Curculionidae and Chrysomelidae Found in Aquatic Habitats in Wisconsin

Lutz J. Bayer
H. Jane Brockmann
University of Wisconsin

Follow this and additional works at: http://scholar.valpo.edu/tgle
Part of the Entomology Commons

Recommended Citation
Available at: http://scholar.valpo.edu/tgle/vol8/iss4/6

This Peer-Review Article is brought to you for free and open access by the Department of Biology at ValpoScholar. It has been accepted for inclusion in The Great Lakes Entomologist by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.
We became interested in aquatic weevils (Curculionidae) and leaf beetles (Chrysomelidae) during the Aquatic Entomology Course at the University of Wisconsin, in the spring of 1971. Many collections, taken from a variety of aquatic habitats in Wisconsin, contained weevils and leaf beetles. Most of the species were not fully treated in the keys found in aquatic entomology texts. We thought it would be useful to compile keys from the literature and present what is known of the distribution of these insects in Wisconsin.

Nine species of weevils have been found in aquatic habitats in Wisconsin, representing seven genera, all belonging to the subtribe Hydronomi, and twenty-five species of leaf beetles, representing five genera in three subfamilies.

**KEY TO FAMILIES**

1. Head prolonged into a beak or snout with mandibles usually visible at its tip; antennae usually arising far in front of eyes, on snout. Curculionidae
1'. Head not prolonged into a beak or snout; antennae arising on front or sides of head, nearer the eyes. Chrysomelidae

**KEY TO SUBFAMILIES OF AQUATIC CHRYSOMELIDAE**

1. Head constricted or neck-like behind the eyes, and not inserted in the prothorax to the eyes; first abdominal sternum very long; elongate, metallic coppery, or blue-black in color. I. Donaciinae
1'. Head not constricted or neck-like behind the eyes; and usually inserted in the prothorax to the eyes. 2

2. Antennae closer together at base, than lengths of first antennal segment; front coxa usually conical and prominent. III. Galerucinae
2'. Antennae widely separated at base, farther apart than length of first antennal segment; front coxa oval or transverse; third tarsal segment, seen from beneath, entire apically or with a slight median indentation. II. Chrysomelinae

**Subfamily I. DONACIINAE**

The subfamily Donaciinae is represented in the United States by three genera, *Neohaemonia* with two species, *Donacia* with 31 species, and *Plateumris* with 17 species. The larvae of Donaciinae are truly aquatic. With the exception of *Neohaemonia nigricornis* and *Donacia hirticollis*, the Donaciinae spend their adult lives above submerged parts of the aquatic plants on which they live. The two exceptions confine almost their entire adult life on submerged vegetation, spending only brief periods on the nonsubmerged parts of plants (Hoffman, 1940). Eggs are deposited by the female in various locations on the selected plant. When the eggs hatch, the larvae drop down through the water or crawl down the stem to the roots or the rhizomes of the host plant (Marx, 1957). Some plants may support more than one species of beetle. Species of the genera *Sparganium*, *Nymphaea*, and *Nuphar* are the most common hosts of *Donacia* (Marx, 1957).

---

1Research supported by the College of Agriculture and Life Sciences, University of Wisconsin, and by a Federal Water Quality Administration Training Grant, 5T2-WP-205.
2Identification of specimens and an early draft of the manuscript for this paper were accomplished by Lutz Bayer before his untimely death in an automobile accident in 1972. All subsequent work has been done by the Junior Author.
3Department of Entomology and Department of Zoology, University of Wisconsin, Madison, Wisconsin 53706.
Neohaemonia is usually found on Potamogeton. Donaciinae may also be found on Pontederia, Sagittaria, Eleocharis, Acorus, Scirpus, Peltandra, Brasenia, Eriocaulon, Castalia, Phragmites, Typha and Glyceria.

**KEY TO GENERA**

1. Elytra with outer apical angles produced into a strong spine; front of head with median elevated projection extending over base of antennae; base of antennae approximate, separated by no more than the width of the scape at its center; third tarsal segment small, entire, not deeply bilobed; tarsal segments 1, 2, and 3 without dense pads beneath .............................................. Neohaemonia Szekessy

1'. Elytra with outer apical angles not produced into a strong spine; front of head without a median elevated projection extending over base of antennae; base of antennae distant, separated by more than width of the scape at its center; third tarsal segment large, deeply bilobed; tarsal segments 1, 2, and 3 with dense pads beneath ..............................................

2. Sutural margin of elytra sinuate near apex ................ Plateumaris Thomson

2'. Sutural margin of elytra straight to apex ................ Donacia Fabricius

**KEY TO WISCONSIN SPECIES OF DONACIA**

1, Pronotal disc pubescent ........................................ 2

1'. Pronotal disc glabrous ........................................ 3

2, Elytra pubescent ........................................ pubescens

2'. Elytra glabrous ........................................ pubicollis

3, Middle tibia with apical tooth-like projection on inner side near tibial spur. piscaatrix

3'. Middle tibia without apical tooth-like projection ............. 4

4, Pronotal disc deeply and usually densely punctate, rugose or densely strigose, punctures large .....................................................

4'. Pronotal disc impunctate or more or less shallowly and sparsely punctate, not rugose or densely strigose, sometimes finely wrinkled, if present punctures usually small ........................................ 18

5, Elytral epipleuron wider than outer interval and not limited by a ridge . quadricollis

5'. Elytral epipleuron narrower than outer interval and usually limited by a ridge. ........................................ 6

6, Posterior femor reddish brown or at least almost half reddish brown ........................................ 7

6'. Posterior femor black or metallic or at most with small, frequently indistinct, reddish brown area at base ...................... 9

7, Antennal segments reddish brown, occasionally with vague darkish areas at the apex of each segment ......................... porosticollis

7'. Antennal segments black or metallic, with reddish brown basally ............... 8

8, Pronotum with anterior, median V-shaped impression bordered behind by oblique obtuse ridges, ridges broken medially by median line. aequalis

8'. Pronotum without oblique obtuse ridges bordering V-shaped anterior median impression ........................................ porosticollis

9, Metasternum and first abdominal segment densely and somewhat coarsely punctate, sparsely pubescent, pubescence not obscuring surface structure ........................................ 10

9'. Metasternum and first abdominal segment densely and finely punctate, densely pubescent, pubescence obscuring surface structure ................ 14

10, Discal elytral intervals impunctate, finely and densely wrinkled .................. distincta

10'. Discal elytral intervals sparsely and shallowly punctate, coarsely and somewhat sparsely wrinkled on disc, and densely wrinkled at apex ............. 11

11, Posterior femor gradually enlarging from base to apical quarter, not extending to apical margin of third abdominal segment .................. biimpressa

11'. Posterior femor enlarging from basal quarter to apical quarter, usually extending to or beyond apical margin of third abdominal segment .............. 12

12, Median pronotal line impressed, extending from anterior impression to basal impression, impressions deep, pronotal disc swollen on either side on median line, elytra convex apically ............................................. tuberculifrons
12'. Median pronotal line absent or indistinct, never deeply impressed, anterior and basal median impressions absent or shallow, pronotal disc not swollen, elytra flattened apically. ............................................ 13
13. Posterior femor not strongly clavate; posterior tibia metallic, generally not reddish brown basally; eyes large, not strongly protruding. fulgens
13'. Posterior femor more strongly clavate; posterior tibia metallic, but generally reddish brown basally; eyes smaller, strongly protruding. subtilis
14. Spaces between pronotal punctures smooth, shiny ........................................... 15
14'. Spaces between pronotal punctures minutely punctulate and rugulose, opaque. poroticollis
15. Discal elytral intervals impunctate, finely and densely wrinkled. distincta
15. Discal elytral intervals sparsely punctulate, coarsely and somewhat sparsely wrinkled on disc, finely and densely wrinkled at apex. .............................................. 16
16. Median pronotal line impressed, extending from anterior impression to basal impression, impressions deep, pronotal disc swollen on either side of median line, elytra convex apically. tuberculifrons
16'. Median pronotal line absent or indistinct, never deeply impressed, anterior and basal median impressions absent or shallow, pronotal disc not swollen, elytra flattened apically. ........................................... 17
17. Posterior femor not strongly clavate; posterior tibiae metallic generally not reddish brown basally, eyes large, not strongly protruding. fulgens
17'. Posterior femor more strongly clavate; posterior tibia metallic, but generally reddish brown basally, eyes smaller, strongly protruding. subtilis
18. Pronotum distinctly alutaceous, opaque ........................................... 19
18. Pronotum not or slightly alutaceous, shining ........................................... 20
19. Posterior tibia (when viewed from behind) evenly and strongly bowed hypoleuca
19'. Posterior tibia (when viewed from behind) only slightly bowed at about apical third texana
20. Posterior femor with one subapical tooth; rarely with indistinct anterior denticle. 23
20. Posterior femor with two distinct subapical teeth ........................................... 21
21. Six apical antennal segments bicolored or reddish brown (Males). cincticornis
21. Six apical segments black or metallic ........................................... 22
22. Posterior femor reddish brown beneath, dark area above cincticornis
22. Posterior femor black, or metallic, reddish brown basally proxima
23. Posterior femor gradually enlarged from base or basal third ........................................... 24
23'. Posterior femor abruptly clavate from middle texana
24. Pronotum with triangular anterior impression, bordered behind by oblique obtuse ridges, ridges broken medially by median line aequalis
24'. Pronotum with anterior impression absent, or if present, not bordered behind by distinct oblique obtuse ridges ........................................... 25
25. Anterior tibia with apical, tooth-like projection on outer edge ........................................... 26
25. Anterior tibia without apical, tooth-like projection on outer edge ........................................... 28
26. Posterior femor not extending beyond apex of third abdominal segment. bimpressa
26. Posterior femor extending beyond apex of third abdominal segment ........................................... 27
27. Posterior femor reddish brown beneath, dark area above; antennal segments 4-11 bicolored or occasionally reddish brown but not entirely black cincticornis
27'. Posterior femor black or metallic, reddish brown basally, antennal segments 4-11 black or metallic, unicolorous proxima
28. Pronotum except for disc densely punctate bimpressa
28'. Pronotum not densely punctate ........................................... 29
29. Females with apex of last abdominal segment rounded or subangulate; males with denticulate ridge behind subapical tooth on ventral surface of posterior femor. cincticornis
29'. Females with apex of last abdominal segment emarginate or subtruncate; males without denticulate ridge behind subapical tooth on ventral surface of posterior femor rufescens
Genus DONACIA Fabricius

aequalis Say. Dane County, June (Schaeffer, 1925, p. 114); Madison, 25 September, Solidago flowers; Milwaukee County, 23 June; Polk County, 28 October; Wood County, Grand Rapids, 3 July; Wisconsin Rapids, 15 July.

biimpressa Melsheimer. Columbia County, Lodi, 9 June (Marx, 1957, p. 264); Juneau County, Mather, 1 July; Polk County, Amery, 20 August, 23 September, water weeds; Wood County, Cranmoor, 5 June (Marx, 1957, p. 264); June, Hooker USNM (Schaeffer, 1925, p. 98).

cineticornis Newman. Barron County, Rice Lake, 25 August; Bayfield County, 11, 18 August (Marx, 1957, p. 266); Bayfield (Schaeffer, 1925, p. 80); Bayfield, August (var. tenalis Schaeffer) (Schaeffer, 1925, p. 83); Dane County, 4 September, 15 September (Marx, 1957, p. 266); Madison, 21, 27 July, water lily leaves; Florence County, Spread Eagle, 30 July (Marx, 1957, p. 266); Oneida County, Pelican Lake, 10 August (Marx, 1957, p. 266); Polk County, Amery, 29 August, 18 September, yellow water lily; Vilas County, Tenderfoot Lake, July (Schaeffer, 1925, p. 80); Tenderfoot Lake, July (Marx, 1957, p. 266); Washington County, West Bend, 24, 26 June, 17 July, 24 August (Marx, 1957, p. 266); Waukesha County, Muskego, 7-16 August (Marx, 1957, p. 266).

distincta LeConte. Bayfield County, Bayfield, 26 June (Marx, 1957, p. 266); Bayfield County, June (Schaeffer, 1925, p. 104); Dane County, Madison, 22 May, 1 June; University of Wisconsin Arboretum, May; Polk County, Amery, 10 June; Wood County, Cranmoor, 30 October (Marx, 1957, p. 266).

fulgens LeConte. Wisconsin, (one) no data (Marx, 1957, p. 267); Vilas County, Trout Lake, 15 August.

hypoleuca Lacordaire. Wood County, Griffith State Nursery, 3 July.

piscatrix Lacordaire. Calumet County, Forest Junction 31 July; Dane County, Madison, 3 August; Oneida County, 4 July (Marx, 1957, p. 271); Vilas County, Trout Lake, 14 July; Tenderfoot Lake, July (Marx, 1957, p. 271); Walworth County, 3 July (Marx, 1957, p. 271); Elkhorn, July (Schaeffer, 1925, p. 67); Washington County, Cedar Lake, 26 June (Marx, 1957, p. 271); West Bend, 24, 26 June, 17 August (Marx, 1957, p. 271).

porosicollis Lacordaire. Dane County, May (Schaeffer, 1925, p. 102); Madison, 10 May; Mendota Lake, 10 May.

proxima Kirby. Bayfield County, 11 August (Marx, 1957, p. 272); Dane County, Madison, 3 August; Sawyer County, Connors Lake, 3 August; Shawano County, Cloverleaf Lakes, 11 June (Marx, 1957, p. 272); Vilas County, Tenderfoot Lake, July, August (Marx, 1957, p. 272); Tenderfoot Lake, August (Schaeffer, 1925, p. 85); Washington County, West Bend, 17, 22 August (Marx, 1957, p. 272); Waukesha County, Oconomowoc, 16 July.

pubescens LeConte. Vilas County, Trout Lake, August (Marx, 1957, p. 272); Tenderfoot Lake, July (Schaeffer, 1925, p. 92); Tenderfoot Lake, July (Marx, 1957, p. 272).

pubicollis Suffrian. Dane County (Marx, 1957, p. 275); April (Schaeffer, 1925, p. 120).

quadricollis Say. Dane County, Mendota, 29 July; Vilas County, Lower Trout Lake, 12 August; Tenderfoot Lake, June (Schaeffer, 1925, p. 93); Tenderfoot Lake, July (Marx, 1957, p. 272); Washington County, Cedar Lake, 13 July (Marx, 1957, p. 272); West Bend, 17 July (Marx, 1957, p. 272).

rufescens Lacordaire. Wood County, Griffith State Nursery, 8 July.

subtilis Kunze. Barron County, Rice Lake, 25 August; Bayfield County, Bayfield (Marx, 1957, p. 275); Dane County, 23 May, 4 June, 12, 18 August; 12 August (Marx, 1957, p. 275); Madison, 10 May-11 September, 17 October; Mendota Lake, 10 May, 29 June; University of Wisconsin Campus, 7 May; Dodge County, Beaver Dam, 12 June (Marx, 1957, p. 275); Juneau County, Mather, 1 July; Milwaukee County, 23 June, 1, 10 July (Marx, 1957, p. 275); Polk County, Amery, 5 June on burdock; Waukesha County, Muskego, 21 July (Marx, 1957, p. 275); Wood County, Griffith State Nursery, 27 June.

texana Crotch. Dane County, 7 August; Wood County, Griffith State Nursery, 3 July-4 August.
Genus PLATEUMARIS Thomson
diversa Schaeffer. Wisconsin, O. Dietz Coll., ♂ allotype (Schaeffer, 1925, p. 144).
emarginata Kirby. Wisconsin, Knab Coll. (Schaeffer, 1925, p. 135).
fulvipes Lacordaire. Dane County, June, Marshall Coll. (Schaeffer, 1925, p. 146).
germaηi Mannerheim. Wisconsin, Minnesota University Coll. (Schaeffer, 1925, p. 141).
sulcicollis Lacordaire. Bayfield County, Bayfield, Wickham Coll. (Schaeffer, 1925, p. 126); Door County, 25 June; Florence County, 27 June; Polk County, St. Croix Falls, ex Acer saccharinum; Amery, 10 June.

Genus NEOHAEMONIA Szekessy
nigricornis Kirby. Dane County, 10 May, 1 June; Fish Lake, 18 May, sweep of Lemna.

Subfamily II. CHRYSOMELINAE

There are four species of Hydrothassa found in the United States, two of which occur in Wisconsin. They may be found on swamp plants, particularly Ranunculaceae. One species, Prasocuris phellandri, is found in the Northeastern United States, but has not been collected in Wisconsin to date. It may be found on Slum, Water Parsnip.

KEY TO THE GENERA OF THE TRIBE PRASOCURINI

1. Basal margin of pronotum without such a bead; form broader, length less than 2.5 times width; sutural dark stripe abruptly widened around scutellum; ventral surface nearly glabrous .......... . Hydrothassa Thomson

Published by ValpoScholar, 1975
Genus HYDROTASSA Thomson

KEY TO SPECIES OF HYDROTASSA
(after Schaeffer, 1928, p. 288)

1. All elytral intervals impunctate; form narrower and relatively more elongate; size smaller, 3-4 mm ........................................ vittata

1'. Some of the elytral intervals more or less distinctly punctate; form broader and size larger, 4-7 mm ........................................ obliquata

obliquata LeConte. Dane County, University of Wisconsin Arboretum, Teal Pond, 6 May.

vittata Olivier. Bayfield County, 29 June; Milwaukee County, 9 April.

Subfamily III. GALERUCINAE

Genus PYRRHALTA Joannis

Subgenus GALERUCCELLA Crotch

According to Wilcox (1965), North American forms are all considered to belong to the single species, P. nymphaeae, although they make up a rather heterogeneous group. It differs from similar species in the comparatively wide prosternum, lack of apical tibial spurs, and the long, slender symmetrical aedeagus. It is found throughout the United States and Canada. The larvae feed on leaves of Nuphar, Polygonum, Myrica, Brasenia, Nymphaea, and Sagittaria.

nymphaeae (Linnaeus). Clark County, Chili, 7 July; Dane County, 29 May, 17 July; Lake Wingra, 8 July; Mendota Lake, 7 June, 10 July; Madison, 9 May, 21 August; Mazomanie, 21 September, ex Salix; Manitowoc County, Point Beach State Park, 21 September; Vilas County, Tenderfoot Lake, July; Wood County, Griffith State Nursery, 9-16 July; near Nekoosa 28 May, ex waterlily pads.

Family CURCULIONIDAE

Tribe ERIRHININI

Subtribe HYDRONOMI

Tanner (1943) included 11 genera and 53 species in this aquatic or semi-aquatic subtribe. Eggs are deposited upon and in stems and roots of aquatic plants. Some species simply drop their eggs on leaves or on the soil and grass of pasture land.

The members of Bagous, the largest genus in this group, feed on a variety of aquatic plants. They have been collected on Carex, Eleocharis, Cyperus, Potamogeton, and Ptilinimum. Species of Tanysphyrus may be found feeding on Lemna, and of Endalus on Scirpus and Typha.

There is presently only one economically important species, Lissorhoptrus simplex (Say), which is a serious pest of cultivated rice. It is widely distributed throughout the eastern United States, and has been found in Columbia, Dane and LaCross counties in Wisconsin. The larva, known as the rice-root maggot destroys the roots, while the adult, "rice water weevil", feeds on the foliage.

KEY TO GENERA OF WISCONSIN HYDRONOMI

1. Third segment of hind tarsus emarginate or bilobed ........................................ 4
2. Third segment of hind tarsus simple, legs long and slender ................................... 2
2'. Club of antenna partly smooth and shining; funicle composed of 6 segments; prosternum excavated ........................................ Lissorhoptrus
3. Pronotum feebly constricted in front ........................................ Bagous
3. Pronotum very strongly constricted and tubulate in front (Recorded from Iowa, no Wisconsin record) .................................. *Pnigodes*

4. Beak curved; funicle composed of six segments, the 2nd short; 3rd segment of tarsus broad, deeply bilobed, last segment short. .................. 5

4'. Beak straight; funicle either 6 or 7 segmented, 2nd segment long; last segment of tarsus long. ................................. 6

5. Last segment of tarsus broad, the claws well separated ........................... 7

5'. Last segment of tarsus narrow, projecting beyond the lobes of the 3rd, the claws slender ............................... *Onychylis*

6. Front and middle tibia serrate on the inner side; 3rd tarsal segment narrow, slightly emarginate; funicle composed of six segments .............................. *Lixellus*

6'. Front and middle tibia not serrate within; 3rd tarsal segment broad, deeply bilobed, funicle composed of seven segments. ........................... *Anchodemus*

7. Elytra but slightly if any wider than the thorax; length usually 2 mm or more . . . ............................. *

7'. Elytra much wider than the thorax; length less than 1.5 mm. ........................ *Tanysphyrus*

Genus **ANCHODEMUS** LeConte

*angustus* LeConte. Dane County, 20 June, 17 July, 14 September.

Genus **BAGOUS** Germar

**KEY TO WISCONSIN SPECIES OF BAGOUS**

1. Tarsus short; prothorax scarred with deep impressions ............. *carinatus*

2. Tarsus long, 4th segment as long as 2nd and 3rd combined, the first three segments narrow with long white setae; beak one and one-half times as long as the prothorax ....................... *longirostris*

2'. Tarsus long, 4th segment less in length than the 2nd and 3rd combined, the first three segments slightly broader than the above; prothorax finely rugose; beak only as long as prothorax ............................. *americanus*

*americanus* LeConte. Dane County, 20 July; Walworth County, Elkhorn (Tanner, 1943, p. 20); Washington County, West Bend (Tanner, 1943, p. 20).

carinatus* Blatchley. Milwaukee County, 6 July; Wood County, Cranmoor (Tanner, 1943, p. 23).


Genus **ENDALUS** Laporte

limatulus* (Gyllenhali). Milwaukee County, 6 July.

Genus **LISSORHOPTRUS** LeConte

simplex* (Say). Columbia County, Lodi, Gibraltar Bog, 20 May; Dane County, 29 May, 4 June; LaCrosse County, 7 August.

Genus **LIXELLUS** LeConte

filiformis* (LeConte). Columbia County, Lodi, Gibraltar Bog, 20 May; Dane County, 10 May; Farm Pond on Route KP, 18 May.

Genus **ONYCHYLIS** LeConte

* Nigrirrostris* (Boheman). Columbia County, Lodi, Gibraltar Bog, 20 May; Dane County, 22
May-28 June, 17 July, 14 September; Dane County, Madison, University of Wisconsin Campus, 15 July, at light; University of Wisconsin Arboretum, 26 June, in marsh; Fish Lake, 18 May; Farm Pond on Route KP, 18 May.

Genus TANYSPHYRUS Germar

lemnae (Fabricius). Dane County, 18 May, 24, 27 June; Madison, 1 May; Farm Pond on Route KP, 18 May; Milwaukee County, 10 July.

ACKNOWLEDGMENTS

We are grateful to Dr. R. White, U.S.D.A., United States National Museum and to Dr. V. V. Board, Arkansas College, Batesville for aid in determining our material. Our thanks are owing to Prof. Roy D. Shenefelt for his help and encouragement with the manuscript.

SELECTED REFERENCES


