounded; lateral depression widened behind midlateral seta [9-11 mm; upper surface either with reddish-yellow forebody and brownish-black elytra or in a few specimens entirely brownish-black; Plate 51]................. T. (Trichotichnus) dichrous (Dejean)

Genus Selenophorus Dejean, 1829 [syn.: Gynandropus Dejean, 1831]
Adults of Selenophorus and Discoderus are unique among northeastern carabids for the presence of rows of small setae along the elytral striae 2, 5 and 7. Members of Selenophorus differ from those of the sole northeastern species of Discoderus by the smaller number of short spines (one to three) along the lateral edge of the protibia and the striate microsculpture covering the abdominal sterna.

Males differ from females in having the pro- and mesotarsomeres 1-4 slightly to moderately expanded and with seriate adhesive setae underneath. Only in females of S. hylacis are the first pro- (markedly so, even more so than in ♂) and meso- (moderately so) tarsomeres dilated but without adhesive setae. The number of setae along the apical margin of the last abdominal sternum is apparently dimorphic in S. opalinus and S. gagatinus (two in ♂, four in ♀) but not in S. ellipticus (two in both sexes) and S. hylacis (four in both sexes).

List of northeastern species of Selenophorus

S. ellipticus Dejean, 1829
S. hylacis (Say, 1823)
S. gagatinus Dejean, 1829
S. opalinus (LeConte, 1863)

Key to northeastern species of Selenophorus

1. Elytra with isodiametric microsculpture. Prosternal apophysis margined along sides [5.3-6.5 mm]................................................................. S. (Celiacamorphus) ellipticus Dejean

[BC: endemic; BZ: temperate; HR: open places: cultivated and abandoned fields, forest edges and clearings, usually on dry, sandy soils; SA: ?; OC: LF+; RA?; DP: wings]
– Elytra with transverse or striate microsculpture. Prosternal apophysis not margined along sides.

2 [1].

Pronotum with anterior angle not projecting anteriad, apex of angle at same level as anterior edge of pronotum at middle. Protarsomere 1 of female markedly dilated. Last abdominal sternum of male with four setae [6.0-7.5 mm; pronotum markedly convex, narrowed in basal half as much as in apical half; elytra more or less iridescent, with very transverse microsculpture; Plate 50] ........ S. (Selenophorus) hylacis (Say)

[BC: endemic; BZ: temperate; HR: covered places: forest and forest edges; SA: ?; OC: LF++; RA:; DP: wings (+); flight (+); GD: NH VT; References: Lindroth (1968: 829); Larochelle and Larivière (2003: 471) – bionomics]

– Pronotum with anterior angle markedly projecting anteriad, apex of angle extended much beyond level of anterior edge of pronotum at middle. Protarsomere 1 of female not dilated. Last abdominal sternum of male with two setae.

3 [2].

Body length more than 9 mm. Elytra strongly iridescent (as in many species of Loxandrus), with striate microsculpture [9.2-10.7 mm; Plate 50] .............................................................. S. (Selenophorus) opalinus (LeConte)

[BC: endemic; BZ: temperate; HR: open places: hills, pastures, cultivated fields, roadsides, sand and gravel pits, usually on sandy soils with scarce vegetation, often under rocks; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Lindroth (1968: 824); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 474) – bionomics]

– Body length 8 mm or less. Elytra not iridescent, with transverse microsculpture (though meshes more or less erase over medial intervals in ♂) [6.5-8.0 mm; Plate 50] .............................................................. S. (Selenophorus) gagatinus Dejean

[BC: endemic; BZ: temperate; HR: open places: hills, pastures, cultivated and vacant fields, roadsides, sand and gravel pits, usually on sandy or gravelly soils with scarce vegetation; SA: ?; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1968: 824-825); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 472) – bionomics]

**GENUS DISCODERUS LECONTE, 1853**

As stated previously, adults of Discoderus and Selenophorus are unique among northeastern carabids for the presence of rows of small setae along the elytral striae 2, 5 and 7. The genus Discoderus includes a single northeastern species, *D. parallelus* (Haldeman, 1843) [Plate 50], which has been collected once only in the region, in southern New Hampshire (Ross T. Bell, personal communication). It differs from the northeastern species of Selenophorus by the higher number of short spines (six or more) along the lateral edge of the protibia and the strong, isodiametric or granulate microsculpture covering the abdominal sterna.

Males have the mesotibia bowed, the last abdominal sternum with two setae along the apical edge and its apex flat at middle. Females have more or less straight mesotibia, the last abdominal sternum with four long setae along the apical edge and its apex tumid at middle. The male protarsomeres of *D. parallelus* are not expanded and have no adhesive setae underneath.
[BC: endemic; BZ: temperate; HR: open places: pastures, cultivated fields, roadsides; SA: ?; OC: LF+; RA?: DP: wings (+); flight (+); GD: NH; References: Lindroth (1968: 831); Larochelle and Larivière (2003: 241) – bionomics]

**TRIBE PENTAGONICINI**

**GENUS PENTAGONICA SCHMIDT-GÖBEL, 1846**
The sole northeastern species of this genus, *P. picticornis* Bates, 1883, is easily recognized in having the edges of the pronotum angulate at level of the midlateral setae.

Males have the protarsomeres 1-3 slightly expanded and with seriate adhesive setae underneath.

[BC: endemic; BZ: temperate; HR: ?; SA: ?; OC: LF++; RA?: DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1969a: 1013); Larochelle and Larivière (2003: 367) – bionomics]

**TRIBE PLATYNINI**

**KEY TO GENERA**

1. Tarsal claws denticulate (as in Fig. 49)...............................................................2
– Tarsal claws smooth (as in Fig. 50)........................................................................4

2 [1]. Prosternal apophysis margined apically [three species: 7.0-11.2 mm; Plate 52]........

– Prosternal apophysis not margined apically ..............................................................3

3 [2]. Metatarsomeres 1-4 without dorsal keel; lateral carina indistinct or almost so on metatarsomere 3, indistinct on metatarsomere 4. Pronotum with sides more or less rounded in basal half in most specimens [one species: 8.7-11.2 mm; Plate 52]........

– Metatarsomeres 1-4 with well-developed, apically widening dorsal keel; lateral carina distinct on metatarsomere 3 and, in most specimens, also on metatarsomere 4. Pronotum with sides somewhat rectilinearly convergent or even sinuate in apical half [one species: 8.0-11.8 mm; Plate 52]..................................................Acalathus Semenov

4 [1]. All elytral intervals with pubescence ........................................................................5
– At least medial elytral intervals without pubescence .................................................6

5 [4]. Pronotum and elytra without microsculpture. Pronotum and head concolour. Body length less than 7 mm [one species: 5.3-6.8 mm; Plate 56] .... Oxypselaphus Chaudoir
– Pronotum and elytra with isodiametric microsculpture. Pronotum entirely or partly paler than head, bright reddish. Body length more than 7 mm in most specimens [one species (*A. decorum* Say): 6.8-9.0 mm; Plate 55] ............Agonum Bonelli [in part]

6 [4]. Elytral interval 3 without discal setae [one species: 13.0-17.5 mm; Plate 52]........

– Elytral interval 3 with two or more discal setae ......................................................7
Antennomeres 8-11 abruptly white, markedly contrasting with preceding antennomeres. Pronotum without posterolateral setae [one species: 7.3-9.0 mm; Plate 53] ............................................................... Tetraleucus Casey
– Antennomeres 8-11 not white and not contrasting with preceding antennomeres. Pronotum with posterolateral setae ................................................................. 8

Mentum without tooth [two apical maxillary palpomeres with scattered, moderately long setae] [two species: 4.0-7.5 mm; Plate 53] ..................................... Olisthopus Dejean
– Mentum with tooth ........................................................................................................ 9

Elytral interval 3 with two discal setae. Meso- and metatarsomeres 1-4 with strong median sulcus on dorsal surface [upper surface brownish-black with forebody darker than elytra, lateral margin and first interval of elytron more or less reddish; lateral edge of elytron without preapical sinuation] [one species: 6.8-9.0 mm; Plate 53] .......
................................................................................................................................. Paranchus Lindroth
– Elytral interval 3 with three or more discal setae. Meso- and metatarsomeres 1-4 without median sulcus on dorsal surface, except for three species with different colouration and with evident elytral preapical sinuation................................. 10

Head with transverse impression on vertex (Fig. 51) [upper surface without metallic lustre] [eight species: 8.5-15.5 mm; Plate 56] ........................................... Platynus Bonelli
– Head without transverse impression on vertex (Fig. 52) ............................................. 11

Elytral interval 3 with four (rarely five) markedly foveate discal setigerous punctures; upper surface black, without metallic lustre [one species (S. quadripunctata): 4.2-6.0 mm; Plate 53] ................................................................. Sericoda Kirby [in part]
– Elytral interval 3 with three, foveate (Agonum excavatum) or not, discal setigerous punctures or with four discal setigerous punctures foveate only in three species (Agonum anchomenoides, A. quinquepunctatum, and A. octopunctatum) with distinct metallic lustre at least on part of the upper surface........................................ 12

Metatarsomere 1 without lateral carina; elytral striae impunctate [one species (S. obsoletum Say): 6.0-7.5 mm] ................................................................. Sericoda Kirby [in part]
– Metatarsomere 1 with lateral carina, except in some species with distinctly punctate elytral striae [43 species: 4.8-11.0 mm; Plates 54, 55] .................. Agonum Bonelli [in part]

Subtribe Sphodrina
Genus Laemostenus Bonelli, 1810 [including Pristonychus Dejean, 1828]
The sole northeastern species of this genus, L. terricola terricola (Herbst, 1784) [Plate 52], is adventive in North America. The species is relatively easy to recognize among our Platynini by its large size (13.0-17.5 mm), bluish or violaceous lustre over the elytra, and absence of discal setae on the elytral interval 3. It may be confused by inexperience students with some species of Pterostichus but contrary to these, there is no elytral plica.

The males have the protarsomeres 1-3 slightly expanded and with seriate adhesive setae underneath, which are difficult to see in some specimens. In addition, the apical edge of the last abdominal sternum is widely rounded in females, narrowly so in males.
GENUS CALATHUS BONELLI, 1810

Members of this genus differ from those of other Platynini in the region, except Acalathus advena and Synuchus impunctatus, in having denticulate, instead of smooth, claws. They differ from the northeastern species of Acalathus and Synuchus in having the prosternal apophysis margined along the apical edge.

In males, the protarsomeres 1-3 are expanded and bear underneath seriate adhesive setae. Both males and females have two subapical setae on the last abdominal sternum. In some species, such as C. ingratus and C. gregarius, the microsculpture meshes on the pronotum are more impressed in the females than in the males.

List of northeastern species of Calathus

C. gregarius (Say, 1823)
C. opaculus LeConte, 1854
C. ingratus Dejean, 1828

Key to northeastern species of Calathus

1. Elytra dull; sculpticells narrow, slightly stretched, flat (♂) or slightly convex (♀). Wings fully developed [7.5-11.0 mm; species rarely collected in the northeast].................... C. (Neocalathus) opaculus LeConte 

[BC: endemic; BZ: temperate; HR: open places: pastures, sand pits, cultivated and abandoned fields, orchards, forest edges, usually on dry sandy soils; SA: autumn breeder; OC: LF++; RA++; DP: wings (+); GD: ME NH QC VT; References: Lindroth (1966: 543); Ball and Nègre (1972: 487-489); Larochelle and Larivière (2003: 171) – bionomics] – Elytra shiny; sculpticells wide, not or barely stretched, flat in both sexes. Wings reduced in most specimens [two species commonly collected in the northeast, rather difficult to separate]............................................................................................................ 2

2 [1]. Lateral margin of pronotum not convex near edge, lateral depression wide, touching midlateral setigerous puncture, distinct up to anterior angle. Body length larger on average, greater than 9.0 mm in more than 90% of specimens seen. Metatarsomeres on average proportionally longer, tarsomere 1 more than 2.4 times length of lateral (smallest) apical spur of metatibia in most specimens [8.4-11.5 mm]............

............................................................................................................ C. (Neocalathus) gregarius (Say)

[BC: endemic; BZ: temperate/boreal; HR: covered/open places: forests, forest edges and clearings, pastures, cultivated and vacant fields, orchards, roadsides, usually on dry sandy soils; SA: autumn breeder; OC: LF++++; RA++++; DP: wings (-+); flight (-); GD: ME NB NH NS QC VT; References: Lindroth (1966: 543-544); Chiolino (1970) – wing development; Ball and Nègre (1972: 485-487); Larochelle (1972f) – wing dimorphism; Levesque et al. (1979) – seasonal activity; Epstein and Kulman (1990) – seasonal activity; Larochelle and Larivière (2003: 170) – bionomics; Note: the
presence or absence of the lateral bead on the pronotum used as primary character in Lindroth’s key (1966: 542) to separate adults of *C. gregarius* from those of *C. ingratus* is too variable in my opinion to be useful

> Lateral margin of pronotum convex up to edge or almost so, lateral depression narrow, not touching midlateral setigerous puncture, indistinct toward anterior angle. Body length smaller on average, less than 9.0 mm in more than 90% of specimens seen. Metatarsomeres on average proportionally smaller, tarsomere 1 less than 2.4 times length of lateral (smallest) apical spur of metatibia in most specimens [7.0-10.5 mm].

*C. (Neocalathus) ingratus* Dejean

[BC: endemic; BZ: temperate/boreal/arctic/alpine; HR: covered/open places: forests, forest edges and clearings, often under loose bark of fallen trees, cultivated and vacant fields, sand and gravel pits, moraines, usually on moist more or less gravelly soils; occasionally spruce bogs; SA: autumn breeder; OC: LF++++; RA++; DP: wings (- –); flight (–); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 112-114, as *C. micropterus ingratus*); Lindroth (1966: 544-545); Chiolino (1970) – wing development; Larochelle and Larivière (2003: 170-171) – bionomics]

**GENUS ACALATHUS** SEMENOV, 1889

A single species of *Acalathus, A. advena* (LeConte, 1846) [Plate 52] which Lindroth (1966) listed within the genus *Calathus*, occurs in the northeast. The adults (8.0-11.8 mm) are most similar to those of *Calathus* but differ in having two (unilaterally three or four in a few specimens) instead of three discal setae on the elytral interval 3, the prosternal apophysis unmargined at apex, and the posterolateral setigerous puncture of pronotum closer to the lateral edge.

The protarsomeres 1-3 of males are expanded and bear underneath seriate adhesive setae. Both males and females have two subapical setae on the last abdominal sternum.

[BC: endemic; BZ: boreal/arctic/alpine; HR: covered places: mixed and coniferous forests, forest edges, occasionally adjacent fields; SA: autumn breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH PM QC; References: Lindroth (1955b: 114); Lindroth (1966: 548-549); Larochelle and Larivière (2003: 169) – bionomics]

**GENUS SYNUCHUS** GYLLENHAL, 1810

The sole northeastern species of this predominantly Asiatic genus, *S. impunctatus* (Say, 1823) [Plate 52], is distinguished from the other Platynini, except members of *Calathus* and *Acalathus*, by the denticulate claws. In some specimens, particularly old ones, the denticles are worn-out and not so evident. Contrary to northeastern species of *Calathus*, the prosternal apophysis is not margined in *Sychnus impunctatus* as in *Acalathus advena*. Adults of *S. impunctatus* differ from those of *A. advena* mainly in having a more convex and slightly different pronotum and the metatarsomeres 1-4 without dorsal keel.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

SUBTRIBE PLATYNINA
GENUS OLISTHOPUS DEJEAN, 1828

Members of this genus differs from those of other northeastern Platynini in the absence of a mentum tooth.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath. In addition, they have two setae near the apical edge of the last abdominal sternum while females have four to six such setae.

North American species of this genus can be separated into two groups: one includes *O. micans* LeConte and *O. flicornis* Casey and the second one *O. parmatus* (Say) (syn.: *O. pictus* Casey and *O. cinctus* Say), *O. iterans* Casey, *O. innuens* Casey, *O. pusio* Casey, and *O. brevicornis* Casey. I have also seen undescribed species in both groups. The genus is taxonomically difficult and need a modern revision.

List of northeastern species of *Olisthopus*

<table>
<thead>
<tr>
<th>Species</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>[O. flicornis] Casey, 1913</td>
<td><em>O. micans</em> LeConte, 1846</td>
</tr>
<tr>
<td>[O. innuens] Casey, 1913</td>
<td><em>O. parmatus</em> (Say, 1823)</td>
</tr>
</tbody>
</table>

Key to northeastern species of *Olisthopus*

1. Elytral interval 3 around second discal setae not paler than adjacent areas. Tarsomere 5 of each leg without setae underneath. Elytra iridescent, microlines indistinct ....................................................................................................................................... [O. micans] LeConte

   – Elytral interval 3 around second discal setae paler than adjacent areas. Tarsomere 5 of each leg with small, but usually distinct, setae underneath near apex. Elytra not or barely iridescent, microlines distinct though fine ...................................................................... [O. flicornis] Casey

2. [1]. Lateral depression of pronotum narrow, at middle narrower than diameter of midlateral setigerous puncture [around 4.7 mm] ................................................................. [O. flicornis] Casey

   [BC: endemic; BZ: temperate; HR: ?; SA: ?; DP: wings (+); flight (+); GD: not yet found in the northeast but recorded from Rhode Island; Note: I have seen only the holotype, a female, of this species]

   – Lateral depression of pronotum wider, at middle as wide as diameter of midlateral setigerous puncture [4.0-4.7 mm] ........................................................................ [O. micans] LeConte

   [BC: endemic; BZ: temperate; HR: wet places: swamps, ponds, brooks, rills in deciduous forests; SA: ?; OC: LF+++++/+++; RA++++/++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1966: 554-555); Larochelle and Larivière (2003: 347) – bionomics]

3. [1]. Body length more than 6.0 mm [6.2-7.3 mm; Plate 53]................................. *O. parmatus* (Say)

   [BC: endemic; BZ: temperate/boreal/alpine; HR: covered places: deciduous and mixed forests, usually in leaf litter; also in wet leaves on muddy soils near ponds and swamps; occasionally in alpine meadows; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH NS QC VT; References: Lindroth (1966: 553-554); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 347-348) – bionomics]

   – Body length less than 5.6 mm [5.1 mm] ......................................................... [O. innuens] Casey
GENUS SERICODA KIRBY, 1837 [Agonum sensu Lindroth, in part]
The two northeastern species of this genus remind very much some of the small species of Agonum. The main character state that separate them from members of Agonum is the presence of one to four small setae at the posterior extremity of each paramere. Because there are no clear cut external character state to separate all northeastern Agonum from the species of Sericoda, the species Sericoda are also keyed out in the key to species of Agonum. One of the two species, S. quadripunctata, is quite characteristic by its small size (4.2-6.0 mm) and elytral microsculpture which is markedly transverse and obliquely so in part.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

List of northeastern species of Sericoda

S. obsoleta (Say, 1823)  
S. quadripunctata (DeGeer, 1774)

Key to northeastern species of Sericoda
[see also key to species of Agonum]

1. Elytral interval 3 with three (unilaterally four in aberrant specimens) non foveolate setigerous punctures. Elytral microsculpture isodiametric to irregularly isodiametric [6.0-7.5 mm] ................................................................. S. obsoleta (Say)  
[BC: endemic; BZ: temperate/boreal/arctic; HR: covered places: mixed and coniferous forests and recently burnt forest sites, often seen running on hot ashes; also human habitations with wood-burning stoves; SA: [spring breeder]; OC: LF++++; RA+++/++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS QC VT; References: Lindroth (1955b: 116-117, as Agonum bogemanni); Lindroth (1966: 565-567); Liebher (1991: 70-76); Larochelle and Larivière (2003: 477) – bionomics]

– Elytral interval 3 with four (unilaterally three or five in aberrant specimens) distinctly foveolate setigerous punctures. Elytral microsculpture markedly transverse, in part obliquely so [4.2-6.0 mm; facies of Bembidion; Plate 53] ................................................................. S. quadripunctata (DeGeer)  
[BC: holarctic; BZ: temperate/boreal/arctic; HR: covered places: mixed and coniferous forests and recently burnt forest sites; also human habitations with wood-burning stoves; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS QC VT; References: Lindroth (1955b: 117); Lindroth (1966: 568-569); Burakowski (1986) – biology; Liebher (1991: 62-68); Larochelle and Larivière (2003: 477) – bionomics]
**GENUS** Tetraleucus Casey, 1920 [*Agonum sensu* Lindroth, in part]

The sole northeastern species of this genus, *T. picticornis* (Newman, 1844) [Plate 53], is immediately recognized from all other species but *Agonum albicus* in having the antennomeres 8–11 contrastingly whitish. *Tetraleucus picticornis* differs from *A. albicus* by many character states, the most obvious being the absence of laterobasal setae on the pronotum.

As in most other Platynini, the males differ from the females in having the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

**[BC]: endemic; **[BZ]: temperate; **[HR]: wet places: swamps, ponds, brooks, rivers in deciduous forests, usually on wet, clayish or muddy soils; **[SA]: ?; **[OC]: LF++; **[RA]: GP; **[DP]: wings (+); flight (+); **[GD]: VT; **[References]: Lindroth (1966: 615); Liebherr (1991: 31-33); Larochelle and Larivière (2003: 499) – bionomics]

**GENUS** Paranchus Lindroth, 1974 [*Agonum sensu* Lindroth, in part]

This genus is represented in North America by one adventive species, *P. albipes* (Fabricius, 1796) [Plate 53], distinguished from other northeastern Platynini by the markedly sulcate tarsomeres dorsally, presence of only two discal setae on elytral interval 3 (the posterior one is missing), and smooth tarsal claws.

Males have the protarsomeres 1-3 with seriate adhesive setae underneath.

**[BC]: exotic (< 1840); **[BZ]: temperate; **[HR]: flooded places: margins of lakes, rivers, ponds, brooks, usually on wet clayish soils with no or sparse vegetation; also along seashore on steep slopes; **[SA]: spring breeder; **[OC]: LF++++; **[RA]: GP; **[DP]: wings (+); flight (+); **[GD]: ME NB NF NS; **[References]: Lindroth (1955b: 120, as *Agonum ruficornis*); Lindroth (1966: 630-631); Kůrka (1976, as *Agonum ruficornis*) – biology; Larochelle and Larivière (2003: 357) – bionomics]

**GENUS** Oxyptelaphus Chaudoir, 1843 [*Agonum sensu* Lindroth, in part]

The sole North American species of this genus, *O. pusillus* (LeConte, 1854) [Plate 56], is quite characteristic for the presence of small setae covering the dorsal surface of the body, including the antennomeres and tarsomeres dorsally, the narrow, cordiform pronotum with extensive punctation over the base, and absence of microsculpture over the dorsal surface. The species is relatively small, varying from 5.3-6.8 mm in length. The species may be confused by inexperienced students with *Atranus pubescens* but in that species the pronotum is not cordiform, the mentum tooth is bifid, not acuminate as in *O. pusillus*, and the dorsal surface has distinct microsculpture.

Males have the protarsomeres 1-3 expanded and covered underneath with seriate adhesive setae.

**[BC]: endemic; **[BZ]: temperate/boreal; **[HR]: wet places: edges of marshes, swamps, ponds, in beaver houses, forested edges of rivers, usually on muddy or clayish soils rich in organic debris; **[SA]: spring breeder; **[OC]: LF++++; **[RA]: GP; **[DP]: wings (+); flight (+); **[GD]: ME NB NH NS PE QC VT; **[References]: Lindroth (1966: 633-634, as *Agonum puncticeps*); Larochelle and Larivière (2003: 355) – bionomics]

**GENUS** Agonum Bonelli, 1810

There are no external character states that will separate easily members of *Agonum* from those of other groups of Platynini. The use of the key to genera is necessary to recognize this genus at least for those who do not have experience with carabid identifications.

Males differ from females in having the protarsomeres 1-3 expanded and with seriate adhesive setae underneath. Other sexual differences may be present in some species. For example, males of *A. nigriceps* have shiny black abdominal sternae while females have entirely pale yellow sternae (Landry 1981: 133).
There is no clear external character states to separate members of *Sericoda* from those of the numerous species of *Agonum*. For that reason, the two northeastern species of *Sericoda* are keyed also with the *Agonum*.

**List of northeastern species of *Agonum***

- *A. aeruginosum* Dejean, 1828
- *A. affine* Kirby, 1837
- *A. albiviridus* Dejean, 1828
- *A. anchomenoides* Randall, 1838
- *A. canadense* Goulet, 1969

  *dilatipenne* sensu Lindroth [in part]

- *A. consimile* (Gyllenhal, 1810)
- *A. corvus* (LeConte, 1860)
- *A. crenistriatum* (LeConte, 1863)
- *A. cupreum* Dejean, 1831

  *dilatipenne* sensu Lindroth [in part]

- *A. cupripennis* (Say, 1823)
- *A. darlingtoni* Lindroth, 1954
- *A. deceptivum* (LeConte, 1846)
- *A. decorum* (Say, 1823)

  *punctiforme* (Say, 1823)

- *A. excavatum* Dejean, 1828

- *A. extensicolle* (Say, 1823)
- *A. ferreum* Haldeman, 1843
- *A. filipes* Dejean, 1828
- *A. filole* Casey, 1920

  [A. galvestonicum (Casey, 1920)]

- *A. gratiosum* (Mannerheim, 1853)

- *A. harrisii* LeConte, 1846

- *A. intulatum* (LeConte, 1854)

- *A. melanarium* Dejean, 1828
- *A. metallicens* (LeConte, 1854)
- *A. moerens* Dejean, 1828
- *A. muelleri* (Herbst, 1784)

- *A. mutatum* (Gemminger & Harold, 1868)
- *A. nigriceps* LeConte, 1846
- *A. octopunctatum* (Fabricius, 1798)
- *A. palustrum* Goulet, 1969

- *A. placidum* (Say, 1823)
- *A. propinquum* (Gemminger & Harold, 1868)
- *A. puncticornis* (Say, 1823)
- *A. retractum* LeConte, 1846

- *A. rufipes* Dejean, 1828
- *A. superioris* Lindroth, 1966
- *A. thoreyi* Dejean, 1828

- *A. trigeminum* Lindroth, 1954

**Key to northeastern species of *Agonum* and *Sericoda***

1. Antennomere 3 with pubescence at least over apical half (Fig. 340) .................. 2
   – Antennomere 3 without pubescence (except for the longer usual setae at apex) (Figs 341, 342) .......................................................................................................................... 15

2 [1]. Pronotum and elytral intervals with pubescence. Pronotum contrasting bright reddish in most specimens, rarely dark green or metallic black [6.8-0.0 mm; head and elytra black with metallic lustre; Plate 55]............... *A. (Olistares) decorum* (Say)

  [BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, edges of ponds, usually on wet clayish soils covered with dense vegetation; SA: spring breeder; OC: LF+++; RA++/+++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1966: 629-630); Liebherr (1986: 124-137); Liebherr (1994: 43-46); Larochelle and Larivière (2003: 23) – bionomics]

   – Pronotum and elytral intervals without pubescence. Pronotum not reddish........ 3

3 [2]. Elytral microsculpture striate [4.9-5.9 mm] .......... *A. (Enophila) darlingtoni* Lindroth
[BC: endemic; BZ: temperate; HR: wet places: Sphagnum bogs; SA: [spring breeder];
OC: 1F++; RA++; DP: wings (+); flight (-); GD: NB NH NS QC VT; References: Lindroth (1966: 582-583); Larochelle and Larivière (2003: 22) – bionomics]

Elytral microsculpture isodiametric or transverse .................................................................

4 [3]. Pronotum without laterobasal setae [6.2-7.5 mm; body flat with markedly long antennae and legs; elytral microsculpture isodiametric] .................................................................................................................................................................................

[4. (Europhilus) galvestonicum (Casey)]

[BC: endemic; BZ: temperate; HR: wet places: Typha marshes; SA: [spring breeder];
DP: wings (+); flight (+); GD: not yet found in the northeast but recorded from

southern Ontario; References: Lindroth (1966: 583); Larochelle and Larivière (2003: 26) – bionomics]

– Pronotum with laterobasal setae

5 [4]. Meso- and metatarsomeres 1-3 with sharp dorsal carina (Fig. 343)........................................6

– Meso- and metatarsomeres 1-3 without dorsal carina (Fig. 344), though usually with lateral carina

6 [5]. Pronotum with deep, large basal impression; lateral bead not distinct toward posterior angle; lateral depression widening toward posterior angle. Elytra with microsculpture transverse though slightly so in some specimens. Antennomeres 2-4 distinctly darker than antennomeres 6-11 in most specimens [6.4-9.1 mm]........................

...............................................................................

A. (Europhilus) gratiosum (Mannerheim)

[BC: endemic; BZ: temperate/boreal/arctic; HR: wet places: marshes, swamps, ponds, beaver houses; occasionally bogs, roadside ditches; SA: spring breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 128); Lindroth (1966: 577-578); Chiolino (1970) – wing development; Larochelle and Larivière (2003: 26-27) – bionomics]

– Pronotum with shallow, small, more or less distinct basal impression; lateral bead well defined toward posterior angle; lateral depression very narrow, more or less distinct toward posterior angle. Elytra with isodiametric or irregularly isodiametric microsculpture. Antennomeres 2-4 not or barely darker than antennomeres 6-11 [6.4-8.7 mm]..........................

.......................................................................................

A. (Europhilus) thoreyi Dejean

[BC: holarctic; BZ: temperate/boreal/arctic; HR: wet places: marshes and swamps; SA: spring breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1955b: 128-129); Lindroth (1966: 579-580); Landry (1994) – habitat; Larochelle and Larivière (2003: 38) – bionomics]

7 [5]. Elytral epipleuron dark, deep brown to black, at least over anterior third; elytra not or only slightly paler than head in most specimens...........................................

– Elytral epipleuron entirely pale, yellow to reddish-brown; elytra quite distinctly paler than head

8 [7]. Pronotum (Fig. 345) markedly convex, slightly transverse (LP/WP = 0.88-0.94; n = 15); basal impression without trace of convexity [6.0-7.4 mm]........................

.......................................................................................

A. (Europhilus) superioris Lindroth

[BC: endemic; BZ: temperate/boreal; HR: wet places: sphagnum bogs, fens, swamps, eutrophic marshes; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NB NH PE QC VT; References: Lindroth (1966: 578-579); Larochelle (1976d) – habitat; Larochelle and Larivière (2003: 37) – bionomics]

– Pronotum (Figs 346, 347) only slightly convex, more transverse (LP/WP = 0.76-0.84; n = 30); basal impression with at least a slight convexity in most specimens ..........9

9 [8]. Antennomere 1 paler, reddish-brown to brown, at least underneath; elytra dark reddish-brown in most specimens. Eyes markedly convex [5.6-7.1 mm]........................

.......................................................................................

A. (Europhilus) picticornoides Lindroth
[BC: endemic; BZ: [temperate]/boreal; HR: [flooded/wet places]: shaded places along lake and river banks, eutrophic marshes; SA: [spring breeder]; OC: LF+++; RA++/+++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 574-575); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 32-33) – bionomics]

Antennomere 1 darker, black or almost so (except at extremities); elytra black in almost all specimens seen. Eyes slightly convex [5.5-7.0 mm] ...........................................
..............................................................................................................A. (Europhilus) consimile (Gyllenhal)

[BC: holarctic; BZ: boreal/arctic; HR: wet places: sphagnum bogs, eutrophic marshes, ponds; SA: spring breeder; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NF NS PM QC; References: Lindroth (1955b: 126); Lindroth (1966: 572-573); Larochelle and Larivière (2003: 20) – bionomics]

10 [7]. Head dorsally with metallic green lustre; pronotum distinctly bicoloured, disc dark with metallic green lustre, margins (particularly lateral ones) widely and contrastingly pale. Eyes markedly convex for the group [6.0-7.2 mm; elytral interval 3 with four (rarely three or five) somewhat foveolate discal setigerous punctures] ............... 

[BC: endemic; BZ: temperate/boreal; HR: wet places: marshes, edges of ponds, on clayish or muddy soils along river and lake banks; SA: spring breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1955b: 125); Lindroth (1966: 589-590); Larochelle and Larivière (2003: 27-28) – habitat; Larochelle and Larivière (2003: 20) – bionomics]

– Head without lustre; pronotum more or less unicolour, at most with lateral margins slightly paler than disc. Eyes slightly to moderately convex................................. 11

11 [10]. Pronotum ground colour paler, yellow or reddish-yellow; disc slightly infuscate but still only slightly darker than elytra, but contrastingly paler than head [5.9-7.0 mm; elytra and lateral margins of pronotum yellow or reddish-yellow; antennomeres 2-11 dark, brownish-black or black, antennomere 1 more or less paler; elytral epipleuron entirely yellow; elytra with isodiametric microsculpture; Plate 54] ........................................................................

[BC: endemic; BZ: temperate/boreal; HR: wet places: eutrophic marshes, swamps; also marshy areas near lakes, rivers, ponds; occasionally roadside ditches; SA: spring breeder; OC: LF++++; RA+/++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1955b: 127); Lindroth (1966: 576-577); Chiolino (1970) – wing development; Carter (1976) – wing dimorphism; Levesque et al. (1979) – seasonal activity; Larochelle and Larivière (2003: 35) – bionomics]

– Pronotum ground colour darker, reddish to black; disc (in many specimens entire pronotum) quite distinctly darker than elytra and almost as dark as head............... 12

12 [11]. Pronotum with posterior setigerous puncture removed from lateral edge (though rather close in some specimens), separated from edge by diameter of puncture or more (Fig. 348). Elytral ground colour mainly red. Wings reduced in most specimens [6.2-7.6 mm; antennomeres, or at least antennomeres 1-3, more or less uniformly reddish-yellow or reddish in many specimens; sides of elytra more or less rounded] ........................................................................ A. (Europhilus) retractum LeConte

[BC: endemic; BZ: temperate/boreal; HR: covered places: forests, usually in leaf litter; SA: spring breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 127); Lindroth (1966: 576-577); Chiolino (1970) – wing development; Carter (1976) – wing dimorphism; Levesque et al. (1979) – seasonal activity; Larochelle and Larivière (2003: 35) – bionomics]

– Pronotum with posterior setigerous puncture touching or very close to lateral edge, separated from edge by less than diameter of puncture (Fig. 349). Elytral ground colour mainly yellow or reddish-yellow. Wings fully developed.......................... 13
13 [12]. Elytral microsculpture moderately transverse. Antennomeres 1-3 more or less uniformly pale or antennomeres 2 and 3 only slightly infuscate compared to antennomere 1 [5.8-7.4 mm; pronotum laterobasally with irregular, weakly impressed microsculpture meshes] ...............................................A. (Europhilus) palustre Goulet

[BC: endemic; BZ: temperate; HR: wet places: marshes, swamps, flood-plain forests, marshy edges of rivers; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NB NH QC VT; References: Goulet (1969: 280-282); Lindroth (1969a: 1119-1120); Larochelle and Larivière (2003: 32) – bionomics]

– Elytral microsculpture isodiametric or irregularly isodiametric. Antennomeres 1-3 more or less uniformly infuscate or antennomeres 2 and 3 quite distinctly infuscate compared to antennomere 1 [two species often difficult to separate] .................

14 [13]. Elytral ground colour pure yellow in most specimens; microsculpture isodiametric. Eyes only slightly convex, head proportionally narrower on average (WH/WP = 0.67-0.76; mean = 0.73; n = 20). Pronotum proportionally longer on average (LP/ WP = 0.86-0.95; mean = 0.91; n = 20) [5.7-6.7 mm] ........................................

........................................................................................................................................A. (Europhilus) canadense Goulet

[BC: endemic; BZ: temperate; HR: wet places: marshes, swamps, sphagnum bogs; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: NB NH NS PE QC VT; References: Goulet (1969: 279-280); Lindroth (1969a: 1119); Larochelle and Larivière (2003: 20) – bionomics]

– Elytral ground colour reddish-yellow in most specimens; microsculpture irregularly isodiametric. Eyes more convex in most specimens, head proportionally wider on average (WH/WP = 0.71-0.80; mean = 0.76; n = 20). Pronotum proportionally shorter on average (LP/ WP = 0.81-0.91; mean = 0.85; n = 20) [5.3-6.5 mm] ...................

........................................................................................................................................A. (Europhilus) sordens Kirby

[BC: endemic; BZ: temperate/boreal/arctic; HR: wet places: marshes, swamps, marshy edges of rivers, flood-plain forests; SA: spring breeder; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 126-127); Lindroth (1966: 575-576); Larochelle and Larivière (2003: 36) – bionomics]

15 [1]. Antennomeres 8-11 white, contrasting with antennomeres 1-7 [7.0-8.5 mm; elytral microsculpture isodiametric, meshes well impressed]........A. (Olisares) albicusus Dejean

[BC: endemic; BZ: temperate; HR: wet places: swamps, usually on wet clayish or muddy soils with some vegetation; SA: [spring breeder]; OC: LF++; RA?: DP: wings (+); flight (+); GD: NH; References: Lindroth (1966: 615); Larochelle and Larivière (2003: 18) – bionomics]

– Antennomeres 8-11 of same ground colour as antennomeres 5-7 .....................

16 [15]. Pronotum and elytra pale yellow with darker (brownish-black) median stripe [4.9-6.3 mm; Plate 54] ........................................A. (Platynomicus) nigriceps LeConte

[BC: holarctic; BZ: temperate/boreal; HR: wet places: mostly eutrophic (Typha or Carex) marshes; SA: spring breeder; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH PE QC; References: Lindroth (1955b: 129-130); Lindroth (1966: 584); Landry (1994) – habitat; Larochelle and Larivière (2003: 30) – bionomics]
- Pronotum and elytra darker, reddish-black to black, without contrasting median stripe.......................................................... 17

17 [16]. Elytral interval 3 with four to eight (unilaterally three in aberrant specimens) discal setae.......................................................... 18
- Elytral interval 3 with three (unilaterally two or four in aberrant specimens) discal setae............................................................................... 26

18 [17]. Antennomere 3 with impression at base on dorsal surface (Fig. 341) [7.0-9.5 mm; upper surface with uniform bright metallic lustre in most specimens; Plate 55]...........
- Antennomere 3 without impression at base (Fig. 342) ........................................................................................................................................ 19

19 [18]. Discal setigerous punctures on interval 3 foveolate (i.e., surrounding by distinct depressions) .......................................................... 20
- Discal setigerous punctures on interval 3 not foveolate.................................................................................................................. 22

20 [19]. Body length less than 6.5 mm. Upper surface without metallic lustre. Elytral micro-sculpture markedly transverse, in part obliquely so [4.2-6.0 mm; facies of *Bembidion*]......................................................................................................................Sericoda quadripunctata (DeGeer)
- Body length 7.0 mm or more. Upper surface with metallic lustre. Elytral micro-sculpture isodiametric or irregularly isodiametric .................................................. 21

21 [20]. Elytra with contrast lustre: medial ones brassy, lateral ones bright green. Base of pronotum with distinct bead laterally. Antennomeres 1-3 more or less pale [7.5-8.5 mm; Plate 54] .................................................................A. (Olisares) octopunctatum (Fabricius)
- Elytra without contrast lustre, uniformly more or less coppery. Base of pronotum without bead laterally. Antennomeres 1-3 black [7.0-8.5 mm] .................................................................................................................. 21

A. (Olisares) cupreum Dejean

[BC: endemic; BZ: temperate/boreal; HR: open places: pastures, meadows, cultivated and vacant fields, usually on dry more or less sandy soils with sparse vegetation; SA: ?, OC: LF+++/RA++; DP: wings (+); flight (+); GD: NB PE QC; References: Lindroth (1966: 596-598); Larochelle (1977c) – wing dimorphism; Larochelle and Larivière (2003: 21) – bionomics]

A. (Olisares) octopunctatum (Fabricius)

[BC: holarctic; BZ: temperate/boreal/arctic; HR: covered places: mixed and coniferous forests and recently burnt forest sites; also human habitations with wood-burning stoves; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: L B ME NB NF NH NS QC VT; References: Lindroth (1955b: 117); Lindroth (1966: 568-569); Burakowski (1986) – biology; Liebherr (1991: 62-68); Larochelle and Larivière (2003: 477) – bionomics]

Sericoda quadripunctata (DeGeer)

[BC: holarctic; BZ: temperate/boreal/arctic; HR: flooded places: river and lake banks, on sand or sand silt soils; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 593-594); Larochelle and Larivière (2003: 31) – bionomics]

A. (Olisares) quinquepunctatum Motschulsky

[BC: holarctic; BZ: arctic; HR: peat bogs; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: NF QC; References: Lindroth (1966: 594-595); Larochelle and Larivière (2003: 34-35) – bionomics]
22 [19]. Pronotum (Fig. 350) with side sinuate in basal half; posterior angle right to slightly obtuse ................................................................. 23
– Pronotum (Fig. 351) with side more or less rounded in basal half; posterior angle markedly obtuse to rounded .............................. 24

23 [22]. Base of pronotum with more or less confluent punctures between impressions. Upper surface with rather strong metallic lustre, often of different colouration on forebody (greenish) than on elytra (bronzyl or brassy). Elytral striae markedly deep even near base [6.8-10.4 mm; Plate 55] ......................... A. (Olisares) extensicolle (Say)

[BC: endemic; BZ: temperate/boreal; HR: flooded places: river and lake banks, usually on wet, sandy muddy soils; SA: spring breeder; OC: LF++++; RA+++; DP: flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 625-627); Liebherr (1986: 112-124); Liebherr (1994: 42-43); Larochelle and Larivière (2003: 24) – bionomics]
– Base of pronotum without punctures between impressions (Fig. 350). Elytra, in most specimens entire upper surface, without metallic lustre. Elytral striae shallow particularly near base [6.0-7.6 mm] ......................... A. (Agonum) piceolum (LeConte)

[BC: endemic; BZ: temperate/boreal/arctic; HR: covered places: woody areas along river and lake shores; SA: ?; OC: LF+++; RA++; DP: wings (+); flight (-); GD: ME NH NF QC; References: Lindroth (1955b: 125); Lindroth (1966: 587-588); Larochelle and Larivière (2003: 32) – bionomics]

24 [22]. Base of pronotum with distinct bead laterally. Elytral interval 3 with four discal setae ................................................................. A. (Agonum) muelleri (Herbst) [in part]

[BC: exotic (< 1840); BZ: temperate/boreal; HR: open places: abandoned and cultivated fields, orchards, sand and gravel pits, gardens, forest edges; SA: spring breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 121-122); Lindroth (1966: 593); Larochelle and Larivière (2003: 29) – bionomics]
– Base of pronotum without bead laterally. Elytral interval 3 with five or more discal setae ................................................................. 25

25 [24]. Upper surface, in some specimens only forebody, with more or less uniform, rather faint, bluish or greenish metallic lustre. Pronotum (Fig. 351) less constricted basally (WPb/WP = 0.80-0.86; n = 20), proportionally shorter on average (LP/WP = 0.75-0.82; n = 20); posterior angle with small jag in most specimens [6.8-8.8 mm; Plate 54] ................................................................. A. (Agonum) placidum (Say)

[BC: endemic; BZ: temperate/boreal; HR: open places: fallows, cultivated and vacant fields, sand and gravel pits, roadsides, often on sandy soils; SA: spring breeder; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 120-121); Lindroth (1966: 613-614); Liebherr (1994: 31-33); Larochelle and Larivière (2003: 33) – bionomics]
– Upper surface with greenish metallic lustre on forebody and bronze lustre on elytra, lustre in some specimens relatively faint. Pronotum more constricted basally (WPb/WP = 0.72-0.78; n = 20), proportionally longer on average (LP/WP = 0.80-0.87; n = 20); posterior angle without jag [7.0-8.3 mm] ......................... A. (Olisares) nutans (Say)
26 [17]. Elytral interval 3 with discal setigerous punctures foveolate (i.e., surrounding by distinct depressions) [6.0-7.5 mm; upper surface with brassy, more rarely greenish or bluish, lustre].......................................................... A. (Olisarei) excavatum Dejean

[**BC**: endemic; **BZ**: temperate; **HR**: flooded places: often on wet sand near ponds; also on muddy soils along lake shores; **SA**: [spring breeder]; **OC**: LF+++; RA++; **DP**: wings (+); flight (+); **GD**: ME NB NH QC VT; **References**: Lindroth (1966: 623-624); Larochelle and Larivière (2003: 24) – bionomics]

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Elytral interval 3 with discal setigerous punctures not foveolate ........................................27

27 [26]

Tarsomere 5 of each leg glabrous underneath .................................................................28

Tarsomere 5 of each leg with several setae underneath .......................................................29

28 [27]

Pronotum (Fig. 352) with posterior angle obtusely rounded; base with well-impressed isodiametric microsculpture meshes between impressions; disc with poorly impressed but usually distinct meshes, lateral half with well-impressed meshes. Femur reddish-yellow to brownish-red [7.0-9.3 mm; upper surface with bright metallic green, brassy, cupreous, rarely bluish lustre, in some specimens lustre barely evident along middle] ............................................................... A. (*Olisares*) *errans* (Say)

[**BC**: endemic; **BZ**: temperate/[boreal]; **HR**: flooded/wet places: river and lake banks, ponds, marshes, peat bogs, usually on wet, sandy-clayish soils; **SA**: [spring breeder]; **OC**: LF+++; RA++; **DP**: wings (+); flight (+); **GD**: NH QC VT; **References**: Lindroth (1966: 616-617); Larochelle and Larivière (2003: 23) – bionomics]

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Pronotum (Fig. 353) with posterior angle rounded; base without or with poorly impressed microsculpture meshes between impressions; disc without clear meshes, lateral third with poorly or moderately impressed meshes. Femur dark reddish-black to black [6.5-7.5 mm; forebody with greenish lustre, elytra with faint bronzy lustre] ............................................................... A. (*Olisares*) *ferreum* Haldeman

[**BC**: endemic; **BZ**: temperate; **HR**: covered places: mixed forests on damp, shaded areas, often near water bodies such as streams; **SA**: [spring breeder]; **OC**: LF+; RA?; **DP**: wings (+); flight (-); **GD**: NH VT; **References**: Lindroth (1966: 624-625); Larochelle and Larivière (2003: 25) – bionomics]

29 [27]

Pronotum (Fig. 354) with small, punctiform basal impression [pronotum markedly convex, almost perfectly circular] ........................................................................................................30

Pronotum (Figs 355-358) with broad, not punctiform (and often with linear medial streak) basal impressions ........................................................................................................33

30 [29]

Elytron with broad, shallow impression near middle. Body length less than 6.7 mm. Elytra, in some specimens also forebody, with bronzy lustre [5.2-6.5 mm; elytral microsculpture isodiametric] ............................................ A. (*Olisares*) *aeruginosum* Dejean

[**BC**: endemic; **BZ**: temperate; **HR**: wet places: marshes, swamps, sphagnum bogs; **SA**: [spring breeder]; **OC**: LF++; RA++; **DP**: wings (+); flight (-); **GD**: ME NB NH NS QC VT; **References**: Lindroth (1966: 623); Larochelle and Larivière (2003: 17-18) – bionomics]

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Elytron without impression near middle. Body length more than 6.7 mm. Upper surface without lustre ........................................................................................................... 31

31 [30]

Elytra and abdominal sterna without microsculpture. Elytral striae coarsely punctate, punctures evident to apex particularly on lateral striae [6.8-9.0 mm] .................................................. A. (*Olisares*) *crenistriatum* (LeConte)

[**BC**: endemic; **BZ**: temperate; **HR**: flooded places: often on wet sand near ponds; also on muddy soils along lake shores; **SA**: [spring breeder]; **OC**: LF+++; RA++; **DP**: wings (+); flight (+); **GD**: ME NB NH QC VT; **References**: Lindroth (1966: 623); Larochelle and Larivière (2003: 24) – bionomics]
[BC: endemic; BZ: temperate; HR: open places: abandoned fields, pastures, sand and gravel pits, usually on sandy soils, sometimes near water; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 621); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 20-21) – bionomics]

– Elytra (except in A. rufipes ♂) and abdominal sterna with microsculpture. Elytral striae only finely punctate, punctures indistinct toward apex ........................................32

32 [31]. Posteroangular region and lateral margin of pronotum without microsculpture. Elytral microsculpture absent (♂) or isodiametric (♀) [6.8-8.0 mm] ....... A. (Olisares) rufipes Dejean [BC: endemic; BZ: temperate; HR: [wet places]; SA: ?; OC: LF++; RA+; DP: wings (+); flight (+); GD: NH; References: Lindroth (1966: 621-622); Larochelle and Larivière (2003: 35-36) – bionomics]

– Posteroangular region and lateral margin of pronotum with microsculpture. Elytral microsculpture irregularly isodiametric or slightly transverse [7.5-8.0 mm] .............

33 [29]. Upper surface with vivid metallic lustre, in most specimens different in colour on forebody and elytra .................................................................34

– Upper surface without or in few species with very faint lustre of uniform colour on forebody and elytra .................................................................35

34 [33]. Elytra with different colour lustre (in most specimens sharply contrasting): mostly cupreous reddish on medial intervals, mostly greenish, bluish, or aeneous on lateral intervals. Basal bead of pronotum extended medial to basal impression, reaching or not middle. Elytral microsculpture isodiametric [7.5-9.3 mm; Plate 55] .............

.........................................................................................................................A. (Olisares) cupripenne (Say) [BC: endemic; BZ: temperate/boreal; HR: open places: cultivated and abandoned fields, orchards, roadsides, forest edges and clearings; SA: ?; OC: LF++; RA2; DP: wings (+); flight (+); GD: NH VT; References: Lindroth (1966: 622); Liebherr (1994: 17-20); Larochelle and Larivière (2003: 34) – bionomics]

– Elytra with uniform, bronzy or bluish lustre. Basal bead of pronotum not extended medial to basal impression. Elytral microsculpture irregularly isodiametric or slightly transverse [7.2-9.5 mm; pronotum thickened behind basal impressions] .........

.........................................................................................................................A. (Agonum) muelleri (Herbst) [in part] [BC: exotic (< 1840); BZ: temperate/boreal; HR: open places: abandoned and cultivated fields, orchards, sand and gravel pits, gardens, forest edges; SA: spring breeder; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1955b: 121-122); Lindroth (1966: 593); Larochelle and Larivière (2003: 29) – bionomics]

35 [33]. Metatarsomeres 1-3 without depression and associate carina on lateral side [6.0-7.5 mm; elytral microsculpture isodiametric or irregularly isodiametric] ........... Sericoda obsoleta (Say)
The remaining species of *Agonum* belong to the *melanarius* group of Lindroth (1966: 598-612), previously known as subgenus *Melanagonum* Casey. These species are variable and rather difficult to identify without reference specimens. Two keys are offered for their identifications. The first one (subsection A) is more traditional and use the presence or not of a longitudinal impression toward apex on each elytral interval 5 as a major character. Unfortunately this character is not always reliable. Some specimens of species which normally do not have such impression can possess a slight impression. I also have seen specimens without such impression that belong to species which normally have a distinct impression on the elytral interval 5. The second key (subsection B) does not use the impression on the elytral interval 5 as a major character but relies more on the elytral microsculpture and the colouration of the elytra compared to that of the forebody. It may worth keying specimens through both keys.

subsection A

36 [35]. Pronotum with well-defined basal bead behind basal impression [elytral microsculpture isodiametric to slightly transverse] .............................................................................................................................................37

– Pronotum with basal bead not defined behind basal impression, though base somewhat thickened and slightly raised in some specimens (particularly those of *A. harriii*) ........................................................................................................................................38

37 [36]. Forebody distinctly darker than elytra; antennomere 1 dorsally more or less reddish; pronotum with lateral margins paler than disc. Pronotum (Fig. 355) with sides rectilinearly convergent in basal half; posterior angle well outlined by jag [6.5-7.9 mm; elytral interval 5 without or with very faint longitudinal impression toward apex].... .............................................................................................................................................. A. (*Olisares*) *propinquum* (Gemminger & Harold)

[BC: endemic; BZ: temperate/boreal; HR: wet places: mainly eutrophic marshes, swamps, usually on wet soils rich in organic debris; SA: [spring breeder]; OC: LF++++; RA++++; DP: wings (+); flight (+); GD: ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 124-125); Lindroth (1966: 611-612); Larochelle and Larivière (2003: 33-34) – bionomics]

– Forebody not darker than elytra; antennomere 1 black or almost so; pronotum with lateral margins at most slightly, indistinctly paler than disc. Pronotum (Fig. 356) with sides rounded in basal half; posterior angle barely outlined [7.0-9.2 mm; basal impression of pronotum with distinct convexity in most specimens] ........................................................................................................................................ A. (*Olisares*) *affine* Kirby

[BC: endemic; BZ: temperate/boreal/arctic; HR: wet places: mostly swamps, bogs, eutrophic marshes, usually on muddy or peaty soils; SA: [spring breeder]; OC:
LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 123-124, as A. carbo); Lindroth (1966: 603-605); Liebherr (1994: 29-30); Larochelle and Larivière (2003: 18) – bionomics

38 [36]. Elytral interval 5 without distinct longitudinal impression toward apex
– Elytral interval 5 with distinct longitudinal impression toward apex

39 [38]. Pronotum (Fig. 357) with posterior angle obtusely denticulate [8.0-10.0 mm; basal impression of pronotum on average deeper and more punctate and/or coriaceous than related species, with convexity in most specimens; elytral microsculpture moderately to markedly transverse].......................... A. (Olisares) melanarium Dejean

[BC: endemic; BZ: temperate/boreal; HR: wet places: mostly swamps, eutrophic marshes, usually on wet soils rich in organic debris; also beaver houses; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 599-600); Epstein and Kulman (1990) – seasonal activity; Larochelle and Larivière (2003: 28) – bionomics]
– Pronotum (Fig. 358) with posterior angle rounded

40 [39]. Elytra brownish to reddish, paler than forebody; margins of pronotum narrowly but quite distinctly paler than disc [8.0-9.5 mm; pronotum with short linear depres-

sion medial to basal impression (like *A. mutatum* but usually shorter) in most specimens; elytral microsculpture irregularly isodiametric to slightly transverse] ..............

.......................................................... *A. (Olisarei) tenue* (LeConte)

[**BC**: endemic; **BZ**: temperate/boreal; **HR**: wet places: mostly swamps, bogs, eutrophic marshes, occasionally beaver houses; **SA**: [spring breeder]; **OC**: LF++++; **RA++**; **DP**: wings (+); flight (+); **GD**: ME NB NH NS PE QC VT; **References**: Lindroth (1966: 610); Larochelle and Larivière (2003: 37-38) – bionomics]

– Elytra brownish-black to black, not or barely paler than forebody; margins of pronotum not or barely, indistinctly paler than disc........................................... 41

**41 [40].** Pronotum with linear depression along basal edge medial to basal impression (Fig. 359). Elytral microsculpture irregularly isodiametric to slightly transverse, only in part moderately transverse [7.4-8.6 mm; tibia black in most specimens; pronotum bulky and elytra proportionally short] .......................................................... 41

.......................................................... *A. (Olisarei) mutatum* (Gemminger & Harold)

[**BC**: endemic; **BZ**: temperate/boreal; **HR**: wet places: sphagnum and peat bogs, swamps; also on edges of ponds and lakes; **SA**: [spring breeder]; **OC**: LF++++; **RA++**; **DP**: wings (+); flight (+); **GD**: LB ME NB NF NH NS PE QC VT; **References**: Lindroth (1955b: 124); Lindroth (1966: 601); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 30) – bionomics]

– Pronotum without linear depression along basal edge medial to basal impression. Elytral microsculpture markedly transverse, only in part moderately transverse.... 42

**42 [41].** Pronotum proportionally longer (LP/LE = 0.39-0.42; mean = 0.41; n = 24). Body length on average longer, 8.8 mm or more but over 9.1 mm in most specimens. Subbasal ridge of elytron markedly prominent and somewhat angulate at level of humerus (Fig. 360) [8.9-10.3 mm] ........................................... 42

.......................................................... *A. (Olisarei) trigeminum* Lindroth

[**BC**: endemic; **BZ**: temperate/boreal; **HR**: wet places: edges of brooks, ponds, and marshes, swamps, often on clayish soils, under alders and willows; **SA**: [spring breeder]; **OC**: LF++++; **RA++**; **DP**: wings (+); flight (+); **GD**: ME NB NH NS PE QC VT; **References**: Lindroth (1966: 600-601); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 39) – bionomics]

– Pronotum proportionally smaller (LP/LE = 0.35-0.39; mean = 0.37; n = 20). Body length smaller, 9.1 mm or less but under 8.6 mm in most specimens. Subbasal ridge of elytron only slightly prominent and more or less rounded at level of humerus in most specimens (Fig. 361) [7.6-9.1 mm] ................................. 42

.......................................................... *A. (Olisarei) fidele* Casey

[**BC**: endemic; **BZ**: temperate/boreal; **HR**: wet places: near ponds, marshes, brooks, usually in shady places; occasionally in beaver houses; **SA**: [spring breeder]; **OC**: LF++++; **RA++**; **DP**: wings (+); flight (+); **GD**: ME NB NH NS QC VT; **References**: Lindroth (1966: 601-603); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 25-26) – bionomics]

**43 [38].** Antennomere 1 and elytral epipleuron dark, brownish-black to black. Elytra as dark as forebody.............................................................. 43

– Antennomere 1 underneath and elytral epipleuron at least in part pale, yellowish to reddish-brown. Elytra somewhat paler than forebody or at least than head ....... 45
44 [43]. Upper surface coal black, without metallic lustre. Pronotum (Fig. 362) with microsculpture meshes more or less impressed near median sulcus; sides widely rounded in basal half; posterior angle rounded [7.0-10.5 mm] .... A. (Olisares) corvus (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of marshes, pools, sloughs;
SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: QC VT; References: Lindroth (1966: 603); Larochelle and Larivière (2003: 20) – bionomics]

45 [43]. Pronotum proportionally longer (LP/LE = 0.38-0.40; n = 20), with basal impression shallow, often with small convexity; base in most specimens thickened and somewhat raised laterally behind impression, suggesting a bead. Elytral micro-
sculpture irregularly isodiametric to slightly transverse. Last abdominal sternum of female with three or four pairs of subapical setae [8.0-11.0 mm; rather commonly collected].................................................................A. (Olisares) harrisii LeConte

| BC: endemic; BZ: temperate/boreal; HR: wet places: edges of marshes, swamps, sphagnum bogs, marshy edges of rivers, usually on wet soils rich in organic debris; SA: [spring breeder]; OC: LF+++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 609); Larochelle and Lariviére (2003: 27) – bionomics |

– Pronotum proportionally smaller (LP/LE = 0.32-0.36; n = 20), with basal impression deep, without convexity in most specimens; base not thickened and raised behind impression. Elytral microsculpture isodiametric, only in part irregularly isodiametric. Last abdominal sternum of female with two pairs of subapical setae [two rarely collected species in the northeast] ..........................................................46

46 [48]. Pronotum (Fig. 364) with posterior angle obtusely denticulate (reminiscent of A. melanarium for many specimens) [8.0-9.0 mm; not found along the east coast]............... .................................................................A. (Olisares) moerens Dejean

| BC: endemic; BZ: temperate; HR: wet places: swamps, marshes; SA: [spring breeder]; OC: LF++; RA+; DP: wings (+); flight (+); GD: ME QC VT; References: Lindroth (1966: 610-611); Larochelle and Lariviére (2003: 29) – bionomics |

Pronotum (Fig. 365) with posterior angle rounded [6.5-8.5 mm; found only in provinces and states bordered the east coast]..................

\( A. (Olisares)\) deceptivum (LeConte) \\
[BC: endemic; BZ: temperate; HR: [wet places]; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME NH NS; References: Lindroth (1966: 611); Larochelle and Larivière (2003: 22) – bionomics]

subsection B

36 [35]. Pronotum with linear depression along basal edge medial to basal impression (Fig. 359) [elytral interval 5 without longitudinal impression toward apex]........37

37 [36]. Elytra black, of same colour as forebody. Lateral margins of pronotum not paler than disc [7.4-8.6 mm; disc of pronotum convex; pronotum bulky and elytra proportionally short; elytra with slightly to moderately transverse microsculpture] ........

.......................................................................................... \( A. (Olisares)\) mutatum (Gemminger & Harold) \\
[BC: endemic; BZ: temperate/boreal; HR: wet places: sphennum and peat bogs, swamps; also on edges of ponds and lakes; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1955b: 124); Lindroth (1966: 601); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 30) – bionomics]

38 [36]. Elytra brownish, quite distinctly paler than disc of pronotum and head. Lateral margins of pronotum paler than disc [8.0-9.5 mm; disc of pronotum more or less convex]................................................. \( A. (Olisares)\) tenue (LeConte) [in part] \\
[BC: endemic; BZ: temperate/boreal; HR: wet places: mostly swamps, bogs, eutrophic marshes, occasionally beaver houses; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 610); Larochelle and Larivière (2003: 37-38) – bionomics]

39 [38]. Elytral microsculpture markedly transverse or striate, only in part moderately transverse in some specimens [elytra reddish-black to black, not or barely paler than forebody; interval 5 without longitudinal impression toward apex; basal impression of pronotum deep]..............................39

– Elytral microsculpture isodiametric or slightly transverse, in part moderately transverse ..................................................................................................................41

38 [36]. Pronotum (Fig. 357) with posterior angle obtusely denticulate; basal impression relatively punctate and/or coriaceous, with convexity in most specimens [8.0-10.0 mm]........................................................................................................ \( A. (Olisares)\) melanarium Dejean \\
[BC: endemic; BZ: temperate/boreal; HR: wet places: mostly swamps, eutrophic marshes, usually on wet soils rich in organic debris; also beaver houses; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 599-600); Epstein and Kulman (1990) – seasonal activity; Larochelle and Larivière (2003: 28) – bionomics]

– Pronotum with posterior angle rounded, though with a minute jag in some specimens; basal impression relatively smooth, without convexity in many specimens........40
40 [39]. Pronotum proportionally longer (LP/LE = 0.39-0.42; mean = 0.41; n = 28). Body length on average longer, 8.8 mm or more but over 9.1 mm in most specimens. Subbasal ridge of elytron markedly prominent and somewhat angulate at level of humerus (Fig. 360) [8.9-10.3 mm] .............................. A. (Olisares) trigeminum Lindroth

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of brooks, ponds, and marshes, swamps, often on clayish soils, under alders and willows; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 600-601); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 39) – bionomics]

– Pronotum proportionally smaller (LP/LE = 0.35-0.39; mean = 0.37; n = 22). Body length smaller, 9.1 mm or less but below 8.6 mm in most specimens. Subbasal ridge of elytron only slightly prominent and more or less rounded at level of humerus in most specimens (Fig. 361) [7.6-9.1 mm] .............................. A. (Olisares) fidele Casey

[BC: endemic; BZ: temperate/boreal; HR: wet places: near ponds, marshes, brooks, usually in shady places; occasionally in beaver houses; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1966: 601-603); Larochelle (1975c: 205) – habitat; Larochelle and Larivière (2003: 25-26) – bionomics]

41 [38]. Elytra reddish-black to black, not or barely paler than forebody.......................42

– Elytra brown to reddish-brown at least in part quite distinctly paler than disc of pronotum and/or head ..........................................................44

42 [41]. Pronotum (Fig. 356) with basal bead clearly outlined. Elytral interval 5 without longitudinal impression toward apex [7.0-9.2 mm; basal impression of pronotum with convexity in most specimens] .............................. A. (Olisares) affine Kirby

[BC: endemic; BZ: temperate/boreal/arctic; HR: wet places: mostly swamps, bogs, eutrophic marshes, usually on muddy or peaty soils; SA: [spring breeder]; OC: LF++++; RA+++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE PM QC VT; References: Lindroth (1955b: 123-124, as A. carbo); Lindroth (1966: 603-605); Liebherr (1994: 29-30); Larochelle and Larivière (2003: 18) – bionomics]

– Pronotum (Figs 362, 363) with basal bead not outlined, although base behind impression thickened in most specimens. Elytral interval 5 with longitudinal impression toward apex, though very shallow (some specimens of A. metallescens)..................43

43 [42]. Upper surface coal black, without metallic lustre. Pronotum (Fig. 362) with microsculpture meshes more or less impressed near median sulcus; sides widely rounded in basal half; posterior angle rounded [7.0-10.5 mm] ............... A. (Olisares) corvus (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of marshes, pools, sloughs; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: QC VT; References: Lindroth (1966: 603); Larochelle and Larivière (2003: 20) – bionomics]

– Upper surface black with brassy, rarely greenish or bluish lustre. Pronotum (Fig. 363) with microsculpture meshes well impressed even near median sulcus; sides narrowly rounded to more or less rectilinearly convergent; posterior angle markedly obtuse, but not quite rounded [7.0-9.5 mm] ............... A. (Olisares) metallescens (LeConte)

[BC: endemic; BZ: temperate/boreal; HR: wet places: eutrophic marshes, swamps, bogs, ponds, usually on wet soils rich in organic debris; SA: [spring breeder]; OC:
SECTION A – ADULTS | COMMENTS AND KEYS TO SPECIES

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LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE PM QC

VT; References: Lindroth (1955b: 122-123); Lindroth (1966: 605, 608); Larochelle
and Larivière (2003: 28-29) – bionomics

44 [41]. Pronotum (Fig. 355) with basal bead well defined laterally. Body length smaller, less
than 7.6 mm in the vast majority of specimens [6.5-7.9 mm; elytral interval 5 with
out or with very faint longitudinal impression toward apex; elytral microsculpture
isodiametric]........................................... A. (Olisares) propinquum (Gemminger & Harold)

[BC: endemic; BZ: temperate/boreal; HR: wet places: mainly eutrophic marsh-
es, swamps, usually on wet soils rich in organic debris; SA: [spring breeder]; OC:
LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC

VT; References: Lindroth (1955b: 124-125); Lindroth (1966: 611-612); Larochelle
and Larivière (2003: 33-34) – bionomics]

– Pronotum without defined basal bead, though base somewhat thickened behind
basal impression in some specimens, particularly those of A. harrisii (with elytral
microsculpture meshes transverse, only in part irregularly isodiametric). Body
length larger, more than 7.6 mm though usually greater than 8.0 mm .................45

45 [44]. Elytral interval 5 without or with very faint longitudinal impression toward apex. Pro-
notum with short, linear depression along basal edge medial to basal impression (as
in A. mutatum but usually shorter) in most specimens [8.0-9.5 mm; pronotum with
lateral depression paler than disc, defected toward posterior angles; basal impression
relatively deep; elytral microsculpture slightly to moderately transverse, only in part
irregularly isodiametric in some specimens]........... A. (Olisares) tenue (LeConte) [in part]

[BC: endemic; BZ: temperate/boreal; HR: wet places: mostly swamps, bogs, eutroph-
ic marshes, occasionally beaver houses; SA: [spring breeder]; OC: LF++++; RA++;
DP: wings (+); flight (+); GD: ME NB NH NS PE QC

VT; References: Lindroth (1966: 610); Larochelle and Larivière (2003: 37-38) – bionomics]

– Elytral interval 5 with longitudinal impression toward apex. Pronotum without
linear depression medial to basal impression ..............................................................46

46 [45]. Pronotum proportionally longer (LP/LE = 0.38-0.40; n = 20), with basal impression
shallow, often with small convexity; base in most specimens thickened and
somewhat raised, suggesting a bead behind basal impression. Elytral microsculp-
ture irregularly isodiametric to slightly transverse. Last abdominal sternum of fe-
male with three or four pairs of subapical setae [8.0-11.0 mm; rather commonly
collected].................................................................................................................. A. (Olisares) harrisii LeConte

[BC: endemic; BZ: temperate/boreal; HR: wet places: edges of marshes, swamps,
sphagnum bogs, marshy edges of rivers, usually on wet soils rich in organic debris;
SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME
NB NH NS PE QC

VT; References: Lindroth (1966: 609); Larochelle and Larivière
(2003: 27) – bionomics]

– Pronotum proportionally smaller (LP/LE = 0.32-0.36; n = 20), with basal impression
depth, without convexity in most specimens; base not thickened and raised be-
hind basal impression. Elytral microsculpture isodiametric, only in part irregularly
isodiametric. Last abdominal sternum of female with two pairs of subapical setae
[two quite rarely collected species in the northeast]..................................................47
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

47 [46]. Pronotum (Fig. 364) with posterior angle obtusely denticulate (remaining _A. mel-анarium_ for many specimens) [8.0-9.0 mm; not found along the east coast] .......... .............................. _A. (Olisares) moerens_ Dejean

  [BC: endemic; BZ: temperate; HR: wet places; swamps, marshes; SA: [spring breeder];
  OC: LF++; RA+; DP: wings (+); flight (+); GD: ME QC VT; References: Lindroth
  (1966: 610-611); Larochelle and Larivière (2003: 29) – bionomics]

– Pronotum (Fig. 365) with posterior angle rounded [7.6-8.5 mm; found only in prov-

  inces and states bordered the east coast] ................. _A. (Olisares) deceptivum_ (LeConte)

  [BC: endemic; BZ: temperate; HR: [wet places]; SA: [spring breeder]; OC: LF++;
  RA++; DP: wings (+); flight (-); GD: ME NH NS; References: Lindroth (1966: 611);
  Larochelle and Larivière (2003: 22) – bionomics]

GENUS _PLATYNUX_ BONELLI, 1810 [ _Agonum_ sensu Lindroth, in part]

Northeastern species of _Platynus_ are quite easily distinguished from the other Platynini in the region by their relatively larger size (8.5-15.5 mm), absence of metallic lustre, and presence of a transverse impression on the vertex.

Males are easily separated from females by having the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

List of northeastern species of _Platynus_

<table>
<thead>
<tr>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>P. cincticollis</em> (Say, 1823)</td>
</tr>
<tr>
<td><em>P. decens</em> (Say, 1823)</td>
</tr>
<tr>
<td><em>P. hypolithos</em> (Say, 1823)</td>
</tr>
<tr>
<td><em>P. indecens</em> Liebherr &amp; Will, 1996</td>
</tr>
<tr>
<td><em>P. mannerheimii</em> (Dejean, 1828)</td>
</tr>
<tr>
<td><em>P. opaculus</em> LeConte, 1863</td>
</tr>
<tr>
<td><em>P. parmarginatus</em> Hamilton, 1893</td>
</tr>
<tr>
<td><em>P. tenuicollis</em> (LeConte, 1846)</td>
</tr>
</tbody>
</table>

Key to northeastern species of _Platynus_

1. Tarsomere 5 of each leg with setae underneath.................................................. 2

  – Tarsomere 5 of each leg without setae underneath........................................... 3

2 [1]. Leg reddish. Elytral intervals 1, 3, 5, and 7 with numerous setae, many of them touching corresponding medial striae [13.5-15.5 mm; Plate 56] ....... _P. ( _Batenus_ ) hypolithos_ (Say)

  [BC: endemic; BZ: temperate; HR: covered places: in leaf litter along clearings in
  mixed forests; occasionally marshes; SA: ?; OC: LF+; RA+; DP: wings (-); GD: VT;
  References: Lindroth (1966: 645-646); Bélanger (1979) – habitat; Larochelle and Lari-
  vière (2003: 91) – bionomics, as _Batenus angustatus hypolithos_]

– Leg brownish-black. Elytral interval 3 with three setae, intervals 1, 5 and 7 without

  setae [12.5-13.5 mm]............................................. _P. ( _Platynus_ ) indecens_ Liebherr & Will

  [BC: endemic; BZ: temperate; HR: wet places: sphagnum bogs; SA: [spring breeder];
  OC: LF++; RA+; DP: wings (+); flight (-); GD: ME NB NS QC VT; References:

3 [1]. Meso- and metatarsomeres 1-3 each with longitudinal keel on dorsal side [9.5-13.0 mm;

  basal impression of pronotum impunctate; elytral microsculpture slightly to markedly transverse, in part irregularly isodiametric in some specimens; interval 3 with three (exceptionally four on one side) discal setae]............... _P. ( _Platynus_ ) tenuicollis_ (LeConte)
[BC: endemic; BZ: temperate/boreal; HR: covered/wet places: forests, along shady margins of brooks and streams, usually on wet gravelly or gravelly-stony soils; SA: [spring breeder]; OC: LF+++; RA+/++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Lindroth (1966: 641-643); Larochelle and Larivière (2003: 374) – habitat; Larochelle and Larivière (2003: 374) – bionomics]  
– Meso- and metatarsomeres 1-3 without longitudinal keel on dorsal side ................. 4  

4 [3]. Elytral microsculpture moderately transverse to striate [8.5-10.3 mm; frons without spots; basal impression of pronotum punctate (versus P. tenuicollis); elytral interval 3 with four (exceptionally three on one side) discal setae] ....... P. (Platynus) parmarginatus Hamilton  
[BC: endemic; BZ: temperate; HR: covered/wet places: forests, along margins of streams and brooks; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (+); GD: VT; References: Lindroth (1966: 641); Larochelle and Larivière (2003: 373) – bionomics]  
– Elytral microsculpture isodiametric or irregularly isodiametric ................................ 5  

5 [4]. Frons with two reddish spots. Pronotum (Figs 366, 367) with posterior angle rounded, though with a strong jag in P. cincticollis ................................................................. 6  
– Frons without spots. Pronotum (Fig. 368) with posterior angle acute or right............ 7  

6 [5]. Pronotum (Fig. 366) without or with very small jag at posterior angle. Metasternum shorter, length behind mesocoxa shorter than longitudinal diameter of mesocoxal
cavity. Antennomeres 1-3 black (except at extremities). Lateral depression of pronotum not paler than disc [11.0-13.2 mm; Plate 56] ......................................................

........................................................................................................
P. (Batenus) mannerheimii (Dejean)  
[BC: holarctic; BZ: temperate/boreal/arctic; HR: wet/covered places: bogs, Carex marshes, swampy areas in forests, mainly coniferous ones; SA: [spring breeder]; OC: LF++++; RA+++; DP: flight (+); GD: NB NH QC VT; References: Lindroth (1955b: 119-120, as Agonum mannerheimi stygicum); Lindroth (1966: 634-636); Larochelle and Larivière (2003: 92) – bionomics]

– Pronotum (Fig. 367) with distinct jag at posterior angle. Metasternum longer, length behind mesocoxa longer than longitudinal diameter of mesocoval cavity. Antennomeres 1-3 reddish to reddish-black. Lateral depression of pronotum paler than disc [10.0-11.5 mm] .................................................................
P. (Batenus) cincticollis (Say)  
[BC: endemic; BZ: temperate; HR: covered places: mixed forests, under stones, under bark of fallen trees, under logs; also on muddy soils in stream bed, around swamps; SA: [spring breeder]; OC: LF++++; RA++; DP: flight (+); GD: NH NS QC VT; References: Lindroth (1966: 640); Larochelle and Larivière (2003: 91-92) – bionomics]

7 [8]. Pronotum without evident microsculpture meshes. Elytra proportionally shorter (LE/LP = 2.6-2.9; n = 12), more or less shiny and oval; intervals convex [9-14 mm; commonly collected species; Plate 56] ......................................................P. (Platynus) decens (Say)  
[BC: endemic; BZ: temperate/boreal/arctic/alpine; HR: covered places: forests, often under loose bark of fallen trees or running on trunks of deciduous trees, under logs, rocks on rather wet places; also shady river banks, bogs, marshes; SA: spring breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1955b: 118-119, as Agonum sinuatum); Davidson and Bell (1977) – habitat; Larochelle and Larivière (2003: 372) – bionomics]

– Pronotum with microsculpture, meshes particularly impressed over lateral margin. Elytra proportionally longer (LE/LP = 3.4-3.8; n = 12), dull, more or less parallel-sided; intervals flat or only slightly convex [11.0-13.5 mm; rarely collected species]. .................................................................P. (Platynus) opaculus LeConte  
[BC: endemic; BZ: temperate; HR: [covered places]; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: NB NH QC VT; References: Lindroth (1955b: 119-120, as Agonum sinuatum); Davidson and Bell (1977) – habitat; Larochelle and Larivière (2003: 372) – bionomics]

TRIBE ATRANINI

GENUS ATRANUS LeConte, 1847

The sole North American species of this genus, A. pubescens (Dejean, 1828) [Plate 41], has a quite distinctive facies. Superficially, the species looks like Oxypselaphus pusillus with which it shares a pubescent body but differs by several character states, including a bifid mentum tooth and distinct microsculpture meshes on the dorsal surface.

Males have the protarsomeres 1-3 expanded and covered underneath with spongy adhesive setae; in addition, they have only two setae (four in females) near the apical edge of the last abdominal sternum.
Tribe Perigonini

Genus Perigona Laporte, 1835
Because of their small size (2.0-2.6 mm), the two northeastern species of Perigona could be confused mainly with members of Trechus, Bembidion, Tachyina, and some Stenolophina. Adults of Perigona are easily distinguished from those of these groups by having the stria 8 sulciform in posterior third.

Males of P. nigriceps (not checked on P. pallipennis) have seriate adhesive setae at the extremity of the protarsomeres 1-3.

List of northeastern species of Perigona

P. nigriceps (Dejean, 1831)  
P. pallipennis (LeConte, 1853)

Key to northeastern species of Perigona

1. Eye markedly protruding (Fig. 369). Proepisternum and metepisternum with strong conelike microsculpture [2.0-2.5 mm; Plate 57] ......................... P. nigriceps (Dejean)  
   [BC: exotic (< 1853); BZ: temperate; HR: wet places: margins of ponds, lakes, gardens;  
   SA: ?; OC: LF+++; RA++; DP: flight (+); GD: ME NB NH NS QC VT;  

   – Eye only slightly protruding (Fig. 370). Proepisternum and metepisternum with faint transverse microsculpture [2.2-2.6 mm] ......................... P. pallipennis (LeConte)  
   [BC: endemic; BZ: temperate; HR: covered places: rotting sawdust, sawmills, open woodlands;  
   SA: ?; OC: LF++; RA++; DP: wings (+); flight (-); GD: ME (Belgrade, Kennebec Co.);  
   References: Bousquet (1987a: 126-127); Larochelle and Larivière (2003: 368) – bionomics]

TRIBE ODACANTHINI

GENUS COLLJURIS DEGEER, 1774
The sole northeastern species of this genus, C. pensylvanica (Linné, 1767) [Plate 57], is immediately recognized on its facies, particularly the elongate, narrow pronotum.

Males have the protarsomeres 1-3 with seriate adhesive setae underneath (only near the apex on tarsomere 1) and two subapical setae (four in females) on the last abdominal sternum.

[BC: endemic; BZ: temperate; HR: open places: mainly cultivated and vacant fields, occasionally on field corn foliage; SA: [spring breeder]; OC: LF+++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1969a: 1007-1008); Larochelle and Larivière (2003: 211-212) – bionomics]

TRIBE CYCLOSOMINI

GENUS TETRAGONODERUS DEJEAN, 1829
This genus contains a single species, T. fasciatus (Haldeman, 1843) [Plate 57], in the northeast. Because of its small size (4.5-5.0 mm) and variegated elytra, the species is more readily confused for a Bembidion. It differs from bembidines by many character states, including elongate apical maxillary palpmere and obliquely truncate elytra.

Males have the protarsomeres 1-3 slightly expanded and with seriate adhesive setae underneath. In addition, the apical edge of the last abdominal sternum has a short but deep median emargination.

[BC: endemic; BZ: temperate; HR: flooded places: river and lake shores, usually on sandy soils; occasionally in corn fields and on corn foliage; SA: [spring breeder]; OC: LF++; RA++/+++; DP: wings (+); flight (+); GD: NH QC VT; References: Lindroth (1969a: 1010-1012); Larochelle and Larivière (2003: 498-499) – bionomics]

TRIBE LEBIINI

KEY TO GENERA

1. Elytral intervals with pubescence [seven species: 7.5-16.0 mm; Plates 58, 59] .........
   .................................................................................................................. Cymindis Latreille, in part (subgenus Cymindis s.str.)
   – Elytral intervals without pubescence ........................................................................... 2

2 [1]. Sutural field of elytron expanded at apex (Fig. 57) [15 species: 2.5-10.5 mm; pronotum with posterior edge lobate medially; Plates 61-64]......................Lebia Latreille
   – Sutural field of elytron not expanded at apex (Fig. 58) ................................................ 3

3 [2]. Tarsomere 4 of each leg deeply cleft for more than half its length (Fig. 61)..........4
   – Tarsomere 4 of each leg slightly emarginate or cleft for less than half its length (Fig. 62).................................................................................................................. 5

4 [3]. Elytra with strong bluish, green or violaceous metallic lustre. Elytron with subbasal ridge complete, reaching level of stria 1. Glossal sclerite with two setae along anterior edge [two species: 7.0-9.0 mm; Plate 65]................................. Calleida Latreille
Elytra without metallic lustre. Elytron with subbasal ridge incomplete, reaching level of stria 4. Glossal sclerite with four setae along anterior edge [one species: 6.5-7.5 mm; Plate 65].

**5 [3]**

Body length less than 4.5 mm...

**6**

Body length more than 5 mm...

**6 [5]**

Apical labial palpomere securiform, its apical edge much wider than apical edge of apical maxillary palpomere [one species: 3.0-3.5 mm; elytron brownish-black to black with large, brownish-yellow humeral macula obliquely prolonged posteriorly; Plate 60].

Apical labial palpomere more or less fusiform, its apical edge similar in width to apical edge of apical maxillary palpomere...

**7 [6]**

Mentum with median tooth (Fig. 56). Suture between mentum and submentum distinct (Fig. 56).

Mentum without tooth (Fig. 55). Suture between mentum and submentum indistinct (Fig. 55).

**8 [7]**

Tarsal claws smooth (Fig. 50). Antennomere 3 sparsely pubescent on apical half. Apical edge of mentum tooth entire, not notched. Elytron with small setae near apical edge [two species: 3.0-4.4 mm; Plate 60].

Tarsal claws denticulate (as in Fig. 49). Antennomere 3 glabrous on apical half (except for usual apical setae). Apical edge of mentum tooth notched at middle. Elytron without setae near apical edge [one species: 2.7-3.5 mm; Plate 61].

**9 [7]**

Body uniformly dark dorsally, brownish-black to black. Pronotum with posterior edge lobate medially. Elytral interval 3 with two setae [one species: 3.0-3.8 mm; Plate 61].

Pronotum and elytra pale, yellowish, head darker. Pronotum with posterior edge truncate, not lobate medially. Elytral interval 3 without setae [one species, *P. atriceps* (LeConte), 3.3-3.8 mm, not yet found in the northeast but recorded from Connecticut].

**10 [8]**

Elytral interval 3 without discal setae; parascutellar seta absent [two species: 5.3-7.8 mm; Plate 60].

Elytral interval 3 with discal setae; parascutellar seta present...

**11 [10]**

Apical labial palpomere dilated apically, somewhat triangularly shaped. Pronotum with posterior edge lobate medially (Fig. 63) [one species, *A. sinuatus* (Say), 6.5-7.7 mm, not yet found in the northeast but recorded from Connecticut].

Apical labial palpomere not dilated apically, fusiform. Pronotum with posterior edge truncate, not lobate medially (Fig. 64).

**12 [11]**

Mentum without tooth. Elytra with strong, greenish, or bluish metallic lustre. Mesotibia of male with preapical notch on medial side. Body length less than 7 mm.
[one species, *C. aerata* Dejean, 5.5-6.5 mm, not yet found in the northeast but re-
recorded from Connecticut] ........................................................................... *Coptodera* Dejean

– Mentum with median tooth. Elytra without metallic lustre. Mesotibia of male
without preapical notch. Body length more than 8 mm [two species: 8.5-10.5 mm;
Plate 58] ................................... *Cymindis* Latreille, in part (subgenus *Pinacodera* Schaum)

**Subtribe Cymindidina**

**Genus Cymindis** Latreille, 1806

Members of this genus are relatively easy to recognize, at least by experience students, on their
facies alone. This is particularly true for those of the subgenus *Cymindis s.str.* which have the
dorsal surface of the body, the antennomeres, and the dorsal surface of the tarsomeres pubes-
cent. For inexperienced scholars, the use of the key to genera is recommended.

Males of species belonging to the subgenus *Cymindis s.str.* have the protarsomeres 1-3
expanded and with seriate adhesive setae underneath. In members of the subgenus *Pinacodera*,
the protarsomeres 1-4 and the mesotarsomeres 1-3 are slightly expanded and with seriate ad-
hesive setae underneath. Males of some species (e.g., *C. americana*, *C. borealis*) have a shallow
but distinct median emargination on the apical edge of the last abdominal sternum. In others
species, the emargination is less distinct or even indistinct.

**List of northeastern species of Cymindis**

*C. americana* Dejean, 1826
*C. pilosa* Say, 1823
*C. borealis* LeConte, 1863
*C. cribricollis* Dejean, 1831
*C. limbata* Dejean, 1831
*C. unicolor* Kirby, 1837
*C. neglecta* Haldeman, 1843

**Key to northeastern species of Cymindis**

1. Upper surface without pubescence........................................................................2
– Upper surface with extensive pubescence.................................................................3

2 [1]. Elytron at level of humerus with evident pale spot extending from lateral edge
to interval 6 or 5. Antenna more elongate (length/width of antennomere 9 =
3.5-4.0). Forebody of female without evident microsculpture meshes [8.5-10.5 mm;
Plate 58] ........................................................................... *C. (Pinacodera) limbata* Dejean

[BC: endemic; BZ: temperate; HR: covered places: on trees, under loose bark of
standing and fallen trees, in leaf litter; SA: ?; OC: LF++; RA++; DP: wings (+);
flight (+); GD: ME NB NH NS QC VT; References: Lindroth (1969a: 1067-1068);
Laroche and Larivière (2003: 225-226) – bionomics]

– Elytron at level of humerus without or with obscure pale spot, usually less ex-
panded. Antenna less elongate (length/width of antennomere 9 = 2.5-3.0). Fore-
body of female with faint but usually evident microsculpture meshes [8.8-10.5 mm;
Plate 58] ........................................................................... *C. (Pinacodera) platicollis* (Say)

[BC: endemic; BZ: temperate; HR: covered places: on trees, under loose bark of
fallen or standing trees, in leaf litter; SA: ?; OC: LF++; RA++; DP: wings (+); flight
3 [3]. Subbasal ridge of elytron complete, reaching level of stria 1 .............................. 4
– Subbasal ridge of elytron incomplete, reaching level of stria 3 or 4 ..................... 5

4 [3]. Elytron with large, well-defined macula near humerus. Lateral depression of pronotum narrow, not distinctly paler than disc. Last abdominal sternum of male with short but deep median notch along apical edge. Body length 10.5 mm or more [10.5-16.0 mm; Plate 58].................................................. C. (Cymindis) americana Dejean

[BC: endemic; BZ: temperate; HR: covered/open places: forest edges and clearings, adjacent fields and sand pits; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (- +); flight (-); GD: NH QC VT; References: Lindroth (1969a: 1079, 1082); Larochelle (1972c) – wing dimorphism; Levesque et al. (1979) – seasonal activity; Larochelle and Larivière (2003: 223) – bionomics]

– Elytron without macula near humerus, at most with entire base slightly paler. Lateral depression of pronotum wide and distinctly paler than disc. Last abdominal sternum of male without median notch along apical edge. Body length less than 10.5 mm in most specimens [8.4-11.0 mm; clypeus without or with few (less than five) small setae (versus C. unicolor)]; Plate 59] ........................ C. (Cymindis) cribricollis Dejean

[BC: endemic; BZ: temperate/boreal/arctic/[alpine]; HR: open places: gravel and sand pits, moraines, fields; forest edges and clearings, occasionally bogs; SA: [autumn breeder]; OC: LF++++; RA++; DP: wings (- +); flight (-); GD: LB ME NB NF NH NS PM QC VT; References: Lindroth (1955b: 131-132); Lindroth (1969a: 1075-1077); Larochelle (1972c) – wing dimorphism; Levesque et al. (1979) – seasonal activity; Larochelle and Larivière (2003: 224-225) – bionomics]

5 [3]. Upper surface with longer setae, most of those on frons at least half as long as supraorbital setae. Elytron more or less uniformly coloured. Clypeus with several small setae [9.5-11.0 mm; Plate 59].................................................. C. (Cymindis) pilosa Say

[BC: endemic; BZ: temperate; HR: open places: sand pits, gravel pits, roadsides, hills, fields, usually on sandy soils; SA: [autumn breeder]; OC: LF++; RA++; DP: wings (-+); flight (+); GD: NH QC VT; References: Lindroth (1969a: 1083); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 226-227) – bionomics]

– Upper surface with shorter setae, those on frons less than half length of supraorbital setae. Elytron with base quite distinctly paler or with pale macula near humerus. Clypeus without or with very few small setae, except in C. unicolor ...................... 6

6 [5]. Abdominal sterna 1-3 markedly shiny near lateral edges, without trace of microsculpture meshes and without or with very few punctures or scratches. Elytral microsculpture meshes absent or poorly impressed at least over medial intervals in anterior half in most specimens. Pubescence on each elytral interval consisting of a single row of setae [7.5-9.0 mm; elytron without humeral spot; pronotum narrow; side not reflexed; Plate 59].................................................. C. (Cymindis) neglecta Haldeman

[BC: endemic; BZ: temperate; HR: covered places: deciduous and mixed forests, often in leaf litter on moderately moist, usually gravelly soils; SA: [autumn breeder];
Abdominal sterna 1-3 more or less dull near lateral edges, with distinct microsculpture meshes and with several punctures (bearing small setae) or scratches (at least on one of the sterna). Elytral microsculpture well impressed on all intervals in most specimens. Pubescence on each elytral interval consisting of double rows of setae at least in part .................................................................7

7 [6]. Elytron without defined macula near humerus. Pronotum with one mid-lateral seta on each side. Clypeus with several small setae [8.0-9.5 mm; Plate 59] .......................[BC: endemic; BZ: boreal/arctic/alpine; HR: open places: moraines, meadows, usually on dry, gravelly soils; SA: autumn breeder; OC: LF++; RA++; DP: wings (-); GD: LB ME NF NH QC; References: Lindroth (1955b: 130-131); Lindroth (1969a: 1083, 1085); Shpeley and Ball (1999: 421-422); Larochelle and Larivière (2003: 228) – bionomics] C. (Cymindis) unicolor Kirby

8 [7]. Pronotum proportionally wider (WP/LP = 1.25-1.38; n=10), without or with poorly impressed microsculpture meshes only along lateral margins. Pronotum mainly reddish, paler than elytra [7.5-10.0 mm] .....................[BC: endemic; BZ: temperate; HR: open places: pastures, fields, gravel pits; SA: autumn breeder; OC: LF+; RA2; DP: wings (-+); flight (+); GD: QC; References: Lindroth (1969a: 1077-1078); Larochelle and Larivière (2003: 227) – bionomics; Note: this western species is known from a single specimen in the northeast collected by Lindroth in 1956; the species has not even been recorded yet from Ontario] C. (Cymindis) planipennis LeConte

– Pronotum proportionally narrower (WP/LP = 1.05-1.19; n=20), with microsculpture meshes over most of surface. Pronotum mainly brownish-black to black, not really paler than elytra [7.5-10.0 mm; Plate 58] .............[BC: endemic; BZ: temperate/boreal; HR: open places: sand and gravel pits, roadsides, fields, hills, usually on dry sandy soils; SA: autumn breeder; OC: LF++/+++; RA++; DP: wings (-); flight (-); GD: ME NB NF NH NS QC VT; References: Lindroth (1955b: 132); Lindroth (1969a: 1082); Larochelle and Larivière (1975c: 206) – habitat; Larochelle (1977b) – wing dimorphism; Larochelle and Larivière (2003: 224) – bionomics]

SUBTRIBE DROMIUSINA

GENUS DROMIUS BONELLI, 1810

The northeastern species of this genus can be recognized on their facies alone, particularly their flat elytra, translucent lateral margins of pronotum, and denticulate claws.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath. In D. piceus (not checked in D. fenestratus) the males have two or three pairs of setae near the apical edge of the last abdominal sternum while females have four or five pairs of setae.

List of northeastern species of Dromius

D. fenestratus (Fabricius, 1794) D. piceus Dejean, 1831
Key to northeastern species of *Dromius*

1. Elytron with oval, yellowish medial spot. Side of pronotum with long sinuation in basal half [5.3-6.5 mm] .................................................................................. *D. fenestratus* (Fabricius)  
   
   [BC: exotic (1994); BZ: temperate; HR: [covered places]: forests; SA: ?; OC: LF+; RA?: DP: wings (+); flight (+); GD: NF NS; References: Larochelle and Larivière (2003: 243) – bionomics]

   – Elytron without spot. Side of pronotum without sinuation in basal half [6.3-7.8 mm; Plate 60] .................................................................................. *D. piceus* Dejean  
   

**Genus Axinopalpus LeConte, 1849**

The single northeastern species of this genus, *A. bispallatus* (Dejean, 1825) [Plate 60], is readily distinguished by its small size (3.0-3.5 mm) and upper surface colour: the body is brownish-black to black and the elytron has a large pale humeral macula which is prolonged posteriorly to at least middle of elytra as an oblique vitta.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.  

[BC: endemic; BZ: temperate; HR: open places: vacant fields, sand pits, road sides, pastures, hills, usually on dry sandy soils; SA: ?; OC: LF+++; RA+++/DP: wings (+); flight (++); GD: ME NH QC VT; References: Lindroth (1969a: 1058); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 86) – bionomics]

**Genus Apristus Chaudoir, 1846**

The two northeastern species of this genus differ from those of *Microlestes* and *Syntomus* to which they resembled most by the small, non-bifid mentum tooth, the smooth claws, and by the relatively well-impressed medial elytral striae.

Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

**List of northeastern species of Apristus**

*A. latens* (LeConte, 1846)  
*A. subsulcatus* (Dejean, 1826)

**Key to northeastern species of Apristus**

1. Elytron with subbasal ridge reaching level of parascutellar seta (Fig. 371). Side of pronotum with shallow sinuation in basal half; posterior angle obtuse [3.0-4.2 mm; Plate 60] .................................................................................. *A. latens* (LeConte)  

   [BC: endemic; BZ: temperate; HR: flooded places: river and lake banks, usually on gravelly soils with no vegetation; SA: [spring breeder]; OC: LF++; RA; DP: wings (+); flight (++); GD: NB NH NS QC VT; References: Lindroth (1969a: 1046); Larochelle and Larivière (2003: 82) – bionomics; Note: the record from Quebec (Larochelle 1975a: 51) was based on a misidentified specimen of *A. subsulcatus* (personal observation)]

   – Elytron with subbasal ridge not reaching level of parascutellar seta (Fig. 372). Side of pronotum with deep sinuation in basal half; posterior angle acute, more rarely right [3.2-4.4 mm; Plate 60] .................................................................................. *A. subsulcatus* (Dejean)
The sole northeastern species of this genus, *M. linearis* (LeConte, 1851) [Plate 61], is most similar in appearance and size (3.0-3.8 mm) to members of *Apristus* and *Syntomus*. The adults differ from those of these two genera by its flatter body, the mentum without tooth, the suture between the mentum and submentum erased, and the elytral apex transversely truncate, without sinuation. Males have the protarsomeres 1-3 expanded and with seriate adhesive setae underneath.

**Genus Syntomus** Hope, 1838 [syn.: *Metabletus* Schmidt-Göbel, 1846]
The sole North American species of this genus, *S. americanus* (Dejean, 1831) [Plate 61], differs from those of *Apristus* and *Microlestes* to which it resembles most by having the antennomere 3 without distinct pubescence (though a few small setae are present) and the mentum with a bifid tooth. The claws are denticulate as in members of *Microlestes*.

Males have the protarsomeres 1-3 slightly expanded and with seriate adhesive setae underneath.

**Subtribe Leciina**

**Genus Lebia** Latreille, 1802
Members of this genus are distinct among northeastern carabids by their short and broad elytra, small forebody, basally lobate pronotum, and pectinate claws. Furthermore, many species have characteristic colour pattern on the elytra.
Males are easily recognized by the presence of a preapical notch on the medial side of the mesotibia, in having the protarsomeres 1-3 slightly expanded and with seriate adhesive setae underneath, and four setae, instead of six in females, near the apical edge of the last abdominal sternum. The extra pair of setae in females is located anterior to the two other pairs.

**List of northeastern species of Lebia**

- *L. analis* Dejean, 1825
- *L. atriventris* Say, 1823
- *L. fuscata* Dejean, 1825
- *L. grandis* Hentz, 1830
- *L. lobulata* LeConte, 1863
- *L. moesta* LeConte, 1850
- *L. ornata* Say, 1823
- *L. pectita* Horn, 1885
- *L. pleuritica* LeConte, 1846
- *L. pumila* Dejean, 1831
- *L. pulchella* Dejean, 1826
- *L. solea* Hentz, 1830
- *L. tricolor* Say, 1823
- *L. viridipennis* Dejean, 1826
- *L. viridis* Say, 1823
- *L. vittata* (Fabricius, 1777)

**Key to northeastern species of Lebia**

1. Elytra entirely dark, without markings .......................................................... 2
   – Elytra in part pale, with clear markings ......................................................

2 [1]. Pronotum dark, brownish-black to black, though with lateral margins narrowly pale in some specimens ....................................................................................................................................................... 3
   – Pronotum pale, reddish ............................................................................. 5

3 [2]. Antennomere 3 paler than adjacent ones. Pronotum without lateral depressions. Body length less than 4.3 mm [2.5-4.2 mm; Plate 62]............. *L. (Lebia) pumila* Dejean
   [BC: endemic; BZ: temperate; HR: open places: vacant fields, sand and gravel pits, meadows, roadsides, forest edges and clearings, often found on flowers, particularly those of *Solidago*, bushes and trees; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Madge (1967: 215-217); Lindroth (1969a: 1038-1039); Larochelle and Larivière (2003: 304) – bionomics]
   – Antennomere 3 not paler than adjacent ones. Pronotum with lateral depressions. Body length more than 4.3 mm in most specimens [two very similar species difficult to separate with confidence on external characters] .................................................. 4

4 [3]. Upper surface without or with faint, aeneous or brassy lustre. Head proportionally narrower on average (WH/WE = 0.82-0.89; mean = 0.86; n = 20 all identified by Lindroth) [3.8-5.2 mm; Plate 61]................................. *L. (Lebia) moesta* LeConte
   [BC: endemic; BZ: temperate/boreal; HR: open places: vacant fields, roadsides, forest edges and clearings, often on plant flowers, shrubs and trees; SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: LB ME NB NF NH NS PE QC VT; References: Lindroth (1969a: 1028-1029); Larochelle and Larivière (2003: 302) – bionomics; Note: Lindroth (1969a: 1028) noted that compared to *L. viridis*, “the forebody .. is always narrower” in this species. Measurements of the pronotum and elytra widths showed that the forebody is actually slightly wider in *L. moesta* (WP/WE
– Upper surface with rather conspicuous, green, blue, or more rarely violaceous lustre. Head proportionally wider on average (WH/WP = 0.88-0.96; mean = 0.91; n = 20 all identified by Lindroth) \[4.7-6.6 \text{ mm}; \text{Plate 61}\] ..........L. \((Lebia) \) \textit{viridis} Say \[\text{BC}: \text{endemic}; \text{BZ}: \text{temperate/boreal}; \text{HR}: \text{open places: cultivated and vacant fields, roadsides, gravel and sand pits, forest edges and clearings, often on flowers, particularly those of } \textit{Solidago}, \text{on shrub, particularly those of } \textit{Salix} \text{ and } \textit{Cornus}, \text{and tree foliage}; \text{SA}: \text{[spring breeder]}; \text{OC}: \text{LF+++}; \text{RA++}; \text{DP}: \text{wings (+)}; \text{flight (+)}; \text{GD}: \text{ME NB NH NS PE QC VT}; \text{References}: \text{Madge (1967: 177-180); Lindroth (1969a: 1026-1028); Larochelle and Larivière (2003: 306-307)} – bionomics; \textbf{Note}: adults mime those of the chrysomelid \textit{Altica woodsi} Isely

5 \[2\].

– Head dark, contrasting with pale pronotum.................................................................6

– Head pale, of same colour as pronotum.......................................................................7

6 \[5\].

Antennomeres, femora and tibiae pale, brownish-yellow. Body length more than 6 mm. Head without metallic lustre \[6.5-9.0 \text{ mm}; \text{Plate 63}\] ..........L. \((Loxopeza) \) \textit{tricolor} Say

\[\text{BC}: \text{endemic}; \text{BZ}: \text{temperate}; \text{HR}: \text{covered/open places: forests, forest edges and clearings, usually in leaf litter; abandoned fields, orchards, usually on } \textit{Solidago} \text{ flowers or bushes, such as } \textit{Cornix} \text{ and } \textit{Salix}; \text{SA}: \text{[spring breeder]}; \text{OC}: \text{LF++}; \text{RA+}; \text{DP}: \text{wings (+)}; \text{flight (+)}; \text{GD}: \text{ME NH NS PE QC VT}; \text{References}: \text{Madge (1967: 156-157); Lindroth (1969a: 1021); Larochelle and Larivière (2003: 305)} – bionomics

– Antennomeres 4-11, apices of femora and tibiae dark, brownish-black to black. Body length less than 6 mm. Head with blue or green metallic lustre \[5.0-5.8 \text{ mm}; \text{Plate 63}\] .................................................................................L. \((Lebia) \) \textit{viridipennis} Dejean

\[\text{BC}: \text{endemic}; \text{BZ}: \text{temperate}; \text{HR}: \text{open places: vacant fields, usually on } \textit{Solidago} \text{ flowers; also forest, forest edges and clearings; SA}: \text{[spring breeder]}; \text{OC}: \text{LF+++}; \text{RA+}; \text{DP}: \text{wings (+)}; \text{flight (+)}; \text{GD}: \text{NH QC VT}; \text{References}: \text{Madge (1967: 170-171); Lindroth (1969a: 1025); Larochelle and Larivière (2003: 306)} – bionomics

7 \[5\].

Palpomeres and antennomeres 4-11 dark, brownish-black to black \[5.4-8.0 \text{ mm}; \text{Plate 62}\] .........................................................................L. \((Laxopeza) \) \textit{atriiventris} Say

\[\text{BC}: \text{endemic}; \text{BZ}: \text{temperate/[boreal]; HR}: \text{open places: abandoned and cultivated fields, roadsides, forest edges and clearings, often on flowers, particularly those of } \textit{Solidago}; \text{SA}: \text{[spring breeder]}; \text{OC}: \text{LF+++}; \text{RA++}; \text{DP}: \text{wings (+)}; \text{flight (+)}; \text{GD}: \text{ME NH QC VT}; \text{References}: \text{Chaboussou (1939) – biology; Madge (1967: 161-163); Lindroth (1969a: 1020); Larochelle and Larivière (2003: 297-298)} – bionomics; \textbf{Note}: adults mime those of the chrysomelid \textit{Zygogramma heterothecae} Linell

– Palpomeres and antennomeres pale, yellowish to reddish........................................8

8 \[7\].

Body length more than 8.4 mm. Elytral epipleura dark, brownish-black to black \[8.5-10.5 \text{ mm}; \text{Plate 62}\] .................................................................................L. \((Laxopeza) \) \textit{grandis} Hentz

\[\text{BC}: \text{endemic}; \text{BZ}: \text{temperate}; \text{HR}: \text{open places: cultivated and abandoned fields, forest edges and clearings, often on flowers of plants such as } \textit{Solidago}, \textit{Solanum} \text{ and } \textit{Zea}; \text{SA}: \text{spring breeder}; \text{OC}: \text{LF+++}; \text{RA+}; \text{DP}: \text{wings (+)}; \text{flight (+)}; \text{GD}: \text{NH QC VT}; \text{References}: \text{Chaboussou (1939) – biology; Madge (1967: 161-163); Lindroth (1969a: 1028)} – bionomics
– Body length less than 8.4 mm. Elytral epipleura pale, reddish-yellow to yellowish-red [6.5-8.2 mm; Plate 62].

L. (Lebia) pleuritica LeConte [BC: endemic; BZ: temperate; HR: open places; SA: [spring breeder]; OC: LF+/++; RA; DP: wings (+); flight (+); GD: QC VT; References: Madge (1967: 173-174); Lindroth (1969a: 1025-1026); Larochelle and Larivière (2003: 303) – bionomics]

9 [1]. Frons with very short, erect pubescence. Antennomeres 2 and 3 more or less pubescent. Head and dark areas of elytra with bluish lustre [6.0-8.0 mm; elytra with two transverse fasciae, one at base, the other behind middle; last abdominal sternum reddish-yellow with two dark spots; Plate 64].

L. (Lebia) pulchella Dejean [BC: endemic; BZ: temperate; HR: open places: abandoned and cultivated fields, grasslands, pastures, forest edges; SA: [spring breeder]; OC: LF+; RA; DP: wings (+); flight (+); GD: NH; References: Madge (1967: 167-169); Lindroth (1969a: 1023); Larochelle and Larivière (2003: 304-305) – bionomics]

10 [9]. Elytron with pale vitta (longitudinal stripe) reaching anterior edge and in most specimens also posterior edge. Head more or less pale.

– Elytron without such pale vitta. Head dark.

11 [10]. Femur entirely pale. Frons distinctly striate laterally [4.5-6.2 mm; head reddish, pronotum reddish-yellow; Plate 63].

L. (Lebia) solea Hentz [BC: endemic; BZ: temperate; HR: open places: cultivated and abandoned fields, orchards, forest edges and clearings, often on plant flowers, particularly those of Solidago caesia Linné, shrubs and trees; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: NH NS QC VT; References: Madge (1967: 187-188); Lindroth (1969a: 1031); Larochelle and Larivière (2003: 304-305) – bionomics]

– Femur infuscate at least over apical third or fourth. Frons not or barely striate ...

12 [11]. Elytra with dark medial vitta divided behind scutellum by triangular pale area. Subbasal ridge of elytron complete, reaching scutellar stria [5.6-8.0 mm; Plate 63].

L. (Lebia) vittata (Fabricius) [BC: endemic; BZ: temperate; HR: open places: cultivated and abandoned fields, gardens, meadows, sand and gravel pits near pools and ponds, usually on plant flowers and bush foliage; SA: [spring breeder]; OC: LF++; RA++; DP: wings (+); flight (+); GD: ME NH NS QC VT; References: Madge (1967: 189-193); Lindroth (1969a: 1031-1033); Larochelle and Larivière (2003: 307) – bionomics; Note: larvae are ectoparasitoid on pupae of the chrysomelid Dysonycha alternata (Illiger)]

– Elytra with dark medial vitta entire, not divided behind scutellum by pale area. Subbasal ridge of elytron incomplete, reaching stria 3 or 4 [5.6-7.2 mm].

L. (Lebia) pectita Horn [BC: endemic; BZ: temperate; HR: open places; SA: [spring breeder]; OC: LF+; RA; DP: wings (+); flight (+); GD: NH; References: Madge (1967: 194-195); Lindroth (1969a: 1033); Larochelle and Larivière (2003: 302-303) – bionomics]
13 [10]. Frons and lateral margin of pronotum markedly longitudinally striate [4.3-6.0 mm; elytron black with humeral macula extending toward apex in some specimens; Plate 64].......................................................................................... L. (Lebia) analis Dejean [BC: endemic; BZ: temperate; HR: open places: abandoned and cultivated fields, usually on flower plants, shrubs, and trees; SA: [spring breeder]; OC: LF+/++; RA2; DP: wings (+); flight (+); GD: VT; References: Madge (1967: 184-186); Lindroth (1969a: 1030-1031); Larochelle and Larivière (2003: 297) – bionomics; Note: larvae of this species are probably ectoparasitoid on pupae of the chrysomelid Dissonycha glabrata (Fabricius)]

— Frons and pronotum not striate or at most faintly so in a few specimens

14 [13]. Frons densely and moderately coarsely punctate. Body length 4.0 mm or less [3.0-4.0 mm].................................................................................. L. (Lebia) lobulata LeConte [BC: endemic; BZ: temperate; HR: open places: fields and forest edges; SA: [spring breeder]; DP: wings (+); flight (+); GD: not yet found in the northeast but recorded from Connecticut; References: Madge (1967: 207-208); Lindroth (1969a: 1035); Larochelle and Larivière (2003: 301) – bionomics]

— Frons not or minutely punctate. Body length 4.0 mm or more

15 [14]. Elytron with broad, apical (i.e., reaching apex) pale spot. Subbasal ridge of elytron complete, reaching parascutellar seta. Eye markedly protruding, head proportionally wider (WH/WP = 0.81-0.89; mean = 0.85; n = 20) [4.3-6.5 mm; Plate 64]....... ....................................................................................................... L. (Lebia) fruscata Dejean

[BC: endemic; BZ: temperate; HR: open places: forest edges and clearings, adjacent fields, pastures, sand and gravel pits, roadsides, usually on trees, bushes and plants; SA: [spring breeder]; OC: LF++++; RA++/++; DP: wings (+); flight (+); GD: ME NB NH NS PE QC VT; References: Madge (1967: 203-205); Lindroth (1969a: 1035-1036); Larochelle and Larivière (2003: 299-300) – bionomics]

— Elytron with small, preapical (i.e., not reaching apex) pale spot. Subbasal ridge of elytron incomplete, reaching level of stria 3 or 4. Eye moderately protruding, head proportionally narrower (WH/WP = 0.73-0.80; mean = 0.77; n = 20) [4.0-5.0 mm; Plate 64].................................................................................. L. (Lebia) ornata Say

[BC: endemic; BZ: temperate; HR: open places: forest edges and clearings, adjacent fields, pastures, sand and gravel pits, usually on trees, shrubs and plants (particularly Solidago flowers); SA: [spring breeder]; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NB NH NS QC VT; References: Madge (1967: 208-211); Lindroth (1969a: 1036-1038); Larochelle (1975c: 207) – habitat; Larochelle and Larivière (2003: 302) – bionomics; Note: larvae are probably ectoparasitoid on pupae of the chrysomelid Altica chalybea Illiger]

SUBTRIBE CALLEIDINA

GENUS PLOCHIONUS DEJEAN, 1825

The sole northeastern species of this genus, P. timidus Haldeman, 1843 [Plate 65], is easily recognized on its broad and flat body without metallic lustre, the markedly bilobed tarsomeres 4, and the pectinate claws; the body length is 6.5-7.5 mm.

Males have the protarsomeres 1-4 and mesotarsomeres 2-4 with seriate adhesive setae underneath, and four setae, six to eight in females, near the apical edge of the last abdominal sternum.
[BC: endemic; BZ: temperate; HR: covered places: deciduous forests, usually under loose bark of standing or fallen trees; the larva has been found regularly in the nests of the Fall Webworm where it feeds on *Hyphantria* larvae (see Murtfeldt 1892; Duffey 1891); SA: ?; OC: LF++; RA?; DP: wings (+); flight (+); GD: NH; References: Lindroth (1969a: 1066-1067); Larochelle and Larivière (2003: 375-376) – bionomics]

**GENUS CALLEIDA LATREILLE, 1824**

The two northeastern species of this genus can be recognized easily on their facies alone. They are of middle sized (7.0-9.0 mm), slender with relatively long legs and metallic lustre, the apical labial palomeres are markedly large, triangular, and the claws are pectinate.

Males of *C. punctata* have the protarsomeres 1-3 and mesotarsomeres 2 and 3 with fine seriate adhesive setae underneath. Males of *C. purpurea* have the pro- and mesotarsomeres 1-4 with seriate adhesive setae underneath. Most males of both species have two setae near the apical edge of the last abdominal sternum, while females have four setae.

**List of northeastern species of Calleida**

*C. punctata* LeConte, 1846

*C. purpurea* (Say, 1823)

**Key to northeastern species of Calleida**

1. Pronotum reddish, contrasting with dark head and elytra. Leg in part pale, reddish-yellow to yellowish-red [7.0-8.5 mm; Plate 65].................*C. (Calleida) punctata* LeConte

   [BC: endemic; BZ: temperate; HR: open places: vacant fields, roadsides, forest edges and clearings, usually under stones; also on *Solidago* flowers and on plants; SA: spring breeder; OC: LF++++; RA++; DP: wings (+); flight (+); GD: ME NH QC VT; References: Lindroth (1969a: 1060-1062); Larochelle (1975c: 206) – habitat; Larochelle and Larivière (2003: 173-174) – bionomics]

   – Pronotum black, like head and elytra. Leg dark, brownish-black to black [7.5-9.0 mm]...............................................................*C. (Calleida) purpurea* (Say)

   [BC: endemic; BZ: temperate; HR: [covered/open places]; SA: [spring breeder]; OC: LF++; RA?; DP: wings (+); flight (-); GD: NH; References: Lindroth (1969a: 1062); Larochelle and Larivière (2003: 174) – bionomics]

**TRIBE GALERITINI**

**GENUS GALERITA FABRICIUS, 1801**

The two species of *Galerita* treated here are easily distinguished from other carabids on their facies, with their elongate body (15.5-23.5 mm), pubescence over entire body, and colouration: the head is black with a triangular reddish spot between the eyes in most specimens, the pronotum is bright reddish, and the elytra are black with a pronounced bluish lustre.

The males have the protarsomeres 1-3 markedly expanded laterally and with two rows of seriate adhesive setae underneath over the laterally expanded section.

**List of northeastern species of Galerita**

[G. bicolor (Drury, 1773)]

*G. janns* (Fabricius, 1792)
Key to northeastern species of *Galerita*

1. Elytral setae (best seen with the specimen place at angle) obliquely decumbent, erect ones present only at extreme base. Pronotum proportionally wider between posterior angles \((LP/WP_b = 1.12-1.29)\) \textit{fide} Ball and Nimmo (1983: table 4) \([15.5-23.5 \text{ mm}; \text{ Plate 65}]\) ... 
   
   \[BC: \text{ endemic}; \ BZ: \text{ temperate}; \ HR: \text{ covered/open places: forests, forest edges and clearings, adjacent cultivated and abandoned fields, gravel pits, usually under stones, debris, and loose bark of fallen trees}; \ SA: \text{ spring breeder}; \ OC: \text{ LF+++; RA+++}; \ DP: \text{ wings (+); flight (+); GD: NH QC VT}; \text{ References: } \text{ Lindroth (1969a: 1093-1094); Larochelle and Larivière (2003: 270-271) – bionomics; Dajoz (2005) – biology}\]

   \[G. \text{ janus (Fabricius)}\]

   \[G. \text{ bicolor (Drury)}\]

TRIBE HELLUONINI

**GENUS HELLUOMORPHOIDES** Ball, 1951

The sole species of this genus to reach the northeast, *H. praeustus bicolor* (Harris, 1828) \(\text{[Plate 65]}\), is easily recognized on its facies, with the markedly constricted neck, transverse antennomeres which are pubescent from the first one, and pubescence over most of the upper surface.

The protarsomeres 1-3 of males are not or barely expanded but bear underneath very fine seriate adhesive setae.

\[BC: \text{ endemic}; \ BZ: \text{ temperate}; \ HR: \text{ covered/open places: forests}; \ SA: \text{?}; \ OC: \text{ LF+; RA?}; \ DP: \text{ wings (+); flight (+); GD: NH}; \text{ References: } \text{ Ball (1956: 79-80); Lindroth (1969a: 1094-1095); Larochelle and Larivière (2003: 294) – bionomics}\]
PLATE 1

*Loricera pilicornis pilicornis* (Fabricius) [7.0-8.5 mm]

*Leistus ferrugineus* (Linné) [5.5-7.0 mm]

*Pelophila borealis* (Paykull) [8.3-13.0 mm]

*Pelophila rudis* (LeConte) [11.8-14.2 mm]
PLATE 2

Nebria pallipes Say [10.0-11.5 mm]

Nebria suturalis LeConte [9.5-11.7 mm]

Nebria gyllenhali castanipes (Kirby) [8.6-12.0 mm]

Nebria nivalis (Paykull) [9.0-12.2 mm]
Plate 3

Notiophilus aeneus (Herbst) [5.0-5.7 mm]

Notiophilus aquaticus (Linné) [4.5-6.0 mm]

Notiophilus biguttatus (Fabricius) [4.7-6.0 mm]

Notiophilus palustris (Duftschmid) [5.0-6.1 mm]
Plate 4

*Sphaeroderus stenostomus lecontei* Dejean [12-17 mm]  *Sphaeroderus nitidicollis* Guérin-Méneville [14.1-17.8 mm]

*Scaphinotus bilobus* (Say) [10.0-13.7 mm]  *Scaphinotus viduus* (Dejean) [26-33 mm]
PLATE 7

Carabus goryi Dejean [20-25 mm]

Carabus sylvosus Say [24-28 mm]

Carabus nemoralis Müller [21-26 mm]

Carabus toedatus agassii LeConte [17-26 mm]
Cicindela marginipennis Dejean [12-14 mm]

Cicindela rufiventris Dejean [9-12 mm]

Cicindela lepida Dejean [8-12 mm]

Cicindela marginata Fabricius [11-14 mm]
Cicindela puritana Horn [12-14 mm]

Cicindela punctulata punctulata Olivier [11-14 mm]

Cicindela longilabris longilabris Say [15-17 mm]

Cicindela longilabris longilabris Say [15-17 mm]
*Cicindela sexguttata* Fabricius [10-14 mm]

*Cicindela scutellaris lecontei* Haldeman [11-13 mm]

*Cicindela hirticollis rhodensis* Calder [13-14 mm]

*Cicindela tranq. tranquebarica* Herbst [14.0-17.5 mm]
PLATE 12

*Cicindela patruela patruela* Dejean [12.0-14.5 mm]

*Cicindela duodecimguttata* Dejean [12-15 mm]

*Cicindela limbata labradorensis* Johnson [10-12 mm]

*Cicindela repanda repanda* Dejean [11-13 mm]
PLATE 13

*Cicindela formosa* genera Dejean [16-18 mm]  
*Cicindela ancocisconensis* Harris [14-16 mm]  
*Cicindela limbalis* Klug [14-16 mm]  
*Cicindela purpurea purpurea* Olivier [14-16 mm]
**Plate 14**

*Diacheila arctica amoena* (Faldermann) [7-9 mm]  

*Blethisa quadricollis* Haldeman [15.5-17.8 mm]

*Blethisa julii* LeConte [10.7-13.0 mm]  

*Blethisa multipunctata hudsonica* Casey [10.0-13.5 mm]
PLATE 15

*Elaphrus lapponicus lapponicus* Gyllenhal [7.8-11.2 mm]  
*Elaphrus ruscarius* Say [6.7-7.2 mm]  
*Elaphrus californicus* Mannerheim [6.3-8.0 mm]  
*Elaphrus americanus americanus* Dejean [7.1-8.6 mm]
PLATE 17

*Omophron americanum* Dejean [5.1-7.0 mm]

*Omophron tessellatum* Say [5.4-7.0 mm]

*Omophron labiatum* (Fabricius) [4.8-6.3 mm]

*Brachinus tenuicollis* LeConte [13.2-16.1 mm]
Plate 18

Scarites subterraneus Fabricius [16-20 mm]

Paraclivina bipustulata (Fabricius) [5.8-7.5 mm]

Clivina fossor (Linné) [5.5-6.5 mm]

Schizogenius lineolatus (Say) [4.5-5.8 mm]
PLATE 19

*Dyschirius sphaericollis* (Say) [4.2-5.2 mm]

*Dyschirius pallipennis* (Say) [3.6-4.2 mm]

*Dyschirius montanus* LeConte [2.7-3.4 mm]

*Miscodera arctica* (Paykull) [6.2-9.8 mm]
PLATE 22

*Bembidion confusum* Hayward [4.5-6.7 mm]  
*Bembidion properans* (Stephens) [3.5-4.2 mm]  
*Bembidion nigrum* Say [3.7-4.4 mm]  
*Bembidion lacunarium* (Zimmermann) [4.7-6.0 mm]
PLATE 23

*Bembidion postremum* Say [6.5-7.2 mm]  
*Bembidion petrosum petrosum* Gebler [4.7-6.7 mm]  
*Bembidion graciliforme* Hayward [5.1-5.8 mm]  
*Bembidion quadrimaculatum oppositum* Say [2.8-3.7 mm]
PLATE 24

*Bembidion versicolor* (LeConte) [2.8-3.6 mm]

*Bembidion transparens* (Gebler) [3.2-3.9 mm]

*Bembidion concretum* Casey [3.2-4.2 mm]

*Bembidion wingatei* Bland [4.6-5.3 mm]
PLATE 25

*Mioptachys flavicauda* (Say) [1.5-1.8 mm]

*Tachyta kirbyi* Casey [2.7-3.3 mm]

*Elaphropus incurvus* (Say) [2.0-2.5 mm]

*Elaphropus tripunctatus* (Say) [2.6-3.2 mm]
**Pericompsus ephippiatus** (Say) [2.3-3.0 mm]

**Porotachys bisulcatus** (Nicolai) [2.8-3.2 mm]

**Polyderis laevis** (Say) [1.5-1.8 mm]

**Paratachys proximus** (Say) [2.6-3.1 mm]
**PLATE 27**

*Diplous rugicollis* (Randall) [9.5-12.2 mm]

*Patrobus longicornis* (Say) [9.2-14.8 mm]

*Patrobus foveocollis* (Eschscholtz) [8.0-11.6 mm]

*Platypatrobus lacustris* Darlington [10.6-12.4 mm]
Nomius pygmaeus (Dejean) [6.0-7.7 mm]
Psydrus piceus LeConte [5.5-6.2 mm]
Gastrellarius honestus (Say) [7.0-8.5 mm]
Stomis punicatus (Panzer) [6.8-8.3 mm]
PLATE 29

*Lophoglossus scrutator* (LeConte) [13.8-15.6 mm]

*Poecilus luculandus* (Say) [9-14 mm]

*Myas cyanescens* Dejean [13.5-15.5 mm]

*Stereocerus haematopus* (Dejean) [9.5-12.5 mm]
PLATE 30

Pterostichus tristis (Dejean) [11.1-13.7 mm]

Pterostichus praetermissus (Chaudoir) [7.8-9.1 mm]

Pterostichus castor Goulet & Bousquet [13.5-14.8 mm]

Pterostichus adstrictus Eschscholtz [9.5-13.0 mm]
PLATE 31

Pterostichus diligendus (Chaudoir) [10.7-14.0 mm]
Pterostichus luctuosus (Dejean) [9.1-10.8 mm]
Pterostichus rostratus (Newman) [12.7-18.0 mm]
Pterostichus pinguedineus (Eschscholtz) [6.3-8.5 mm]
Pterostichus melanarius (Illiger) [12-19 mm]

Pterostichus punctatissimus (Randall) [15-18 mm]

Cyclotrachelus sodalis sodalis (LeConte) [13.5-19 mm]

Abax parallelepipedus (Pill. & Mitt.) [18-22 mm]
Amara aulica (Panzer) [11.0-14.3 mm]
Amara avida (Say) [7.4-9.8 mm]
Amara obesa (Say) [9-13 mm]
Amara musculus (Say) [3.9-6.5 mm]
Amara quenseli (Schönherr) [5.2-8.4 mm]
Amara otiosa Casey [6.5-8.2 mm]
Amara patruelis Dejean [7.0-10.3 mm]
Amara pallipes Kirby [6.2-8.0 mm]
PLATE 35

Pseudamara arenaria (LeConte) [5.0-5.8 mm]  
Oodes fluvialis LeConte [11.6-14.8 mm]  
Lachnocrepis parallela (Say) [8.3-11.2 mm]  
Anatrichis minuta (Dejean) [5.0-6.5 mm]
Plate 36

*Panagaeus fasciatus* Say [8.0-9.5 mm]  

*Chlaenius tomentosus* (Say) [12.5-18.0 mm]  

*Chlaenius purpuricollis* Randall [8.7-9.5 mm]  

*Chlaenius cardicollis* Kirby [12.4-15.3 mm]
Chlaenius nemoralis Say [10.7-13.0 mm]
Chlaenius brevilabris LeConte [9.5-11.9 mm]
Chlaenius pennsylvanicus Say [10.4-11.9 mm]
Chlaenius tricolor Dejean [10.1-13.5 mm]
PLATE 40

Diplocheila obtusa (LeConte) [9.7-11.7 mm]

Diplocheila striatopunctata (LeConte) [12.5-17.9 mm]

Dicaelus politus Dejean [10.7-14.9 mm]

Dicaelus elongatus Bonelli [15-19 mm]
Badister grandiceps Casey [4.6-5.6 mm]
Badister notatus Haldeman [3.8-4.7 mm]
Badister neopulchellus Lindroth [5.2-6.1 mm]
Atranus pubescens (Dejean) [5-7 mm]
Notiobia nitidipennis (LeConte) [5.9-8.0 mm]

Notiobia terminata (Say) [8.1-9.6 mm]

Xestonotus lugubris (Dejean) [9.2-11.0 mm]

Anisodactylus verticalis (LeConte) [12.8-14.0 mm]
Anisodactylus rusticus (Say) [7.8-12.2 mm]

Anisodactylus harrisii LeConte [10.5-13.0 mm]

Anisodactylus discoideus Dejean [9.4-12.7 mm]

Anisodactylus sanctaecrucis (Fabricius) [8.3-10.9 mm]
Anisodactylus kirbyi Lindroth [9.0-12.8 mm]

Geopinus incrassatus (Dejean) [13-17 mm]

Amphasia sericea (Harris) [8.8-11.0 mm]

Amphasia interstitialis (Say) [8.5-10.2 mm]
Stenolophus fuliginosus Dejean [5.3-7.2 mm]
Stenolophus ochropezus (Say) [4.8-6.7 mm]
Stenolophus lecontei (Chaudoir) [5.3-7.2 mm]
Stenolophus lineola (Fabricius) [7.0-9.1 mm]
Stenolophus conjunctus (Say) [3.2-4.3 mm]

Dicheirotrichus cognatus (Gyllenhal) [3.5-5.2 mm]

Acupalpus alternans (LeConte) [3.3-4.1 mm]

Acupalpus pauperculus Dejean [2.9-3.4 mm]
Bradycellus atrimeadeus (Say) [5.2-6.3 mm]

Bradycellus lecontei Csiki [4.3-5.2 mm]

Bradycellus nigrinus (Dejean) [4.7-6.0 mm]

Bradycellus rupestris (Say) [3.9-5.2 mm]
Harpalus erraticus Say [11-18 mm]
Harpalus laticeps LeConte [11.6-16.0 mm]
Harpalus somnulentus Dejean [7.3-12.5 mm]
Harpalus fuscipalpis Sturm [7.3-9.8 mm]
PLATE 50

Selenophorus gagatinus Dejean [6.5-8.0 mm]

Selenophorus hylacis (Say) [6.0-7.5 mm]

Selenophorus opalinus (LeConte) [9.2-10.7 mm]

Discoderus parallelus (Haldeman) [6.0-7.5 mm]
PLATE 51

*Euryderus grossus* (Say) [10.5-15.8 mm]

*Trichotichnus autumnalis* (Say) [6.5-8.0 mm]

*Trichotichnus dichrous* (Dejean) [9.0-11.0 mm]

*Trichotichnus vulpeculus* (Say) [9.0-10.0 mm]
Acalathus advena (LeConte) [8.0-11.8 mm]

Calathus gregarius (Say) [8.4-11.5 mm]

Laemostenus terricola (Herbst) [13.0-17.5 mm]

Synuchus impunctatus (Say) [8.7-11.2 mm]
Olisthopus parmatus (Say) [6.2-7.3 mm]
Sericoda quadripunctata (DeGeer) [4.2-6.0 mm]

Tetraleucus picticornis (Newman) [7.3-9.0 mm]
Paranchus albipes (Fabricius) [6.8-9.0 mm]
PLATE 54

*Agonum octopunctatum* (Fabricius) [7.5-8.5 mm]

*Agonum nigriceps* LeConte [4.9-6.3 mm]

*Agonum lutulentum* (LeConte) [5.9-7.0 mm]

*Agonum placidum* (Say) [6.8-8.8 mm]
PLATE 55

Agonum cupreum Dejean [7.0-9.5 mm]  
Agonum cupripenne (Say) [7.5-9.3 mm]

Agonum decorum (Say) [6.8-9.0 mm]  
Agonum extensicolle (Say) [6.8-10.4 mm]
Oxypselaphus pusillus (LeConte) [5.3-6.8 mm]

Platynus hypolithos (Say) [13.5-15.5 mm]

Platynus decens (Say) [9-14 mm]

Platynus mannerheimii (Dejean) [11.0-13.2 mm]
Pentagonica picticornis Bates [4.5-4.7 mm]  
Perigona nigriceps (Dejean) [2.0-2.5 mm]  
Colliuris pensylvanica (Linné) [5.8-7.2 mm]  
Tetragonoderus fasciatus (Haldeman) [4.5-5.0 mm]
Cymindis pilosa Say [9.5-11.0 mm]
Cymindis neglecta Haldeman [7.5-9.0 mm]
Cymindis cribricollis Dejean [8.4-11.0 mm]
Cymindis unicolor Kirby [8.0-9.5 mm]
**PLATE 60**

*Dromius piceus* Dejean [6.3-7.8 mm]

*Axinopalpus biplagiatus* (Dejean) [3.0-3.5 mm]

*Apristus latens* (LeConte) [3.0-4.2 mm]

*Apristus subsulcatus* (Dejean) [3.2-4.4 mm]
Microlestes linearis (LeConte) [3.0-3.8 mm]
Syntomus americanus (Dejean) [2.7-3.5 mm]
Lebia viridis Say [4.7-6.6 mm]
Lebia moesta LeConte [3.8-5.2 mm]
Lebia pumila Dejean [2.5-4.2 mm]

Lebia pleuritica LeConte [6.5-8.2 mm]

Lebia atriventris Say [5.4-8.0 mm]

Lebia grandis Hentz [8.5-10.5 mm]
Lebia tricolor Say [6.5-9.0 mm]

Lebia viridipennis Dejean [5.0-5.8 mm]

Lebia solea Hentz [4.5-6.2 mm]

Lebia vittata (Fabricius) [5.6-8.0 mm]
Lebia pulchella Dejean [6.0-8.0 mm]

Lebia analis Dejean [4.3-6.0 mm]

Lebia fuscata Dejean [4.3-6.5 mm]

Lebia ornata Say [4.0-5.0 mm]
PLATE 65

*Plochionus timidus* Haldeman [6.5-7.5 mm]  
*Calleida punctata* LeConte [7.0-8.5 mm]  
*Galerita janus* (Fabricius) [15.5-23.5 mm]  
*Helluomorphoides praeustus bicolor* (Harris) [13-18 mm]
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SECTION B

LARVAE
Generalities

1. – INFORMATION INCLUDED

This section includes a key to known second- and third-instar larvae of genera represented in the northeast. First instar larvae are not considered because they are less likely to be collected in the field and, in many groups, are too small to be identified without preparation. In addition to this key, larval characters of each tribe and genus are discussed and a list is given of the northeastern species which have been described or illustrated. The list of species includes: references to descriptions or illustrations; indication whether the character states are presented in the form of descriptions (D), in keys (K), or both (D+K); and the instar(s) described. Keys to all or the most common species are included for the following 11 genera: Cicindela, Calosoma, Carabus, Scaphinotus, Sphaeroderus, Blethisa, Elaphrus, Pocelus, Pterostichus, Diplocheila, and Notiobia.

Thirteen genera represented in the northeast are not included in the key. Larvae of Paraclivina, Blemus, Pericompsus, Pseudamara, Anatrichis, Selenophorus, Discoderus, and Pentagonica are unknown and those of Polyderis, Nomius, Stomis, Paranchus, and Perigona are known but were unavailable for study and the published descriptions lack details to include them in the key. Of the 95 genera represented in the northeast, at least one second- or third-instar larva of 70 of them was examined by the author and most, but not all, of the specimens belonged to species found in the northeast. With the material at hand and literature, three pairs of genera (Paratachys-Porotachys; Patrobus-Platypatrobus; Bradycellus-Acupalpus) and one trio (Agonum-Sericoda-Oxypselaphus) could not be distinguished with confidence.

Unless otherwise stated, all larvae studied are in the Canadian National Collection of Insects, Arachnids, and Nematodes in Ottawa.

2. – IDENTIFICATION

Identification of carabid larvae requires a binocular stereomicroscope with a light source and cavities (such as a petri dish) filled with 70% ethanol. Well-preserved larvae are easier to work with and are obtained by killing larvae in boiling or very hot water for about five minutes before transferring them to 70% alcohol. Another technique consists of clearing specimens in a boiling solution of 10% potassium hydroxide for three to five minutes and impregnating them with glycerine prior to microscopic examination in glycerine (see Goulet 1977c; Bousquet and Goulet 1984: 573). The use of a compound microscope provides higher magnification which is essential for examining characters such as sensilla, pores, and microsculpture. Larvae can also be mounted on slides in various media (such as lactic acid) as described by Martin (1977: 105-107).

Larvae of several groups of Carabidae can be recognized by their shape alone or by the presence of peculiar anatomical structures which are easily seen. This is true for larvae of Nebria-Notiophilus, Cicindela, Carabini, Cychrini, Omophron, Scarites, Dyschirius, Clivina, Licinini, Galerita, and Helisomorphidia. For non-specialists, identifying larvae of other groups usually requires examination of a number of characters of which the most important are the claws (number and relative size) and the condition of the lacinia. The claws can be observed under
the stereomicroscope in alcohol but the lacinia is often too small to be studied without adequate preparation. The author recommends pulling one of the maxillae, clearing it for ten minutes in lactic acid, and then placing it in a drop of lactic acid on a slide covered with a cover slip before studying the appendage under the microscope.

First instar larvae are best separated from older instars by the presence of egg-bursters. This paired structure consists in most taxa of one microspinule or a series, usually longitudinally arranged, of two or more microspinules that can be fused partially or entirely into a carina (see Hůrka 1999). The egg-bursters are probably modified microsculpture and in a few taxa (e.g., some *Bembidion*) they are indeed an area where the spinelike microsculpture is simply larger than usual. The egg-bursters are located at the base of the frontale near the frontal sutures in the vast majority of taxa, and on the parietale in a few (e.g., *Bembidion*). In some groups (e.g., Trechini, *Brachinus*, Helluonini, see van Emden 1942: 5) the egg-bursters are apparently missing; in such cases the best way to separate first instars from older ones is by the chaetotaxy. First instars of most taxa have only primary setae and so fewer setae than older instars. The best structures to look for are the mandible (one seta [MN\textsubscript{1}] in L\textsubscript{1}), the lateral side of the stipes (two setae [MX\textsubscript{2} and MX\textsubscript{3}] in L\textsubscript{1}), the hypopleurite (no setae in L\textsubscript{1}), and the urogomphi (five setae [UR\textsubscript{4-9}] on each side in L\textsubscript{1}). Older instars of most taxa have secondary setae beside the primary ones.

Larvae of Carabidae, except later instars of ectoparasitoid *Brachinus* and *Lebia*, can be differentiated from polyphagan larvae by the presence of five-segmented legs in addition to one or two claws at their extremities. The reader is referred to Thompson (1979a: 216) and Luff (1993: 18-19) for keys distinguishing carabid larvae from those of other adephagan taxa. No keys to the carabid larvae of the North American genera have been published, although van Emden’s key (1942), which covers the world fauna, does include 58 genera found in the northeast. Several published keys to larvae of European or Palaearctic genera can also be useful as they include some genera found in the northeast: Hůrka (1978) for Europe (53 genera represented in the northeastern included), Arndt (1991a) for central Europe (51 northeastern genera); Luff (1993) for Fennoscandia and Denmark (52 northeastern genera), and Makarov (1994) for the Palaearctic Region (58 northeastern genera).

3. – STRUCTURES AND TERMS

Only structural terms used in the keys are explained in this section. The reader is referred to Jeannel (1941: 58-67) and Luff (1993: 9-15) for an overview of larval morphology of Carabidae.

**Abdomen.** This body part is composed of ten segments. The first eight are similar in most taxa. The ninth is reduced and, in most taxa, bears a pair of urogomphi [q.u.]. The tenth segment, the pygopod [q.p.], is tubular. Typically, each of the first eight segments bears a pair of spiracles laterally and the following set of sclerites: a tergite [q.t.], a pair of epipleurites [q.e.], a pair of hypopleurites [q.h.], a median sternite [q.s.], a pair of inner sternites [q.I], and a pair of outer sternites [q.o.].

**Abdominal tergite.** The dorsal sclerite on each abdominal segment. In many carabid taxa, all but the last or at least some of the abdominal terga bear an anterotransverse carina, the tergal carina, which often extends laterally. The part of the tergite anterior to the carina is the anterodiscal area (pretergite of Luff 1993; pretergum of Makarov 1994) and the part posterior to it is the posterodiscal area.
ADDITIONAL Setae. See entry primary setae.

ADNASALE. The anterolateral area of the frontonate on each side of the nasale [q.v.] (ad, Fig. 602). The adnasale is not the anterior edge itself but the anterior edge and the narrow area posterior to it.

ANAL LOBES. See entry pygopod.

ANCESTRAL Setae. See entry primary setae.

ANTACORIA. Membranous area between the antennomeres (an, Fig. 525).

ANTERODISCAL AREA. See entry abdominal tergite.

BASAL STRICTURE. The constriction, delimiting a cervical region, at the base of the cephalic capsule [q.v.] found in some groups like the Nebrini, Notiophilini, and Galeritini. The subbasal constriction is a lateral tightness of the cephalic capsule found behind the level of seta PA in several taxa.

CEPHALIC CAPSULE. Section of the body comprising the frontale and the parietale; basically the head without the mouthparts and antennae.

CERVICAL GROOVE. Laterodorsal sulcus found on each side of the parietale in many taxa (g, Figs 500, 502, 595). Also called epicranial groove (Makarov 1994).

CLAW. Hooklike structure at the apex of each leg. A number of groups have only one claw on each leg (e.g., Trechini, Bembidiini, and Brosconi) but most have two claws which are subequal or unequal, often with the anterior one longer than the posterior one. In most taxa, each claw bears a very small seta (UN1 and UN2) which in rare cases could be long (e.g., Omophron); in some groups, a pulvillus (soft, padlike structure; e.g., Calleida) or toothlike process (e.g., Dromius) may be present at the base ventrally.

CORONAL SUTURE. Basal stem of the epicranial suture [q.v.] (cs, Fig. 373). In many taxa, the coronal suture is absent. The length of the coronal suture when present is often of importance and is best expressed in relation to the length of one of the antennomeres, preferably the first or last one. Improperly referred to as the epicranial suture by some authors (van Emden 1942; Luff 1993; Makarov 1994). Also called ecdysial cleavage line (Thompson 1979a).

Egg-bursters. Paired structure located in most carabid larvae at the base of the frontale [q.v.], usually consisting of microspines which may be fused. The structure is used to break the chorion during hatching.

Epicranial Suture. Ecdysial line on the dorsum of the cephalic capsule that consists of two arms forming the frontal suture [q.v.] and, in many taxa, a stem called the coronal suture [q.v.].

Epipleurite. The small, upper sclerite on the side of each of the first nine abdominal segments.

Frontal Suture. Arms of the epicranial suture [q.v.] (fs, Fig. 373). In almost all known carabid larvae, each arm of the frontal suture is sinuate and the sinuation occurs roughly at level of the position of seta FR. The part of the frontal suture anterior to the sinuation is usually of no taxonomic interest but the part posterior to it is, because the section could be rounded, obliquely convergent, subparallel, or even divergent before reaching the middle of the parietate [q.v.].

Frontale. Area of the cephalic capsule located between the arms of the epicranial suture [q.v.] (fr, Fig. 373). Also called frontal piece (Luff 1993; Makarov 1994) or frontal plate (Thompson 1979a).

Galea. The apical lobe of the two medial lobes of the maxilla (ga, Fig. 374). In carabid larvae the galea is, with rare exceptions, two-segmented and articulated to the stipes. Also called outer lobe (van Emden 1942, Thompson 1979a).

Gular Sutures. Paired suture dividing the parietale on the ventral surface. Also called mediogular sutures (Makarov 1994).
HYPODON. Small toothlike projection located at the middle on the ventral surface of the nasale in some species (e.g., *Carabus*) (by, Fig. 407). The hypodon can be seen from above at the middle of the nasale. Also called ventral nasale spine (Spence and Sutcliffe 1982).

HYPOPLEURITE. The small, lower sclerite on the side of the first eight abdominal segments.

INNER STERNITE. The paired small sclerite located posterior to the median sclerite [q.v.] near the midline. Also called inner sternellum (Luff 1993).

LACINIA. The basal lobe of the two medial lobes of the maxilla (la, Fig. 374). This lobe is absent in many taxa. When present, it usually consists of a small cone (acuminate or not) bearing a seta (MX6). The presence or absence of the lacinia and its shape is taxonomically important in carabids. Also called inner lobe (van Emden 1942; Thompson 1979a).

LATERAL TUBERCLES. Small protuberance on each side of the anterior edge of the nasale [q.v.].

LIGULA. Median protuberance, present in many carabid taxa, at the apical extremity of the prementum (li, Fig. 375).

MAJOR SETAE. Refers to setae on a sclerite that are relatively long compared to other ones on the same or adjacent sclerites.

MAXILLA. Paired structures of the mouthparts that are articulated to the anterior part of the cephalic capsule [q.v.]. The structure consists of a small basal sclerite, the cardo, an elongate stipes [q.v.], a segmented palpus [q.v.], a lacinia [q.v.], and a galea [q.v.].

MEDIAN STERNITE. The unpaired, median, large sclerite found on the ventral surface of each of the first eight abdominal segments of most taxa. Also called anterior ventrite (van Emden 1942) or sternum (Luff 1993).

MEMBRANOUS. Denotes absence of pigment.

MEMBRANOUS DECLIVITY. Narrow extension of the membranous dorsal side of the stipes into the sclerotized lateral and often also ventral surfaces of the stipes [q.v.] (md, Figs 535, 538). The declivity is usually located behind the position of seta MX2. When present on the ventral side of the stipes the declivity could be more or less interrupted at the middle.

METEPIMERON. Small sclerite of the lateral region of the metathorax close to the coxa, bearing a small eversible gland in some taxa (e.g., *Chlaenius*).

NASALE. The median anterior part of the frontale [q.v.] (na, Fig. 602) which in most taxa is distinctive, either being protruding or with toothlike projections; in such cases the nasale is said to be differentiated. In some taxa (e.g., *Cyclotrachelus*, Licinini) the nasale is not differentiated from the rest of the frontale. The nasale is not the medioanterior edge of the frontale but the area itself. In some species (e.g., most *Agonum*), the anterior edge of the nasale consists of a median section flanked by lateral tubercles [q.v.].

OCULAR GROOVE. Short sulcus located on each side of the parietale near the posterior row of stemmata [q.v.] (og, Figs 592, 595). Also called postocellare groove (Makarov 1994).

ONISCIFORM. Refers to a larva which is relatively broad, more or less ovate, and moderately to markedly flattened, like those of the tribe Cychrini (Pl. 68).

OUTER STERNITE. Paired, small sclerite located posterior to the median sternite [q.v.] and lateral to the inner sternite [q.v.] on the abdominal segments. Also called outer sternellum (Luff 1993).

PALPUS. Segmented appendage located at the apex of the stipes [q.v.] (maxillary palpus) and at the apex of the prementum [q.v.] (labial palpus). In the primitive state for insects, each palpus is articulated to a small sclerite, the palpiger. However, the author cannot ascertain if the basal structure of both the maxillary and labial palpi in Carabidae represents a true palpiger or a typical palptomere with the palpiger being lost. For that reason the basal segment is counted in this work as a palptomere. Carabid larvae have, with few exceptions, four maxillary and two labial palpomeres.
ILLUSTRATED IDENTIFICATION GUIDE TO ADULTS AND LARVAE OF NORTHEASTERN NORTH AMERICAN GROUND BEETLES

PARIETALE. Area of the cephalic capsule lateral to and posterior to the arms of the epicranial suture \([q.v.](\text{pa}, \text{Fig. 373})\).

PENICILLUS. Seta or, more commonly, a tuft of setae located at the base of the mandible on it medial edge \((\text{ps}, \text{Fig. 528})\).

POSTERODISCAL AREA. See entry abdominal tergite.

POSTOCcipITAL SUTURE. Transverse suture at the extreme base of the cephalic capsule \([q.v.](\text{ps}, \text{Fig. 373})\).

PREMENTUM. Apical section of the labium, bearing a pair of palpi at its apex \((\text{pm}, \text{Fig. 375})\). Improperly called “mentum” by some authors (e.g., van Emden 1942).

PRIMARY SETAE. Setae found on the first instar and their homologous setae on later instars. Primary setae are divided into ancestral and additional setae. The ancestral setae are those associated with the ancestral pattern and generally present in most carabids. Bousquet and Goulet (1984) provided a code system for these setae. Additional setae are those found on a limited number of taxa and believed not to be part of the ancestral pattern.

PYGOPOD. The tenth abdominal segment, which is tubular in carabid larvae \((\text{py}, \text{Fig. 461})\). In many carabids there is a membranous area separating the dorsal and ventral sclerites, but in some taxa this membranous zone is indistinct. The apex of the pygopod usually has two internal eversible lobes (protrusible tubes of van Emden 1942; protrusible organ or pygopodium of Luff 1993) here referred to as the anal lobes (see Thompson 1979a). In some taxa (e.g., Dromius) sclerotized structures, often in shape of hooks (anal hooks of Luff 1993), are present within the lobes. The pygopod is also called segment X (Thompson 1979a), pygidium (Bousquet and Goulet 1984; Makarov 1994), or anal tube (Luff 1993).

RETI N ACULUM. Toothlike projection on the medial edge of the mandible \((\text{re}, \text{Fig. 528})\). The retinaculum could be long, short, or even absent. Its posterior edge is serrulate in some taxa (e.g., Licinini, Cychrini).

SCLEROTIZED. Denotes the presence of yellow to black pigment.

SECONDARY SETAE. Setae found on the second and third instars excluding the primary setae \([q.v.]\).

SENSORIUM. Unpigmented sensorial organ located anterolaterally or anteroventrally on antennomere 3 \((\text{se}, \text{Fig. 525})\). Also called hyaline vesicle, sensory appendage (van Emden 1942; Luff 1993), sensorial appendage (Makarov 1994), and sensory node (Thompson 1979a). The sensorium is bulbous in most taxa but flat in a few (e.g., Scaritini, Morionini).

SETAE. Setae are important features of carabid larvae. They are grouped into primary \([q.v.]\) and secondary setae \([q.v.]\). The positions of some of the most taxonomically useful setae are indicated on Figures 373 (dorsal view of parietale \([\text{PA}]\) and frontale \([\text{FR}]\)), 503 (lateral view of parietale \([\text{PA}]\)), 528 (dorsal view of mandible \([\text{MN}]\)), 537 (lateral view of maxilla \([\text{MX}]\)), 540 (dorsal view of lacinia \([\text{MX}]\)), 547 (dorsal view of urogomphi \([\text{UR}]\)), and 614 (dorsal view of abdominal tergite \([\text{TE}]\)).

SETAL GROUP \[\text{GMX}\]. Setae, taken collectively, on the dorsal surface of the stipes (see Bousquet and Goulet 1984). The approximate number of these setae is sometimes taxonomically useful.

SPOTTY. Refers to the presence of unpigmented areas behind some of the primary setae on the urogomphi.

STEMMA. Sight organ located anterolaterally on each side of the parietale \([q.v.]\). In most taxa, six of these structures are present on each side and arranged in two rows, an anterior and a posterior one, of three stemmata each. Also called ocellus (Thompson 1979a; Luff 1993).

STERNAL SCLERITE. The term was used by Bousquet and Goulet (1984) to denote the ventral sclerite on the eighth and ninth abdominal segments of most carabid species. These scler-
ites arise from the fusion of the median, inner, and outer sternites on the eighth segment, and of the median, inner and outer sternites, and hypopleurites on the ninth segment.

**STIPES.** Elongate sclerite of the maxilla bearing a palpus [q.v.], lacinia [q.v.], and galea [q.v.].

**SUBBASAL CONSTRUCTION.** See entry basal stricture.

**SUBMENTUM.** The more or less membranous area on the ventral side of the parietale [q.v.] between the gular sutures [q.v.] anterior to the posterior tentorial pits (a pair of invaginations of the cephalic capsule).

**TEREBRA.** The area of the mandible anterior to the retinaculum (τ, Fig. 528). Its medial edge is serrulate in some taxa.

**TERGAL CARINA.** See entry abdominal tergite.

**UROGOMPHUS.** Apical extension of abdominal tergite IX. Also called cercus (Thompson 1979a; Makarov 1994). In most taxa, the urogomphi are fixed to tergite IX but in a few, they are articulated (e.g., Nebriini). For most taxa the urogomphi are longer than the pygopod [q.v.], but in others they can be very short (most Cychrini) or even absent (Cicindelinae).

### 4. — ABBREVIATIONS USED

The following abbreviations are used in this section: D: description; D+K: description and key; K: key; LH: length of cephalic capsule, measured from the edge of adnasale to the postoccipital suture; I₁: first instar; I₂: second instar; I₃: third instar; I₂₃: second or third instar; I₁: instar unknown or not specified; WH: maximum width of cephalic capsule.
Key to Genera

1. Leg less than five-segmented (claws not counted) [ectoparasitoid larvae, very rarely collected] ...............................................................................................................................2  
   – Leg five-segmented (claws not counted) [free living larvae] ........................................3

   ............................................................................................................................ Lebia Latreille  
   – Antenna four- or five-segmented. Galea unisegmented [tribe Brachinini] ..............  
   ........................................................................................................................... Brachinus Weber

3 [1]. Abdominal tergite 5 with two tubercles, each bearing two hooks (Fig. 421). Galeomere 1 and maxillary palpmere 1 fused at base (Fig. 416). Antennomere 3 without sensorium [urogomphe absent] [tribe Cicindelini; Plate 70] ................. Cicindela Linné  
   – Abdominal tergite 5 without tubercles and hooks. Galeomere 1 and maxillary palpmere 1 not fused at base. Antennomere 3 with bulbous or flat sensorium ....... 4

4 [3]. Mandible with toothlike process behind retinaculum (Fig. 441). Ligula as long as labial palpus (Fig. 443). Lacinia subequal in length to galea (Fig. 442) and subspatulate apically. Setae UN₁ and UN₂ flat and about 1.5 X length of claws [tribe Omophronini; Plate 73] ................................................................. Omophron Latreille  
   – Mandible without toothlike process behind retinaculum. Ligula absent or much shorter than labial palpus. Lacinia absent or much shorter than galea, not subspatulate apically. Setae UN₁ and UN₂ shorter than claws, in most taxa minute and indistinct ................................................................. 5

5 [4]. Galeomere 2 with granular bulbous median portion and long apical filament, both surrounded by a membranous structure (Fig. 429). Mandible with small membranous “tongue” near middle of terebra ventrally [cephalic capsule markedly rounded posteriorly but without basal constriction (Fig. 426); penicillus minute (Fig. 427); lacinia absent] [tribe Loricerini; Plate 71] ...................................................... Loriera Latreille  
   – Galeomere 2 without apical filament and membranous structure. Mandible without membranous “tongue” near middle of blade ............................................ 6

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1 A generic name placed in French quotation marks («») in the key indicates that no specimens of that genus were available for study and the character states listed are taken from the literature. Some genera are taxonomically complex with numerous species but only a few known in their larval stages (e.g., Clivina). Genera placed in quotation marks (“”) belong to that category. Possibly larvae of previously unknown species may not possess the character states listed for their genera and therefore not key to the proper name.

The notation of primary setae follows Bousquet and Goulet (1984) and that of secondary setae follows Bousquet (1985b). An asterix (*) after a coded seta indicates that the homology of the seta with that illustrated by Bousquet and Goulet (1984) is incertain.
6 [5]. Cephalic capsule with basal stricture defining a cervical region (Figs 377, 378, 386, 679) [coronal suture markedly long; penicillus absent] ................................................7
  – Cephalic capsule without basal stricture, though a subbasal constriction is present in some species .................................................................................................................10

7 [6]. Urogomphi fixed and markedly long, more than five times length of cephalic capsule [lacinia absent; claws equal] [tribe Galeritini; Plate 90] .......... Galerita Fabricius
  – Urogomphi articulated and much shorter, less than three times length of cephalic capsule [claws slightly unequal] ................................................................. 8

8 [7]. Nasale with four toothlike projections, medial ones less than twice as long as lateral ones (Fig. 380). Lacinia present, styliform (Fig. 382). Apical labial palpomere subequal or shorter than basal palpomere (Fig. 383) [tribe Nebrini, in part; Plate 67]...
  – Nasale with four or six toothlike projections, two medial ones more than twice as long as lateral ones (Figs 379, 381). Lacinia absent (Fig. 387). Apical maxillary palpomere longer than basal palpomere (Fig. 388) ........................................................................................................................9

9 [8]. Antennomeres 1 and 2 with setae. Adnasale without toothlike projection near nasale (Fig. 379). Urogomphus with five setae [tribe Nebrini, in part] ...........................
  – Antennomeres 1 and 2 without setae. Adnasale with toothlike projection on each side of nasale (Fig. 381). Urogomphus with five to eight setae [tribe Notiophilini]. ...........................................................................................................................Notiophilus Duméril

10 [6]. Tarsus with one claw ........................................................................................................................ 11
  – Tarsus with two claws ........................................................................................................................ 21

11 [10]. Maxillary palpus five-segmented (Fig. 471); labial palpus four-segmented (Fig. 472) [urogomphus with seven long setae] [tribe Trechini] .................... Trechus Clairville
  – Maxillary palpus four-segmented; labial palpus two-segmented ...................................................... 12

12 [11]. Urogomphi markedly short, much shorter than pygopod (Fig. 460) [body very narrow; lacinia absent] [tribe Clivinini, in part; Plate 76] ...................... Dyschirius Bonelli
  – Urogomphi moderately long (Figs 458, 467, 468), as long as or longer than pygopod ....... 13

13 [12]. Cervical groove present (Figs 451, 464) ...................................................................................... 14
  – Cervical groove absent (Figs 462, 475-477) ...................................................................................... 15

14 [13]. Cervical groove extended dorsally to near coronal suture (Fig. 464). Lacinia absent (Fig. 463). Urogomphus much longer than pygopod, with nine major setae (Fig. 468). Width of cephalic capsule more than 2 mm [tribe Broscini, in part] .......
  – Cervical groove not extended dorsally to near coronal suture (Fig. 451). Lacinia present, consisting of a small projection. Urogomphus subequal in length to pygopod, with seven major setae and numerous smaller ones (Fig. 458). Width
of cephalic capsule less than 1.2 mm [tribe Clivinini, in part: subgenus *Clivina s.str.*; Plate 75].......................................................... "*Clivina*" Latreille

15 [13]. Urogomphus with 10-14 major setae (Fig. 467). Setae UN₁ and UN₂ on claws spine-like, distinct [tribe Broscini, in part; Plate 77].................................................. *Miscodera* Eschscholtz
  – Urogomphus with six to nine major setae (Figs 482-484). Setae UN₁ and UN₂ filiform, indistinct even at 80X [tribe Bembidiini].............................................................. 16

16 [15]. Urogomphus with seven or more major setae (Fig. 482) [subtribe Bembidiina]... 17
  – Urogomphus with six major setae (Figs 483, 484) [subtribe Tachyina]...................... 18

17 [16]. Setae FR₄, FR₅, PA₄ and PA₅, frayed .................................................. «*Asaphidion*» Gozis
  – Setae FR₂, FR₃, PA₄ and PA₅, typical, acuminate apically.................. *Bembidion* Latreille

18 [16]. Coronal suture absent (Fig. 476)............................................................... *Mioptachys* Bates
  – Coronal suture present (Fig. 477)........................................................................... 19

19 [18]. Tergite 9 without secondary seta on each side anterior to UR₂. Setal group gMX with five setae. Ocular groove distinct .......................................................... «*Tachyta*» Kirby
  – Tergite 9 with secondary seta on each side anterior to UR₂. Setal group gMX with six setae. Ocular groove indistinct............................................................... 20

20 [19]. Terebra serrulate along basal half of medial edge...........................................«*Paratachys*» Casey/ «*Porotachys*» Netolitzky
  – Terebra smooth along medial edge ......................................................................... *Elaphropus* Motschulsky

21 [10]. Lacinia distinct, longer than wide................................................................... 22
  – Lacinia absent or markedly small, barely distinct, wider than long.......................... 68

22 [21]. Arms of frontal suture reaching postoccipital suture separately, not coming in contact medially (Fig. 579) [nasale undifferentiated; terebra with dorsal and ventral rows of serrations near medial edge] .................................................... *Badister* Clairville
  – Arms of frontal suture coming in contact medially .................................................. 23

23 [22]. Claws of median and hind legs equal or very slightly unequal.......................... 24
  – Claws of median and hind legs distinctly unequal.................................................. 50

24 [23]. Body shape onisciform (Plate 71). Urogomphus absent (Fig. 396) or markedly short (Fig. 395), not or barely prolonged beyond apex of tergite 9 [dorsal sclerites darkly pigmented; coronal suture absent; antenna longer than mandible; posterior edge of retinaculum serrulate] [tribe Cychrini].......................................................... 25
  – Body shape not onisciform, more or less parallel-sided. Urogomphus present, distinctly prolonged beyond apex of tergite 9............................................................... 26

25 [24]. Ligula absent (Fig. 393). Median and inner sternites not fused on abdominal segments 3-7 [Plate 68]............................................................... *Sphaeroderus* Dejean
  – Ligula well developed (Fig. 394). Median and inner sternites fused on abdominal segments 3-7 ............................................................... *Seaphinotus* Dejean
26 [24]. Urogomphus short, shorter than width of tergite 9, with one or two hornlike projections [dorsal sclerites darkly pigmented; coronal suture absent or very short; antenna subequal in length to mandible] [tribe Carabini]...
   - Urogomphus proportionally longer, as long as or longer than width of tergite 9, without hornlike projections but with nodules in some species...

27 [26]. Urogomphus curled up apically (Figs 410-413) ........................................... *Carabus* Linné
   - Urogomphus more or less straight apically (Fig. 404) [Plate 69].............. *Calosoma* Weber

28 [26]. Cervical groove absent ..............................................................
   - Cervical groove present ..............................................................

29 [28]. Lacinia not acuminate, seta MX₆ apical ..................................................
   - Lacinia acuminate, seta MX₆ lateral or basal .......................................... 

30 [29]. Coronal suture indistinct or markedly short, less than half length of antennomere 4 (Figs 570-572) [tribe Chlaeniini; Plate 82]............................ *Chlaenius* Bonelli
   - Coronal suture longer, at least half length of antennomere 4 ....................

31 [30]. Anterior edge of nasale transversely truncate, without toothlike projections. Urogomphus with five long setae only, no accessory setae present. Penicillus unisetose, seta short [tribe Psydrini] ................................................................. *Psydrus* LeConte
   - Anterior edge of nasale with at least one toothlike projection. Urogomphus with more than five relatively long setae and/or with accessory smaller setae at least at base. Penicillus plurisetose ..........................................................

32 [31]. Urogomphi articulated. Nasale with two primary toothlike projections, usually with an additional smaller one on each side (Fig. 373) [tribe Pelophilini; Plate 66] ............................
   - Urogomphi fixed. Nasale with three primary toothlike projections, often also with an additional smaller one on each side, or with one central projection .........

33 [32]. Nasale with three primary toothlike projections (Figs 566, 567). Urogomphus without nodules, with five long setae (Fig. 569) [tribe Oodini] ..........................
   - Nasale with one median projection (Figs 431, 432). Urogomphus with nodules (often best seen in lateral view), with more than five long setae (Figs 434-436) [tribe Elaphrini, in part] ........................................

34 [33]. Coronal suture as long as antennomere 4 (Fig. 566) [Plate 81]............. *Lachnocrepis* LeConte
   - Coronal suture shorter than antennomere 4 (Fig. 567) .......................... *Oodes* Bonelli

35 [33]. Epipleurite not divided........................................................................... *Diacheila* Motschulsky
   - Epipleurite divided [Plate 72] ............................................................... *Blethisa* Bonelli

36 [29]. Nasale with four to eight short, subequal toothlike projections, in some species with microserrations between processes and laterad. Setal group gMX with apicalmost setae distinctly thicker than other ones (Fig. 561) [tribe Zabrini, in part] ..............................................
   - *Amara* Bonelli [in part]
– Nasale without toothlike projection, except in some species for one at each lateral angle of anterior margin, with microserrations in most species. Setal group gMX without thicker setae anteriorly.................................37

37 [36]. Antennomere 1 with basal membranous ring suggesting subdivision (Fig. 526). Coronal suture well developed, as long as antennomere 2. Posterior edge of retinaculum smooth. Urogomphus with five long setae and no small setae. Stipes with membranous declivity medioventrally [tribe Pterostichini, in part]....... *Cyclothoracelus* Chaudoir [in part]
– Antennomere 1 without membranous area. Coronal suture absent or very short, much shorter than antennomere 2. Posterior edge of retinaculum serrulate. Urogomphus with several minute setae. Stipes without membranous declivity medioventrally [tribe Licinini, in part].................................................................38

38 [37]. Antenna only slightly longer than mandible. Antennomere 2 subequal in length to antennomere 1. Antennomeres 3 and 4 without minute setae. Tarsus without small spines ventrally. Urogomphi relatively short, about as long as median length of tergite 8, with nodules .................................................. *Diplocheila* Brullé
– Antenna much longer, at least twice as long as mandible. Antennomere 2 about three times as long as antennomere 1. Antennomeres 3 and 4 with minute setae. Tarsus with small spines ventrally. Urogomphi longer than median length of tergite 8, without nodules [Plate 83].................................................. *Dicaelus* Bonelli

39 [28]. Urogomphus with perpendicular apical process (Fig. 461). Penicillus unisetose. Claw incised, bearing elongate membranous structure (visible only with a scanning electron microscope) [parietale with one ocellus on each side; cervical groove extended lateroventrally] [tribe Clivinini, in part]................................. *Schizogenius* Putzeys
– Urogomphus without apical process. Penicillus absent or plurisetose. Claw not incised, without membranous structure........................................40

40 [39]. Nasale with four to eight short, subequal toothlike projections, in some species with microserrations between processes and lateral. Setal group gMX with apicalmost setae quite distinctly thicker than other ones (Fig. 561) [tribe Zabrini, in part; Plate 80].......................... *Amara* Bonelli [in part]
– Nasale without toothlike projection, except in some species for one at each lateral angle of anterior margin, with microserrations in most species. Setal group gMX without thicker setae anteriorly, except in *Pterostichus mutus*......................41

41 [40]. Lacinia distinctly acuminate, seta MX₅ inserted laterad or basal (Figs 539-541). Stipes with membranous declivity, surpassing level of MX₅ on lateral surface in the vast majority of species (Fig. 538), in several species extended over ventral surface (Figs 532, 535). Seta MN₇ present (Figs 527-530). Cervical groove extended anterior to seta PA₁₅ on lateral surface of parietale in several species (Fig. 502) [tribe Pterostichini, in part; Plate 79]..................42
– Lacinia not acuminate or slightly so, seta MX₅ inserted apicad or subapicad. Stipes without or with short membranous declivity on lateral surface barely reaching level of MX₅. Seta MN₇ absent in most species. Cervical groove not extended anterior to seta PA₁₅ [tribe Platynini, in part].................................................................48
42 [41]. Urogomphus pubescent in basal half and six or seven times as long as median length of tergite 9 (Fig. 552). Antennomere 2 with four or five apical setae. \textit{Alaox} Bonelli
- Urogomphus not pubescent and at most five times as long as median length of tergite 9 (Figs 547-551). Antennomere 2 at most with two apical setae. \textit{Abax} Bonelli

43 [42]. Penicillus absent. Urogomphus markedly curved inward in apical half (Fig. 550). \textit{Myas} Sturm
- Penicillus present (Figs 527-530). Urogomphus slightly divergent to moderately curved inward in apical half (Figs 547-549, 551, 553). \textit{Abacon} Bonelli

44 [43]. Urogomphus with ten distinct setae (Fig. 548). Antennomere 1 with one small, medial seta. \textit{Stereocerus} Kirby
- Urogomphus with six to nine distinct setae (Figs 547, 549, 551, 553). Antennomere 1 without seta.

45 [44]. Abdominal tergites 1 and 2 with numerous (more than ten) small secondary setae. \textit{Laphogoia} Bonelli
- Abdominal tergites 1 and 2 with few (less than ten) small secondary setae.

46 [45]. Urogomphus with seven distinct setae (Fig. 549). \textit{Gastrellarius} Casey
- Urogomphus with six (\textit{Pterostichus brevicornis}, Fig. 553) or eight or nine distinct setae (Figs 547, 551).

47 [46]. Seta TE_{10} on abdominal tergites about 0.1 times or less length of TE_{9}. \textit{Pecius} Bonelli
- Seta TE_{10} on abdominal tergites 1-5 at least 0.3 times (usually more than 0.5) length of TE_{9}. \textit{Pterostichus} Bonelli

48 [41]. Terebra with medial edge serrulate. \textit{Platynus} Bonelli
- Terebra with medial edge smooth, or with one or two incisions.

49 [48]. Abdominal tergites 1-8 with many small secondary setae more or less evenly distributed. \textit{Tetraleucus} Casey
- Abdominal tergites 1-8 without or with few secondary setae disposed, along with primary setae, in two transverse rows. \textit{Agonum} Bonelli / \textit{Sericoda} Kirby / \textit{Oxypselaphus} Chaudoir

50 [23]. Antennomere 2 with at least one apical seta [tribe Harpalini, in part]. \textit{Trichorticus} Morawitz
- Antennomere 2 without setae.

51 [50]. Nasale with two prominent toothlike projections extending beyond edge of adnasale; anterior edge of nasale emarginate between toothlike projections (Fig. 597). \textit{Ophonus} Dejean
- Nasale with more than two, small or large, toothlike projections not extending beyond edge of adnasale; anterior edge of nasale not emarginate.

52 [51]. Labial palpomere 1 without setae. Tergal carina distinct on tergites 1-8 [antennomere 2 with one apical seta]. \textit{Trichorticus} Morawitz
Labial palpomere 1 with dorsal setae (Fig. 611). Tergal carina indistinct at least on tergites 5-8 [Plate 85].

53 [50]. Cervical groove absent ........................................................................................................ 54
53 [50]. Cervical groove present [labial palpomere 1 without setae] ........................................ 56

54 [53]. Urogomphus with five major setae. Antennomere 1 with basal membranous ring (Fig. 526). Nasale not differentiated (Fig. 509) [tribe Pterostichini, in part] ....................

54 [53]. Urogomphus with seven to nine major setae (Fig. 618). Antennomere 1 without membranous ring. Nasale differentiated [tribe Harpalini, in part] ................................. 55

55 [54]. Labial palpomere 1 without setae. Urogomphus with nine major setae. Trochanter without, femur with less than ten secondary spiniform setae on ventral side [subgenus Agonoleptus Casey] .......................................................... Stenolophus Dejean [in part]

55 [54]. Labial palpomere 1 with two to five setae. Urogomphus with seven major setae (Fig. 618). Trochanter with 25-38 and femur with 18-32 secondary spiniform setae on ventral side [subgenus Gynandrotarsus Laferté-Sénéctère] .......................................................... Anisodactylus Dejean [in part]

56 [53]. Urogomphus shorter than pygopod (Fig. 620) ............................................................... Geopinus LeConte
56 [53]. Urogomphus longer than pygopod .................................................................................. 57

57 [56]. Mandible slightly curved anteriorly; medial edge of terebra with two toothlike processes; retinaculum located in basal half of mandible (Figs 590, 591) .............................. 58
57 [56]. Mandible moderately curved anteriorly; medial edge of terebra without or at most with one small rounded process; retinaculum located near middle of mandible .... 59

58 [57]. Adnasale markedly sloping toward nasale (Fig. 600). Ocular groove extended posteriorly past level of PA₆ (Fig. 591). Length of coronal suture subequal to that of antennomere 4 (Fig. 591). Length of seta PR₂ less than 0.1 times that of PR₁. .......................... Xestonotus LeConte

58 [57]. Adnasale moderately sloping toward nasale (Fig. 598). Ocular groove not extended toward PA₆ (Fig. 590). Length of coronal suture about half that of antennomere 4 (Fig. 590). Length of seta PR₂ 0.7-0.9 times that of PR₁ .... Notiobia Perty [in part]

59 [57]. Ocular groove extended posteriorly beyond level of PA₆ (Fig. 593) [tribe Harpalini, in part] ........................................................................................................................................ 60
59 [57]. Ocular groove absent or present but not extended posteriorly ........................................ 62

60 [59]. Tarsus longer than anterior claw. Stipes without membranous declivity laterally behind MX₂. Nasale without median projection (Fig. 599). Seta LA₆ on ligula apical [subgenus Amphasia s.str.] ................................................................. Amphasia Newman

60 [59]. Tarsus subequal in length to anterior claw. Stipes with small membranous declivity laterally behind MX₂. Nasale with small median projection (Figs 602, 603). Seta LA₆ on ligula preapical .................................................................................................... 61
61 [60]. Tergal carina distinct on all segments [subgenus Anisodactylus s.str.] ..........................................................Anisodactylus Dejean [in part]
– Tergal carina distinct only on first two or three segments [subgenus Anadaptus Casey] ..................................................Anisodactylus Dejean [in part]

62 [59]. Adnasale not sloping toward nasale; anterior margin of nasale serrulate (Fig. 642). Urogomphus with several very small setae beside major ones (Fig. 646) [tribe Atranini] ........................................................................................................Atranus LeConte
– Adnasale more or less sloping toward nasale; anterior margin of nasale with complex array of serrations and small toothlike projections. Urogomphus without small setae beside major ones [tribe Harpalini, in part] ..................................................63

63 [62]. Tergal carina distinct on tergites 1-8 ..................................................64
– Tergal carina indistinct at least on tergites 6-8 ..................................................66

64 [63]. Lateral side of mandible with two setae (MN₁ and MN₂) ...................... «Dicheirotrichus» Jacquelin du Val
– Lateral side of mandible with one seta (MN₁) ..........................................................65

65 [64]. Coronal suture shorter, less than half length of antennomere 4. Trochanter with two to four secondary setae. Lacinia moderately acuminate, fixed to stipes (Fig. 607) [Plate 84] ..........................................................Notiobia Perty [in part]
– Coronal suture longer, subequal in length to antennomere 4. Trochanter with 9-15 secondary setae. Lacinia markedly acuminate, articulated to stipes [subgenus Spongopus LeConte] ........................................................................................................Anisodactylus Dejean [in part]

66 [63]. Tergite without distinct secondary setae (less than eight setae distinct on each side) ...........................................«Acupalpus» Latreille / «Bradycellus» Erichson
– Tergite with several secondary setae (ten setae or more distinct on each side) (Fig. 615) ..................................................67

67 [66]. Tarsus very short, distinctly shorter than tibia [subgenus Agonoderus Dejean] ..........................................................Stenolophus Dejean [in part]
– Tarsus longer, subequal in length to tibia [subgenus Stenolophus s.str.] ..........................................................Stenolophus Dejean [in part]

68 [21]. Cervical groove present, extended dorsally to coronal suture (Fig. 448). Sensorium on antennomere 3 flat [tribe Scaritini; Plate 74] ..................................................................................Scarites Fabricius
– Cervical groove present or not, if present, not extended dorsally. Sensorium on antennomere 3 bulbous (except in one small [HW = 0.38-0.40 mm] species with exceedingly long urogomphi) ..........................................................69

69 [68]. Galeomere 1 not individualized, its medial edge contiguous with medial edge of stipes (Fig. 683). Antacoria between antennomeres 2 and 3 very narrow [coronal suture absent; penicillus absent] [tribe Helluoenini; Plate 91] .....................Helluoenmorphoides Ball
Galeomere 1 individualized, its medial edge not contiguous with medial edge of stipes. Antacoria between antennomeres 2 and 3 well developed, as much as that between antennomeres 1 and 2 .................................................................70

70 [69]. Urogomphus markedly long, much longer than remaining body. Sensorium on antennomere 3 not bulbous [tribe Lebiini, in part]...................... Axinopalpus LeConte

Urogomphus shorter, much shorter than length of remaining body. Sensorium on antennomere 3 bulbous........................................................................71

71 [70]. Claws distinctly unequal [tribe Platynini, in part]......................... Olisthopus Dejean

Claws subequal........................................................................................................72

72 [71]. Retinaculum absent or vestigial [urogomphi segmented; anal lobes with numerous well-developed hooklike structures] [tribe Lebiini, in part]..........................73

Retinaculum well developed.....................................................................................75

73 [72]. Claw without pulvillus or basal toothlike process. Urogomphus six- or seven-segmented (Fig. 677) [four-segmented in L1 (Fig. 678)]. Body without conspicuous colour contrast dorsally [Plate 88]............................................................................. Cymindis Latreille

Claw with pulvillus or basal toothlike process ventrally. Urogomphus five-segmented [four-segmented in L1]. Head and/or pronotum contrastingly paler than remaining of dorsum.................................................................74

74 [73]. Claw with basal toothlike process ventrally, about half as long as claw itself. Nasale narrow, at most as wide as labium, its anterior margin more or less smooth to finely serrulate........................................................................................................ Plochionus Dejean

Claw with pulvillus. Nasale wide, much wider than labium, with four well-developed through relatively small toothlike projections (Fig. 663) [Plate 89]........ Calleida Latreille

75 [72]. Urogomphi markedly short, shorter than pygopod. Claw with two toothlike processes along posterior edge near middle [coronal suture absent; penicillus very short] [tribe Lebiini, in part].............................................................. «Dromius» Bonelli

Urogomphi clearly longer than pygopod. Claw without toothlike processes along posterior edge....................................................................................76

76 [75]. Urogomphi segmented (Fig. 650).................................................................77

Urogomphi not segmented.......................................................................................78

77 [76]. Medial edge of terebra serrate. Arms of frontal suture converging in posterior half (Fig. 647) [cervical groove present in L2, absent in L1] [tribe Odacanthini; Plate 87]................................................................. Colliuris DeGeer

Medial edge of terebra smooth. Arms of frontal suture diverging and thence converging in posterior half (Fig. 660) [tribe Lebiini, in part] ...... Apristus Chaudoir [in part]

78 [76]. Coronal suture absent (Fig. 629) [tribe Platynini, in part] .............. Laemostenus Bonelli

Coronal suture present.............................................................................................79
79 [78]. Urogomphus with six or seven major setae (Figs 491, 492). Penicillus absent or consisting of very small setae [tribe Patrobinii] .................................................................80
– Urogomphus with eight or more major setae (Figs 435-439). Penicillus consisting of moderately long to long setae .............................................................81

80 [79]. Antennomere 2 without setae ................................. *Patrobus* Dejean / *Platypatrobus* Darlington
– Antennomere 2 with setae [Plate 78] .............................. *Diphus* Motschulsky

81 [79]. Nasale triangularly protruding (Figs 433, 626) .............................................................82
– Nasale not triangularly protruding (Figs 651, 667, 668, 670) ........................................83

82 [81]. Urogomphus with small setigerous nodules and 14-50 setae (Figs 437-439). Parietale with six stemmata on each side [tribe Elaphrini, in part] ........... *Elaphrus* Fabricius
– Urogomphus without nodules, with nine major setae. Parietale with four more or less distinct stemmata on each side [tribe Platynini, in part; Plate 86] ...........
..................................................................................................................*Synuchus* Gyllenhal

83 [81]. Cervical groove present [tribe Platynini, in part] .........................................................84
– Cervical groove absent .................................................................................................85

84 [83]. Tibia with a spinelike seta behind T1 s .................................................................*Calathus* Bonelli
– Tibia without spinelike seta behind T1 s .........................................................*Acalathus* Semenov

85 [83]. Mandible with two lateral setae (MN₁ and MNα). Setae MX₃ on stipes and MX₁₀ on maxillary palpomere 1 markedly thick (Fig. 652) [tribe Cyclosomini] ..........
..............................................................................................................................*“Tetragonoderus”* Dejean
– Mandible with one lateral seta (MN₁). Setae MX₃ on stipes and MX₁₀ on maxillary palpomere 1 relatively thin, as usual for carabids ........................................86

86 [85]. Urogomphus with ten major setae (Fig. 675). Adnasale projecting laterad (Figs 667, 668) .........................................................................................*Syntomus* Hope
– Urogomphus with more than 20 major setae (Fig. 674). Adnasale not projecting laterad (Fig. 670) .........................................................................................*Microlestes* Schmidt-Göbel
Comments and Key to Species of Some Genera

**Tribe Pelophilini**

[Figs 373-376, Pl. 66]

A single genus belongs to this tribe and larvae of one of its species has been adequately described.

**Genus Pelophila Dejean**

Larvae of this genus do not have any remarkable character states that would permit to recognize them readily. The following character states taken collectively would separate larvae of *Pelophila* from those of other northeastern taxa: head capsule without basal stricture (Fig. 373); parietale without cervical or ocular grooves, with six well-developed stemmata on each side; coronal suture well defined; nasale with four toothlike projections rather small particularly the lateral ones in L₃; antennomeres 1 and 2 without setae; penicillus distinct; lacinia present, acuminate apically (Fig. 374), seta MX₆ distinct; ligula distinct (Fig. 375); tergal carina distinct, extended laterally; urogomphi articulated to tergite 9 (fixed in L₁), each with 15-20 setae (Fig. 376); and two subequal or slightly unequal (more so in L₁) claws on each leg.

This account is taken from examination of 2L₂ and 6L₃ of *P. borealis* collected in northern Quebec and the Aleutian Islands in Alaska, and from the descriptions and illustrations of *P. borealis* provided by Andersen (1970) and Luff (1972; 1993). Based on Andersen’s (1970: 92) publication, the width of the cephalic capsule varies between 0.7 mm (L₁), 1.0-1.1 mm (L₂), and 1.4-1.5 mm (L₃). The specimens I examined measured between 1.07-1.13 mm (L₂) and 1.49-1.61 mm (L₃).

**List of northeastern species described or illustrated:**

*Pelophila borealis* (Paykull): Johnson and Carpenter (1898: 136-139; Figs 1-12) [D: L₁]; Sharova (1958: 37; Figs 31, 81-82) [K: L₁, L₂, L₃]; Sharova (1964: 143, 144; Figs 99-4, 128, 129-1) [K: L₂, L₃]; Andersen (1970: 92, 93; Figs 2a-i, 3a-c) [D: L₁, L₂, L₃]; Luff (1972: 176, 177; Figs 51-62) [D: L₁, L₂, L₃]; Thompson (1979a: Figs 34a-c); Luff (1993: 58, 59; Figs 160-163) [D: L₁, L₂, L₃].

**Tribe Nebriini**

[Figs 377-380, 382-385, Pl. 67]

Larvae of Nebriini are relatively easy to recognize from other northeastern taxa, except those of Notiophilini, by sharing the following character states: head capsule with basal stricture (Figs 377, 378); parietale without cervical groove, with six proportionally large stemmata on each side; coronal suture markedly long; nasale with toothlike projections (Figs 379, 380) which in some taxa are markedly protruding (Fig. 379); adnasale near nasale not acutely projecting forward; antennomere 1 with at least one seta, antennomere 2 with or without setae; mandible slender, suckle-shaped, with proportionally long retinaculum but no penicillus; maxilla elongate; lacinia present (Fig. 382) or not; ligula distinct in some taxa including the two genera present in the northeast (Fig. 383); urogomphi long, articulated to tergite 9 (Fig. 384); leg long, with two unequal claws (Fig. 385); tibia and tarsus with several secondary setae or short spines.
Figs 373-376. *Pelophila borealis*, L_{2,3} (dorsal view). 373, cephalic capsule, antenna and mandible; 374, right maxilla; 375, labium; 376, tergite 9 and urogomphi. Scale bars = 0.1 mm. *cs* – coronal suture; *fr* – frontale; *fs* – frontal suture; *ga* – galea; *la* – lacinia; *li* – ligula; *pa* – parietale; *pm* – prementum; *ps* – postoccipital suture.
GENUS _LEISTUS_ FRÖLICH (Figs 378, 379)

_Leistus_ larvae are superficially similar to those of _Notiophilus_, more so than to those of _Nebria_. They differ from _Notiophilus_ larvae in having six toothlike projections on the nasale (Fig. 379) though the basal ones are small, both antennomeres 1 and 2 with short setae, and each urogomphus with only five major setae. From _Nebria_ larvae, they differ by having the nasale more protruding, the antennomere 2 with small setae, the mandible and stipes markedly narrow, the lacinia absent, and the urogomphi proportionally shorter, each with only five major setae.

The account is taken from the examination of 2L₁ of _L. ferrugineus_ collected in Germany and the descriptions and illustrations provided by Luff (1972; 1993) for several European species. The width of the cephalic capsule for the two specimens studied is 1.02 and 1.04 mm. Luff (1972: 165) reported that the width of the cephalic capsule in _L. ferrugineus_ varies between 0.68 mm (L₁; n= 1), 0.82-0.83 mm (L₂; n= 2), and 0.96-1.15 mm (L₃; n= 18).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

- _Leistus ferrugineus_ (Linné): Larsson (1941: 280) [D+K: L₁-₃]; Larsson (1968: 324) [D+K: L₁-₃]; Arndt (1991a: 72) [L₁-₃]; Luff (1993: 48; Figs 122, 123) [D+K: L₁-₃].

GENUS _NEBRIA_ LATREILLE (Figs 377, 380, 382-385)

_Nebria_ larvae are easily separated from those of _Leistus_ by having the nasale less protruding (Fig. 380), the antennomere 2 without setae, the mandible and stipes proportionally wider, the lacinia distinct (Fig. 383), consisting of an acuminate lobe (which could in fact be a heavy short spine) with seta MX₆ indistinct, and the urogomphi proportionally longer, each with more than ten major setae in L₁-₃.

This account is taken from examination of several reared specimens of _N. pallipes_ Say and _N. lacustris_ Casey and unidentifed field-collected specimens from southern Quebec and New Hampshire as well as information and drawings provided by Luff (1972; 1993) for several European species. A detailed structural study of the _Nebria_ head capsule and its appendages has been published by Spence and Sutcliffe (1982). Five species found in the northeast have been described to date but a comparative study is needed before a key could be presented. The two most commonly species found in the temperate region of the northeast are _N. pallipes_ and _N. lacustris_. According to Spence _et al._ (1976: 81), larvae of the two species differ from one another by the shape of the nasale: the median pair of toothlike projections are longer compared to the lateral ones in _N. pallipes_ than in _N. lacustris_. The width of the cephalic capsule is given as 0.90-1.00 mm (L₂) and 1.20-1.30 mm (L₃) for _N. pallipes_ and 1.00-1.10 mm (L₂) and 1.30-1.40 mm (L₃) for _N. lacustris_.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

- _Nebria (Boreonebria) gyllenhalii_ Schönherr: Andersen (1970: 91-93; Figs 4a-i, 5a-c) [D+K: L₁-₃; Luff (1972, as _N. rufescens_: 171, 174, 176; Figs 45-49) [D+K: L₁-₃]; Böcher (1988, as _N. rufescens_: Fig. 1); Arndt (1991a: 71, 72) [K: L₁, L₂-₃]; Luff (1993: 50-52; Figs 131-136) [D+K: L₁, L₂-₃]; Makarov (1994: Figs 85, 86).  
- _Nebria (Boreonebria) lacustris_ Casey: Spence _et al._ (1976: 82; Figs 2a-c, 3a) [D: L₁-₃].  
- _Nebria (Nebria) nivalis_ (Paykull): Andersen (1970: 91-93; Figs 6a-d) [K: L₁-₃; Luff (1993: 50, 52; Figs 137-142) [D+K: L₁-₃].  
- _Nebria (Nebria) brevicollis_ (Fabricius): Blissone (1848: 73-76; Pl. 1, Figs 1-6) [D: L₂-₃]; Schiodte (1867: 461-465; Pl. 14, Figs 1-7) [D: L₃]; Znojko (1929: Fig. 4b); Larsson (1941: 278; Figs 5, 6, 17a, 18a) [D+K: L₁-₃]; Sharova (1958: 38; Figs 6, 18, 85a) [K: L₁-₃]; Sharova (1964: 145; Figs 88, 93-2, 130-1) [K: L₁-₃]; Larsson (1968: 321, 322; Figs 5, 6, 17a, 18a) [D+K:
Figs 377-385. 377, cephalic capsule of *Nebria sp.*, L₁ (dorsal view); 378, cephalic capsule, antenna, mandibles and maxilla of *Leistus ferrugineus*, L₂₋₃ (dorsal view); 379-381: anterior edge of frontale (dorsal view). 379, *Leistus ferrugineus*, L₂₋₃; 380, *Nebria sp.*, L₂₋₃; 381, *Notiophilus sp.*, L₂₋₃; 382, right maxilla of *Nebria sp.*, L₂₋₃ (dorsal view); 383, labium of *Nebria sp.*, L₂₋₃ (dorsal view); 384, tergite 9 and urogomphi of *Nebria sp.*, L₁ (dorsal view); 385, tarsus and claws of *Nebria sp.*, L₁ (dorsal view). Scale bars = 0.2 mm
TRIBE NOTIOPHILINI

[Figs 381, 386-389]

A single genus belongs to this tribe and several species are known in their larval stages.

GENUS NOTIOPHILUS DUMÉRIL

Notiophilus larvae are remarkably similar to those of Nebrini and this fact is one of the main reasons why the two tribes are regarded as closely related in most carabid classifications today. They share with nebrine larvae a basally strictured cephalic capsule (Fig. 386), presence of well-developed toothlike projections on the nasale (Fig. 381), markedly falciform mandible with elongate retinaculum (Fig. 386), absence of penicillus, markedly elongate apical maxillary palpmere (Fig. 387), articulated urogomphi (Fig. 389), and two unequal claws on each leg. They differ from those of Nebrini in that the nasale is more convex, clearly set off from the adnasalia, the adnasale is acutely projecting forward on both sides near the nasale (Fig. 381), both antennomeres 1 and 2 are without setae, and the tibia and tarsus have no secondary setae or short spines. The urogomphi each bear five to eight major setae.

This account is based on examination of a few unidentifed larvae collected in North America as well as descriptions and illustrations provided by Luff (1976, 1993) for several European species. Four of the nine species found in the northeast are known in their larval stages. The urogomphi are bicolour (basal two-thirds dark, apical third whitish) in N. aquaticus and N. palustris (Luff 1993: 61), unicolour (entirely dark) in N. biguttatus (Luff 1993: 61) and N. novemstriatus (Thompson and Allen 1974: 189).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Notiophilus aquaticus (Linne): Schiodte (1867: 456; Pl. 13, fig. 19) [D: L1, 3]; Larsson (1941: 233) [D+K: L1, 3]; Larsson (1941: 283; Figs 20, 22a) [D+K: L1, 3]; van Emden (1942: Fig. 4); Sharova (1958: 39; Fig. 86a) [K: L1, 3]; Davies (1964: 207, 208; Fig. 1) [D+K: L1, L2, 3]; Sharova (1964: 146; Fig. 130-3) [K: L1, 3]; Larsson (1968: 327, 328; Figs 20, 22a) [D+K: L1, 3]; Sharova (1976: 52, 59; Figs 17-19) [D+K: L1, L2, 3]; Arndt (1991a: 74) [K: L1, 3]; Luff (1993: 61, 62; Figs 168-170) [D+K: L1, L2, 3].

Notiophilus biguttatus (Fabricius): Schiodte (1867: 456; Pl. 13, Figs 12-17) [D: L1, 3]; Larsson (1941: 233, 284; Figs 20, 22a) [D+K: L1, 3]; van Emden (1942: Fig. 4); Sharova (1958: 39; Fig. 86a) [K: L1, 3]; Davies (1964: 207, 208; Fig. 1) [D+K: L1, L2, 3]; Sharova (1964: 146; Fig. 130-3) [K: L1, 3]; Larsson (1968: 327, 328; Figs 20, 22a) [D+K: L1, 3]; Sharova (1976: 52, 53, 55; Figs 1-10) [D+K: L1, L2, 3]; Arndt (1991a: 74) [K: L1, 3]; Luff (1993: 61, 64; Figs 178-183) [D+K: L1, L2, 3].

Notiophilus novemstriatus LeConte: Thompson and Allen (1974: 186-189; Figs 1a-c) [D: L2, 3].

Notiophilus palustris (Duftschmidt): Larsson (1941: 283, 284) [D+K: L1, 3]; Sharova (1958: 39; Fig. 80) [K: L1, 3]; Davies (1964: 207, 208) [D+K: L1, L2, 3]; Sharova (1964: 146; Fig. 127) [K: L1, 3]; Larsson (1968: 327-329) [D+K: L1, 3]; Larsson (1976: 52, 56; Figs 12, 13) [D+K: L2, 3]; Arndt (1991a: 74; Fig. 64) [K: L1, 3]; Luff (1993: 61-63) [D+K: L1, 3].
Figs 386-389. *Notiophilus* sp., L₃ (dorsal view). 386, cephalic capsule, antenna and mandible; 387, left maxilla; 388, labium; 389, tergite 9 and urogomphi. Scale bars = 0.2 mm
Cychrine larvae are easily distinguished by their broad, onisciform body (Plate 68), their heavily sclerotized dorsal sclerites at maturity, and their laterally extended tergites covering the segments entirely. Other character states common to all known species include: cephalic capsule without basal stricture (Fig. 390); cervical groove absent; six stemmata on each side of parietale; arms of frontal suture without or with shallow sinuations; coronal suture indistinct; nasale only slightly protruding medially, its anterior edge without microserration; antenna (Fig. 390) at least slightly longer than mandible but usually much longer, antennomere 2 longer than any other antennomeres, with setae, sensorium small but distinct, located lateroventrally at apex; mandible (Fig. 391) with medial edge of terebra smooth, retinaculum well developed, its posterior edge serrate, penicillus consisting of many relatively small setae; lacinia conical, MX₆ apical (Fig. 392); ligula present (Fig. 394) or not (Fig. 393); gular sutures widely separated anterior to metatentoria; abdominal tergites without conspicuous setae; inner sternites fused together; urogomphi absent (Fig. 396) or very short (Fig. 395), without setae; leg (Fig. 397) with two equal claws; tarsus with several small spines at least ventrally.

Larvae of all three cychrine genera present in North America are known.

**Genus Scaphinotus Dejean** (Figs 390, 394, 396)

There is no published description of larvae of any species of *Scaphinotus*. I have studied several specimens collected in Quebec, Vermont, Pennsylvania, West Virginia, Tennessee, British Columbia and California, representing at least six species, including *S. bilobus* and *S. viduus* present in the northeast. All of them have a well-developed ligula (Fig. 394) which is entirely sclerotized ventrally and the median and inner sternites fused together at least from the abdominal segment 3. In the specimen from Mount Revelstoke National Park, British Columbia, the antennae are only slightly longer than the mandibles but in all other species, they are much longer than the mandibles. In members of *S. bilobus* and one species collected in Tulare County, California, the urogomphi are absent (Fig. 396). Two specimens of *S. bilobus* were studied, one reared L₁ and one field-collected L₂ from Matagami, Quebec.

**Key to known northeastern species of Scaphinotus**

1. Urogomphi absent (Fig. 396). First labial and second maxillary palpomeres without setae [WH = 0.78 mm (L₁; n=1), 1.13 mm (L₂; n=1)] .............................. *S. bilobus* Say
– Urogomphi present. First labial and second maxillary palpomeres with setae [WH = 2.10-2.43 mm (L₂; n=4)] ...................................................................... *S. viduus* Dejean

**List of northeastern species described or illustrated:**

*Scaphinotus* (Nomaretus) *bilobus* Say: Bousquet (1977: 4.9; Figs 12-13) [D: L₁, L₂].

*Scaphinotus* (Scaphinotus) *viduus* Dejean: Bousquet (1977: 4.4-4.8; Figs 1-11) [D: L₂, L₃].

**Genus Sphaeroderus Dejean** (Figs 391-393, 395, 397)

Contrary to larvae of *Scaphinotus*, those of *Sphaeroderus* have no ligula (Fig. 393) and the median sternite is not fused to the inner sternite on the first seven abdominal segments. The antennae are much longer than the mandibles and the urogomphi are present (Fig. 395). Thompson’s (1979a: Fig. 32a, b) figures, representing a specimen with well-developed ligula and lacking
Figs 390-397. *Sphaeroderus stenostomus lecontei* (dorsal view), unless otherwise noted. 390, cephalic capsule, antenna and mandible of *Scaphinotus viduus*, L₁; 391, left mandible, L₁; 392, right maxilla, L₁; 393, labium, L₁; 394, labium of *Scaphinotus viduus*, L₁; 395, tergite 9 and urogomphi, L₁; 396, tergite 9 and urogomphi of *Scaphinotus bilobus*, L₂-₃; 397, leg, L₁ (lateral view). Scale bars = 0.2 mm.
urogomphi, assumed to be those of a *Sphaeroderus* are likely misleading; his specimen collected in Washington County, Arkansas, certainly belongs to the genus *Scaphinotus*. This is substantiated by the fact that no *Sphaeroderus* are known from Arkansas based on Bousquet and Laroche’s (1993) catalogue.

This account is taken from examination of reared and/or field collected specimens of all three species found in the northeast. Larval descriptions of these species can be found in Bousquet’s (1977) unpublished thesis.

**Key to northeastern species of *Sphaeroderus***

1. Penultimate maxillary palpomere with seven to ten conspicuous setae. Cephalic capsule distinctly transverse (LH/WH = 0.80-0.85) [WH = 1.18-1.28 mm (L2; n=6), 1.44-1.59 mm (L3; n=14)]; urogomphi reaching about level of posterior extremities of tergite 9] .............................................................. *S. canadensis* Chaudoir

   – Penultimate maxillary palpomere without conspicuous setae. Cephalic capsule subquadrate or slightly longer than wide (LH/WH = 0.95-1.10) ........................................ 2

2 [1]. Urogomphi reaching or even slightly surpassing level of posterior extremities of tergite 9 (Fig. 395; see also Lindroth 1955b: Fig. 7c). Cephalic capsule subquadrate (LH/WH = 0.95-1.00) [WH = 1.14-1.22 mm (L2; n=12), 1.37-1.52 mm (L3; n=21)] ..................................................................................... *S. stenostomus lecontei* Dejean

   – Urogomphi not quite reaching level of posterior extremities of tergite 9 (see Lindroth 1955b: Fig. 7d). Cephalic capsule slightly elongate (LH/WH = 1.05-1.10) [WH = 1.01-1.08 mm (L2; n=5), 1.18-1.31 mm (L3; n=10)] ........................................................................

   ............................................................................................................. *S. nitidicollis* Guérin-Méneville

**List of northeastern species described or illustrated:**

*Sphaeroderus canadensis* Chaudoir: Bousquet (1977: 1.9; Figs 2, 3, 8, 10) [D+K: L1-3].
*Sphaeroderus nitidicollis* Guérin-Méneville: Lindroth (1955b: Fig. 7d); Bousquet (1977: 1.9, 1.10; Figs 5, 7, 17) [D+K: L1-3].
*Sphaeroderus stenostomus lecontei* Dejean: Lindroth (1955b: Fig. 7c); Bousquet (1977: 1.9, 1.10; Figs 4, 6, 9-15, 18-20) [D+K: L1-3].

**Tribe Carabini**

*[Figs 398-413, Pl. 69]*

Larvae of Carabini, at least those found in North America, are quite characteristic by their robust, cylindrical body (Plate 69), their wide, heavily sclerotized dorsal sclerites, and proportionally short urogomphi, each bearing one or two hornlike projections at least in L2 and L3 (Figs 404, 410-413). Other character states common to North American Carabini include: cephalic capsule without basal stricture (Fig. 398); parietale without cervical groove but with six stemmata on each side; coronal suture very short or indistinct; nasale differentiated; antenna not longer than mandible, sensorium proportionally small, located ventrally rather than medially at apex of antennomere 3; penicillus present (Fig. 399); stipes relatively short (Fig. 400); lacinia present, conical with MX6 apical (Fig. 400); leg stout with two equal or slightly unequal claws (Fig. 405).

Both genera found in the northeast are known in their larval stages.
GENUS CALOSOMA Weber (Figs 398-405)

Separation of Calosoma and Carabus larvae is not always evident. The only readily seen character state I have found to differentiate the two species of Calosoma from the six species of Carabus treated are as follow. The nasale has four toothlike projections in Calosoma and the two smaller lateral ones are more or less separated from the larger medial ones whereas in Carabus, the nasale is shaped differently (Figs 407, 408) or if with four toothlike projections, the lateral ones are clearly separated from the medial ones, more or less as much as between the two median projections (Fig. 406). The setae PA₆ and PR₄ are distinct, although small, in Calosoma, indistinct in Carabus. The epipleurite is clearly divided in Calosoma whereas in Carabus it is undivided, incompletely divided, or narrowly divided. Finally, in lateral view, the urogomphi are more or less straight toward the apex in the two Calosoma (Fig. 404) and at least moderately curled up in the six Carabus (Figs 410-413). Whether or not these character states will hold for all North American Calosoma and Carabus remains to be documented.

This account in taken from examination of several reared and field-collected larvae of C. calidum and C. frigidum. All six species found in the northeast are known in their larval stage. The following key included only two of the six species but these two are more likely to be collected in the northeast than any of the other ones. Several other character states differ between the two species: for example, the urogomphi in C. calidum are proportionally longer, slightly curved overall in lateral view, and the main horn is located more posteriad than in C. frigidum and the antennomere 2 bears a distinct medial seta in C. frigidum while in C. calidum, the seta is absent or very small in almost all specimens seen.

Key to the most common northeastern species of Calosoma

1. Lateroposterior area of abdominal tergites 5-8 rounded, not projecting posteriad (Fig. 402). Setae on epipleurites, hypopleurites, median sternites and inner and outer sternites not conspicuous [WH = 1.89-2.32 mm (L₂; n=9), 2.53-3.24 mm (L₃; n=8)] ..........................................................................................................

Calosoma (Calitropa) externum (Say): Burgess and Collins (1917: 20, 23, 24) [D+K: L₁, L₂, L₃].

Calosoma (Calodrepa) scrutator (Fabricius): Chapuis and Candèze (1853: 372, 373; Pl. 1, fig. 4) [D: L₁, L₂, L₃]; Burgess and Collins (1917: 19, 31; Pl. 8, Figs a-d; Pl. 9, Figs a,b) [D+K: L₁, L₂, L₃].

Calosoma (Calodrepa) wilcoxi LeConte: Burgess and Collins (1917: 19, 41, 42) [D+K: L₁, L₂, L₃]; Garner (1954: 90-93) [D+K: L₂].

Calosoma (Calosoma) frigidum Kirby: Lapouge (1905: 172) [K: L₁]; Lapouge (1908: 163) [D: L₁, L₂, L₃]; Burgess and Collins (1917: 19, 48-50) [D+K: L₁, L₂, L₃]; Garner (1954: 90, 93, 94) [D+K: L₁, L₂, L₃]; Bousquet and Goulet (1984: Figs 40, 45, 47).

Calosoma (Calosoma) sycophanta (Linné): Burmeister (1836: 235, 236; Pl. 13, Figs 1-5) [D: L₁, L₂, L₃]; Lapouge (1905: 172) [K: L₁]; Lapouge (1908: 159, 160) [D: L₁, L₂, L₃]; Burgess and Collins (1917: 18, 19, 64, 65; Pl. 10, Figs a-d; Pl. 11, Figs a,b) [D+K: L₁, L₂, L₃]; Larsson (1941: 263-265; Figs 9b, 10b) [D+K: L₁, L₂, L₃]; Garner (1954: 90, 97, 98) [D+K: L₁, L₂, L₃]; Sharova (1957: 882; Figs 1a, 2a, 3a) [K: L₁, L₂, L₃]; Sharova
Figs 398-405. *Calosoma frigidum* (dorsal view), unless otherwise noted. 398, cephalic capsule, antenna and mandible, L2-3; 399, right mandible, L1; 400, right maxilla, L1; 401, labium, L1; 402, left half of tergite 7, L2-3; 403, left half of tergite 7 of *Calosoma calidum*, L2-3; 404, urogomphus, L2-3 (lateral view); 405, tarsus and claws, L1. Scale bars = 0.2 mm
(1958: 28; Figs 69a, 71a) [K: L1, ]; Sturani (1962: Fig. 38); Sharova (1964: 135; Figs 118-1, 120-1) [K: L1, ]; Larsson (1968: 306, 308; Figs 9b, 10b) [D+K: L1, ]; Casale et al. (1982: 82-83; Fig. 26b) [D: L1, ]; Arndt (1991a: 62; Fig. 29) [K: L1, ]; Luff (1993: 33, 34; Figs 58-62) [D+K: L1, L2, ]; Calosoma (Chrysostigma) calidum (Fabricius): Lapouge (1905: 172) [K: L3]; Lapouge (1908: 164) [D: L1, ]; Burgess and Collins (1917: 19, 101; Pl. 18, Figs a-d; Pl. 19, Figs a-b) [D+K: L1, L2, L3]; Garner (1954: 91, 100-102) [D+K: L2, ]; Kirk (1972: 1355; Fig. 3-7, Pl.1[7]) [D: L1, ];

**GENUS CARABUS LINNÉ (Figs 406-413)**

Character states that would separate larvae of *Carabus* from those of *Calosoma* were listed under the last-named genus.

This account is taken from examination of several field collected larvae of *C. nemoralis* from southern Quebec, of *C. serratus* from the Charlevoix region (Quebec), of *C. chamissonis* from Mount Washington, New Hampshire, a few specimens of *C. maeander* from southern Quebec, three specimens of *C. granulatus* from Sydney, Nova Scotia, and one specimen of *C. sylvosus* from Havelock (Quebec).

All species found in the northeast are known in their larval stage. The following key includes only six species but they are the ones most likely to be collected in the northeast.

**Key to the most common northeastern species of Carabus**

1. Seta TE₉ on abdominal tergites 1-7 present, long (Fig. 409). Apical labial palpomere with apical sensorial area undivided.................................................................2
   – Seta TE₉ on abdominal tergites 1-7 absent. Apical labial palpomere with apical sensorial area divided medially by narrow sclerotization...........................................4

2 [i]. Adnasale slightly sloping toward centre; nasale with two distant protuberances (Fig. 407). Apical labial palpomere fusiform, apical sensorial area small, round [HW = 1.80 (L2; n= 1)] ..............................................................................*C. granulatus* Linné
   – Adnasale markedly sloping toward centre; nasale with two strong, close toothlike projections (Fig. 408). Apical labial palpomere not fusiform, apical sensorial area larger, more or less oval ......................................................3

3 [ii]. Urogomphi distinctly curled up apically (Fig. 410). Lateroposterior area of tergite 9 not distinctly projecting posterioriad [WH = 1.23 mm (L1; n=1), 1.73-1.77 mm (L2, n=3), 2.10-2.17 mm (L3; n=3)] ..............................................*C. maeander* Fischer von Waldheim
   – Urogomphi only slightly curled up apically (Fig. 411). Lateroposterior area of tergite 9 distinctly projecting posterioriad [WH = 1.36-1.42 mm (L1; n= 2), 1.60-1.70 mm (L2; n= 6), 1.94-2.18 mm (L3; n= 13)] ..............................................................................*C. serratus* Say

4 [i]. Adnasale slightly sloping toward centre; nasale with two distant protuberances (as in Fig. 407); hypodon clearly distinct (as in Fig. 407) [WH = 1.70-1.84 mm (L1; n= 6), 2.06-2.32 mm (L2; n=8), 2.71-3.00 mm (L3; n=9)] ...............................................*C. nemoralis* Müller

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1 The width of the cephalic capsule given by Hůrka (1971: 54, 56) for *C. granulatus* varies between 1.20-1.40 mm (L1; n= 20), 1.52-1.98 mm (L2; n= 16), and 2.02-2.48 mm (L3; n= 27).

2 The width of the cephalic capsule given by Hůrka (1971: 64-65) for *C. nemoralis* varies between 1.62-1.95 mm (L1; n= 41), 2.06-2.44 mm (L2; n= 40), and 2.70-3.00 mm (L3; n= 34).
- Adnasale markedly sloping toward centre; nasale with two or four close toothlike projections (Fig. 406); hypodon not distinct (Fig. 406) ................................................ 5

5 [4]. Urogomphus with one large horn (Fig. 412). Epipleurite not divided [HW = 2.72 mm (L2; n= 1)] ........................................................................................................ C. sylvius Say
- Urogomphus with one or two small horns (Fig. 413). Epipleurite narrowly divided [WH = 1.65 mm (L2; n= 1), 1.99-2.22 mm (L3; n= 7)] .................................................................................... C. chamissonis Fischer von Waldheim

Figs 406-413. Carabus, L2-3. 406-408, anterior edge of frontale (dorsal view). 406, C. chamissonis; 407, C. granulatus; 408, C. maeander; 409, left half of tergite 7 of C. maeander (dorsal view); 410-413, urogomphus (lateral view). 410, C. maeander; 411, C. serratus; 412, C. sylvius; 413, C. chamissonis. Scale bars = 0.2 mm. by – hypodon
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Carabus (Archicarabus) nemoralis Müller†: Schiødte (1867: 490-491; Pl. 16, Figs 9-11) [D: L1]; Lapouge (1905: 172) [K: L1]; Lapouge (1908: 150, 151) [D: L1]; Larsson (1941: 267, 269; Figs 7, 11c) [D+K: L1]; Garner (1954: 75-77) [D+K: L1]; Sharova (1958: 31; Figs 72a, 74a, 76a, 79a) [K: L1]; Larsson (1968: 310, 312; Figs 7, 11c) [D+K: L1]; Luff (1969: 251, 255, 257; Figs 47-52) [D+K: L1]; Hůrka (1971: 22, 25, 62, 64, 65; Figs 19a-o) [D+K: L1]; Arndt (1991a: 66; Figs 26, 39, 51) [K: L1]; Luff (1993: 38, 42; Figs 6, 98-100) [D+K: L1].

Carabus (Carabus) goryi Dejean: Garner (1954, as C. limbatus: 75, 79, 80) [D+K: L1].

Carabus (Carabus) granulatus Linné†: Schiødte (1867: 493-494; Pl. 17, Figs 13-15) [D: L1]; Lapouge (1905: 172) [K: L1]; Lapouge (1908: 152, 153) [D: L1]; Oertel (1924: 326-356; Figs h, j-z, a1-h1, i1) [D: L1]; Larsson (1941: 267, 269, 270; Fig. 12a) [D+K: L1]; Garner (1954: 75, 85, 86) [D+K: L1]; Sharova (1958: 32; Figs 7, 72a, 73r, 76b, 79a) [K: L1]; Larsson (1968: 310, 313; Fig. 12a) [D+K: L1]; Luff (1969: 251, 255; Figs 40-46) [D+K: L1]; Hůrka (1971: 23, 24, 54-56; Figs 16a-u) [D+K: L1]; Arndt (1991a: 64) [K: L1]; Luff (1993: 38, 42, 43; Figs 101-103) [D+K: L1].

Carabus (Homoeocarabus) serratus Say: Lindroth (1955b: Figs 8c,f); Raynaud (1976a: 107) [D+K: L1].

Carabus (Homoeocarabus) maeander Fischer von Waldheim: Lindroth (1955b: Figs 8a,d); Raynaud (1976a: 107) [D+K: L1].

Carabus (Tachypus) auratus Linné: Lapouge (1905: 172) [K: L1]; Lapouge (1907: 52, 53) [D: L1]; Hůrka (1971: 23, 24, 44, 46, 47; Figs 13a-o) [D+K: L1]; Raynaud (1976a: 38, Pl. 71) [D+K: L1]; Arndt (1991a: 64) [K: L1]; Luff (1993: 38) [K: L1].

Carabus (Tomocarabus) chamissonis Fischer von Waldheim: Garner (1954: 75, 81, 82) [D+K: L1]; Lindroth (1955b: Figs 8b,c).

Carabus (Tanaocarabus) sylvestris Say: Garner (1954: 75, 77-79; Pl. 3, Figs a-c) [D+K: L1]; Raynaud (1975: 264; Pl. 14) [D+K: L1]; Thompson (1979a: Figs 29a-b).

Carabus (Tanaocarabus) taedatus Fabricius: Garner (1954: 75, 83, 84) [D+K: L1]; Raynaud (1975: 222; Pl. 5) [D+K: L1].

TRIBE CICINDELINI

[Figs 414-425, Pl. 70]

Larvae of Cicindelinae (tiger beetles) are unique for their body shape in which the head and pronotum basically rest at a right angle with the main axis of the body, by the fused galeomere 1 and maxillary palpomere 1 at base (Fig. 416), and for the presence of two tubercles, each bearing hooks, on abdominal tergite 5 (Fig. 421). Additionally two of the six stemmata on each side of the parietale are much bigger than the other ones, the antennomere 3 lacks the sensorium, and the urogomphi are absent.

Contrary to most other carabid groups, larvae of tiger beetles do not actively search for food. They spend their lives in burrows with a circular opening. They wait at the top of their burrows, with the head and pronotum closing the opening, for preys to pass by and then they quickly jump and grasp them. At the presence of danger, the larvae rapidly retreat at the bottom of the burrow.

GENUS Cicindela Linné

Being the only genus of tiger beetles presents in the northeast, larvae of Cicindela are easily recognized by the characteristics of the tribe. One species of another genus, Megacephala,
has been found in areas adjacent to the northeast. Larvae of that genus differ from those of *Cicindela* in having both hooks on each tubercle of abdominal tergite 5 straight or very slightly curved, the ridge at base of frontale transverse and joining the ridge at base of parietale, the prementum without sclerotization at the base of the labial palpi, and the first labial palpomere without projection at apex ventrally. *Cicindela* larvae have the median hook on each tubercle long, curved, directed laterad and the inner one smaller and more or less straight, the ridge at base of frontale U-shaped and not reaching the ridge at base of parietale, the prementum with sclerotization at the base of the labial palpi, and the first labial palpomere with a short spine-like projection at apex ventrally.

This account is taken from examination of several unidentiﬁed larvae collected in the northeast as well as information and illustrations given by Hamilton (1925), Knisley and Pearson (1984), and Arndt and Putchkov (1997). Larvae of all but one (*C. marginipennis*) of the 19 species found in the northeast have been described. The following key is based on 15 species, the most common ones in the area. The key is largely derived from those of Hamilton (1925), Sikes (1997), and Leonard and Bell (1999), and is developed for third instars only. Instars can be recognized by the widths of the cephalic capsule and pronotum and by the number of stout setae on the medial edge of the first galeomere (Leffler 1979: 63; Spanton 1988: 108): one in L_1* (Fig. 416), two in L_2 and three or four in L_3.

The key below relies a lot on the number of setae on the inner and median hooks of abdominal tergite 5, on the antennomere 1, and on the posterior edge of the sternal sclerite on abdominal segment 9. With larger samples than those available to Hamilton (1925), it is likely that variation will occur in the number of setae on some of these sclerites. Already such variation was noted by Spanton (1988) in *C. longilabris*. Therefore, the key may not work for all specimens.

The hooks on abdominal tergite 5 (Fig. 421) are the most interesting structures of tiger beetle larvae. Following Hamilton (1925), the small one bearing a short spinedlike projection at the apex is the inner hook and the larger, curved one is the median hook.

**Key to most commonly found northeastern species of *Cicindela***

1. Ridge at base of frontale with three or four distinct setae.................................2
   – Ridge at base of frontale with two distinct setae........................................4

2 [1]. Galeomere 1 with four stout setae along medial edge. Head and pronotum without metallic lustre [median hook on tergite 5 with three distinct setae]...........................
   .............................................................................................................. *C. formosa generosa* Dejean
   – Galeomere 1 with three stout setae along medial edge. Head and pronotum with metallic lustre.................................................................3

3 [2]. Median hook on tergite 5 with three or (more commonly) four setae. Pronotum with less than 50 setae on each side (excluding marginal setae) (Fig. 417) ............
   .............................................................................................................. *C. scutellaris lecontei* Haldeman
   – Median hook on tergite 5 with two setae. Pronotum with more than 100 setae on each side (excluding marginal setae) (Fig. 418)................................. *C. hirticollis* Say

4 [1]. Inner hook on tergite 5 with more than three setae................. *C. marginata* Fabricius
   – Inner hook on tergite 5 with two or three setae (Figs 422, 423)........................5
5 [4]. Pronotum uniformly brown in colour, without metallic lustre. Setae on head dorsally and pronotum brownish. C. sexguttata Fabricius
– Pronotum either with metallic lustre, or black or brown but with light areas. Setae on head dorsally and pronotum whitish or transparent. C. repanda Dejean

6 [5]. Median hook on tergite 5 with one or two distinct setae (Fig. 421), in some specimens with a third seta much smaller than other two. C. limbalis Klug
– Median hook on tergite 5 with three distinct, subequal setae. C. punctulata Olivier

7 [6]. Inner hook on tergite 5 with apical spinelike projection much shorter, distinctly less than half length of basal part of hook (Fig. 422). C. tranquebarica Herbst
– Inner hook on tergite 5 with apical spinelike projection relatively longer, about half or more length of basal part of hook (Fig. 423). C. duodecimguttata Dejean

8 [7]. Antennomere 1 with six or seven setae. Median hook on tergite 5 with two subequal setae. Pronotum with more than 40 setae on each side (excluding marginal setae) (Fig. 419). C. lepida Dejean
– Antennomere 1 with ten or 11 setae. Median hook on tergite 5 with one seta, in some specimens with a second much smaller seta. Pronotum with less than 20 setae on each side (excluding marginal setae) (Fig. 420). C. ancocisconensis Harris

9 [7]. Inner hook on tergite 5 with apical spinelike projection relatively longer, at least as long as basal part of hook (Fig. 423). C. purpurea Olivier
– Inner hook on tergite 5 with apical spinelike projection relatively shorter, distinctly shorter than length of basal part of hook. C. tranquebarica Herbst

10 [6]. Antennomere 1 with four setae. C. ancocisconensis Harris
– Antennomere 1 with five or more setae. C. punctulata Olivier

11 [10]. Sternal sclerite on abdominal segment 9 with four or more subequal setae along apical edge on each side. C. punctulata Olivier
– Sternal sclerite on abdominal segment 9 with three setae along apical edge on each side, in some specimens with a fourth, smaller seta. C. purpurea Olivier

12 [11]. Pronotum with more than 20 setae on each side (excluding marginal setae). C. tranquebarica Herbst
– Pronotum with less than ten setae on each side (excluding marginal setae). C. longilabris Say

13 [11]. Antennomere 1 with five or six setae. C. punctulata Olivier
– Antennomere 1 with 7-11 setae. C. longilabris Say

14 [13]. Pronotum with more than 50 setae on each side (excluding marginal setae). C. puritana Horn
– Pronotum with less than 20 setae on each side (excluding marginal setae). C. duodecimguttata Dejean
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Cicindela (Cicindela) ancocisconensis* Harris: Leonard and Bell (1999: 33, 63; Figs 76-78) [D+K: L3].

*Cicindela (Cicindela) duodecimguttata* Dejean: Hamilton (1925: 19, 39-40; Figs 68, 105, 135) [D+K: L2.3]; Leonard and Bell (1999: 33, 97; Figs 104, 105) [D+K: L3].

*Cicindela (Cicindela) formosa generosa*: Hamilton (1925: 19, 47-48) [D+K: L2.3]; Gaumer (1977: 182, 205, 206; Fig. 46d) [D+K: L2, L3]; Leonard and Bell (1999: 34, 58; Figs 72, 73) [D+K: L3].

*Cicindela (Cicindela) hirticollis* Say: Hamilton (1925: 20, 55; Figs 55-57, 92, 93, 146) [D+K: L2.3]; Leonard and Bell (1999: 36, 80, 81; Figs 92, 93) [D+K: L3].

Figs 421-425. *Cicindela*. 421: abdominal segment 5 of *C. limbalis*, L3 (dorsal view) [redraw from Hamilton (1925)]. 422-423: inner hook, L3 [redraw from Hamilton (1925)]. 422, *C. repanda*; 423, *C. limbalis*. 424: sternal sclerite on abdominal segment 9 of *C. tranquebarica*, L3. 425: tarsus and claws of *Cicindela* sp., L3 (dorsal view). Scale bars = 0.2 mm (Figs 1-11), 0.5 mm (Fig. 12)
Cicindela (Cicindela) limbata: Klug: Hamilton (1925: 18, 25-26; Figs 1, 5-8, 14, 17, 21-23, 27, 28, 32, 33, 37-40, 42, 52-54, 96, 126) [D+K: L_{2,3}]; Boving and Craighead (1931: Pl. 4[C]); Bouquet and Goulet (1984: Fig. 28); Leonard and Bell (1999: 30, 119; Figs 122-124) [D+K: L_{2,3}].

Cicindela (Cicindela) limbata Say: Hamilton (1925: 20, 56, 57; Figs 77, 114, 145) [D+K: L_{2,3}]; Leonard and Bell (1999: 36, 89; Figs 101, 102) [D+K: L_{1,3}].

Cicindela (Cicindela) limbalis Klug: Hamilton (1925: 18, 25-26; Figs 1, 5-8, 14, 17, 21-23, 27, 28, 32, 33, 37-40, 42, 52-54, 96, 126) [D+K: L_{2,3}]; Boving and Craighead (1931: Pl. 4[C]); Bouquet and Goulet (1984: Fig. 28); Leonard and Bell (1999: 30, 119; Figs 122-124) [D+K: L_{2,3}].

Cicindela (Cicindela) purpurea Olivieri: Shelford (1908: 161, 162) [D: L_{1,2,3}]; Hamilton (1925, as C. purpurea graminea: 18, 27; Figs 60, 97, 127) [D+K: L_{2,3}]; Leonard and Bell (1999: 31, 124; Figs 128, 129) [D+K: L_{2,3}].

Cicindela (Cicindela) repanda Dejean: Horn (1878: 35, 36; Figs 4a-d) [D: L_{2,3}]; Schaupp (1884: 123; Fig. 124) [D: L_{2,3}]; Hamilton (1925: 19, 31, 56, 100, 130) [D+K: L_{2,3}]; Leonard and Bell (1999: 32, 53, 54; Figs 68, 69) [D+K: L_{2,3}].

Cicindela (Cicindela) sexguttata Fabricius: Hamilton (1925: 17, 23, 24; Figs 58, 94, 124) [D+K: L_{2,3}]; Willis (1967: 172) [K: L_{2,3}]; Leonard and Bell (1999: 29, 41, 42; Figs 59, 60) [D+K: L_{2,3}].

Cicindela (Cicindela) scutellaris lecontei Haldeman: Hamilton (1925: 19, 48, 49; Figs 75, 112, 143) [D+K: L_{2,3}]; Leonard and Bell (1999: 35, 131, 132; Figs 133, 134) [D+K: L_{2,3}].

Cicindela (Cicindela) tranquebarica Herbst: Hamilton (1925: 18, 36; Figs 66, 103, 133) [D+K: L_{2,3}]; Leonard and Bell (1999: 33, 69; Figs 82, 83) [D+K: L_{2,3}].

Cicindela (Cicindelidia) punctulata Olivier: Hamilton (1925: 19, 41; Figs 69, 106, 136) [D+K: L_{2,3}]; Knisley and Pearson (1984: 525, 526; Figs 68-73) [D+K: L_{2,3}]; Leonard and Bell (1999: 34, 112; Figs 117, 118) [D+K: L_{2,3}].

Cicindela (Cicindelidia) rufiventris Dejean: Beatty and Knisley (1982: 4-8; Figs 1-11) [D: L_{1,2,3}]; Leonard and Bell (1999: 32, 103, 104; Figs 109, 110) [D+K: L_{2,3}].

Cicindela (Ellipsoptera) lepida Dejean: Hamilton (1925: 18, 32, 53, 64, 101, 131) [D+K: L_{2,3}]; Leonard and Bell (1999: 32, 146, 147; Figs 144, 145) [D+K: L_{2,3}].

Cicindela (Ellipsoptera) marginata Fabricius: Hamilton (1925: 19, 45, 46; Figs 73, 110, 140) [D+K: L_{2,3}]; Willis (1967: 173) [K: L_{2,3}]; Leonard and Bell (1999: 29, 86; Figs 98, 99) [D+K: L_{2,3}].

TRIBE LORICERINI
[Figs 326-430, Pl. 71]

This tribe contains a single genus and larvae of a few species are known.

GENUS LORICERA LATREILLE

Larvae of Loricera are quite distinctive by the shape of galeomere 2 which has a granular bulbous median portion and long apical filament, both surrounded by a membranous sheath (Fig. 428). The cephalic capsule is not constricted basally but the sides are markedly rounded posteriorly (Fig. 426); the parietale has no cervical grooves; the six stemmata on each side are well defined; the coronal suture is proportionally long; the nasale has two prominent toothlike projections (Fig. 426); the mandible (Fig. 427) is markedly curved apically and has a small membranous “tongue” near the middle of terebra ventrally, a large retinaculum with its posterior edge serrate, and a penicillus consisting of minute setae; the lacinia is absent (Fig. 428); the ligula is distinct (Fig. 429); tergite 9 is without pigmentation; the urogomphi are fixed,
Figs 426-430. *Loricera pilicornis*, L₁ (dorsal view). 426, cephalic capsule; 427, left mandible; 428, left maxilla; 429, labium; 430, tarsus and claws. Scale bars = 0.1 mm
proportionally long, with several setae; and each leg has two unequal claws (Fig. 430) with the setae UN₁ and UN₂ proportionally long.

This account is taken from examination of several field-collected specimens of *Loricera pilicornis*, as well as descriptions and illustrations provided by Ball and Erwin (1969) and Luff (1978; 1993).

The larva of the sole northeastern species of this tribe, *Loricera pilicornis*, has been described by several authors. Based on Luff’s (1978: 270) publication, the width of the cephalic capsule varies between 0.55-0.58 mm (L₁; n = 5), 0.76-0.88 mm (L₂; n = 4), and 1.07-1.19 mm (L₃; n = 25).

**List of northeastern species described or illustrated:**

*Loricera pilicornis* (Fabricius): Schiodte (1867: 465-469; Pl. 14, Figs 8-16) [D: L₁]; Larsson (1941, as *L. tovarikovi* 290; Figs 27, 28a-c) [D: L₁, L₂]; van Emden (1942: Fig. 48); Garner (1954: 149, 150) [D+K: L₂]; Sharova (1958: 40; Figs 25a-c) [D: L₁, L₂]; Sharova (1964: 146; Figs 97-1,2,3,4,5,6) [D: L₂]; Larsson (1968: 335; Figs 27, 28a-c) [D: L₁]; Ball and Erwin (1969: 894, 896; Figs 50, 53, 56, 57) [D: L₁, L₂]; Raynaud (1976c: 167, 168; Pl. 16B, Figs 1-7) [D: L₂]; Luff (1978: 269, 270; Figs 9-17) [D: L₁, L₂]; Thompson (1979a: Figs 39a-c); Bousquet and Goulet (1984: Figs 30, 49); Bauer and Kredler (1988: Figs 3a-f); Arndt (1991a: Figs 67, 68); Luff (1993: 69, 70; Figs 1, 206-213) [D: L₁, L₂]; Makarov (1994: Fig. 102); Makarov (1996; Fig. 39).

**Tribe Elaphrini**

[Figs 431-439, Pl. 72]

Larvae of Elaphrini do not possess diagnostic characteristics except for the fact that almost all species have, at least in L₂ and L₃, nodules, each bearing a seta, on the urogomphi. These nodules seem to be missing in the European *Elaphrus ulrichi* Redtenbacher (see Goulet 1983: Figs 103a, b). Elaphrine larvae are characterized by having the cephalic capsule without basal stricture (Figs 431-433), the parietale with six stemmata on each side but without cervical or ocular grooves, the coronal suture distinct through variable in length from smaller to much longer than antennomere 4, the nasale more or less triangularly protruding, the sensorium small, bulbous, the retinaculum relatively long, the penicillus consisting of several small setae, the ligula indistinct or almost so, the tergal carina distinct, the urogomphi fixed, relatively long and slender, each with 12 or more major setae (Figs 434-439), and the leg with two equal claws (see treatment of *Diacheila* below). The lacinia is distinct or not.

All three genera of Elaphrini are known in their larval stages.

**Genus Diacheila** MOTSCHULSKY (Figs 431, 434)

The first species of *Diacheila* to be described in its larval stages was that of *D. arctica* (Gyllenhal) by Lindroth (1954b) based on field-collected specimens from Finnish Lapland; the author did not mention the number of claws on each leg which suggest that his specimens had two claws as in all other known Elaphrini. Sharova (1958: 41; 1964: 149) noted that larvae of *D. polita*, based on field-collected specimens, and *D. arctica*, based on Lindroth’s (1954b) unrevealing description, have only one tarsal claw. Goulet (1983: 233, 236) studied 6L₁ and 3L₂ reared larvae of *D. polita* and, as Lindroth (1954b), said nothing about the number of tarsal claws which again suggests that his specimens had two claws. I have studied 1L₁ of *D. polita* from Goulet’s material, reared from females collected in the Northwest Territories, and the specimen had two equal claws on all six legs.
Based on the above facts, there are two possibilities. First, Sharova’s statement that *Diacheila* larva has only one claw, which is based exclusively on examination of *D. polita*, is erroneous. I have seen several carabid larvae with both claws closely appressed to one another and appearing as being composed of a single claw. Second, there is intraspecific variation in the number of claws in *D. polita*. This possibility is unlikely in my opinion. That Sharova’s material was misidentified is also unlikely since her drawing (1958: Fig. 92) of the quite characteristic mandible matches that of Goulet’s (1983: Fig. 79) which was based on reared material. Subsequent statements (e.g., Hůrka 1978: 57; Luff 1993: 66) that *Diacheila* larvae have a single claw on each leg is based on Sharova’s statement.

Lindroth’s (1954b: 20; Figs 9a-14a) description and illustrations of *D. arctica* and Goulet’s (1983: 236; Figs 79, 83, 87, 93) description and illustration of *D. polita* indicate that *Diacheila* larvae have a distinct lacinia with seta MX$_6$ being apical or preapical, the serrations on the anterior edge of the nasale finer than in the other two genera, the mandible not wider at base than above the retinaculum. Goulet (1983) noted that *D. polita* has a membranous declivity behind level of MX$_2$ on the ventral surface of the stipes; the condition is unknown for *D. arctica*.

The two species of *Diacheila* known in their larval stages can be separated by characters of the mandible and nasale. In *D. polita* the mandible (Fig. 431) is narrow and markedly falciform, the retinaculum is narrow but proportionally long, the medial edge of the terebra is smooth (see Sharova 1958: Fig. 92; Goulet 1983: Fig. 79), and the nasale is moderately protruding (Fig. 431; see also Goulet 1983: Fig. 87). Larvae of *D. arctica* have the mandible wider, only slightly falciform, with the retinaculum much shorter but wider, the medial edge of the terebra finely serrulate (see Lindroth 1954b: Fig. 12a), and the nasale only slightly protruding (see Lindroth 1954b: Fig. 11a). Only *D. arctica* is found in the northeast.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Diacheila arctica* (Gyllenhal): Lindroth (1954b: Figs 9a, 10a, 11a, 12a, 13a, 14a); Sharova (1958: 41; Figs 27a, 90a, 92a) [K: L1-3]; Sharova (1964: 149; Figs 98-2, 3, 133-1, 135-1) [K: L1-3]. Goulet (1983: Figs 78, 84, 94); Luff (1993: 66; Figs 190-192) [D+K: L1-3].

**GENUS BLETHISA** BONELLI (Figs 432, 435, 436)

*Blethisa* larvae have the nasale produced medially as in other Elaphrini but, contrary to *Elaphrus* and *Diacheila*, the extremity of the projection is not acuminate (Fig. 432), the coronal suture is long, much longer than the antennomere 1, the ventral surface of the stipes lacks a membranous declivity, the lacinia is distinct with seta MX$_6$ being apical and very small, the pronotum bears several setae lateral to the sclerotized section on each side, the urogomphi are bowed (Figs 435, 436), and the epipleurites on abdominal segments 1-7 are divided. The last character state is characteristic of the genus *Blethisa* among the tribe but the division is more or less evident in some specimens and a careful examination is often required.

The following key includes two of the three species found in the northeast but these are the ones most likely to be collected. It is based on examination of several reared and field-collected L$_2$ and L$_3$ of *B. multipunctata* and of several field-collected L$_2$ and L$_3$ of *B. quadricollis*.

**Key to the most common northeastern species of Blethisa**

1. Urogomphus with nodules, though low in number, along medial side (Fig. 435)
   
   [WH = 0.99-1.04 mm (L$_2$; n=3), 1.42-1.61 mm (L$_3$; n=5)] ... *B. multipunctata* (Linné)

   – Urogomphus without nodules along medial side (Fig. 436) [WH = 1.16-1.28 mm (L$_2$; n=5), 1.68-1.77 mm (L$_3$; n=4)] ... *B. quadricollis* Haldeman
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

**Blethisa julii** LeConte: Lindroth (1954b: 23, 24; Figs 9b, 10b, 11b, 12b, 13c, 15b) [K: L2,3]; Thompson (1979a: Figs 41a-c).

**Blethisa multipunctata** (Linne): Bøving (1910: 357-363; Figs 8, 12, 15) [D: L2,3]; Larsson (1941: 287; Fig. 25) [D: L1,3]; Lindroth (1954b: 24; Figs 11c, 13b, 14b, 15a) [K: L1,3]; Garner (1954: 121, 122; Pl. 6, Figs a-c) [D: L2,3]; Sharova (1958: Figs 89a-A); Sharova (1964: Figs 132-1,2,3,4,5); Larsson (1968: 332; Fig. 25) [D+K: L1,3]; Luff (1976: 60, 65, 67; Figs 39-47) [D+K: L1,3]; Goulet (1983: 356; Figs 96a-b); Arndt (1991a: 75; Fig. 66) [D: L1,3]; Luff (1993: 65; Figs 184-189) [D: L2,3].

**Blethisa quadricollis** Haldeman: Lindroth (1954b: 23; Figs 9c, 11d, 13d, 14c) [K: L2,3]; Goulet (1983: Figs 88a-b, 95).

**GENUS** **ELAPHRUS** **FABRICIUS** (Figs 433, 437, 438)

Larvae of *Elaphrus* have the mandible wider at base than just above the retinaculum (Fig. 433), contrary to the other two elaphrine genera, the nasale acutely projecting medially (Fig. 433), the ventral surface of the stipes with or without membranous declivity, the lacinia indistinct, the pronotum (lateral to sclerotized section) with very few setae on each side, and the epipleurite undivided. The indistinct lacinia is characteristic of this genus among Elaphrini.

All northeastern species except *E. trossulus* Semenov are known in their larval stage. The following key to the seven most common northeastern species is based on Goulet’s (1983) fine study and on examination of reared and field-collected larvae of most species.

**Key to the most common northeastern species of Elaphrus**

1. Stipes with membranous declivity on ventral side [coronal suture as long as antennomere 1] [subgenus *Arctelaphrus* Semenov].......................... *E. lapponicus* Gyllenhal
   - Stipes without membranous declivity on ventral side, though a membranous notch is present laterally in some species ................................................................. 2

2 [1]. Stipes without membranous notch behind MX. Coronal suture 0.8-1.2 times as long as antennomere 1. Hypopleurite on abdominal segments 1-8 with 8-20 (L2) or 14-47 (L3) secondary setae [subgenus *Neoelaphrus* Hatch].................................................. 3
   - Stipes with membranous notch behind MX. Coronal suture 0.2-0.6 times as long as antennomere 1. Hypopleurite on abdominal segments 1-8 with 4 (L2) or 8-10 (L3) secondary setae [subgenus *Elaphrus* Fabricius]................................................................. 6

3 [2]. Urogomphus with 12 or more major setae (Fig. 439). Parietale dorsally mostly pale, dark only near frontal suture and base of antennae................................. 4
   - Urogomphus with less than 12 major setae (Fig. 438). Parietale dorsally mostly dark, pale only behind eyes and/or at base [retinaculum markedly long].............. 5

4 [3]. Sclerites moderately setose: urogomphus with 20 or less setae [WH = 1.03-1.06 mm (L; n=2)].................................................................................. *E. fuliginosus* Say
   - Sclerites densely setose: urogomphus with 24 or more setae (Fig. 439) [WH = 0.71-0.80 mm (L; n=5), 1.02-1.11 mm (L; n=4)] .................................................. *E. cicatricosus* LeConte

5 [3]. Epipleurite on abdominal segment 9 with five or six distinct setae at high magnification [WH = 0.78-0.80 mm (L; n=3), 1.02-1.11 (L; n=4)] ...................... *E. clairvillei* Kirby
Epipleurite on abdominal segment 9 with two or three distinct setae at high magnification [WH = 0.69-0.78 mm (L₂; n=6), 0.97-1.11 mm (L₃; n=9)].

6 [2]. Coronal suture very short, less than 0.3 times length of antennomere 1 [WH = 0.64-0.71 mm (L₂; n=6), 0.92-1.09 mm (L₃; n=8)].

Coronal suture longer, 0.3-0.6 times length of antennomere 1 [WH = 0.69-0.77 mm (L₂; n=5), 0.97-1.11 mm (L₃; n=4)].

Figs 431-434. 431-433: cephalic capsule, antenna and mandible (dorsal view). 431, Diacheila polita, L₂; 432, Blethisa multipunctata aurata, L₃; 433, Elaphrus americanus, L₃; 434, tergite 9 and urogomphi of Diacheila polita, L₂ (dorsal view). Scale bars = 0.2 mm.
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Elaphrus (Arctelaphrus) lapponicus Gyllenhal: Lindroth (1954b: 25; Figs 13c, 16a, 17a) [K: L2, L2]; Luff (1976: 62, 63, 65; Figs 34-38) [D+K: L1, L2]; Thompson (1979a: Fig. 40a); Goulet (1983: 243; Figs 89a-b, 97) [D: L1]; Luff (1993: 67, 68; Figs 193-194) [D+K: L1, L2].

Elaphrus (Elaphrus) americanus Dejean: Goulet (1983: 287, 288, 309; Figs 100a-b) [D+K: L1, L2, L3].

Elaphrus (Elaphrus) californicus Mannerheim: Goulet (1983: 286-288, 302; Figs 154, 155) [D+K: L1, L2, L3].

Elaphrus (Elaphrus) ruscinus Say: Goulet (1983: 250, 251, 253, 263-264; Figs 99a-b) [D+K: L1, L2, L3].

Elaphrus (Neoelaphrus) cicatricosus LeConte: Goulet (1983: 249, 251, 253, 263-264; Figs 99a-b) [D+K: L1, L2, L3].

Elaphrus (Neoelaphrus) clairellei Kirby: Lindroth (1954b: 26; Figs 12c, 14d, 16c, 17c) [K: L2, L3]; Thompson (1979a: Figs 40b-f); Goulet (1983: 225-253, 275; Figs 76a-g, 80, 82a-b, 85a-c, 90a-b, 98a-c) [D+K: L1, L2, L3]; Beutel (1993: Figs 17, 25).

Elaphrus (Neoelaphrus) fuliginosus Say: Goulet (1983: 250, 251, 253, 261-262) [D+K: L1, L2, L3].

Elaphrus (Neoelaphrus) olivaceus LeConte: Lindroth (1954b: 25; Figs 16b, 17b) [K: L2, L3]; Goulet (1983: 251-253, 279-280) [D+K: L1, L2, L3].

TRIBE OMOPHRONINI

[FIGS 440-447, PL. 73]

A single genus belongs to this tribe and its larval characters are known.

GENUS OMOPHRON LATREILLE

Omophron larvae are easily recognized by their bidentate retinaculum (Fig. 441), long and apically subspatulate lacinia which is subequal in length to the galea (Fig. 442), elongate ligula which is as long as the labial palpus (Fig. 443), the position of setae TI2* and TI7* which are located at the base of the meso- and metatibiae (Fig. 447), the long setae UN1 and UN2 which are slightly longer than the claws (Figs 446, 447), and the presence of serially paired glandlike structures on abdominal pleura 1-7. In addition to these unique generic character states, Omophron larvae share the following ones: head capsule without basal stricture (Fig. 440); cervical and ocular grooves absent; six stemmata on both sides of the parietale; coronal suture distinct, slightly longer than antennomere 4; nasale markedly protruding medially (Fig. 440); sensorium on antennomere 3 proportionally small; penicillus absent; galeomere 1 about twice as long as galeomere 2 (Fig. 442); tergal carina absent; urogomphi fixed (Fig. 444), longer than pygopod, each with more than 10 setae in L2 and L3; and leg with two subequal claws. This account is based on examination of several unidentified larvae and on the detailed description and drawings provided by Landry and Bousquet (1984: 266-267) and Luff (1978: 266, 267; 1993: 24, 25).

None of the northeastern species of Omophron have been described to date but standardized body length and width of cephalic capsule are given for O. americanum and O. tessellatum, the two species most commonly found in the northeast by Landry and Bousquet (1984: 1560). Collectively, the width of the cephalic capsule for these two species varies between 0.51-0.63 mm (L1; n= 17), 0.75-0.90 mm (L2; n= 26), and 1.08-1.30 mm (L3; n= 44).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Figs 440-443. *Omaphron tessellatum* (dorsal view). 440, cephalic capsule, L₂; 441, left mandible, L₁; 442, left maxilla, L₁; 443, labium, L₁. Scale bars = 0.1 mm
Figs 444-447. *Omophron tessellatum* (dorsal view). 444-445: tergite 9 and urogomphi. 444, L3; 445, L1; 446, protibia, tarsus and claws, L1; 447, metatibia, tarsus and claws, L1. Scale bars = 0.1 mm
Scaritine larvae are relatively easy to recognize by the large, flat sensorium on antennomere 3. This characteristic is also present in larvae of Morionini but several adult and larval character states suggest that the two groups are not closely related (see Bousquet 2001). No morionine species is found in the northeast. Other characteristics common to Scaritini larvae include: head capsule parallel-sided, without basal stricture; coronal suture distinct, in most taxa relatively long; antenna not longer than mandible; retinaculum present though small in some taxa, penicillus absent; urogomphi fixed, as long as or longer than pygopod; leg with two claws.

The tribe includes two genera in North America: *Pasimachus* and *Scarites*. Only the last-mentioned genus is found in the northeast though one species of *Pasimachus* is found in nearby states. Larvae of several genera found in Africa have been adequately described and illustrated by Peyrieras (1976).

**Genus Scarites Fabricius (Figs 1-3)**

Based on the examination of several unidentifed field-collected specimens, descriptions and illustrations of two African species (Peyrieras 1976), and illustrations of several species found in Japan (Habu and Sadanaga 1969) and Russia (Makarov 2005), *Scarites* larvae can be characterized as having the coronal suture proportionally long, longer than antennomere 4 (Fig. 448), the nasale protruding but without distinct toothlike projections (Fig. 448), the cervical groove present and extended medially on dorsum to the coronal suture (Fig. 448), except probably in *Scarites planus* Bonelli (see Makarov 2005: Fig. 38), no lacinia, and the urogomphi more or less parallel, each with eight or nine long setae (Fig. 450). Based on the examination of several unidentified specimens, larvae of *Pasimachus* differ from those of *Scarites* in having a distinct though relatively small lacinia, the cervical groove extended anteriorly on dorsum to near the stemmata, and the urogomphi distinctly bowed.

**List of Northeastern Species Described or Illustrated:**

*Scarites subterraneus*: Garner (1954: 227, 230; Pl. 15, Figs a-c) [D+K: L2-3].

**Tribe Clivinini**

[Figs 451-461, Pls 75-76]

I am unable to find any diagnostic character states shared by members of the three genera of Clivinini present in the northeast. In fact, the structural differences observed between the three genera are in my opinion more substantial than between taxa of any other tribe covered in this book. This fact suggests that the tribe is possibly not a monophyletic group.

**Genus Clivina Latreille (Figs 451, 458)**

This genus is numerous in terms of species, taxonomically diverse, and still larvae of only two identified, closely related species have been described in detail. Therefore the following account may well not apply to all species. Larvae of *Clivina* have no basal stricture of the cephalic capsule, the cervical groove on the parietale is present (Fig. 451) and prolonged laterally to near the antennal insertion, the stemmata are lacking, the coronal suture is relatively long, as long as the antennomere 4 (Fig. 451), the nasale is slightly protruding with several very small toothlike projections (Fig. 451), the antennomeres 1 and 2 have no setae, the sensorium on
Figs 448-450. *Scarites subterraneus*, L_2_ (dorsal view). 448, cephalic capsule, antenna and mandible; 449, labium; 450, tergite 9 and urogomphi. Scale bars = 0.4 mm (Figs 448, 450), 0.1 mm (Fig. 449).
antennomere 3 is well developed (Fig. 451), the retinaculum is relatively small, the penicillus consists of a single, long seta, the lacinia is present as a small peglike projection (which may or not be homologous with the true lacinia), the ligula is short but distinct, the tergal carina is distinct but not prolonged laterally, the urogomphi are fixed, not segmented, subparallel, broad, flattened dorsoventrally, about as long as the pygopod, each with seven major setae and several smaller ones (Fig. 458), and each leg has a single claw.
Thompson (1979a: Figs 47a-c) published illustrations of a larva from Boone County, Arkansas, which he attributed to *Clivina dentipes* Dejean. The illustrations show a specimen with several of the character states of *Clivina* except that each leg has apparently two terminal claws and the urogomphi, along their medial edges, and the pygopod have protuberances. Gardner (1954: 270-271: plate 19) described and illustrated an unidentified clivinine larva (as genus A, sp. A) from Bellgrade, Florida (preserved in the United States National Museum in Washington, DC) showing several of the *Clivina* character states, including the presence of a single claw on each leg, but without a coronal suture and tergal carina and the pygopod with protuberances like in the illustration of Thompson (1979a: Fig. 47a). Gardner’s and Thompson’s specimens could belong to the genera *Clivina* (possibly of the subgenus *Semiclivina*) or *Paraclivina*, or to one of the ardistomine genera (*Ardistomis* Putzeys and *Aspidoglossa* Putzeys). A few species of *Ardistomis* and *Aspidoglossa* are found in Florida and Arkansas. Larvae of *Semiardistomis* Kult, the other North American ardistomine genus, are known (see Bousquet 2006).

This account is taken from the examination of a few field-collected larvae, probably *C. fossor*, and exuviae of *C. impressefrons*, associated with adults, as well as the descriptions and illustrations provided by Luff (1978, 1993) and Vaněk (1984).

Only two of the five northeastern species, both adventive, are adequately described in their larval stages. Structural differences between the two species are given by Vaněk (1984: 111). Collectively for the two species, the width of the cephalic capsule varies between 0.32-0.43 mm (*L*₁), 0.46-0.53 mm (*L*₂), and 0.66-0.80 mm (*L*₃) according to Vaněk (1984: 111).

**List of northeastern species described or illustrated:**

*Clivina* (*Clivina*) *collaris* (Herbst): Luff (1978: 272, 281; Fig. 57) [D+K: *L*₁, *L*₂]; Vaněk (1984: 100-103; Figs 1-47) [D: *L*₁, *L*₂, *L*₃]; Arndt (1991a: 78, Figs 78, 80) [K: *L*₁]; Luff (1993: 71, 72; Fig. 222) [D+K: *L*₁, *L*₂, *L*₃]; Makarov (1994: Fig. 24).


*Clivina* (*Clivina*) *impressefrons* LeConte: Kirk (1972: 1355; Fig. 3-16, Pl.1[16]) [D: *L*₁].

**Genus Schizogenius Putzeys** (Figs 452, 454, 456, 459, 461)

A single species of this genus is known in its larval stage. The parietale has a single stemma on each side, the cervical groove is distinct (Fig. 452) and extend lateroventrally up to level of seta PA₁₂, the coronal suture is relatively long, the nasale is slightly protruding, its apical margin more or less truncate to slightly rounded, the antennomeres 1 and 2 are without setae, the penicillus consists of a single seta, the lacinia consists of a small acuminate cone (Fig. 454), the setal group gMX has about 15 setae (Fig. 454), the urogomphi are fixed, unsegmented, relatively long each with a small perpendicular process at apex (Fig. 461) and nine major setae (Fig. 459), and the leg bears two subequal claws each with an indentation near middle bearing an elongate, hyaline structure visible only at the scanning electron microscope (see Bousquet 1996b: Fig. 11). The presence of two claws and of the small apical process on each urogomphus are unique within the clivinine larvae as far as known.

This account is taken from the description and illustrations of the sole species known. The width of the cephalic capsule varies between 0.33-0.35 mm (*L*₁; *n* = 3), 0.54-0.58 mm (*L*₂; *n* = 6), and 0.68-0.70 mm (*L*₃; *n* = 2).
Figs 456-461. 456-457: labium (dorsal view). 456, *Schizogenius lineolatus*, L₂; 457, *Dyschirius sp.*, L₁. 458-459: tergite 9 and urogomphi (dorsal view). 458, *Clivina fossor*, L₃; 459, *Schizogenius lineolatus*, L₂₃. 460, tergites 8 and 9 and urogomphi of *Dyschirius sp.*, L₁ (dorsal view); 461, tergite 9, urogomphus and pygopod of *Schizogenius lineolatus*, L₂₃ (lateral view). Scale bars = 0.5 mm (Figs 456, 457), 0.2 mm (Figs 458-461). *py* – pygopod; *ur* – urogomphus
List of Northeastern Species Described or Illustrated:

*Schizogenius lineolatus* (Say): Bousquet (1996b: 348-351; Figs 1-11) [D: L1, L2-3].

**Genus Dyschirius** Bonelli (Figs 453, 455, 457, 460)

Larvae of *Dyschirius* are very characteristic and can hardly be confused with any other taxa in the northeast. They are slender, parallel-sided, relatively darkly pigmented (Pl. 11), have six stemmata on each side of the parietale, no cervical groove (Fig. 453), no lacinia (Fig. 455), the urogomphi proportionally very short, much shorter than the pygopod (Fig. 460), and only one claw at the extremity of each leg.

This account is based on examination of several unidentified larvae collected in southern Quebec as well as the descriptions and illustrations of several European species provided by Luff (1978; 1993). Of the 19 species found in the northeast, only three have been described to date, including one found also in the Palaearctic Region.

List of Northeastern Species Described or Illustrated:

*Dyschirius globulosus* (Say): Garner (1954: 248, 254) [D+K: L3].

*Dyschirius dejeanii* Putzeys: Kirk (1972: 1355, as *D. integer*; Fig. 3-18, Pl.1[18]) [D: L1, L2].

*Dyschirius politus* (Dejean): Larsson (1941: 293, 294; Figs 30d, 31e) [D+K: L1-3]; Sharova (1958: 45; Fig. 101A) [K: L1, L2]; Sharova (1964: 154; Fig. 139-7) [K: L1, L2]; Larsson (1968: 338 340; Figs 30d, 31e) [D+K: L1, L2]; Luff (1978: 271, 277; Figs 38-40) [D+K: L1, L2]; Arndt (1991a: 78) [K: L1, L2]; Luff (1993: 73, 75, 76; Figs 231, 232) [D+K: L1, L2].

**Tribe Broscini**

[Figs 462-468, Pl. 77]

Except for the presence of a single claw at the extremity of each leg, there are few distinctive character states shared by known broscine larvae: the head capsule has no basal stricture; six stemmata are distinct on each side of the parietale; the coronal is distinct and relatively long in most taxa, the nasale is differentiated, protruding but without toothlike projections; the antenna is about the same length as or slightly shorter than the mandible; the sensorium is bulbous but relatively small; the retinaculum is developed; the penicillus is evident, except in *Brullea* (Harris 1978), but consists of small setae; the tergal carina is distinct except in *Brullea* (Harris 1978); the urogomphi are well developed, in most taxa longer than the pygopod, fixed, each with eight or more major setae; and the setae UN1 and UN2 both located ventrally at the base of the unique claw, are more conspicuous than average (Fig. 466), at least in the two genera treated here and *Craspedophorus* (see Habu and Sadanaga 1965: Fig. 18). The cervical groove and lacinia are present in some genera, absent in other ones.

Besides those of five southern Hemisphere genera, larvae of *Axonya* Andrewes, *Broscus* Panzer, *Craspedonotus* Schaum, and *Miscodera* Eschscholtz are also known.

**Genus Broscus** Panzer (Figs 464, 468)

*Broscus* larvae have the anterior edge of the nasale transversely truncate (Fig. 464), the cervical groove well defined and extended medially to the coronal suture (Fig. 464) as in members of *Scarites*, no setae on the antennomeres 1 and 2, the lacinia indistinct, the tergal carina not extended laterally, and the urogomphi (Fig. 468) much longer than the pygopod.

This account is taken from the descriptions and illustrations of Luff (1978, 1993) and illustrations of Sharova and Makarov (1984). The sole species found in the northeast has been
described; based on Luff’s (1978: 285) measurements, the width of the cephalic capsule varies between 1.65-2.06 mm (L1), 2.48-3.04 mm (L2), and 3.16-3.74 mm (L3).

List of Northeastern Species Described or Illustrated:

*Broscus cephalotes* (Linne); Schiodte (1867: 504-507; Pl. 19; Figs 1-8) [D: L1,3]; Znojko (1929: Fig. 8a); Larsson (1941: 297; Figs 32a-b) [D: L1,3]; van Emden (1942: Fig. 39); Sharova (1958: 45; Figs 36, 37) [K: L1,3]; Sharova (1964: 154, 155; Figs 102-1,2) [D: L1,3]; Larsson (1968: 343; Figs 33a-

Figs 462-464. 462-463: *Miscodera arctica*, L2 (dorsal view). 462, cephalic capsule, antenna and mandible; 463, right maxilla; 464, cephalic capsule, antenna and mandible of *Broscus cephalotes*, L2 (dorsal view). Scale bars = 0.2 (Figs 462, 464), 0.1 mm (Fig. 463)
b) [D: L1]; Andersen (1968: 74) [D: L1]; Luff (1978: 282-285; Figs 58-65) [D+K: L1, L2, L3]; Sharova and Makarov (1984: 742, 744, 746, 748; Pl. 1-2) [D+K: L1]; Arndt (1991a: Figs 69-71); Luff (1993: 77, 78; Figs 246-251) [D: L1, L2, L3]; Beutel (1993: Figs 4, 10, 18); Makarov (1994: Fig. 26).

**Genus Miscodera Eschscholtz** (Figs 462, 463, 465-467)

Larvae of the sole species included in this genus have the nasale narrow; its anterior edge with a short central projection and the lateral angles more or less protruding (Fig. 462), no cervical groove on the parietale, no setae on the antennomeres 1 and 2, the lacinia visible as a short

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**Figs 465-468.** 465-466: *Miscodera arctica*, L2. 465, labium (dorsal view); 466, femur, tibia, tarsus and claw (lateral view). 467-468: tergite 9 and urogomphi (dorsal view). 467, *Miscodera arctica*, L2; 468, *Broscus cephalotes*, L2. Scale bars = 0.1 mm (Fig. 465), 0.2 mm (Figs 466-468)
projection (Fig. 463) but without apparent seta MX', the tergal carina extended laterally, and the urogomphi short, about the length of the pygopod, each with about ten major setae (Fig. 467), the seta URg being relatively long.

This account is taken from the examination of eight specimens of all three instars collected in a red pine plantation in Kirkwood, Ontario and from the descriptions and illustrations provided by Andersen (1968) and Luff (1978, 1993). Based on Luff’s (1978: 286) numbers, the width of the cephalic capsule is 0.52 mm (L1), 0.65 mm (L2), and 0.90-1.03 mm (L3). Measurements taken from the specimens seen give 0.50-0.54 mm (L1; n= 3), 0.69-0.73 mm (L2; n= 3), and 1.02-1.06 mm (L3; n= 2).

List of Northeastern Species Described or Illustrated:

*Misodera arctica* (Paykull): Andersen (1968: 71-74; Fig. 1, 2a-c, 3a-b) [D: L3]; Larsson (1968: 343) [D: L1, L2]; Luff (1978: 282, 285, 286; Figs 66-75) [D+K: L1, L2, L3]; Thompson (1979a: Figs 43a-f); Luff (1993: 79; Figs 252, 253) [D: L1, L2, L3]; Makarov (1994: Fig. 25).

**Tribe Trechini**

[Tigs 469-474]

Taken in its wide sense (i.e., including trechodines, aepines, and perileptines), Trechini larvae have few distinctive character states in common. The mandible has a single lateral seta (MN), the lacinia is absent, the setal group gMX consists of relatively few setae (less than about 20), and each urogomphus has only seven major setae (UR4-8, URδ and URε). These characteristics are also found in larvae of most Bembidiina. The maxillary and labial palpi are five- and four-segmented respectively and each leg bears a single claw in most taxa, but the palpi are four- and two-segmented respectively and each leg with two claws in *Perileptus* as in most carabids. Unlike most Carabidae, the setae UN1 and UN2 on the ventral side of the claws of *Perileptus* are markedly long and flat (Luff 1985: 310) as in *Omophron*.

The larvae of many genera have been described to date.

**Genus Trechus Clairville** (Fig. 474)

Among the northeastern fauna, *Trechus* larvae, and likely also those of *Blemus*, are distinguished by having the maxillary palpus five-segmented and the labial palpus four-segmented. They also shared the following character states: body slender, poorly sclerotized; cephalic capsule without basal stricture; coronal suture distinct, relatively long; nasale differentiated, serrulate and somewhat three-lobed; antenna about as long as mandible; mandible with distinct retinaculum and penicillus consisting of several setae; urogomphi at least as long as pygopod, fixed, not segmented; leg with single claw.

Several *Trechus* species, mainly European ones, have been described to date in their larval stage including two species adventive in the northeast. I studied two third-instar larvae collected in southern Quebec (Aylmer [currently Gatineau] and Baie Sainte-Catherine near Tadoussac) which very likely belong to *T. apicalis*. The width of the cephalic capsule stands at 0.49 and 0.50 mm. For comparative purposes, the width of the cephalic capsule of *T. quadristriatus* measured between 0.30-0.33 mm (L1; n= 3), 0.35-0.43 mm (L2; n= 12) and 0.46-0.60 mm (L3; n= 36) and that of *T. rubens*, the largest *Trechus* found in the northeast, 0.76 mm (L3; n= 1) according to Luff (1985: 304, 306).

List of Northeastern Species Described or Illustrated:

Trechus (Trechus) quadristriatus (Schrank): Boving (1911: 141-147, 172-178; Pl. 5; Figs 3, 9, 14, 19, 22) [D: L₂₋₃]; Jeannel (1920: 523, 539; Figs 13-17) [D+K: L₂₋₃]; Beier and Strouhal (1928: 1-4; Pl. 1, Figs 1a-b, 2a-e, 3) [D: L₃]; Boldori (1932: 158; Figs 1,2, 2,2) [K: L₁₋₃]; Larsson (1941: 303; Fig. 34b) [D+K: L₁₋₃]; Sharova (1958: 47; Fig. 105r) [K: L₁₋₃]; Sharova (1964: 157; Fig. 143-4) [K: L₁₋₃]; Larsson (1968: 352, 353; Fig. 36b) [D+K: L₁₋₃]; Luff (1985: 302, 304; Figs

Figs 469-474. 469-473: ?Blemus discus, L₃ (dorsal view). 469, cephalic capsule, antenna and mandible; 470, nasale; 471, right maxilla; 472, labium; 473, tergite 9 and urogomphi; 474, cephalic capsule, antenna and mandible of Trechus ?opticaulis, L₃ (dorsal view). Scale bars = 0.1 mm
1-10) [D+K: L₁, L₂₃]; Arndt (1991a: 82; Figs 72, 73) [K: L₁, L₂₃]; Luff (1993: 84-86; Figs 281-283) [D+K: L₁, L₂₃]; Makarov (1994: Fig. 32).

Trechus (Trechus) rubens (Fabricius): Larsson (1941: 303, 304; Fig. 34a) [D+K: L₁]; Sharova (1958: 47; Fig. 105b) [K: L₁]; Sharova (1964: 157; Fig. 143-2) [K: L₁]; Larsson (1968: 352, 353; Fig. 36a) [D+K: L₁, L₂₃]; Luff (1985: 302, 304, 306; Figs 12-16) [D+K: L₃]; Arndt (1991a: 82) [K: L₁, L₂₃]; Luff (1993: 85; Figs 278-280) [D+K: L₃].

GENUS BLEMUS DEJEAN (Figs 469-473)
Larvae of the sole species placed in this genus are still undescribed. I collected two third-instar trechine larvae in a beaver house at Saint-Hippolyte-de-Kilkenny in the Laurentides region, southern Quebec. Only two, both adventive in North America, of the five trechine species inhabiting Quebec have been reported from beaver houses: Blemus discus and Trechus rubens (see Larochelle and Larivière 2003: 147, 508). Larvae of Trechus rubens were described by Luff (1985, 1993) and the width of the cephalic capsule has been reported at 0.76 mm for the third instar (Luff 1985: 306). The width of the cephalic capsule measured 0.48 and 0.51 mm in my specimens. This suggests that the two specimens pertain to a smaller species than T. rubens and so possibly belong to Blemus discus. Drawings of the head capsule with its appendages and the urogomphi of one of the two specimens are included. The species differs mainly from those of Trechus ?apicalis in that the cephalic capsule is less elongate (see Figs 469 and 474).

TRIBE BEMBIĐINI
[Figs 475-484]

Bembidiine larvae are very similar to those of Trechini: the body is often barely pigmented, the setal group gMX consists of few setae, the lacinia is absent, and each leg possesses a single claw. The main difference is in the number of palpomeres. All known trechine larvae, except those of Perileptus, have five-segmented maxillary palpus and four-segmented labial palpus whereas Bembidiini have, like most Carabidae, four-segmented maxillary palpus and two-segmented labial palpus. In addition, most trechine larvae have a seta on the antennomere 2 but no bembidiine larvae so far are known bearing such seta.

The genera represented in the northeast are arranged into three subtribes: Bembidini (Asaphidion and Bembidion), Xystosomina (Mioptachys), and Tachyina (remaining genera). Bembidini second- and third-instar larvae differ from those of Xystosomina and Tachyina in having seven (UR₄, UR₅, and UR₆) or more major setae on each urogomphus (Fig. 482) instead of six (UR₄, UR₅, UR₆) (Figs 483, 484) and two pairs of setae on the ligula (Fig. 480) instead of one (LA₆) (Fig. 481) (Grebennikov and Maddison 2000). Anillina is another subtribe of Bembidiini found in North America but not in the northeast. The larval stage of a single European anilline species is known (Arndt et al. 1999) and it is remarkable for the presence of only three antennomeres and of two small toothlike projections on the medial edge of the terebra; the adnasalia and nasale are also of peculiar shape and the penicillus is absent. The urogomphus bears seven major setae as in most Bembidini larvae.

Larvae of several bembidiine genera are described but most of those belonging to the subtribes Xystosomina and Tachyina are known from very few species. Additional material is needed to confirm the character states observed. A key to larvae of all known genera has been published (Grebennikov 2008: 487-488).
SUBTRIBE BEMBIDIINA

GENUS ASAPHIDION GOZIS

Character states of known Asaphidion larvae have been discussed by Maddison (1993: 153). First instar larvae of *A. alaskanum* Wickham differ from those of *Bembidion* in having the setae MX₁₁ and MX₁₂ longer, the setae PR₁₃, ME₁₄, and TE₁₁ each replaced by a patch of two to four short, thick setae, the hypopleurite with one seta (absent in *Bembidion* as in most carabids), and most long dorsal setae distally frayed (i.e., tipped by crownlike arrangement of two to six projections (see Maddison 1993: Fig. 195). This last character state is present in second- and third-instar larvae of both European species known, *A. flavipes* (Linne) and *A. pallipes* (Duftschmid) (Luff 1993), but not in the unique reared L₁ of *A. yukonense* Wickham studied by Maddison (1993: 153). The sole species found in the northeast, *A. curtum* (Heyden), has been confused for a long time with *A. flavipes* (Linne) and adults of both are structurally very similar; the same is probably true for their larvae. Therefore, I assume that most long setae are frayed in *A. curtum* and this character state would be the most easily one to separate larvae of *Asaphidion* found in the northeast from those of *Bembidion*.

No *Asaphidion* larva was available for study.

GENUS BEMBIDION LATREILLE (Figs 475, 478, 480, 482)

*Bembidion* larvae possess the following character states: dorsal setae distally tapered, none of them frayed; cervical groove distinct though often shallow or absent; parietale with six stemmata on each side (except apparently in one species, see Maddison 1993: 157); coronal suture distinct, relatively long; nasale varied, denticulate; medial edge of terebra smooth; penicillus consisting of several setae; ligula with an additional pair of setae (Fig. 480); tergite 9 with secondary seta on each side anterior to UR₂; urogomphus with seven (most species, Fig. 482) to nine major setae, not counting the seta at or near the base of the urogomphus.

This account is based on examination of several unidentified specimens collected mainly in southern Quebec as well as the information and illustrations provided by Andersen (1966), Smrž (1979), and Maddison (1993). Twenty species found in the northeast have been described or illustrated.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Bembidion* (Bembidion) quadririnaculatum (Linne): Kirk (1972: 1355; Fig. 3-25, Pl.1[25]) [D: L₁, L₃].

*Bembidion* (Bracteon) carinula Chaudoir: Maddison (1993: 172, 181; Figs 197, 198, 213, 228, 234, 243, 246, 250, 253, 256, 260) [D+K: L₁, L₃].

*Bembidion* (Bracteon) inaequalle Say: Maddison (1993: 192; Fig. 193) [D: L₁, L₃].

*Bembidion* (Bracteon) levettei Casey: Maddison (1993: 190; Figs 218, 231) [D: L₁, L₃].

*Bembidion* (Bracteon) punctatostriatum Say: Maddison (1993: 172, 185; Figs 194, 204, 215, 230, 237, 239, 241, 251, 254) [D+K: L₁, L₃].

*Bembidion* (Eurytrachelus) nitidum Kirby: Kirk (1972: 1355; Fig. 3-26, Pl.1[26]) [D: L₁].

*Bembidion* (Leja) lampros (Herbst): Larsson (1941: 299; Fig. 33b) [D+K: L₁, L₃]; Larsson (1968: 346, 348; Fig. 35b) [D+K: L₁, L₃]; Desender and Crappé (1983: 39, 46; Figs 4a-i, 5a-h, 6a-h) [D: L₁, L₃]; Luff (1993: 91, 93; Figs 304, 305) [D+K: L₁, L₃].

*Bembidion* (Leja) properans (Stephens): Desender and Crappé (1983: 39, 46; Figs 1a-h, 2a-h, 3a-h) [D: L₁, L₃].

*Bembidion* (Notaphus) contractum Say: Lindroth (1955b: Fig. 15b).

*Bembidion* (Ochthedromus) chyrenense Casey: Maddison (1993: 172; Fig. 220) [K: L₁].

*Bembidion* (Odontium) aenulum Hayward: Maddison (1993: 172; Fig. 223) [K: L₁].

*Bembidion* (Odontium) confusum Hayward: Maddison (1993: 173) [K: L₁].
Bembidion (Peryphanes) grapii Gyllenhal: Böcher (1988: Fig. 4); Luff (1993: 92, 99; Figs 329, 330) [D+K: L_{1.1}].

Bembidion (Peryphanes) bruxellense Wesmael†; Larsson (1941: 299, 300, as B. rupestre; Fig. 33g) [D+K: L_{1.1}]; Sharova (1958: 49, as B. rupestre; Fig. 108f) [K: L_{1.1}]; Sharova (1964: 159, as B. rupestre; Fig. 143-10) [K: L_{1.1}]; Larsson (1968: 347, 349; Fig. 35g) [D+K: L_{1.1}]; Luff (1993: 91, 98, 99; Figs 327, 328) [D+K: L_{1.1}].

Bembidion (Peryphanes) femoratum Sturm†: Arndt (1991a: Fig. 75).

Bembidion (Peryphanes) petrosum Gebler: Andersen (1966: Fig. 43); Luff (1993: 91, 98; Figs 325, 326) [D+K: L_{1.1}].

Bembidion (Peryphanes) tetracolum Say†: Larsson (1941: 299, 300, as B. ustulatum; Fig. 33f) [D+K: L_{1.1}]; Sharova (1958: 49, as B. ustulatum; Fig. 108e) [K: L_{1.1}]; Sharova (1964: 159, as B. ustulatum; Fig. 143-9) [K: L_{1.1}]; Larsson (1968: 347, 349; Fig. 35f) [D+K: L_{1.1}]; Kirk (1972: 1355; Fig. 3-27, Pl.1[27]) [D: L_{1.2}]; Smrž (1979: 247, 249; Figs 1, 4, 6, 7, 10, 12, 14, 15, 17, 19, 21, 24, 26, 27, 29, 31, 33, 35, 38, 39, 42, 44, 46, 47, 50, 52, 54, 56) [D: L_{1.2}, L_{2.2}, L_{3}]; Luff (1993: 91, 97; Figs 320-324) [D+K: L_{1.2}, L_{2.2}, L_{3}].

Bembidion (Phyla) obtusum Audinet-Serville†: Maddison (1993: Fig. 224).

Bembidion (Pseudoperyphanes) chaleum Dejean: Maddison (1993: Fig. 221).

**subtribe Xystosomina**

**Genus Mioptachys Bates** (Figs 476, 479, 481, 483)

This genus is the only northeastern representative of the subtribe Xystosomina and it contains a single species in our territory. The larva of *M. flavicauda* differs from those of Bembidiina and Tachyina, except *Polyderis*, in having the coronal suture absent (Fig. 476). Like *Tachyta* larvae, but contrary to other known tachyines, *Mioptachys* larvae possess egg-bursters in the first instar which consists of two longitudinal rows of microspinules along the frontal suture (Grebennikov and Maddison 2000: 227). Based on Grebennikov’s (2008) key, second- and third-instar larvae of *Mioptachys* differ from those of *Polyderis* in having the sides of the cephalic capsule rounded, not parallel, the ocular groove present, and the lateral margin of tergum 9 without a long secondary seta at the middle.

This account is based on examination of 5L_{3} collected in southern Quebec. The width of the cephalic capsule of these specimens varies between 0.30 and 0.31 mm.

**List of northeastern species described or illustrated:**

*Mioptachys flavicauda* (Say): Thompson (1979a: Fig. 48); Grebennikov and Maddison (2000: 230; Figs 3, 12, 22, 40) [D+K: L_{1}].

**subtribe Tachyina**

**Genus Tachyta Kirby**

According to Grebennikov and Maddison (2000: 228), *Tachyta* larvae differ from other known tachyine larvae in having the cephalic capsule rounded laterally, the ocular groove distinct, the setal group gMX consisting of five setae, instead of six, and the lateral edge of tergite 9 without additional seta anterior to UR_{2}. No larva of this genus was available for study. The width of the cephalic capsule of *T. nana* is given by Grebennikov and Maddison (2000: 232-233) as 0.28-0.29 mm (L_{1}; n= 4), 0.39-0.42 mm (L_{2}; n= 2), and 0.52-0.58 mm (L_{3}; n= 2).

**List of northeastern species described or illustrated:**

Genus Elaphropus Motchulsky (Figs 477, 484)

Two species of this genus are known in their larval stages and one of them occurs in the northeast. These larvae have no distinct ocular groove, the coronal suture is distinct, about as long as antennomere 4 (Fig. 477), the medial edge of the terebra is smooth, the setal group gMX consists of six setae, and the tergite 9 has an additional seta on each side anterior to UR (Fig. 484).

This account is based on examination of 1L 2-3 collected at Abercorn, southern Quebec, and the information and illustrations provided by Grebennikov and Maddison (2000: 236-237). The width of the cephalic capsule of the sole northeastern species described is given by Grebennikov and Maddison (2000: 237) as 0.25 mm (L1; n= 1) and 0.35 mm (L2; n= 1); that of my sole specimen is 0.30 mm.

List of northeastern species described or illustrated:

Elaphropus anceps (LeConte): Kirk (1972: 1355; Fig. 3-24, Pl.1[24]) [D: L1-3].

Elaphropus tripunctatus (Say): Grebennikov and Maddison (2000: 237; Figs 8, 33) [D: L1, L2].

Genus Pericompus LeConte

No larva of this genus has been described to date and no specimen was available for study.

Genus Porotachys Netolitzky

Only one species of this genus is found in the northeast. Its second- and third-larval instars have no distinct ocular groove, the coronal suture is distinct, about as long as antennomere 4, the nasale is triangularly protruding but without median crown, the medial edge of the terebra is serrulate, the setal group gMX consists of six setae, and the tergite 9 has an additional seta on each side anterior to UR (Grebennikov and Maddison 2000: 238). No larva of P. bisulcatus was available for study. The width of the cephalic capsule varies between 0.26-0.28 mm (L1; n= 4), 0.31 mm (L2; n= 1) and 0.42-0.44 mm (L3; n= 2) according to Grebennikov and Maddison (2000: 238).

List of northeastern species described or illustrated:

Porotachys bisulcatus (Nicolai)†: Grebennikov and Maddison (2000: 238; Figs 11, 17, 38, 39, 48, 56, 60) [D: L1, L2-3].

Genus Paratachys Casey

A single Palaearctic species of this speciose genus has been described so far in the larval stage. Its second and third instars are similar to those of Porotachys. The ocular groove is not distinct, the coronal suture is about as long as the antennomere 4, the medial edge of the terebra is serrulate, the setal group gMX consists of six setae, and the tergite 9 has an additional seta on each side anterior to UR (Grebennikov and Maddison 2000: 238). However, the frontale is more elongate in Paratachys than in Porotachys and a median crown on the edge of the nasale is evident in the figures of Paratachys (Grebennikov and Maddison 2000: Figs 36, 37) contrary to those of Porotachys (Grebennikov and Maddison 2000: Figs 38, 39). No larva of this genus was available for study.

Genus Polyderis Motchulsky

The sole northeastern species of this genus is the smallest carabid in our fauna. A single second-instar larva is known and has been described and illustrated by Grebennikov and Maddison (2000: 236). It differs from larvae of most other known tachyine larvae in having the coronal suture absent (Grebennikov and Maddison 2000: Fig. 52) as in Mioptachys. The medial edge of the terebra is smooth as in Tachyta and Elaphropus larvae. The width of the cephalic capsule is given at 0.18 mm. No specimen was available for study.
List of northeastern species described or illustrated:

*Polyderis laevis* (Say): Grebennikov and Maddison (2000: 236; Figs 20, 30, 52) [D: L2].

Figs 475-478. 475-477: cephalic capsule, antenna and antenna (dorsal view). 475, *Bembidion sp.*, L2; 476, *Mioptachys flavicauda*, L3; 477, *Elaphropus sp.*, L3; 478, left maxilla of *Bembidion sp.*, L2 (dorsal view). Scales bars = 0.2 mm (Fig. 475), 0.1 mm (Figs 476-478)
Figs 479–484. 479, left maxilla of *Mioptachys flavicauda*, L₃ (dorsal view); 480–481: labium (dorsal view). 480, *Bembidion sp.*, L₂; 481, *Mioptachys flavicauda*, L₃; 482–484: tergite 9 and urogomphi (dorsal view). 482, *Bembidion sp.*, L₂; 483, *Mioptachys flavicauda*, L₃; 484, *Elaphropus sp.*, L₃. Scale bars = 0.05 mm (Figs 479, 481), 0.1 mm (Figs 480, 483, 484), 0.2 mm (Fig. 482)
Like Trechini and Bembidiini, patrobine larvae have no lacinia but they differ readily in having two equal claws at the extremity of each leg. The head capsule has no cervical stricture but a subbasal constriction is present, the cervical groove is distinct though in some specimens not so evident, there are six stemmata on each side of the parietale, the coronal suture is proportionally long, the nasale is only slightly protruding, the antennomere 2 is longer than any other antennomeres, the retinaculum is present, not particularly long, the medial edge of the terebra is smooth, the penicillus is absent or consists of one to three very small setae conenate at base, the maxilla besides the lacinia is typical of most carabids, the stipes is without membranous declivity, the urogomphi are relatively long, with six or seven major setae on each side, sometimes with another one located at base and clearly shorter than the major setae, and the tarsus has no short spines.

Larvae of Patrobini resemble those of Pterostichini and Platynini. They can be separated from these two groups by the absence of lacinia. From the few platynine larvae which have a very short lacinia, such as *Synuchus*, they may be differentiated by the absence or markedly reduced penicillus. In addition, known larvae of Patrobini have only six or seven major setae on each urogomphus while most Pterostichini and Platynini, including *Synuchus*, have eight or more major setae.


**Genus *Patrobus* Dejean** (Figs 485, 488, 489)

*Patrobus* larvae can be characterized in having the nasale slightly protruding, often with a short more or less rounded median projection (Fig. 485), the antennomere 2 glabrous, the maxillary and labial palpomeres slender (Figs 488, 489), the abdominal tergites proportionally narrower than in *Diplous* with the lateroposterior angles flat, and the urogomphi in lateral view not raised over the apical half.

This account is based on examination of several field-collected specimens of *P. longicornis* and on the descriptions and illustrations of several European species provided by Houston and Luff (1975) and Luff (1993). The only *Patrobus* species commonly found in the temperate region of the northeast is *P. longicornis*. The width of the cephalic capsule of that species varies between 0.71 mm (L₁; n = 1), 0.95–1.06 mm (L₂; n = 8), and 1.49–1.84 mm (L₃; n = 12). For *P. septentrionis*, Houston and Luff (1975: 64) give the range of the cephalic capsule width as 0.70–0.75 mm (L₁; n = 7), 1.01–1.37 mm (L₂; n = 8), and 1.69–1.80 mm (L₃; n = 2).

**List of northeastern species described or illustrated:**


*Patrobus longicornis* (Say): Thompson (1979a: Figs 55a-c).

*Patrobus septentrionis* Dejean: Larsson (1941: 305, 306; Fig. 35b) [D+K: L₁, L₂, L₃]; Larsson (1968: 356, 357; Fig. 38b) [D+K: L₁, L₂, L₃]; Houston and Luff (1975: 60, 64; Fig. 16) [D+K: L₁, L₂, L₃]; Böcher (1988: Fig. 2); Arndt (1991a: 84, 85) [K: L₁, L₂, L₃]; Luff (1993: 79, 80; Figs 254-257) [D+K: L₁, L₂, L₃].

**Genus *Platypatrobus* Darlington** (Figs 486, 491)

Bousquet and Grebennikov (1999) described the larvae of the sole species placed in this genus and found no substantial differences between them and the larvae of *Patrobus* taken collectively. Nevertheless, because *Platypatrobus* live exclusively within beaver houses and *Pa-
**trobus longicornis** is the only other patrobine occasionally found in that habitat, differentiation between these two species should be enough to make positive identification of *P. lacustris*. There are several structural differences between the two species and the most easily seen are listed. The lateral tubercles of the nasale in *Platypatrobus* are usually longer than the median one (Fig. 486), the seta UR₉ on the tergite 9 is very short (Fig. 491), 0.1 times or less the length of

![Figures 485-488](image_url)

**Figs 485-488.** 485-487: cephalic capsule, antenna and mandible (dorsal view). 485, *Patrobus longicornis*, L₃; 486, *Platypatrobus lacustris*, L₃; 487, *Diplous rugicollis*, L₃; 488, right maxilla of *Patrobus longicornis*, L₃ (dorsal view). Scale bars = 0.3 mm (Figs 485-487), 0.2 mm (Fig. 488)
Figs 489-492. 489-490: labium (dorsal view). 489, *Patrobus longicornis*, L.; 490, *Diplous rugicollis*, L. 491-492: tergite 9 and urogomphi (dorsal view). 491, *Platypatrobus lacustris*, L.; 492, *Diplous rugicollis*, L. Scale bars = 0.2 mm (Figs 489-490), 0.3 mm (Figs 491-492)
the major setae on the urogomphi, each urogomphus has only six major setae (Fig. 491), and most sclerites have much less secondary setae; for example the epipleurite has less than eight distinct setae. In *Patrobus longicornis* the lateral tubercles of the nasale are not longer than the median projection (Fig. 485), the seta URα is relatively long, about 0.4-0.6 times the length of the major setae on the urogomphi, each urogomphus has seven major setae plus another one on basal third of about the same length as URα, and most sclerites have more secondary setae; for example the epipleurite has more than ten evident setae.

The width of the cephalic capsule varies between 0.74-0.79 mm (L1; n= 10), 1.13-1.18 mm (L2; n= 4), and 1.71-1.86 mm (L3; n= 4) according to Bousquet and Grebennikov (1999).

**List of northeastern species described or illustrated:**

*Platypatrobus lacustris* Darlington: Bousquet and Grebennikov (1999: 6, 8, 10; Figs 7-15)

**Genus Diplous Motschulsky** (Figs 487, 490, 492)

Compared to *Patrobus longicornis* larvae, those of *Diplous rugicollis*, the sole species of this genus in the northeast, differ in having the nasale somewhat triangularly protruding (Fig. 487), the antennomere 2 with two or three setae (Fig. 487), the maxillary and labial palpomeres clearly less slender (Fig. 490), the abdominal tergites proportionally wider with the lateroposterior angles more or less bumpy, and the urogomphi in lateral view slightly raised over the apical half. There are also differences in the length of several setae.

This account is based on examination of several reared and field-collected larvae of *D. rugicollis* Randall. The width of the cephalic capsule varies in this species between 1.18-1.23 mm (L1; n= 2) and 1.68-1.91 mm (L3; n= 10). Larvae of *Diplous depressus* (Gebler) (Zamotajlov 1996: 123-127) and *Diplous caligatus* Bates (Kurosa 1959: 404) have been described to date.

**Tribe Psydrini**

The tribe Psydrini is a large, complex, doubtfully monophyletic group. There is at this time too few species known in their larval stages to dress a realistic portrait of the larval character states of the tribe. Besides the larvae of *Psydrus piceus* and presumably *Nomius pygmaeus*, only those of the Australian *Melisodera picipennis* Westwood are known (Moore 1964).

**Genus Psydrus LeConte**

The third-instar larva of *Psydrus piceus* was described by Dajoz (1997) based on two specimens collected at Kennedy Meadow in California. Two additional larvae were reared to adults which confirm the species’ identity. The width of the cephalic capsule is given at 1.17 mm.

Based on Dajoz’s description and illustrations, the species is rather typical of most carabids. The cervical and ocular grooves are absent, there are six stemmata on each side of the parietale, the coronal suture is distinct though relatively short, the nasale is differentiated, slightly protruding with its anterior edge transversely truncate, the antenna is not particularly long, the first two antennomeres have no setae, the sensorium is bulbous, the medial edge of the terebra is smooth, the retinaculum relatively small, the penicillus consists of a single short seta, the lacinia is a short, rounded (i.e., nonacuminate) lobe, the urogomphi are relatively long, fixed, each with five major setae only, and the leg bears two equal claws. The presence of the lacinia will separate this species from patrobines and the presence of only five major setae on the urogomphus from all northeastern pterostichines except *Cyclotrachelus*. 
List of Northeastern Species Described or Illustrated:
Psydrus piceus LeConte: Dajoz (1997: 133, 134; Figs 1-11) [D: L3].

Genus Nomius Laporte
Jeannel (1948: 74, 75: Figs 1a-c) described the larval characters of a species which he believed was Nomius pygmaeus. The two specimens, likely third instars, were collected in the famous forest of Fontainebleau in the Seine-et-Marne department in northern France. The species, which was a great rarity in the region and in fact all over Europe, was collected in large number in 1946 and the two larvae were found in September of that year along with adults.

Based on the description and drawings of the head (dorsal view), leg, and urogomphi provided by Jeannel, the following features are found in that species: cervical groove absent; four stemmata on each side of the parietale, the three of the anterior row distinct, those of the second row apparently fused into a single heap; coronal suture relatively short, less than half length of antennomere 1; nasale typical of many Pterostichini and Platynini, i.e., slightly protruding with its anterior edge more or less truncate; antennomere 1 almost as long as remaining antennomeres combined; antennomere 2 with one secondary seta; sensorium on antennomere 3 bulbous, typical; mandible with short retinaculum; terebra with medial edge smooth; penicillus (based on Jeannel’s figure 1a) consisting of a single seta; lacinia distinct, probably not acuminate (based on Jeannel’s figure 1a) with seta MX inserted apicad and relatively long; urogomphi relatively long, fixed, “knotty”, apparently with ten long setae on each side (based on Jeannel’s figure 1c); and leg with two equal claws.

At the request of the author, Thierry Deuve tried, without success, to locate these two larvae in the Muséum national d’Histoire Naturelle in Paris.

List of Northeastern Species Described or Illustrated:
Nomius pygmaeus (Dejean): Jeannel (1948: 74, 75; Figs 1a-c) [D: L3]; Hůrka (1978: 54) [K: L3].

Tribe Brachinini
[Figs 493-497]

Known brachinine larvae are peculiar because all instars but the first one are fat, poorly sclerotized, with the legs each with fewer than five segments. First instar specimens have typical carabid character states. Larvae of this tribe are too poorly known to characterize the group at this time. Besides those of Brachinus, larvae of only the genera Aptinus and Pheropsophus are known.

Genus Brachinus Weber (Figs 493-497)
Besides Erwin’s (1967) detailed description of all instars of B. pallidus Erwin, a species found in western United States, there is no species of Brachinus described other than in the first instar. Therefore, the following account is taken from Erwin’s description and illustrations. The larva goes through five instars1, and except for the first one, are characterized by the following states: body white, soft, without much sclerotization and pigmentation, abdominal segments swollen (Fig. 493); frontal suture more or less U-shaped, coronal suture short in L2 and L3, longer in L4 and L5; nasale not differentiated though median section of the frontale anterior edge is slightly emarginate; pigmented spots (granules) present on each side of the parietale.

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1 Larvae of the European Brachinus explodens Duftschmid and B. crepitans (Linné) go through three instars only (Saska and Honek 2004).
in L₂, L₃, and L₄ but apparently without functional stemmata; cervical and ocular grooves absent; antenna four-segmented in L₂ and L₃, five-segmented in L₄ and L₅; antennomere 3 with small knob “not at all transparent” in L₂; mandible rather short, with very small retinaculum; penicillus condition unknown; maxillary palpus four-segmented; galea unisegmented, proportionally rather long; lacinia absent; labial palpus two-segmented; ligula indistinct; abdomen

Figs 493-497. *Brachinus* sp. (dorsal view). 493, body, L₅ [redraw from Erwin (1967)]; 494, cephalic capsule, L₁; 495, right maxilla, L₁; 496, labium, L₁; 497, tergite 9 and urogomphi, L₁. Scale bars = 0.05 mm
ten-segmented; urogomphi short, non-segmented, soft, each bearing four long setae in addition to long seta on tergite 9 at base of urogomphus; pygopod short; leg proportionally short, apparently three-segmented (see Erwin 1967: Fig. 6).

First instar of ten species of *Brachinus* have been described to date, including two from North America (*B. janthinipennis* and *B. pallidus*). These larvae have no stricture at the base of the cephalic capsule (Fig. 494), the frontal suture is V-shaped and the coronal suture is absent, the nasale is not differentiated from the adnasale, the stemmata are present, apparently six of them disposed on two rows, the cervical and ocular grooves are absent, the antenna is four-segmented and about the same length as the mandible, the antennomere 3 is swollen and the sensorium proportionally large, bulbous, the mandible has a very small retinaculum near the basal third and the periculus is absent, the lacinia is also absent, the galea is two-segmented (Fig. 495) but the first galeomere is proportionally very small (possibly unisegmented in *Brachinus incomptus* Bates, see Habu and Sadanaga 1965: Fig. 235), the ligula is indistinct (Fig. 496), the urogomphi are markedly short (Fig. 497), much shorter than the pygopod, and bear four setae on each side though a fifth one is present at the base of the urogomphus; the pygopod has no protruding hook ventrally, and the leg bears a single claw. Like those of *Aptinus* (see Hovorka 1996: Figs 1-7; Wautier and Viala 1967: Figs 5-6), *Brachinus* first-instar larvae have no apparent egg-bursters. For comparative purposes, *Pheropsophus* larvae have a large microspinule at the base of the frontale for egg-bursters, a distinct coronal suture, no retinaculum, a relatively large spine at the location of the lacinia, a proportionally long galeomere 1, no visible urogomphi, a well-developed hook appendage on the ventral surface of the pygopod, and two claws at the extremity of the leg (Habu and Sadanaga 1965: Figs 251-255; Habu 1986: 113-122).

Available information suggests that *Brachinus* larvae are ectoparasitoid of water beetle pupae, such as those of *Gyrinidae*, *Dytiscidae* and *Hydrophilidae*, or of carabid pupae, such as those of *Amara* (see Saska and Honek 2004).

The first instar of only one species found in the northeast has been briefly described to date.

**List of northeastern species described or illustrated:**

*Brachinus janthinipennis* (Dejean): Wickham (1893: 330-332; Pl. IX, figs 1-2) [D: L2-?]; Dimmock and Knab (1904: 31-34; Fig. 4; Pl. 3, Figs 1, 2) [D: L1-?].

**Tribe Pterostichini**

[Figs 498-553, Pl. 79]

Pterostichini larvae possess the following character states: cephalic capsule without cervical stricture (Figs 498-501), though a subbasal constriction is present in several species; cervical groove present except in known members of the genus *Cylotrachelus*; parietale with six stemmata on each side; coronal suture distinct, varying from 0.3-2.6 times the length of antennomere 4; nasale differentiated in most taxa (Figs 505-524), without toothlike projections except that the lateral angles of the anterior edge are slightly protruding in some taxa; antenna about the same length as mandible; antennomere 1 longer than antennomere 2; sensorium bulbous; retinaculum well developed; penicillus present (except in *Myas*), consisting of several relatively long setae (Figs 527-530); stipes with a membranous declivity on its lateral side (Figs 537, 538) which extends into the ventral surface in some species (Figs 532, 534-536); lacinia present and acuminate with seta MX, inserted laterad or basad (Figs 539-544); tergal carina distinct; urogomphi fixed, relatively long, not segmented (except in some species of *Abax*), without nodules as such, with five to ten major setae on each side (Figs 547-553); leg with two terminal claws.
Pterostichine larvae are most similar to those of Patrobini and Platynini. Patrobine larvae differ in having the lacinia absent and the penicillus either absent or consisting of one to three very small setae. Platynine larvae differ in having the lacinia not or only barely acuminate. However, this character is difficult to observe on unmounted specimens. As far as known, there are no platynine larvae with a membranous declivity on the lateral side of the stipes that extends beyond level of MX2 or have the cervical groove extended anteriad on the lateral surface of the parietale. The presence of either character state in a larva of these two groups will indicate that it belongs to the tribe Pterostichini. Furthermore, all northeastern Pterostichini, except for the quite characteristic *Abax parallelepipedus*, have one or two secondary setae behind MN1 on the lateral side of the mandible (Figs 527-530). Secondary setae are rarely present on the lateral side of the mandible in members of the tribe Platynini.

**Genus Poecilus** (Figs 498, 532, 547)
The two species of *Poecilus* found in the northeast belong to the nominotypical subgenus (see Bousquet 1999) and can be recognized among pterostichines, except for the otherwise very characteristic genus *Cyclotrachelus*, in having the setae TE10 very small, less than 0.1 times the length of TE9. Additionally, third instar larvae have a longitudinal groove on each side on the dorsum of the parietale between PA6 and PA7 (Fig. 498). The edge of the nasale is concave, the membranous declivity extends over the entire width of the ventral surface (though often rather indistinct at middle), and the seta MX6 on the lacinia is relatively long, about 0.5-0.9 times that of MX5.

This account is based on the examination of several reared and field-collected specimens of the two species found in the northeast. Several European species have been described by Arndt and Hůrka (1992a).

**Key to northeastern species of Poecilus**

1. Parietale without sulcus between setae PA6 and PA7. Width of cephalic capsule 0.86-1.11 mm [L2] ........................................................................................................................2
   – Parietale with short longitudinal sulcus between setae PA6 and PA7 (Fig.). Width of cephalic capsule 1.31-1.85 mm [L3] ..................................................................................3

2 [1]. Seta PY6 on pygopod longer, its length about 0.5 times that of PY4. Seta ANα on antennomere 2 absent ................................................................. *P. lucublandus* (Say)
   – Seta PY6 on pygopod small, its length 0.1 times or less that of PY4. Seta ANα on antennomere 2 present, though small ........................................... *P. chalcites* (Say)

3 [1]. Cephalic capsule quadrate (LH/WH = 0.99-1.03). Mandible usually with three lateral setae ................................................................. *P. lucublandus* (Say)
   – Cephalic capsule slightly transverse (LH/WH = 0.87-0.94). Mandible with two lateral setae .................................................... *P. chalcites* (Say)

**List of northeastern species described or illustrated:**

*Poecilus chalcites* (Say): Kirk (1972: 1355; Fig. 3-29, Pl.1[29]) [D: L1, L2, L3]; Thompson (1979b: 55, 62, 63; Figs 33a-f) [D+K: L1, L2, L3]; Bousquet (1985b: 201, 204, 213-214; Figs 16, 57, 76, 93, 100) [D+K: L1, L2, L3]; Bousquet (1989: 31, 34; Figs 9-10, 30) [K: L1, L2, L3]; Bousquet (1999: Figs 119, 123).
Poecilus lucublandus (Say): Schaupp (1881: 88, 89) [D: L2, 3]; Kirk (1972: 1355; Fig. 3-28, Pl. 1[28]) [D: L1, 3]; van Emden (1942: Fig. 23); Thompson (1979b: 55, 74, 75; Figs 41a-g) [D+K: L1, L2, 3]; Bousquet (1985b: 201, 204, 212, 213; Fig. 29) [D+K: L1, L2, 3]; Bousquet (1989: 31, 34) [K: L1, L2, L3].

Genus Gastrellarius Casey (Figs 510, 533, 549)
Larvae of two of the three species that belong to this genus are known. These species are similar to those of Pterostichus except that the setae TEα are indistinct on all abdominal segments and each urogomphus has only seven major setae (Fig. 549) instead of eight or nine as in the vast majority of Pterostichus species. The antennomere 2 bears an apical seta, the seta MX5 on the lacinia is very small, about 0.1-0.2 times the length of MX9, and the membranous declivity is small and restricted to the lateral side of the stipes. In the northeastern species, the setae UR2 on tergite 9 is about the same length as UR3 (Fig. 549) while in Pterostichus the seta UR9 is much longer than UR3.

This account is based on examination of reared specimens of G. blanchardi (Horn) and G. honestus (Say). The width of the cephalic capsule for the last-named species and only one found in the northeast varies between 0.50-0.55 mm (L1; n= 9), 0.71-0.83 mm (L2; n= 7), and 1.06-1.18 mm (L3; n= 10).

List of northeastern species described or illustrated:
Gastrellarius honestus (Say): Bousquet (1985b: 200, 203, 224-225; Figs 19, 33, 34, 59, 75, 97) [D+K: L1, L2, L3]; Bousquet (1989: 30, 33; Figs 15, 34) [K: L1, L2, L3].

Genus Stomis Clairville
The larvae of two species of Stomis have been described so far: S. pumicatus (see below) and S. rostratus (Zetto Brandmayr and Marano 1993). Based on the published descriptions and illustrations, I am unable to find any character states that could separate larvae of Stomis from those of Pterostichus. The cervical groove is not extended forward laterally, the coronal suture is relatively long, the nasale not particularly different from that of several Pterostichus, the antennomeres 1 and 2 have no setae, the membranous declivity is not apparent on the ventral surface of the stipes, the seta MX5 is rather long, 0.6-1.0 times length of MX9, the seta UR9 is very small or indistinct, and the urogomphus bears six (S. rostratus) or nine (S. pumicatus) major setae.

No larva of Stomis was available for study and the genus is not included in the key to genera. According to Zetto Brandmayr and Marano (1993: 31), the width of the cephalic capsule in S. pumicatus is 0.45 mm (L1), 0.68 mm (L2), and 0.95 mm (L3).

List of northeastern species described or illustrated:
Stomis pumicatus (Panzer)†: Luff (1993: 106; Figs 350-352) [D: L2, 3]; Zetto Brandmayr and Marano (1993: 30-32; Pl. 4, Figs 1-6; Pl. 5, Figs 1-10) [D: L1, L2, L3].

Genus Lophoglossus LeConte (Figs 505, 506, 539)
Lophoglossus scrutator larvae are similar to those of Pterostichus except that the first tergites, and particularly the first two, are more setose. The edge of the nasale is transversely truncate with a short, more or less distinct projection at middle (Fig. 506), the antennomere 2 bears a seta (AN1), the membranous declivity extends over the lateral half of the ventral surface, the seta MX5 is very small, about 0.1-0.2 times the length of MX9 (Fig. 539), and each urogomphus bears nine major setae.

This account is based on the examination of several reared specimens of L. scrutator. The width of its cephalic capsule varies between 0.73-0.75 mm (L1; n= 6), 1.04-1.14 mm (L2; n= 3), and 1.56-1.80 mm (L3; n= 5) according to Bousquet (1985b: 194).
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Lophoglossus scrutator (LeConte): Bousquet (1985b: 200, 204, 211; Figs 15, 27, 28, 63, 71, 88) \[D+K: L_1, L_2, L_3\]; Bousquet (1989: 30, 34; Figs 8, 13, 32) \[K: L_1, L_2, L_3\].

GENUS Sterocerus Kirby (Figs 507, 540, 548)

Two very similar species are placed in this genus and the larva of one of them is known. It is characterized within the tribe Pterostichini by having the urogomphi distinctly bowed (Fig. 548), though not as much as in larvae of Myas (see Fig. 550), each with ten major setae. All northeastern pterostichines, with the exception of aberrant specimens, have nine major setae or less on each urogomphus, the seta UR$_9$ being very small. In Sterocerus, the seta UR$_9$ is much longer than usual (Fig. 548), though not as much as UR$_4$-$8$. Additionally, larvae of Sterocerus have the antennomeres 1 and 2 with one seta each, the stipes with a membranous declivity over the lateral half of ventral surface, and the seta MX$_6$ on the lacinia long (Fig. 540).

This account is based on examination of several reared and field-collected specimens of S. haematopus. The width of the cephalic capsule for that species varies between 0.78-0.84 mm (L$_1$; n= 4), 1.21-1.35 mm (L$_2$; n= 6), 1.76-1.94 mm (L$_3$; n= 11).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Sterocerus haematopus (Dejean): Thompson (1979b: 56, 68; Figs 36a-h) \[D+K: L_1, L_2-3\]; Bousquet and Goulet (1984: Fig. 58); Bousquet (1985b: 201, 203, 214-219; Figs 30, 64, 72, 94) \[D+K: L_1, L_2, L_3\]; Bousquet (1989: 31, 33; Fig. 37) \[K: L_1, L_2, L_3\].

GENUS MYAS Sturm (Figs 501, 508, 550)

Larvae of the genus Myas are easy to recognize by the absence of penicillus and the markedly bowed urogomphi (Fig. 550). Other character states include: nasale with its anterior edge emarginate at middle (Fig. 508), cervical groove present, coronal suture short, adnasale with four to six setae (Fig. 508), antennomere 2 with one seta (AN$_\alpha$), medial edge of terebra smooth, stipes with membranous declivity over lateral half of ventral surface, seta MX$_6$ on lacinia long, and urogomphus with nine long setae (Fig. 550).

This account is based on examination of 1L$_2$ and 7L$_3$ collected in Quebec, Ontario, and Pennsylvania and the description and illustrations provided by Zetto Brandmayr and Marano (1996) of the European M. chalybaeus (Palliardi). Only one of the two species found in the northeast is known; its cephalic capsule width varies between 1.16 (L$_2$; n= 1) and 1.69-1.84 mm (L$_3$; n= 7).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

Myas cyanescens Dejean: Thompson (1979a: Figs 59a-b); Thompson (1979b: 54, 55; Figs 29a-g) \[D: L_1\]; Bousquet (1985b: 203, 219, 220; Figs 31, 77, 95) \[D: L_1\]; Bousquet (1989: 33; Figs 14, 36) \[K: L_1\].

GENUS PTEROSTICHUS Bonelli
(Figs 502-504, 511-525, 527-530, 534, 535, 537, 538, 543-545, 551, 553)

This genus is represented by more than a thousand species in the Northern Hemisphere and there is no evidence, from the structural features of both the adults and larvae, that it represents a monophyletic group. I am unable to find any feature that would separate larvae of the genus Pterostichus from those of other Pterostichini genera in the northeast. The following character states are common to all known northeastern species: cervical groove distinct (Figs 502-504), not extended on dorsum medial to level of PA$_7$; nasale differentiated (Figs 511-524); adnasale not sloping toward nasale, with two setae (FR$_5$-$6$); antennomere 1 without membranous band (though such a band exists in some species found outside the northeast); mandible
with at least one secondary seta behind MN₁ (Figs 527-530); abdominal tergites 1-5 without numerous secondary setae; seta TE₁₀ apparent at least on the first three abdominal tergites, its length 0.1-1.0 (usually 0.3-1.0) times that of TE₁; seta UR₁ distinctly longer than UR₁ (Figs 551, 553); urogomphi more or less straight to slightly curved, each with six (P. brevicornis; Fig. 553) or eight or nine major setae (Fig. 551).

This account is based on examination of at least one reared L₂ and one reared L₃ of almost all northeastern species. Several Palaearctic (see Arndt and Hůrka 1992b, 1992c, 1992d, 1993) and other Nearctic (see Thompson 1979b; Bousquet 1984, 1989) species are known in their larval stages. The following key includes all northeastern species, except P. praetermissus (Chaudoir) and P. corrusculus LeConte which are unknown and P. vernalis (Panzer) an adventive species which was not available for study. With the material at hand a few closely related species could not be distinguished.

**Key to most northeastern species of Pterostichus**

1. Urogomphus with six long setae (Fig. 553) [WH = 0.58-0.59 mm (L₂; n= 2), 0.82-0.88 mm (L₃; n= 5)] .................................................................................. P. brevicornis (Kirby)
   - Urogomphus with at least eight long setae (Fig. 551) ........................................... 2

2 [1]. Seta FR₁ on frontale small, as small as FR₁ ................................................................ 3
   - Seta FR₂ on frontale long, much longer than FR₁ ................................................... 4

3 [2]. Seta PR₁ on pronotum small, as small as PR₁. Urogomphus with eight long setae [WH = 1.05-1.25 mm (L₂; n= 9); 1.43-1.88 mm (L₃; n= 10)] ........... P. tristis (Dejean)
   - Seta PR₃ on pronotum long, much longer than PR₃. Urogomphus with nine long setae [WH = 1.30-1.46 mm (L₂; n= 13); 1.96-2.22 mm (L₃; n= 14)] ... P. adocus (Say)

4 [2]. Medial edge of terebra serrulate ........................................................................ 5
   - Medial edge of terebra smooth ............................................................................. 9

5 [4]. Seta MX₆ not exceeding apex of lacinia, its length 0.1-0.2 times that of MX₅ (Fig. 544). Membranous declivity extended beyond level of seta MX₅ on lateral margin of stipes (as in Fig. 538) [WH = 0.86-0.90 mm (L₂; n= 7); 1.18-1.49 mm (L₃; n= 12)]........ P. luctuosus (Dejean) and P. tenuis (Casey)
   - Seta MX₆ exceeding apex of lacinia, its length 0.5-0.7 times that of MX₅. Membranous declivity not extended beyond level of seta MX₅ on lateral margin of stipes (as in Fig. 537).......................................................................................................................... 6

6 [5]. Width of cephalic capsule 0.55-0.68 mm [L₂] ................................................... 7
   - Width of cephalic capsule 0.90-0.98 mm [L₃] ......................................................... 8

7 [6]. Body darker, cephalic capsule and pronotum yellowish-brown, remaining of dorsum more brownish. Length of seta UR₁ on abdominal tergite 9 two to four times that of UR₁ ................................................................. P. patruelis (Dejean)
   - Body paler, cephalic capsule and pronotum yellow, remaining of dorsum yellowish-white. Length of seta UR₁ on abdominal tergite 9 subequal to that of UR₁ ............................................................... P. femoralis (Kirby)
Body darker, cephalic capsule and pronotum yellowish-brown, remaining of dorsum more brownish. Length of seta UR₉ on ninth abdominal tergite 0.5-0.7 times that of TE₁₀ of tergite 8. *P. patruelis* (Dejean)

- Body paler, cephalic capsule and pronotum yellow, rest of dorsum of body yellowish-white. Length of seta UR₉ on ninth abdominal tergite 0.2-0.4 times that of TE₁₀ of tergite 8. *P. femoralis* (Kirby)

Antennomere 2 with seta (ANₐ) on medial side (Fig. 525).

- Antennomere 2 without seta.

Length of seta MX₆ on lacinia 0.5-0.6 times that of MX₅ (as in Fig. 543).

- Length of seta MX₆ on lacinia 0.1-0.3 times that of MX₅ (as in Fig. 539).

Cephalic capsule more transverse (LH/WH = 0.80-0.85). Length of coronal suture 0.3-0.7 times that of antennomere 4 [WH = 1.00-1.05 mm (L₄; n= 3); 1.46-1.66 mm (L₄; n= 9)]. *P. mutus* (Say)

- Cephalic capsule less transverse (LH/WH = 0.87-0.99). Length of coronal suture 0.9-1.9 times that of antennomere 4.

Width of cephalic capsule 1.06-1.31 mm. Mandible with two lateral setae [L₄].

- Width of cephalic capsule 1.54-2.02 mm. Mandible usually with three lateral setae [L₄]

Length of seta ME₁₃ on metanotum 0.2 times or less that of ME₁₂. Length of seta PR₁₂ on pronotum 0.2 times or less that of PR₁₁. *P. pensylvanicus* LeConte

- Length of seta ME₁₃ on metanotum 0.5-0.8 times that of ME₁₂. Length of seta PR₁₂ on pronotum 0.4-0.7 times that of PR₁₁. *P. adstrictus* Eschscholtz

Length of seta ME₁₃ on metanotum 0.2-0.5 times that of ME₁₂. Length of seta PR₁₂ on pronotum 0.1-0.4 times that of PR₁₁. *P. pensylvanicus* LeConte

- Length of seta ME₁₃ on metanotum 0.5-0.8 times that of ME₁₂. Length of seta PR₁₂ on pronotum 0.4-0.7 times that of PR₁₁. *P. adstrictus* Eschscholtz

Membranous declivity not extended on ventral surface of stipes. Edge of nasale truncate to slightly convex (Fig. 521) [WH = 1.50-1.62 mm (L₄; n= 4); 2.16-2.56 mm (L₄; n= 10)]. *P. punctatissimus* Randall

- Membranous declivity extended on ventral surface of stipes (Figs 534, 535). Edge of nasale usually slightly concave (Fig. 519).

Cephalic capsule quadrate (LH/WH = 0.95-1.00). Length of first labial palpomere 1.4-1.5 times that of second palpomere. Length of coronal suture 1.2-1.5 times that of antennomere 4 [WH = 1.28-1.74 mm (L₄; n= 9); 1.95-2.58 mm (L₄; n= 16)]. *P. melanarius* (Illiger)

- Cephalic capsule elongate (LH/WH = 1.06-1.10). Length of first labial palpomere 0.8-1.2 times that of second palpomere. Length of coronal suture 1.5-2.0 times that of antennomere 4.
17 [16]. Length of first galeomere 0.7-0.8 times that of second galeomere. Nasale not prominent (Fig. 520) [WH = 1.60-1.77 mm (L₂; n= 12); 2.25-2.35 mm (L₃; n= 4)]...........

– Length of first galeomere 1.0-1.2 times that of second galeomere. Nasale slightly prominent [WH = 1.37-1.58 mm (L₂; n= 15); 1.89-2.41 mm (L₃; n= 20)]..............

.......................................................................................................P. lacrymosus (Newman) (Newman)

18 [9]. Cervical groove extended laterally to level of posterior row of stemmata (Fig. 502) ..........................................................19

– Cervical groove not extended laterally or extended at most to level of seta PA₁₄......21

19 [18]. Stipes 3.2-3.6 times as long as wide. Length of second maxillary palpomere 1.4-1.6 times that of third palpomere. Width of cephalic capsule 1.11-1.32 mm (n= 15) ....

...............................................................................................P. pinguedinus (Eschscholtz), L₃

– Stipes 3.9-5.8 times as long as wide. Length of second maxillary palpomere 0.8-1.1 times that of third palpomere. Width of cephalic capsule 1.31-2.37 mm.............20

20 [19]. Membranous declivity not extended to level of seta MX₂ on lateral margin of stipes (Fig. 537) [WH = 1.44-1.64 mm (L₂; n= 12); 2.17-2.37 mm (L₃; n= 7)].................

...............................................................................................P. diligens (Chaudoir)

– Membranous declivity extended beyond level of seta MX₂ on lateral margin of stipes (Fig. 538) [WH = 1.31-1.54 mm (L₂; n= 24); 1.76-2.27 mm (L₃; n= 25)].............

...............................................................................................P. corvinus (Dejean) and P. castor (Goulet & Bousquet)

21 [18]. Membranous declivity extended on ventral surface of stipes [WH = 0.88-0.99 mm (L₂; n= 8); 1.19-1.25 mm (L₃; n= 3)].............................................................

...............................................................................................P. caudalis (Say)

– Membranous declivity not extended on ventral surface of stipes ..................22

22 [21]. Width of cephalic capsule 1.62-2.65 mm. Length of coronal suture 1.9-2.6 times that of antennomere 4 [WH = 1.62-1.75 mm (L₂; n= 6); 2.24-2.65 mm (L₃; n= 8)].

...............................................................................................P. rostratus (Newman)

– Width of cephalic capsule 0.62-1.32 mm. Length of coronal suture 0.8-1.6 times that of antennomere 4.................................................................23

23 [22]. Length of seta MX₅ on lacinia 0.5-0.7 times that of MX₅. Length of second maxillary palpomere 0.8-1.0 times that of third palpomere .....................................24

– Length of seta MX₅ on lacinia 0.1-0.2 times that of MX₅. Length of second maxillary palpomere 1.2-1.6 times that of third palpomere ....................................27

24 [23]. Width of cephalic capsule 0.62-0.77 mm [L₂]..........................................................25

– Width of cephalic capsule 0.91-1.11 mm [L₃]..........................................................26

25 [24]. Length of seta UR₅ on ninth abdominal tergite 2-4 times that of UR₅..............

.................................................................................................................P. commutabilis (Motschulsky)

– Length of seta UR₅ on ninth abdominal tergite subequal to that of UR₅................

................................................................................................................P. strenuus (Panzer)
26 [24]. Length of seta \( UR_β \) on ninth abdominal tergite 0.4-0.6 times that of \( TE_{10} \) on tergite 8 ............................................................................................................ P. commutabilis (Motschulsky)

27 [23]. Length of seta \( UR_α \) on ninth abdominal tergite 0.2-0.4 times that of \( TE_{10} \) on tergite 8 ............................................................................................................ P. strenuus (Panzer)

28 [27]. Width of cephalic capsule 0.72-0.83 mm \([L_2]\) ..............................................................

29 [27]. Width of cephalic capsule 1.05-1.32 mm \([L_2]\) ..............................................................

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Pterostichus* (Argutor) *commutabilis* (Motschulsky): Bousquet (1985b: 202, 206, 225-226, as *P. leconteianus*; Fig. 35) \([D+K: L_1, L_2, L_3]\); Bousquet (1989: 32, 36, as *P. leconteianus*; Fig. 16) \([K: L_1, L_2, L_3]\).

*Pterostichus* (Argutor) *vernalis* (Panzer)†: Larsson (1941: 326, 327; Figs 48d, 53c) \([D+K: L_1, L_2, L_3]\); Sharova (1958: 64; Fig. 120a) \([K: L_1, L_2, L_3]\); Sharova (1964: 175; Fig. 150-25) \([K: L_1, L_2, L_3]\); Larsson (1968: 383, 386; Figs 52b, 53c) \([D+K: L_1, L_2, L_3]\); Desender and Panné (1983: 139, 141-143; Figs 5a-g, 6a-g, 7a-h, 8) \([D: L_1, L_2, L_3]\); Arndt and Hůrka (1991a: 90, 93) \([K: L_1, L_2, L_3]\); Arndt and Hůrka (1992d: 263) \([D: L_1, L_2, L_3]\); Luff (1993: 108, 109; Figs 357, 358) \([D+K: L_1, L_2, L_3]\); Arndt and Hůrka (1993: 46, 48) \([K: L_1, L_2, L_3]\).


*Pterostichus* (Bothriopterus) *pensylvanicus* LeConte: Goulet (1974: 19) \([D: L_1, L_2, L_3]\); Thompson (1979b: 55, 80; Figs 44a-d) \([D+K: L_1, L_2, L_3]\); Bousquet (1985b: 202, 205, 233; Figs 23, 41, 79, 90) \([D+K: L_1, L_2, L_3]\); Bousquet (1989: 32, 35; Fig. 24) \([K: L_1, L_2, L_3]\).


*Pterostichus* (Cryobius) *brevicornis* (Cryobius): Bousquet (1985b: 202, 203, 248; Fig. 98) \([D+K: L_1, L_2, L_3]\); Bousquet (1989: 32, 33) \([K: L_1, L_2, L_3]\).


*Pterostichus* (Cylindrocharis) *rostratus* (Newman): Bousquet (1985b: 202, 206, 245; Fig. 54) \([D+K: L_1, L_2, L_3]\); Bousquet (1989: 32, 36) \([K: L_1, L_2, L_3]\).

*Pterostichus* (Euferonia) *coracinus* (Newman): Bousquet (1985b: 201, 205, 242-243; Figs 62, 81) \([D+K: L_1, L_2, L_3]\); Bousquet (1989: 31, 35; Fig. 20) \([K: L_1, L_2, L_3]\).
Pterostichus (Euferronia) lachrymosus (Newman): Thompson (1979b: 56, 71; Figs 38a-g) [D+K: L₁, L₂, L₃]; Bousquet (1985b: 201, 205, 241-242; Figs 51, 61) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 35; Fig. 19) [K: L₁, L₂, L₃].

Pterostichus (Euferronia) stygicus (Say): Dimmock and Knab (1904: 41-43; Fig. 3; Pl. 4: Figs 1, 4) [D: L₁]; Thompson (1979a: Fig. 60); Bousquet (1985b: 201, 205, 243) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 35) [K: L₁, L₂, L₃].

Pterostichus (Hyphermes) adoxus (Say): Bousquet (1985b: 200, 203, 246; Figs 55, 99) [D+K: L₁, L₂, L₃]; Bousquet (1989: 30, 34) [K: L₁, L₂, L₃].

Pterostichus (Hyphermes) tristis (Dejean): Dimmock and Knab (1904: 46-47, as P. adoxus; Pl. 4, fig. 6) [D: L₃]; Bousquet (1985b: 200, 203, 246-247) [D+K: L₁, L₂, L₃]; Bousquet (1989: 30, 34) [K: L₁, L₂, L₃].

Pterostichus (Lamenius) caudicalis (Say): Bousquet (1985b: 201, 206, 235; Figs 47a-i) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 36; Fig. 12) [K: L₁, L₂, L₃].

Pterostichus (Lenapterus) punctatissimus (Randall): Thompson (1979b: 56, 80, 81; Figs 45a-i) [D+K: L₁, L₂-3]; Bousquet (1985b: 202, 205, 244; Figs 52, 53) [D+K: L₁, L₂, L₃]; Bousquet (1989: 33, 35) [K: L₁, L₂, L₃].


Pterostichus (Melanius) corvinus (Dejean): Thompson (1979b: 56, 65; Figs 34a-g) [D+K: L₁, L₂-3]; Bousquet (1985b: 202, 206, 236; Figs 43, 44, 86, 92) [D+K: L₁, L₂, L₃]; Bousquet (1989: 33, 36; Fig. 28) [K: L₁, L₂, L₃].

Pterostichus (Monoferonia) diligendus (Chaudoir): Bousquet (1985b: 202, 206, 239; Figs 1-13, 48, 70, 82, 87) [D+K: L₁, L₂, L₃]; Bousquet (1989: 32, 36) [K: L₁, L₂, L₃].

Pterostichus (Morphnosoma) melanarius (Illiger): Schiødte (1867: 511) [D: L₁]; Larsson (1941: 326-328, as P. vulgaris; Fig. 49d) [D+K: L₁, L₂, L₃]; Sharova (1958: 64, as P. vulgaris; Figs 120aa, 123) [K: L₁]; Sharova (1964: 175, as P. vulgaris; Figs 150-24, 154-6) [K: L₁]; Larsson (1968: 384, 387, as P. vulgaris; Fig. 53d) [D+K: L₁, L₂, L₃]; Thompson (1979b: 56, 77; Figs 42a-f) [D+K: L₁, L₂, L₃]; Bousquet (1985b: 201, 205, 241; Figs 50, 80, 85) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 35) [K: L₁, L₂, L₃]; Arndt (1991a: 89, 93) [K: L₁, L₂, L₃]; Arndt and Hůrka (1992c: Fig. 24); Luff (1993: 108, 111; Figs 364-366) [D+K: L₁, L₂, L₃]; Arndt and Hůrka (1993: 45, 48) [K: L₁, L₂, L₃].

Pterostichus (Phonias) femoralis (Kirby): Bousquet (1985b: 201, 204, 227-228) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 34) [K: L₁, L₂, L₃].

Pterostichus (Phonias) patruelis (Dejean): Thompson (1979b: 56, 77, 78; Figs 43a-f) [D+K: L₁, L₂, L₃]; Bousquet (1985b: 201, 204, 227; Figs 21, 38, 39, 67, 89) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 34; Figs 11, 25-26) [K: L₁, L₂, L₃].

Pterostichus (Phonias) strenuus (Panzer): Larsson (1941: 325, 329; Fig. 48b) [D+K: L₁, L₃]; Sharova (1958: 62; Fig. 120s) [K: L₁]; Sharova (1964: 173; Fig. 150-16) [K: L₁]; Larsson (1968: 383, 388, 389) [D+K: L₁]; Desender and Panné (1983: 139, 141-143; Figs 1, 2a-g, 3a-g, 4a-h) [D: L₁, L₂, L₃]; Bousquet (1985b: 202, 206, 226-227; Figs 20, 36, 37) [D+K: L₁, L₂, L₃]; Bousquet (1989: 32, 36; Fig. 17) [K: L₁, L₂, L₃]; Arndt (1991a: 90, 92; Fig. 85) [K: L₁, L₂, L₃]; Arndt and Hůrka (1992d: 264; Figs 26, 27) [D: L₁, L₂, L₃]; Luff (1993: 108, 113; Figs 373, 374) [D+K: L₁, L₂, L₃]; Arndt and Hůrka (1993: 46, 48) [K: L₁, L₂, L₃].

Pterostichus (Psedomases) lactuosus (Dejean): Thompson (1979b: 56, 74; Figs 40a-g) [D+K: L₁, L₂, L₃]; Bousquet (1985b: 201, 204, 238; Figs 45-47, 68) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 34; Fig. 27) [K: L₁, L₂, L₃].

Pterostichus (Psedomases) tenuis (Casey): Bousquet (1985b: 201, 204, 238) [D+K: L₁, L₂, L₃]; Bousquet (1989: 31, 34) [K: L₁, L₂, L₃].
**Genus Cyclotrachelus Chaudoir** (Figs 499, 509, 542, 546)

Larvae of the few known species of *Cyclotrachelus* are unique among the North American Pterostichini in having the cervical groove absent, a small additional sclerite anterior to the epipleurite, and the urogomphus with only five major setae in all three instars. Other important character states include: nasale not differentiated (Fig. 509), adnasale with seven setae, antennomere 1 with membranous ring suggesting a subdivision, antennomere 2 without setae,

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mandible markedly curved apically, membranous declivity extended over ventral surface of stipes, seta MX₆ on lacinia relatively long (Fig. 542), setae TE₁₀ very short, less than 0.1 times the length of TE₉, and claws unequal in length.

This account is based on the descriptions and illustrations provided by Thompson (1979b) and Bousquet (1985b). Only two species of this genus are known in their larval stage, *C. parasodalis* (Freitag) (Thompson 1979b) and *C. seximpressus* (LeConte) (Thompson 1979b; Bousquet 1985b). Illustrations of the head capsule of *C. alternans* (Casey) and *C. torvus* (LeConte) have been published by Kirk (1972).

Figs 545-549. 545-546: labium (dorsal view). 545, *Pterostichus diligendus*, L₁; 546, *Cyclotrachelus* sp., L₁. 547-549: tergite 9 and urogomphi (dorsal view). 547, *Poecilus chalcites*, L₃; 548, *Stereocerus haematopus*, L₃; 549, *Gastrellarius honestus*, L₂. Scale bars = 0.1 mm (Figs 545, 546, 549), 0.5 mm (Figs 547, 548).
Genus *Abax* Bonelli (Figs 500, 526, 531, 536, 541, 552)

Larvae of the sole species of this genus found in North America are unique among the Ne-arctic Pterostichini in having the urogomphi markedly long and pubescent in apical half in second and third instars (Fig. 552) and the antennomeres 1 and 2 each with several apical setae (Fig. 526). Other character states of interest include: adnasale with three setae, antennomere 1 with membranous ring basally (Fig. 526) as in *Cyclotrachelus*, mandible markedly curved apically (Fig. 531), membranous declivity extended over lateral third of ventral surface of stipes (Fig. 536), seta MX₆ on lacinia short, about 0.2-0.3 times length of MX₅ (Fig. 541), and urogomphus with eight major setae (Fig. 552).

Figs 550-553. Tergite 9 and urogomphi (dorsal view). 550, *Myas cyanescens*, L₃; 551, *Pterostichus diligendus*, L₃; 552, *Abax* sp., L₃; 553, *Pterostichus brevicornis*, L₂. Scale bars = 0.5 mm (Figs 550-552), 0.1 mm (Fig. 553)
This account is based on the examination of 1L2 and 3L3 of *A. parallelepipedus* collected in Europe. The width of the cephalic capsule of these specimens varies between 2.09 mm (L2) and 3.18-3.23 mm (L3). The measurements given by Arndt (1989a: 264-265) for that species are 1.41-1.58 mm (L1; n= 7), 1.94-2.16 mm (L2; n= 4), and 2.71-3.01 mm (L3; n= 8). Larvae of three other European species have been described to date (Arndt 1989a, 1991a).

**List of northeastern species described or illustrated:**

*Abax parallelepipedus* (Piller & Mitterpacher): Schiødte (1872: 179-180, as *Pterostichus striola*; Pl. 1, Figs 3-8) [D: L1-3]; Larsson (1941: 330, as *A. ater*; Fig. 49g) [D: L1-3]; van Emden (1942: Fig. 99, as *A. ater*); Sharova (1958, as *A. ater*; Figs 50a-ж); Sharova (1964: 168, as *A. ater*; Figs 108-1,2,3,4,5) [K: L1,3]; Larsson (1968: 390, as *A. ater*; Fig. 53g) [D+K: L1,3]; Raynaud (1976c: 171, 172, 174, as *A. ater*; Pl. 17B, Figs 1-7) [D: L1,3]; Bousquet (1985b: 200, 203, 221; Figs 17, 58, 65, 73, 84, 96) [D+K: L1, L2, L3]; Bousquet (1989: 30, 33; Figs 33, 38) [K: L1, L2, L3]; Arndt (1991a: 94; Fig. 14) [K: L1, L2,3]; Luff (1993: 104, 115; Figs 379-384) [D: L1, L2,3].

**Tribe Zabriini**

[Figs 554-565, Pl. 80]

Zabrine larvae can usually be recognized by the shape of their nasale which bears four to eight subequal, small toothlike projections at least in the North American species, often with a transverse row of smaller projections below and laterad. Unfortunately, these toothlike projections are more or less abraded and barely discernable in some larvae. The parietale has six stemmata on each side, the antenna is not longer than the mandible which is rather short but robust, the terebra is either obliquely straight or relatively little curved apically, its medial edge smooth and without projections, the retinaculum is small or absent, the penicillus present in most species, the stipes has a membranous declivity distinct at least laterally on the ventral surface, the lacinia is distinct and acuminate apically, some setae of the setal group gMX on the anterior part of the stipes are distinctly larger than the remaining ones, the urogomphi are fixed, at least as long as the pygopod, and the leg ends in two subequal claws.

Besides the genera *Pseudamara* and *Amara* (in its wide sense), the tribe includes also the Palaearctic genus *Zabrus* Clairville which larvae differ from those of *Amara* mainly in having the nasale with only two, larger toothlike projections.

**Genus Pseudamara Lindroth**

The relationships of this genus is uncertain. Adults of *Pseudamara* differ from those of *Amara* and *Zabrus* by many character states (see Lindroth 1968: 654). The sole species of this genus was first placed by LeConte (1847) in the harpaline genus *Geobaenus* Dejean along with other small Stenolophina and later (LeConte 1853) moved to the genus *Bradycellus*. The larva of *Pseudamara arenaria* is unknown.

**Genus Amara Bonelli** (Figs 554-565)

Several character states, usually relatively stable in other genera, vary within the species of this diversified genus. The epicranial suture varies from absent (e.g., subgenus *Bradytus*) to relatively long (e.g., subgenus *Curtonotus*), the cervical groove is absent (e.g., *Bradytus*) or present (e.g., *Curtonotus*), the number of setae (including MN1) along the lateral edge of the mandible varies from one (e.g., *A. impuncticollis*) to four (e.g., *A. carinata*), the antennomere 1 may have or not setae but the antennomere 2 has at least one seta, the penicillus is absent or present and con-
sists of small or long setae, the membranous declivity is present only laterally or extends along the ventral surface over the width of the stipes, the tergal carina is present and not extended laterally or is absent, the urogomphi varies from short to moderately long, and the number of major setae on each urogomphus varies from six to ten in the specimens seen.

*Amara* larvae are most likely to be confused with those of Harpalini. However, harpaline larvae have the frontale markedly sloping toward the anterior edge, the nasale is often quite complex and definitively not with four to eight small, regular toothlike projections, and the two claws are unequal in size, though slightly so in a few species.

Several northeastern species have been described in their larval stages but a throughout study based on reared material is needed before attempting to propose a key for their identification.

Several detailed articles on various *Amara* groups have been published by Karel Hůrka and his students (Hůrka and Ducháč 1980a, 1980b; Hůrka 1998; Hůrka and Růžičková 1999; Hůrka 2001). A key to known subgenera has been published by Bílý (1975) and Makarov and Brinev (2001: 286-287).

Figs 554-557. Cephalic capsule, antenna and mandible (dorsal view). 554, *Amara (Curtonotus)* sp., L₂; 555, *A. avida*, L₃; 556, *A. ?obesa*, L₃; 557, *A. musculis*, L₃. Scale bars = 0.3 mm (Figs 554-556), 0.2 mm (Fig. 557)
**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Amara (Amara) aenea* (DeGeer)†: Scatizzi Branchini (1938: 216-220; Fig. 1) [D: L1]; Larsson (1941: 333, 335) [D+K: L1, L3]; Sharova (1958: 68) [K: L1, L3]; Sharova (1964: 180) [K: L1, L3]; Larsson (1968: 395, 397) [D+K: L1, L3]; Raynaud (1976d: 24; Pl. 8, Figs 17-20) [D: L1]; Desender (1988: 154, 158; Plates 1-3) [D: L1]; Arndt (1991a: 109) [K: L1, L2, L3]; Luff (1993: 133, 134, 136; Fig. 440) [D+K: L1, L2, L3]; Saská (2004: 198, 200, 232, 233; Figs 11, 12, 15, 16, 26, 33, 39, 40, 42, 44, 46, 49-51, 57-61, 71, 73, 78, 83, 84, 89, 93, 102, 111, 113, 115-117, 124-126, 128) [D+K: L1, L2, L3].

*Amara (Amara) communis* (Panzer)†: Larsson (1941: 333, 335; Fig. 52c) [D+K: L1, L2, L3]; Sharova (1958: 68) [K: L1, L3]; Sharova (1964: 180) [K: L1, L3]; Larsson (1968: 394, 396; Fig. 57c) [D+K: L1, L2, L3]; Arndt (1991a: 109, 110) [K: L1, L2, L3]; Luff (1993: 134, 135; Figs 435, 436) [D+K: L1, L2, L3]; Hůrka and Růžičková (1999: 452, 457, 461; Figs 9-19) [D+K: L1, L2, L3].

*Amara (Amara) cupreolata* Putzeys: Dogger and Olson (1966: 94, 95; Figs 3-4) [D: L3].

*Amara (Amara) eurynota* (Panzer)†: Larsson (1941: 334; Fig. 52b) [D+K: L1, L2, L3]; Sharova (1958: 67; Fig. 129а) [K: L1, L3]; Sharova (1964: 178; Fig. 159-1) [K: L1, L3]; Larsson (1968: 393, 400; Fig. 57b) [D+K: L1]; Bilý (1972: 324-328; Figs 1-19) [D: L1, L2, L3]; Raynaud (1976d: 22, 23; Pl. 8, Figs 7-13) [D: L1]; Arndt (1991a: 109, 110) [K: L1, L2-3]; Luff (1993: 132, 137; Figs 441) [D+K: L1, L2-3].

*Amara (Amara) familiaris* (Duftschmid)†: Schiødte (1867: 531) [D: L1]; Larsson (1941: 333, 335; Fig. 52e) [D+K: L1, L3]; Sharova (1958: 67; Fig. 129а) [K: L1, L3]; Sharova (1964: 178; Fig. 159-1) [K: L1, L3]; Larsson (1968: 393, 400; Fig. 57e) [D+K: L1, L2, L3]; Desender (1988: 159; Plates 4-6) [D: L1-3]; Arndt (1991a: 109) [K: L1, L2-3]; Luff (1993: 132, 136) [D+K: L1, L2, L3].

*Amara (Amara) impuncticollis* (Say): Thompson (1979a: Figs 66a-c); Thompson (1979b: 87, 93, 94; Figs 53a-c) [D+K: L1, L2].

*Amara (Amara) littoralis* Mannerheim: Thompson (1979b: 87, 94; Figs 54a-f) [D+K: L1, L2].

*Amara (Amara) lunicollis* Schiödte (1867: 530) [D: L1]; Larsson (1941: 333, 335; Fig. 52i) [D+K: L1, L3]; Sharova (1958: 67; Fig. 129а) [K: L1, L3]; Sharova (1964: 178; Fig. 159-1) [K: L1, L3]; Larsson (1968: 393, 397; Fig. 57e) [D+K: L1, L3]; Desender (1988: 159; Plates 4-6) [D: L1, L3]; Arndt (1991a: 109; Fig. 104) [K: L1, L2, L3]; Luff (1993: 132, 137; Fig. 441) [D+K: L1, L2, L3]; Saská (2004: 206, 208, 232, 233; Figs 2, 19, 32, 34, 48, 55, 64, 76, 79, 104, 114, 119, 130, 135) [D+K: L1, L2, L3].

*Amara (Amara) ovata* (Fabricius)†: Arndt (1991a: 110) [K: L2, L3].

*Amara (Bradytus) apricaria* (Paykull)†: Schiödte (1867: 530) [D: L1]; Larsson (1941: 333, 336; Fig. 52i) [D+K: L1, L3]; Sharova (1958: 69; Figs 54, 58, 126b) [K: L1, L3]; Sharova (1964: 181; Figs 110-2, 112, 158-9) [K: L1, L3]; Larsson (1968: 393, 400; Fig. 57i) [D+K: L1, L3]; Hůrka and Ducháč (1980b: 167, 169, 181; Figs 1-9) [D: L1, L2, L3]; Arndt (1991a: 106, 107) [K: L1, L2-3]; Luff (1993: 132, 141; Figs 448-451) [D+K: L1, L2, L3].

*Amara (Bradytus) exarata* Dejean: Kirk (1972: 1355; Fig. 3-12, Pl. 1[12]) [D: L1, L3].

*Amara (Celia) bifrons* Gyllenhal: Larsson (1941: 331, 336) [D+K: L1, L3]; van Emden (1942: Fig. 10); Sharova (1958: 70; Fig. 130) [K: L1, L3]; Sharova (1964: 180; Fig. 160) [K: L1, L3]; Larsson (1968: 393, 400, 401) [D+K: L1, L3]; Raynaud (1976d: 20, 22; Pl. 8, Figs 1-6) [D: L1]; Hůrka and Ducháč (1980b: 173, 174, 176, 181; Figs 20-33, 670 [D: L1, L2, L3]; Arndt (1991a: 106, 107) [K: L1, L2, L3]; Luff (1993: 132, 141; Figs 452, 453) [D+K: L1, L2, L3].

*Amara (Celia) livida* (Kirk): Thompson (1979a: Figs 66a-c); Thompson (1979b: 87, 93, 94; Figs 53a-c) [D+K: L1, L2].
Figs 558-565. 558-560: anterior edge of frontale (dorsal view). 558, *Amara avida*, L₂; 559, *A. obesa*, L₂; 560, *A. musculis*, L₂; 561, right maxilla of *Amara avida*, L₂ (dorsal view). 562-565: tergite 9 and urogomphi (dorsal view). 562, *Amara* (*Curtonotus*) *sp.*, L₂; 563, *A. avida*, L₂; 564, *A. obesa*, L₂; 565, *A. musculis*, L₂. Scale bars = 0.2 mm (Figs 558, 560-565), 0.3 mm (Fig. 559)

Amara (Curtonotus) alpina (Paykull): Forsskåhl (1966: 29, 31; Figs 1-7) [D: L2, L3]; Luff (1993: 133, 143) [D+K: L1, L2, L3].

Amara (Curtonotus) aulica (Panzer): Larsson (1941: 333, 334; Fig. 52a) [D+K: L1, L2, L3]; Larsson (1968: 394, 395; Fig. 57a) [D+K: L1.3]; Bílý (1975: Fig. 12-4); Hůrka and Ducháč (1980a: 259-261, 263, 265, 352; Figs 1-18, 29) [D+K: L1, L2, L3]; Arndt (1991a: 108, 109) [K: L1, L2, L3]; Luff (1993: 133, 142, 143; Figs 456-461) [D+K: L1, L2, L3].

Amara (Curtonotus) carinata (LeConte): Kirk (1972: 1355; Fig. 3-14, Pl.1[14]) [D: L1.3]; Thompson (1979b: 87, 89; Figs 50a-h) [D+K: L1, L2, L3].

Amara (Paracelia) quenseli (Schönherr): Sharova (1958: 67; Fig. 127r) [K: L1.3]; Sharova (1964: 179; Fig. 158-4) [K: L1.3]; Larsson (1968: 393, 399) [D+K: L1.3]; Bílý (1975: 51, 54, 60, 61; Figs 8-10) [D+K: L1, L2, L3]; Arndt (1991a: 106) [K: L1.3]; Luff (1993: 132, 139; Figs 46, 443, 444) [D+K: L1, L2, L3].

Amara (Percosia) obesa (Say): Kirk (1972: 1355; Fig. 3-11, Pl.1[11]) [D: L1.3].

**Tribe Oodini**

Oodine larvae do not possess distinctive features but can be recognized by the combination of the following character states: cephalic capsule without basal stricture and cervical and ocular grooves, with six relatively large stemmata on each side; coronal suture distinct, at least half the length of antennomere 4; nasale protruding, its anterior edge with five toothlike projections, the lateral ones small and in some specimens more or less distinct; both antennomeres 1 and 2 with a few small setae; retinaculum well developed; penicillus present, consisting of rather long setae; stipes with membranous declivity laterally on ventral surface; lacinia distinct, not acuminate, the seta MX6 apical and rather long; labial palpomere 1 with small setae; tergal carina distinct, extended laterally; urogomphus moderately long, fixed, without nodules, with five major setae; metepimeron with small eversible gland; leg with two equal claws.

Oodine larvae are most similar to those of some species of Chlaenius but differ in having the coronal suture longer. Furthermore, I am not aware of any Chlaenius species with a similarly shaped nasale. Contrary to oodine larvae, those of several species of Chlaenius have small setae on the dorsal thoracic sclerites and the tergites.

Among the many oodine genera, only those of Oodes and Lachnocrepis are known in their larval stages.

**Genus Oodes Bonelli** (Figs 567, 568)

Larvae of Oodes differ from those of Lachnocrepis in having a shorter coronal suture, which is about half the length of antennomere 4 including the membranous apex. Larvae of O. flavialis differ from those of L. parallela also in having the parietale darker dorsally, being at least in part reddish or reddish-brown, and the cephalic capsule less elongate, the ratio WH/LH varying between 1.18 (L2) and 1.26-1.40 (L3).
This account is based on the examination of one reared $L_2$ and several field-collected $L_2$ and $L_3$ from southern Quebec and Ontario of *O. fluvialis* and on the description and illustrations of two European species by Luff (1980a, 1993). The width of the cephalic capsule in *O. fluvialis* varies between 0.92-1.06 mm ($L_2$; $n=3$), and 1.54-1.73 mm ($L_3$; $n=7$).

**List of northeastern species described or illustrated:**

*Oodes fluvialis* LeConte: Thompson (1979a, as *O. americanus*: Figs 75a-c).

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GENUS *LACHNOCREPIS* LECONTE (Figs 566, 569)
Larvae of *Lachnocrepis* differ from those of *Oodes* in having a longer coronal suture, which is about the length of antennomere 4 excluding the membranous apex. Larvae of *L. parallela* differ from those of *O. flavialis* also in having the parietale pale dorsally, yellowish except in some specimens along the frontal suture, and the cephalic capsule more elongate, the ratio WH/LH varying between 1.08-1.15 (*L*₂) and 1.15-1.24 (*L*₃).

This account is based on the examination of several field-collected larvae from southern Quebec and Ontario of *L. parallela*, the sole North American species, and on the illustrations of the two Asian species by Habu and Sadanaga (1963, 1971). The width of the cephalic capsule in *L. parallela* varies between 0.64-0.66 mm (*L*₁; *n* = 2), 0.90-0.97 mm (*L*₂; *n* = 3), and 1.39-1.54 mm (*L*₃; *n* = 8).

GENUS *ANATRICHIS* LECONTE
Larvae of the genus *Anatrichis* are unknown.

**TRIBE CHLAENIINI**
[Figs 570-576, Pl. 82]

North American carabidologists include all chlaeniine species occurring on this continent in a single genus. There is little doubt that these species belong to various lineages but, using character states of adults only, these complexes are difficult to define. Larval structures, as well as pygidial gland secretions and DNA studies, will certainly help define the various lineages in my opinion.

Known Nearctic chlaeniine larvae share the following character states: cephalic capsule often much paler, usually yellowish, than remaining of body, without basal stricture or cervical groove; coronal suture markedly short or absent; nasale not or only slightly protruding in most taxa; antenna at most slightly longer than mandible; antennomeres 1 and 2 with small setae; sensorium relatively small, located preapically; mandible slender, falciform; retinaculum relatively small, often located more basally than usual in carabids and in some taxa somewhat directed obliquely; penicillus present, consisting of moderately long setae; lacinia distinct, not acuminate, seta MX₆ inserted apicad; tergal carina present, extended laterally; urogomphi articulated or fixed, moderately to markedly long; meso- and/or metepimera each with small eversible gland; leg with two equal claws.

GENUS *CHLAENIUS* BONELLI (Figs 570-576)
*Chlaenius* larvae, at least the known North American species, resemble mainly those of *Oodini* but can be differentiated in having the coronal suture shorter or absent and a nasale usually less protruding and of different shape.

Several species of *Chlaenius* possess a small sensorial peg, which looks like a small accessory segment, at the apex of the apical labial palpomere as illustrated by Zetto Brandmayr et al. (2000: Fig. 4). Such structure is unique among northeastern Carabidae. All species of *Chlaenius* I have seen have an eversible gland on the metepimeron and in some species also on the mesepimeron; the structure and histology of the glands have been studied by Hayes and Chu (1947) for *C. sericeus* and *C. prasinus*.

Among known northeastern *Chlaenius*, larvae of *C. sericeus* and *C. cordicollis* are very distinctive in having the urogomphi articulated, at least partly so, and the mesepimeron without eversible gland. In the other species, the urogomphi are fixed and the mesepimeron has an
eversible gland. Second- and third-instar larvae of *C. sericeus* are easily recognized by their markedly long (more than twice as long as last three tergites combined) striped urogomphi with the apex and subbasal section contrastingly paler, whitish. Also, contrary to larvae of *C. cordicollis*, the urogomphi are completely articulated and without major setae, the legs (except the coxae) pale, yellow, and the maxillary palpomere 2 without setae. The width of the cephalic capsule varies in *C. sericeus* between 0.83 mm (*L*₁; *n* = 2), 1.13-1.32 mm (*L*₂; *n* = 6), and 1.82-2.01 mm.

Figs 570-573. 570-572: cephalic capsule, antenna and mandible (dorsal view). 570, *Chlaenius tomentosus*, *L*₃; 571, *C. sericeus*, *L*₃; 572, *C. tricolor*, *L*₃; 573, right maxilla of *C. tricolor*, *L*₃ (dorsal view). Scale bars = 0.2 mm
Larvae of *C. cordicollis* have the urogomphi only partly articulated, each with three major setae, the legs brown, and the maxillary palpomere 2 with setae.

Second- and third-instar larvae of *C. tomentosus* can be recognized by their short urogomphi (Fig. 575), which are shorter than the pygopod.

This account is based on examination of several field-collected larvae, including those of *C. sericeus, C. cordicollis, C. tomentosus* and *C. tricolor*, and the descriptions and illustrations of several European species provided by Hůrka (1966) and Luff (1980a) and illustrations of several species published by Habu and Sadanaga (1961, 1965) and Makarova (2001).

Larvae of seven northeastern species have been described or illustrated to date, some of them rather briefly and superficially.

**List of northeastern species described or illustrated:**
- *Chlaenius (Chlaensiellus) pennsylvanicus* Say: Chu (1945: 21, 24, 25; Figs 5, 8, 14, 17, 18) [D+K: L3].
- *Chlaenius (Chlaensiellus) tricolor* Dejean: Chu (1945: 21, 25, 26; Figs 4, 11, 13) [D+K: L3].

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Chlaenius (Chlaenius) laticollis Say: Schauupp (1880: 17) [D: L2,3].
Chlaenius (Chlaenius) sericeus (Forster): Boldori (1940: 285) [K: L1,3]; van Emden (1942: Figs 62, 79); Chu (1945: 22, 28, 29; Figs 2, 15, 16, 47) [D+K: L2,3]; Kirk (1972: 1355; Fig. 3-9, Pl.1[9]) [D: L1,3].
Chlaenius (Eurydactylus) tomentosus (Say): Kirk (1972: 1355; Fig. 3-10, Pl.1[10]) [D: L3]; Thompson (1979a: Figs 73a-d).

TRIBE LICININI

[Figs 577-586, Pl. 83]

The following character states are common to licinine larvae. Head capsule without basal structure, without ocular and cervical grooves (except in Lestignathus Erichson, see Moore 1965), with six stemmata on each side, though these are more or less distinct in members of Badister; gular sutures diverging anteriorly; submentum wider than usual in carabids; arms of frontal suture not or barely sinuate; coronal suture very short or absent; nasale not differentiated (except in Dicrochile Guérin-Méneville, see Moore 1965); antenna longer than mandible; retinaculum relatively long, its posterior edge serrate in several genera; penicillus distinct, consisting of relatively long setae; stipes without membranous declivity; lacinia distinct, acuminate though slightly so in some taxa, seta MX5 sublateral or lateral; ligula very small or absent; pronotum tapering anteriorly; mesepimeron and metepimeron without eversible glands (versus Chlaenius); tergal carina present; urogomphi fixed in most genera, including those represented in the northeast, longer than pygopod; leg relatively long, with two subequal claws.

North American licinine larvae can be recognized by having the antenna much longer than the mandible, the arms of the frontal suture not or barely sinuate, and the nasale not differentiated. Larvae of Dicaelus and Badister are unique among northeastern genera in having the median anterior section of the frontale membranous, making the nasale indistinct.

A detailed analysis of the larval head structures of Licinus silphoides Rossi has been published by Beutel (1992) who concluded that several larval character states, assumed to be synapomorphic, suggest a close relationship between the tribes Licinini and Panagaeini.

Overall nine genera, belonging to the subtribes Dicaelina, Dicrochilina, Lestignathina, and Licinina, are known in their larval stages. A key to eight of them has been published by Arndt (1991c); the other genus, Tricholicinus Poppius, was included by Makarov (1994) in his key to Palaearctic carabid genera.

GENUS Diplocheila Brullé (Figs 578, 586)

All Diplocheila larvae I have seen share the following character states: arms of frontal suture meeting medially; coronal suture indistinct (Fig. 578); anterior margin of frontale pigmented; antenna at most twice as long as mandible; antennomere 1 about as long as or slightly shorter than antennomere 2 (Fig. 578); antennomeres 2-4 without small setae; antennomere 3 without membranous ring between sensorium and apex; terebra with medial edge smooth; posterior edge of retinaculum smooth; ligula represented by a very small sclerotized cone; labial palpomere 1 normally developed, with apparent setae; apical labial palpomere with apical sensorial zone narrowly extended posteriad over ventral surface; tergal carina extended laterally; urogomphi (fig. 586) with small nodules and major setae; tarsus without short spines ventrally.

The generic account is based on examination of several field-collected L2 and/or L3 of at least three, probably all four, species occurring in the northeast.
Except for *D. zeelandica* (Redtenbacher) (see Kurosa 1959), no other species of *Diplocheila* have been described in their larval stages, although the generic character states of the genus have been reported in various keys (van Emden 1942; Arndt 1991c; Makarov 1994).

**Key to northeastern species of *Diplocheila***

1. Urogomphus covered with small tubercles in addition to nodules, with five major setae. Seta $TE_{10}$ short to very short, at least three times shorter than $TE_{9}$ [cephalic capsule markedly transverse, WH/LH = 1.64-1.87; WH = 0.59-0.71 mm ($L_1$; n= 7), 0.92-1.11 mm ($L_2$; n= 21), 1.47-1.73 mm ($L_3$; n= 19)]........... *D. striatopunctata* (LeConte)
   – Urogomphus without tubercles, with seven or eight major setae. Seta $TE_{10}$ long, as long as $TE_{9}$ ....................................................... 2

2. Urogomphi rather short (Fig. 586), less than 1.5 times length of tergite 8. Cephalic capsule moderately transverse, WH/LH = 1.39-1.48 [WH = 0.87-0.95 mm ($L_3$; n= 4)]................................. *D. obtusa* (LeConte)
   – Urogomphi rather long, more than 1.9 times length of tergite 8. Cephalic capsule markedly transverse, WH/LH = 1.55-1.80 [WH = 0.83-0.85 mm ($L_2$; n= 4), 1.04-1.35 mm ($L_3$; n= 13)]............................... *D. assimilis* (LeConte) / *D. impressicollis* (Dejean)

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Diplocheila striatopunctata* (LeConte): van Emden (1942: Fig. 15, as *Rembus laticollis*); Bouquet and Goulet (1984: Fig. 33).

**GENUS *DICAELUS* BONELLI** (Figs 577, 582, 584)

All *Dicaelus* larvae studied share the following character states: arms of frontal suture meeting medially; coronal suture short but distinct (Fig. 577); anterior margin of frontale membranous; antenna about three times longer than mandible; antennomere 2 at least twice as long as antennomere 1 (Fig. 577); antennomeres 3 and 4 with small setae; antennomere 3 with narrow membranous ring between sensorium and apex; medial edge of terebra and posterior edge of retinaculum serrulate; ligula absent (Fig. 582); labial palpmere 1 normally developed, with apparent setae (Fig. 582); apical labial palpmere with sensorial zone occupying apical third or half of ventral surface; tergal carina extended laterally; urogomphi (Fig. 584) without nodules, without or with few major setae, with small setae at least over apical half; tarsus with short spines ventrally, in some species also with small setae.

This account is based on the examination of 11$L_{2,3}$ larvae collected in Quebec, Manitoba, Pennsylvania, Minnesota, and Virginia, representing at least four species. Several of these specimens have the antennomere 4 much paler (whitish) than the remaining ones. The single larva seen, likely a third instar [WH = 1.02 mm], from Quebec belongs to *D. politus*: the antennomere 4 is not contrastingly paler, the seta $TE_{10}$ is very small compared to $TE_9$, and the urogomphi are long and widely bowed toward the apex (Fig. 584). Larvae of four species of *Dicaelus* have been described, superficially though, by Schaupp (1878a, b, c) and Dimmock and Knab (1904); of these three are found in the northeast.

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Dicaelus* (*Paradicaelus*) dilatatus Say: Schaupp (1878a: 3) [D: $L_{1,2}$].

*Dicaelus* (*Paradicaelus*) elongatus Bonelli: Schaupp (1878b: 43) [D: $L_{2,3}$].

*Dicaelus* (*Paradicaelus*) politus Dejean: Schaupp (1878c: 44) [D: $L_{2,3}$].
Figs 577-582. 577-579: cephalic capsule, antenna and mandible (dorsal view). 577, Dicaelus politus, L₃; 578, Diplochela obtusa, L₃; 579, Badister sp., L₃. 580: right maxilla of Badister sp., L₃ (dorsal view); 581, right mandible of Badister sp., L₃ (dorsal view). 582, labium of Dicaelus politus, L₃ (dorsal view). Scale bars = 0.2 mm (Figs 577, 578), 0.1 mm (Figs 579-582)
**Genus Badister Clairville** (Figs 579-581, 583, 585)

Character states of *Badister* larvae include: arms of frontal suture rectilinear, not meeting medially (Fig. 579); anterior margin of frontale membranous medially; antenna at most twice as long as mandible; antennomere 1 about as long as antennomere 2 (Fig. 579); antennomeres 2-4 without small setae; antennomere 3 without membranous ring between sensorium and apex; terebra with dorsal and ventral rows of microserrations near medial edge (Fig. 581); posterior edge of retinaculum serrulate; ligula represented by a very small sclerotized cone; labial pal-

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**Figs 583-586.** 583, labium of *Badister sp.*, L₃ (dorsal view). 584-586: tergite 9 and urogomphi (dorsal view). 584, *Dicaelus politus*, L₃; 585, *Badister sp.*, L₃; 586, *Diplocheila obtusa*, L₃. Scale bars = 0.05 mm (Fig. 583), 0.2 mm (Figs 584, 586), 0.1 mm (Fig. 585)
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pomere 1 wide and very short, without apparent setae; apical labial palpmere with sensorial zone occupying all ventral surface; tergal carina not extended laterally; urogomphus somewhat acuminate at apex, with small nodules and eight major setae (Fig. 585); tarsus without short spines ventrally.

Larvae of Badister are immediately recognized in the northeast in that the arms of the frontal suture do not meet medially but reach the postoccipital suture. Larvae of the Palaearctic genus Licinus Latreille, which is closely related to Badister, have a similar feature; they differ from those of Badister in having the epipleurite protruding, the abdominal tergites without major setae, and the urogomphi not acuminate at apex. A few specimens of L. silphoides Rossi were found in the 19th Century in Massachusetts but the species never became established (Lindroth 1969a: 955).

This account is based on the examination of 4L 2-3 collected in Ottawa (Ontario), and Gatineau (Quebec), and the descriptions and illustrations of three European species provided by Luff (1980a, 1993). No North American species have been described in their larval stages.

TRIBE HARPALINI

[Figs 587-624, Pls 84, 85]

Larvae of this highly diverse tribe have relatively few character states in common, but the following are present in all known northeastern taxa: cephalic capsule without cervical stricture; parietale with six stemmata on each side; coronal suture distinct; nasale differentiated, usually with an array of minute toothlike projections; antenna about as long as mandible; sensorium on antennomere 3 bulbous; mandible stout, only slightly curved apically in many species; retinaculum and penicillus distinct; lacinia distinct, acuminate, the seta MX₆ relatively long, stout; leg with two claws of unequal length, though slightly so in a few taxa. The head is proportionally very large and transverse in several taxa.

Harpaline larvae can be differentiated from almost all other carabids present in the northeast by the acuminate lacinia in combination with the presence of two unequal claws. Some Amara species superficially resemble harpalines but they differ in having equal claws and the nasale with four to eight regular toothlike projections. The nasale of harpaline larvae is differently shaped, often consisting of several irregular, minute toothlike projections.

SUBTRIBE ANISODACTYLINA

Members of this subtribe have the antennomeres 1 and 2 without setae, the setal group gMX with more than 50 setae, and the labial palpmere 1 without setae (except in members of Gynandrotarsus).

GENUS NOTIOBIA PERTY (Figs 590, 598, 607, 608, 613)

All three northeastern species of Notiobia are known in their larval stage. These larvae have the following character states in common: cephalic capsule slightly to moderately transverse, with the cervical groove extended dorsally to about PA₆ (Fig. 590); ocular groove distinct, though faint in N. terminata, not extended posteriorly; coronal suture proportionally short, 0.3-0.4 times the length of antennomere 4; nasale not or only slightly prominent, its anterior edge with toothlike processes discrete, without median projection (Fig. 598); adnasale with three setae along the anterior edge; antennomere 2 shorter than antennomere 3; antennomere 3 subequal to slightly shorter than antennomere 1; mandible slightly to moderately curved
anteriorly; medial edge of terebra smooth to slightly uneven or with two toothlike processes; retinaculum located near middle or in basal half of mandible; stipes without membranous declivity behind MX₂; ligula without small sclerotized process at apex (Fig. 613); seta PR₁ long, its length 0.7-0.9 times that of PR₄; tergal carina distinct on all tergites; urogomphi longer than pygopod; pygopod elongate, with few (less than ten) setae; tibia without secondary setae; tarsus elongate with setae TA₃-TA₆ very small, much smaller than TE₂ and TA₇.

This account is based on the descriptions and illustrations provided by Bousquet and Tchang (1992) of two northeastern species belonging to the subgenus Anisotarsus Chaudoir. Based on the superficial description of *N. sayi* by Chu (1945: 47), larvae of that species will key to *N. terminata* as the “mandibular teeth [are] wanting” and the “lacinia [is] fused with stipes.” Several Neotropical species belonging to the nominotypical subgenus have been described in their larval stages by Arndt et al. (1996).

### Key to some northeastern species of *Notiobia*

1. Mandible (Fig. 590) slightly curved anteriorly; medial edge of terebra with two or three toothlike processes. Lacinia markedly acuminate, articulated to stipes (Fig. 608) [WH = 0.96-1.04 mm (L₂; n= 5), 1.24-1.34 mm (L₃; n= 6)].................................................. *N. nitidipennis* (LeConte)
   - Mandible moderately curved anteriorly; medial edge of terebra without or with one rounded process. Lacinia slightly acuminate, fixed to stipes (Fig. 607) [WH = 1.01 mm (L₂; n= 1), 1.44-1.53 mm (L₃; n= 6)].................................................. *N. terminata* (Say)

### List of northeastern species described or illustrated:

- *Notiobia nitidipennis* (LeConte): Bousquet and Tchang (1992: 756; Figs 2, 12, 20, 25, 29, 31) [D: L₁, L₂, L₃]
- *Notiobia sayi* (Blatchley): Chu (1945: 20, 47, 48; Figs 32, 44, 51, 71, 72) [D+K: L₂]
- *Notiobia terminata* (Say): Thompson (1979a: Figs 68a-b); Bousquet and Tchang (1992: 756; Figs 1, 3, 28) [D: L₁, L₂, L₃]

### Genus *Xestonotus* LeConte (Figs 591, 600, 617)

The sole species includes in this genus exhibits the following character states in its larval stage: cephalic capsule slightly transverse, with the cervical groove extended dorsally to about PA₁ (Fig. 591); ocular groove distinct, extended posteriorly to behind level of PA₂; coronal suture subequal in length to antennomere 4; nasale not prominent, its anterior edge with discrete toothlike processes of about same size and without median projection (Fig. 600); adnasale with three setae along anterior edge; antennomere 2 shorter than antennomere 3, the antennomere 3 slightly shorter than antennomere 1; mandible very slightly curved anteriorly (Fig. 591); medial edge of terebra with two or three toothlike processes; retinaculum located in basal half of mandible; stipes without membranous declivity behind MX₂; ligula without small sclerotized process at apex; seta PR₁ very small, its length less than 0.1 times that of PR₄; tergal carina distinct on all tergites; urogomphi (Fig. 617) longer than pygopod; pygopod elongate, with less than ten setae; tibia without secondary setae; tarsus elongate with setae TA₃-TA₆ very small, much smaller than TE₂ and TA₇.

Larvae of this genus are quite easily separated from other Anisodactylina and Stenolophina by the shape of the nasale which is not protruding with its anterior edge bearing small and regular toothlike processes and by the strongly sloping medially adnasale.
This account is taken from the description and illustrations provided by Bousquet and Tchang (1992) of the sole species. The width of the cephalic capsule varies from 0.98-1.00 mm (L₁; n= 4), 1.19-1.27 mm (L₂; n= 2), and 1.51-1.59 mm (L₃; n= 2).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Xestonotus lugubris* (Dejean): Bousquet and Tchang (1992: 758-760, 770; Figs 5, 14, 22, 32, 37, 38) [D+K: L₁, L₂, L₃].

**Genus Anisodactylus Dejean** (Figs 592, 593, 601-604, 606, 612, 618, 619, 622, 624)

As presently conceived, larvae of this genus share few significant character states. The cephalic capsule varies from moderately to markedly transverse, the cervical groove is present except in members of the subgenus *Gynandrotarsus* (Fig. 592), the ocular groove is distinct though faint in *Spongopus*, and extends posteriorly to behind level of PA₆ except in *Spongopus*, the coronal suture is relatively long, at least 0.6 times length of antennomere 4, the nasale is prominent, its anterior edge with toothlike processes rather discrete in *Spongopus* (Fig. 601), more or less fused in other subgenera (Figs 602-604) and with a median projection, the adnasale is moderately sloping mediad, with three to seven setae along its anterior edge, the antennomere 2 is shorter than antennomere 3, the antennomere 3 is slightly shorter than antennomere 1, the mandible is moderately curved anteriorly, the medial edge of terebra is smooth or with one small rounded process, the retinaculum is located near middle of mandible, the stipes has a small membranous declivity laterally behind MX₂, the seta LA₆ is apical or preapical on the ligula (Fig. 612), the labial palpomere 1 has two to five setae (*Gynandrotarsus*) or is without setae, the tergal carina is variable, distinct at least on the first two tergites or indistinct, the urogomphi is subequal to (*Gynandrotarsus*) or longer than the pygopod, the pygopod is bulky (*Gynandrotarsus*) or elongate, with many (*Gynandrotarsus*) or few (less than ten) setae, the tibia has one to three secondary setae (*Gynandrotarsus*) or is without such setae, and the tarsus is shorter (*Gynandrotarsus*), subequal (Fig. 622), or slightly longer (*Spongopus*, Fig. 624) than the anterior claw, with the setae TA₃-TA₆ very small, much smaller than TE₂ and TA₆.

This genus includes several subgenera. Their larvae, except those of the subgenus *Spongopus*, are characteristic in having a small sclerotized process at the apex of the ligula. The absence of such process in *Spongopus* and *Xestonotus* is evidence, as pointed out by Bousquet and Tchang (1992), that the taxa should be excluded from the genus *Anisodactylus*. On the other hand, such ligular process is present in *Geopinus* and suggests, like some of the character states of the adults (see Noonan 1973), that the taxon is probably only an unusual *Anisodactylus*. Because many subgenera of *Anisodactylus* are rather distinct, they have been included in the key to genera.

*Gynandrotarsus* larvae are very characteristic. They differ from other *Anisodactylus* larvae in having no cervical groove, the labial palpomere 1 with two to five setae, the urogomphi short, the pygopod bulky with more than 20 setae, the tibia with one to three secondary setae ventrally, and the tarsus shorter than the anterior claw. As mentioned by Bousquet and Tchang (1992), some of these character states are shared with *Geopinus* and suggest that the two taxa are closely related.

This account is based on the generic descriptions and illustrations of four subgenera represented in the northeast published by Bousquet and Tchang (1992) and descriptions and illustrations of species belonging to the subgenera *Hexatrichus* Tschitschérine and *Pseudanisodactylus* Noonan provided by Habu (1973) and Luff (1993).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Anisodactylus (Anadaptus) discoidens* Dejean: Dogger and Olson (1966: 95, 96; Figs 5-6) [D: L₂, L₃].
**Anisodactylus (Anadaptus) sanctaecrucis** (Fabricius): Kirk (1976: 354; Fig. 1) [D: L1-3]; Thompson (1979a: Figs 69a-c); Bousquet and Tchang (1992: Figs 8, 17, 33, 35).

**Anisodactylus (Anisodactylus) harrisii** LeConte: Bousquet and Tchang (1992: Figs 23, 30).

**Anisodactylus (Anisodactylus) kirbyi** Lindroth: Bousquet and Tchang (1992: Figs 16, 40).

**Anisodactylus (Anisodactylus) nigrita** Dejean: Bousquet and Goulet (1984: Fig. 32); Bousquet and Tchang (1992: Fig. 7).

**Anisodactylus (Gynandrotarsus) merula** (Germar): Bousquet and Tchang (1992: Figs 9, 24).

**Anisodactylus (Gynandrotarsus) rusticus** (Say): Kirk (1977a: 279; Fig. 1) [D: L2-3]; Bousquet and Tchang (1992: Figs 18, 27, 39).

**Anisodactylus (Spongopus) verticalis** (LeConte): Bousquet and Tchang (1992: 760-762, 770, 771; Figs 6, 15, 34) [D+K: L1, L2-3].

**GENUS GEOPINUS LECONTE** (Figs 594, 605, 610, 620, 623)

The sole species included in this genus possesses the following larval character states: cephalic capsule markedly transverse (Fig. 594), with the cervical groove extended dorsally beyond level of PA7; ocular groove indistinct; parietale with a crest along PA5-PA8 bearing 10-15 long secondary setae; coronal suture 0.6-0.7 times length of antennomere 4; nasale prominent (Fig. 605), its anterior edge with toothlike processes more or less fused and with median projection; adnasale with five to seven setae along its anterior edge; antennomere 2 as long as antennomere 3, antennomere 3 distinctly shorter than antennomere 1; mandible moderately curved anteriorly; medial edge of terebra smooth; retinaculum located near middle of mandible; stipes with membranous declivity behind MX2 extended over ventral surface; ligula with small sclerotized process at apex (Fig. 610); labial palpomere 1 without setae; tergal carina indistinct on all tergites; urogomphi shorter than pygopod (Fig. 620); pygopod markedly bulky, with over 50 setae; tibia without secondary setae; tarsus stout with setae TA3-TA6 as long as TE2 and TA8 (Fig. 623).

**Geopinus** larvae are rather characteristic among Harpalini by the presence of a parietal crest flanked by 10-15 long setae, the spiniform setae TA5-TA6; the presence of more than 50 setae on the pygopod, the remarkably short urogomphi, and the bulky pygopod.

This account is based on the description and illustrations provided by Bousquet and Tchang (1992). The width of the cephalic capsule varies between 2.00-2.04 mm (L1; n= 4), 2.82-3.17 mm (L2; n= 2), and 3.93-4.44 mm (L3; n= 3).

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

**Geopinus incrassatus** (Dejean): Kirk (1972: 1354; Fig. 3-6, Pl.1[6]) [D: L1-3]; Bousquet and Tchang (1992: 767-770; Figs 10, 11, 19, 26, 36, 41) [D+K: L1, L2-3].

**GENUS AMPHASIA NEWMAN** (Fig. 599)

Only one of the two species included in this genus is known in its larval stage. The larvae possess the following character states: cephalic capsule slightly transverse, with the cervical groove extended dorsally to about PA5; ocular groove distinct, extended posteriorly to behind level of PA5; coronal suture long, 1.0-1.4 times length of antennomere 4; nasale prominent, its anterior edge with toothlike processes more or less fused and without median projection (Fig. 599); adnasale moderately sloping medially, with three setae along its anterior edge; antennomere 2 shorter than antennomere 3, antennomere 3 slightly shorter than antennomere 1; mandible moderately curved anteriorly; medial edge of terebra smooth or with one rounded process; retinaculum located near middle of mandible; stipes without membranous declivity behind MX2; ligula without small sclerotized process at apex; seta LA6 apical on ligula; tergal carina
distinct on all tergites; urogomphi longer than pygopod; pygopod elongate, with less than ten setae; tibia without secondary setae; tarsus longer than anterior claw with setae TA₃·TA₆ very small, much smaller than TE₂ and TA₆.

This account is based on the description and illustrations by Bousquet and Tchang (1992) of one of the two species included in this genus. The width of the cephalic capsule varies from 0.92-0.96 mm (L₁; n= 3), 1.21 mm (L₂; n= 1), and 1.58-1.71 mm (L₃; n= 3).

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Amphasia (Amphasia) interstitialis* (Say): van Emden (1942: Fig. 12); Chu (1945: 46, 47; Figs 36, 67, 68) [D: L₂-₃]; Bousquet and Tchang (1992: 756-758, 770, 771; Figs 4, 13, 21) [D+K: L₁, L₂-₃].

**SUBTRIBE STENOLOPHINA**

Members of this subtribe possess the following character states: antennomeres 1 and 2 without setae except in some species of *Stenolophus s.str.* from Japan (see Matalin 1996b); setal group gMX with less than 50 setae; ligula narrower at base than base of labial palpomere 1; labial palpomere 1 without setae.

**GENUS Dicheirotrichus Jacquelin du Val**

The following character states are found in *Dicheirotrichus* larvae: cervical groove distinct; ocular groove absent; lateral edge of mandible with two setae (MN₁ and MN₃); medial edge of terebra smooth or serrulate; gMX with less than 40 setae; apex of ligula truncate, seta LA₆ inserted apicad; tergites 1-8 with eight or less distinct setae on each side; tergal carina present; femur with four or five secondary setae on ventral side; tarsus subequal in length to tibia.

This account is based on the descriptions and illustrations of several Palaearctic species, one of which is Holarctic and found in the northeast, by Matalin (1998, 2001).

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Dicheirotrichus (Trichocellus) cognatus* (Gyllenhal): Larsson (1941: 347, 348; Fig. 61b) [D+K: L₁, L₂-₃]; Larsson (1968: 417; Fig. 67b) [D+K: L₁, L₂]; Böcher (1988: Fig. 5); Luff (1993: 154, 155; Figs 503, 504) [D+K: L₁, L₂-₃]; Matalin (2001: 314, 320; Figs 15, 22, 30, 31, 51, 59, 60) [D+K: L₂].

**GENUS Bradycellus Erichson**

*Bradycellus* larvae are very poorly known. Those that have been described share the following character states: cervical groove distinct, extended dorsally to PA₃ and laterally to near PA₁₅; ocular groove absent; lateral edge of mandible with one (MN₁) or two setae (MN₁ and MN₃); medial edge of terebra smooth; tergites with eight or less distinct setae on each side; tergal carina present or not; femur with four or five secondary setae on ventral side.

This account is based on the descriptions and illustrations of species belonging to the subgenera *Bradycellus s.str.*, *Tachycellus* Morawitz, *Stenocellus* Casey, and *Tetraplatypus* Tschitscherine by Arndt (1991a), Matalin (1996a) and Hůrka (1997). A single northeastern species has been described to date in its larval stage.

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Bradycellus (Stenocellus) rupestris* (Say): Chu (1945: 21, 48, 49; Figs 56, 58, 60) [D+K: L₃]; Matalin (1996a: 290) [K: L₃]; Hůrka (1997: 197) [K: L₃]; Matalin (2001: 317) [K: L₃].

**GENUS Stenolophus Dejean** (Figs 595, 596, 615, 621)

The North American species of *Stenolophus* are grouped under three subgenera. Larvae of all three taxa are known and those of one of them, *Agonoleptus*, are structurally quite distinct from the other two. The following character states are found in *Stenolophus* larvae: cervical groove
distinct in subgenera Agonoderus (Fig. 595) and Stenolophus s.str., absent in Agonoleptus (Fig. 596); nasale with a median crown in some species; lateral edge of mandible with one seta only (MN1); medial edge of terebra smooth; tergite with 15 or more distinct setae on each side in subgenera Agonoderus (Fig. 615) and Stenolophus s.str., with less than eight distinct setae in subgenus Agono-leptus; tergal carina absent; femur with three to eight secondary setae on ventral side (Fig. 621).

This account is based on the examination of a few larvae of all three subgenera present in the northeast and the descriptions and illustrations of several Palaearctic species belonging to the subgenera Stenolophus s.str., Astenolophus Habu, and Egdadroma Motschulsky published by Arndt (1991b) and Matalin (1996b); of these subgenera, only the first one is represented in North America.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

- Stenolophus (Agonoderus) comma (Fabricius): Kirk (1972: 1354; Fig. 3-5, Pl.1[5]) [D: L1-3].
- Stenolophus (Agonoderus) lineola (Fabricius): van Emden (1942: Fig. 61); Chu (1945: 24, 51, 52; Figs 52, 91, 92) [D+K: L2-3].
- Stenolophus (Agonoleptus) conjunctus (Say): Chu (1945: 22, 49, 50; Figs 54, 63, 64) [D+K: L3].

GENUS ACUPALPUS LATREILLE

Larvae of this diverse group are still poorly known. They share the following character states: cervical groove distinct, extended dorsally to PA5 and laterally to near PA15; nasale without median crown; lateral edge of mandible with one seta only (MN1); medial edge of terebra smooth; tergite with eight or less distinct setae on each side; tergal carina absent.

This account is based on the descriptions and illustrations of six Palaearctic species by Habu (1973) and Arndt (1991a) belonging to the subgenera Acupalpus s.str., Ancylostria Schaub-berger, and Palcaupus Habu. A single northeastern species, adventive in North America, has been described to date in its larval stage.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

- Acupalpus (Acupalpus) meridianus (Linné): Larsson (1941: 350; Figs 60d, 62c) [D: L1, J].
- Sharova (1958: Figs 133f, 134b); Sharova (1964; Figs 161-6, 162-1); Larsson (1968: 420; Figs 66d, 68c) [D+K: L1, J]; Arndt (1991a: 121; Fig. 120) [K: L2, J]; Arndt (1991b: 50; Fig. 5.9) [D+K: L3]; Luff (1993: 159; Fig. 510) [D+K: L1, J].

SUBTRIBE HARPALINA

Members of this subtribe possess the following character states: antennomere 2, in some taxa also 1, with at least one seta in all known North American taxa (apparently absent in some European Ophonus, see Brandmayr et al. 1980: 337); ligula as wide at base than base of labial palpomere 1; labial palpomere 1 with or without setae.

GENUS OPHONUS DEJEAN (Figs 587, 597, 609, 616)

Larvae of this genus are immediately recognized among Harpalini by the characteristic shape of the nasale (Fig. 597): the anterior edge is emarginate between two large toothlike projections. Other character states include: adnasale not projecting anteriad; medial edge of terebra without toothlike processes; labial palpomere 1 without setae (Fig. 609).

This account is based on the examination of 1L2,3 collected in Gatineau (Quebec) and on the generic description and illustrations provided by Brandmayr et al. (1980).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

- Ophonus puncticeps Stephens †: Larsson (1941: 340, 341, as O. angusticollis; Figs 55c, 56c) [D+K: L1, J]; Larsson (1968: 406, 409, as Harpalus angusticollis; Figs 61c, 62c) [D+K: L1, J];
Brandmayr and Zetto Brandmayr (1982: 87, 89, 98; Figs 69-75, 102, 103, 115) [D+K: L1, L3]; Arndt (1991a: 117) [K: L1, j]; Luff (1993: 145, 146; Figs 472, 473) [D+K: L1, I2_3].

*Ophonus rufiharbis* (Fabricius): Larsson (1941: 340, 341, as *O. seladon*; Figs 55d, 56d) [D+K: L1-3]; Larsson (1968: 406, 409, as *Harpalus seladon*, Figs 61d, 62d) [D+K: L1_3]; Brandmayr and Zetto Brandmayr (1982: 95, 98; Figs 91-95, 106) [D+K: L3]; Arndt (1991a: 118) [K: L1-3].

**GENUS *HARPALUS* LATREILLE (Figs 588, 611)**

Larvae of *Harpalus* have the cephalic capsule markedly large compared to the remaining of the body. Other character states include: nasale variously shaped but without two large toothlike projections characteristic of *Ophonus* larvae, usually with an array of small to minute toothlike projections, in some taxa with a median crown; adnasale markedly sloping mediad; mandible with one projection, though often short, along the medial edge of terebra in most species; labial palpomere 1 with one to three setae (Fig. 611).


**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Harpalus* (*Harpalus*) *affinis* (Schrank): Schiødte (1867: 531-535, as *H. aeneus*; Pl. 22, Figs 1-3) [D: L1-3]; Larsson (1941: 344, 345, as *H. aeneus*; Figs 58b, 59b) [D+K: L1-3]; Chu (1945: 23, 36, 37, as *H. viridiaeneus*; Figs 25, 80, 83) [D+K: L3]; Sharova (1964: 187, as *H. aeneus*; Figs 163-1, 164-1) [K: L1, j]; Larsson (1968: 408, 410, 411, as *H. aeneus*; Figs 63b, 64b) [D+K: L1-3]; Arndt (1991a: 115, as *H. aeneus*; Figs 107, 145) [K: L1, j]; Putchkov (1992: 73) [K: L1]; Luff (1993: 145, 149; Figs 481-483) [D+K: L1, L2-3].

*Harpalus* (*Harpalus*) *herbivagus* Say: Kirk (1972: 1354; Fig. 2, 3-2, Pl.1[2]) [D: L1-3].

*Harpalus* (*Harpalus*) *rubripes* (Duftschmid): Larsson (1941: 344-346; Figs 58d, 59d) [D+K: L1-3]; Sharova (1958: Figs 133s, 134g); Sharova (1964: 189; Figs 163-8, 164-8) [K: L1-3]; Larsson (1968: 407, 412; Fig. 64d) [D+K: L1-3]; Arndt (1991a: 116, as *H. quadripunctatus*; Figs 108, 113) [K: L1, j]; Luff (1993: 145, 151; Figs 490, 491) [D+K: L1, L2-3].

*Harpalus* (*Harpalus*) *solitaris* Dejean: Hůrka and Papoušek (2002: 112; Figs 54-61) [D: L3].

*Harpalus* (*Megapangus*) *caliginosus* (Fabricius): Chu (1945: 23, 34, 35; Figs 26, 89, 90) [D+K: L2-3]; Kirk (1972: 1354; Fig. 3-1, Pl.1[4]) [D: L1_2]; Thompson (1979a: Figs 71a-e).

*Harpalus* (*Opadius*) *laeipes* Zetterstedt: Sharova (1964: 188, 189, as *H. quadripunctatus*; Figs 109, 163-7, 164-7) [K: L1, j]; Larsson (1968: 407, 412, as *H. quadripunctatus*; [D+K: L1_3]; Arndt (1991a: 116, as *H. quadripunctatus*; [K: L1_3]; Luff (1993: 145, 150, 151, as *H. quadripunctatus*; [D+K: L1_3].

*Harpalus* (*Plectralidus*) *erraticus* Say: Kirk (1972: 1354; Figs 1-3, Pl.1[1]) [D: L1_2]; Thompson (1979a: Figs 71a-e).

*Harpalus* (*Pseudoophonus*) *compar* LeConte: Chu (1945: 24, 40, 41; Figs 22, 73, 74) [D+K: L1_3].

*Harpalus* (*Pseudoophonus*) *erythropus* Dejean: Chu (1945: 23, 39, 40; Figs 23, 27, 77, 78) [D+K: L1_3].

*Harpalus* (*Pseudoophonus*) *vagns* LeConte: Chu (1945: 24, 37, 38; Figs 20, 49, 85, 86) [D+K: L1_3].

*Harpalus* (*Pseudoophonus*) *pensylvanicus* (DeGeer): Chu (1945: 23, 41, 42; Figs 21, 29-31, 33, 84) [D+K: L1_3]; Kirk (1972: 1354; Fig. 3-3, Pl.1[3]) [D: L1_3].
Figs 597-605. Anterior edge of frontale (dorsal view). 597, Ophonus puncticeps, L3; 598, Notiobia niuidipennis, L3; 599, Amphasia interstitialis, L3; 600, Xestonotus lugubris, L3; 601, Anisodactylus verticalis, L3; 602, A. kirbyi, L1; 603, A. sanctaeclarae, L1; 604, A. rusticus, L3; 605, Geopinus incrassatus, L1. Scale bars = 0.1 mm. ad – adnasale; na – nasale
Figs 614-618. 614-615: left half of tergite 5, 614, *Trichotichnus vulpeculus*, L₃; 615, *Stenolophus comma*, L₃. 616-618: tergite 9 and urogomphi (dorsal view). 616, *Ophonus puncticeps*, L₃; 617, *Xestonotus lugubris*, L₃; 618, *Anisodactylus merula*, L₃. Scale bars = 0.2 mm (Figs 614-616), 0.5 mm (Figs 617, 618)
Harpalus (Pseudoophonus) rufipes (DeGeer): Schiodte (1867: 535, as H. ruficornis; Pl. 22, Figs 4-11) [D: L1, 3]; Znojko (1929: 351, 352, as H. pubescens; Figs 19, 20a-b, 21a-c, 22-24) [D: L1, 3]; Larsson (1941: 343, as Pseudoophonus pubescens; Figs 58a, 59a) [D: L1, 3]; van Emden (1942: Fig. 78); Sharova (1958: 74; Figs 52, 133p) [K: L1, 3]; Sharova (1964: 186; Figs 110-1, 161-14) [K: L1]; Larsson (1968: 406, 409, 410, as H. pubescens; Figs 60, 63a, 64a) [D+K: L1, 3]; Arndt (1991a: Figs 115, 116); Luff (1993: 145, 147; Figs 476-480) [D+K: L1, L2, 3]; Makarov (1994: Fig. 97).

Figs 619-624. 619-620: tergite 9, urogomphus and pygopod (lateral view). 619, Anisodactylus kirbyi, L3; 620, Geopinus incrassatus, L3. 621, trochanter, femur, tibia, tarsus, and claws of Stenolophus conjunctus, L3 (laterodorsal view). 622-624: tibia, tarsus and claws (lateral view). 622, Anisodactylus sanctaecrucis, L3; 623, Geopinus incrassatus, L3; 624, Anisodactylus verticalis, L3. Scale bars = 0.5 mm (Figs 619, 620), 0.1 mm (Figs 621-624)
GENUS *Trichotichnus* Morawitz (Figs 589, 614)

In *Trichotichnus* larvae the anterior edge of the nasale is more or less truncate with several toothlike projections, the adnasale is markedly sloping mediad, the mandible has no projection along the medial edge of the terebra, the labial palpomere 1 has no setae, the ligula is rather strong with LA₆ apical, and the tergal carina is distinct on tergites 1-8 (Fig. 614).

This account is based on examination of several reared larvae of all instars of *T. vulpeculus* and from the description and illustrations of *T. dichrous* provided by Chu (1945). The width of the cephalic capsule varies for *T. vulpeculus* between 0.75-0.80 mm (L₁; n= 6), 0.93-1.00 mm (L₂; n= 2), and 1.18-1.30 mm (L₃; n= 5).

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:
*Trichotichnus* (*Trichotichnus*) *dichrous* (Dejean): Chu (1945: 21, 43; Figs 24, 81, 82) [D+K: L₁₋₃].

GENUS *Selenophorus* Dejean

This genus is represented in North America by several species but none are known in their larval stages.

GENUS *Discoderus* LeConte

No species of this endemic North American genus is known in its larval stage.

TRIBE PENTAGONICINI

This tribe is represented in North America by a single genus, *Pentagonica* Schmidt-Göbel, and unfortunately its larva is unknown. A single Australian species belonging to this group, *Scopodes simplex* Blackburn, has been described in its larval stage to date (Moore 1965).

TRIBE PLATYNINI

[Lars 625-641, Pl. 86]

Larvae of Platynini share the following character states: cephalic capsule without stricture; ocular and cervical grooves present or not; coronal suture varying from rather long to absent; nasale differentiated though slightly so in some taxa, with small lateral tubercles in many taxa; antenna about as long as mandible; sensorium on antennomere 3 bulbous; mandible elongate, moderately to markedly falciform; retinaculum present; penicillus present in the vast majority of taxa; stipes without membranous declivity, though a very small membranous notch is visible in some taxa on the lateral side of the stipes; lacinia present, though markedly short and more or less distinct in some genera, slightly acuminate in most taxa; ligula distinct but short; tergal carina distinct, not extended laterally; urogomphi fixed, unsegmented in the vast majority of taxa including all those found in the northeast, at least as long as the pygopod, with nine major setae on each side in most taxa; anal lobes of pygopod without sclerotized structures; leg with two equal claws in most taxa.

Larvae of Platynini are most similar to those of Pterostichini and I am unable to find a single character state to unambiguously separate larvae of the two tribes. Nevertheless, platynine larvae have the lacinia not or only slightly acuminate and its seta (e.g., MX₆) is apical or preapical, the lateral side of the mandible has a single seta (MN₁) in most taxa, the stipes is without membranous declivity though in a few taxa a small membranous notch can be seen on the lateral surface of the stipes which usually does not reach level of MX₆, and the cervical
groove, if present, is not extended anteriad on the lateral surface of parietale. Pterostichini larvae have the lacinia clearly acuminated and its seta is laterally inserted, the mandible has two or more lateral setae (MN₁ and MN₂) in most taxa, the stipes has a membranous declivity, often extended over the ventral surface of the stipes, and the cervical groove is, in several taxa, extended anteriad along the lateral surface of the parietale.

**SUBTRIBE SPHODRINA**

**GENUS *LAEMOSTENUS* BONELLI (Figs 629, 638)**

Larvae of *Laemostenus* are similar to those of *Calathus* but differ mainly in having the coronal suture smaller, even absent in some species such as *L. terricola* (Fig. 629), and the seta FR₃ on the frontale much longer and distinct even at low magnification.

Hovorka (1991) described three European species of this genus. According to this author (Hovorka 1991: 102-103), the width of the cephalic capsule in *L. terricola terricola* larvae varies between 0.80-0.83 mm (L₁; n = 2), 1.36-1.39 mm (L₂; n = 2), and 2.0-2.1 mm (L₃; n = 2). In the three specimens I have seen, reared from females collected on the Island of Orleans (Quebec), the width of the cephalic capsule is 0.80 mm (L₁), 0.83 mm (L₁), and 1.30 mm (L₂).

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Laemostenus terricola* (Herbst)†: Chapuis and Candèze (1853: 376-378; Pl. 1, fig. 3) [D: L2-3]; Böving and Craighead (1931: Pl. 4 [F-H]); Larsson (1941: 315; Fig. 41a) [D: L₂-3]; Sharova (1958: 57; Fig. 120a) [K: L₂-3]; Sharova (1964: 167; Fig. 150-1) [K: L₂-3]; Larsson (1968: 368; Fig. 44a) [D: L₂-3]; Casale (1988: 90; Fig. 114) [K: L₂-3]; Arndt (1991a: 103) [K: L₁-3]; Hovorka (1991: 102, 103; Figs 8-12) [D: L₁-3]; Luff (1993: 120; Figs 399-401) [D: L₁-3].

**GENUS CALATHUS BONELLI**

Larvae of *Calathus* share the following character states: parietale with six stemmata on each side; cervical groove distinct, not extended dorsally; coronal suture short but distinct, slightly shorter than antennomere 4; nasale slightly protruding, its anterior edge with more or less distinct, minute lobes; seta FR₃ on frontale very small, indistinct or almost so even at high magnification; antennomeres 1 and 2 without setae; mandible with medial edge of terebra smooth; lacinia very small, more or less distinct even at 80X; urogomphus with nine major setae; claws equal in length.

This description is based on examination of several larvae of two northeastern species and the descriptions and illustrations provided by Thompson (1979b) of some North American species and by Kůrka (1971) of several European species of *Calathus*.

**Key to northeastern species of Calathus**

1. Seta UR₁ on tergite 9 moderately long, distinct at 20X. Anterior edge of nasale with distinct lateral tubercles [HW = 1.13 mm (L₁)].................................*C. opaculus* LeConte¹

   – Seta UR₂ on tergite 9 very small, indistinct at 20X. Anterior edge of nasale without lateral tubercles.................................................................2

2 [1]. Setae TE₁ and TE₆ on tergite 8 distinct at 40X, at most about three times shorter than TE₇ [HW = 0.80-0.92 mm (L₁; n = 5)]..................................................*C. gregarius* Say

   – Setae TE₁ and TE₆ on tergite 8 indistinct at 40X, several times shorter than TE₇ [HW = 0.78-0.83 mm (L₁; n = 3)].................................*C. ingratus* Dejean

¹ Character states taken from Thompson’s (1979b: 40-41) description.
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

**Calathus (Neocalathus) gregarius** (Say): Kirk (1977a: 280; Fig. 2); Thompson (1979b: 35-37; Figs 17a-d) [D+K: L1, L2-3].

**Calathus (Neocalathus) ingratus** Dejean: Thompson (1979a: Figs 65a-b); Thompson (1979b: 35, 39; Figs 18a-i) [D+K: L1, L2-3].

**Calathus (Neocalathus) opaculus** LeConte: Thompson (1979b: 35, 40, 41; Figs 19a-c) [D+K: L3].

**GENUS ACALATHUS** Semenov, 1889 (Figs 627, 639)

Larvae of the sole North American species of this genus differ from those of *Calathus* by the absence of secondary spinelike setae on the tibia. In *Calathus* one such seta is present behind T1 on each tibia.

This account is based on the examination of two reared larvae of the northeastern species. The width of the cephalic capsule for the two second-instar specimens studied is 0.90 and 0.92 mm.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

**Acalathus advena** (LeConte): Lindroth (1956: Figs 35d, 36-Id, 36-IId, 36-IIId, 36-IVd).

**GENUS SYNUCHUS** Gyllenhal (Figs 626, 637)

The sole species of *Synuchus* in the northeast has a more or less triangularly projecting nasale (Fig. 637) which is rather distinctive among platynine larvae. It is similar to the nasale of *Elaphrus* larvae although the projection is less acute and shorter. Other character states of *S. impunctatus* include: cervical groove distinct but shallow, short, poorly defined; arms of frontal suture only slightly sinuate (Fig. 626); coronal suture relatively short, slightly shorter than antennomere 4 which is also relatively short; antennomeres 1 and 2 without setae; medial edge of the terebra smooth; lacinia markedly short, more or less distinct even at high magnification, not acuminate; seta UR very short or indistinct; urogomphi slightly bowed, not spotty, with nine major setae on each side; leg with two equal claws.

This account is based on examination of several reared and field-collected larvae of the sole species found in the northeast. The width of the cephalic capsule varies for the specimens studied between 1.08-1.25 mm (L3; n= 10). The measures given by Thompson (1979b: 48) are 0.44 mm (L1), 0.68 mm (L2), and 1.08 mm (L3).

Working with reared material of both species, Lindroth (1956: 564) pointed out that larvae of the European *Synuchus vivalis* Illiger, contrary to those of *S. impunctatus*, have no stemmata and the tarsal claws are distinctly unequal.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

**Synuchus impunctatus** (Say): Lindroth (1956: 564; Figs 35b, 36-Ib, 36-IIbg, 36-IIIb, 36-IVb) [D: L1]; Thompson (1979a: Figs 64a-d); Thompson (1979b: 48; Figs 24a-f) [D: L1, L2-3].

**SUBTRIBE PLATYNINA**

**GENUS OLISTHOPUS** Dejean (Fig. 625)

I have seen two first-instar larvae of *O. parvatus* reared by two persons. These larvae have the following character states: parietale without cervical or ocular grooves, with six stemmata on each side; coronal suture very short (Fig. 625); nasale differentiated, roundedly protruding; medial edge of terebra smooth; retinaculum small, somewhat directed anteriod; gMX with four setae only around MX; lacinia markedly small, indistinct even at 80X; galeomere 2 longer than galeomere 1; ligula relatively long; setae PR and PR14 proportionally long, nearly as long as PR11-12; seta UR1 relatively long, only about three times shorter than UR1, claws markedly unequal, anterior one much shorter and slender than posterior one.
This account constitutes the first larval description of a North American species of *Olisthopus*. The only other species of the genus with its larva described is the European *O. rotundatus* Paykull (Boving 1910: 342-346; Larsson 1941: 318; Larsson 1968: 374; Luff 1993: 122-123) and the species differs from *O. parma* in having the nasale more triangularly produced, reminding that of *Synuchus* species, the retinaculum not directed anteriad, the lacinia more developed, and the tarsal claws equal.

**Genus Sericoda Kirby**

This genus contains seven species of which four are found in North America. Larvae of three species are known, those of *S. obsoleta* described by Thompson (1979b), of *S. bembidioides* Kirby described by Liebherr (1991), and of *S. quadripunctata* described by Burakowski (1989). Second- and third-instar larvae have distinct cervical groove and six stemmata on each side of the parietale, the coronal suture proportionally rather long, the nasale slightly protruding, with (*S. obsoleta*) or without lateral tubercles, with the median section rather narrow, more or less transversely truncate, situated more anteriad than the tubercles if present, the medial edge of the terebra smooth, the lacinia proportionally very small, the seta URα on the tergite 9 rather long; and the urogomphus with nine major setae, without small setae.

This account is based on the descriptions and illustrations of *S. obsoleta* and *S. quadripunctata*. The following measurements of the cephalic capsule width were reported: 0.43 mm (L1), 0.62 mm (L2), and 0.88 mm (L3) for *S. obsoleta* (Thompson 1979b: 19); 0.33-0.37 mm (L1), 0.50-0.55 mm (L2) and 0.65-0.75 mm (L3) for *S. quadripunctata* (Burakowski 1989: 186-187). Only first instar larvae are known for *S. bembidioides*.

I have not seen any larva of *Sericoda* and I am unable to assess, with the available descriptions, the structural differences of the genus in comparison with other platynine genera.

**List of Northeastern Species Described or Illustrated:**

*Sericoda obsoleta* (Say): Thompson (1979b: 8, 18, 19; Figs 6a-f) [D+K: L1, L2-3].
*Sericoda quadripunctata* (DeGeer): Burakowski (1989: 186-188, 190; Figs 13-41) [D: L1, L2, L3].

**Genus Tetraleucus Casey**

Second- and third-instar larvae of the sole species included in this genus possess the following characteristics: parietale with cervical and ocular grooves, with six stemmata on each side; coronal suture proportionally long; nasale slightly protruding, denticulate, emarginate at middle, with tubercles on each side; medial edge of terebra smooth; lacinia distinct; tergite with several small secondary setae; urogomphus proportionally long, with nine major setae and several small ones. The presence of several small secondary setae more or less evenly distributed over the tergites 1-8 seems to be the only structural difference between larvae of *Tetraleucus* and those of *Agonum*.

This account is based on the description and illustrations of *T. picticornis* by Thompson (1979b). The width of the cephalic capsule is listed as 0.4 mm (L1), 0.64 mm (L2), and 0.98 mm (L3).

**List of Northeastern Species Described or Illustrated:**

*Tetraleucus picticornis* (Newman): Thompson (1979b: 8, 24; Figs 9a-f) [D+K: L1, L2-3]; Liebherr (1991: 125; Figs 293-304) [D: L1].

**Genus Paranchus Lindroth**

I have not seen any larva of this genus and based on the available descriptions and illustrations of the sole species, I am unable to note any character states that would separate the larva of that species from those of *Agonum*. 
LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Paranchus albipes* (Fabricius)†: Xambeu (1898: 55-57) [D: L2-3]; Larsson (1941: 319, 320, as *Platynus ruficornis*, Fig. 42b) [D+K: L1, L3]; Sharova (1958: 61, as *Agonum ruficornes*, Fig. 120a) [K: L1, L3]; Larsson (1968: 376, 377, as *Agonum ruficornes*, Fig. 47b) [D+K: L1, L3]; Arndt (1991a: 98, 99, as *Platynus ruficornis*) [K: L1, L2-3]; Luff (1993: 125, 130, 131, Figs 422-424) [D+K: L1, L2-3].

**GENUS OXYPSELAPHUS Chaudoir (Fig. 628)**

Based on the descriptions and illustrations of the European *O. obscurus* (Herbst) (see Larsson 1941: 314, 319, 320; Sharova 1958: 60; Sharova 1964: 172; Larsson 1968: 375, 378; Arndt 1991a: 96, 98, 99; Luff 1993: 124, 131) and examination of the sole North America species of the genus, *O. pusillus* (LeConte), I am unable to find any character states that would separate larvae of *Oxypselaphus* from those of *Agonum*.

The larva of the North American *Oxypselaphus* has not yet been described or illustrated.

**GENUS AGONUM Bonelli (Figs 630, 631, 633-635, 640)**

*Agonum* larvae can be recognized in having six stemmata on each side of the parietale, the coronal suture relatively long (Figs 630, 631), the anterior edge of the nasale often with lateral tubercles (Figs 633-635), the medial edge of the terebra smooth or with one or two incisions (serrulate in L1 in some species), the lacinia distinct and longer than wide, the tergites 1-8 without or with few secondary setae more or less disposed on two transverse rows, the urogomphi rather long and slender (Fig. 640), and two equal tarsal claws.

LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:

*Agonum (Agonum) muelleri* (Herbst)†: Larsson (1941: 321; Figs 43b, 44a) [D+K: L1, L3]; van Emden (1942: Fig. 52); Sharova (1958: 61; Fig. 120a) [K: L1, L3]; Larsson (1968: 376, 378, 379; Figs 47f, 48a-b) [D+K: L1, L3]; Arndt (1991a: 98, 100; Figs 1, 6-11, 16, 92, 96) [K: L1, L2-3]; Luff (1993: 124, 128, 130, Figs 417-419) [D+K: L1, L2-3]; Makarov (1996: Fig. 23).

*Agonum (Agonum) placidum* (Say): Kirk (1972: 1355; Fig. 3-15, Pl.1[15]) [D: L1, L3].

*Agonum (Europhilus) anchoforma* Randell: Thompson (1979b: 7, 10; Figs 1a-c) [D+K: L1].

*Agonum (Europhilus) gratiosum* (Mannerheim): Thompson (1979b: 7, 16; Figs 4a-g) [K: L1, L3].

*Agonum (Europhilus) retractum* LeConte: Thompson (1979b: 7, 29; Figs 12a-f) [D+K: L1, L2-3].

*Agonum (Europhilus) thoreyi* Dejean: Larsson (1941: 323; Figs 45c, 46d-e) [K: L1, L3]; Lindroth (1955a: Fig. 1a); Sharova (1958: 60; Fig. 120a) [K: L1, L3]; Sharova (1964: 172; Fig. 150-4) [K: L1, L3]; Larsson (1968: 376, 378, 379; Figs 47f, 48a-b) [D+K: L1, L3]; Arndt (1991a: 98, 100; Figs 1, 6-11, 16, 92, 96) [K: L1, L2-3]; Luff (1993: 124, 128, 130, Figs 417-419) [D+K: L1, L2-3]; Arndt (1991a: 100; Fig. 94) [K: L2-3]; Luff (1993: 123, 126; Figs 411, 412) [D+K: L1, L2-3].

*Agonum (Olisares) extensicolle* (Say): Schaupp (1881b: 91-92); Thompson (1979b: 9, 11, 12; Figs 2a-c) [D+K: L1].

*Agonum (Olisares) melanarium* Dejean: Thompson (1979b: 8, 18; Figs 5a-d) [D+K: L1].

*Agonum (Olisares) octopunctatum* (Fabricius): Thompson (1979b: 8, 21; Figs 7a-c) [D+K: L1].

*Agonum (Olisares) propinquum* (Gemminger & Harold): Thompson (1979b: 8, 24, 25; Figs 10a-g) [D+K: L1, L2-3].

*Agonum (Olisares) punctiforme* (Say): Thompson and Allen (1974: 192-195; Figs 3a-d) [D: L2]; Thompson (1979a: Figs 57a-b); Thompson (1979b: 8, 26, 27; Figs 11a-e) [D+K: L1].

*Agonum (Olisares) tenue* (LeConte): Thompson (1979b: 8, 34, Figs 15a-h) [D+K: L1, L2-3].
Figs 625-629. Cephalic capsule, antenna and mandible (dorsal view). 625, *Olisthopus parmatus*, L₁; 626, *Synuchus impunctatus*, L₃; 627, *Acalathus advena*, L₃; 628, *Oxyspelaphus pusillus*, L₃; 629, *Laemostenus terricola*, L₃. Scale bars = 0.1 (Fig. 625), 0.2 mm (Figs 626-629)
Figs 630-638. 630-632: cephalic capsule, antenna and mandible (dorsal view). 630, Agonum nigriceps, L₃; 631, A. gratiosum, L₃; 632, Platynus decens, L₃. 633-638: anterior edge of frontale (dorsal view). 633, Agonum melanarium, L₃; 634, A. cupripenne, L₃; 635, A. errans, L₃; 636, Platynus decens, L₃; 637, Synuchus impunctatus, L₃; 638, Laemostenus terricola, L₃. Scale bars = 0.2 mm (Figs 630-632), 0.1 mm (Figs 633-638)
**Genus Platynus Bonelli** (Figs 632, 636, 641)

Larvae of *Platynus* are similar to those of *Agonum* but differ mainly in having the medial edge of the terebra serrulate. *Agonum* larvae have the terebra smooth or with one or two incisions.

This account is based on examination of several second and third instars of *P. opaculus* and *P. decens*, as well as the descriptions and illustrations provided by Thompson (1979b) of

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**Figs 639-641.** Tergite 9 and urogomphi (dorsal view). 639, *Acalathus advena*, L₃; 640, *Agonum errans*, L₃; 641, *Platynus decens*, L₃. Scale bars = 0.2 mm (Figs 639, 640), 0.3 mm (Fig. 641)

**List of Northeastern Species Described or Illustrated:**

- *Platynus* (*Batenus*) hypolithos (Say): Thompson (1979b: 41, 44; Figs 21a-i) [D+K: L3].
- *Platynus* (*Batenus*) mannerheimii (Dejean): Thompson (1979b: 41, 45, 46; Figs 22a-f) [D+K: L1-3].
- *Platynus* (*Platynus*) decens (Say): Thompson (1979a: Figs 58a-d); Thompson (1979b: 41, 42; Figs 20a-j) [D+K: L1, L2-3].

**Tribe *Atranini***

[Figs 642-646]

This tribe contains a single genus. The genus was placed near *Chlaenius* by LeConte (1847: 438) who later included it in the tribe Chlaeniini along with oodines (LeConte 1861: 17, 28; 1863: 11). Horn (1881: 144), followed by LeConte and Horn (1883: 36-37), moved the genus to the tribe Lachnophorini (as Anchonoderini) and isolated it in its own subtribe (Atranini). Csiki (1931: 740) placed the genus within the Platynini (as Agonini), a placement that was accepted by Lindroth (1966: 648). However, the presence of spongy adhesive setae underneath some of the male protarsomeres as well as several larval character states, particularly the strongly acuminate lacinia and markedly unequal claws, do not support inclusion of *Atranus* within the Platynini. The position of the genus is unsettled and for the time being it is placed here in its own tribe.

**Genus *Atranus* LeConte***

This genus includes two species, one from Europe and the other from North America. Raynaud (1976b) described a field-collected larva which he attributed to the European *A. col laris*; as pointed out by Bousquet (1985a: 329), the identification was erroneous.

Larvae of *Atranus* possess the following character states: parietale with cervical groove extended dorsally to about level of PA5 (Fig. 642), without ocular groove, with six st金字塔ata on each side; coronal suture relatively long, subequal to slightly longer than antennomere 4; nasale slightly, roundly projecting medially, without lateral tubercles; sensorium on antennomere 3 bulbous; mandible about as long as antenna (Fig. 642), with the medial edge of terebra finely serrulate; retinaculum narrow, its posterior edge smooth or very finely serrulate (Fig. 642); penicillus present, multisetae; stipes without membranous declivity; setal group gMX with 20-35 setae (Fig. 644); lacinia distinct, consisting of a small cone acuminate apically, the seta MX6 preapical and about as long as MX5; ligula small; labial palpomeres subequal in length; tergal carina present, not extended laterally; urogomphi (Fig. 646) relatively long, fixed, unsegmented, slightly curved inward apically, each with nine major setae (UR4-UR8, URβ, URγ, URδ, URε) in L2 and L3 and several small setae; tarsus slightly longer than tibia, with two unequal claws, the anterior one being distinctly longer than the posterior one (Fig. 645).

This account is based on the description and illustrations of *A. pubescens* provided by Bousquet (1985a). The width of the cephalic capsule varies from 0.42-0.44 mm (L1; n= 4), 0.55-0.60 mm (L2; n= 5), and 0.81-0.82 mm (L3; n= 2).

**List of Northeastern Species Described or Illustrated:**

- *Atranus pubescens* (Dejean): Bousquet (1985a: 330, 331; Figs 1-6) [D: L1, L2, L3]; Makarov (1994: Fig. 81).
Figs 642-646. *Atranus pubescens* (dorsal view). 642, cephalic capsule, antenna and mandible, L₁. 643, right mandible, L₁. 644, right maxilla, L₁. 645, tarsus and claws, L₁₁. 646, tergite 9 and urogomphi, L₁₁₁. Scale bars = 0.1 mm (Figs 642, 643), 0.05 mm (Figs 644, 645), 0.2 mm (Fig. 646)
**Tribe Perigonini**

Only larvae of the genus *Perigona* are known.

**Genus Perigona Laporte**

A single species attributed to this genus has been described in its larval stage. Two larvae, probably third instars of *P. termitis* Jeannel, were collected in a termite nest at Danané, Ivory Coast, along with seven females. According to Grassé (in Grassé and Jeannel 1941: 147) the larvae and the adults were found only on sawdust heaps stored in the upper levels of the termite’s nest.

Based on Jeannel’s (in Grassé and Jeannel 1941: 144-146: Figs 7a-f) description and illustrations, the larva is narrow and elongate, poorly pigmented, and has the following character states: stemmata reduced to a single pigmented mass; coronal suture relatively long; nasale slightly protruding, its anterior edge rounded and crenulate; antenna about as long as mandible; retinaculum relatively small, penicillus reduce to a single seta; lacinia absent; prementum with a median dorsoapical «sorte de lèvre membraneuse ciliée» (kind of ciliate membranous lip); ligula small; urogomphi long, fixed, not segmented, each with five or six small setigerous nodules; anal lobes with several hooklike structures; leg with two unequal claws. Based on the cephalic capsule figure provided by Jeannel, the cervical groove is indistinct.

**Tribe Odacanthini**

[Figs 647-650, Pl. 87]

Larvae of only a few odacanthine species, belonging to the genera *Archicolliuris* Liebke (see Habu and Sadanaga 1963, 1965), *Eudalia* Laporte (see Moore 1965), and *Odacantha* Paykull (see Larsson 1941, 1968; Sharova 1958, 1964; Habu and Sadanaga 1965; Arndt 1991a; Luff 1993), have been described to date.

Based on the available descriptions and examination of larvae of *Colliuris pensylvanica*, the structural differences between larvae of odacanthine genera are minor. Only one genus is found in North America north of Mexico.

**Genus Colliuris DeGeer**

*Colliuris* larvae possess the following character states: cephalic capsule without cervical stricture but with subbasal constriction (Fig. 647); cervical groove distinct; six stemmata present on each side of parietale; coronal suture relatively long (Fig. 647); nasale slightly protruding, its anterior edge truncate and denticulate (Fig. 648); adnasale not or barely sloping medially; antenna about as long as mandible (Fig. 647); antennomeres 1 and 2 without setae; sensorium on antennomere 3 rather small, bulbous; mandible moderately falciform (Fig. 647); medial edge of terebra serrulate; retinaculum well developed; penicillus present, multisetose, setae moderately long; stipes without membranous declivity; setal group gMX with less than 30 setae (Fig. 649); lacinia absent; ligula distinct though relatively small; tergal carina distinct; urogomphus long, fixed, four-segmented, with eight major setae (Fig. 650); leg with two slender, equal claws.

Larvae of *Colliuris* can be distinguished from other northeastern genera by the combination of the following character states: medial edge of terebra serrulate; retinaculum well developed; lacinia absent; urogomphi long, each four-segmented.
This account is based on examination of 2L₁ and one damaged L₂₃ of *C. pensylvanica* collected at Lexington, Kentucky as well as from the illustrations of the same species provided by Thompson (1979a).

**List of Northeastern Species Described or Illustrated:**

*Colliuris pensylvanica* (Linné): Thompson (1979a: Figs 77a-c).

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**Figs 647-650.** *Colliuris pensylvanica.* 647, cephalic capsule, antenna and mandible, L₂₃ (dorsal view); 648, anterior edge of frontale, L₂₃ (dorsal view); 649, left maxilla, L₂₃ (dorsal view); 650, tergite 9, urogomphi and pygopod, L₁ (laterodorsal view). Scale bars = 0.1 mm
TRIBE CYCLOSOMINI
[Figs 651-655]

Larvae of Cyclosomini are relatively poorly known and only those of the genera Aephnidius MacLeay (Habu and Sadanaga 1965), Corsyra Dejean (Sharova 1958, 1964), Macracanthus Chaudoir (Pavel Valdés 2002), Tetragonoderus Dejean (Gardner 1938), and Masoreus Dejean (Gardner 1936; Larsson 1968; Arndt 1991a; Luff 1993) are known. The tribe is represented in North America, north of Mexico, by the genus Tetragonoderus.

GENUS TETRAGONODERUS DEJEAN
I have seen two second- or third-instar larvae of Tetragonoderus mexicanus Chaudoir reared from specimens collected in Veracruz, Mexico. The cephalic capsule has no subbasal constriction (Fig. 651), the parietale has six stemmata on each side, the cervical and ocular grooves are absent, the coronal suture is long, at least as long as antennomere 4 (Fig. 651), the arms of the frontal suture are distinctly sinuate, the nasale is differentiated and rather narrow with two short projections, the antennomeres 1 and 2 have no setae, the lateral edge of the mandible has two setae (MN₁ and MN₂), the retinaculum is moderately long, the medial edge of the terebra and the posterior edge of the retinaculum are smooth, the penicillus is present and consists of moderately long setae, the lacinia is absent (Fig. 652), the galeomeres are short, the setal group gMX has less than 20 setae, the urogomphi are fixed, unsegmented, unspotted, longer than the pygopod, with more than 15 major setae on each side (Fig. 655), the anal lobes of the pygopod have no sclerotized structures, the femur, but not the tibia, has secondary spinelike setae, and the tarsus bears two rather long, equal claws (Fig. 654).

A single species attributed to the genus Tetragonoderus, T. elegans Andrewes, has been described in its larval stage (Gardner 1938: 154, 155; Figs 22-27) based on a field-collected specimen and exuviae. The larva differs from those of T. mexicanus in having the coronal suture short, the adnasale markedly projecting laterad as in members of Syntomus, the penicillus consisting of markedly long setae (Fig. 26 in Gardner) as in members of Syntomus, and the galeomere 1 with an apical extension (a “conspicuous lobe” as described by Gardner 1938: 155).

TRIBE LEBINI
[Figs 656-678, Pls 88, 89]

This tribe is markedly diversified, particularly in the tropical regions, and few character states seem to be common to all known larvae. The cephalic capsule has no basal stricture, the antenna is slightly shorter to slightly longer than the mandible, the mandible has the medial edge of the terebra smooth in most taxa, the penicillus is present, though short in some species, the lacinia is absent, and each leg bears two claws.

SUBTRIBE CYMINIDIDINA
This subtribe contains a single genus in the northeast.
Figs 651-655. *Tetragonoderus mexicanus*, L₂. 651, cephalic capsule, antenna and mandible (dorsal view); 652, right maxilla (dorsal view); 653, labium (dorsal view); 654, trochanter, femur, tibia, tarsus, and claws (lateral view); 655, tergite 9 and urogomphi (dorsal view). Scale bars = 0.1 mm
Genus Cymindis Latreille (Figs 665, 666, 677, 678)
Larvae of Cymindis can be recognized among northeastern lebiines on the following character states: coronal suture distinct (Figs 665, 666); nasale with two well-separated toothlike projections; antennomeres 1 and 2 without setae; sensorium bulbous; mandible falciform (Figs 665, 666), with one or two lateral setae; retinaculum very small, directed anteriad; medial edge of terebra smooth or serrulate; penicillus long, reaching the retinaculum, consisting of many setae (Figs 665, 666); ligula present; tergal carina distinct; urogomphus longer than pygopod but smaller than the remaining of body, six or seven-segmented (four-segmented in L1), with nine major setae (Fig. 677, 678); anal lobes with two groups of hooklike sclerites; claws without pulvillus or basal toothlike processes.

Figs 656-659. Cephalic capsule, antenna and mandible. 656, Lebia viridis, L1 (dorsal view); 657, L. viridis, L2 (dorsal view) [redraw from Capograco (1989)], 658, L. viridis, L2 (ventral view) [redraw from Capograco (1989)], 659, Axinopalpus bipelegatus, L2.5. Scale bars = 0.1 mm
This account is based on examination of several larvae of unidentified species and on Hůrka (1986) detailed descriptions and illustrations of 14 Palaeartic species. No North American species have been described to date except for the Holarctic *Cymindis vaporariorum* (Linné).

**Subtribe Dromiusina**

Larvae of several dromiusine genera are known. I have been unable to find any significant character states shared by them.

**Genus Dromius Bonelli**

Among northeastern lebiines, *Dromius* larvae are quite characteristic in having markedly short (e.g., *D. piceus*) or absent urogomphi. Other character states include: cervical groove absent; coronal suture relatively short but distinct or absent as in *D. piceus*; nasale indistinctly to moderately protruding, with two toothlike projections clearly separated; retinaculum well developed; penicillus consisting of small setae; claws with one or two minute toothlike projections on apical half along the ventral surface (see Arndt 1989b: Figs 12-12a; Arndt 1991a: Figs 161-162).

This account is based on the descriptions and illustrations of *Dromius piceus* provided by Mahar et al. (1983) and of several European species provided by Luff (1993). No *Dromius* larva was available for this study. The width of the cephalic capsule in *D. piceus* is giving as 0.48 mm in L₁, 0.63 mm in L₂, and 0.81 mm in L₃ (Mahar et al. 1983).

**List of northeastern species described or illustrated:**

*Dromius piceus* Dejean: Mahar et al. (1983: 24-26; Figs 1-7) [D: L₁, L₂, L₃].

**Genus Axinopalpus LeConte** (Fig. 659)

Larvae of *Axinopalpus* are very peculiar for the markedly long urogomphi, these being much longer than the body itself. Other character states include: cervical groove absent; parietale with five stemmata on each side; coronal suture indistinct (Fig. 659); nasale undifferentiated; antenna nearly twice as long as mandible (Fig. 659); antennomeres 1 and 2 glabrous; sensorium not bulbous; mandible rather short (Fig. 659), only slightly curved apically; medial edge of terebra serrulate; retinaculum very small; penicillus consisting of three or four small aligned setae; stipes rather short, without membranous declivity; gMX with five or six setae only; galea proportionally very small, about same length as maxillary palpomere 1; galeocere 2 with one relatively long seta toward apex; ligula absent; abdominal tergites without small setae; tergite carina absent; urogomphi unsegmented, without major setae but with small, more or less sparse setae over entire length; anal lobes without sclerotized structures; leg relatively long; claws rather small without apparent ventral structure; femur, tibia, and tarsus without secondary spinelike setae; tarsus longer than tibia. The body is whitish-yellow dorsally.

Larvae of this genus were previously unknown. The present description is based on 6L₁₂₃ of *A. biplagiatus* collected at Rigaud (Quebec) under a large stone along with several adults. The width of the cephalic capsule varies between 0.38-0.40 mm.

**Genus Apristus Chaudoir** (Figs 660, 669, 671, 673)

*Apristus* larvae I have studied have the following character states: cervical groove fine but distinct dorsally; parietale with six stemmata on each side; arms of frontal suture lyre-shaped (Fig. 660); coronal suture proportionally very long, longer than antennomere 3; nasale relatively wide, only slightly protruding, consisting of several small toothlike projections (Fig. 669); antennomere 1 glabrous, antennomere 2 with three or four setae; mandible with medial edge of terebra smooth; retinaculum directed medioanterior with its extremity hooked (Fig.
penicillus multisetose, setae long and reaching the retinaculum; stipes without membranous declivity; gMX with 20-25 setae; apical maxillary palptomere slender, long, as long as palptomere 2 (Fig. 671); tergites without small setae; tergal carinae distinct, prolonged laterally; urogomphi fixed, each seven-segmented (four-segmented in L1), with nine major setae (Fig. 673); anal lobes without sclerotized structures; tarsus as long as tibia; claws long, each with one or two minute toothlike projections on ventral side along apical half as in members of Lionychus (see Arndt 1989b: Fig. 9; Arndt 1991a: Fig. 158). Apristus larvae are quite easily dif-
ferentiated from other dromiusine larvae by the shape of the nasale, its anterior edge having six to eight small lobes.

This account is taken from examination of 1L₁ of *Apristus subsulcatus* Dejean reared from adults collected in Cape Breton Highlands National Park (Nova Scotia) and several larvae of all instars of the same species collected in Ottawa (Ontario) and in southern Quebec. No species of this genus was previously described in its larval stage. The width of the cephalic capsule for the specimens studied vary between 0.36 mm in L₁ (n= 2), 0.44 mm in L₂ (n= 1), and 0.60-0.63 mm in L₃ (n= 4). Larvae of *Lionychus* (Arndt 1989b, 1991a) are structurally very similar to those of *Apristus* and the two genera are probably closely related.

Figs 664-670. 664, cephalic capsule, antenna and mandible of *Calleida punctata*, L₂₋₃ (dorsal view); 665, cephalic capsule of *Cymindis sp.*, L₁ (dorsal view); 666, cephalic capsule, antenna and mandible of *Cymindis sp.*, L₂₋₃ (dorsal view). 667-670: anterior edge of frontale (dorsal view). 667, *Syntomus americanus*, L₂₋₃ (reared specimen); 668, *Syntomus americanus*, L₂₋₃ (field collected specimen from L’Assomption, QC); 669, *Apristus subsulcatus*, L₂₋₃; 670, *Microlestes sp.*, L₂₋₃. Scale bars = 0.2 mm (Figs 664, 666), 0.1 mm (Fig. 665)
**GENUS MICROLESTES SCHMIDT-GÖBEL** (Figs 662, 670, 672, 674)

In the sole larva of *Microlestes* I have seen, the parietale has no cervical and ocular grooves and only five stemmata on each side, three in the anterior row, two in the posterior row, the coronal suture is long (Fig. 662), the nasale is slightly protruding and its anterior margin has two small toothlike projections (Fig. 670), the antenna is about as long as the mandible (Fig. 662), the antennomeres 1 and 2 are subequal and without setae, the sensorium is bulbous, the mandible is moderately falciform (Fig. 662), the medial edge of the terebra is smooth, the retinaculum is moderately developed, the penicillus is well developed, consisting of several relatively long setae, the stipes has no membranous declivity, the urogomphi are long, more or less soft, unsegmented, each with more than 20 setae (Fig. 674).

I have seen one exuviae and one second- or third-instar larva of this genus collected at Meckling (South Dakota) by Vernon M. Kirk during his cropland study. The identification was done by exclusion. Kirk (1971a: 239) listed *M. nigrinus* Mannerheim (likely a misidentification for *M. linearis* LeConte) as a species commonly found in cropland in South Dakota. The only other dromiuisine species found, though less commonly, during the study was an unidentified species of *Apristus* (Kirk 1971a: 239). That genus was excluded because the larva and exuviae differ significantly from the reared material I have studied of *Apristus*.

The generic larval states and illustrations of *Microlestes* provided by Arndt (1989b, 1991a), Luff (1993), and Makarov (1994) probably represent a member of the genus *Syntomus*.

**GENUS SYNTOMUS HOPE** (Figs 661, 667, 668, 675)

Three species of *Syntomus* are known in their larval stages. They share the following character states: cephalic capsule elongate, with six stemmata on each side, without ocular and cervical grooves; coronal suture proportionally long, as long as antennomeres 3 (Fig. 661); arms of frontal suture more or less parallel thence roundly convergent; nasale slightly protruding, with two small median, clearly separated toothlike projections and two or three small ones on each side (Figs 667, 668); adnasale distinctly protruding laterad; antenna about as long as mandible (Fig. 661); antennomeres 1 and 2 without setae; sensorium bulbous; mandible relatively short and broad (Fig. 661), medial edge of terebra smooth or more or less serrulate, retinaculum moderately developed, penicillus consisting of several setae reaching apex of retinaculum; stipes moderately elongate, the setal group gMX consisting of only four setae; maxillary palptome 2 long, as long as palptome 4; ligula small but distinct; setae TE9 and TE10 markedly long; urogomphi relatively long, not segmented, with ten long setae on each side (Fig. 675); tarsus slightly longer than tibia; claws without any peculiar structure.

This account is based on examination of 1L1 reared and 1L3 collected at L’Assomption (Quebec) of *S. americanus*. Descriptions and drawings of larvae of *S. truncatellus* (Linne) by Larsson (1941: 355, Figs 67b, 68b; 1968: 427; Figs 73b, 74b) and Luff (1993: 174, Figs 570-572) and of *S. cymindulus* Bates by Gardner (1936: 195, 196; Figs 51-53) were also taken into account. The generic larval states and illustrations of *Syntomus* provided by Sharova (1958, 1964), Arndt (1989b, 1991a), and Makarov’s (1994) are probably those of members of *Microlestes*.

The width of the cephalic capsule for the two specimens seen measures 0.29 mm (L1) and 0.62 (L3).

**SUBTRIBE LEBIINA**

This subtribe contains a single genus, with several species, in the northeast. Their larvae are ectoparasitoid on chrysomelid pupae. The first instar larva is of carabid appearance and looks for a host right after emergence. Once found, the *Lebia* larva feeds upon the pupa until its...
body becomes grublike and distended. It then moult into a non-feeding second instar, which has reduced mouthparts and appendages, and like Brachinus larvae are faintly sclerotized and pigmented. That instar is atypical for carabids.

**GENUS LEBIA LATREILLE** (Figs 656-658)

Only three species of Lebia have been described in their larval stage: _L. chlorocephala_ (Hoffmann) (Larsson 1941, 1968; Lindroth 1954a; Luff 1993), _L. grandis_ Hentz (Chaboussou 1939), and _L. viridis_ Say (Capogreco 1989). The following account is based on Capogreco’s (1989) description and illustrations and on the examination of one first instar specimen of _L. viridis_.

The second instar larva of *Lebia* has the cephalic capsule distinctly rounded laterally (Figs 657, 658) and four stemmata on each side, the frontal suture is absent, the nasale is narrow, rounded, with its anterior edge serrulate, the antenna is short, two-segmented, with the antennomere 1 markedly large compared to antennomere 2 (Fig. 657), with a small, apicolateral axillary process (sensorium?), the mandible is short, barely falciform, with a short retinaculum, the cardo is apparently fused to the long, thick stipes, the galea is two-segmented and the palpus is four-segmented as in typical carabids, the ligula is absent and the labial palpus is two-segmented, the abdomen is swollen, the tergites are indistinct, the ninth abdominal segment bears two small projections which probably represent remnants of the urogomphi, the leg is markedly short, three-segmented (coxa, trochanter, and fused femur, tibia, and tarsus) with a pair of small terminal claws.

The first instar could be recognized on the following character states: parietale with four stemmata on each side, three in anterior row, one in posterior row; cervical and ocular grooves absent; coronal suture very short (Fig. 656); nasale protruding, rounded, without projections; egg-bursters consisting of a pair of spinelike structures at the base of the frontalale; antenna subequal to mandible (Fig. 656); antennomere 3 proportionally large; sensorium bulbous; mandible with medial edge of terebra smooth; retinaculum markedly small; penicillus present, plurisetose, setae relatively long; stipes not particularly elongate, setal group gMX with less than five setae; galeomere 2 much longer than galeomere 1; maxillary palpomere 4 longest of palpomeres; ligula absent; labial palpomere 1 short; urogomphi longer than pygopod, each four-segmented; anal lobes without sclerotized structures; leg with two unequal claws.

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Lebia (L. analis)* Dejean: Thompson (1979a: Figs 80a-b).

*Lebia (L. viridis)* Say: Capogreco (1989: 187-191; Figs 2-5, 7-16) [D: L1, L2].

*Lebia (Loxopeza) grandis* Hentz: Chaboussou (1939: 414-416, 419; Figs 18-20, 22-34) [D: L1, L2].

**SUBTRIBE CALLEIDINA**

Larvae of the following genera of Calleidina are known: Onota Chaudoir (van Emden 1942: 49), Tecomophilus Chaudoir (Larson 1969: 24), Plochionus Dejean, and Calleida Latreille. These larvae have the following character states in common: parietale without cervical and ocular grooves, with six stemmata on each side; coronal suture indistinct; nasale differentiated, with four lobes or toothlike projections; antenna slightly shorter than mandible, antennomeres 1 and 2 without setae, sensorium bulbous; mandible with medial edge of terebra smooth; retinaculum absent or very small; penicillus present; stipes without membranous declivity; ligula distinct, small; urogomphus five-segmented (four-segmented in L1), longer than pygopod; anal lobes with small hooklike structures.
Figs 675-678. Tergite 9 and urogomphi (dorsal view). 675, *Syntomus americanus*, L₂-₃; 676, *Calleida punctata*, L₂-₃; 677, *Cymindis* sp., L₂-₃; 678, *Cymindis* sp., L₁. Scale bars = 0.1 mm (Figs 675, 676, 678), 0.2 mm (Fig. 677).
**GENUS PLOCHIONUS DEJEAN**

In addition to the character states listed for the subtribe, *Plochionus* larvae have the nasale narrower than the prementum with its anterior edge more or less smooth or with four minute toothlike projections, the adnasale markedly sloping mediad with its lateral angle situated more anteriad than the anterior edge of nasale, each claw with a ventral toothlike projection at the base, and no pulvillus between the claws.

This account is based on van Emden’s (1942: 50) key characters, which were based on *P. pallens* Fabricius and *P. timidus* Haldeman, and on Zhou and Goyer’s (1993: 237-240) description and illustrations of *P. timidus*. No specimen of *Plochionus* was available for study. The width of the cephalic capsule of *P. timidus* varies between 0.40-0.50 mm (L₁, n= 66), 0.60-0.82 mm (L₂, n= 53), and 0.90-1.28 mm (L₃, n= 356) according to Zhou and Goyer (1993: 239).

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

- *Plochionus timidus* Haldeman: Duffey (1891: 538; Pl. 10, Figs A-E) [D: L₁, L₃]; Larson (1969: 25; Figs 7, 8) [D: L₂-3]; Thompson (1979a: Figs 79a-b); Zhou and Goyer (1993: 237-240; Figs 2a-d) [D: L₁, L₂, L₃].

**GENUS CALLEIDA LATREILLE** (Figs 663, 664, 676)

Known larvae of *Calleida* differ from those of *Plochionus* in having the nasale wider, at least as wide as the prementum, with its anterior edge clearly four-lobed, the adnasale much less sloping mediad and with its lateral angle situated less anteriad than the anterior edge of nasale, the claws without toothlike projections ventrally but with a soft, more or less bilobed pulvillus between them.

This account is based on the examination of several reared larvae of *Calleida decora* and several field-collected larvae of *C. punctata* from Quebec, Ontario, and Vermont. The width of the cephalic capsule for the specimens I have seen of *C. punctata* varies between 0.63-0.70 mm (L₂; n= 5) and 1.03-1.08 mm (L₃; n= 3).

Several species of this genus, belonging to the subgenera *Calleida s.str.*, *Callidiola* Jeannel, and *Philophuga* Motschulsky, have been described by Gardner (1933), Larson (1969), Habu (1981), Mahar et al. (1983), and Zhou and Goyer (1993).

None of the two species found in the northeast has been described as such but illustrations of some structures have been published.

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

- *Calleida punctata* LeConte: Bousquet and Goulet (1984: Fig. 36); Zhou and Goyer (1993: Fig. 3b).

**TRIBE GALERITINI**

[Figs 679-681, Pl. 90]

Besides larvae of *Galerita*, only those of a species of *Trichognathus* Latreille have been described to date (Arndt and Drechsel 1998: 21-22).

**GENUS GALERITA FABRICIUS**

Among northeastern carabids, larvae of *Galerita* are unmistakable (see Plate 90). The cephalic capsule (Fig. 679) has a basal stricture as in larvae of Nebrini and Notiophilini, the cervical and ocular grooves are absent, the parietale has six stemmata on each side, the coronal suture is very long (Fig. 679), the nasale consists of a long, bifurcated projection bearing small setae,
Figs 679-681. *Galerita janus*, L₁ (dorsal view). 679, cephalic capsule, antenna and mandible; 680, left maxilla; 681, labium. Scale bars = 0.2 mm (Figs 679, 680), 0.3 mm (Fig. 681)
the antenna is long, about twice the length of the mandible, the antennomere 1 is the longest of the antennomeres, the antennomeres 1-3 have several small setae, the sensorium is rather small, the mandible is spindly, falciform (Fig. 679), the retinaculum is distinct but the penicillus is absent, the medial edge of terebra is smooth, the stipes (Fig. 680) is markedly elongate, the setal group gMX has less than 40 setae, the lacinia is absent, the prementum of the labium (Fig. 681) is rather short, the labial palpomeres are markedly elongate, particularly palpmere 1, the ligula is narrow, more or less conical, the tergites are covered with small setae, the tergal carina is distinct and extended laterally, the urogomphi are markedly long, fixed, multisegmented (four-segmented in L1), without major setae but with numerous small ones, and the leg is long, with two equal claws (see van Emden 1942: Fig. 37).

This account is based on examination of 13 larvae of *G. janus* collected in southern Quebec, southern Ontario, Ohio, and Pennsylvania, as well as the generic descriptions and illustrations provided by van Emden (1942: 52) and Thompson (1979a: 282-283). The width of the cephalic capsule of *G. janus*, at level of the stemmata, varies between 1.30-1.40 mm in L1 (n= 4), 1.75-1.80 mm in L2 (n= 2), and 2.25-2.43 mm in L3 (n= 7). Besides *G. janus*, only larvae of *G. japonica* Bates (Kurosa 1959: 414; Fig. 769) and *G. lecontei* Dejean (Chapuis and Candèze 1853: 367-369) have been briefly described, although illustrations of other species have been published.

**LIST OF NORTHEASTERN SPECIES DESCRIBED OR ILLUSTRATED:**

*Galerita janus* (Fabricius): Hubbard (1875: 49-51) [D: L2-3]; Kirk (1981: 368; Fig. 1) [D: L3]; Dajoz (2005: 285; Figs 1-7) [D: L3].

**TRIBE HELLUONINI**

[Fig 682-686, Pl. 91]

Besides *Helluonmorphoides*, larvae of the following helluonine genera are known: *Colfax* Andrewes (Gardner 1933), *Macrocheilus* Hope (Gardner 1933), *Omphra* Dejean (Chopra 1924; Rajagopal and Kumar 1993), and *Triaenogenius* Chaudoir (van Emden 1942).

**GENUS HELLUOMORPHOIDES**

Larvae of this genus are rather characteristic (see Plate 91) in having the antacoria between antennomeres 2 and 3 very narrow and the galeomere 1 large, covered with numerous setae, its lateral edge being continuous with the stipes’ ex crescense (Fig. 683). Other character states include: cephalic capsule without basal stricture (Fig. 682); ocular and cervical grooves absent; parietale with six stemmata on each side; coronal suture absent; nasale slightly protruding, its anterior edge slightly projecting medially; antenna rather short (Fig. 682); antennomeres 1 and 2 with setae; sensorium large, elliptical, slightly convex; mandible broad, moderately curved; medial edge of terebra smooth; retinaculum moderately large; penicillus absent; stipes subquadrate (Fig. 683), without membranous declivity; gMX with more than 40 setae; lacinia absent; galea large; prementum with the median dorsal area membranous, well delineated, extended anteriorly into a small protuberance between the base of palpi; labial palpomeres stout; palpomere 1, much shorter than palpomere 2 (Fig. 684); tergal carina present, not extended laterally; urogomphi stout, rather short, fixed to tergite 9, unsegmented, slightly divergent (Fig. 686); leg robust, with two equal claws (Fig. 685); tarsus longer than tibia.

This account is based on Bousquet’s (1987b) description and illustrations of *H. praenstus bicolor*, the sole species of the genus known in its larval stage. The width of the cephalic capsule of the two specimens seen is 0.70 mm (L1) and 0.86 mm (L3).
Ill. 10. *Heliophanus praestus bicolor* Harris: Bousquet (1987b: 922, 925-927; Figs 1-3, 5-7) [D: L\textsubscript{1}, L\textsubscript{2}]

Figs 682–686. *Heliophanus praestus bicolor*, L\textsubscript{1} (dorsal view). 682, cephalic capsule, antenna and mandible; 683, right maxilla; 684, labium; 685, tarsus and claws; 686, urogomphi. Scale bars = 0.2 mm (Figs 682, 686), 0.1 mm (Figs 683–685)
Pelophila borealis (Paykull), L₃
Nebria sp., L₃ (Mt. Washington, NH)
Sphaeroderus stenostomus lecontei Dejean, L₁
Calosoma frigidum Kirby, L₃
Cicindela sp., L₂ (Cape Breton Island, NS)
Loricera pilicornis (Fabricius), L₂
Omophron tessellatum Say, L₁
Scarites subterraneus Fabricius, L₃
Clivina fossor (Linné), L$_3$
Dyschirius sp., L₃ (Abercorn, QC)
Miscodera arctica (Paykull), $L_2$
Diplous rugicollis (Randall), L₁
Pterostichus diligendus (Chaudoir), L₀
Amara sp., L₁ (Longueuil, QC)
Lachnocrepis parallela (Say), L$_2$
Chlaenius tomentosus (Say), L₁
*Dicaelus sp.*, L₃ (Westmoreland Co., PA)
Notiobia terminata (Say), L₂
Harpalus vagans LeConte, L₃
Synuchus impunctatus (Say), L$_3$
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Calleida decora (Fabricius), L₃
PLATE 90

Galerita janus (Fabricius), L₃
Helluomorphoides praeustus bicolor (Harris), L₂
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