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Volume 112, article 3, pages 191–278,
figures 1–54

Issued July 22, 1957

Price: $1.50 a copy

INTRODUCTION

THE PRESENT REVIEW is an effort to bring together the existing knowledge of the New World beetles of the subgenus *Donacia*, to make available the rather extensive data gathered on their geographical distribution and dates of occurrence, to revise the species in the light of our present-day concepts, and to provide a key to the species as herein recognized. It is hoped that time and circumstances will permit the writer at some future date to prepare a similar paper on the other two subgenera of Nearctic *Donacia*, *Poecilocera* and *Plateumaris*.

In the preparation of this review collections from 30 institutions and individuals have been studied, determined, and labeled. The material examined totals over 8700 specimens. It will be noticed that some specimens in the collections returned some time ago bear determination labels with subspecific or "variety" (in the Schaeffer sense) names which are herein now treated as synonyms. This, of course, was unavoidable as more material and further study made the change in their status necessary.

ACKNOWLEDGMENTS

For the loan of specimens the writer is indebted to the following persons and to the institutions which they represent: Mr. A. T. McClay, University of California at Davis; Dr. W. J. Brown, Division of Entomology, Canada Department of Agriculture; Dr. T. H. Hubbell, University of Michigan; Mr. P. J. Spangler, University of Missouri; Dr. David Dunavan, Clemson Agricultural College; Dr. F. A. Fenton, Oklahoma Agricultural and Mechanical College; Dr. L. W. Quate, University of Nebraska; Mr. H. B. Leech, California Academy of Sciences; Dr. R. H. Beamer, University of Kansas; Dr. H. Dietrich, Cornell University; Dr. Karl P. Schmidt, Chicago Natural History Museum; Mr. L. S. Dillon, formerly with the Reading Public Museum, now at Agricultural and Mechanical College of Texas; Dr. D. D. Millspaugh, Iowa Wesleyan College; Dr. A. N. Tissot, University of Florida; Mr. J. A. G. Rehn, Academy of Natural Sciences of Philadelphia; Dr. W. F. Barr, University of Idaho; Dr. Mont A. Cazier and Mr. John C. Pallister, the American Museum of Natural History; Mr. J. A. Wilcox, New York State Museum; and Dr. W. H. Anderson and Mr. G. B. Vogt, United States National Museum. Messrs. R. R. Dreisbach, R. Latham, J. Schuh, B. Summerville, J. W. Green, and Dr. J. G. Edwards kindly lent all the specimens in their personal collections.

The author appreciates the courtesies extended at the time of his visits by Dr. D. L. Wray, North Carolina Department of Agriculture, and Dr. P. J. Darlington, Jr., Museum of Comparative Zoölogy, and the opportunity of examining the LeConte types at the latter institution.

To Mr. J. A. G. Rehn, Curator, Insects, to Mrs. Venia T. Phillips, Librarian, and to Miss Mary Pearsall, her assistant, all of the Academy of Natural Sciences of Philadelphia, sincere thanks are given for aid rendered.

The writer is deeply indebted to Miss Marjorie Statham, who not only did the drawings, which, it is hoped, will make the dichotomies of the key clearer, but also prepared the distributional maps, and to Mrs. Carolyn W. Cazier who typed the manuscript.

Finally to Dr. Mont A. Cazier sincerest thanks and appreciation are due not only for his constant encouragement, guidance, and help but even more for the many, many hours of his time, which he so generously devoted to working with the writer, especially on certain of the more difficult phases of the study. The author is also indebted to him, and to the Publications Committee of the American Museum of Natural History, for arranging to have the paper published by that institution.

HISTORY

The genus *Donacia* (Greek *donax*, a reed) was established by Fabricius (1775) who based it on two Palearctic species, *Donacia crassipes* and *Donacia simplex*, which he described.

In 1795 Olivier described the first Nearctic species of *Donacia*, *D. palmata* and *D. caerulea*. Since that time 102 different names have been proposed for the New World species, subspecies, and "varieties" of the genus by 21 authors. Schaeffer leads the list with

23 names. Lacordaire follows with 21; LeConte, 17; Kirby, seven; Say, six; Melsheimer, five; Newman, three; Olivier, Ahrens, Germar, Mannerheim, Suffrian, and Mead, two each. Kunze, Couper, Crotch, Leng, Knab, Blatchley, Weise, and Hatch had one each.

The principal systematic works on the Nearctic species of the genus, containing not only descriptions of new species but keys for identification, were written by Lacordaire (1845), LeConte (1851), Crotch (1873), Leng (1891), MacGillivray (1903), Blatchley (1910), and Schaeffer (1925). The last-named is the most recent and exhaustive study of the Donaciidae of the New World, and in it the author resolves many problems that pertain to the systematics of the group.

Tabulated below are the North American species and subspecies of the genus *Donacia* as recognized by the most recent authors—Schaeffer (1925) and Mead (1938). As pointed out by Mead, Schaeffer used the term "variety" for the subspecies he described, and they are so listed here.

SUBGENUS *DONACIA* FABRICIUS

Species	Subspecies
militaris Lacordaire	
piscatrix Lacordaire	*congener* LeConte
palmata Olivier	
texana Crotch	*minor* Schaeffer
rufescens Lacordaire	
hypoleuca Lacordaire	
edentata Schaeffer	
parvidens Schaeffer	
cincticornis Newman	*tryphera* Schaeffer
	tenuis Schaeffer
	rufipennis Lacordaire
	antillarum Suffrian
proxima Kirby	*californica* LeConte
caerulea Olivier	
magnifica LeConte	
hirticollis Kirby	
pubescens LeConte	
quadricollis Say	
rugosa LeConte	
assimilis Lacordaire	
biimpressa Melsheimer	*limonia* Schaeffer
porosicollis Lacordaire	
distincta LeConte	*occidentalis* Mead
subtilis Kunze	*fulgens* LeConte
	magistrigata Mead
tuberculifrons Schaeffer	
vicina Lacordaire	
liebecki Schaeffer	
megacornis Blatchley	
aequalis Say	
dissimilis Schaeffer	
rufa Say	
pubicollis Suffrian	
Total: 29 species	11 subspecies

SUBGENUS *POECILOCERA* SCHAEFFER

harrisi Le Conte

SUBGENUS *PLATEUMARIS* THOMSON

sulcicollis Lacordaire	
flavipes Kirby	*shoemakeri* Schaeffer
	lodingi Schaeffer
nitida Germar	
notmani Schaeffer	
emarginata Kirby	*frosti* Schaeffer
metallica Ahrens	
germari Mannerheim	
diversa Schaeffer	
fulvipes Lacordaire	
pusilla Say	*pyritosa* LeConte
	robusta Schaeffer
wallisi Schaeffer	
dubia Schaeffer	
neomexicana Schaeffer	
longicollis Schaeffer	
vermiculata Schaeffer	
idola Hatch	
Total: 16 species	5 subspecies
Total for genus: 46 species	16 subspecies

In the present paper the following are recognized in the subgenus *Donacia:*

Species	Subspecies
pubescens LeConte	
pubicollis Suffrian	
hirticollis Kirby	
militaris Lacordaire	
edentata Schaeffer	
rugosa LeConte	
rufa Say	
assimilis Lacordaire	
vicina Lacordaire	
dissimilis Schaeffer	
piscatrix Lacordaire	
palmata Olivier	*angustipes*, new subspecies
magnifica LeConte	
quadricollis Say	
megacornis Blatchley	
liebecki Schaeffer	
aequalis Say	
porosicollis Lacordaire	
distincta LeConte	

Species	Subspecies
cazieri, new species	
biimpressa Melsheimer	
tuberculifrons Schaeffer	
fulgens LeConte	
subtilis Kunze	
hypoleuca Lacordaire	
texana Crotch	
caerulea Olivier	
cincticornis Newman	
proxima Kirby	*californica* LeConte
parvidens Schaeffer	
rufescens Lacordaire	
Total: 31 species	2 subspecies

DISTRIBUTION

The genus *Donacia* is world wide in distribution, being found on every continent except South America. The greatest number of species occur in the temperate zones, particularly the North Temperate, although a few species are found in tropical and subtropical regions. No representative of the genus is cosmopolitan nor do any of the Nearctic species appear in other faunal realms, with the sole exception of the extreme northern portion of the Neotropical.

The New World species of the genus *Donacia* are confined with but very few exceptions to the United States and Canada, with no representatives, as stated above, in South America. Specimens of *Donacia cincticornis* Newman, formerly known as *D. cincticornis antillarum* Suffrian, have been examined which were collected in Cuba. Schaeffer (1925) lists his variety of *cincticornis* (*tryphera*) as occurring in Mexico and Guatemala as well as eastern United States. Blackwelder (1946) lists *D. cincticornis rufipennis* Lacordaire and *D. proxima* Kirby for Mexico, citing the record for the latter as probably erroneous. It does appear extremely unlikely that *proxima* occurs as far south as Mexico. However, *piscatrix* and a new subspecies of *palmata* (*angustipes*) have been collected in numbers along the southwestern border of Texas, so it would seem quite probable that they will be found in northern Mexico at least.

Six species of the subgenus *Donacia* (*distincta*, *fulgens*, *hirticollis*, *proxima*, *pubescens*, and *subtilis*) occur in the east and the far west and several of them in much of the intervening country also. *Donacia magnifica* ranges from Quebec through British Columbia, but in the United States it seems to occur only in Wyoming, Utah, and California.

Generally speaking, the balance of the species apparently are confined to those sections of both Canada and the United States lying east of the Rockies. Some, such as *aequalis* and *cincticornis*, are quite widely distributed over this entire area. Others, *assimilis* and *edentata*, for example, are found only in states along the Atlantic coast. No doubt additional collecting throughout the region between the Appalachians and the Rockies will fill in many of the distributional gaps which now exist. These remarks on distribution are based solely on specimens seen, as are the maps showing the geographical distribution of each species, which follow.

BIOLOGY

Apparently the first contribution to the biology of North American *Donacia* was made by Packard (1877) who in a brief note described the larva and cocoon of *Donacia proxima* Kirby. Sanderson (1900) investigated the respiration of the submerged larvae and also described the eggs and larvae of *D. piscatrix* Lacordaire. MacGillivray (1903) discussed the beetles' habits and also described the eggs, larvae, and cocoons of several species. But the most important and exhaustive studies were made by Hoffman (1940a, 1940b, 1940c). In these papers he treats in detail the eggs and larvae of 10 species of the genus, nine of which are in the subgenus *Donacia*, and gives keys for the identification of the species in these immature stages. He also discusses at considerable length the various phases of their life histories and their ecological relationships. In the present review Hoffman's studies are heavily drawn upon.

Adult *Donacia* are usually found in association with aquatic or semi-aquatic plants, and in the case of most species the largest part of their adult lives is spent above the surface of the water. As imagoes they may occur on the flowers, leaves, or stems of the preferred species of plant. They are generally rapid fliers, and when alarmed most species will take flight to avoid capture, alighting on any plant convenient to them. However, each species as far as is known has a definite pref-

erence for a single host plant or at the most several species of plants which occupy the same habitat as that of the usual host plant. Hoffman (1940a) found the adults of seven species of the subgenus confined to one plant and only two to more than one plant.

In those species of which the life history is known, the eggs are deposited by the female on various parts of the selected plant, the location and method varying with the species. Generally the eggs are in contact with or below the surface of the water. As would be expected from Hoffman's findings with respect to the adults, seven species used only a single species of plant for oviposition, but of two others, one species used two kinds of plants, and the second, six.

When the eggs hatch, the larvae usually make their way to the roots or the rhizome of a host plant, dropping down through the water or crawling down the stem. But the larvae of some species may also spend the larval stage on a portion of the stem. Here on the location selected they feed. According to Hoffman, six species of the subgenus were found on only the single plant associate of the adult. Three other species, however, were found not only on the food plants of the adults but on one other plant, or as many as five other plants, as well.

When the time comes to pupate, a cocoon is formed, very often in the same position on the plant in which the larvae occurred. Hoffman (1940a) found that the time of cocoon formation and the duration of the cocoon stage varied with the species.

Hoffman is the authority for the statement that some plants support more than one species of *Donacia*. Actually personal field experience confirms this and indicates that species of the genera *Sparganium*, *Nymphaea*, and *Nuphar* are the favorite plant associates of more species of the subgenus *Donacia* than any others. A list of plant genera and the *Donacia* species of the subgenus collected in at least fair numbers on each follows:

Nymphaea: White water lily
- *cincticornis* Newman
- *liebecki* Schaeffer
- *megacornis* Blatchley
- *militaris* Lacordaire
- *parvidens* Schaeffer
- *rufescens* Lacordaire

Sparganium: Bur reed
- *aequalis* Say
- *assimilis* Lacordaire
- *fulgens* LeConte
- *hirticollis* Kirby
- *subtilis* Kunze

Nuphar: Yellow water lily
- *palmata* Olivier
- *piscatrix* Lacordaire
- *proxima* Kirby
- *texana* Crotch

Pontederia: Pickerelweed
- *fulgens* LeConte
- *rugosa* LeConte
- *subtilis* Kunze

Sagittaria: Arrowhead
- *aequalis* Say
- *rufa* Say

Eleocharis: Spike rush
- *fulgens* LeConte
- *rugosa* LeConte

Acorus: Sweet flag
- *aequalis* Say
- *subtilis* Kunze

Scirpus: Club rush
- *fulgens* LeConte
- *subtilis* Kunze

Peltandra: Arrow arum
- *rufa* Say

Brasenia: Water shield
- *cincticornis* Newman

Eriocaulon: Pipewort
- *liebecki* Schaeffer

It is interesting to note that the species partial to *Nymphaea*, a genus apparently confined almost entirely to the eastern half of the country, are not found in the western half of the country, judging from the material examined, while some species associating with such widely distributed genera as *Nuphar* and *Sparganium* are found from coast to coast.

MORPHOLOGICAL CHARACTERS OF TAXONOMIC VALUE

A brief discussion of the morphological characters used in the separation of the various species follows. It will be noted that many members of the subgenus bear a marked resemblance to one another, which makes their recognition somewhat difficult. In addition many of the possible diagnostic characters show such a wide range of variability in even a small sample as to render them useless for identifications. Further-

more a character selected for distinguishing the species may show a sexual difference.

Vestiture

The under surface of most species is more or less pubescent. In some, such as *porosicollis*, *distincta*, *tuberculifrons*, *subtilis*, and *fulgens*, it may or may not be sufficiently pubescent to obscure the surface sculpturing. In those species that are associated with the yellow and white water lilies, (*Nuphar* and *Nymphaea*, respectively), *cincticornis* and *proxima*, for example, it is always densely pubescent.

Generally speaking, the upper surface, at least the pronotum and the elytra, is not pubescent. *Militaris*, however, has the inflexed pronotal margins pubescent, especially anteriorly, and in *pubescens* both the pronotal disc and elytra are densely so. The other exceptions are *hirticollis* and *pubicollis* which have the pronotal disc pubescent in varying degrees.

Color

The color, at least of the upper surface, is generally not reliable as a distinguishing character and has not been made use of in the separation of the various species. Many species resemble one another in this respect, and in addition there is a wide range of variability within the species. Whether the upper surface is shining as in *assimilis* or opaque as in *rugosa* is due mostly to the surface sculpture rather than to the color itself.

The fact that the antennal segments, the posterior tibiae, and femora may be bicolored or unicolorous has provided extremely useful characters for separating many species. Spots of a different color on the head in the case of *palmata* were a good key character.

Head

Relatively few characters of the head and its appendages were found of use other than the color of the antennal segments. In two species (*pubicollis* and *hirticollis*) the over-all length of the antennae with respect to the length of the beetle provided a good character. The length of the third segment compared with that of the scape was helpful with *rugosa* and *megacornis*. In the separation of *subtilis* from *fulgens*, two closely related and quite similar species, the relative size of the eyes and the degree of protrusion were good specific characters.

Thorax

Much use has been made of the characters of the pronotum, particularly the sculpture of the disc. In a large group of species it is deeply and densely punctate or rugose, or strigose, the punctures being large (such as in *subtilis* and *liebecki*) while in the balance of the species, an equally large number (*cincticornis* and *proxima*, for example) has the pronotal disc either impunctate or shallowly and sparsely punctate, the punctures being small.

The presence or absence of a pronotal median line and its characteristics, length and whether impressed, fine, or obsolete, are good specific characters with such species as *tuberculifrons*, *subtilis*, and *fulgens*.

The anterior pronotal lateral tubercles may be distinct, prominent, and delimited internally by a deep groove (*rufa*, *piscatrix*, *aequalis*, for example); moderately distinct but not prominent (*cincticornis*, *proxima*); or obsolete or absent (*fulgens*, *subtilis*, *cazieri*).

The anterior pronotal median impression may be distinct and delimited behind by oblique obtuse ridges (*rufa*, *aequalis*); present but not distinctly limited behind (*tuberculifrons*); or absent (*cincticornis*, *subtilis*).

The posterior median pronotal impression is relatively deep and distinct in *tuberculifrons* and *proxima;* present but vague in *parvidens;* absent or obsolete in *liebecki* and *quadricollis*.

In *rufa* and *distincta*, for example, the anterior pronotal angles are prominent and may even be produced laterally, but in most species they are merely distinct but not prominent.

The lateral pronotal margins, when viewed from above, may be more or less straight (*fulgens*), strongly sinuate (*rufa*), feebly sinuate (*tuberculifrons*), or somewhat constricted medially (*rugosa*). In their relative position with respect to one another they may be more or less parallel (*fulgens*), narrowed towards the apex (*hypoleuca*), or converging towards the base (*aequalis*).

Elytra

The elytra furnish a number of characters

that are extremely useful in the separation of the various species. The elytral epipleura in most species are narrower than the outer elytral interval and limited at least in part by a ridge. In *pubescens* and *quadricollis*, however, this is not the case, for the elytral epipleura are wider than the outer interval, and the usual ridge is absent.

While in most species the outer apical elytral angle is convex, in *liebecki* it is explanate.

The sculpturing of the elytral intervals, especially on the disc, has been employed in a number of instances. In *rufa*, *assimilis*, *biimpressa*, *subtilis*, and *fulgens*, for example, the intervals are sparsely and coarsely wrinkled and generally sparsely and shallowly punctulate also. On the other hand, *distincta*, *cazieri*, and *rugosa* have the elytral intervals finely and densely wrinkled and impunctate.

The convexity of the elytra apically was useful in the separation of three species. This particular character is best seen if the beetle is viewed from the side. In *tuberculifrons* the elytra are convex towards the apex, while in *subtilis* and *fulgens* they are flattened.

Legs

The characters presented by the legs, particularly those of the posterior, have been much used not only in the identification of species but also in the diagnosis of groups. Of these characters the presence or absence of a subapical tooth on the ventral surface of the posterior femora has been the most important. In one small group of species, which consists of *assimilis*, *vicina*, *dissimilis*, and *pubicollis*, the tooth is absent. This is also true of the females of *militaris* and *rufa*. In *rugosa* and *edentata* this tooth may be either present or absent, though in *edentata* it is generally lacking. In the other species of the subgenus there is always at least one tooth and sometimes two teeth, as in the case of the males of *rufa*, *cincticornis*, and *proxima*.

In the group that lacks the posterior femoral tooth the shape of the femora itself was helpful. In *vicina* and *dissimilis* it was feebly clavate and in *rugosa*, *rufa*, and *assimilis* strongly clavate. In the separation of *biimpressa* from *tuberculifrons*, *subtilis*, and *fulgens*, it was found that in the former the posterior femora were not only shorter but gradually enlarge from the base to the apical quarter, while in the other three species the enlarging starts from the basal quarter. In *magnifica* and the males of *militaris* and *cincticornis* the posterior femora extend to or beyond the elytral apices, but in *quadricollis*, *megacornis*, and most of the other species they do not reach the elytral apices.

The posterior tibiae, which, when viewed from behind, are frequently only slightly bent at the apical third, are strongly and evenly bowed in *hypoleuca*. The only other posterior tibial character used is the long, spine-like projection on the inner side at the apex, which is apparently peculiar to the male of *militaris*.

But little use comparatively was made of the characters of the middle and anterior tibiae. The apical tooth-like projection on the inner side near the tibial spur of the middle tibiae, somewhat difficult to see in some specimens, is diagnostic of the group that comprises *palmata* and *piscatrix*. Whether the anterior tibiae have an apical tooth-like projection on the outer edge or not is a character that is helpful in the identification of *rufescens* and certain specimens of *parvidens* as well as in the separation of variable groups within species such as *cincticornis* and *biimpressa*.

Tarsal characters also have been little employed. The first segment of the anterior tarsi being as long as or longer than the fifth is diagnostic of *texana*. The subcordate first anterior tarsal segment is peculiar to the male of *palmata* proper.

Abdomen

In the differentiation of the sexes the last ventral abdominal segment provides the best external character. In the male there is always a relatively deep depression at the middle of the apex. This is completely lacking in the female.

Abdominal characters are also useful in the separation of some of the closely related species such as *piscatrix* and *palmata*. In the male of the former the first ventral abdominal segment is concave medially, usually deeply so, while in the latter it is flattened medially or only just slightly concave. The female of *piscatrix* has a blunt, tooth-like projection at the apex of the last ventral abdominal seg-

ment, which is more obvious in some specimens than in others. In the female of *palmata* the apex of this segment is triangular or subtriangular. The apex of this same segment is also helpful for the differentiation between the females of *cincticornis* and *rufescens*. In *cincticornis* it is rounded or subangulate, in *rufescens* emarginate or subtruncate.

Genitalia

The male genitalia of over half of the species of the subgenus were extracted, and for comparison simple outline drawings were made of the distal half of the aedeagus. It was found that a number of species, which in most other respects were quite different, showed a marked similarity in this particular character. Such diverse species as *porosicollis*, *texana*, and *palmata* were virtually identical in this one respect. The same was true of *biimpressa*, *aequalis*, and certain specimens of *subtilis*. The aedeagal apices of *cincticornis*, *magnifica*, *proxima*, and *caerulea* also showed a noticeable resemblance to one another. As in many of the external morphological characters there was also considerable variability within the various species. This is touched upon very briefly under *cincticornis*.

The female genitalia of the species of this subgenus are softer and less chitinized than those of *Plateumaris* and are therefore much more prone to distortion upon extraction and when dried. No effort was made in this study to extract or compare them.

While the genitalia of neither the male nor female have been used in the differentiation of the various species, it is recognized as being likely that detailed and careful study of the entire genitalic structures of both sexes may result in the discovery of very useful, specifically diagnostic characters.

GENERAL REMARKS

In the measurements given, the length of the beetle is the distance from the apical margin of the pronotum to the apex of the elytra, and the width of the pronotum is the distance between the sides at the widest point of the pronotum.

Distribution records from faunal lists such as Smith's "Report of the insects of New Jersey" have not been included. Unless otherwise noted, all locality records are based on specimens actually seen and determined. That there are errors in the identifications is probably inevitable despite every precaution, but it is hoped that they are at a minimum.

Key to Genera

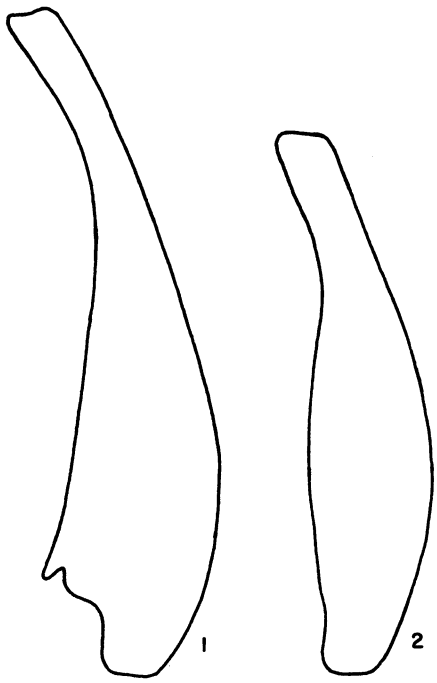
1. Elytra with outer apical angles produced into a strong spine; front of head with median elevated projection extending over base of antennae; base of antennae approximate, separated by width or less than width of the scape at its center; third tarsal segment small, entire, not deeply bilobed; tarsal segments 1, 2, and 3 without dense pads beneath ..... *Neohaemonia* Székessy
2. Elytra with outer apical angles not produced into a strong spine; front of head without 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..... *Donacia* Fabricius

Key to Subgenera

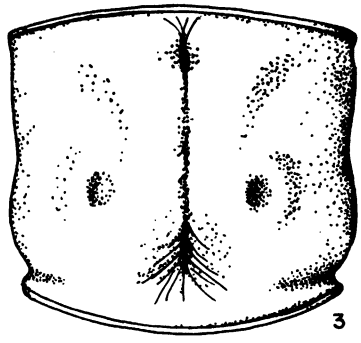
1. Sutural margin of elytra sinuate near apex..2
   Sutural margin of elytra straight to apex..... ..... *Donacia* Fabricius
2. Posterior tibiae serrate or denticulate internally; third antennal segment longer than fourth..... *Poecilocera* Schaeffer
   Posterior tibiae not serrate or denticulate internally; third antennal segment shorter than fourth..... *Plateumaris* Thomson

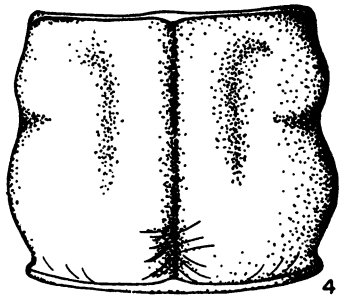
Key to the Species of the Subgenus *Donacia*

1. Pronotal disc pubescent.....2
   Pronotal disc glabrous.....4
2. Elytra pubescent..... *pubescens*
   Elytra glabrous.....3
3. Posterior femora reddish brown; antennae long, extending to or beyond middle of elytra..... *pubicollis*
   Posterior femora not reddish brown; antennae short, extending to basal third of elytra... ..... *hirticollis*
4. Posterior femora with one or more subapical teeth on ventral surface (fig. 1).....11
   Posterior femora without subapical teeth on ventral surface (fig. 2).....5
5. Inflexed pronotal margins bare.....6
   Inflexed pronotal margins pubescent, especially in anterior portion (females)..... ..... *militaris*
6. Pronotum with or without impressed median line; if present, it extends to basal impres-



FIGS. 1, 2. Posterior femur, female. 1. *Donacia piscatrix*. 2. *D. vicina*.





FIGS. 3, 4. Pronotum. 3. *Donacia parvidens*. 4. *D. edentata*.

sion but not to basal margin (fig. 3).....7
Pronotum with impressed median line extending to basal margin (fig. 4).....*edentata*

7. Posterior femora feebly clavate, as wide at base as at apex (fig. 2); strial punctures small.....10
Posterior femora strongly clavate, narrower at base than at apex (fig. 1); strial punctures large and deep and sometimes coalescent..8

8. Elytral intervals sparsely and often coarsely wrinkled, surface shining; pronotum irregularly sculptured with punctures, wrinkles, or smooth areas.....9
Elytral intervals finely and densely wrinkled, surface opaque; pronotum rugosely punctate throughout, sometimes mixed with deep transverse striae.....*rugosa*

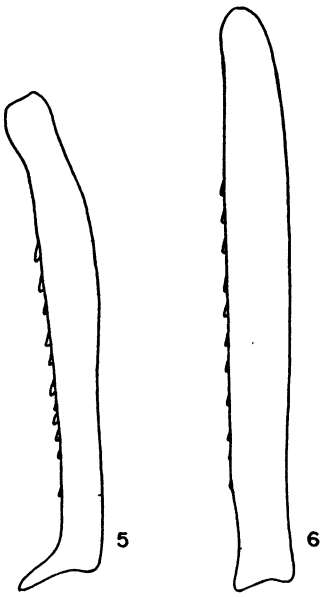
9. Pronotum alutaceous; anterior lateral pronotal tubercles delimited above and behind by a deep groove (females).....*rufa*
Pronotum not alutaceous, shining; anterior lateral pronotal tubercles not delimited above and behind by a deep groove.....
.....*assimilis*

10. Pronotum shining; proepisterna with large pubescent area above coxae; anterior lateral pronotal tubercles not prominent and not bordered internally by a deep groove.....
.....*vicina*
Pronotum alutaceous; proepisterna with narrow pubescent area in front of and above coxae; anterior lateral pronotal tubercles prominent, bordered internally by a wide deep groove.....*dissimilis*

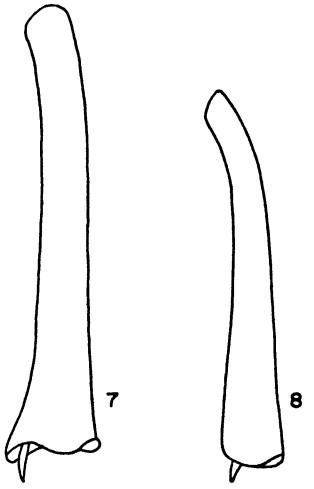
11. Posterior tibiae with long, spine-like projection at apex on inner side (fig. 5); inflexed pronotal margins pubescent (males).....
.....*militaris*
Posterior tibiae without spine-like apical projection (fig. 6) or sometimes with blunt (not spine-like) projection on inner side; inflexed pronotal margins glabrous.....12

12. Middle tibiae with apical, tooth-like projection on inner side near tibial spur (fig. 7).13
Middle tibiae without apical tooth-like projection (fig. 8).....14

13. Head without small indistinct reddish spots between eyes opposite their hind margin; first segment of anterior tarsi not enlarged or subcordate (fig. 9); first ventral abdominal segment usually deeply concave medially in males, in females last abdominal segment with blunt, tooth-like, apical projection.....*piscatrix*
Head usually with small indistinct reddish spots between eyes opposite their hind margin; first segment of anterior tarsi enlarged or subcordate in males (northeastern states)



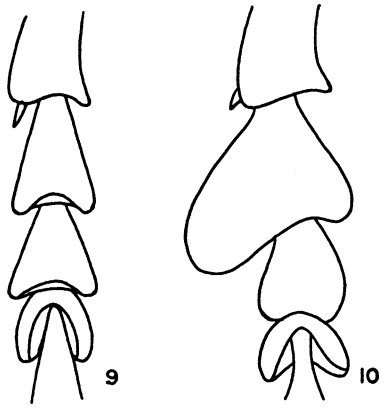
FIGS. 5, 6. Posterior tibia, male. 5. *Donacia militaris*. 6. *D. proxima*.



FIGS. 7, 8. Middle tibia. 7. *Donacia palmata*. 8. *D. subtilis*.

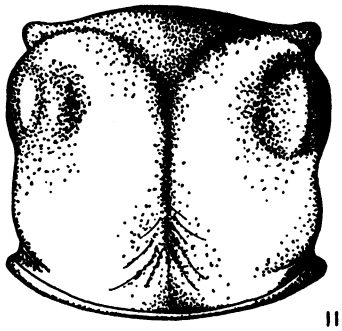
(fig. 10); first ventral abdominal segment flat or slightly concave medially in males, in females last abdominal segment usually triangular or subtriangular.....*palmata*

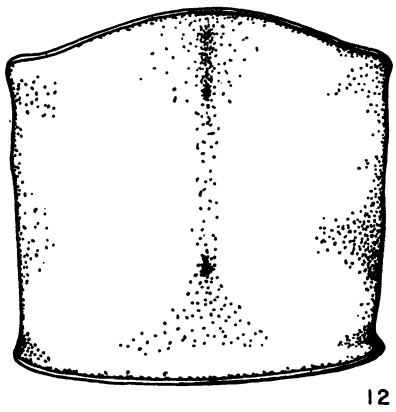
14. Pronotal disc deeply and usually densely punctate, rugose or densely strigose, punctures large.....15
    Pronotal disc impunctate or more or less shallowly and sparsely punctate, not rugose or densely strigose, sometimes finely wrinkled, punctures if present usually small.....35



FIGS. 9, 10. First anterior tarsal segment, male. 9. *Donacia piscatrix*. 10. *D. palmata*.

15. Posterior femora with two subapical teeth on inner surface (males).....*magnifica*
    Posterior femora with one subapical tooth on inner surface.....16
16. Posterior femora extending to or beyond elytral apices (females).....*magnifica*
    Posterior femora not extending to elytral apices.....17
17. Elytral epipleura wider than outer interval and not limited by a ridge.....*quadricollis*
    Elytral epipleura narrower than outer interval and usually limited by a ridge.....18
18. Posterior femora reddish brown or at least almost half reddish brown.....19
    Posterior femora black or metallic or at most with small, frequently indistinct, reddish brown area at base.....25
19. Antennal segments reddish brown, occasionally with vague darkish areas apically...20
    Antennal segments black or metallic, with reddish brown basally.....22
20. Antennae with third segment subequal to scape (in part).....*rugosa*
    Antennae with third segment shorter than scape.....21
21. Antennae with second segment subequal to third.....*megacornis*
    Antennae with second segment shorter than third.....*porosicollis*
22. Antennae with third segment subequal to scape (in part).....*rugosa*
    Antennae with third segment shorter than scape.....23
23. Elytra with outer apical angles explanate.....*liebecki*
    Elytra with outer apical angles rounded and convex.....24
24. Pronotum with anterior, median, V-shaped impression bordered behind by oblique ob-





FIGS. 11, 12. Pronotum. 11. *Donacia aequalis.* 12. *D. porosicollis.*

tuse ridges, ridges broken medially by median line (fig. 11).....*aequalis*

Pronotum without oblique obtuse ridges bordering V-shaped anterior median impression (fig. 12).....*porosicollis*

25. Metasternum and first abdominal segment densely and somewhat coarsely punctate, sparsely pubescent, pubescence not obscuring surface structure.....26

Metasternum and first abdominal segment densely and finely punctulate, densely pubescent, pubescence obscuring surface structure.....31

26. Discal elytral intervals impunctate, finely and densely wrinkled.....27

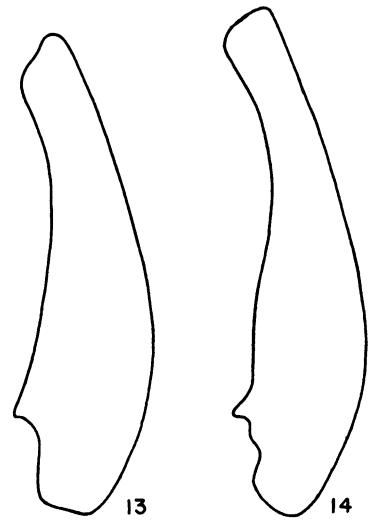
Discal elytral intervals sparsely and shallowly punctulate, coarsely and somewhat sparsely wrinkled on disc, finely and densely wrinkled at apex.....28

27. Anterior lateral pronotal tubercles quite prominent and bordered internally by groove, anterior pronotal angles prominent, frequently produced laterally.....*distincta*

Anterior lateral pronotal tubercles obsolete, not bordered internally by groove, anterior pronotal angles not prominent.....*cazieri*

28. Posterior femora gradually enlarging from base to apical quarter (fig. 13), not extending to apical margin of third abdominal segment.....*biimpressa*

Posterior femora enlarging from basal quarter to apical quarter (fig. 14), usually extending to or beyond apical margin of third abdominal segment.....29



FIGS. 13, 14. Posterior femur. 13. *Donacia biimpressa.* 14. *D. tuberculifrons.*

29. Median pronotal line impressed, extending from anterior impression to basal impression (fig. 15), impressions deep, pronotal disc swollen on either side on median line, elytra convex apically.....*tuberculifrons*

Median pronotal line absent or indistinct, never deeply impressed (fig. 16), anterior and basal median impressions absent or shallow, pronotal disc not swollen, elytra flattened apically.....30

30. Posterior femora not strongly clavate (fig. 17); posterior tibiae metallic, generally not reddish brown basally; eyes large, not strongly protruding.....*fulgens*

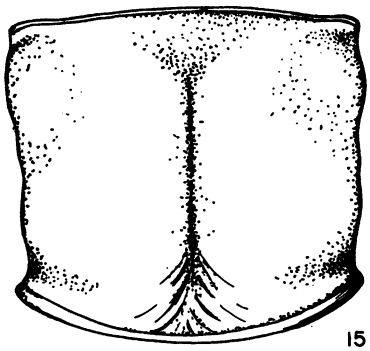
Posterior femora more strongly clavate (fig. 18); posterior tibiae metallic, but generally reddish brown basally; eyes smaller, strongly protruding.....*subtilis*

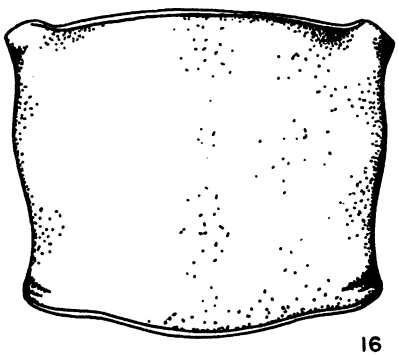
31. Spaces between pronotal punctures smooth, shiny.....32

Spaces between pronotal punctures minutely punctulate and rugulose, opaque.....*porosicollis*

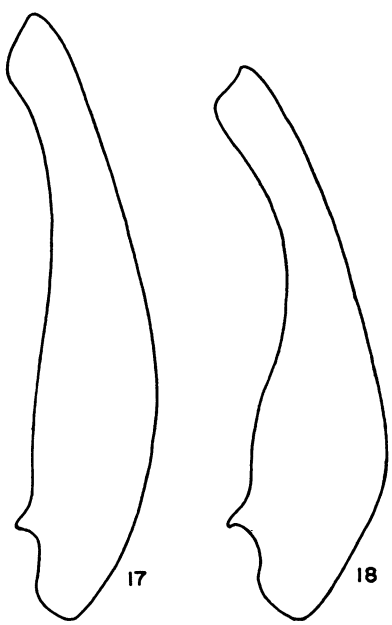
32. Discal elytral intervals impunctate, finely and densely wrinkled.....*distincta*

Discal elytral intervals sparsely punctulate, coarsely and somewhat sparsely wrinkled on





FIGS. 15, 16. Pronotum. 15. *Donacia tuberculifrons*. 16. *D. fulgens*.



FIGS. 17, 18. Posterior femur. 17. *Donacia fulgens*. 18. *D. subtilis*.

disc, finely and densely wrinkled at apex. 33

33. Median pronotal line impressed, extending from anterior impression to basal impression (fig. 15), impressions deep, pronotal disc swollen on either side of median line, elytra convex apically..... *tuberculifrons*

Median pronotal line absent or indistinct, never deeply impressed (fig. 16), anterior and basal median impressions absent or shallow, pronotal disc not swollen, elytra flattened apically..... 34

34. Posterior femora not strongly clavate (fig. 17); posterior tibiae metallic, generally not reddish brown basally; eyes large, not strongly protruding..... *fulgens*

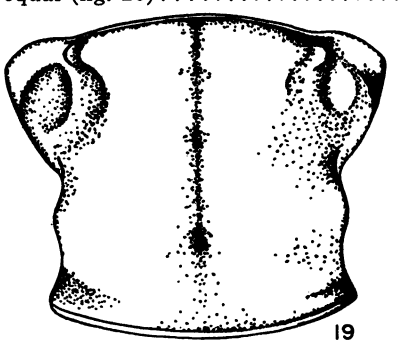
Posterior femora more strongly clavate (fig. 18); posterior tibiae metallic, but generally reddish brown basally; eyes smaller, strongly protruding..... *subtilis*

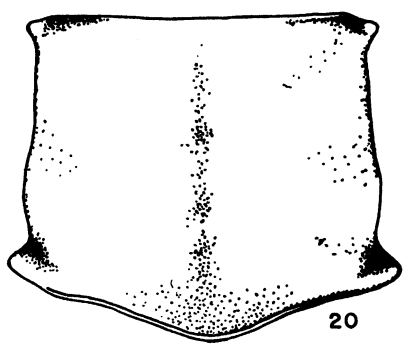
35. Pronotum distinctly alutaceous, opaque... 36

Pronotum not or slightly alutaceous, shining 40

36. Lateral pronotal margins strongly sinuate, anterior margin much wider than posterior margin (fig. 19)..... *rufa*

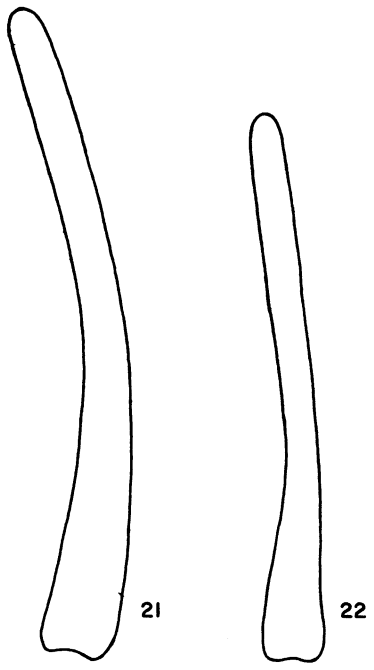
Lateral pronotal margins not or but feebly sinuate, anterior and posterior margins subequal (fig. 20)..... 37





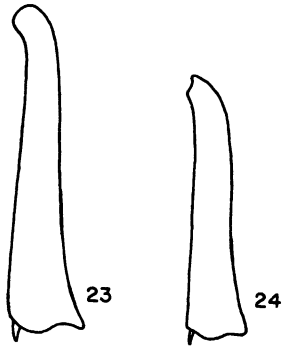
FIGS. 19, 20. Pronotum. 19. *Donacia rufa*. 20. *D. hypoleuca*.

37. Posterior tibiae (when viewed from behind) evenly and strongly bowed (fig. 21)..... .....*hypoleuca*
Posterior tibiae (when viewed from behind) only slightly bent at about apical third (fig. 22).....38
38. Median pronotal line impressed and extending from basal margin nearly to apex..*edentata*
Median pronotal line fine, obsolete or absent

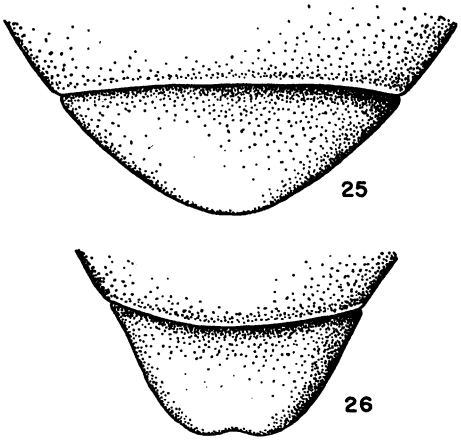


FIGS. 21, 22. Posterior tibia. 21. *Donacia hypoleuca*. 22. *D. texana*.

but never extending from basal margin nearly to apex.....39
39. First segment of anterior tarsi as long as or longer than fifth.....*texana*
First segment of anterior tarsi shorter than fifth.....*caerulea*
40. Posterior femora with one subapical tooth; rarely with indistinct anterior denticle..43
Posterior femora with two distinct subapical teeth.....41
41. Six apical antennal segments bicolored or reddish brown (males).....*cincticornis*
Six apical segments black or metallic.....42
42. Posterior femora reddish brown beneath, dark area above.....*cincticornis*
Posterior femora black or metallic, reddish brown basally.....*proxima*
43. Posterior femora gradually enlarged from base or basal third.....44
Posterior femora abruptly clavate from middle.....*texana*
44. Pronotum with triangular anterior impression, bordered behind by oblique obtuse ridges, ridges broken medially by median line.....*aequalis*
Pronotal anterior impression absent, or if present, not bordered behind by distinct oblique obtuse ridges.....45
45. Anterior tibiae with apical, tooth-like projection on outer edge (fig. 23).....46
Anterior tibiae without apical, tooth-like projection on outer edge (fig. 24).....49
46. Posterior femora not extending beyond apex of third abdominal segment.....47
Posterior femora extending beyond apex of third abdominal segment.....48
47. Median pronotal line deeply impressed and rather wide.....*parvidens*
Median pronotal line absent or, if present, not deeply impressed or wide.....*biimpressa*
48. Posterior femora reddish brown beneath, dark area above; antennal segments 4 to 11 bi-



FIGS. 23, 24. Anterior tibia. 23. *Donacia biimpressa*. 24. *D. rufescens*.



FIGS. 25, 26. Ventral view of last abdominal segment, female. 25. *Donacia cincticornis*. 26. *D. rufescens*.

colored or occasionally reddish brown but not entirely black.....*cincticornis*

Posterior femora black or metallic, reddish brown basally, antennal segments 4 to 11 black or metallic, unicolorous.....*proxima*

49. Pronotum except for disc densely punctate.. .....*biimpressa*

Pronotum not densely punctate.....50

50. Females with apex of last abdominal segment rounded or subangulate (fig. 25); males with denticulate ridge behind subapical tooth on ventral surface of posterior femora..... .....*cincticornis*

Females with apex of last abdominal segment emarginate (fig. 26) or subtruncate; males without denticulate ridge behind subapical tooth on ventral surface of posterior femora .....*rufescens*

DISCUSSION

Donacia aequalis Say

Figures 11 and 27

Donacia aequalis SAY, 1824, Jour. Acad. Nat. Sci. Philadelphia, vol. 3, pt. 2, p. 428.

Donacia confusa LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 109 ("de l'Amérique du nord").

TYPE LOCALITY: "Missouri."

GENERAL DISTRIBUTION: Quebec and Ontario; Maine to Alabama, west to Minnesota, Nebraska, Kansas, and Texas. Schaeffer (1925) records it from Dane County, Wisconsin.

This widespread species is monotypic. While it shows a certain degree of variability in the punctuation of the disc of the pronotum, in the extent of reddish brown at the base of the posterior femora, as well as in size, there does not seem to be any geographical pattern in this variability. Specimens with the sparsely punctate pronotal discs will be found in samples with the pronotal disc densely punctate. Samples with the posterior

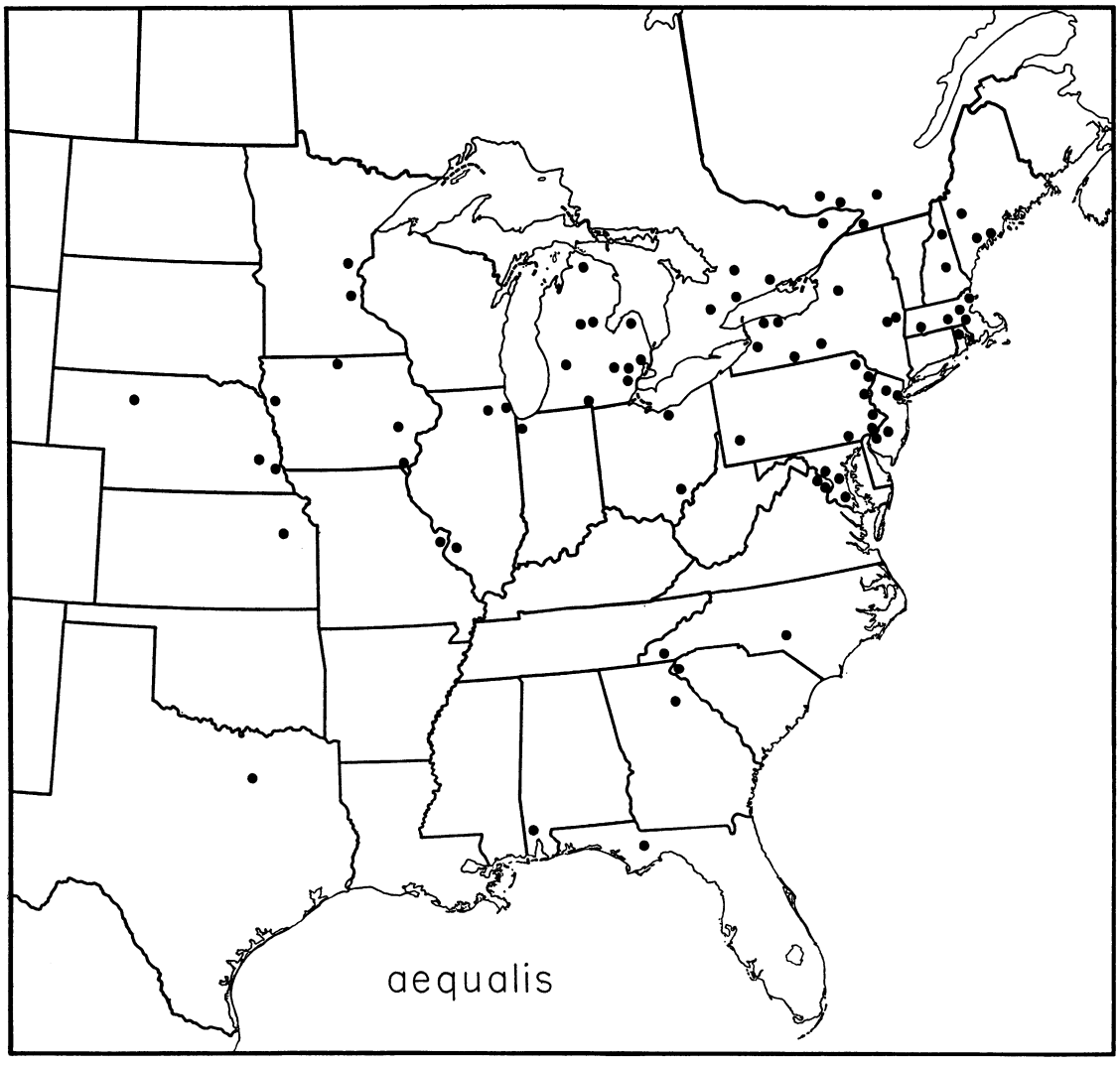


FIG. 27. Distribution of *Donacia aequalis*.

femora almost half reddish brown will contain specimens in which this reddish brown area is much reduced. The same holds true in the matter of size. Larger specimens occur in South Carolina, Michigan, and New Jersey along with those of the more usual size.

This species is readily recognizable and is not likely to be confused with any other species of the subgenus.

HABITS: Blatchley (1910) states that in Indiana *aequalis* occurs on reeds and sedges along the borders of marshes and streams. Löding (1945) found it at Spring Hill, Mobile County, Alabama, in April on *Sagittaria*. Schaeffer (1925), on the authority of Wenzel, wrote that it was "found in numbers on Sparganiaceae and *Sagittaria* growing together at Wenonah, New Jersey, and at Essington and Pike County, Pennsylvania, on *Sagittaria*." Hoffman (1940a) gives the food plant of the adult in Michigan as *Sagittaria latifolia* Willdenow (arrowhead) only, but states that it may rest on other plants.

According to the data on the specimens examined, adults were collected on *Sagittaria* (species?) in Virginia, Illinois, New Jersey, and Maine; on *Sagittaria latifolia* in New York and Maryland: on *Acorus calamus* Linnaeus (sweet flag) in New Jersey; and on *Pontederia cordata* Linnaeus (pickerelweed) in Maine.

Hoffman (1940a) describes how the female deposits her eggs: "Crawling to the apex of the blade (of *Sagittaria latifolia*), she grasps the point with her fore legs and slowly pulls it down and then around onto the opposite side of the blade. She then deposits her eggs between the point and the surface of the blade, fastening the two together by the gelatinous mass."

This species was found to be very common on July 5, 1948, in a small area along Albertson Brook, near Atsion, Burlington County, New Jersey. The vegetation consisted largely of *Dulichium*, *Sparganium*, *Peltandra*, and grass, with a few low plants of *Sagittaria* scattered here and there. On these last there were a number of *aequalis*, many copulating. In avoiding capture they alighted on any plant, but it was apparent that *Sagittaria* was preferred. There were many egg deposits, as evidenced by the folded-over lobes of *Sagittaria*. Probably because there were comparatively few arrowhead plants, almost every blade had one lobe utilized as an egg depository, many had two so used, and one even all three.

According to Hoffman the larvae feed not only on *Sagittaria latifolia* but also on *Sagittaria ariafolia* Nuttall. Their cocoons are formed on the roots of both these species of plants.

MacGillivray (1903) described the larva, pupa, and cocoon from specimens collected at Ithaca, New York, on the roots of *Sagittaria latifolia* and *Sagittaria rigida* Pursh. At Douglas Lake, Michigan, the cocoons were made about the middle of July, and fully developed adults were found in them about the middle of August.

From the data on the specimens seen, March 3 at Washington, D. C., was the earliest date adults were collected. These specimens were labeled "in old leaves" and were no doubt taken by sifting. The next earliest date was April 19 at Gloucester, New Jersey. From this date on, the species appears to be quite common in most sections until early August. There are a few later records, with the last seen being September 29 at Albany, New York, and October 26 at Washington, D. C. Hoffman (1940a) at Douglas Lake, Cheboygan County, Michigan, found the flying period extended from about June 15 to August 1.

Donacia assimilis Lacordaire

Figure 28

Donacia assimilis LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 153.

Donacia glabrata SCHAEFFER, 1919, Jour. New York Ent. Soc., vol. 27, p. 313 (Clementon, New Jersey).

TYPE LOCALITY: North America.

GENERAL DISTRIBUTION: Long Island, New York, south through New Jersey, Maryland, Virginia, South Carolina, and Georgia to Alabama.

For many years, until it was re-instated by Schaeffer (1925), this uncommon monotypic species was considered to be a synonym of *D. palmata* Olivier, but it is quite distinct from that species and appears to be closely related to *D. rugosa* LeConte. It may readily be separated from the latter by the shining pronotum and elytra, with the elytral inter-

FIG. 28. Distribution of *Donacia assimilis*.

vals being sparsely wrinkled. It is not, however, more slender than *rugosa*, as is stated by Schaeffer (1925).

Forty-two specimens (28 males, 14 females) were examined, and of this total 32 (24 males, eight females) were collected at the same locality, Atsion, New Jersey. From this somewhat limited material it appears that there is little variability within or between local populations. Even the color of the upper surface which is so variable in many species of this genus was remarkably constant. One female from Perry, Georgia, was the exception, having the upper surface aeneous. But a second female from the same locality and taken on the same date had the usual dark metallic green coloration on the upper surface.

HABITS: At Atsion, New Jersey, over a three-year period (1947–1949 inclusive) the 32 specimens taken were all captured on *Sparganium americanum* Nuttall (bur reed). On several occasions on the same plant at the same time a few *D. subtilis* Kunze and *D. fulgens* LeConte were collected.

Labels on all the specimens studied bore early August dates with but two exceptions. A female was collected at Prattville, Georgia, July 21, and a pair were taken at Richland, South Carolina, on September 1. The period

of greatest abundance was the first half of August. Of the 32 specimens collected at Atsion, New Jersey, 30 were caught during the first eight days of the month.

There was a pair in coitus at Atsion on August 2 and a few pairs mating on August 7.

This species was noticeably less wary than *subtilis* or *fulgens* and could be caught by hand quite readily.

Donacia biimpressa Melsheimer

Figures 13, 23, and 29

Donacia biimpressa MELSHEIMER, 1847, Proc. Acad. Nat. Sci. Philadelphia, vol. 3, p. 159.

Donacia aurichalcea MELSHEIMER, 1847, Proc. Acad. Nat. Sci. Philadelphia, vol. 3, p. 159 ("Pennsylvania").

Donacia torosa LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 313 ("Massachusetts").

Donacia biimpressa variety *limonia* SCHAEFFER, 1925, Brooklyn Mus. Sci. Bull., vol. 3, no. 3, p. 100 (Indian Pass, New York). New synonym.

TYPE LOCALITY: "Pennsylvania."

GENERAL DISTRIBUTION: Quebec, Ontario, and Manitoba. Maine west to Minnesota, Nebraska, and Kansas, south to South Carolina. Blatchley (1924), quoting Schaeffer, states that there were "specimens in Leng Collection labelled 'Fla.'" Fattig (1948) reports the species, as *torosa* LeConte, in May at Tallulah Falls, Georgia. Schaeffer (1925) lists it as occurring at Sioux Falls, South Dakota.

This species exhibits a range of variability in morphological characters that is extreme even for this variable genus. Many specimens are readily determined as *biimpressa* or *limonia* because these names were given to sections of the total variability pattern within the population. However, the study of samples of various sizes from different localities would seem to indicate that this variability is continuous, with no recognizable geographical pattern of subspeciation.

The morphological differences given by Schaeffer (1925) for his "variety" *limonia* are too unstable to be of real significance. In speaking of the punctuation and pubescence of the ventral abdominal segments, Schaeffer himself says, "in a large series cupreous specimens will be found which are intermediate between typical *biimpressa* and variety *limonia*." He also states that *limonia* is much more variable than "typical" *biimpressa* not only in the elytral sculpture and punctuation of the ventral segments but also in the form of the prothorax. In the description of *limonia* he cites three localities (Ithaca and Van Cortlandt Park, New York, and Framingham, Massachusetts) where it occurred, the allotype, a female, being from the second place, and he gives these same localities for *biimpressa* itself. Specimens studied by the present author from Clementon, New Jersey, Livingston County, Michigan, and Southboro, Massachusetts, contained representatives referable to *limonia* and also to *biimpressa*. Occurring together, as evidenced by the above, they could not be subspecies and should therefore be considered either as mere variants of the same population or distinct species. From the pattern of variability found in a large number of specimens it appears at the present time that *limonia* should be considered to be but a name applied to individual variants.

Samples with the densely punctate or rugose pronotum occur in various parts of its area of distribution, but from the material examined it seems that this type of variation is more common in the north. Specimens with less heavily sculptured pronotum occur throughout the area of distribution, both north and south, while those with the heavily sculptured pronotal surface apparently do not occur in the southern portion of the range of the species. However, in that part of the range where both extremes occur all intermediates are also present. The variability seems to be a cline without a definite geographical break. With this type of pronotal sculpture the median pronotal line is frequently more evident and may even be impressed, though not deeply. An occasional specimen with the median pronotal line and densely punctate pronotal surface may resemble *tuberculifrons*, but the bicolored posterior femora will readily identify it as *biimpressa*.

The apical, tooth-like projection on the outer edge of the anterior tibiae is sometimes difficult to see. It may be only on one anterior tibia or rarely may be absent. It was lacking on a male from Hull, Quebec. In a sample of five males and four females from Rupert

FIG. 29. Distribution of *Donacia biimpressa*.

House, Quebec, it was present in only two males.

The great majority of specimens studied, both male and female, were cupreous above, but some were blue, purple, or black. With only three exceptions these were all males.

As Schaeffer (1925) points out, some specimens of *biimpressa* may appear to be quite close to *porosicollis* in certain characters, such as the form of the pronotum, the sculpture of the elytral intervals, and the punctuation of the ventral surface of the abdominal segments. But the posterior femora of *biimpressa* are shining, somewhat coarsely punctate, and sparsely and inconspicuously pubescent, the pubescence not obscuring the surface. In *porosicollis* the posterior femora are either not shining or less so, densely and more finely punctate, and conspicuously and densely pubescent, the pubescence obscuring the surface sculpture.

HABITS: According to Schaeffer (1925), C. A. Frost took *biimpressa* on *Carex stricta* Lamarck (tussock sedge). He quotes H. W. Wenzel as follows: "Found in numbers by sweeping various grasses, Bur Reeds (*Sparganiaceae*) and *Sagittaria* in swamp fed by tide water." Knab took it on *Carex stricta*

according to the label on specimens collected by him. Blatchley (1924) on Schaeffer's authority states it occurs in Massachusetts on *Carex* and grasses in moist meadows. A series of nine was taken at Lakeland, Maryland, May 14, 1911, on *Carex crinita* Lamarck (fringed sedge). Frost, according to several specimens, collected it at Southboro and Hopkinton, Massachusetts, by "sweeping meadow grass." At Conewago, Pennsylvania, a male was taken May 8, 1909, by Daecke on skunk cabbage [*Symplocarpus foetidus* (Linnaeus) Rafinesque]. A male and female were collected at Ramsey, New Jersey, by "sweeping cat-tails, Big Swamp." At Herrington Manor, Garrett County, Maryland, it was found on grasses at the edge of a small lake.

According to the data on the specimens examined, *biimpressa* is one of the early appearing members of the genus. It seems to be most common in most of its range throughout May, for the greatest number, according to the label data, were taken in that month. The earliest record is for April 22 at Cornwall, Connecticut, and the latest, Campden, Ontario, September 6.

Donacia caerulea Olivier
Figure 30

Donacia caerulea OLIVIER, 1795, Entomologie, ou histoire naturelle des insectes, coléoptères, vol. 4, no. 75, p. 10, pl. 2, figs. 10a, 10b.

Donacia episcopalis LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 105 ("de l'Amerique du nord").

TYPE LOCALITY: "Carolina on aquatic plants."

GENERAL DISTRIBUTION: Southeastern New York, New Jersey, southeastern Pennsylvania, southern Michigan, and, according to Schaeffer (1925), Maryland.

This monotypic species appears to be closely related to *proxima* Kirby which it resembles somewhat, but it is more likely to be confused with small specimens of *texana* Crotch. Characters useful in the separation of *caerulea* from *texana* are discussed under *texana*.

Though it occurs in a part of the country that has engaged the attention of many collectors through the years, it is not very plentifully represented in collections.

HABITS: The dates on the labels of the material seen indicate that it is most abundant during May. Of 48 specimens, taken at localities within about 125 miles of one another, five were taken in April, two in June, one each in July and August, and 37 in May.

According to Schaeffer (1925) this species is found on the leaves of the yellow water lily.

Donacia cazieri, new species

Medium-sized, metallic green above; pronotal disc densely punctate, with anterior lateral tubercles obsolete and anterior angles not prominent; discal elytral intervals impunctate, densely wrinkled; posterior femora metallic, with small subapical tooth; dark metallic below, densely punctulate and sparsely pubescent.

MALE: Head narrowed behind eyes and moderately prolonged, eyes relatively large and prominent, median impressed line deep, with distinct subelliptical impression between antennal tubercles; surface densely punctulate, with sparse indistinct pubescence; second, third, and fourth antennal segments increasing in length but individually shorter than scape, fifth segment and scape subequal, segments 7 to 11 stouter. Pronotum about as wide at apex as long, anterior and posterior pronotal angles distinct but not prominent, anterior lateral pronotal tubercles obsolete, not bordered internally by groove, sides subparallel, median pronotal line rather fine but impressed, terminating in distinct basal impression, not reaching anterior or posterior margins, anterior pronotal impression absent, pronotal surface densely punctate on disc, rugose basally and laterally. Elytra with wide arcuate groove from humeral angle to antemedian impression, groove bordered externally by obtuse elevation which extends diagonally from humeral angle towards suture almost to elytral apex, median impression present but indistinct, post-median impression obsolete; elytral intervals impunctate, finely and densely wrinkled throughout. Apex of last dorsal abdominal segment feebly emarginate. Under surface densely punctulate, sparsely pubescent; posterior femora extending to apex of third abdominal segment, clavate and armed with one small subapical tooth; first ventral abdominal seg-

FIG. 30. Distribution of *Donacia caerulea*.

ment concave medially, apex of last ventral abdominal segment broadly rounded, with usual median depression of male. Length, 5.9 mm.; width of pronotum, 1.3 mm.

FEMALE: Similar to male except somewhat larger, antennal segments 6 to 11 stouter, first ventral abdominal segment convex medially not concave; apex of last ventral abdominal segment without median depression and broadly rounded. Length, 6.15 mm.; width of pronotum, 1.45 mm.

TYPE MATERIAL: Holotype male and three male paratopotypes collected at Goose Bay, Labrador, June 17, 1948, and one male paratopotype, June 10, 1948, all by W. W. Judd, one male paratopotype, June 11, 1948, by H. C. Friesen. Allotype female collected at Goose Bay, Labrador, June 14, 1948, by W. E. Beckel, and one female paratopotype, June 12, 1948, by W. W. Judd. Except for one male paratopotype deposited in the American Museum of Natural History, all types are in the Canadian National Collection. This species is named in honor of Dr. Mont A. Cazier.

There is comparatively little variability in the series, although one male is a more brilliant metallic green than the rest and one female is cupreous. This latter specimen also has the apex of the last ventral abdominal

segment angulate rather than rounded. In two of the males the sides of the pronotum converge slightly towards the base. The posterior femora may be black or metallic.

Superficially this species resembles *fulgens*, particularly the more brilliant metallic green examples of the latter. But, in addition to the differential characters given in the key, the pronotal sculpturing of *cazieri* is denser and finer, the pronotal median line is impressed or at least very distinct, and the arcuate grooves of the elytra are present.

Donacia cincticornis Newman

Figures 25 and 31

Donacia cincticornis NEWMAN, 1838, Ent. Mag. London, vol. 5, p. 391.

Donacia rufipennis LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 110 ("des Etats-Unis aux environs de Boston"). New synonym.

Donacia lucida LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 106 ("de l'Amerique du nord aux environs de Boston").

Donacia pulchella LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 312 ("New Jersey").

Donacia antillarum SUFFRIAN, 1866, Arch. Naturgesch., Berlin, vol. 32, p. 282 ("Cuba"). New synonym.

Donacia cincticornis variety *tryphera* SCHAEFFER, 1925, Brooklyn Mus. Sci. Bull., vol. 3, no. 3, p. 81 (Centerton, New Jersey). New synonym.

Donacia cincticornis variety *tenuis* SCHAEFFER, 1925, Brooklyn Mus. Sci. Bull., vol. 3, no. 3, p. 82 (Swansea, "N.C." [should be South Carolina]). New synonym.

TYPE LOCALITY: "Trenton Falls in North America." Newman states that Foster and Doubleday collected this species. Doubleday (1838) says that Trenton Falls is located in the vicinity of Utica, New York. In older atlases this locality can be found about 13 miles due north of Utica and is now the locality called Barneveld.

GENERAL DISTRIBUTION: Canada from Nova Scotia through Quebec and Ontario to Victoria, British Columbia; eastern United States from Maine to Florida, west to Minnesota, Iowa, Kansas, and Texas; Cuba; and, according to Schaeffer (1925), Mexico and Guatemala.

The picture presented by this widespread and variable species has always been confusing. Many specimens are readily identifiable as *cincticornis*, *tenuis*, or *tryphera*, because these names were applied to sections of the total pattern of variability within the population. With the accumulation of long series from many localities, it has been found that the variability is continuous, and there is no discernible geographical pattern of subspeciation.

Many specimens are impossible to identify as any of the above names because they represent the intermediates between these named portions of the continuous pattern of variability. Two forms may occur together not only in the same locality but also in the same habitat and on the same host plants. Examples referable to *cincticornis* and *tryphera* were taken together in the same habitat and on the same species of host plant in Maine as well as New Jersey. Within a few miles of Jefferson, Maine, *cincticornis* and *tenuis* occurred in the same small pond. *Cincticornis* and *tryphera* occur in Texas and North Carolina, *cincticornis* and *tenuis* in Florida, *tenuis* and *tryphera* from Maine to Florida, to give just a few examples. As the result of my studying a large quantity of material and compiling the distribution records, it became apparent that the forms that occur together (sympatric), as they do in so many localities, could not be subspecies. They must either be mere variants of the same population or distinct species.

As stated above, many individuals are separable, but when a large series was examined it was found that the morphological differences used by Schaeffer for the various varieties are too unstable to be of any significance. In one large series from Elk Lake, New York, there were a number of *tenuis* having the critical characters listed by Schaeffer—narrower prothorax with feeble apical angles, narrower and more elongate elytra, and more elongate antennal segments. Occurring with them were some typical *cincticornis* and a few with some of the characters of both. The same situation exists with respect to the Schaeffer variety *tryphera*. In a sizable series it was possible to separate a number on the basis of the Schaeffer characters, "prothorax smoother, more even and very often, especially in females, rather wider, the lateral tubercles generally feeble

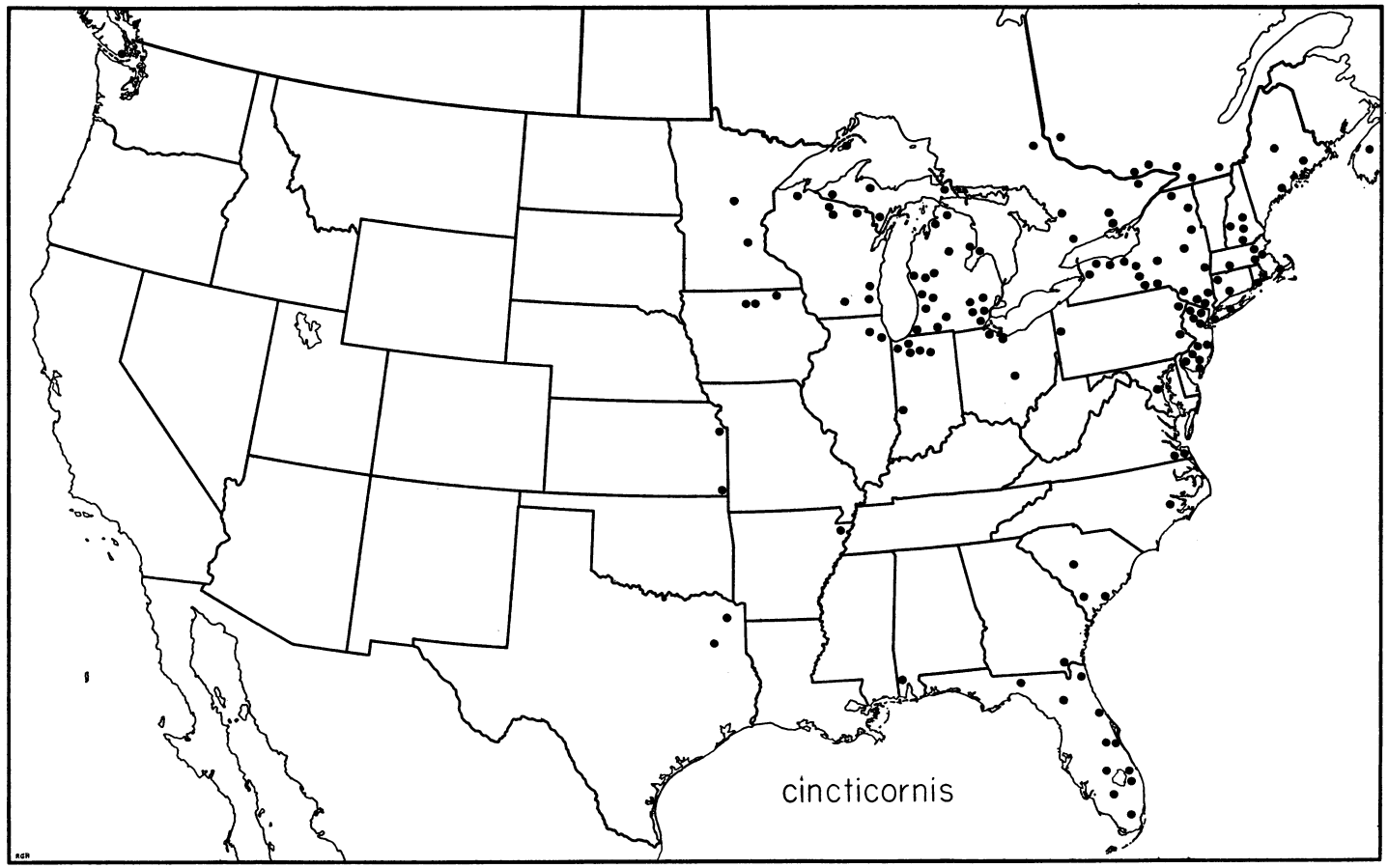


FIG. 31. Distribution of *Donacia cincticornis*.

and nearly obliterated." But in the same sample there were some *cincticornis* and others with some of the characters of each. Schaeffer himself stated with respect to this variety that specimens from southern New Jersey and farther south occurred in the same locality with others that were doubtful to place.

The characters given for the separation of *rufipennis* are even more variable and unstable. Schaeffer himself calls attention to the variability in the sculpture of the pronotum. Specimens with none of the other *rufipennis* characters have the antennal segments largely dark and elytral apices emarginate. Specimens referable to *rufipennis* on the basis of one or more characters supposedly definitive of the population are found sporadically in samples throughout this species range, and it is herein considered to be but a name applied to individual variants in this variable population.

There appears to be a clinal tendency, with *cincticornis* predominating in the north and *tenuis* and *tryphera* in the south. However, there is no sharp break in this cline, as intermediate populations are found in the area extending from Maine to North Carolina and from the Middle West to as far south as Texas.

When some of the same Cuban specimens used by Schaeffer in his description and discussion of *antillarum* were restudied, it was found that in every case the characters and differences mentioned by Schaeffer do not in any way fall outside the variability of samples of *tryphera*. The elytra are not slightly longer nor are the sides more parallel or more feebly narrowed towards the apex than in *tryphera*. The antennal segments can be either longer or shorter than in *tryphera*, and the third segment can be longer or shorter than the first. The prothorax is not less transverse, and in many examples of *tryphera* the lateral tubercles are also absent. In the Cuban sample the hind femora are not less strongly incrassate but are more strongly incrassate than in some *tryphera*. The teeth beneath the hind femora and the serrate ridge behind the posterior tooth in the Cuban sample are more evident than in some *tryphera* instead of being more feeble as noted by Schaeffer. In the males the hind tibiae are not denticulate, or are only feebly so, in *antillarum* and in many *tryphera*. The color of the four Cuban specimens is dark castaneous, with a feeble aeneous tint, but this is a normal color variant that occurs throughout the entire range of *cincticornis*. The same is true with respect to the color of the prothorax, the antennae, the under side, and the legs.

In view of the fact that records on host plants for *cincticornis* include species belonging not only to the genus *Nymphaea* but to other genera of aquatic plants, there is no reason to believe that the recorded occurrence of *antillarum* on *Nymphaea flava* Leitner (yellow water lily) in Cuba would be of any biological significance in the establishment of the status of this population. *Nymphaea flava* occurs in the United States but is confined primarily to Florida and the Gulf states, extending as far north as South Carolina

From the above discussion it is obvious that all characters given for the separation of this population fall within the normal pattern of variability of *cincticornis*, and there is therefore no justification for retaining the name *antillarum*.

GENITALIA: The male genitalia in *cincticornis* show considerable variability which is not correlated geographically or structurally with the above-mentioned names.

HABITS: Hoffman (1940a) states that in Michigan *cincticornis* was confined solely to *Castalia* (=*Nymphaea*) *odorata* Aiton (sweet-scented water lily) and would not attack *Nymphaea* (=*Nuphar*) *advena* Aiton (spatter-dock). Schaeffer (1925) gives both the white and yellow (spatter-dock) water lilies as well as *Brasenia* (water shield). Blatchley (1910) says it occurs on *Nuphar advena* and on the leaves of *Potamogeton* (pondweed) in Indiana. Blatchley (1924) gives the yellow water lily in Florida as well as the white and *Potamogeton*. Schaeffer (1925) states that Bruner collected specimens on *Nymphaea flava* Leitner in Cuba. Boving and Craighead, Schaeffer (1925) states, found both the larvae and adults on *Potamogeton*. According to Berg (1949) five species of *Potamogeton* (pondweed), i.e., *alpinus* Balbis, *amplifolius* Tuckerman, *gramineus* Linnaeus, *natans* Linnaeus, and *Richardsonii* (Bennett) Rydberg, were host plants for both imagoes and larvae. The parts of the plants affected were the leaves and the roots.

In Maine, New York, and New Jersey,

Nymphaea odorata was found to be the preferred host plant, but *Brasenia Schreberi* Gmelin (water shield) frequently, and in Maine very occasionally *Potamogeton* (species?) and *Nymphoides cordatum* (Elliott) Fernald (floating heart), were used. A number of specimens from other states bore labels such as "pond lily leaves" and "on lily pads." Several specimens from Swansea, South Carolina, had labels reading "water shield." Generally speaking, *Nymphaea odorata* seems to be preferred, but *Brasenia Schreberi* is accepted where it predominates.

In Michigan the flying period lasts from late spring through the entire summer (Hoffman, 1940a). In New Jersey late spring to mid-September is the flying period, with the greatest activity and numbers occurring in July and August.

This species as an adult lives above the surface of the water, spending most of its time on the floating leaves of the host plants. It is extremely active and wary, especially on warm sunny days. Should it happen to fall in the water it can "take off" readily, aided no doubt by the dense pubescence on its under surface and first three tarsal segments.

A male was taken in 1916 at Victoria, Texas, "at light." At Marmora, Ontario, on August 7, 1952, five males and three females were collected "under stones on shore." Both these occurrences, however, are most unusual.

The eggs are deposited by the female on the under surface of the host plant leaf in a semicircular double row around a hole. As the egg mass is similar to that of *Donacia palmata*, it is very likely that the same method of oviposition is employed as is described for that species.

After hatching, the larvae drop to the bottom and crawl to the roots of *Nymphaea odorata*, living and feeding there, rarely on the rhizome. The cocoons are built on the roots of the host plants. The cocoon formation and emergence may take place any time during the summer (Hoffman, 1940a).

Donacia dissimilis Schaeffer

Donacia dissimilis SCHAEFFER, 1925, Brooklyn Mus. Sci. Bull., vol. 3, no. 3, p. 115.

TYPE LOCALITY: "Florida." Allotype (male), Dunedin, Florida, April 16.

GENERAL DISTRIBUTION: Florida and Georgia.

This monotypic species is quite distinct and readily separable from any of the other species having the posterior femora without subapical teeth. In the one female examined the mesosternal intercoxal process was not triangular or subtriangular, as Schaeffer (1925) stated was the case with the type, so probably its occurrence in the type was accidental, as Schaeffer suspected. In this female the last two abdominal segments were reddish brown; the following two segments were also this color along the apical margin, but metallic green basally. The other specimen seen, a male, was as described by Schaeffer except that the pronotum was somewhat smooth on either side of the median line, which was not fine but somewhat broad. As so frequently happens in this subgenus, there was a punctiform impression on either side of the median line. Finally, the last four abdominal segments, rather than just three as in the allotype, were reddish brown.

The specimens seen were as follows: One female, April 16, Orange Lake, Marion County, Florida (D. H. Blake), United States National Museum, and one male, May 27, 1927, Savannah, Chatham County, Georgia, Fall collection, Museum of Comparative Zoölogy.

Fattig (1948) lists the species as occurring in June at Butler, Taylor County, Georgia.

HABITS: Unknown except for the statement of Blatchley (1925) that he took the allotype (male) on April 16 at Dunedin, Pinellas County, Florida, from the flower of the yellow water lily, *Nuphar advena* Aiton.

Donacia distincta LeConte

Figure 32

Donacia distincta LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 313.

Donacia distincta occidentalis MEAD, 1938, Pan-Pacific Ent., vol. 14, no. 3, p. 114 (Luther's Pass, near Meyers, El Dorado County, California). New synonym.

TYPE LOCALITY: "Lake Superior."

GENERAL DISTRIBUTION: Labrador through Ontario, Manitoba, Alberta, eastern British Columbia, Northwest Territories, and

Yukon Territory, to Alaska. Maine, New Hampshire, and Massachusetts west through New York, Michigan, Wisconsin, Minnesota, and Montana, to California.

For the study of this species, material was at hand not only from the already known parts of its range but also from areas such as Labrador, Northwest Territories, Yukon Territory, and Alaska, sections from which it apparently had not previously been recorded. Included in this material were three of the original 10 paratypes of *occidentalis* Mead (two males and one female), all from the type locality, Luther Pass, California.

It was found that there was considerable variation in morphological characters as well as in size but that there was no geographical correlation in such variability. Specimens from Goose Bay, Labrador, showed the same variation, for example, as those from Luther Pass, California.

Mead (1938), in his discussion of the subspecies *occidentalis* which he described, states, "The type series of ten shows a remarkable constancy in all structures especially in the presence of the definite basal carina of the pronotum and the obscure tooth of the metathoracic femur." Of the three paratypes studied by the present author one (the female) has a very distinct acute tooth on the hind femur, definitely not obscure. The basal carina of the pronotum is present in all three, but it was also present in a number of specimens from the east as well as others from the west.

Mead cites a number of differences by which *occidentalis* may be separated from typical *distincta*. It is, he states, smaller, more slender, and more convex. Of a small sample from Goose Bay, Labrador, consisting of two males and one female, one male was smaller than either of the two male paratypes, and the other male was about the same size as the smaller male paratype. Thus both were smaller than the larger male paratype and as slender as each. The female from Goose Bay was the same size as the female paratype and also as slender. In a series of 20 males and five females from Summit Lake, Shasta County, California, one male was smaller and more slender than the smaller male paratype, while eight males were about as large and as slender as the other male paratype. The rest of the males and the females were larger and stouter than the paratypes.

Males from Whitefish Point, Lake Superior, Kam Lake, Northwest Territories, and College, Alaska, were no larger or less slender than the larger male paratype.

The same situation exists with respect to the convexity. Specimens from numerous localities were as convex as any of the paratypes examined, and the apical third of the elytra showed similar curvature.

Mead states that "the antennae are shorter and stouter; the eyes are less prominent." This proved to be true also for some specimens from other sections.

The "slightly clavate" metathoracic femur with "a small obscure tooth" applied equally well to a female from Franconia, New Hampshire, for the femur and femoral tooth of this specimen were identical with those of the two male paratypes. The hind femora of a male from College, Alaska, were no more clavate than those of the paratypes, and the femoral tooth was slightly larger than that of the female paratype.

In the Summit Lake series mentioned above, two males had the less clavate hind femora of *occidentalis*, but the femoral tooth in one particularly was only slightly larger than that of the female paratype. All the other specimens of this sample had the hind femora more clavate and the femoral tooth definitely larger than any of the paratypes. While the teeth of this portion of the sample were all large, there was considerable variability, some teeth being quite large. In the Goose Bay, Labrador, sample referred to, one male had the hind femora no more clavate than one of the male paratypes and the femoral tooth of almost the same size. The other two from this eastern locality had more clavate hind femora and larger femoral tooth.

A series from Watson Lake, Yukon Territory (six males, three females), a male from Kam Lake, and a female from Norman Wells, both Northwest Territories, all had the clavate femora and the large and acute femoral tooth, although there was considerable variation in the size and acuteness of the tooth. A male labeled "Beaverfoot Range, Rocky Mts., Can." had the less clavate hind femora of the *occidentalis* paratypes but a large and conspicuous femoral tooth. The

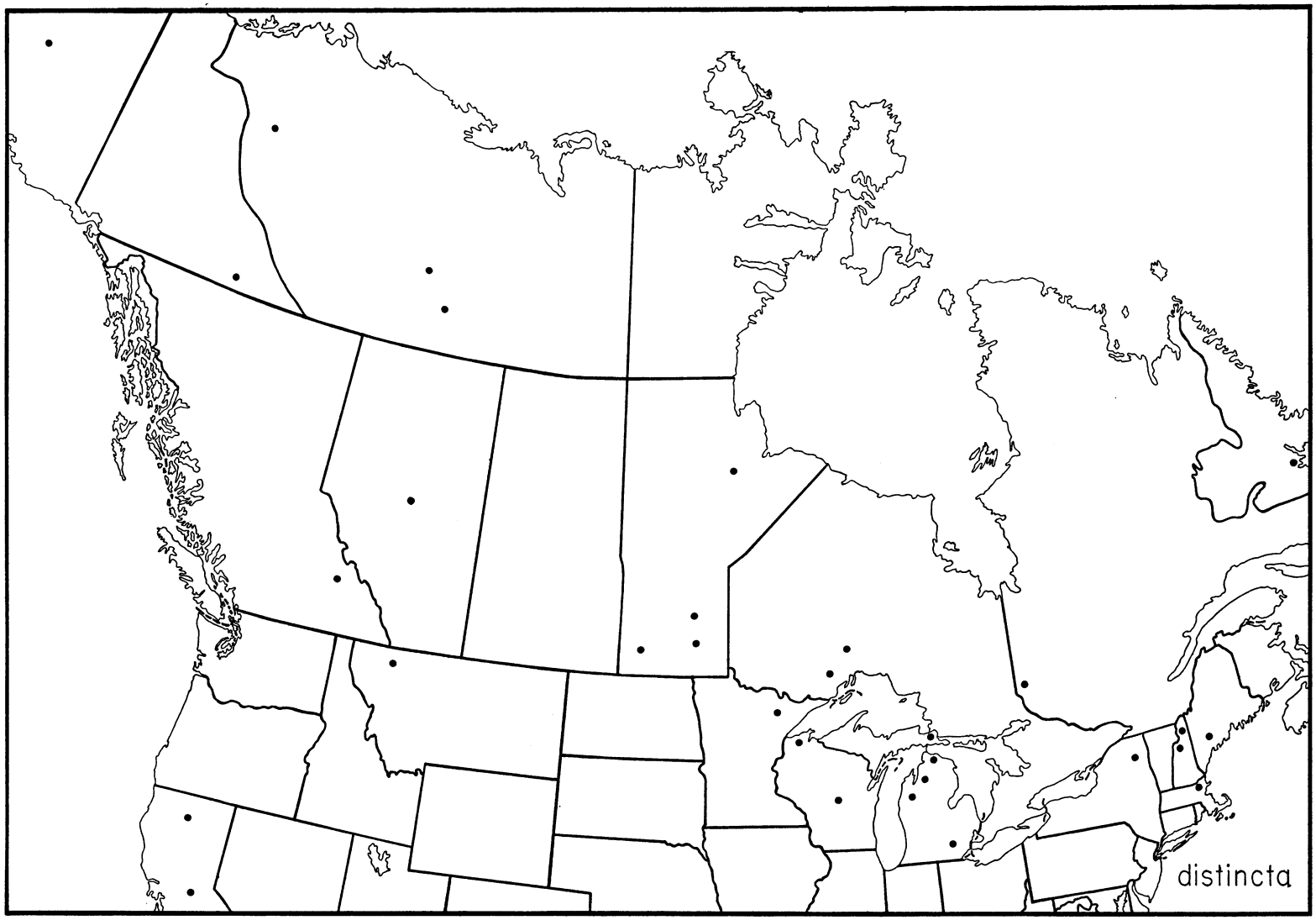


FIG. 32. Distribution of *Donacia distincta*.

Beaverfoot Range appears on the map about 50 miles west of Banff, east of the Columbia River and west of a branch of the Beaverfoot River.

The female from Glacier National Park, Montana, a locality farther south but at about the same longitude, had more clavate hind femora and the large femoral tooth.

Because the characters definitive of *occidentalis* occur in population samples from distant as well as intermediate sections of the distribution range of *distincta* and because the paratypes themselves show variation in at least one definitive character, it would seem that there is no sound reason for our retaining *occidentalis* as a subspecies.

The last dorsal abdominal segment of both sexes is emarginate at the apex. In the case of the females it is generally deeply notched. Of 29 females 26 had this distinguishing character. It is less likely to occur in the males. Of 47 males 11 had the apex either notched or deeply emarginate. In the remaining 36 it was shallowly and rather widely emarginate.

HABITS: J. Gordon Edwards wrote, in a letter, in regard to a female he collected on July 13, 1950, in Glacier National Park, Montana, as follows: "In snowfield at summit of Mount Vaught, elevation 8800 feet (Note: Timberline is between 5000 and 6000 feet here and the nearest lake was over 4000 feet below this summit)."

Little ecological information regarding this species has been recorded. Two males collected by T. O. Thatcher on July 2, 1947, at Summit Lake, Shasta County, California, were labeled "*Carex*." G. Stace Smith at Duparquet, Quebec, collected one male and three females from June 22 to 27, 1943, all labeled "sweeping *Carex rostrata*."

Donacia edentata Schaeffer

Figures 4 and 33

Donacia endentata SCHAEFFER, 1919, Jour. New York Ent. Soc., vol. 27, p. 312.

TYPE LOCALITY: Crum Lake, New York.

GENERAL DISTRIBUTION: New York, New Jersey, North Carolina, and Florida.

As Schaeffer (1925) thought likely, the study of additional material has extended the range of this monotypic species farther south, for specimens have been seen from North Carolina and Florida. Furthermore as the plant with which it associates ranges along the Gulf coast, it is reasonable to assume additional collecting should extend the area of distribution of the species.

The species quite closely resembles *D. parvidens* Schaeffer, but the pronotum is less shining, the antennal segments are longer and more slender, and the posterior femora generally have no posterior teeth. This last character, however, is subject to some variability. One paratype, a male from Centerton, New Jersey, had the posterior femora armed with a small indistinct tooth, as did another male from the same locality. The same was true of a male from Clayton, New Jersey, and one from Montauk Beach, Long Island, New York. Occasionally there is a slight angulation on the posterior femora in females as well as males.

HABITS: According to Schaeffer (1925) this species occurs on the flowers and leaves of the white water lily, *Castalia* (=*Nymphaea*) *odorata* Aiton. A specimen from Crum Pond, New York, bore a label that read "white water lily."

From the dates on the specimen labels it is apparent that this is one of the earlier flying species. The dates of capture range from April 23 in Florida to July 2 at Montauk Beach, Long Island, New York. The period of its greatest abundance, at least in the northern part of its range, seems to be very late May and June.

Three males taken at Winnabow, Brunswick County, North Carolina, were labeled as "from stomach of alligator." They were in excellent condition.

Donacia fulgens LeConte

Figures 16, 17, and 34

Donacia fulgens LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 312.

Donacia subtilis magistrigata MEAD, 1938, Pan-Pacific Ent., vol. 14, no. 3, p. 113 (Clarksburg, Yolo County, California). New synonym.

TYPE LOCALITY: "Lake Superior."

GENERAL DISTRIBUTION: Quebec, Ontario; Maine south to South Carolina, west to Indiana, Wisconsin, and Minnesota; California.

The status of *subtilis* and *fulgens* is discussed under the former species.

FIG. 33. Distribution of *Donacia edentata* and *D. quadricollis*.

Available for a study of the *subtilis-fulgens* complex were a number of specimens from California. These included fair-sized samples from Clear Lake Oaks, Lake County, Rio Vista, Solano County, and a few specimens from Forestville and Sebastopol, Sonoma County, and Clarksburg, Yolo County, with a male and female paratype of *magistrigata* from the the last-named locality.

Mead (1938) in his discussion of *magistrigata* states that it "can be readily distinguished from the typical *subtilis* Kunze by the fine and dense strigate-rugose sculpturing of the elytra, by the meta-thoracic femora which are less clavate; and by the antennae which are stouter." It happens that these are the identical characters, especially the femoral character, that are equally useful in the separation of *subtilis* from *fulgens*. Still another difference between *magistrigata* and *subtilis*, according to Mead, is that the last abdominal tergite of the female of the former is feebly emarginate, while that of the latter is broadly rounded. However, this particular character of the female *subtilis* is far from stable. In fact the apex of the last abdominal tergite may be rounded, truncate, or feebly emarginate. In a small series of 20, it was rounded in nine, truncate in eight, and feebly emarginate in the remainder. In 10 other

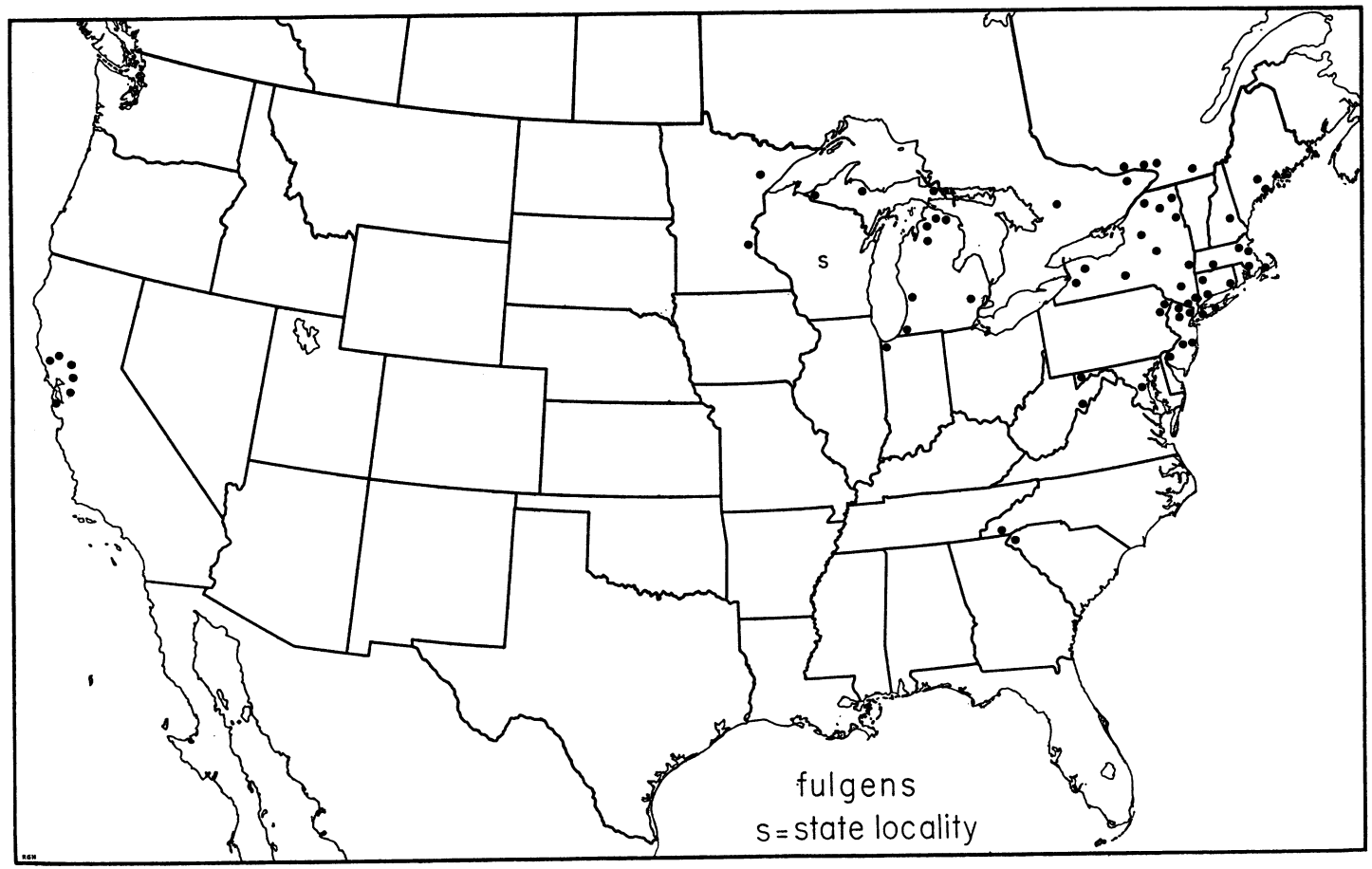


FIG. 34. Distribution of *Donacia fulgens*.

females it was emarginate in six and rounded in four.

Comparison of the California samples with samples of *fulgens* from the eastern seaboard showed them to be conspecific. The distinguishing characters enumerated for *magistrigata* applied equally well to *fulgens*. Even the two paratypes of *magistrigata* corresponded to specimens of *fulgens*. Two males from Clarksburg, California (one a paratype), had the aedeagal characters of *fulgens* as outlined under *subtilis* but with the constriction of the aedeagus less evident.

It is true that *fulgens* in the east shows a higher percentage of specimens that are brilliant metallic green in color than does *magistrigata*, but in the Rio Vista series one female was as brilliant green as any eastern specimen. On the other hand a large sample of *fulgens* from Upper Mill, Burlington County, New Jersey, for example, showed considerable variation in color, with as large a number of those dark in color as did the California material.

In light of the above it is felt that *magistrigata* and *fulgens* should be considered as conspecific, and the name *magistrigata* is therefore placed in synonymy.

A comparison of two males and three females of *fulgens* with LeConte's types, a male and female, showed them to be conspecific with the types. It was particularly noted that the types have the morphological characters previously pointed out as useful in a separation of *fulgens* from *subtilis*, including the stouter antennal segments and the posterior femora so characteristic of *fulgens*.

HABITS: This species occurs in the same habitat as *subtilis*, and as stated the two may occur as adults on the same plant. It has been collected in the imaginal stage on the following plants:

PLANT	STATE
Eleocharis species?	Maine
Pontederia cordata	Maine
Scirpus species?	Maine
Sparganium americanum	New Jersey
Sparganium angustifolium	Maine
Sparganium species?	Maine, New Jersey, Massachusetts

Like *subtilis* it is very wary and on bright sunny summer days is very active. According to the data on the specimens seen it has a long flying period. The first record was May 14 at White Plains, New York, and the last Ely, Minnesota, September 4, and September 3 at Saranac Lake, New Jersey, with the period of greatest abundance appearing to be June and July.

The series from Clear Lake Oaks, California, collected by Alice and J. G. Edwards, he reported in a letter, was "beaten and swept from cattail leaves (tules) near shore."

Donacia hirticollis Kirby

Figure 35

Donacia hirticollis KIRBY, 1837, *in* Richardson, Fauna Boreali-Americana, pt. 4, p. 226.

Donacia rudicollis LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 108 (United States).

TYPE LOCALITY: This species was described from "a single specimen taken in Lat. 65°." The full title of the work of which Kirby's volume is the fourth and last is "Fauna Boreali-Americana or the zoology of the northern parts of British America: containing descriptions of the objects of natural history collected on the late northern land expeditions, under command of Capt. Sir John Franklin, R.N." The chief author was John Richardson, M.D., surgeon and naturalist to the expeditions.

Franklin led two land expeditions through northern Canada, the first in 1819–1822 and the second in 1825–1827. It seems reasonable to believe that if his routes on these expeditions were studied carefully it could be determined at what point they crossed the sixty-fifth parallel, and in this way an approximation of the type locality of *hirticollis* could be established.

Franklin (1823), in addition to describing in detail the journey and experiences on the first land expedition, includes in the Appendix lists and discussions of the mammals, birds, fish, and plants observed and collected, but no mention of specimens of insects is made. It would seem that if specimens of insects had been collected and returned to England by the first expedition, such a list would have been included in the Appendix with the accounts of the other collections, or a definite note regarding their omission would have been made.

Franklin's narrative covering the second

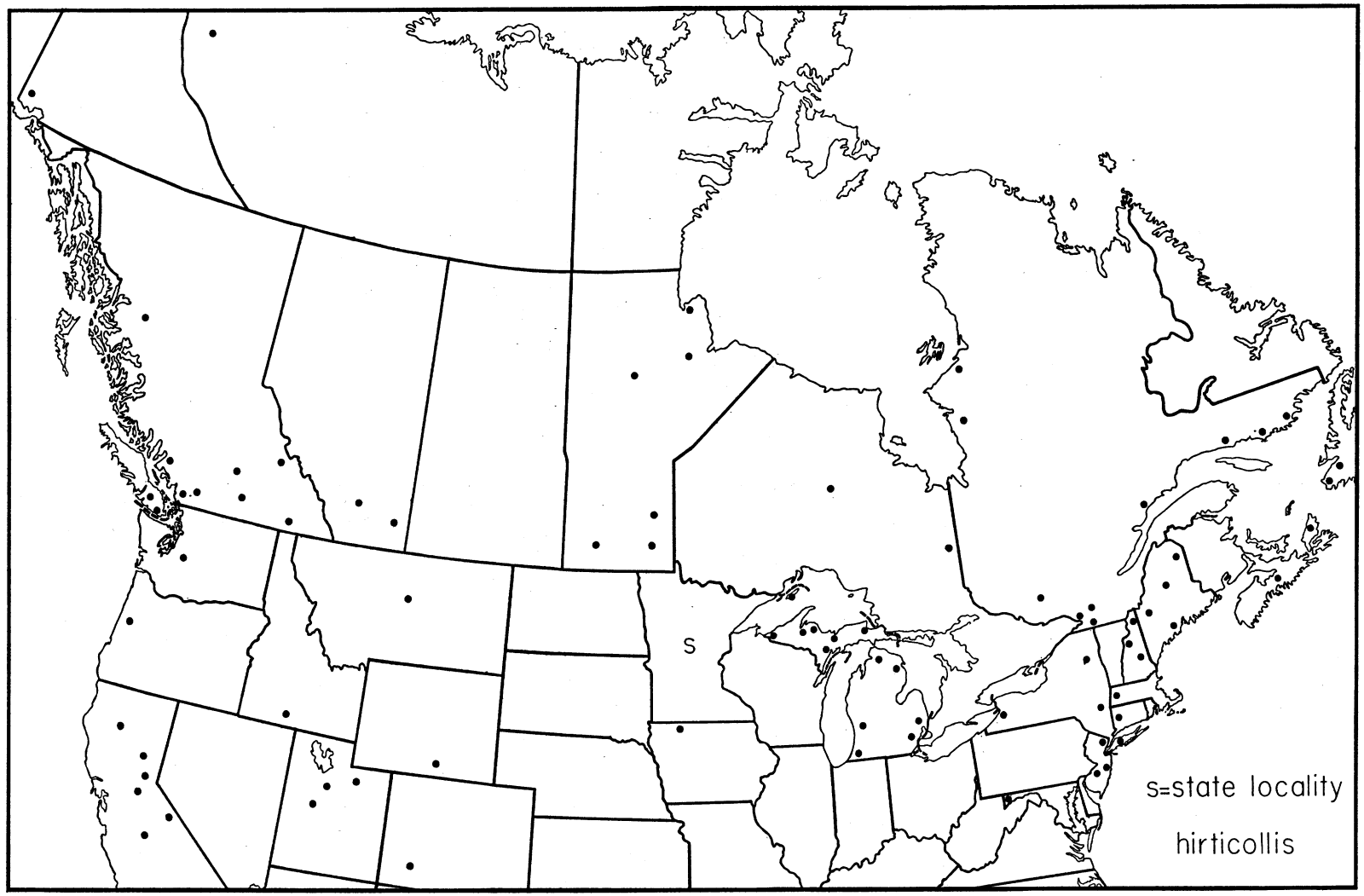


FIG. 35. Distribution of *Donacia hirticollis*.

land expedition (1828, p. vii) has this note: "An Account of the objects of Natural History, collected on our journey, being too voluminous to be inserted in the Appendix, has been reserved for a separate work, which will be published as soon as possible, by Dr. Richardson and Professor Hooker, under the sanction, and by the assistance of His Majesty's Government."

Finally Kirby (1837, p. xxii) writes: "Amongst the other objects of Natural History collected in Captain, now Sir John, Franklin's last expedition to the Polar Seas, the *Insects* form a very principal and interesting feature, not only on account of the number of individual species, which is considerable, but also on account of several new forms which they present to the scientific Entomologist." Kirby's statement referring to the last land expedition only, and the preceding discussion, appear to eliminate conclusively any consideration of the first, the 1819–1822, expedition. The search consequently can be confined to the route of the second, and last, land expedition.

From a careful study of Franklin's narrative (1828) it was found that the expedition was near the sixty-fifth parallel for the first time on August 7, 1825, when it reached Fort Norman on the Mackenzie (latitude 64° 40′ 30″ N., longitude 124° 53′ 22″ W.). At this point the personnel of the expedition was divided into three parties. The first, under Franklin, went down the Mackenzie to the ocean, returning in about a month. The second, under Richardson, proceeded by boat through the Great Bear River into Great Bear Lake and along its north shore. The third, under George Back, was detailed to establish a base on Great Bear Lake at which to spend the winter in preparation for the exploration along the shores of the Arctic Ocean the following year. This was done, and the camp was named Fort Franklin in honor of the leader. Its position was latitude 65° 11′ 56″ N., longitude 123° 12′ 44″ W. The three parties reassembled at Fort Franklin by September 5, and from that time on throughout the balance of 1825 and all of 1826 the fort was occupied by all or at least one of the members of the expedition. On June 14, 1826, Richardson with two other men went by canoe to collect flowers in bloom along the borders of Bear Lake River. On June 21, 1826, the expedition left Fort Franklin for the north, reaching Fort Norman on June 25. On June 28 they were on their way north again, soon passing beyond the sixty-fifth parallel. By September 21, 1826, all of the expedition was back at Fort Franklin, one detachment under Richardson having returned September 1. Richardson proceeded south in December, 1826, and Franklin started south on February 20, 1827.

From the foregoing it is obvious that considerable time was spent by at least some members of the expedition in that area traversed by the sixty-fifth parallel which lies approximately between Fort Norman and Fort Franklin. The Bear Lake River, in its course from Great Bear Lake to the Mackenzie, roughly follows this parallel and crosses it three times. The mileage according to Franklin (1828, p. 50) from the mouth of Bear Lake River, downstream a short distance from Fort Norman, to Fort Franklin is 91 miles.

Kirby lists 343 species of Coleoptera. Of these, 90 were not collected by the expedition, and 14 others are doubtful. The locality of 68 of the remaining 239 is unknown. Eight others were collected in four different localities. The remainder, 163, were collected at the fifty-fourth and sixty-fifth parallels, with 75 having been taken at the sixty-fifth, a few of these at the fifty-fourth also. With such a large percentage of the species having been secured in two general localities, the fifty-fourth and sixty-fifth parallels, and because the expedition traveled largely by water, it certainly appears that a more intensive collecting effort was made when the expedition halted for some time rather than on short stops on the way.

In light of all of the foregoing, there seems to be little doubt that *hirticollis*, one of those species of the sixty-fifth parallel, was collected somewhere between Fort Norman and Fort Franklin or near Fort Franklin itself, with the very strong likelihood that it was taken near Fort Franklin, on Great Bear Lake, District of Mackenzie, Northwest Territories.

It is interesting to note that in the Canadian National Collection there are three males and one female which were collected by

S. D. Hicks on July 27, 1949, on *Nymphozanthus* (=*Nuphar*) *variegatus* Engelmann at Norman Wells, a settlement on the Mackenzie River about 50 miles farther north downstream from Fort Norman.

GENERAL DISTRIBUTION: Canada from Newfoundland and Nova Scotia west through Quebec, Ontario; Northwest Territories to Yukon and British Columbia, Alaska; United States from Maine south to New Jersey and Maryland, west through New York, Michigan, Iowa, Minnesota, Montana, Wyoming, Idaho, Colorado, and Utah to Washington, Oregon, and California.

The species is monotypic and shows little variability in its distinctive morphological characters, except in the color of the elytra, throughout its extensive range. Generally these are dark metallic blue, green, or purple, but examples occur fairly often with flavous elytra.

Of 290 specimens examined (194 males, 96 females), 26 males, about 13.5 per cent, and 17 females, about 17.5 per cent, had flavous elytra. Of the total number seen, 135 were from Canada and included 10 males and five females with flavous elytra, or 11.6 per cent and 10 per cent, respectively. Thirty-eight specimens (22 males, 16 females) from all over Michigan showed eight males and nine females, or 30 per cent and 53 per cent, respectively, with flavous elytra. With 38 specimens from Michigan, 13 per cent of all that were seen were from that state, but 30 per cent of all the males and 53 per cent of all the females with flavous elytra came from Michigan.

Specimens with the flavous elytra were seen from all parts of the range except the extreme north and south, but this type of variability is not at all unusual in this genus. While it might appear from the Michigan figures that there was a geographical pattern, it seems more likely that the generally small samples from all other sections influenced the results and that more adequate sampling throughout the range would present an entirely different picture.

HABITS: This species is one of the few members of the subgenus the area of distribution of which includes Alaska and the northern territories of Canada. It has been taken at about 100 feet above sea level in New Jersey; at 2500 feet in western Maryland; at 3000 feet at Cypress Lake, British Columbia; at 3100 feet near Canyon City, Yukon; at 6000 feet at Revelstoke Mountain, British Columbia; and at 10,000 feet in the Parowan Mountains, Utah.

In Maine a few adults of *hirticollis* were collected on *Nuphar advena* Aiton and *Pontederia cordata* Linnaeus, but most commonly and at several localities in Maine it was found on *Sparganium angustifolium* Michaux and *Sparganium* (species?). In New Hampshire and New Jersey a few were taken on *Sparganium* (species?).

According to the labels on some specimens examined, at Rosen Lake, British Columbia, it was found on *Polygonum amphibium* Linnaeus, at Como Lake, Quebec "on flowers of *Nymphaea*," and at Cowichan Lake, Ontario, "on leaves of *Nuphar polycephalum*." As stated above, a small sample (three males, one female) was seen from Norman Wells, which was collected on *Nymphozanthus* (= *Nuphar*) *variegatus* Engelmann.

Berg (1949) found that in Michigan five species of *Potamogeton* were affected by *hirticollis*—*alpinus* Balbis, *amplifolius* Tuckerman, *ephihydrus* Rafinesque-Schmaltz, *natans* Linnaeus, and *Richardsonii* (Bennett)—the parts attacked being the roots, stipules, stems, and leaves.

Hoffman (1940a) states that in Michigan *hirticollis* lives on more than one plant and lists *Potamogeton natans* Linnaeus and *Sparganium angustifolium* Michaux for the adults. For the larvae, in addition to the preceding two, he lists *Glyceria borealis* (Nash), *Sagittaria latifolia* Willdenow, and *Sparganium diversifolium* Graeb (=*chlorocarpum* Rydberg) as food plants. Because he collected a few cocoons but no larvae of this species on plants other than those enumerated, he believes there may be a few more host plants.

Andrews (1923) collected *hirticollis* at Whitefish Point, Michigan, in the partly opened buds of yellow water lilies as well as on "lily pads."

As would be expected because of its more northerly distribution, most specimens examined bore labels with July, August, and early September dates. In New Jersey, Maryland, Connecticut, Massachusetts, and south-

ern New York, there were a few specimens with early June dates together with one taken on April 5 at Ramsey, New Jersey. A male collected at Aweme, Manitoba, June 1, a female at Victoria, British Columbia, June 9, a male at Lethbridge, Alberta, June 4, a female taken in a rotary flight trap on June 23 at Kings Lake, Matanuska Valley, Alaska, and a few from Thunder River, Quebec, collected in the last half of June provided the only other early records. Some of these specimens, particularly those from Canada and Alaska, might have been adults that had overwintered in the adult stage. The optimum period for adults is undoubtedly July and August. The latest seasonal date was provided by a female that was taken at Creston, British Columbia, on October 30. At Jefferson, Maine, a pair was taken copulating on July 18 and a few years later another pair was taken on July 22 at the same place. Hoffman (1940a) places the flying period at Douglas Lake, Michigan, from July to September 15.

Hoffman (1940a) states that adults of *hirticollis* spend almost their entire life "submerged except for brief periods when they come to the non-submerged parts of the plant." He noted only two instances of their flying from one plant to another. The collection of sizable samples at several localities near Jefferson, Maine, and a smaller sample in Maryland, all on the upper surface of the floating leaves of *Sparganium* (species?), indicated that probably the insects spend more time on the surface than Hoffman believed. However, field experience with this species bears out Hoffman's statement that males are much more frequently found on the upper surface than females.

Unlike the more active members of the subgenus such as *subtilis* or *cincticornis* which avoid capture by taking flight, *hirticollis* quickly crawls underneath the floating leaf, submerging itself.

Hoffman (1940b) collected the eggs of *hirticollis* from between the stem and stipules of *Potamogeton natans* Linnaeus and also between the submerged parts of two leaves of *Sparganium angustifolium* Michaux. Upon hatching, the larvae drop to the bottom and seek the roots of their food plants.

Donacia hypoleuca Lacordaire

Figures 20, 21, and 36

Donacia hypoleuca LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 101.

TYPE LOCALITY: Louisiana.

GENERAL DISTRIBUTION: Virginia to South Carolina, Georgia (Fattig, 1948), Mobile County, Alabama (Loding), Florida (Blatchley, 1924), west through Ohio, Indiana, Michigan, and Illinois to Iowa, Nebraska, Kansas, Oklahoma, and Texas. One specimen in the collection of the Academy of Natural Sciences of Philadelphia was collected by Laurent at Atlantic City, New Jersey, July 24, 1880, and Schaeffer (1925) states Wenzel took the species at Five Mile Beach (now Wildwood), New Jersey, in July. It appears quite likely that both these occurrences were accidental.

This monotypic species, while covering quite a wide territory, seems not to have undergone any geographical changes and there is but little intraspecific variability.

HABITS: It possesses a habit unique in this genus of being attracted by light. Of the 189 specimens examined 29 were collected at lights and were so labeled. These records are as follows: Kansas: Topeka, July 23, one female; Ottawa, August 1, one female, 19 males; Douglas County, June one male. Louisiana: Gueydan, June 11, one male, one female. Missouri: Kansas City, July 1, one female. Texas: Victoria, July 28, one female; Plano, August, one male. Oklahoma: Stillwater, September 19, one male.

Ulke (1902) wrote that "the only specimens of *hypoleuca* were found at electric lights" in the District of Columbia.

It would appear that this species is more nocturnal than the other members of the genus.

According to Andrews (1923) at Whitefish Point, Chippewa County, Michigan, *hypoleuca* was found "on sedges growing at edges of pool."

Donacia liebecki Schaeffer

Figure 37

Donacia liebecki SCHAEFFER, 1919, Jour. New York Ent. Soc., vol. 27, p. 314.

Donacia pallipes LACORDAIRE, 1845, Mem. Soc.

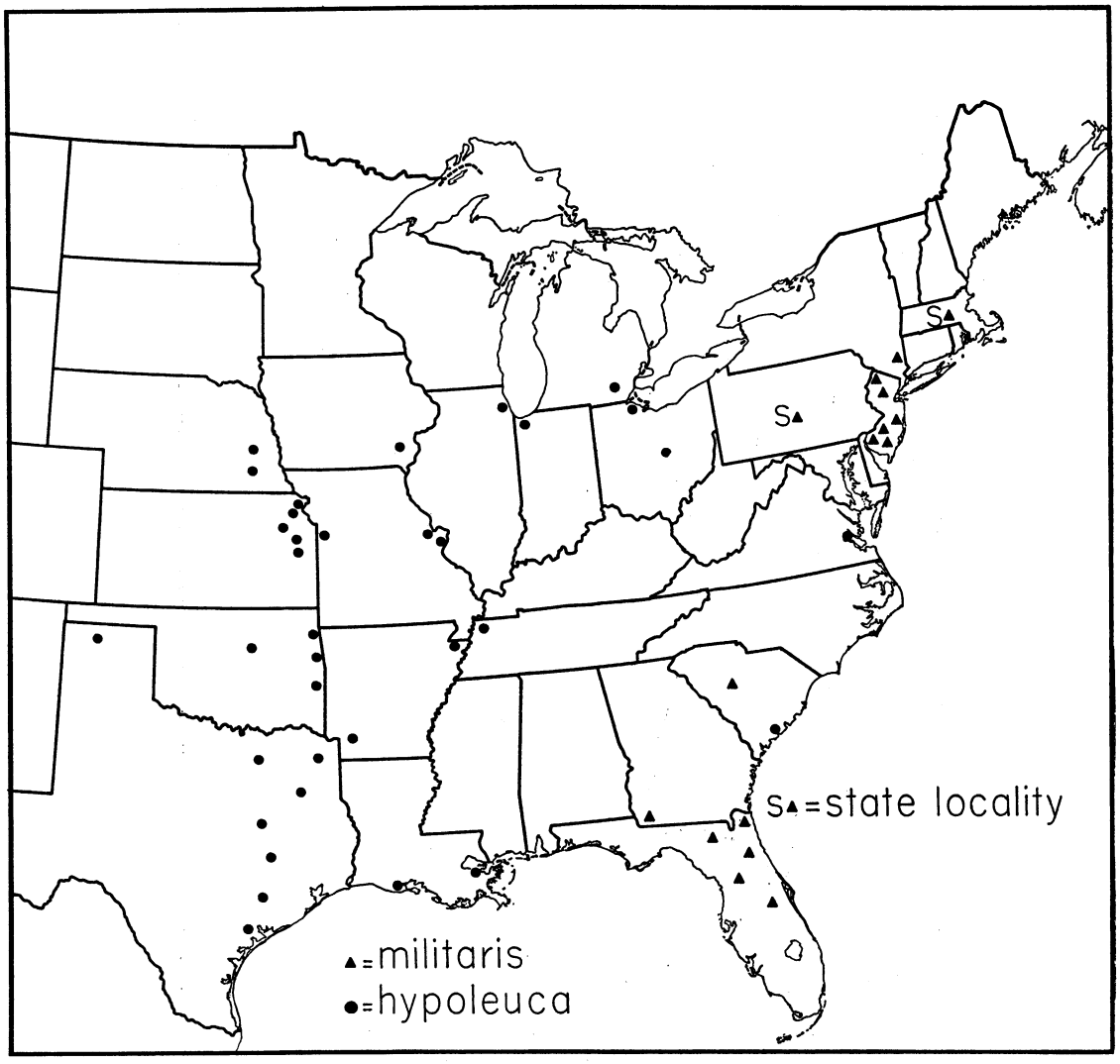


FIG. 36. Distribution of *Donacia hypoleuca* and *D. militaris*.

Roy. Sci. Liège, vol. 3, pt. 1, p. 149 ("vicinity of Boston in the United States").

TYPE LOCALITY: Wyandanch, Long Island, New York.

GENERAL DISTRIBUTION: Maine; Massachusetts; Long Island, New York; New Jersey; North Carolina; South Carolina; Michigan; and Kentucky.

While *liebecki* and *megacornis* resemble each other and are apparently closely related, the two species can be readily separated. The former has bicolored antennal segments, a small tooth on the hind femora, and the outer apical angles of the elytra explanate. In *megacornis* the antennal segments are generally reddish brown, the tooth on the hind femora is large, triangular, and with a serrulate hind margin, and the outer apical angles of the elytra are simple.

HABITS: Schaeffer (1925) states that this species "is commonly taken in the pine regions of Long Island and New Jersey on the flowers and leaves of the white water lily." At Wyandanch, Long Island, he reports that "a small number were taken on the flowers of the white daisy," which he felt was due to

FIG. 37. Distribution of *Donacia liebecki.*

the fact that a near-by lake had been dredged, destroying the natural food of the species so that the insects turned to the daisies which were blooming profusely. That this is not unusual is indicated by a similar occurrence at Riverhead, Long Island. Roy Latham of Orient, Long Island, sent some specimens of this species that he had collected on June 1, 10, and 14, 1953, on the flowers of white daisies in a dry field some distance from marshes. In his letter of transmittal he wrote that *liebecki* was also common at the time "on the flowers of the yellow pond lily in a pond one-half mile away."

Schaeffer (1925) quotes H. W. Wenzel regarding this species in New Jersey as follows: "At Newfield, May 21, in numbers on the bloom of *Orontium aquaticum* Linnaeus and easily disturbed during the heat of the day when they take to flight and rest on the leaves of the plant. At Bamber, June 9, in the flowers of *Castalia* (= *Nymphaea*) *odorata* Aiton. At Newfield, June 18, the bloom of *Orontium aquaticum* Linnaeus being over specimens were found in the flowers of *Nymphaea* (*Nuphar*) *advena* Aiton. At Hammonton, July 16, in numbers in the flowers of *Castalia* (= *Nymphaea*) *odorata* Aiton."

Near Warren Grove in the Pine Barren region of New Jersey a few specimens were collected on May 30 on the flowers of *Nymphaea odorata* Aiton. The year previous near

the same locality on June 1 the species was common on the heads of pipewort, *Eriocaulon compressum* Lamarck. It appeared to be feeding on them. A number were in copulation on the flower heads. The beetles were not especially wary or active and could be caught merely by being picked off the pipewort. They lit on the scape but seemed to prefer the heads.

A week later a large series was collected at the same spot, an old abandoned cranberry bog. This bog was divided by an earthen wall, with a broken sluiceway providing the drainage from the upper to the lower section downstream. Above the wall *liebecki* confined itself to the pipewort, never more than a few specimens to each head, though *Nymphaea odorata* Aiton was present in considerable numbers and in bloom.

But below the wall, in the lower section, *liebecki* was very common on the flowers of *N. odorata* Aiton, swarming over the petals and yellow stamens, particularly the latter. Each flower had a number, and many were copulating. There was no pipewort in this lower section.

Despite the fact that both host plants were readily available above the wall, pipewort was apparently preferred, while below, the white water lily was the choice.

At Dennis, Massachusetts, Frost (1931) found *liebecki* on July 5, 1930, on the flowers of *Nuphar advena* Aiton. While Procter (1946) reports this species on Mt. Desert Island, Maine, as scarce, it was found mating in the white water-lily flowers on July 28 and August 3.

Schaeffer (1925) took a few specimens at Wading River, Long Island, on the flowers of *Carex*. He expressed the opinion that the species does not breed on strictly aquatic plants even though it generally was found on them, but probably breeds in *Carex*. He states that "the species which are known to breed in aquatic plants have the pubescence of the underside denser, finer and shorter than in *liebecki*." In view of the fact there are other species of *Donacia* with similar pubescence, such as *D. subtilis* Kunze, for example, that breed on aquatic plants and in view of the fact *liebecki* is in close association with at least two aquatic plants it appears more likely that it breeds at least on some species of aquatic plants.

Donacia magnifica LeConte

Figure 38

Donacia magnifica LeConte, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 310.

Type Locality: "Lake Superior."

General Distribution: Canada from Quebec west through Ontario and Manitoba to British Columbia; in the United States, California, Wyoming, and Utah, and, according to LeConte (1879), Alamosa, Colorado, and, according to Hubbard and Schwarz (1878), Marquette, Michigan.

This monotypic species apparently is most closely related to *D. proxima* Kirby and superficially resembles it. *Proxima*, however, is generally larger than *magnifica* and has the pronotum noticeably wider at the apex than long and the surface impunctate rather than punctate.

While its range practically spans the continent in Canada the bulk of the specimens examined were from a limited part of its Canadian range. Of the 105 specimens seen, 35 were from two localities in Alberta, 31 from three localities in Manitoba, 15 from two localities in British Columbia, and 10 from four localities in Quebec. As it has been collected in Utah and Alamosa, Colorado, 7600 feet (LeConte, 1879), it seems likely that it will be found at high elevations in the area between these states and Canada.

Habits: The earliest date of occurrence was June 24 at Wellsville, Utah, and Winnipeg, Manitoba, with the month of July appearing to be the time of greatest abundance. On October 30 a few were taken at Creston, British Columbia, "on flood debris" by Stace Smith.

A pair collected by J. B. Wallis at Winnipeg, June 24, 1911, were labeled "on *Sagittaria* sp.?" Carr (1923) records taking *magnifica* at Edmonton, Alberta, July 12, 1922, "on arrowhead." Three specimens collected by G. Stace Smith at Creston, British Columbia, August 17, 1933, were labeled "on leaf of water lily."

Donacia megacornis Blatchley

Figure 39

Donacia megacornis Blatchley, 1910, Bull. Indiana Dept. Geol. and Nat. Resources, no. 1, p. 1103.

Donacia megalocera Weise, 1913, Wiener Ent. Zeitg., vol. 32, p. 18.

FIG. 38. Distribution of *Donacia magnifica*.

FIG. 39. Distribution of *Donacia megacornis.*

TYPE LOCALITY: Lake County, Indiana.

GENERAL DISTRIBUTION: New Hampshire, Massachusetts, New York, New Jersey, Michigan, Indiana, and Iowa.

This monotypic species is closely related to *D. liebecki* Schaeffer and is easily confused with it. They both occur on the same host plant and at the same time. The separation of the two is not difficult and is discussed under *liebecki.*

Megacornis is one of the less common species in collections, and according to the specimens seen its distribution is somewhat limited. However, further collecting at the proper time of year (late spring and early summer) will probably result in the extension of its range to embrace the northeastern quarter of the United States.

HABITS: In New Jersey the earliest date that it has been taken was May 25 and the last date July 26. In this state it seemed to be most abundant from mid-June to mid-July.

Megacornis is one of the numerous species of the subgenus *Donacia* that show a marked preference for the white water lily, *Nymphaea odorata* Aiton. It prefers the flowers to the leaves.

Schaeffer (1925) states that H. W. Wenzel generally took this species in New Jersey on

N. odorata Aiton, but on one occasion at Malaga, New Jersey, on June 18, it was collected from the flowers of *Nymphaea* (=*Nuphar*) *advena* Aiton.

Andrews (1923) collected *megacornis* "on sedges" at Whitefish Point, Michigan.

Donacia militaris Lacordaire

Figures 5 and 36

Donacia militaris LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 115.

Donacia floridae LENG, 1891, Trans. Amer. Ent. Soc., vol. 18, p. 166 (Enterprise, Florida).

TYPE LOCALITY: "United States in the vicinity of Boston."

GENERAL DISTRIBUTION: Massachusetts and New York south through Pennsylvania and New Jersey, South Carolina, and Georgia to Florida.

This monotypic species seems to be confined to the easternmost states from Massachusetts to Florida and does not appear to have undergone any geographical changes. Of the 116 specimens examined, 11 were from Florida, 83 from New Jersey, and the remaining 22 were divided between five states.

Superficially it resembles *rufescens* Lacordaire and the very small examples of *cincticornis* Newman and occurs in the same habitat with them. But the males of *militaris* can readily be distinguished by the hind femora, which are very strongly incrassate and bent almost from the base, and by the spine-like prolongation internally of the apex of the hind tibiae. The females can be separated by the slender, unarmed, hind femora and the pubescent inflexed pronotal margins.

HABITS: Schaeffer (1925) states that this species was taken on both the flowers and the leaves of the white water lily, *Castalia* (=*Nymphaea*) *odorata* Aiton. Blatchley (1924) gives this same plant as the food plant in Florida. Several specimens from Swansea, South Carolina, were labeled as from "white lily." A number from New Jersey bore labels reading "lily pads" and "white pond lily." In New Jersey specimens were taken on the leaves of *Nymphaea odorata* Aiton but not on the flowers. It would appear, therefore, that this widely distributed plant is preferred by *militaris* throughout its range.

In New Jersey the flying period seems to extend from mid-July to very early September. In Bainbridge, Georgia, some specimens were collected June 1 and 2.

Donacia palmata Olivier

Figures 7, 10, 40–43

Donacia palmata OLIVIER, 1795, Entomologie, Paris, vol. 4, no. 75, pp. 8–9, pl. 1, figs. 7a–c.

Donacia claudicans GERMAR, 1821, Mag. Ent., Halle, vol. 4, pp. 173–174 (North America).

TYPE LOCALITY: "North America."

GENERAL DISTRIBUTION: Nova Scotia west through Ontario; Maine west to Illinois, south through North Carolina, Alabama, and Texas. Fattig (1948) records it from Tallulah Falls (Rabun County), Georgia, in the extreme northern part of the state, and Schaeffer (1925) on the authority of Bradley from Spring Creek, Decatur County, Georgia, in the extreme southwestern section of the state. Wickam (1909) lists it from Ames, Iowa. No specimens were seen from either of these two states.

Until the present writing, *D. palmata* Olivier has appeared to be a monotypic species, confined to eastern Canada and the eastern half of the United States. It is quite closely related to *D. piscatrix* Lacordaire and sympatric with it throughout its range. But new material that has come to hand from the south central section of the United States has not only extended the range of *palmata* but has also made it appear that this species is really polytypic, with an area of intergradation, the limits of which are not presently known.

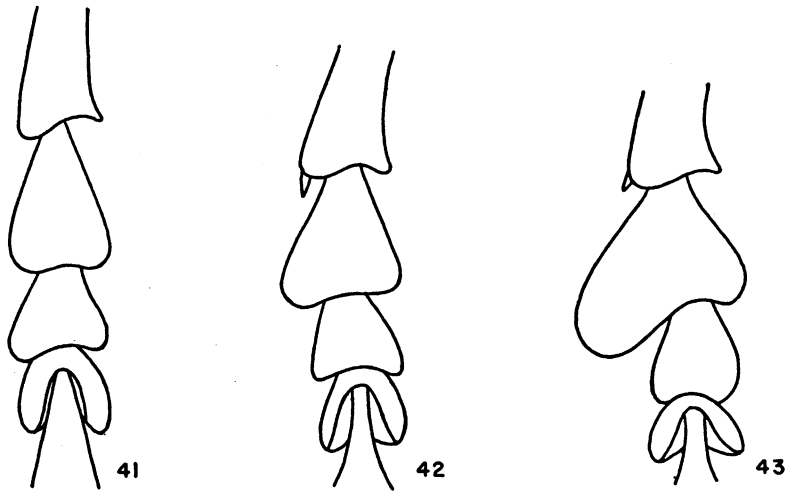
The males of *palmata* have been readily separable from other species of *Donacia*, including its near relative *piscatrix*, by the widely dilated first segment of the anterior tarsi. This character has been remarkably constant throughout the entire range of this species and in itself has been sufficient to identify the males of *palmata*. The females are less readily separated, particularly from the females of *piscatrix*. But in *palmata* the apex of the last abdominal segment is triangular or subtriangular, while in *piscatrix* it is usually produced into a short process, which in many specimens is very distinct.

A series of 17 males and 13 females collected by J. O. Martin at "Devils River, Texas, near Del Rio" and one male and two females labeled Devils River, Texas, collected by

FIG. 40. Distribution of *Donacia palmata*.

J. W. Green resemble *palmata* in many respects yet appear to be distinct. Like *palmata* all, both male and female, have the small indistinct reddish spots on the head between the eyes, the apical tooth-like projection at the apex of the middle tibiae, and the first ventral abdominal segment flat or slightly concave. In the females the apex of this segment is triangular or subtriangular, but four of the females have an indication of the prolongation at the apex but not so distinctly as in *piscatrix*. On the other hand the prothorax differs from that of typical *palmata* in that the sides are not parallel or subparallel but distinctly converge towards the base, the disc of the pronotum is more distinctly elevated from the sides, front, and base, which gives the surface a more uneven appearance, and the median line is more distinct and deeply impressed, extending from the anterior to the basal impression. The segments of the anterior tarsi of the male are wide, as are those of *palmata*, with the very noticeable exception of the first segment. This, instead of being widely dilated and subcordate as in *palmata*, is triangular and slightly wider at the apex than the second segment.

The Devils River population is quite dis-



FIGS. 41–43. Anterior tarsal segments. 41. *Donacia angustipes.* 42. *D. palmata*×*angustipes.* 43. *D. palmata.*

tinct and readily separable from *palmata* and could therefore be recognized as a new species were it not for what appears to be a connecting link. Between the Devils River sample and typical *palmata*, the nearest specimens of which were from Illinois, there are at hand two males from Johnston County, Oklahoma. These were collected May 27, 1930, by R. D. Bird. They are apparently intermediates, having the characteristics of both *palmata* and the Devils River population. Both of these males have the dilated first segment of the anterior tarsi that is subcordate but noticeably less dilated than in typical *palmata* and is about midway between that of the latter and that of the Devils River series. The shape of the prothorax and the surface of the pronotum more closely resemble the Devils River specimens than *palmata* but the median line, distinct in the Devils River population, is absent as in the case of many *palmata*. In only one respect do these two Oklahoma specimens vary from both *palmata* and the Devils River series. The small, indistinct, reddish brown spots on the head are absent. This very infrequently happens in *palmata*. Of 75 specimens, both males and females, but one was without these spots.

As the two Oklahoma specimens give clear evidence of being members of an intergrading population between *palmata* proper and the Devils River sample it would appear that the Devils River population must be considered a subspecies of *palmata* and as such is named *angustipes*.

Delimitation of the zone of intergradation of these populations depends on the collecting of material in the areas that lie between.

When Schaeffer (1925) designated *congener* LeConte (type locality, "Georgia") as a "variety" of *piscatrix* he referred the six specimens he had before him from Del Rio and Devils River, Texas, to *congener* also. Three of these orginal six specimens, a male and two females, all from Del Rio, have been available for this present study. Each bears Schaeffer's determination label as *congener*. Careful examination indicates they are neither *congener* nor *piscatrix* but are *angustipes*, the subspecies of *palmata* discussed above. *Piscatrix* has no small indistinct reddish spots on the head between the eyes, but these two specimens have, as do *palmata* and *angustipes*. The female of *piscatrix* has the apex of the last abdominal segment produced. This female, as does that of *palmata*, has the last abdominal segment triangular and not produced. The surface of the first ventral abdominal segment is usually deeply concave medially in the male of *piscatrix*. It is flattened in this male specimen as in *palmata*. The prothorax and the anterior tarsal segments are quite different from those of *piscatrix* but are similar to those of *angustipes*. It therefore would appear that Schaeffer was

mistaken in considering the Del Rio and Devils River specimens *congener*, a "variety" of *piscatrix*, and that they are actually the subspecies of *palmata*, *angustipes*.

KEY TO THE SUBSPECIES OF *Donacia palmata* OLIVIER

1. Sides of prothorax generally parallel or subparallel; anterior prothoracic angles usually not prominent; pronotal disc not distinctly elevated from front, sides, and base; first anterior tarsal segment in the male subcordate ..... *palmata*
2. Sides of prothorax plainly converging towards the base; anterior prothoracic angles prominent; pronotal disc distinctly elevated from front, sides, and base; first anterior tarsal segment in the male triangular... *angustipes*

Donacia palmata angustipes, new subspecies

Similar to *palmata* but differing in that the sides of the prothorax converge towards the base, the disc of the pronotum is distinctly elevated from the front, sides, and base of the pronotum, the median pronotal line is always present, usually distinct and impressed, especially towards the front and the base. The male has the first anterior tarsal segment triangular, about equal in width at the apex to the second tarsal segment, and the anterior tooth on the posterior femora is absent or reduced to an indistinct ridge of small denticles, which vary in length.

TYPE MATERIAL: Holotype male, allotype female, and 24 paratopotypes, 14 males and 10 females, collected at "Devils River near Del Rio," Val Verde County, Texas, June 16, 1932 (J. O. Martin), and three paratypes collected at Devils River, Texas, June 16, 1932 (J. W. Green), are all deposited in the California Academy of Sciences, San Francisco. Four paratopotypes bearing the same data as the holotype are deposited as follows: two in the collection of the author and two in the American Museum of Natural History. Three paratypes, a male and female labeled Del Rio, Texas, May 27, 1912 (J. D. Mitchell), and a female collected at "Del Rio, Texas, July 23–24, 955 ft." are in the United States National Museum.

HABITS: Schaeffer (1925 and 1928) states that *palmata* occurs "on the flowers and leaves of the yellow water lily." Blatchley (1910) reports it on both white and yellow water lilies. MacGillivary (1903), who made an exhaustive study of the biology of this species at Ithaca, New York, found it very plentiful on the plants of the yellow pond lily, *Nymphaea* (=*Nuphar*) *advena* Aiton. According to him the female cuts a small hole in the leaf of the lily and, inserting the tip of her abdomen through the opening, lays her eggs in a double row on the under surface around the gnawed circle. In about 10 days the eggs hatch, and the larvae find their way to the roots of the lily. When the larvae are ready to pupate they spin a cocoon attached to the rhizome of the plant. He states that the beetles do not emerge in definite broods, for he collected eggs in all stages of development at all times during the spring and fall.

The ecological data gathered from the specimens seen indicate that *Nuphar advena* is the preferred host plant. At Como, Quebec, and Litchfield, Connecticut, the species was collected on the flowers of *Nuphar*. At Blue Ridge, New York, and Acotink Creek, Potomac River, Virginia, it was also found on this plant.

Field experience with the species in Camden County, New Jersey, indicates that it is not very common in spite of the fact that the yellow pond lily is. On May 28 and June 4 it was collected on the leaves of *N. advena* at the same time that *piscatrix* was very common in the same locality and on the same plants. *Donacia piscatrix* favored the blossoms; *palmata*, the leaves. On June 4 two pairs in copulation were collected from the leaves. One specimen was collected at Boardman, North Carolina, on *Taxodium distichum* (Linnaeus) Richard (bald cypress).

Although specimens were taken in late July and early August, the period of greatest abundance seems to be late May, June, and early July.

Donacia parvidens Schaeffer

Figures 3 and 44

Donacia parvidens SCHAEFFER, 1919, Jour. New York Ent. Soc., vol. 27, p. 311.

TYPE LOCALITY: Yaphank, Long Island, New York.

GENERAL DISTRIBUTION: Massachusetts and Rhode Island, south through New Jersey and Virginia to Georgia, west through New York, Michigan, and Indiana to Minnesota.

This monotypic species does not appear to

have undergone any geographic changes, and there is very little intraspecific variability in the samples studied. It is closely related to *D. edentata* Schaeffer and can be easily mistaken for that species. It is, however, quite distinct. Some of the helpful characters for separating the two species are given under *edentata*. In addition, the tooth on the posterior femora is quite distinct and is always present in *parvidens*, while in the very occasional specimens of *edentata* in which such a tooth on the posterior femora occurs, it is very small and indistinct.

HABITS: Schaeffer (1925) states that this species is found on the flowers and leaves of the white water lily (*Nymphaea odorata* Aiton). However, considerable field experience with this species makes it plain that it preferred the leaves of *Nymphaea odorata* Aiton rather than the blossoms. In fact, during the period of its greatest abundance in New Jersey (late May) usually few lilies are in bloom.

At Atsion, New Jersey, a female was taken on May 6 on the leaf of *Nuphar* (species?). From Lakewood, New Jersey, and Washtenaw County, Michigan, specimens were seen labeled as "on water lily leaves." One

FIG. 44. Distribution of *Donacia parvidens*.

male from Riverhead, Long Island, New York, bore the label reading "on *Sparganium*." At Hyannis, Massachusetts, a male was collected June 14 from the leaf of *N. odorata* Aiton.

Although a male was collected on March 29 and a female on November 11 at Virginia Beach, Virginia, from the data on the 182 specimens examined it is obvious that these were unusual dates of occurrence and that the period of greatest abundance extended from late May to mid-June.

In Burlington County, New Jersey, one pair was found in copulation on April 28, an early date. A few years earlier a number were mating on May 24 when the species was very abundant. The mating takes place on the lily pads and not on or within the flowers.

This species is not so active or so wary as *cinticornis* with which it occurs during the latter part of its flying period. In avoiding capture it takes flight but is somewhat slow to "take off." In flying to another lily leaf when alarmed it seems quite inept at alighting, frequently falling into the water. As is true of some of the other members of the subgenus, the pubescent under surface is of great assistance in its flying up from the surface of the water.

Donacia piscatrix Lacordaire

Figures 1, 9, and 45

Donacia piscatrix LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 113.

Donacia carolina LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 114 (North America).

Donacia cuprea MELSHEIMER, 1847, Proc. Acad. Nat. Sci. Philadelphia, vol. 3, p. 158 (Pennsylvania).

Donacia alutacea LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 311 ("N. York, Penna.").

Donacia congener LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 310 (Georgia). New synonym.

TYPE LOCALITY: "North America."

GENERAL DISTRIBUTION: Canada, New Brunswick (Brown, 1929), Quebec, Ontario; United States from Maine south to Florida, west to Minnesota, Iowa, Kansas (Douglass, 1929), and Oklahoma to Texas. In the Canadian National Collection there is a female labeled "B. C., Entomological Branch, Ottawa." A male and female labeled "Wy., Minn. Univ." are in the United States National Museum collection. Finally, in the Horn collection at the Academy of Natural Sciences of Philadelphia there are two males and four females labeled simply "Cal." It would appear that the authenticity of these western records is extremely questionable and that quite likely the specimens were erroneously labeled. There seem to be no other similar records, and Mead (1938) does not list *piscatrix* as occurring in Washington, Oregon, or California.

Schaeffer (1925) states that the shape of the prothorax of *piscatrix* is very variable and calls attention to the fact that "Florida specimens have the prothorax very wide in front and rather strongly converging to base, the sides feebly or not sinuate." These, he says, "occur with typical and intermediate specimens." The examination of a number of Florida specimens corroborated his observation, for it was found that the rather straight sides of the pronotum converging towards the base from the wide front occurred in specimens of both sexes from Lake City in the northern part of the state to Miami in the south.

In addition the surface of the pronotum was very finely granulate rather than alutaceous, and the posterior femora in both sexes were more strongly clavate than usual in *piscatrix*. But from some of the same localities there were specimens which had the sinuate pronotal sides scarcely converging towards the base, an alutaceous pronotal surface, and less strongly clavate posterior femora, all characteristics of *piscatrix* from other areas.

A sizable sample from Okefenokee Swamp, Georgia, collected July 27, 1939, by R. H. Beamer showed the same variability in the same characters, with the extremes as well as the intermediates. Two males from Crawford County, Indiana, had all the characters of the Florida form. From Harris County and Christoval, Texas, a male taken at each locality had the very strongly clavate posterior femora but the typical *piscatrix* prothorax. The same was true for a male labeled only "Wis." At Atco, New Jersey, a small sample was collected of which two males had the wider pronotum and straight pronotal sides but the pronotal surface was alutaceous

FIG. 45. Distribution of *Donacia piscatrix*.

and the posterior femora moderately clavate. The same was true of a male collected in another part of Camden County, New Jersey. A male labeled "Wy." had the straight pronotal sides and the granulate surface on the pronotum. At Philadelphia, Pennsylvania, a male was collected which had all the characteristics of the most extreme Florida form, including the definitely granulate pronotal surface.

In the female *piscatrix* the last ventral abdominal segment is produced at the apex into a distinct process, often truncate or emarginate. This was found in specimens from eastern Canada to Oklahoma and Texas. In fact over most of the range of the species this character appears to be constant. But in the southeastern section of its area of distribution exceptions occur. From Southern Pines, North Carolina, a female had the last ventral abdominal segment triangular, with straight sides terminating in a narrowly rounded point, similar to that of *palmata* Olivier. In a sample of 12 females from Okefenokee Swamp, Georgia, one female had this segment somewhat broadly rounded at the apex, with no evidence of the usual process. Two females from Florida, including one from Vero Beach, had a similar type of last segment.

From the material seen it appears that,

while the Florida form of variability is more common in that section of the range of *piscatrix* than elsewhere, similar specimens with some and occasionally all of its characters occur in other and distant parts of its extensive area of distribution.

Schaeffer (1925), on the basis of eight specimens (six from Del Rio and Devils River, Texas, and the two type specimens), made *congener* LeConte a variety of *piscatrix*. The types are both females. LeConte's description approximates *piscatrix*. An examination of the two types disclosed the fact that in one the last ventral abdominal segment was somewhat produced and in the other it was triangular, terminating in a subacute point. The same variability was found in specimens from North Carolina, Georgia, and Florida. The posterior femora were more strongly clavate than in most *piscatrix*, which again duplicates the variability previously noted in this portion of the area of distribution of *piscatrix*. Tarsal and antennal segments were similar to those of *piscatrix*. *Congener* LeConte therefore appears to be but an individual variant of *piscatrix*, with no particular geographical significance, and as such is placed in synonymy.

That a minor segregation may be taking place in the southeastern part of the range of *piscatrix* is a possibility, but at this time it does not seem sufficient evidence for a subspecies to be recognized.

At hand for study were two of the Del Rio, Texas, specimens Schaeffer referred to *congener* and a fair-sized series from Devils River, Texas. These were found to be not a "variety" of *piscatrix* but rather a subspecies of *palmata* Oliver and are discussed under that species.

HABITS: Hoffman (1940a) states that in Michigan *piscatrix* confines itself to *Nymphaea* (=*Nuphar*) *advena* Aiton, both as an adult and larva, the former feeding on the flower and the latter on the roots, or, rarely, on the rhizome. Schaeffer (1925) states that all records indicate that this species is found on the flowers and leaves of the yellow water lily, *Nuphar advena* Aiton. Blatchley (1924) writes that in Florida this water lily is its only food plant. In Indiana the same author (1910) wrote, "occurs mainly on the flowers and foliage of the yellow water lily, rarely on those of the white." Leng (1891) says that it occurs in the flowers and on the leaves of *Nuphar*. Andrews (1923) states that he took a specimen at Whitefish Point, Chippewa County, Michigan, in the flowers of the yellow water lily. Robertson (1889) reports that *piscatrix* in Florida visited *Nuphar advena* Aiton and was "abundant on the older flowers, where they were pairing, the females gnawing the petals and anthers." At Madison, Wisconsin, also, he states, the flowers of this same plant were preferred by *piscatrix*.

The data on the specimens examined merely emphasize the fact that this water lily is the host plant of *piscatrix*. A small sample from Swansea, South Carolina, was labeled, "yellow lily." A number of specimens from Litchfield, Connecticut, were collected in the blossoms of *Nuphar advena* Aiton. Specimens from Maine, Massachusetts, Ohio, and Virginia were taken on this same species of plant. On many specimens seen, which lacked a host-plant label, grains of yellow pollen, no doubt of *Nuphar*, were clinging to the under surface of the beetles. This was true of a female from Pushmataha County, Oklahoma, among others. In many localities in New Jersey *piscatrix* was collected but only on *Nuphar advena* Aiton. At Jefferson, Maine, on July 17 a lone specimen, a female, was collected on pickerelweed, *Pontederia cordata* Linnaeus. One other exception from the data on specimens was a male collected at Swansea, South Carolina, August 7, and labeled "white lily."

In New Jersey the flying period lasts from late May through July, being most abundant from the last week of May through June, although stragglers were collected as late as early September. In Florida and Texas, of course, it appears earlier; many specimens bear April dates. Blatchley (1924) states that it was common about Dunedin, Florida, in March and April, mating in the flowers. At Okefenokee Swamp, Georgia, a very large sample was collected the last week in July, and at Swansea, South Carolina, during the first two weeks of August a number were taken. Hoffman (1940a) found the flying period lasted in Michigan from mid-June to the end of July. He expressed the opinion that *Donacia piscatrix* is probably controlled to a large degree by the seasonal advancement of the flowers of its host, *Nuphar advena* Aiton. That it has a noticeable partiality for the

blossoms of the yellow water lily is very obvious in the field. On May 28 in Camden County, New Jersey, it was very abundant. While the beetles were on both the flowers and the leaves, the favorite spot was inside the blossoms on the lower row of stamens where they were partially enclosed by the curved sepals. This location they seemed to prefer for copulating, for a number of pairs were so engaged. Of the large number of pairs observed, only two were seen *in coitu* on the upper surface of the leaf and not in the flower.

Piscatrix as an adult in avoiding capture is noticeably less active and wary than *D. rufescens* Lacordaire and *D. cincticornis* Newman.

Schaeffer (1925), quoting Wenzel, says, "the eggs are laid in the flowers, where they may be found in numbers." Hoffman (1940a) found, however, by observation both in the laboratory and the field, that the female actually entered the water when the time came for oviposition and deposited her eggs in an irregular mass on the submerged portion of the blossom peduncle about 5 cm. below the surface.

Hoffman (1940a) further states that the larvae upon hatching in about 16 days drop to the bottom and crawl to the roots of *Nuphar advena* Aiton. Here they feed and pupate, forming their concoons in early August; in Michigan they emerge as adults in June of the following year.

Donacia porosicollis Lacordaire
Figures 12 and 46

Donacia porosicollis LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 150.

TYPE LOCALITY: "Des environs de Boston aux États Unis."

GENERAL DISTRIBUTION: Ontario, Manitoba, Quebec; New York, Massachusetts, Michigan, District of Columbia, Virginia, and, according to Schaeffer (1925), Illinois, "Cane" (=Dane) County, Wisconsin, St. Anthony Park, Minnesota, and Cumberland County, Maine. Leng (1891) lists Pennsylvania.

Like its close relative *biimpressa*, *porosicollis* shows considerable variability in a number of characters, especially in the form of the prothorax, but apparently the pronotal punctuation is always dense and coarse and the median line distinct. Although the posterior femora and the antennal segments are generally bicolored, in one female labeled "Virginia" they were reddish brown, with only a very faint trace of black on the outer four segments. This same specimen had the apex of the last dorsal abdominal segment feebly emarginate rather than broadly rounded, which is the usual condition.

The density of the punctuation and pubescence on the metasternum and first ventral abdominal segment served to identify certain groups and the variable members of those groups, but the density of the pubescence particularly was subject to considerable variability. When males from Whitefish Point, Michigan, Marquette, Michigan, and Washington, D. C., were compared, it was found that the pubescence of the first ventral abdominal segment was densest on the Whitefish Point specimen, least so on the Washington representative, with the Marquette male being intermediate. Whether or not there is a significant geographical pattern in the variability of this character can be determined only when more extensive material becomes available.

As pointed out by Schaeffer (1925), the elytra are rather elongate, and the very fine and dense sculpture of the intervals gives the elytra a dull appearance which is helpful in a determination of this species.

The differences in the posterior femora of *biimpressa* and *porosicollis* are discussed under the former.

Porosicollis appears to be a rather uncommon species and is not well represented in the collections examined. Only 32 specimens were seen. It is felt that the accumulation of larger samples will not only give a clearer picture of the distribution of this species but will also clarify its relationship to *biimpressa*.

HABITS: Gibson (1915), on the authority of Criddle and Wallis, reports the species in the flowers of the marsh marigold, *Caltha polustris* Linnaeus, at Onah, Manitoba. Ulke (1902) found it in "swampy meadows" in the District of Columbia. Hatch, according to Schaeffer (1925), took it by "sweeping grass in marsh."

From the dates on the specimen labels, late May is the usual time for its appearance, and the last date recorded was September 24 at Nepigon, Ontario.

MacGillivray (1903) described the egg,

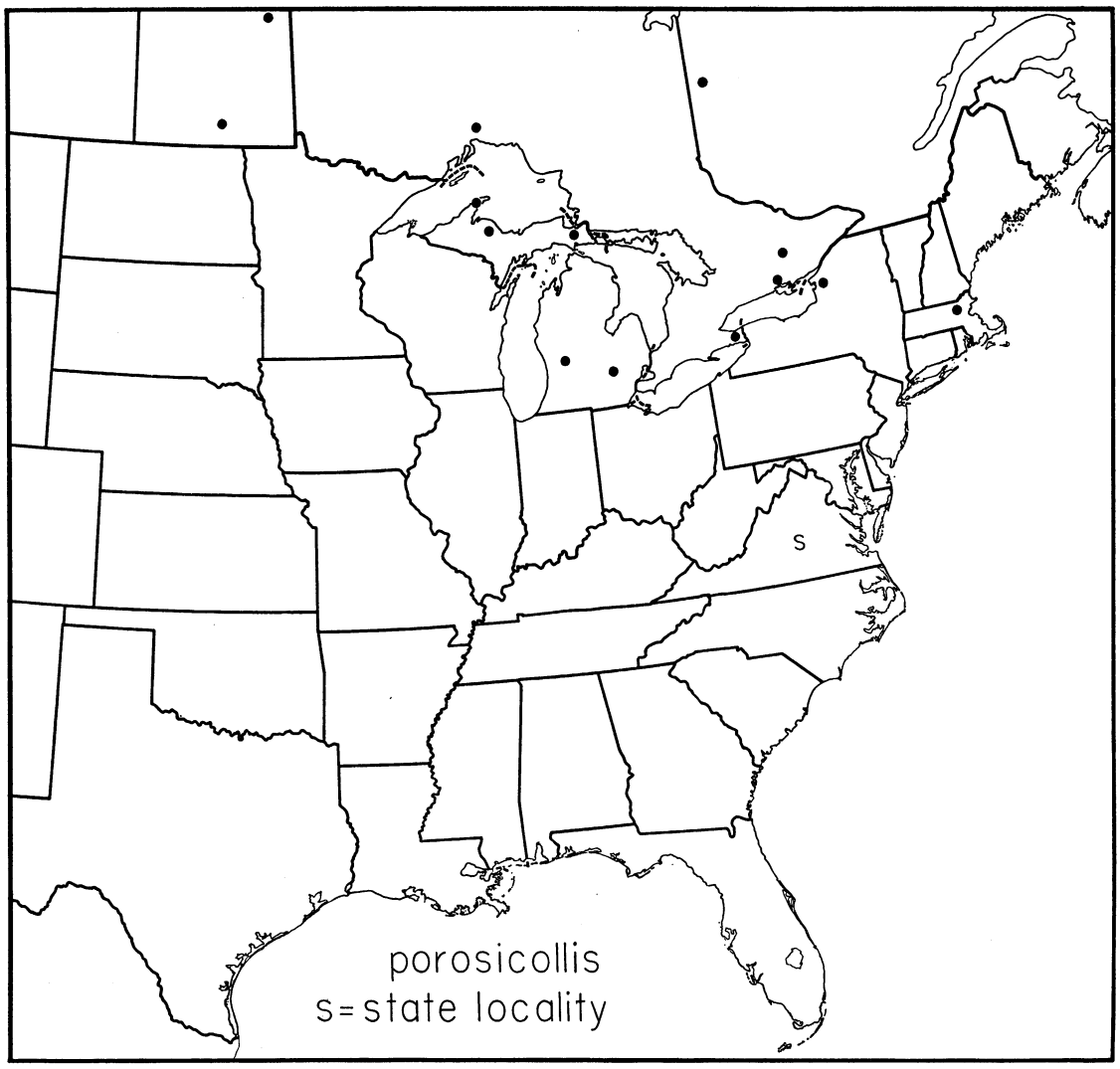


FIG. 46. Distribution of *Donacia porosicollis.*

cocoon, and larva from specimens collected by H. G. Hubbard on sedge (*Juncus*) in marshes of the Detroit River, August, 1873. He states that the eggs are "laid in a single row along the edge of the leaves of a sedge under water, and attached by one side." The cocoon is attached along the middle line of the leaf of a sedge (*Juncus*).

Donacia proxima Kirby

Figures 6 and 47

GENERAL DISTRIBUTION: Canada, United States.

This is one of the most widely distributed species of the genus on the North American continent, ranging from coast to coast in both Canada and the United States and from the subarctic regions of the former to the southern borders of the latter. It was long considered to be but a "variety" of *cincticornis* Newman, until Schaeffer (1919) decided that it was a separate species, with *californica* LeConte as a "variety." Though polytypic, *proxima*, in spite of its extensive area of distribution, shows remarkably little variability in morphological characters over most of its range.

KEY TO THE SUBSPECIES OF *Donacia proxima* KIRBY

1. Spaces between elytral strial punctures as well

FIG. 47. Distribution of *Donacia proxima*.

as the intervals minutely transversely convex on basal half of the sutural area, giving rugose appearance..... *californica*

2. Spaces between elytral strial punctures as well as the intervals not minutely transversely convex on basal half of sutural area..... ..... *proxima*

Donacia proxima californica LeConte

Donacia californica LECONTE, 1861, Proc. Acad. Nat. Sci. Philadelphia, vol. 13, p. 3.

TYPE LOCALITY: "California."

GENERAL DISTRIBUTION: British Columbia; Idaho, Washington, and California; Oregon, according to Mead (1938).

LeConte (1861) in describing *californica* stated that it "resembles in form and characters *D. proxima* Kirby but differs by the color and by the thoracic tubercles being less prominent. The upper surface is also not so smooth and shining." Schaeffer (1925) found *californica* to be like *proxima*, "except that the head, prothorax and elytra are distinctly metallic green or cupreous and the serial punctures are coarser." Mead (1938) in his key separated the two on the differences in color, strial punctuation, and in the median basal triangulate excavation. This last prob-

ably refers to the basal impression of the pronotum.

The study of a large number of specimens of both *proxima* and *californica* disclosed the fact that two characters, the prominence of prothoracic tubercles and the relative distinctness of the median basal excavation of the pronotum, are not definitive, for both these characters occur in some samples of *proxima* to the same degree that they do in *calfornica*.

Nor was the color of the upper surface a character that could be entirely relied on, for here also there was a certain amount of variability though with some apparent geographical correlation. *Proxima* is generally black above, with a bluish or purplish or, much less frequently, a submetallic greenish tint. There appears to be a tendency for the specimens with the greenish tint to become more numerous towards the west. In a sample of 28 from Waskesiu Lake, Saskatchewan, the majority, though still dark above, had a greenish tint. This, however, was not true of a series of 22 from Norman Wells, Northwest Territories, in which only two had the greenish tint.

Californica on the upper surface is generally submetallic green, green, or cupreous and very occasionally dark like *proxima*, with the bluish tint. In a series of six specimens collected at Lake Audrain, El Dorado County, California, five had the submetallic green upper surface of *californica* and one, a female, that of *proxima* of the East. In a sample of five specimens of *californica* from Creston, British Columbia, one male was dark blue above. The others were typical *californica*. Of three specimens of *californica* from Coeur d'Alene, Idaho, one was dark blue above like *proxima*.

Although the strial punctuation of the elytra was generally coarser in *californica*, some examples of *proxima* could not be separated on this character alone. The minute elevations on the elytral intervals and between the strial punctures of the elytra referred to in the key apparently are a character which is definitive of these two subspecies and quite likely are what LeConte had in mind when he wrote that the upper surface of *californica* was not so "smooth" as in *proxima*.

HABITS: The only data available on host plants were gathered from the few specimens so labeled. At Creston, British Columbia, the species was collected "on leaf of water lily" and at Puyallup, Washington, on "water lily." Probably the water lily referred to was the yellow pond lily, *Nuphar polysepalum* Engelmann.

The flying period, according to the data on the specimens studied, extended from June 17 at Puyallup, Washington, through July and August, the latest date being August 28 at Florence Lake, Thurston, British Columbia.

Donacia proxima proxima Kirby

Donacia proxima KIRBY, 1837, *in* Richardson, Fauna Boreali-Americana, pt. 4, p. 225.

TYPE LOCALITY: "Taken in Canada."

GENERAL DISTRIBUTION: Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, Northwest Territories, and British Columbia; Maine south to New Jersey, west to Illinois and Minnesota; Florida; according to the literature it was also found in Texas (Tucker, 1910), Iowa (Wickham, 1909), Clayton, Georgia (Fattig, 1948), Havelock and Raleigh, North Carolina (Brimley, 1938), and Washington State (Mead, 1938).

The Florida record is based on a female collected by T. H. Hubbell in Liberty County on May 29, 1924. The Texas record is based on a capture in August at night in a trap light at Plano, Collins County. The identification was made by E. A. Schwarz. In the material examined from the Canadian National Collection there were two males labeled "Victoria, B. C. Entomological Branch Ottawa Canada" which were typical *proxima*, both black above, one with purplish tint, neither having the elytral sculpturing of *californica*. Their occurrence well within the area of distribution of *californica* is difficult to explain at the present time. The conjecture that they were accidentally introduced commercially through their usual host plant, the yellow pond lily, appears plausible. Possibly the collecting of additional and more extensive material from this section will provide a more satisfactory explanation. It may show that *proxima* and *californica* occur sympatrically without intergradation, in which case *cali-*

fornica would be a distinct species, or it may be that in the additional material collected intergradation will be discovered that would substantiate the recognition of *californica* as a subspecies. Special attention should be paid to the host plants, as, according to Muenscher (1944), the host plant common to *proxima* (*Nuphar advena* Aiton) does not occur naturally in the area inhabited by *californica*, though another species of the genus (*Nuphar polysepalum* Engelmann) does.

HABITS: Hoffman (1940a) found that in Michigan *proxima* confines itself to *Nymphaea* (=*Nuphar*) *advena* Aiton (the yellow pond lily), both as an adult and larva, the former feeding on the leaves and the latter on the leaf petioles, spending its time between the bases of the petioles. The larvae when ready to form cocoons and a few younger larvae, according to Hoffman, are found on the rhizomes on which they also feed. In one instance only he discovered a last instar larva on *Castalia* (=*Nymphaea*) *odorata* Aiton. Schaffer (1925) states that the yellow pond lily is the host plant as does Packard (1877).

The data on the specimens examined confirm the fact that the yellow pond lily is the preferred host plant. A specimen from Winnipeg, Manitoba, was labeled "yellow pond lily," and several from Connecticut bore labels reading "pond lily." A large series from Waskesiu Lake, Saskatchewan, was collected on "*Nuphar*." Another equally large sample from Norman Wells was labeled "*Nymphozanthus variegatus* [=*Nuphar variegatum*] Engelmann." Another sizable series, from Duparquet, Quebec, was taken on "*Nymphaea americana*" [=*Nuphar variegatum* Engelmann].

Field experience with *proxima* in New York and Maine indicated that *Nuphar advena* was the preferred plant associate, though at Glendon, Lincoln County, Maine, four specimens were taken on *Nymphaea odorata* Aiton and three on *Sparganium* (species?) at Jefferson in the same county. It is likely, however, that these species of plants were merely convenient resting places, with no closer biological relationship.

From the data on the specimens examined it was apparent that *proxima* has a lengthy flying period. A few specimens were seen which were collected at Trenton, New Jersey, April 23, but this was unusual. One specimen was collected at Framingham, Massachusetts, by C. A. Frost on April 7 "sifting humus." The usual early dates were in mid-June, for example: Pike, New York, June 15; Lenox, Massachusetts, June 18; Winnipeg, Manitoba, June 12; "Abitibi Region," Ontario, June 9–15; with late June, and July and August being the period of greatest abundance. September 3 at Cheboygan County, Michigan, September 4, Tupper Lake, New York, and October 28 at Patterson, New Jersey, were the latest dates recorded. Hoffman (1940a) found that at Douglas Lake, Cheboygan County, Michigan, the flying period lasted from about June 1 to September 15.

The adults of *proxima* spend their lives above the surface of the water and but rarely submerge. Hoffman (1940a) mentions a few instances in which the beetles crawled down on the submerged under side of the pond lily leaves, and Andrews (1923) records the fact that he saw "15 specimens, submerged about an inch and clinging to lily pads."

The egg mass is deposited on the under side of the leaf of *Nuphar advena* Aiton around a circular hole in the leaf. Upon hatching the larvae drop to the bottom and, according to Hoffman (1940a), usually crawl up between the basal part of the leaf petioles of the pond lily, remaining there until ready to form the cocoon. They then crawl down to the rhizome of the plant and build their cocoon on top of it. Hoffman (1940a) found that cocoon formation and emergence are not confined to a single period but may take place at any time during the summer.

Donacia pubescens LECONTE

Figure 48

Donacia pubescens LECONTE, 1868, Trans. Amer. Ent. Soc., Philadelphia, vol. 2, p. 55.

TYPE LOCALITY: "Smoky Hill River," probably Kansas, as this river lies almost wholly in that state, but the source of the river is in eastern Colorado so that the locality cannot be definitely stated as Kansas.

GENERAL DISTRIBUTION: Quebec, Ontario, Manitoba, Saskatchewan, and British Columbia. Maine, New York, and Pennsylvania (?) west through Michigan, Wisconsin,

Minnesota, Indiana, Illinois, and Iowa to South Dakota and Nebraska; Oregon and California and, according to Mead (1938) and Beller and Hatch (1932), Washington. The record for Pennsylvania is based on a female labeled "Manayunk, Pa.," no date, "*fide* de Griffith" which was examined in the Fall collection and apparently came from the Liebeck collection. Manayunk is now a part of Philadelphia. The occurrence of *pubescens* in this locality is extremely doubtful, and it is felt that the record is open to question. Schaeffer (1925), on the basis of material in the Leng collection, lists Devils River, Texas, but it would seem most likely that this record was in error, owing possibly to a mistake in labeling.

Donacia pubescens is the only New World species with the upper surface, including the elytra, pubescent, and by this character alone it can be easily identified. As in *quadricollis* the elytral epipleurae are wider than the outer interval and not separated from it by the usual ridge. This particular character is peculiar to these two species.

The upper surface is generally reddish brown, sometimes quite light, but occasionally it is cupreous. In one specimen, a male from Waskesiu Lake, Saskatchewan, it was metallic green, with the usual golden pubescence.

The posterior femora of the male are armed below with two small teeth, but those of the female generally have one tooth. But in the case of the female there appears to be considerable variability in this character. A female from Marmora, Ontario, as well as one from Lake County, California, lacked the tooth of the posterior femora. In a series of seven females from Waskesiu Lake, Saskatchewan, only one specimen had the tooth, and in a sample of six females from Attons Lake, Cut Knife, Saskatchewan, five were without the usual tooth and one had a slight angulation where the tooth normally is. Two females from a sample of six from Stockholm, Maine, lacked the tooth entirely. Of the remaining four, two had two small but distinct teeth on each posterior femur, one had one tooth and an indistinct angulation in place of the second tooth, and the fourth had two teeth which were intermediate in distinctness between those of the first two specimens and the condition in the third specimen.

HABITS: Blatchley (1910) states that *pubescens* in Indiana occurs on pickerelweed, but the only specimens seen with host data, a series from Waskesiu Lake and one from Attons Lake, Cut Knife, both in Saskatchewan, were labeled as from "*Scirpus*." Hoffman (1940a) found that at Douglas Lake, Michigan, *pubescens* was limited to *Scirpus occidentalis* (Watson) Chase (=*acutus* Muhlenberg), the bulrush, feeding as an adult on the flowers and in the larval stage on the roots. The imagoes also copulate on the flowers of the host plant.

The female deposits her eggs on the inner side of the sheathing leaves between them and the culm itself. According to Hoffman the larvae, upon hatching, crawl down to the roots of the plant, seeming to prefer roots in shallow water and sandy situations. The cocoons are formed in early August and are attached to the roots but never to the root stock. Hoffman found fully formed adults in the cocoons in early June, ready to emerge.

Hoffman (1940a) determined that the flying period at Douglas Lake, Michigan, began about mid-June and lasted until approximately August 1. From the data on the material examined, May at Lake County, California, and June 1 at Ruthven, Iowa, were the earliest dates. A series from as far north as Cut Knife, Saskatchewan, was dated June 15. The latest date recorded was August 6, at Marmora, Ontario. Most of the dates were in late June and throughout July.

Donacia pubicollis Suffrian

Donacia pubicollis SUFFRIAN, 1872, Ent. Zeitg., Stettin, vol. 33, p. 21.

Donacia pubicollis CROTCH, 1873, Proc. Acad. Nat. Sci. Philadelphia, vol. 25, p. 21. While it is recognized that this is a primary homonym, it would seem that no good purpose would be served by the renaming of a synonym.

TYPE LOCALITY: "Illinois."

GENERAL DISTRIBUTION: Eastern Ontario, Minnesota, Illinois, and Indiana. Schaeffer (1925) lists Dane County, Wisconsin, and "Dakota." Hoffman (1940a) found the species at Douglas Lake, Cheboygan County, Michigan.

This very distinctive monotypic species shows remarkably little variability through-

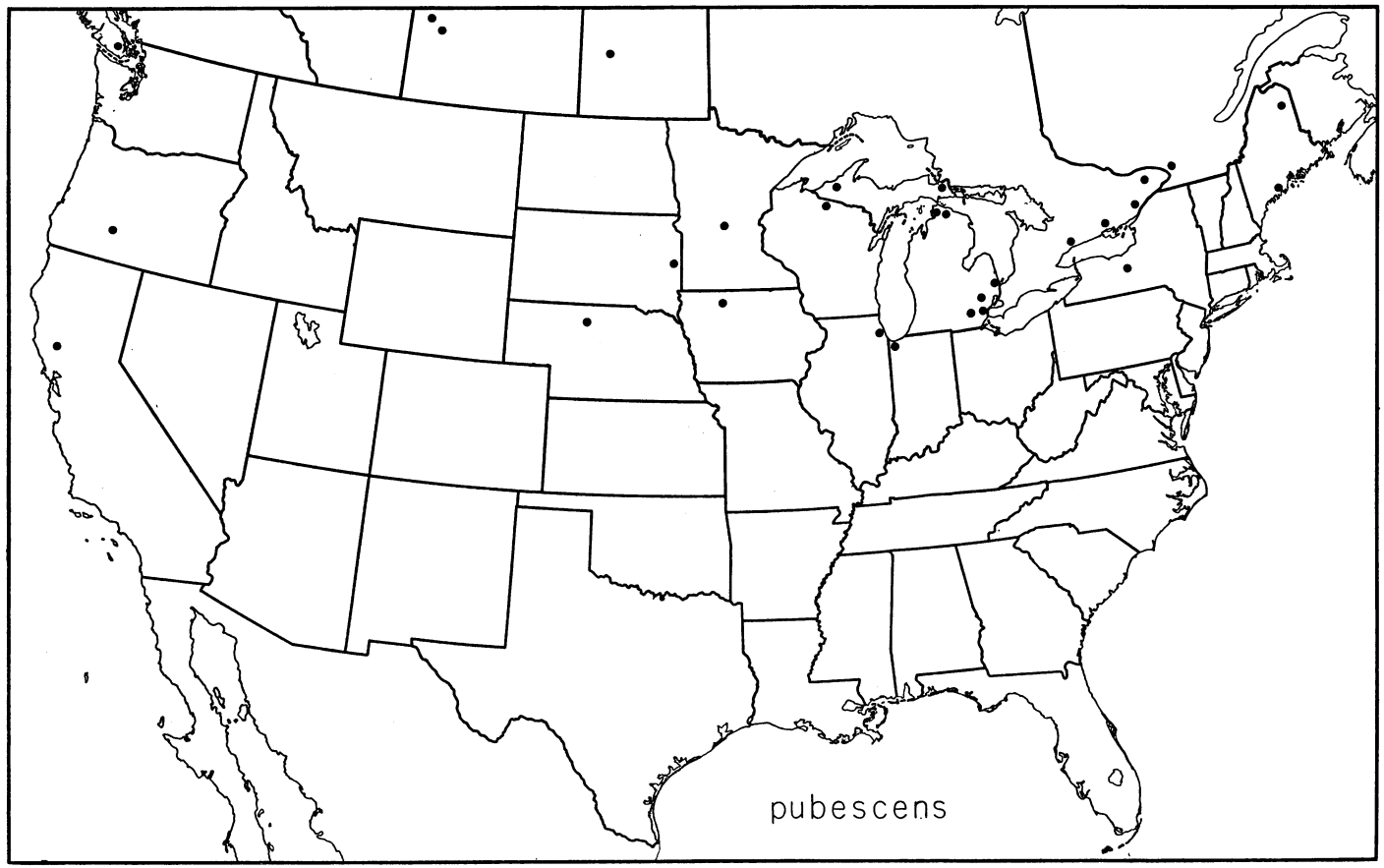


FIG. 48. Distribution of *Donacia pubescens*.

out its present known and quite limited area of distribution. It was represented in most collections seen, but in very small numbers and from very few localities. Of the 40 specimens studied, 18 were from one locality, Lake Itasca, Clearwater County, Minnesota, 17 having been collected on one day, June 12, 1920. Two were from "E. Ont.," no further data, and 18 from "Ill." or "N. Ill.," with no details. The remaining two were labeled Evanston, Illinois, July 20, 1900, and Hessville, Lake County, August 1, 1942.

This species is unique in that the vaginal plate of the female resembles the plates of the species of the subgenus *Plateumaris* rather than those of the subgenus *Donacia*.

HABITS: Blatchley (1910) states that it occurs in the northern Illinois on water lilies, while Leng (1891) writes, "Food plant, *Nymphaea*." But Hoffman (1940a) found that at Douglas Lake, Cheboygan County, Michigan, *pubicollis* was restricted, both as an adult and as a larva, to one food plant, *Phragmites communis* Trinius (Reed). The adults feed and copulate on the leaves, while larvae live on the roots. He further states that the adult "flies very little and is found either feeding or hiding between the culm and leaf."

The only time the adult goes below the surface of the water is when the female deposits her eggs. These are placed either on the inner surface of the leaf or on the portion of the culm covered by the sheathing leaf. Shortly after hatching the larvae drop down or crawl to the roots of *Phragmites*, seeming to prefer plants growing in sandy places and in deep water.

The cocoons are placed on the culms just above the roots. Hoffman found that the cocoons were formed in early August and that adults emerged the following June.

The dates on the material examined ranged from June 12 to August 1. At Douglas Lake, Michigan, according to Hoffman, the flying period lasted from about June 1 to August 1.

Donacia quadricollis Say

Figure 33

Donacia quadricollis SAY, 1826, Jour. Acad. Nat. Sci. Philadelphia, vol. 5, pt. 2, p. 282.

Donacia cuprea KIRBY, 1837, *in* Richardson, Fauna Boreali-Americana, pt. 4, p. 225 ("Canada").

Donacia curticollis KNAB, 1906, Proc. Ent. Soc. Washington, vol. 7, p. 122 (Illinois, Indiana).

TYPE LOCALITY: Unknown.

GENERAL DISTRIBUTION: Quebec, eastern Ontario. New York to Minnesota, Indiana, Illinois, Iowa, and Missouri. Hughes (1944) lists it from Erie County, Ohio.

This monotypic species, which was poorly represented in the collections examined (38 specimens in all), varies considerably, as do many other species of the genus, particularly in the color of the upper surface. Many specimens were light brown above, with a golden metallic tint, especially on the elytra. Others were darker.

The pronotum was frequently darker. Some examples had the pronotal margins light. An occasional specimen was entirely dark metallic green above. This variability in color does not, however, appear to be correlated in any way with the pattern of distribution.

The sides of the prothorax converge towards the base, generally very distinctly. The anterior pronotal angles are rounded and connected by the anterior prothoracic margin which is reflexed rather widely and noticeably. As stated in the key, the elytral epipleurae are wider than the outer interval and are not limited inwardly by the usual ridge. *Donacia pubescens* is the only other North American species with this epipleural character, but *quadricollis* lacks the elytral pubescence of that species. These characters, in addition to the others given in the key, will help in the separation of this species.

HABITS: Hoffman (1940a) states that in Michigan *quadricollis*, both as adults and larvae, was confined solely to *Scirpus occidentalis* (Watson) Chase (=*acutus* Muhlenberg), the bulrush. Both Knab (1906) and Blatchley (1910) also report it as occurring on bulrushes.

According to Hoffman (1940a, 1940b), *quadricollis* lives as an adult on the culms of the host plant, feeding and copulating above the surface of the water, but the female deposits her eggs under water between the sheathing leaves at the base of the plant and the culm, usually on the larger culms growing in water 18 inches or more in depth. The larvae are generally found between the sheathing leaves and the culm of the host plant.

The larvae overwinter in the last larval stage and "form their cocoons the year in which the adults fly." The cocoons are placed on the culm just above the roots, but occasionally on the roots themselves. The cocoons are built the early part of June, and adults were found by Hoffman ready to emerge during early July.

From the data on the specimens seen, July 4 at Oakland County, Michigan, and Ruthven, Iowa, was the earliest date recorded, August 28 being the last, at Ottawa County, Michigan. Most of the records were in the latter half of July and the first half of August. At Douglas Lake, Cheboygan County, Michigan, Hoffman (1940a) found that the flying period extended from about the first of July to the end of August.

Though *pubescens* and *quadricollis* have the same host plant, the geographical range of the former, while coinciding in part with that of the latter, is much more widespread. It therefore seems reasonable to believe that additional collecting in the proper sections will result in the extension of the area of distribution of *quadricollis*.

Donacia rufa Say

Figures 19 and 49

Donacia rufa SAY, 1826, Jour. Acad. Nat. Sci. Philadelphia, vol. 5, p. 283.

Donacia tuberculata LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 155 ("de l'Amérique du nord").

Donacia rutila MELSHEIMER, 1847, Proc. Acad. Nat. Sci. Philadelphia, vol. 3, p. 159 ("Pennsylvania").

TYPE LOCALITY: "On bank of Schuylkill river," Pennsylvania.

GENERAL DISTRIBUTION: Southern Maine, south through New Hampshire, Massachusetts, Rhode Island, Connecticut, eastern New York, New Jersey, eastern Pennsylvania, and Delaware to Virginia. In the Horn collection at the Academy of Natural Sciences of Philadelphia there is a male labeled "Ga.," but Fattig (1948) does not include *rufa* in his list of Georgia *Donacia*, nor does Brimley (1938) for North Carolina, Löding (1945) for Alabama, or Blatchley (1924) for Florida. There is a strong possibility, therefore, that the Georgia specimen was mislabeled. Hughes (1944) lists *rufa* as having been taken in Hamilton and Hocking counties, Ohio. If correct this record extends the range considerably to the west.

There is a certain degree of variability in the color of the upper surface of *rufa* which so frequently happens in this genus. Most specimens were cupreous above, a few were reddish brown, and occasional specimens were dark metallic green. As a rule, at least the apex of the last abdominal segment is more or less reddish brown. Generally the posterior femora of the male is armed with two distinct teeth, but infrequently the anterior tooth is reduced to an indistinct denticle, and in one specimen it was absent. These variations appear to have no geographical significance and there appears to be no indication of subspeciation.

HABITS: From the data on the specimens seen, the flying period of *rufa* extended from mid-June to mid-August, with July as the month of greatest abundance throughout its range. March 3 at Hammonton, New Jersey, April 4 at Orient, Long Island, New York, and May 30 at Washington, D.C., are the earliest dates recorded.

Schaeffer (1925) gives *Sagittaria* (arrowhead) as the host plant. One male from Maspeth, Long Island, New York, was labeled as "on leaves and flowers of *Sagittaria latifolia*." Another was taken on Staten Island, New York, when the collector was "sweeping *Sagittaria*." At Centreton, Burlington County, New Jersey, and at Atsion, New Jersey, a few specimens were collected in very early July on the leaves of *Sagittaria* (species?), and a lone female was taken August 5 at Atsion, New Jersey, on the leaves of *Peltandra virginica* (Linnaeus) Kunth (arrow arum). There seems to be not much doubt that *Sagittaria* is its favorite host plant.

Donacia rufescens Lacordaire

Figures 24, 26, and 50

Donacia rufescens LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 112.

TYPE LOCALITY: "Des États-Unis aux environs de Boston."

GENERAL DISTRIBUTION: Maine south to Florida, west through New York and Pennsylvania to Ohio and Michigan and, according to Blatchley (1910), Indiana.

Procter (1946) writing of the populations of Mount Desert Island, Maine, says,

"shows great variation in size and color." He no doubt had in mind the sexual variability. The males generally are yellowish brown above and below and are noticeably smaller than the females. On the other hand the females are frequently dark purplish above and much less frequently are the same color as the males, but they are generally larger. This type of variability occurs throughout the area of distribution of *rufescens*, and there is no evidence of any geographical pattern.

Superficially in the field this species might be mistaken for the smallest examples of *cincticornis*, and likewise the females might also be confused with those of *militaris*. But on closer examination *rufescens* can readily be separated from either of these species.

The emargination of the apex of the last abdominal segment occurs to some degree in most females of *rufescens*, but in a very few specimens it is absent. In this case the apex is subtruncate.

FIG. 49. Distribution of *Donacia rufa*.

HABITS: From the data on the 221 specimens examined, it is apparent that this species has an exceptionally long period of activity as an adult throughout its range. July, August, and September are the months of greatest abundance. The earliest record was June 1 when a single specimen was collected at Riverhead, Long Island, New York, and

the latest was October 28 when 12 were taken at Paterson, New Jersey.

In the adult stage it is very active, wary, and not easy to collect. To avoid capture it takes flight, traveling some distance to get out of danger.

There is not much doubt that its favorite host plant is the white water lily, *Nymphaea odorata* Aiton. Specimens from Maine, Massachusetts, New York, New Jersey, and South Carolina bore labels reading "white lily," "*Nymphaea*," or "*Nymphaea odorata*." The one exception was the specimen taken June 1 at Riverhead, Long Island, New York, which was collected on *Sagittaria*.

As its flying period coincides at least in part with the flying periods of *cincticornis* and *militaris*, at least in New Jersey, the three species have been collected on the pads of *N. odorata* Aiton in the same small area on the same day.

FIG. 50. Distribution of *Donacia rufescens*.

Donacia rugosa LeConte

Figure 51

Donacia rugosa LeConte, 1878, Proc. Amer. Phil. Soc., vol. 17, p. 415.

TYPE LOCALITY: Enterprise, Florida.

GENERAL DISTRIBUTION: Maine south to Florida, west through New York to Michigan in the north and west to Mississippi in the south. Blatchley (1910) lists the species from Indiana.

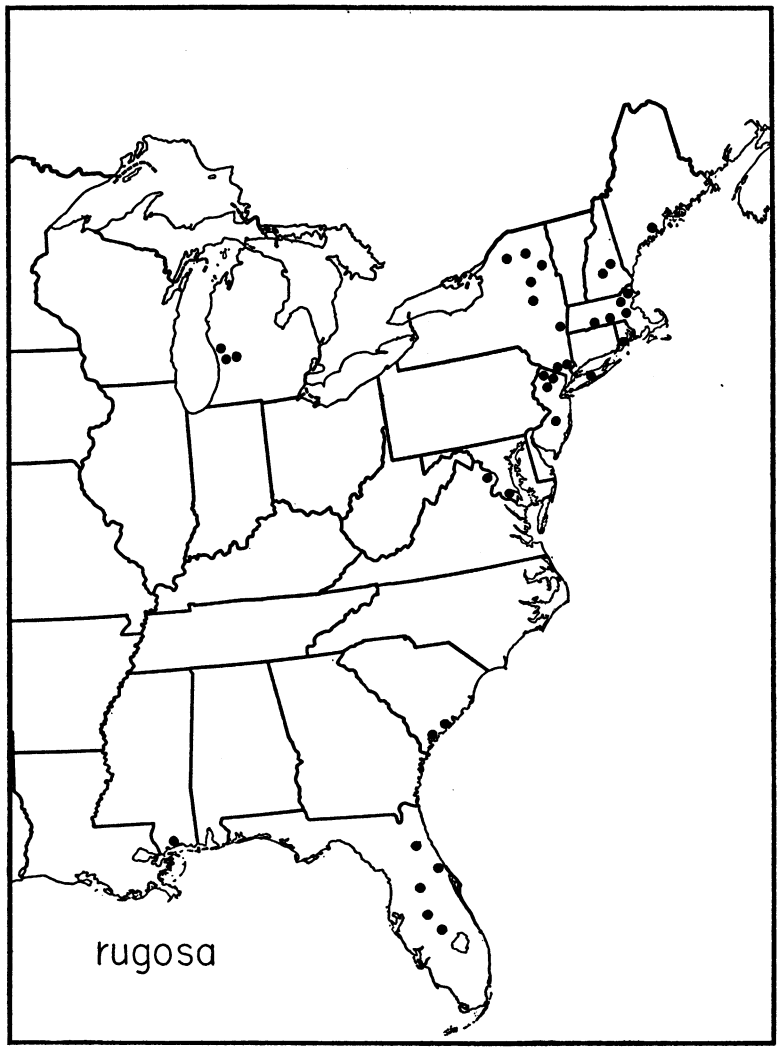


FIG. 51. Distribution of *Donacia rugosa*.

This species was for some years held to be merely a variety of *subtilis* Kunze. MacGillivray (1903) in his key to the imagoes of *Donacia*, compiled from that of Leng (1891), separated *subtilis* and *rugosa* and in a footnote says, "I can see no reason why *rugosa* should not be entitled to specific rank, and have so considered it here." Blatchley (1910), on the basis of a letter he received from Leng, also treated *rugosa* as a full species.

The two species are somewhat similar in general appearance and no doubt are closely related, but they are readily separable. The posterior femora of *rugosa* are either reddish brown or conspicuously bicolored, whereas those of *subtilis* are dark metallic or occasionally indistinctly bicolored, the reddish brown being confined to a very small area at the base of the femora. In *rugosa* the third antennal segment is subequal to the first, and, starting with the third, the antennal segments are longer and more slender than those of *subtilis*. This is especially noticeable with the fourth, fifth, and sixth segments.

In the field *rugosa* superficially resembles

assimilis Lacordaire also. Useful differences in the separation of the two species will be found in the discussion of the latter.

Though *rugosa* ranges from Maine to Florida, there appears to be no significant geographical variability in the material examined.

HABITS: The earliest dates recorded on those specimens seen were March 25 and 30 at the Archbold Biological Station, Lake Placid, Florida. Farther north in New Jersey and New York the species has been taken in early June and becomes more common as the season progresses. From mid-July to mid-August appears to be the time of greatest abundance in the northern half of its range. Pairs were taken copulating in very late July and early August in Maine and New Jersey.

Single females were captured at lights on June 10 and 27 at Leesburg, Florida, May 6 at Lake Alfred, Florida, and June 14 in Beaufort County, South Carolina. Of all the specimens seen these were the only ones so collected.

Donacia rugosa is very active and wary as an adult and avoids capture by taking flight. Most of the time in this stage is spent on the leaves of the host plant.

Blatchely (1910) quotes Leng as stating that this species lives on pickerelweed (*Pontederia cordata* Linnaeus) and names this same plant as host in Florida (Blatchley, 1924). Schaeffer (1925) states that *Sagittaria* is the host plant, on the authority of Leng, and that *Pontederia cordata* Linnaeus is, according to Wenzel. Procter (1946), writing of Mount Desert Island, Maine, states ". . . mating in large numbers on *Pontederia cordata*, July 28, 1937." Andrews (1923) collected a few at Whitefish Point, Chippewa County, Michigan, "on sedges." At Riverhead, Long Island, New York, Latham collected a few during the first half of June "on flowers *Nymphaea*," according to the labels on the specimens.

The collecting of large samples of populations in both Maine and New Jersey indicated that *Pontederia cordata* Linnaeus was by far the favorite plant. In Maine, although a single specimen was collected on each of the following: *Eleocharis* (species?), *Sparganium* and *Potamogeton* (species?), these were isolated occurrences. In the Reading (Pennsylvania) Museum there is a specimen of an empty pupal case attached to a rootlet with a label reading "Stoughton, Mass. Aug. 1924. Donacia pupa on roots of *Pontederia cordata*. Cocoon of *Donacia rugosa* Lec."

It is interesting to note that the area of distribution of *rugosa* by states, as shown by the specimens examined, corresponds quite closely with that of *Pontederia cordata* Linnaeus as given on the distributional map of *cordata* in Muenscher (1944). *Donacia rugosa* from the data accumulated so far does not occur in those states where this plant is not present.

Donacia subtilis Kunze

Figures 8, 18, and 52

Donacia subtilis KUNZE, 1818, Neue Schr. Naturf. Gesell. Halle, vol. 2, pt. 4, p. 12. New name.

Donacia aenea AHRENS, 1810, Neue Schr. Naturf. Gesell. Halle, vol. 1, pt. 3, p. 21. *Donacia aenea* preoccupied by *Donacia aenea* Hoppe, 1795.

Donacia confluenta SAY, 1826 (not 1827), Jour. Acad. Nat. Sci. Philadelphia, vol. 5, pt. 2, p. 293 ("I have found this insect in Pennsylvania, and also in Missouri").

Donacia aequalis KIRBY, 1837, *in* Richardson, Fauna Boreali-Americana, pt. 4, p. 226 ("many taken in the Journey from New York to Cumberland-house").

Donacia aerea LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 148 ("États-Unis").

Donacia confluens LECONTE, 1851, Proc. Acad. Nat. Sci. Philadelphia, vol. 5, p. 312 ("Pennsylvania").

TYPE LOCALITY: "Pennsylvania."

GENERAL DISTRIBUTION: Canada from Nova Scotia west through Quebec, Ontario, Manitoba, Saskatchewan, and Alberta to British Columbia; United States from Maine south to Georgia, west through Montana, Colorado, and Texas to California and, according to Beller and Hatch (1932), to Washington.

This species is one of the most widely distributed members of the subgenus, as it ranges from coast to coast in both Canada and the United States. In portions of its area of distribution, two closely related species frequently occur in the same habitat.

One is *subtilis* Kunze as generally recognized, and the other is *fulgens* LeConte, which Schaeffer (1925) reinstated as a "variety" of *subtilis*, Suffrian (1872) having placed it in synonymy.

The separation of the two is generally quite readily possible by means of the posterior femoral character illustrated in the key, but occasionally males may be somewhat difficult to place, as this character is not quite so distinct as in the females. In addition many *fulgens* of both sexes are bright metallic green, but *subtilis* is very seldom this color and never so brilliant. The eyes of *fulgens* are larger and less protruding, whereas those of *subtilis* are somewhat smaller and more protruding, which gives it by comparison a "pop-eyed" appearance. The antennal segments of *fulgens* are somewhat stouter than those of *subtilis* and are usually entirely black. In *subtilis* often the antennal segments are narrowly annulate basally with reddish brown, and frequently the apical five segments are reddish brown beneath also.

In *fulgens* the aedeagus is frequently constricted behind the anterior angles of the apex, and the tegmental cap is dilated apically. But *subtilis* on the other hand very often has no constriction behind the anterior angles of the apex and has the sides almost parallel, the tegmental cap not being dilated at the apex. These genitalic differences, however, are not diagnostic of the two species. An examination of but five specimens, two *fulgens* from California and two *subtilis* and one *fulgens* from Michigan, showed not only an overlap in variability in these characters between the samples from the two areas, but also variability within the samples themselves.

The two are almost completely sympatric, as they may occur together not only in the same locality and habitat but even on the same individual host plant. They have been collected together in the same habitat at the following localities:

Maine: Lincoln County: Jefferson.

New Jersey: Burlington County: Atsion; Indian Mills; Masonville; Upper Mill. Salem County: Parvin State Park.

New Hampshire: Belknap County: Center Harbor.

Maryland: Garrett County: Muddy Creek.

Massachusetts: Barnstable County: Hyannis; Mashpee.

In addition, the labels of a number of specimens examined indicate that both have been collected at the following localities:

Quebec: Mt. Saint Hilaire; Rigaud, Knowlton.

Connecticut. Litchfield County: Cornwall; Litchfield.

Maryland: Prince Georges County: Hyattsville.

Michigan: Oakland County. Cheboygan County: Douglas Lake. Chippewa County: Whitefish Point.

New Jersey: Bergen County: Fort Lee. Essex County: Orange. Sussex County: Stockholm. Morris County: Newfoundland.

New York: Tompkins County: Ithaca. Erie County: Buffalo. Suffolk County: Yaphank; Riverhead. Genesee County: Oakfield.

Pennsylvania: Pike County: Baoba. Monroe County: Delaware Water Gap.

Massachusetts: Middlesex County: Sherborn; Ashland. Hampden County: Chicopee. Bristol County: New Bedford.

Minnesota: Ramsey County: St. Paul.

District of Columbia: Washington.

North Carolina: Macon County: Highlands.

California: Lake County: Clearlake Oaks.

In some areas only *fulgens* occurs, in others *subtilis* alone. Schaeffer (1925) also noted the fact that they may occur together, but he mentioned the finding of intermediate specimens. Although occasional mixed pairs have been taken copulating, a male of *fulgens* with a female of *subtilis* or vice versa, a careful examination of long series has failed to disclose any hybrids, nor is there any evidence that these mixed matings are successful and that they do hybridize.

In view of the fact, therefore, that *fulgens* and *subtilis* occur sympatrically, apparently without hybridization, and can be separated morphologically, it seems that *fulgens* must be recognized at the present time as a distinct species until evidence to the contrary comes to light.

Single specimens, in each case a male, labeled only British Columbia, "Mon" (Montana), and Texas, a male and female from Greeley, Colorado, and a female from Lake County, California, labeled "Field Mus., F. Psota Coll." represent the western limit of specimens seen of *subtilis*. For *fulgens*,

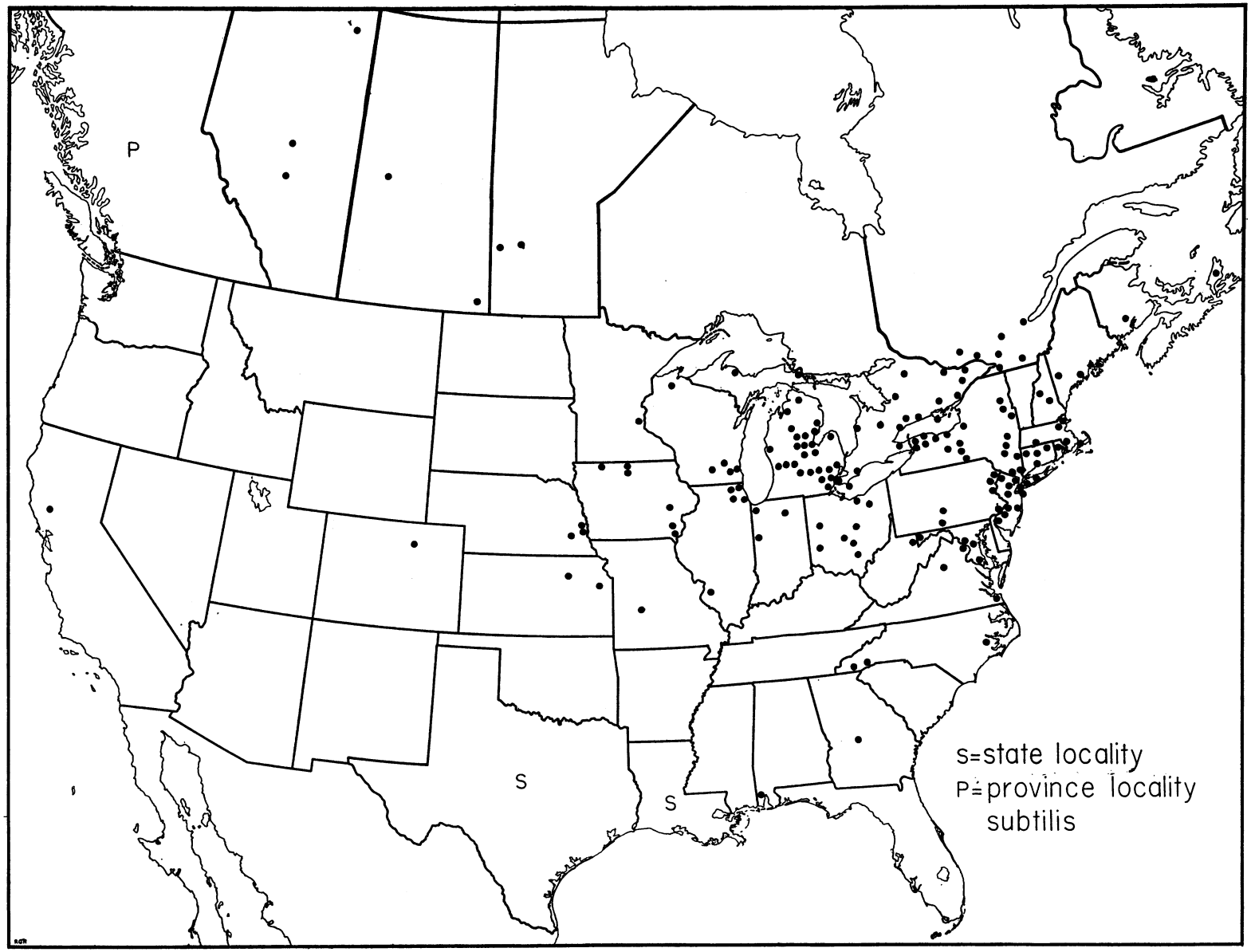


FIG. 52. Distribution of *Donacia subtilis*.

Michigan, Indiana, and Minnesota are the western extremes, until it reappears as here recognized in a number of localities in California. That this is a most peculiar pattern of distribution is obvious, but it seems reasonable to believe that future collecting in the proper habitat in the territory between the extremes will result in the filling in of some of the gaps in the area of distribution.

Hoffman (1940a) stated that, at Douglas Lake, Cheboygan County, Michigan, because of difference in habits and dependence on different species of plants, it was necessary to divide *Donacia subtilis* into two groups, which he designated as A and B. He wrote: "future morphological studies of the adults of *Donacia subtilis* may reveal that group (B) is a variety of (A). It has been possible to separate *Donacia subtilis* (B) from *Donacia subtilis* (A) since the former is smaller and has a different coloration than that of (A)." It is quite likely that the forms to which Hoffman refers were *fulgens* and *subtilis* proper, as specimens of both from Douglas Lake (not Hoffman's material) have been examined. But which is which it is impossible to determine, as no further details are given regarding these differences. Neither color nor size is a character sufficiently stable to be useful in the separation of these two forms. *Fulgens*, it is true, is frequently brilliant metallic green and *subtilis* is rarely so, but the former may also be cupreous, aeneous, or black as *subtilis* usually is. In size also both forms are extremely variable, as are so many species in this subgenus.

HABITS: Hoffman (1940a) gives the plant associates at the various stages of the development of *subtilis* as follows:

Donacia subtilis (A)

Adult
- *Sparganium eurycarpum* Engelmann; feeds solely on this plant

Egg depository
- *Polygonum amphibium* Linnaeus
- *Polygonum hydropiperoides* Michaux
- *Nymphaea*(=*Nuphar*) *advena* Aiton

Larvae and cocoons
- *Sparganium eurycarpum* Engelmann
- *Typha latifolia* Linnaeus
- *Sagittaria latifolia* Willdenow
- *Pontederia cordata* Linnaeus

Donacia subtilis (B)

Adult
- *Sparganium angustifolium* Michaux
- *Sparganium diversifolium* Graebner (=*chlorocarpum Rydberg*); never collected on and never feeds on *Sparganium eurycarpum*, but feeding solely on the above two species of *Sparganium*

Egg depository
- *Polygonum amphibium* Linnaeus
- *Polygonum hydropiperoides* Michaux
- *Sparganium angustifolium* Michaux
- *Sparganium diversifolium* Graebner (=*chlorocarpum* Rydberg)
- Probably other floating plants also

Larvae and cocoons
- *Sparganium angustifolium* Michaux
- *Sparganium diversifolium* Graebner (=*chlorocarpum* Rydberg)
- *Pontederia cordata* Linnaeus
- *Sagittaria latifolia* Willdenow
- *Typha latifolia* Linnaeus

It is interesting to note that Hoffman (1940b), in his discussion and keys to the eggs and larvae, does not differentiate between *D. subtilis* (A) and (B).

Field experience with *subtilis* and *fulgens* indicates that both species, at least as adults, are closely associated with the plant genus *Sparganium* and that it is useless to seek either in habitats where some species of *Sparganium* is not present. However, it would seem open to some question whether *subtilis* (A) and (B) are definitely host specific as adults to the extent that Hoffman indicated.

Schaeffer (1925) gives the bur reeds, *Sparganium*, as the apparent host plants of *subtilis* but states that it was collected at Beaver Dam, Wisconsin, in October, feeding on goldenrod blooms. Leng (1911) found it feeding on *Sparganium* (species?) at Clayton, Rabun County, Georgia, and Löding (1945) reports it occurs on this plant in Mobile County, Alabama. Judd (1949) collected it on the leaves of *Nymphaea odorata* Aiton in the Dundas Marsh, Hamilton, Ontario, but found the larvae and cocoons on the roots of *Sparganium eurycarpum* Engelmann.

Labels on the specimens examined bore out the fact that *Sparganium* was the principal plant associate. An occasional specimen is labeled "*Calamus*" or "*Sagittaria*" or "sweet

flags," but these are the exceptions.

Specimens of adults were collected in the field on the following plants, with the largest numbers being taken on *Sparganium:*

PLANT	STATE
Acorus calamus Linnaeus, sweet flag	New Jersey
Pontederia cordata Linnaeus, pickerelweed	Maine
Scirpus (species ?), bulrush	Maine
Sparganium americanum Nuttall	New Jersey
Sparganium angustifolium Michaux	Maine
Sparganium androcladum (Engelmann) Morong	New Jersey
Sparganium (species ?)	Maine, Massachusetts, New Jersey

In New Jersey the flying period lasts from mid-May through August, with the beetles being most abundant during June, July, and very early August. They may occur later; in fact a small sample was taken at Oswego Lake, Penn State Forest, Burlington County, New Jersey, on October 2, 1948, two pairs in copulation, and two weeks later two other specimens were collected at the same locality. This, however, is unusual.

Labels on the specimens showed dates of April 23 and May 1 at Toronto, Ontario, at one extreme, and September 26 at Ithaca, New York, and September 30 at Litchfield, Connecticut, at the other extreme. However, mid-May, June, July, and early August appear to be the period of greatest abundance. Hoffman (1940a) gives the flying period as June 1 to September 15 at Douglas Lake, Cheboygan County, Michigan. He also states that *Donacia subtilis* (B) was collected late in the fall and early in the spring. Specimens were seen bearing the following dates: Washington, D.C., March 3 and 18; Kissina Park, Long Island, New York, March 19; Litchfield, Connecticut, April 16 and November 17, the last two dates on specimens taken by "sifting in woods." From this it would appear that this species overwinters in the adult stage, at least occasionally.

Hoffman states that the eggs are deposited between two floating leaves of the selected host plant and the egg mass is sealed in this position. Upon hatching the larvae drop to the bottom and make their way to the roots of the food plant. However, in the case of *Sparganium* they generally crawl up the plant and take a position between the sheathing leaves, though some may merely seek out the roots, according to the same author.

The cocoons are built on the roots of the host plants listed above.

Donacia texana Crotch

Figures 22 and 53

Donacia texana CROTCH, 1873, Proc. Acad. Nat. Sci. Philadelphia, vol. 25, p. 22.

Donacia texana variety *minor* SCHAEFFER, 1925, Brooklyn Mus. Sci. Bull., vol. 3, no. 3, p. 72 (Centerton, New Jersey). New synonym.

TYPE LOCALITY: Texas.

GENERAL DISTRIBUTION: Eastern United States from New York to Florida, west to lower Michigan, Missouri, Oklahoma, and Texas.

Schaeffer (1925) reinstated this species, pointing out that it was quite distinct from *hypoleuca* Lacordaire and not conspecific with it. In addition, however, he described as a new "variety" a form occurring, he stated, in the north, though he lists Texas as being in its range. This new form he called *minor* and characterized it as follows: "Differs from typical *texana* in smaller size and relatively larger strial punctures of elytra."

An examination of a number of specimens from the south as well as the north, including three paratypes of *minor*, established the fact that the difference in the strial punctures of the elytra does not exist.

The difference in size also proved to be unreliable in an attempt to separate the two populations. Specimens from Texas were within the size limits of those from Pennsylvania and New Jersey. Localities in Florida and Georgia produced specimens that in size overlapped those from New Jersey.

Generally speaking, it seems reasonable to assume that there is a gradual increase in size southward.

In view of the above it appears that there is no value in the retention of *minor* as a subspecies of *texana*, and that it is better to consider *texana* as a monotypic species which shows some geographic variability in size.

FIG. 53. Distribution of *Donacia texana.*

The smaller examples of *texana* are quite similar to *caerulea* but may be readily separated. In *texana* the posterior femora are abruptly clavate from the middle, and the first anterior tarsal segment is at least as long as the fifth. In *caerulea* the posterior femora gradually enlarge from the base or basal third and the first anterior tarsal segment is shorter than the fifth.

HABITS: Schaeffer (1925) gives the yellow water lily, *Nymphaea* (=*Nuphar*) *advena* Aiton as the food plant. Blatchley (1924) lists this same host plant for specimens taken in Florida. In New Jersey the species was also taken on this lily. From the known data it appears that the area of distribution of *texana* follows that of *Nuphar advena* Aiton.

Donacia tuberculifrons Schaeffer

Figures 14, 15, and 54

Donacia tuberculifrons SCHAEFFER, 1919, Jour. New York Ent. Soc., vol. 27, p. 315.

TYPE LOCALITY: Toronto, Canada.

GENERAL DISTRIBUTION: Quebec, Ontario, Manitoba. Vermont south to Virginia, west

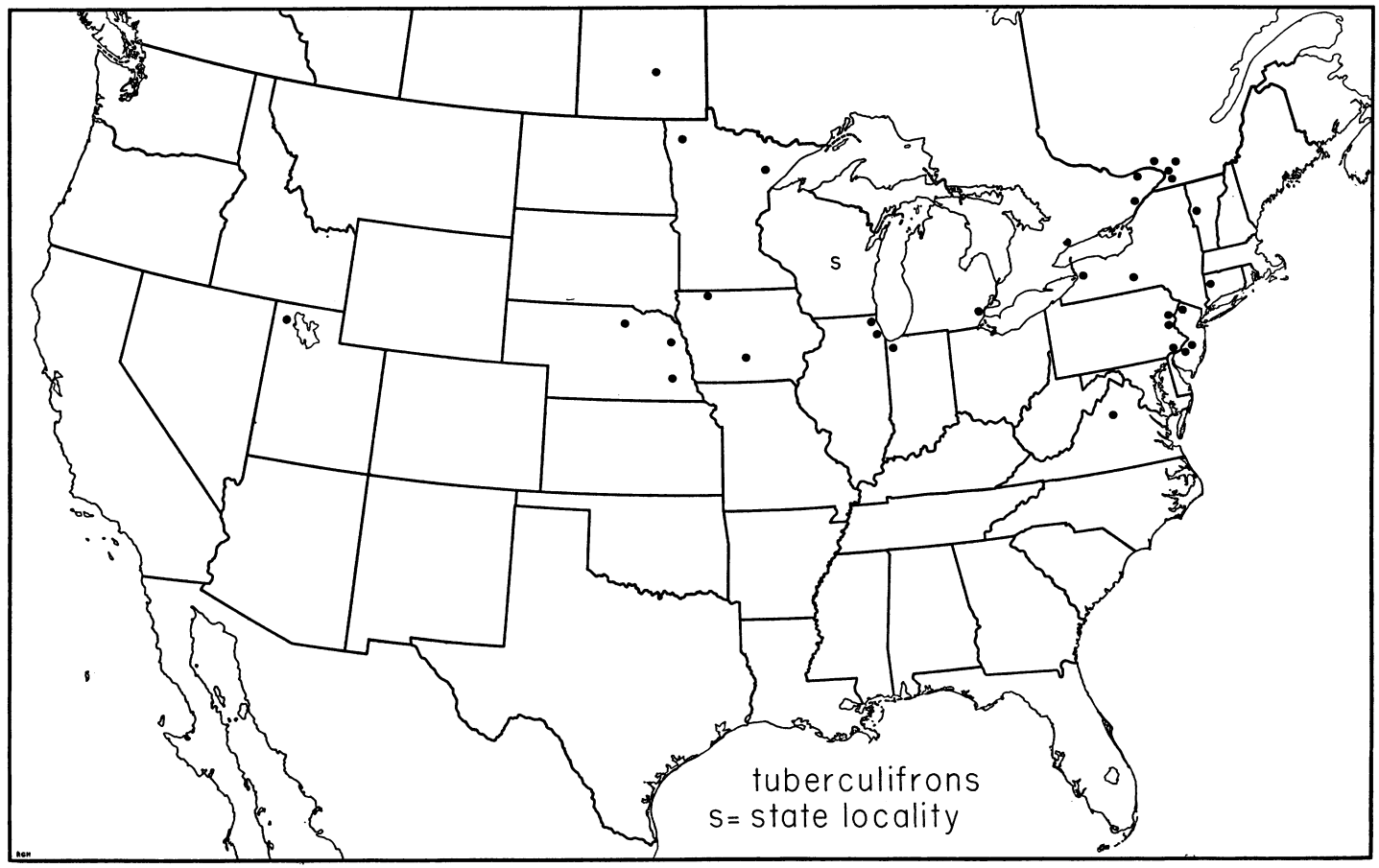


FIG. 54. Distribution of *Donacia tuberculifrons*.

through Michigan, Indiana, Illinois, Wisconsin, and Iowa to Minnesota and Nebraska; Utah. Schaeffer (1925) lists Brookings, South Dakota.

This species resembles *D. subtilis* Kunze and at times may be quite easily confused with it. This is particularly true when the occasional specimen with the pronotal median line less distinct than usual is compared with the infrequent examples of *subtilis* that have a median line, though indistinct. As pointed out by Schaeffer (1925), the shape of the prothorax of *tuberculifrons* is different, the sides are more parallel, and the elytra are more convex, both dorsally and laterally. The antennal segments are stouter, particularly the fourth, fifth, and sixth. These differences, together with the ones given in the key, should make the separation of these two closely related species less difficult.

The geographical ranges of the two species appear to coincide in part. The range of *tuberculifrons* is much less extensive than that of *subtilis;* it occupies the northern portion of the range of the latter but does not extend so far south or west. That *tuberculifrons* occurs sympatrically with *subtilis* is evidenced by the fact that it was collected at the same locality (Centreton, Burlington County, New Jersey), in the same pond, and on the same species of plant (*Acorus calamus* Linnaeus, or sweet flag).

HABITS: Schaeffer (1925) wrote that "This species has been taken on the yellow pond lily (Wenzel and Wolcott), on bulrushes (Liebeck) and on *Sparganium* (Davis)."

There were few ecological data on the specimens examined by the present author, but at Litchfield, Connecticut, a series of nine was collected June 15 on *Carex* (sedge), including one pair in copulation.

At Centreton, Burlington County, New Jersey, a series of five was collected May 21 on *Acorus calamus* Linnaeus (sweet flag) and on June 11 six more were taken on the same species of plant at the same locality. At the later date several pairs were copulating. On July 4 of the same year and at the same spot none were seen.

Noting is known of the egg-laying habits of *tuberculifrons*, its larval stages, or definite host plants.

From the labels on the specimens seen it appears that this species has a relatively short flying period, extending from mid-May to early July, with late May and June being the time of greatest abundance. If a specimen labeled Washington, D. C., March 18, and one labeled Camden, New Jersey, December 12 (both of which were probably collected by "sifting"), be disregarded, May 14 (Washington, D. C.) was the earliest date and July 16 (Lake Okoboji, Iowa) was the latest, with the exception of one specimen from Rigaud, Quebec, and one from Ithaca, New York, both of which were labeled "Sept."

Donacia vicina Lacordaire

Donacia vicina LACORDAIRE, 1845, Mem. Soc. Roy. Sci. Liège, vol. 3, pt. 1, p. 154.

TYPE LOCALITY: "De l'Amerique du nord."

GENERAL DISTRIBUTION: Spring Hill, Alabama, and Los Angeles County, California. According to Fattig (1948), the species occurs at Valdosta, Georgia.

This species, long considered to be conspecific with *palmata* Olivier, was reinstated as a distinct species by Schaeffer (1925). It is probably closely related to *subtilis* Kunze which it resembles somewhat and with which it can be confused, but *vicina* is a broader insect than *subtilis* and is more shining above. The disc of the pronotum is finely rugose laterally, and the elytral intervals are noticeably smoother than those of *subtilis*. Finally the posterior femora not only lack the subapical tooth but are broadly and distinctly bicolored.

The material available for the present review was very limited and came, with but one doubtful exception, from one locality (Spring Hill, Mobile County, Alabama). This one exception was a female in the United States National Museum which was labeled "Los Angeles Co., Cal., 1899, Collection Coquillett, 5521." Because of the very wide gap in the distributional pattern and the paucity of specimens collected, and until further and more extensive material is gathered, this particular record is subject to reasonable doubt. It is also possible that there was an error in the labeling of the specimen.

The specimens seen from Spring Hill were

as follows: One female, March 17, 1911 (Th. van Aller), California Academy of Sciences; one male and two females, March 27, 1921 (H. P. Löding), and one female, March 17, 1923, all in the Fall collection, Museum of Comparative Zoölogy; one male and one female, March 17 (H. P. Löding), and one male, March 27, 1921 (H. P. Löding), United States National Museum.

HABITS: Unknown except for the brief note by Löding (1945), "on *Sparganium*." As the species is apparently associated with a plant genus of widespread distribution, it appears likely that additional collecting will result in considerable extension of the range of *vicina*, at least in the south.

The data on the few specimens seen, as well as the scant published information, indicate that this species appears in the last half of March, which makes it one of the earliest species of the subgenus to appear and one that probably has a relatively short flying period

APPENDIX. DISTRIBUTIONAL DATA

THE FOLLOWING LISTS of localities, taken from the labels of specimens examined, are the basis for the plotting of the distributional maps for the various species. The place names are arranged alphabetically by states in the United States and by provinces in Canada; no attempt was made to carry the alphabetical arrangement below these political divisions. The names of the collectors and the collections are omitted. The species are arranged in alphabetical order, as they are in the text.

Donacia aequalis Say

CANADA: *Ontario:* Ottawa, Britannia, June 14, 1949; Mer Bleue, June 5, 1923; Fairy Lake, Aug. 7, 1927; Trenton, June 12, 1904; Guelph, June 22, 1950; Toronto. *Quebec:* Montreal, Aug. 8; Terrebonne, July 14, 1899; Rigaud, July; St. Chrystome, June 28, 1927; Covey Hill, June 27, 1927; Kazubazua, July 17, 1927.

UNITED STATES: *Alabama:* Mobile Co.: Mobile, Apr. 20, 1911. *District of Columbia:* Washington, May 31, Oct. 26, 1921; Eastern Branch, Mar. 3, 1923, Mar. 18, 1924, June 19, 1911, June 19, 1923; Shaw Pond, Apr. 27, 1926; Piney Branch, May 19; Eastern Branch near Bennings, Mar. 23, 1923, Apr. 19, 1914. *Florida:* Liberty Co.: "Camp Torreya, Twp. 2 N-R. 7 W," Apr. 26, 1924. *Georgia:* Clarke Co.: Athens, May 17, 1924. *Illinois:* Kane Co.: Elgin, June 3, June 9, 1922; Trout Park, Elgin, June 16, 1921. Cook Co.: Palos Park, June 26, 1917; Chicago, Oct. 8, 1909. St. Clair Co.: Apr. 29, 1919. *Indiana:* Lake Co.: Pine, May 28, 1905. *Iowa:* Lee Co.: Fort Madison, May 25, 1915, June. Johnson Co.: Iowa City, June 7, 1895, June 10, 1917. Woodbury Co.: Sioux City. Winnebago Co.: July 4, 1940. *Kansas:* Shawnee Co.: Topeka, May 26. *Maine:* Franklin Co.: Weld, June 30, 1938. Androscoggin Co.: Minot, June 18, 1915; Wales, June 20, 1906. Lincoln Co.: July 19, 1948; Jefferson, July 23, 24, 1946, July 17, 1952. *Maryland:* St. Marys Co.: Hills Bridge, Pautuxent River, June 26, 1924. Prince Georges Co.: Beltsville, June 9, 1915. Montgomery Co.: Glen Echo, June 22, 1930. *Massachusetts:* Hampden Co.: Long Meadow, June 9, 1905; West Springfield, June 13, 1916. Middlesex Co.: Framingham, July 16, 1932, Sept. 4, 1944. Norfolk Co.: Milton, June 5, 1922. Essex Co.: Ipswich, July 7, 1923. Worcester Co.: Northboro, July 3, 1937. *Michigan:* Wayne Co.: Detroit. Oakland Co.: Waterford Twp., June 23, 1923; Bloomfield, June 7, 1909. Clare Co.: June 4, 1949. Gladwin Co.: June 4, 1949. Cheboygan Co.: Aug. 2, 1934. Branch Co.: May 30, 1942. Huron Co.: July 1, 1908. Macomb Co.: New Baltimore, July 17, 22, 1893. Kent Co.: Grand Rapids. Livingston Co.: Pinckney, June 8, 1947. *Minnesota:* Ramsey Co.: Phalen Lake, St. Paul, June 19, 1921. Kanabec Co.: Mora, June 15, July 1, 1907. *Missouri:* St. Louis Co.: May 25, 1902. *Nebraska:* Cherry Co.: June. Lancaster Co.: Lincoln, June. Otoe Co.: Nebraska City, June. *New Hampshire:* Coos Co.: Mt. Washington. Belknap Co.: Center Harbor, July 10, 1942. *New Jersey:* Gloucester Co.: Wenonah, May 7, 23, 1922; Westville, May 2, 29, June 20. Burlington Co.: June 4, 5; Masonville, May 28, 1922; Centreton, May 21, June 11, 1944; Indian Mills, June 13, 1948; Atsion, July 5, 1948; Hartford, May 31, 1941; Riverton, July 7, 1920, June 13, 1909. Camden Co.: May 27, 1951, May 28, 1944; Gloucester, Apr. 19; Camden, June 9. Essex Co.: Upper Montclair; Irvington. Morris Co.: Boonton, July 11, 1924; Morristown, June 16. Union Co.: Summit, June 8, 1913. *New York:* Lewis Co.: Black River, Lowville, June 20, 23, 1921. Steuben Co.: Bath, July 9, 1902. Orleans Co.: Lyndonville, July 2, 1940. Rensselaer Co.: Shodack Landing, June 20, 1902; Nassau, June 17, 1912; Lake Tackawasick, June 25, 1920. Albany Co.: June 25, 1952; Albany, June 9, Sept. 29, 1927. Tompkins Co.: Ithaca. Erie Co.: Buffalo. Monroe Co.: Rochester, June 19, 1902. *North Carolina:* Moore Co.: Southern Pines, June 10, 1911. Macon Co.: Highlands, June 11, 1933. *Ohio:* Athens Co.: Armitage, June 7, 1951. Lorain Co.: Lorain, June 25, 1949. *Pennsylvania:* Delaware Co.: Essington, June 5, 8, 1922. Lancaster Co.: June 15, Bucks Co.: Bristol, May 30, 1922. Allegheny Co.: Harmarville, June 30. Northampton Co.: Easton, June 11, 1909. Monroe Co.: Pocono Lake, July 20, 1918. Wayne Co.: Starlight, June 13, 15, 1921. Philadelphia Co.: June 16, 1910. Pike Co.: Greentown, June 24, 1920. *Rhode Island:* Providence Co.: Cranston, May 3, 1914, May 9, 1912; Providence, Apr. 17, 1913. Kent Co.: Warwick, May 30, 1899. *South Carolina:* Oconee Co.: Clemson, May 2, 1951. *Texas:* Dallas Co.: Dallas, June 2, 1909. *Virginia:* Fairfax Co.: June 16; Great Falls, May 23, 1918, June 19, 1910; Mt. Vernon, July 4, 1904. Arlington Co.: Arlington, May, 1921.

Donacia assimilis Lacordaire

Alabama: Autauga Co.: Prattville, July 21, 1930. *Georgia:* Houston Co.: Perry, Aug. 12, 1939. *Maryland:* Prince Georges Co.: Hyattsville, Aug. 14, 1909, Aug. 14, 1912. *New Jersey:* Atlantic Co.: Albertson Brook, 3½ miles south of Atsion, Aug. 2, 6, 1947, Aug. 8, 1948, Aug. 5, 7, 21, 1949; Great

Swamp Branch, about 4 miles south of Atsion, Aug. 21, 1949. *New York:* Suffolk Co.: Cold Spring Harbor, Aug. 29, 1912. *South Carolina:* Oconee Co.: Richland, Sept. 1, 1932. *Virginia:* Norfolk Co.: Dismal Swamp, Aug. 13, 1934.

Donacia biimpressa Melsheimer

CANADA: *Manitoba:* Onah, July 9, 1918, July 12, 1915. *Ontario:* Campden, Sept. 6, 1941; Lobo, May 29, 1925; Coldstream, May 22, 1922; Marmora, May 23, 1952; Preston; Guelph, June 22, 1950. *Quebec:* Rupert House, June 21, 1949; Hull, May 31, 1903; Knowlton, June 21, 22, 1927.

UNITED STATES: *Connecticut:* Litchfield Co.: Cornwall, Apr. 22, May 3, 1921, May 29, June 1, 1920. New Haven Co.: South Meriden, May 24, 1914. *District of Columbia:* Washington, Apr. 25, 1917, May 16, May 19, and Nov. 10, 1911; "Pine Br.," May 19; "Castru Br.," May 14, 1906. *Illinois:* Peoria Co.: Peoria. La Salle Co.: May 4, 1937. Cook Co.: Riverside, June 28, 1915. *Iowa:* Story Co.: Ames, May 27, 1929, Aug. 30, 1932. Dickinson Co.: July 8, 1935. *Kansas:* Douglas Co.: Lawrence, May 14, 1911. Riley Co. *Maine:* Androscoggin Co.: Wales, June 12, 13, 26, 1909. Oxford Co.: Peru. *Maryland:* Cecil Co.: Elkton, May 9, 10, 1922. Garrett Co.: Herrington Manor, June 10, 1953. *Massachusetts:* Middlesex Co.: Hopkinton, June 3, 1923; Sherborn, May 17, 1949, May 24, May 25, and June 6, 1950, May 24, May 27, 1934; Natick, May 25, 1941, June 2, 1950, June 7, 1936. Worcester Co.: Southboro, May 21, 1920, May 30, 1923. Suffolk Co.: Boston, May 17, 1901. Hampden Co.: Springfield, May 21, 1903, June 10, 1905; Chicopee, May 21, 1893. *Michigan:* Oakland Co.: Independence Twp., May 27, 28, 1923; Pontiac Twp., May 19, 1933; Bloomfield, June 7, 1909, Washtenaw Co.: June 2, 1919; Sylvan Twp., May 30; Ann Arbor, May 18, 22, 1929; Cavanagh Lake, May 24, 1919; Lima Twp., May 22, 1920; Pittsfield Twp., May 28, 1919. Livingston Co.: June 3, 1950; E. S. George Reserve, Pinckney, May 28, 1944, June 8, 1947; Green Oak Twp., May 23, 1920; Lakeland, June 21, 1917. Grand Traverse Co.: May 27, 1950. Kalkaska Co.: May 28, 1950. Gratiot Co.: May 14, 1949. Osceola Co.: May 16, 1951. Chippewa Co.: Whitefish Point, July 27, 1914. *Minnesota:* Hennepin Co.: Minneapolis, June 8, 1920. *Nebraska:* Lancaster Co.: Lincoln, May. *New Hampshire:* Sullivan Co.: Claremont, July 10, 1911. *New Jersey:* Gloucester Co.: Wenonah, May 7, 1922; Westville, May 15, 1896, May 4. Burlington Co.: May 27, June 9; Taunton Lake, May 4, 1949. Morris Co.: Boonton, Apr. 30, 1901; Newfoundland. Camden Co.: Merchantville, Apr. 24, May 8, June 9; Clementon, May 1, 1904, May 3, 1905, May 12, 1899, May 16, 1897, May 21, 1931, May 24, 1933. Union Co.: Berkeley Heights. Middlesex Co.: Jamesburg, May 1, 1911. Sussex Co.: Andover, May 24, 1933. Bergen Co.: Ramsey, May 30, 1917. Passaic Co.: Ocean Co.: Warren Grove, Apr. 30, 1949. *New York:* Essex Co.: Wallface Mountain, July, 1922. Nassau Co.: Long Beach, Long Island, May 7, 1911. Tompkins Co.: Taghanic, Ithaca, May 8, 1921; Ithaca, May 9, 1895, May 14, 1919; McLean Bogs, Apr. 17, 1925, May 30, 1921, June 5, 1937. Rockland Co.: Bear Mountain, May 4, 1930; Suffern. Orange Co.: Pine Island, June 7, 1914; West Point, May 8, 21, 1910. Putnam Co.: Patterson, May 29, 1935. Albany Co.: Bear Swamp, May 21, 1941. Suffolk Co.: East Hampton, Long Island, May 28, 1949; Orient, Long Island, July 16, 1949; Yaphank, Long Island, May 29. New York Co.: Van Cortlandt Park, May 21, 1904. Dutchess Co.: Tivoli, May 21, 1904. *North Carolina:* Wake Co.: Raleigh, May 13, 1924. Buncombe Co.: Black Mountains, May 22, 1912. *Ohio:* Lorain Co.: May 21, 1944. *Pennsylvania:* Philadelphia Co.: Apr. 30, May 27, June 5. Delaware Co.: June 10, 20. Lancaster Co.: July 30, Aug. 20. Dauphin Co.: Hummelstown, May 25. Monroe Co.: Bartonsville, May 26, 1917. *South Carolina:* Pickens Co.: Table Rock Mountains, May 5, 1954. Oconee Co.: Kibler Farm, Clemson, Apr. 23, 1952. *Virginia:* Greene Co.: Dyke, May 18, 1911. Chesterfield Co.: Petersburg, June 1, 1917. Fairfax Co.: Newington. Spotsylvania Co.: Fredericksburg. *Wisconsin:* Columbia Co.: Lodi, June 9, 1950. Wood Co.: Cranmoor, June 5, 1910.

Donacia caerulea Olivier

Michigan: Livingston Co.: May 28, 1944. *New Jersey:* Burlington Co.: June 9. Gloucester Co.: Gibbstown, May 20, 1923; Westville, July 21. Camden Co.: Clementon, June 25, 1904, Aug. 12. Bergen Co.: "Fort Lee District." Mercer Co.: Trenton, Apr. 23. *New York:* Bronx Co.: Van Cortlandt Park, May 24, 28, 1925. Westchester Co.: White Plains, May 31, 1923. Nassau Co.: Baldwin, May 16. Richmond Co.: Staten Island. *Pennsylvania:* Philadelphia Co.: Philadelphia Neck, May 12, 20, 25.

Donacia cincticornis Newman

CANADA: *British Columbia:* Victoria. *Nova Scotia:* Halifax, Aug. 25, 26, 1915. *Ontario:* Port Credit, July 1, 1896; Lake Timagami, July 13, 1934; Indian Lake, July 13, 1934; Marmora, Aug. 7, 1952; Ottawa, Aug. 3; Belleville; Gravenhurst, June. *Quebec:* Rigaud, Aug. 14, 15; Montebello, July 12, 1937; Montreal, Aug. 14; Knowlton, Aug. 8, 1929; Laniel, Sept. 10, 1935; Beech Grove, July 21, 1950.

CUBA: L. de Ariguanabo, Oct. 15, 1922.

UNITED STATES: *Alabama:* Mobile Co.: Mobile, June 15. *Arkansas:* Mississippi Co.: Big Lake, June 20, 1911, June 22, 1920. *Connecticut:* Litchfield Co.: Litchfield, July 11, 1925, July 28, 1901, Aug. 3, 1901, Aug. 20, 1924, Aug. 28, 1918, Aug. 30, 1924. New Haven Co.: South Meriden, July 13, 1914. *District of Columbia:* Washington, July 28, 1906. *Florida:* Alachua Co.: Gainesville, May 26, 1922, Sept. 13, 1933, Sept. 20, 1925. Volusia Co.: Enterprise, June 24. Palm Beach Co.: Jupiter, May 2, July 10; Belleglade, June 2–4, 1927. Hendry Co.: Clewiston, Aug. 2, 1927. Highlands Co.: Archbold Biological Station, Lake Placid, Apr. 7, 1948, Apr. 28, 1947. Martin Co.: Salerno, Apr. 5, 1939. Dade Co.: Biscayne. Osceola Co.: Kissimmee. Brevard Co.: Indian River. Jefferson Co.: Lake Miccosukee, Aug. 15, 1925. Duval Co.: St. Nicholas. *Georgia:* Charlton Co.: May 8, 1933; Okefenokee Swamp, May 5, 1933, July 30, 1934, Aug. 3, 1934. *Illinois:* Kane Co.: Elgin, June 9, 1922. Cook Co.: Chicago, July 4, 1902; Glenview, May 30, 1909. *Indiana:* Lake Co.: May 28, 1903. Marshall Co.: Aug. 14, 1920. Laporte Co.: July 15, 1909. Vigo Co.: May 21, 1893. Starke Co.: Aug. 20, 1904. Kosciusko Co.: Warsaw, July 30, 1903. Porter Co.: Mineral Springs, Sept. 2, 1911. *Iowa:* Howard Co.: Elma, June 4, 1902. Hancock Co.: July 4, 1946. Cerro Gordo Co.: Clear Lake, July 11. *Kansas:* Cherokee Co.: Aug., 1920. Wyandotte Co.: Argentine, Aug. 18, 1913. *Maine:* Hancock Co.: Mt. Desert Island, July 28, 30, 1922, Aug. 17, 1933. Lincoln Co.: Glendon, July 27, 30, 1946; Jefferson, July 20, 21, 1952, July 26, 28, 1946. Piscataquis Co.: Indian Pond, Katahdin Iron Works, Aug. 27, 1947; Katahdin Iron Works, Aug. 23–26, 28, 1947. *Maryland:* Prince Georges Co.: Laurel, July 8, 1912. *Massachusetts:* Middlesex Co.: Wakefield, July 18, 1893, July 23, Aug. 23; Bedford, Sept. 15, 1907. Hampden Co.: Chicopee, July 14, 1901, Aug. 14, 1903, Sept. 9, 1901. Norfolk Co.: Stoughton, Aug., 1924; Ames Pond, Stoughton, Aug., 1947. Barnstable Co.: Hyannis, June 14, 1949. Suffolk Co.: Forest Hills, Oct. 15, 1914. *Michigan:* Oakland Co.: July 29, 1939; Waterford Twp., June 20, July 8, 9, 17, 1923; South Lyon, June 21, 1948. Ottawa Co.: Aug. 21, 22, 26; Macatawa Beach, June 10, 1906; Spring Lake, July 21, 1925. Mecosta Co.: June 25, 1949, July 25, 1948. Cheboygan Co.: June 20, 30, 1934, June 30, 1932, June 30, 1935; Douglas Lake, June 23, 1925, July 5, 1927, July 13, 1917, July 23, 1951, July 28, 1927, July 31, 1925. Aug. 14, 1943. Monroe Co.: Monroe, July 3, 13, 28, 1910. Berrien Co.: Herbert Dunes, July 25, 1917. Washtenaw Co.: Ann Arbor, May 25, 1941, June 17, 1916, June 20, 22, 1893, July 21, 1916; First Sister Lake, Ann Arbor, June 15, 1920; Huron River, June 15, 1920. Wayne Co.: Detroit. Allegan Co.: Saugatuck, July 12–14, 1935. Gogebic Co.: Hughitt-Rawson Preserve, Aug. 10, 1919. Keweenaw Co.: Isle Royal. Calhoun Co.: Goguac Lake, Aug. 27, 1919. Charity Island: June 24, 1910. Oceana Co.: Pentwater, July 17, 28, 1920. St. Joseph Co.: Portage Lake, June 6, 1920. Charlevoix Co.: Beaver Island, Aug. 16, 1894, Sept. 9, 1924; Charlevoix, Aug. 19, 1894. Roscommon Co.: June 20, 1953. Iosco Co.: July 19, 1952. Livingston Co.: Whitewood Lake, June 26, 1917. Menominee Co.: 12 miles west of Stephenson. July 2, 5, 1940. Chippewa Co.: Whitefish Point, July 4, 1913. Kent Co.: Grand Rapids, July 21, 1888. Marquette Co.: Marquette, July 28. Newaygo Co.: Sept. 6, 1948. *Minnesota:* Hennepin Co.: Lake Minnetonka, June 13, 1923, Sept. 8, 1923. Crow Wing Co.: Pelican Lake region, Aug. 13, 1908; Pelican Lake, Nisswa, July 28, 1908. *New Hampshire:* Belknap Co.: Center Harbor, July 14, 16, 1942. Hillsboro Co.: Manchester, July 5, Aug. 4; Penacook, July 6. Merrimack Co.: Concord, July 18. Sullivan Co.: Claremont, July 10, 1911. *New Jersey:* Ocean Co.: Warren Grove, June 1, 8, 1946, June 15, 1947, July 14, 1945, July 31, 1953, Aug. 31, 1940; Bayhead; Forked River, Aug. 26, Sept. 2, 1934; Bamber, June 9, 1922; Lakehurst, June 16, 1917, July 2, 1922, July 4, 1923, July 22, 1917, July 27, 1934, July 30, 1922, July 31, 1915, Aug. 10, 1913, Sept. 2, 4, 9, 1923, Sept. 17, 1916, Sept. 18, 1910, Sept. 23, 1916, Sept. 24, 1921; Pine Beach, June 20, 22, Sept. 6, 14; Tuckerton, Aug. 24; East Plains, Aug. 25, 29, Sept. 2, 1940; Oswego River, Penn State Forest, July 12, 1947. Burlington Co.: June 14; Moorestown, Aug. 10, 1946; Browns Mills, June 28, 1921; Chatsworth, June 16, 1951, July 4, 1946, July 8, 1953, July 9, 1949, July 25, 1953, Aug. 10, 1946; West Branch, Wading River, July 19, 1950. Gloucester Co.: Clayton, June 21, 1924. Morris Co.: Budds Lake, Aug. 11, 24, Sept. 3. Cape May Co.: Cape May Point, June 24, 1922; Anglesea, July 11. Bergen Co.: Fort Lee. Union Co.: Berkley Heights, July 7. Salem Co.: Centerton, June 24, July 24; Palatine, July 23. Camden Co.: Atco, July 21, 1945; Clementon, June 25, 1904, Aug. 6. Passaic Co.: Paterson, Aug. 29. Atlantic Co.: Hammonton, June 15, 1929. Essex Co.: Irvington. Sussex Co.: Quick Pond, Branchville, July 30. *New York:* Suffolk Co.: Cold Spring Harbor, July 25, 1900; Riverhead, July 14, 1952; Wading River, June 24, June 27, 1922, July 14; Yaphank, June 20, 1911, Sept. 3, Sept. 12, 1914; Wyandanch, July 23, Aug. 9, 10; Bellport, July, Aug. 18; Greenport, May 25, 1922. Franklin Co.: Saranac Lake, Sept. 2–4, 14, 1909; Upper Saranac, July 7, 8, 1928. Sullivan Co.: Aug. 3, 24, 1918. Warren Co.: Horicon; Brant Lake, Aug.; Lake George, July 24, 25, 1914. Essex Co.: Eagle Lake, July 25,

1937; Clear Pond, Blue Ridge, Aug. 17, 1948; Elk Lake, Blue Ridge, Aug. 15–19, 21, 1948. Tompkins Co.: Cascadilla Creek, Ithaca, Aug. 22, 1940; Fish Hatchery, Ithaca, July 11, 1940; Ithaca, July 16, 1926, Aug. 9, 14, 1894. Orleans Co.: Lakeside Park, July 9, Aug. 8, 1921; Two Bridges, June 20, 1939. Cayuga Co.: North Fairhaven, July 1, 1921. Richmond Co.: Staten Island, June; Princess Bay. Monroe Co.: Rochester, June 19, 1902. New York Co.: "Vicinity of New York." Rockland Co.: Ramapo Mts., Erie Co.: Buffalo. Madison Co.: Bridgeport, July 20, 1913. Orange Co.: West Point, Aug. 19, 1917. Putnam Co.: Carmel, Aug. 11, 1923. Wayne Co.: Big Island, Sodus Bay, Aug. 31, 1911. Queens Co.: Astoria. Fulton Co.: Chain Lakes. Tioga Co.: Spencer Lake, Aug. 16, 21, 26, 1917. Columbia Co.: Lake Charlotte, Aug. 3, 1928. Broome Co.: New Windsor. *North Carolina:* Craven Co.: Lake Ellis, Havelock, June 19–24, 1905. *Ohio:* Licking Co.: Buckeye Lake, July 9, Aug. 10, 1946. Erie Co.: Cedar Point, Sandusky, July 1, 1913, July 8, 1905, July 15, 17, 1916. Ottawa Co.: Catawba Island, Put-in-Bay, July 11–20, 1946. *Pennsylvania:* Pike Co.: Baoba, July 21, 1922. Bucks Co.: Bristol, June 30, 1929, Aug. 18, 1923, Aug. 20, 1922, Sept. 2, 1922. Mercer Co.: Stoneboro, Sept. 4, 1927; Grove City, July 6, 1932. *Rhode Island:* Washington Co.: Watch Hill, June 22, July 21, 31, 1909. *South Carolina:* Hampton Co.: Yemassee, Sept. 7, 1939. Lexington Co.: Swansea, Aug. 11, 1911. Charleston Co.: I'on Swamp, Apr. 6, 1948. *Texas:* Victoria Co.: Victoria, July 31, 1916. Morris Co.: June 27, 1937; Daingerfield, July 29, 1937. Smith Co.: Tyler, Aug. 5, 1937. *Virginia:* Alexandria. Nansemond Co.: Cypress Chapel, Sept. 14, 1934. Princess Anne Co.: Virginia Beach, Aug. 14, 1913. *Wisconsin:* Bayfield Co.: Aug. 11, 18. Dane Co.: Sept. 15, 1898. Vilas Co.: Tenderfoot Lake, July, 1912. Waukesha Co.: Muskego, Aug. 7–16, 1936. Washington Co.: West Bend, June 24, 26, 1906, July 17, 1903, Aug. 24, 1915. Oneida Co.: Pelican Lake, Aug. 10, 1943. Florence Co : Spread Eagle, July 30, 1910.

Donacia distincta LeConte

CANADA: *Alberta:* Edmonton, May 7, June 8, 9, 1918. *British Columbia:* Beaverfoot Range, Rocky Mts. *Labrador:* Goose Bay, June 29, 1948. *Manitoba:* Winnipeg, June 24, 1911; Husavick, June 23, 1912, July 9, 1917; Aweme, June 10, 1908, June 7, July 6; Gillam, July 18, 1950. *Northwest Territories:* Pearson Point, Great Slave Lake, July 18, 1947; Kam Lake, June 30, 1949; Norman Wells, July 2, 1949. *Ontario:* Nipigon, June; Lac du Milles Lacs Dist., Thunder Bay, 1892. *Quebec:* Duparquet, June 12, 1938, June 22, 23, 25, 27, 1943. *Yukon Territory:* Watson Lake, June 17, 1948.

UNITED STATES: *Alaska:* College. *California:* Shasta Co.: Summit Lake, July 2, 1947. Eldorado Co.: Luther's Pass near Meyers, June 15, 1930. *Maine:* Androscoggin Co.: Wales, June 18, 1906. *Massachusetts:* Essex Co.: Salisbury, June 11, 1928. Middlesex Co.: Natick, May 22, 1932. *Michigan:* Kalkaska Co.: May 28, 1950. Wexford Co.: May 27, 1950. Cheboygan Co.: Douglas Lake, July 19, 1927. Chippewa Co.: Whitefish Point. Washtenaw Co.: First Sister Lake, Ann Arbor, May 23, 1928. *Minnesota:* St. Louis Co.: Duluth. *Montana:* Glacier National Park, July 13, 1950. *New Hampshire:* Coos Co.: Mt. Washington. Grafton Co.: Franconia. *New York:* Essex Co.: Top, Mt. MacIntyre, June 19, 1941. *Wisconsin:* Bayfield Co.: Bayfield, June 26, 1897. Wood Co.: Cranmoor, Oct. 30, 1909.

Donacia edentata Schaeffer

Florida: Putnam Co.: Crescent City, Apr. 23, 1908. *New Jersey:* Gloucester Co.: Clayton, June 21, 22, 1924. Salem Co.: Centerton, May 27, 28, 29, 31. *New York:* Suffolk Co.: Montauk Beach, July 2, 1916. Westchester Co.: Crum Pond, June 28, 1891. *North Carolina:* Craven Co.: Havelock, late May, 1907; Lake Ellis, Havelock, May 7, 1906. Brunswick Co.: Winnabow, May 18, 1934.

Donacia fulgens LeConte

CANADA: *Ontario:* Mer Bleue, July 5, 1923; Norway Point, Lake of Bays, June 18, 1922, June 20, 1920, June 28, 1922, July 23–26, 1920. *Quebec:* Mt. St. Hilaire, June, July, 1909; Knowlton, June 23, July 21, 1929; Kazubazua, July 17, 1927; Rigaud, July.

UNITED STATES: *California:* Yolo Co.: Clarksburg, June 4, 1931; Davis, May 4, 1950. Lake Co.: Clear Lake Oaks, May 20, 1951; Lower Lake, May 10, 1951. Solano Co.: Rio Vista, Apr. 29, 1932. Sonoma Co.: Sebastopol, May 18, 1936; Forestville, June 6, 1936. Contra Costa Co.: Antioch, Apr. 29, 1950. San Mateo Co.: Palo Alto, Apr. 27, 1947. *Connecticut:* New London Co.: Lyme, July 15, 1918. Fairfield Co.: Stamford. Litchfield Co.: Cornwall, June 7, 1925, June 16, 1922, July 17, 1921, Aug. 4, 10, 1920; Litchfield, May 30, 1903, June 9, 1921. Hartford Co.: New Britain. *District of Columbia:* Washington, May 30, 1905, June 9, 1901, June 11, 1899, July 9, 1902, Aug. 6, 1906. *Indiana:* Lake Co.: Miller; July 12, 1912. *Maine:* Lincoln Co.: July 7, 1948, Jefferson, July 22, 26, 28, 29, 1946, July 18, 20, 21, 1952. Kennebec Co.: Monmouth, May 25, 1912. *Maryland:* Prince Georges Co.: Hyattsville, May 29, 1940. Garrett Co.: Muddy Creek, June 11, 1953. *Massachusetts:* Hampden Co.: Chicopee, June 15, 16, 1902. Barnstable Co.: Mashpee, June 14, 1949; Hyannis, June 15, 1949. Middlesex Co.: Sherborn, June 11, 15, 1949; Ashland, July

27, 1949. Suffolk Co.: Brookline. Bristol Co.: New Bedford, June 10. *Michigan:* Ottawa Co.: Aug. 26, 27, 28. Oakland Co.: June 7, 1909, June 14, 1908, July 16, 1943. Chippewa Co.: Whitefish Point, July 10, 1913, July 24, 1914. Presque Isle Co.: Ocqueoc, July 30, 1940. Cheboygan Co.: June 26, 1938, July 6, 1936, July 17, 1931, July 25, 1931; Burt Lake, July 24, 1930; Douglas Lake, July 13, 1917, July 27, 1927, July 29. Berrien Co.: E. K. Warren Preserve, June 26, 1919; New Buffalo, June 30, 1919. Gogebic Co.: Hughitt-Rawson Preserve, Aug. 3, 1919. Marquette Co.: Huron Mts., July 12, 1920. Kalkaska Co.: June 23, 1951. Charlevoix Co.: Charlevoix, Aug. 9, 1894. Beaver Island, Aug. 16, 1894. *Minnesota:* Ramsey Co.: Elks Golf Ponds, St. Paul, July 14, 1921. St. Louis Co.: Ely, Sept. 4, 1921. *New Hampshire:* Belknap Co.: Center Harbor, July 10, 11, 13, 14, 16, 1942, Aug. 15, 1939. *New Jersey:* Essex Co.: Orange. Passaic Co.: Paterson, July 31; Passaic Junction, June 10, 1911. Burlington Co.: Masonville, May 28; Upper Mill, June 2, 16, 1950; Great Swamp Branch, Atsion, June 18, July 4, 1947; Indian Mills, June 13, 1948, Aug. 6, 1947; Albertson Brook, Atsion, July 5, 1948, Aug. 2, 1947, Aug. 7, 8, 1948; Branch, Bass River, May 30, 1947; Taunton Lake, May 21, 1949; Mt. Misery Brook, June 16, 1950. Salem Co.: Parvin State Park, June 10, July 25, 1947; Elmer, May 30. Sussex Co.: Stockholm, June 10, 1949; Hopatcong. Bergen Co.: Fort Lee. Ocean Co.: Lakehurst, July 4, 1909. Morris Co.: Newfoundland, July 4, 1910. *New York:* Franklin Co.: Saranac Lake, Sept. 2, 1909; Coreys, Sept. 12, 1928. Rockland Co.: Ramapo Mts. Ulster Co.: Phoenicia, July 2, 1935. Westchester Co.: White Plains, May 14, 1922. Suffolk Co.: Yaphank, June 20, 1911; Cold Spring Harbor, July 26, 1900; Riverhead, July 20, 1950, July 9, 1951; July 12, 1952. Herkimer Co.: Old Forge, June 15, 17, 1905. Clinton Co.: Saranac. Tompkins Co.: Ithaca, June 12, 18, 1917, July 6, 1916, Aug. 5, 1920, Aug. 17, 1917. Nassau Co.: Long Beach, Sept. 19, 1926. Erie Co.: Buffalo. Essex Co.: Elk Lake, Blue Ridge. Columbia Co.: New Lebanon, June, 1939. Lewis Co.: Black River, Lowville, June 23, 1921. Genesee Co.: Oakfield, June 22, 23, 1922. St. Lawrence Co.: Cranberry Lake, June 23, 1922. *North Carolina:* Macon Co.: Highlands, June 11, 1933. *Pennsylvania:* Pike Co.: Baoba, July 17, 1922. Monroe Co.: Delaware Water Gap, June 15. *South Carolina:* Oconee Co.: Mountain Rest, July 17, 1936. *West Virginia:* Pendleton Co.: Smoke Hole, Aug. 7, 1930. *Wisconsin:* No data. One ♀.

Donacia hirticollis Kirby

CANADA: *Alberta:* Cypress Hills, July 21, 1930; Lethbridge, June 4, 1930. *British Columbia:* Pender Harbor, Sept. 16, 1909; Revelstoke Mt., elevation 6000 ft., Aug. 12, 1923; Vancouver, Aug., 1894, Sept. 3, 1930; Creston, July 12, 1926, Aug. 6, Oct. 30, 1933; Penticton, Aug. 11, 1909; Terrace; Victoria, June 9, 1923; Metchosin, Aug. 30, 1929; Quamichan Lake, Vancouver Island; Cypress Lake, 3000 ft.; Vancouver; Douglas Lake, July 27; Cowichan Lake, Sept. 14, 1905. *Manitoba:* Winnipeg, July 20, 1916; Piquitenay, July 22, 1917; Husavick, Aug. 1, 1911; Aweme, June 1; Gillam, July 18, 1950; Churchill, June 29, 1937. *Newfoundland:* Spruce Brook, Aug. 8, 1912; Little River, Codroy, July 10–18, 1907. *Northwest Territories:* Norman Wells, July 27, 1949. *Nova Scotia:* Gamble Lake, Castlereigh, Aug. 3, 1926; Cheticamp, Cape Breton Island, June–July, 1917. *Ontario:* Ogoki, Aug. 8, 9, 1952; "Abitibi Region, Dr. Cook," July 12–25, 1915. *Quebec:* Montreal. Rouville Co. Saint Denis. Boucherville, Aug. 19, 1926, Aug. 20; Como, July, 1925; Natashquan, Aug. 5, 1929; Harrington Harbor, June 30, 1929; Kazubazua, July 17, 1927; east coast, James Bay, July, 1920; Great Whale River, Aug. 20, 1949; Thunder River, June 16, 25, 28, Aug. 20, 1930. *Yukon:* One mile south of Canyon City, lat. 61° 48′ N., long. 140° 45′ W., elevation 3100 ft., Sept. 3, 1944.

UNITED STATES: *Alaska:* Cordova, Aug. 15, 1916; Matanuska Valley, July 21, 1950; Kings Lake, June 23, 1944. *California:* Mono Co.: Topaz, July 5, 1917. Eldorado Co.: Lake Audrain, July 18, 1934. Shasta Co.: Summit Lake, July 2, 1947; Lake Eiler, July 9, 1947. Placer Co.: Aug. 1934. Plumas Co.: Buck's Lake, June 23, 1949. Madera Co.: Soquel Basin, elevation 5000 ft., July 4, 1946. *Colorado:* San Juan Co.: San Juan Mts. *Connecticut:* Litchfield Co.: Cornwall, June 7, 1925. *Idaho:* Twin Falls Co.: 14 miles east of Rogerson, July 20, 1952. *Iowa:* Dickinson Co.: Spirit Lake. *Maine:* Aroostook Co.: Stockholm, July 25, 1927. Franklin Co.: Rangeley, July 31, 1925, Aug. 1894. Lincoln Co.: Jefferson, July 18, 1952, July 22, 26, 29, 1946, July 28, 1942. Piscataquis Co.: Katahdin Iron Works, Aug. 26, 1947. *Maryland:* Garrett Co.: Muddy Creek, June 11, 1953. *Massachusetts:* Berkshire Co.: Windsor, June 1, 1952. *Michigan:* Keweenaw Co.: Isle Royal, 1905. Baraga Co.: Slate River, July 23, 1921. Cheboygan Co.: July 20, 1933; Douglas Lake, July 30, 1925, Aug. 9; Nigger Creek, Mullett Lake, Aug. 4, 1925; Black Lake, July 17, 1952. Berrien Co.: Herbert Dunes, July 23, 25, 1917. Chippewa Co.: Whitefish Point, July 9, 1913, Aug. 1, 1914. Marquette Co.: Marquette, July 14; Huron Mountain Club, July 12, 1920, July 15, 1919. Delta Co.: Escanaba, July 17. Wayne Co.: Detroit. Gogebic Co.: Hughitt-Rawson Preserve, July 18, 1919. Alpena Co.: Thunder Bay River, July 8, 1925. Alger Co.:

Onota Twp., July 28, 1916. Kent Co.: Grand Rapids. Macomb Co.: New Baltimore, July 22, 26, 1893. *Minnesota:* One ♀, no data. *Montana:* Fergus Co.: Beaver Creek, 6300 ft., Aug., 1913. *New Hampshire:* Belknap Co.: Center Harbor, July 14, 1942. Coos Co.: Moose Pond, Pittsburg, Aug. 14, 1951. Grafton Co.: Franconia. *New Jersey:* Burlington Co.: Mt. Misery, June 16, 1950. Bergen Co.: Ramsey, Apr. 5, June 7, Sept. 9, 1924. Ocean Co.: Lakehurst, July 4, 1911. *New York:* Suffolk Co.: Yaphank, June 3, June 20, 1911. Erie Co.: Buffalo. Essex Co.: Mt. MacIntyre, Aug. 30, 1942; Lake Colden, Aug. 31, 1946. Columbia Co.: New Lebanon, June 14, 1938. *Oregon:* Benton Co.: Corvallis, June 26, 1926. *Utah:* Juab Co.: Mammoth, July 13, 1921; Parowan Mts., Mammoth, July 13, 1922; Top, Parowan Mts., 10,000 ft., Mammoth, July 13–22, 1921. Duchesne Co.: Tryol Lake, Uintah Mountains; Mirror Lake, Uintah Mountains. Utah Co.: Aspen Grove, Aug. 1, 1938; Salamander Pond, elevation 7000 ft., Mt. Timpanogos, May 24, 1941. *Washington:* Pierce Co.: Paradise Camp, Mt. Rainier, Aug. 19, 1927. *Wyoming:* Carbon Co.: Medicine Bow Mts., July 17, 1917.

Donacia hypoleuca Lacordaire

Arkansas: Hempstead Co.: Hope, June 28, 1932. Mississippi Co.: Big Lake, June 20, 1911. *Illinois:* Cook Co.: Harvey, Aug. 28, 1895. *Indiana:* Porter Co.: Chesterton, July 10, 1934. *Iowa:* Henry Co.: July 4, 17, 1939, July 25, 28, 30, 1940. *Kansas:* Shawnee Co.: Topeka, July 23. Doniphan Co.: July 19, 20, 23, 1924. Douglas Co.: June; Lawrence, July 22, 1922. Franklin Co.: Aug. 6, 1925; Ottawa, Aug. 1, 1923, Aug. 1, 1924. Atchison Co.: Atchison, July, 1900. *Louisiana:* Vermilion Co.: Gueydan, June 11, 1925. Orleans Co.: New Orleans. *Michigan:* Washtenaw Co.: Ann Arbor, Aug. 15, 1901. *Missouri:* St. Charles Co.: St. Charles, July 2, 1899. St. Louis Co.: July 16, July 21, 1936, Aug. 12, 1936, Sept. 1; Crevecoeur Lake, July 18, 1901. Jackson Co.: Kansas City, July 1, 1899, Aug. 2, 1925, Sept. 16, 1920. *Nebraska:* Saunders Co.: Cedar Bluffs. Lancaster Co.: Lincoln, July. *Ohio:* Knox Co.: Mt. Vernon, July 26, 1913. Ottawa Co.: South Bass Island, Put-in-Bay, July 11–20, 1946. *Oklahoma:* Delaware Co.: July 16, 1929. Le Flore Co.: Apr. 30, 1934. Adair Co.: Watts, June 16, 1939. Payne Co.: Stillwater, Sept. 19, 1935. *South Carolina:* Charleston Co.: I'on Swamp, May 6, 1948. *Tennessee:* Obion Co.: Walnutlog, July 16, 1919; Reelfoot Lake, Sept. 16, 1919. *Texas:* Brazos Co.: Bryan, June 11, 1932. Morris Co.: June 27, 1937; Daingerfield, July 29, 1937. Smith Co.: Tyler, June 29, 1937. Limestone Co.: Mexia, Aug. 3, 1937. Colorado Co.: Columbus, Oct. 8. Victoria Co.: Victoria, July 28, 1906. Collin Co.: Plano, Aug. Grayson Co.: Sherman, June 25, 1948. *Virginia:* James City Co.: Potomac River, Jamestown, July 20.

Donacia liebecki Schaeffer

Kentucky: No additional data on label, one ♀. *Maine:* Hancock Co.: Mt. Desert, July 28, 30, 1922. *Massachusetts:* Hampden Co.: Springfield, July 9, 1901. *Michigan:* Cheboygan Co. *New Jersey:* Gloucester Co.: Clayton, June 21, 1924; Malaga, May 21, 1922, June 8, July 3; Newfield, May 21, 1922. Atlantic Co.: Hammonton, June 15, 1929, June 18, 1947. Ocean Co.: Lakehurst, June 16, July 22, 1917, Aug. 31, 1923; Warren Grove, May 30, June 15, 1947, June 18, 1946, June 21, 1947; Point Pleasant, July 1, 1917. Burlington Co.: Chatsworth, June 16, 1951, July 4, 1946; Pakim Pond, Lebanon State Forest, June 16, 1950. Salem Co.: Centerton, June 10, July 2. *New York:* Suffolk Co.: Wading River, June 24; Riverhead, June 1, 10, 14, 1953, June 4, 1950, July 8, 12, 14, 18, 20, 26, 1932, Aug. 4, Sept. 4, 1949; Orient, Aug. 18, Sept. 6, 17, 18, 1949; Shelter Island, June 3, 1949; Amagansett, May 11, 1949; East Marion; East Hampton, May 28, 1949; Wyandanch, June 18, 1916. *North Carolina:* Craven Co.: Havelock, late May, 1907. *South Carolina:* Horry Co.: Myrtle Beach, Apr. 22, 1919.

Donacia magnifica LeConte

CANADA: *Alberta:* Edmonton, July 13, 15, 1922; Medicine Hat, July 12. *British Columbia:* Creston, Aug. 17, Oct. 30, 1933; Salmon Arm, 1927, June 9, 1929. *Manitoba:* Winnipeg, June 12, 24, 1911, July 20; Aweme, June 22, July 6, 1922, July 10, 20, 1906, July 21, 1915; Berens River, July 6, 1938. *Ontario:* Maitland, June 2, 1931. *Quebec:* Montreal I., July 3, 27, 1904; Rouville Co.: July 12, 1902; Mt. St. Hilaire, July, 1909; Kazubazua, July 18, 22, 1927; Duparquet, July 21–24, 1943.

UNITED STATES: *California:* Shasta Co.: Summit Lake, July, 1947, July 2, 1947. *Utah:* Cache Co.: Wellsville, June 24, 1926; Logan, "summer 1926." *Wyoming:* Carbon Co.: Medicine Bow Mts., July 17, 1937.

Donacia megacornis Blatchley

Iowa: Johnson Co.: Iowa City. *Massachusetts:* Middlesex Co.: Framingham, July 4, 1920. *Michigan:* Chippewa Co.: Whitefish Point, July 10, 1913, July 27, 29, 1914. Schoolcraft Co.: Manistique, July 8, 1923. Charity Island: July 4, 1910. *New Hampshire:* Grafton Co.: Plymouth, June 14, 1949. *New Jersey:* Burlington Co.: Chatsworth, May 25, 1929, June 16, 1951, July 4, 1946; Pakim Pond, Lebanon State Forest, June 16, 1950; New

Lisbon, June 9. Ocean Co.: Bamber, June 9, 1922; Warren Grove, June 8, 1946; Lakehurst, May 28, 1905, May 30, June 27, July 21, 22, 1917, July 4, 1910, July 26; Point Pleasant, July 1, 1917. Gloucester Co.: Clayton, June 21, 1924; Newfield, June 18; Malaga, July 3. Atlantic Co.: Hammonton, June 15, 1929. *New York:* Ulster Co.: Kingston, July 5, 1897. Queens Co.: Rockaway Beach, June 23, 1907.

Donacia militaris Lacordaire

Florida: Duval Co.: Neptune, July 20. Putnam Co.: Crescent City. Osceola Co.: Kissimmee. Marion Co.: Ocala, Aug. 17, 1930. Columbia Co.: Lake City, Sept. 1, 1896. *Georgia:* Decatur Co.: Bainbridge, June 1, 2, 1911. *Massachusetts:* One specimen, no data. *New Jersey:* Gloucester Co.: Clayton, Aug. 3, Sept. 2, 1923. Ocean Co.: Bamber, Sept. 9; Tuckerton, Aug. 24, 1904; Lakehurst, July 21, 23, 1917, Sept. 2, 1923, Sept. 17–23, 1916; Warren Grove, July 31, 1953. Atlantic Co.: Hammonton, July 16, 1922, Aug. 23, 1903. Salem Co.: Palatine, July 15, 23. Morris Co.: Budd Lake, Aug. 11, Sept. 3; Green Pond, July 24, 1949. Sussex Co.: Branchville, June, July 30. Burlington Co.: Chatsworth, July 25, 1953. *New York:* Putnam Co.: Carmel, Aug. 11, 1923, Aug. 13, 1922. *Pennsylvania:* One specimen, no data. *South Carolina:* Lexington Co.: Swansea, Aug. 7, 1911.

Donacia palmata Olivier

CANADA: *New Brunswick:* Kingston, Aug. 10, 1926. *Nova Scotia:* Greenfield, Queens, July 13–16, 1910; Ingrahamport, July 11, 1947; Castlereigh, Aug. 3, 1936. *Ontario:* Point Pelee, June 17, 1925, June 20, 1927; Sudbury; Ottawa. *Quebec:* Como, July, 1935; St. Placide, June 20, 1931; Rigaud, July; Kazubazua, July 17, 1927; Hemmingford, June 29, 30, 1923; Knowlton, June 23, 1929, July 21, 1929; Queen's Park, Aylmer, July 5, 1922; Val Morin, July.

UNITED STATES: *Alabama:* Colbert Co.: Wilson Dam F. Q., May 27, 1942. *Connecticut:* Litchfield Co.: Tyler Lake, Goshen, June 28, 1923, July 4, 1919; Litchfield, May 30, 1903, July 4, 1902. Tolland Co.: Tolland, June 14, 1938. *District of Columbia:* Four Mile Run, Washington, May 30, 1910. *Illinois:* Cook Co.: Fort Sheridan, June 20, 1916. *Indiana:* Gibson Co.: June 12, 17, 1925. *Maine:* Aroostook Co.: Stockholm, July 18, 20, 21, 1927. Lincoln Co.: Jefferson, July 18, 1952. *Massachusetts:* Bristol Co.: Attleboro, June 20, 21, 27, 1925, July 4, 1921. Middlesex Co.: Wakefield, July 18. *Michigan:* Oakland Co.: July 4, 1921. Huron Co.: June 22, 1908; Sand Point, June 22, 1922. Washtenaw Co.: Ann Arbor, June 15, 1922, Aug. 27, 1927. Livingston Co.: Whitewood Lake, June 26, 1917. *New Hampshire:* Sullivan Co.: Claremont, July 10, 1911. Grafton Co.: Franconia; Plymouth, June 28, 1949. Belknap Co.: Center Harbor, July 10, 11, 16, 1942. Strafford Co.: Durham. Merrimack Co.: Penacook, July 6. *New Jersey:* Camden Co.: May 27, 28, June 4, 1944; Camden, May 4, 10, 30, June 11; Clementon, June 25, 1904; Gloucester, June 10. Burlington Co.: June 5, 14, 27; Riverton, June 6, 13, 16; Browns Mills, June 15, 1909; Masonville, May 28, 1922. Somerset Co.: Neshanic, June. Atlantic Co.: Mays Landing, June 16, 1925. Passaic Co.: Passaic, June; Little Falls, June 6, 1915. Union Co.: Berkeley Heights, July 7. Bergen Co.: Alpine; Fort Lee. Monmouth Co.: Red Bank, July 4, 1908. Salem Co.: Elmer, May 30; Palatine, May 28, Ocean Co.: Ship Bottom, July 12, 1936. *New York:* Rockland Co.: Ramapo Mts.; Rockland Lake, July 21. Warren Co.: Horicon, Brant Lake, Aug.; Lake George, July 21–25, 1914. Tompkins Co.: Ithaca, July 23, 1898. Westchester Co.: White Plains, May 31, 1923. New York Co.: New York City. Franklin Co.: Upper Saranac, July 7, 1928; Saranac Lake, Sept. Columbia Co.: Lake Charlotte, Aug. 3, 1928. Orange Co.: Sta. Study Insects, Tuxedo, June 29, 1928. Greene Co.: Athens, July 4, 1913. Rensselaer Co.: Lake Tackawasick, June 25, 1920. Essex Co.: Clear Pond, Blue Ridge, Aug. 17, 1948. Hamilton Co.: Long Lake, Richmond Co.: Staten Island. St. Lawrence Co.: Potsdam. *North Carolina:* Columbus Co.: Lake Waccamaw, Apr. 10, 1929; Boardman. Washington Co.: Wenona, May 26, 1925. Perquimans Co.: Hertford, July 26, 1924. *Ohio:* Holmes Co.: July 13, 1946. Lorain Co.: June 13, 1942. *Pennsylvania:* Bucks Co.: Bristol, May 20, 30, July 4, 1922. Philadelphia Co.: Philadelphia, June 14, 15. Luzerne Co.: Sybertsville, Aug. 3, 1926. Pike Co.: Tafton, July 30, 1938. York Co.: Washington Twp., June 10, 17, 1953; 5 miles west of Davidsburg, June 1, 1941, June 15, 1953. Adams Co.: Gettysburg, May 18, 1941. Montgomery Co.: Abington, July 10: Spring Mount, May 15, 28, June 26, 1922. *Rhode Island:* Washington Co.: Watch Hill, July 2, 1909. Providence Co.: Providence, June 30, 1919. *Virginia:* Fairfax Co.: June 16, 1922.

Donacia parvidens Schaeffer

CANADA: *Ontario:* Gravenhurst, July 1, 1932.

UNITED STATES: *Georgia:* Charlton Co.: Billy Island, Okefenokee Swamp, Dec. 28, 1913. *Illinois:* Cook Co.: Chicago, June 2, 1904. *Indiana:* Lake Co.: Miller, July 4, 1916. *Massachusetts:* Barnstable Co.: Hyannis, June 14, 1949; Harwichport, Aug. 16, 1933. *Michigan:* Washtenaw Co.: Ann Arbor, June 17, 1946; Huron River, June 15, 1920. Oakland Co.: Waterford Twp., June 20,

1923. *Minnesota:* Hennepin Co.: Lake Minnetonka, June 13, 1923. *New Jersey:* Ocean Co.: Bamber, June 9, 1922; Lakewood, June 16, 1917; Lakehurst, May 3, 1923, May 18, 30; Lahaway, May 4, 30, 1916; Warren Grove, May 24, 30, 1947, June 1, 8, 1946. Burlington Co.: June 14; Atsion, May 6, 1951; Chatsworth, May 6, 1951; Oswego River, Penn State Forest, Apr. 28, 1951; Martha, May 11, 1947. Camden Co.: Clementon, Aug. 6, 12, 17. Gloucester Co.: Clayton, June 21, 1924. Atlantic Co.: Hammonton, May 28, 1921, May 29, June 16, 1929, Aug. *New York:* Suffolk Co.: Wyandanch, May 15, 1921, May 23, 26, 1918, May 30, June 20, 1938; Yaphank, May 28, 1911; Orient, June 26, 1948; Riverhead, June 1, 1953, July 9, 1951, Sept. 4, 1949; Wading River, June 24. Rockland Co.: Bear Mountain, May 28, 1947. *Rhode Island:* Providence Co.: Providence, June 30, 1900. Washington Co.: Watch Hill, June 30, 1909. *South Carolina:* Charleston Co.: Isle of Palms, May 3. *Virginia:* Princess Anne Co.: Virginia Beach, Mar. 29, 1908, Nov. 11, 1907.

Donacia piscatrix Lacordaire

CANADA: *Ontario:* Rideau Lake, July 2, 1911; Toronto; Irondale, July 1–15, 1928; Ottawa; Point Pelee, June 20, 1927; Prince Edward Co., Aug. 2, 1900; Vineland, July 15, 1929; Guelph, July 19, 1928; Lac du Milles Dist., Thunder Bay, 1892. *Quebec:* Rigaud; Val Morin, July 28, 1902; Orford Lake, July ; Queen's Park, Aylmer, July 5, 1922; Hull, June 4, July 4, 1932; Cazaville.

UNITED STATES: *Connecticut:* Litchfield Co.: Tyler Lake, Goshen, June 25, 28, 1923, July 4, 1919; Litchfield, June 28, 1924, July 4, 1902, July 6, 1925, Aug. 1, 1922, Aug. 3, 1901, Aug. 4, 1903, Aug. 30, 1924. *Delaware:* New Castle Co.: Townsend, Aug. 26, 30. *District of Columbia:* June 19, 1911; East Branch, June 21, 1911; Washington, May 21, 30, 31, 1921. *Florida:* Pinellas Co.: Dunedin, Apr. 4, 1920, Apr. 7, 1913, Apr. 11, 1922. Dade Co.: Miami, Apr. 3. Levy Co.: Apr. 16, 24, 26; Gunntown, Apr. 24. Duval Co.: Jacksonville, Apr. 23. Columbia Co.: Lake City, Apr. 11, 1892, May 30, 1892. Osceola Co.: Kissimmee. Putnam Co.: Cresecent City. Indian River Co.: Vero Beach, Dec. 20, 1943. Alachua Co.: Wauberg Lake, Apr. 23, 1935; Gainesville, Mar. 29, 1924. *Georgia:* Charlton Co.: Billy Lake, Okefenokee Swamp, June 14, 1912; Billy's Island, July 27, 1939; Okefenokee Swamp, July 25, 27, 1939. Clinch Co.: Fargo, Mar. 28, 1951. *Illinois:* Will Co.: New Lenox, June 28, 1930, Aug. 9, 1936. Lake Co.: Zion City, June 26, 1932. *Indiana:* Vigo Co. Kosciusko Co.: June 6, 1901, July 24, 1907. Knox Co.: July 8, 1902. Crawford Co.: May 25, 1904. Fulton Co.: June 2, 1948 *Iowa:* Jones Co. *Maine:* Hancock Co.: New Mill Pond, Mt. Desert Island, July 12, 1935; Witch Hole Pond, Mt. Desert Island, Aug. 17, 1933. Lincoln Co.: Jefferson, July 17, 1935. *Maryland:* St. Marys Co.: Hills Bridge, Patuxent River, June 26, 1924. *Massachusetts:* Middlesex Co.: Wakefield, July 27, 1893, Aug. 12, 1889, Aug. 23, 1912; Hopkinton, July 4, 1926. *Michigan:* Oakland Co.: Waterford Twp., June 20, July 9, 1923; Lakeville, June 30, 1929; Lake Orion, Aug. 12, 1909. Wayne Co.: Detroit. Ottawa Co.: Aug. 24, 25. Ingham Co.: Agricultural College. Mecosta Co.: June 25, 1949. Antrim Co.: July 10, 1949. Cheboygan Co.: July 27, 1933; Douglas Lake, July 1, 1923, July 10, 13, 1927, July 27, 1933, Aug. 12, 15, 1920; Cheboygan, June 29, 1939. Marquette Co.: Huron Mts., July 12, 13, 1920. Berrien Co.: July 25, 1917; Sawyer Dunes, E. K. Warren Preserve, June 24, 1919; Herbert Dunes, July 20, 1917. Chippewa Co.: Whitefish Point, July 19, 1913, July 20, 26, 1914. Washtenaw Co.: July 19, 26, Aug. 13, 1922; Ann Arbor, 1894, Aug. 27, 1927; Forestry Farm, Ann Arbor, July 9, 1919; Third Sister Lake, June 21, 1919, Aug. 12, 1933. Livingston Co.: Whitewood Lake, June 26, 1917. Kent Co.: Grand Rapids. Manistee Co.: Bear Lake, 1908. *Minnesota:* Crow Wing Co.: Pelican Lake, Nisswa, June 27. *Missouri:* Ste. Genevieve Co.: Saint Marys, June 18, 1937. *New Hampshire:* Grafton Co.: Plymouth, June 29, 1949. *New Jersey:* Gloucester Co.: Malaga, July 3; Westville, Aug. 6, 1927, July 2; Woodbury, May 22, 1896; Clayton, June 21, 1924; Pitman, Aug. 4, 1899. Morris Co.: Budd Lake, July 11, Aug. 11; Chester, July 4. Middlesex Co.: New Brunswick, June 5. Camden Co.: May 27, 1951, May 28, 1944, July 5, 1947, July 7, 1939; Camden, May 4; Collingswood, June 19; Clementon, June 24, 25, 1904; Atco, July 21, 1945, June 15. Union Co.: Summit, June 8, 1913; Berkeley Heights. Ocean Co.: Lakehurst, July 4, 1910. Atlantic Co.: Mays Landing, June 16, 1925. Cumberland Co.: Millville, June 29, 1925. Sussex Co.: Hopatcong. Salem Co.: Centerton, June 10. Burlington Co.: Mt. Holly, June 12, 1927; New Lisbon, June 28, July 24, 1930. *New York:* Franklin Co.: Upper Saranac Lake, July 7, 1928. Wayne Co.: Sodus Point, June 29, 1923. Warren Co.: Brant Lake. Sullivan Co.: Aug. 3, 1918. Suffolk Co.: Lake Ronkonkoma, May 31, 1913. Orange Co.: Sta. Study Insects, Tuxedo Park, June 29, 1928. Rockland Co.: Rockland Lake, July 2, 1911. Westchester Co.: New Rochelle, Aug. 3, 1910; White Plains, May 31; Larchmont, July 19, 1899; Yonkers, June, 1947. Saratoga Co.: Bellston Lake, Aug. 26, 1923. Herkimer Co.: Big Moose, July 26, 1904. New York Co.: Van Cortlandt Park, New York City, June 4, 1951. Richmond Co.: Staten

Island, June 6; Grasmere, Staten Island, Oct. 4, 1925. *North Carolina:* Moore Co.: Southern Pines, June 2, 3, 21, 28, 1911. Wake Co.: Raleigh, May, July 3, 1902. Brunswick Co.: Winnabow, May 18, 1934. *Ohio:* Lorain Co.: June 13, 1946, Aug. 13, 1945; La Grange, June 29, 1941. Holmes Co.: July 13, 1946. Franklin Co. *Oklahoma:* McCurtain Co.: June 10, 1931; Idabel, Aug. 1, 1931. Pushmataha Co.: Apr. 27, 1934; Antlers, May 11, 1934. *Pennsylvania:* Montgomery Co.: Spring Mount, May 15, 22, 28, June 10, 19, 1922. Philadelphia Co.: Philadelphia, June 10, May 28, June 18; Tacony, June 21, 1929. Bucks Co.: Bristol, May 30, Aug. 20, Sept. 4, 1922, June 16, 1923. Delaware Co.: Essington, June 3, 1923; Moores, June 24, July 1. York Co.: Washington Twp., June 17, 1953; Detters Mill, 7 miles west of Dover, June 20, 1949; 5 miles west of Davidsburg, June 15, 1953. Adams Co.: Gettysburg, May 18, 1941. *Rhode Island:* Washington Co.: Watch Hill, July 31, 1909. *South Carolina:* Lexington Co.: Swansea, Aug. 7, 9, 11, 1911. Lee Co.: Meredith, May 16, 1932, May 27, 28, 1926. *Tennessee:* Obion Co.: Reelfoot Lake, Samburg, July 15, 1919. *Texas:* Hidalgo Co.: Edinburg, Sept. 1933. Comal Co.: New Braunfels, Apr. 4, 1902. Tom Green Co.: Christoval, Apr. 27, 1915, July 15, 1928. Harris Co.: May 27. *Virginia:* Fairfax Co.: June 16, 23, 1923; Mt. Vernon, June 17, 1917. Greene Co.: Dyke, May 28, 1915. Nelson Co.: June 27, 1911. *Wisconsin*: Vilas Co.: Tenderfoot Lake, July, 1912. Walworth Co.: July 3, 1891. Washington Co.: Cedar Lake, June 26; West Bend, June 24, 26, 1906, Aug. 17, 1902. Oneida Co.: July 4, 1943.

Donacia porosicollis Lacordaire

CANADA: *Manitoba:* Onah, May 24, 1912; "Mile 214, H. B. Ry.," July 6, 1917. *Ontario:* Nipigon, Sept. 24; Marmora, May 23, 1902; Hastings Co., May 27, 1911; Ridgeway, May 30, 1891. *Quebec:* Duparquet, June 4, 1941.

UNITED STATES: *District of Columbia:* Washington. *Massachusetts:* Middlesex Co.: Tyngsboro. *Michigan:* Marquette Co.: Marquette. Chippewa Co.: Whitefish Point. Keweenaw Co.: Eagle Harbor, June 7. Livingston Co.: May 23; Green Oak Twp., May 23, 1920. Kent Co.: Grand Rapids. *New York:* Jefferson Co.: Woodville, Lake Ontario, June 9, 1923. *Virginia:* No data.

Donacia proxima Kirby

CANADA: *Alberta:* Edmonton, Aug. 27, 1900; Bilby, June 19, 1924. *British Columbia:* Victoria. *Manitoba:* Winnipeg, June 12, 1911; Aweme, July 14; Gillam, July 20, 1950; Piquitenay, July 22, 26, 1917. *New Brunswick:* Fredericton, July 1, 1931; Kingston, Aug. 10, 1926; Fundy National Park, Aug. 1, 1954. *Newfoundland:* Spruce Brook, Aug. 8, 1912; Codroy, Little River, July 10–18, 1907. *Nova Scotia:* Medway, Queens, Aug. 7–19, 1912; Halifax, Aug. 25, 1915. *Northwest Territories:* Norman Wells, July 10, 24, 27, 1949. *Ontario:* Indian Lake, July 13, 1934; Point Pelee, June 20, 1927; Marmora, Aug. 7, 1952; Lac des Milles Lacs Dist., Thunder Bay, 1892; Ottawa, June 7, 1923, Aug. 4, 1899; Mer Bleue, June 25, 1923; Toronto, "Abitibi Region," June 9–15, "Dr. Cook"; "Abitibi Region," June 20–22, 1915, "Dr. Cook." *Quebec:* Duparquet, June 17, 1938, June 28, 1942, July 4, 1944, July 27, 1936, Aug. 17, 22, 23, 1935, Aug. 26, 1936; Montreal, July 1, 1904; Mt. St. Hilaire, July, 1909; Val Morin, July 7, 1901; Hemmingford, June 27, 30, 1923; Rigaud, July, 1900; Brome Lake, July 8, 1927. *Saskatchewan:* Waskesiu Lake, July 8, 1939.

UNITED STATES: *Connecticut:* Litchfield Co.: Litchfield, July 26, 1901, Aug. 3, 1901, Aug. 19, 1918, Aug. 30, 1924; Tyler Lake, Goshen, June 28, 1923. Tolland Co.: June 14, 1938. *Florida:* Liberty Co.: "Twp. 2 N.-R.7W," May 29, 1924. *Illinois:* "N. Ill." August. *Indiana:* Porter Co.: Mineral Springs, May 21, 1905. *Maine:* Aroostook Co.: Stockholm, July 17, 20, 23, 1927. Lincoln Co.: Jefferson, July 18, 20, 21, 1952. Kennebec Co.: Monmouth, June 21, 1909. *Massachusetts:* Bristol Co.: Attleboro, July 29; North Attleboro, June 29, 1922. Middlesex Co.: Framingham, Apr. 7, 1944; Wakefield, July 27, Aug. 23. Berkshire Co.: Lenox, June 18. Barnstable Co.: Woods Hole. Hampden Co.: Chicopee, June 20, 1901. *Michigan:* Marquette Co.: Marquette, June 28, 30; Huron Mts., July 12, 1920, Aug. 23. Cheboygan Co.: June 28, 1935, June 29, 1939, June 30, 1932, June 30, 1934, June 30, 1935, July 2–5, 1931, July 6, 1933, July 6, 1936, July 17, 1943, July 20, 1933, Aug. 6, 1931, Sept. 3, 1933; Douglas Lake, June 27, 28, 1925, July 1, 8, 1926, July 4, 1930, July 5, 1927, July 13, 1917, July 21, 1925, July 24, 1923, July 28, 1926, July 28, 1927, Aug. 9, 1926, Aug. 12, 15, 1920, Aug. 23; Douglas Lake, Bessey Creek, July 18, 1923; Douglas Lake, near Pellston, July 22, 1914; Burt Lake, July 24, 29, 1930; Smiths' Bog, July 5, 1952. Ottawa Co.: Aug. 22; Macatawa Beach, June 10, 1906. Chippewa Co.: Whitefish Point, July 9, 1913, July 27, 1914. Keweenaw Co.: Isle Royal, 1905. Gogebic Co.: Aug. 18, 1919. Berrien Co.: Herbert Dunes, July 25, 1917. Livingston Co.: Whitewood Lake, June 26, 1917. Menominee Co.: 12 miles west of Stephenson, July 5, 1940. Schoolcraft Co.: Manistique, June 19, 1923, Aug. 12, 1923. Alger Co.: Onota Twp., July 21, 1916. Huron Co.: July 1, 1908. Charlevoix Co.: Charlevoix, Aug. 9, 1894. Kent Co.: Grand Rapids, July 23, 1895. *Minnesota:* Clearwater Co.: Lake Itaska, June 25, 1915, Aug. 5, 1910. Olmstead Co.: Rochester, June 12,

13, 1922. *New Hampshire:* Grafton Co.: Franconia. Merrimack Co.: Elkins, Aug. 17; Loudon, July 26, 1931. Hillsboro Co.: Manchester, Aug. 3, 4. *New Jersey:* Passaic Co.: Paterson, Aug. 6, Oct. 28. Mercer Co.: Trenton, Apr. 23. Bergen Co.: Fort Lee. Morris Co.: Budds Lake, Aug. 11, 24. *New York:* Fulton Co.: Chain Lakes. Franklin Co.: Tupper Lake, Sept. 4, 1946; Upper Saranac, July 2, 3, 5, 7, 1928; Saranac Lake, Sept. 2, 3, 1909. Wyoming Co.: Pike, June 15, 1901. Putnam Co.: Carmel, Aug. 11, 1923. Essex Co.: Elk Lake, Aug. 16, 1948; Upper Ausable Lake, July 30, 1920; Clear Pond, Blue Ridge, Aug. 17, 1948. Columbia Co.: Lake Charlotte, Aug. 2, 3, 1928. Schuyler Co.: Lake Cayuta, Aug. 22, 1929. Orange Co.: Sta. Study Insects, Tuxedo, June 29, 1928. Tioga Co.: Spencer Lake, Aug. 26, 1917; Orleans Co.: Lakeside Park, Aug. 8, 1921. Wayne Co.: Sodus Point, Aug. 7, 1925. Erie Co.: Buffalo. Rockland Co.: Ramapo Mts. Chautauqua Co.: Chautauqua Lake, July. Hamilton Co.: Lake Pleasant, Aug. Warren Co.: Brant Lake. *Ohio:* Erie Co.: Sandusky, July 8, 1905. *Pennsylvania:* Pike Co.: July 21; Baoba, July 19, 21, 1922, July 17, 18. Carbon Co.: Lehigh Gap, July 12, 1899, July 22, 1903. *Wisconsin:* Vilas Co.: Tenderfoot Lake, July, 1912, Aug. 1913. Bayfield Co.: Aug. 11. Washington Co.: West Bend, Aug. 17, 1902, Aug. 22, 1915. Shawano Co.: Cloverleaf Lakes, June 11, 1933.

Donacia proxima californica LeConte

CANADA: *British Columbia:* Creston, Aug. 24, 1933; Pender Harbor, June 25, 26, July 5, Aug. 26, 1926; Agassiz, July 17, 1922; Yellow Point, Nanaimo, Aug. 15, 1927, June 28, 1920; Florence Lake, Thurston, Aug. 28, 1925.

UNITED STATES: *California:* El Dorado Co.: Lake Audrain, July 18, 1934. Shasta Co.: Lake Eiler, July 9, 1947. Placer Co.: Cisco, June, 1910. *Idaho:* Kootenai Co.: Coeur d'Alene. Shoshone Co.: Burke, Aug. 20, 1934. *Washington:* Pierce Co.: Puyallup, June 17, 1929.

Donacia pubescens LeConte

CANADA: *British Columbia:* Vancouver Island; Quamichan Lake. *Manitoba:* Riding Mount Park, June 9, 1937. *Ontario:* Toronto; Marmora, Aug. 6, 1952; Rideau, June 12; Ottawa. *Quebec:* St. Hilaire, July 1, 1904, July 1, 1905. *Saskatchewan:* Waskesiu Lake, July 8, 9, 1939; Attons Lake, Cut Knife, June 15, 1940.

UNITED STATES: *California:* Lake Co. *Illinois:* Cook Co.: Chicago, June 26; Lake Beach, Chicago, May 28, 1911. *Indiana:* Lake Co.: Miller, July 4, 1916; Pine, June 2, 1905. *Iowa:* Palo Alto Co.: Ruthven, June 1, 1934. *Maine:* Aroostook Co.: Stockholm, July 18, 1927. Lincoln Co.: July 9, 1949. *Michigan:* Cheboygan Co.: June 27, 1935, June 30, 1932, June 30, 1952, July 2–5, 1931, July 28, 1932, Aug. 4, 1933; Douglas Lake, June 29, 1923, July 1, 4, 1928, Aug., 1917; Bessey Creek, Douglas Lake, June 23, 1925. Emmet Co.: Carp Lake. Wayne Co.: Detroit. Saint Clair Co.: Port Huron, June. Chippewa Co.: Whitefish Point. Ontonagon Co.: Lake Gogebic, June 23, 1938. Washtenaw Co.: Dexter, June 27, 1893. Oakland Co.: July 10, 1938. *Minnesota:* Stearns Co.: Saint Cloud, July 11, 1925. *Nebraska:* Cherry Co.: Dewey Lake Twp., June 14, 1902. *New York:* Seneca Co.: Junius, June 11, 1922. *Oregon:* Klamath Co.: Pelican Bay, June 11, 1951. *South Dakota:* Brookings Co.: Brookings. *Wisconsin:* Vilas Co.: Tenderfoot Lake, July, 1912; Trout Lake, Aug., 1934.

Donacia quadricollis Say

CANADA: *Ontario:* "Eastern Ontario." *Quebec:* St. Theresa; St. Placide, July 14, 1931; St. Anicet, July, 1910; Duparquet, July 16, 1944.

UNITED STATES: *Illinois:* Lake Co.: Fourth Lake, Aug. 2, 1887. *Indiana:* Marshall Co.: Aug. 15, 1907. *Iowa:* Palo Alto Co.: Ruthven, July 4, 1933. *Michigan:* Ottawa Co.: Aug. 27, 28. Cheboygan Co.: July 22, 1935, Aug., 1934; Lancester Lake, July 11, 1952; Douglas Lake, July 15, 1920. Macomb Co.: New Baltimore, July 22, 26, 1893. Beaver Island, Aug. 16, 1894. Wayne Co.: Detroit, Aug. Oakland Co.: July 4, 1939. *Minnesota:* Crow Wing Co.: Pelican Lake, Nisswa, July 28, 1908. *Missouri:* St. Louis Co.: Creve-Coeur Lake, Sept. 19, 1902. *New York:* Clinton Co.: Plattsburg. Tioga Co.: Spencer Lake, Aug. 26, 1917. Orange Co.: New Windsor. *Wisconsin:* Vilas Co.: Tenderfoot Lake, July, 1912. Washington Co.: Cedar Lake, July 13, 1903; West Bend, July 17, 1903.

Donacia rufa Say

Connecticut: New Haven Co.: Westville, July 10, 1898; Meriden, July 8, 1921. *Delaware:* New Castle Co.: Wilmington, July. *District of Columbia:* Washington, Aug. 26, 1907; Rock Creek, Washington, June 11, 1899; Kenilworth, July, 1926; Eastern Branch, Potomac River, Washington, June 19, 1933; Potomac side, Washington, May 30, 1905. *Georgia:* One ♂, no data. *Maine:* Cumberland Co.: Casco, Aug. 1–13, 1944. *Maryland:* Prince Georges Co.: Lakeland, July 24, 1910. *Massachusetts:* Worcester Co.: Berlin, July 4, 1935. *New Hampshire:* Belknap Co.: Center Harbor, July 10, 14, 1942. *New Jersey:* Camden Co.: July 1, 1944, July 4, 1945, June 7; Camden, July 23; Westville. Burlington Co.: June 4, 5; Browns Mills, June 28, 1921; Centreton, July 4, 1944; Riverton, July 16, 1905. Essex Co.: Newark,

Irvington. Bergen Co.: Hackensack, July 1, 1925; Leonia, July 23; Fort Lee, July 11, 1895. Passaic Co.: Paterson, Aug. 27, 1903, July 31, Aug. 20. Sussex Co.: Hopatcong. Atlantic Co.: Hammonton, Mar. 8; Albertson Brook, 3½ miles south of Atsion, July 5, 1948, Aug. 5, 1949. Ocean Co.: Point Pleasant. *New York:* Queens Co.: Maspeth, Long Island, Aug. 17. Richmond Co.: Staten Island. Greene Co.: New Baltimore, 1879. Suffolk Co.: Orient, Apr. 4, 1941. *Pennsylvania:* Pike Co.: Baoba, July 25, 28, 1922. Philadelphia Co.: Torresdale, July 2, 1922; Frankford, July 2; Roxborough, June 27, 1915; Mt. Airy, July 3, 7; Pennypack Park, July 22, 1923. Bucks Co.: Bristol, July 4, 1922. Berks Co.: Wyomissing, July 27. Northampton Co.: Easton; Belfast, July 30, 1937; Bethlehem, June 6, 1900. Delaware Co.: Moores, July 7, 8. Monroe Co.: Delaware Water Gap. *Rhode Island:* Washington Co.: Watch Hill, July 21, 31, 1909. *Virginia:* Arlington Co.: Rosslyn, Aug., 1907. Fairfax Co.: Mt. Vernon.

Donacia rufescens Lacordaire

Florida: Marion Co.: Ocala, Aug. 17, 1930. Jefferson Co.: Lake Miccosukee, Aug. 15, 1925. *Massachusetts:* Worcester Co.: Brookfield, July 31, 1894. Hampden Co.: Westfield, Aug. 23, 1903. Norfolk Co.: Stoughton, Aug., 1924. *Maine:* Hancock Co.: Witch Hole Pond, Mt. Desert Island, Aug. 17, 1933. *Michigan:* Oakland Co.: Lakeville, July 23, 1933. *New Hampshire:* Belknap Co.: Center Harbor, July 14, 1942. *New Jersey:* Camden Co.: Clementon, Aug. 6, 8, 13; Atco, July 21, 1945. Ocean Co.: Bamber, Sept. 9; Bayhead; Lakehurst, Sept. 2, 4, 1923, Sept. 23, 1916; Warren Grove, July 14, 1945, July 31, 1953, Aug. 31, 1940. Passaic Co.: Paterson, Oct. 28. Morris Co.: Budds Lake, Aug. 11, 24, Sept. 3. Salem Co.: Centerton, July 2, 3. Burlington Co.: New Lisbon, July 14; Chatsworth, July 8, 25, 1953, Sept. 3, 1945. Atlantic Co.: Hammonton, July 16, 1922. *New York:* Suffolk Co.: Wyandanch, Long Island, July 12, 23, Aug. 9, 23, Sept. 16; Riverhead, June 1, 1953. Putnam Co.: Carmel, Aug. 11, 1923, Aug. 11, 1929. Richmond Co.: Silver Lake, Staten Island, July; Staten Island, July 28, 1891, Aug. 22, 1885. Rockland Co.: Ramapo Mts. Essex Co.: Eagle Lake, July 25, 1937. *Ohio:* Holmes Co.: July 13, 1946. *Pennsylvania:* Bucks Co.: Bristol, Aug. 15, 20, Sept. 2, 4, 1922, Aug. 18, 1923. *South Carolina:* Lexington Co.: Swansea, Aug. 7, 1911.

Donacia rugosa LeConte

District of Columbia: Rock Creek, Washington, July 9, 1902. *Florida:* Highlands Co.: Lake Placid, Mar. 30, 1945; Archbold Biological Station, Lake Placid, Mar. 25, 1949. Lake Co.: Leesburg, June 10, 27, 1930. Polk Co.: Lake Alfred, May 6, 1929. Volusia Co.: Enterprise, Apr. 24, May 20, 25. Putnam Co.: Welaka, June 5, 1940. *Maine:* Lincoln Co.: Jefferson, July 17, 20, 1952, July 24, 28, 1946; Winslow Mills, July 26, 1946; Glendon, July 27, 28, 30, 1946. *Maryland:* St. Marys Co.: Breton Bay, Potomac River, July 13, 1923. *Massachusetts:* Middlesex Co.: Tyngsboro; Lowell, Aug. 25, 1888. Essex Co.: Ipswich, Aug. 6, 1926. Norfolk Co.: Stoughton, Aug., 1924; Ames Pond, Stoughton, Aug., 1947. Hampden Co.: Agawan, Sept. 4, 1899. Worcester Co.: Northboro, Aug. 29, 1945. *Michigan:* Ottawa Co.: Aug. 26. Muskegon Co.: Whitehall, July 26, 1914. Kent Co.: Grand Rapids. *Mississippi:* Harrison Co.: Biloxi, June 24, 1931. *New Hampshire:* Belknap Co.: Center Harbor, July 13, 14, 16, 1942, Aug. 18, 1939. Merrimack Co.: Concord, Aug. 28, 1908. *New Jersey:* Burlington Co.: June 4; Atsion, Aug. 2, 1922, Aug. 8, 1948, Aug. 10, 23, 1923; Riverton, July 16, 1905. Sussex Co.: Swartswood, Sept. Passaic Co.: Paterson, July 31. Morris Co.: Budd Lake, Aug. 11. *New York:* Franklin Co.: Saranac Lake. Hamilton Co.: Fulton Co.: Chain Lakes. Rockland Co.: West Nyack, Aug. 2, 1922. Suffolk Co.: Southold, June 9, 1949, July 11, 1940; Orient, July 17, 1949, Sept. 2, 1946; Riverhead, June 1, 10, 1953, June 11, 1934, June 14, 1953, July 9, 1951, July 24, 1932, Sept. Columbia Co.: Lake Charlotte, Aug. 3, 1928. Westchester Co.: Peekskill. St. Lawrence Co.: Rossie, July 13, 1941. Essex Co.: Eagle Lake, July 25, 1937. *Rhode Island:* Washington Co.: Watch Hill, July 23, 1945. *South Carolina:* Beaufort Co.: June 14, 1948. Charleston Co.: I'on Swamp, June 4, 1948. *Virginia:* Fairfax Co.: July 18, 1906.

Donacia subtilis Kunze

CANADA: *Alberta:* St. Albert, July 12, 1924; Edmonton, May 5, 1918; Olds, June 16, 1900; Athabaska Delta, Fort Chipewyan, July 8, 1920. *British Columbia:* One ♂ in Canadian National Collection labeled "Br. Col." and one ♂ in collection of Reading (Pennsylvania) Museum with label reading "British Columbia, Entomological Branch, Ottawa, Canada." *Manitoba:* Stockton, June 21, 1925, July 29, 1924; Glen Souris, June 5, 1923; Treesbank, June 20, 1925, July 1, 1924, Aug. 3, 1926; Aweme, June 6, 1922. *New Brunswick:* Penobsquis, July 27, 1926. *Nova Scotia:* Baddeck, June 23, 30, 1936. *Ontario:* Toronto, Apr. 23, 1926, May 1, 1895, June 11, 1897, June 23, 1926; Guelph, June 22, 1950, Sept. 15, 1928; Kingsville, May 31, 1909; Port Hope; Port Credit, July 4; Goderich, June 22, 1904, June 22, 1906, June 25, 1905; Algonquin Park, June 19–21, 1922; Marmora, May 23, Aug. 6, 1952; Belleville; Ottawa, June 9, 1949; Lyn,

July 7, 1924; Rondeau Park, June 13, 1929; Muskoka, July, 1888. Prince Edward Co.: May 13, 1922, May 27, 1918, June 1, 1923, June 20, 1922, July 29, 1923, Aug. 10, 1929; Point Pelee, June 5, 1929, June 11, 1940; Black Rapids, Aug. 25, 1927; Vineland, June 11, 1949; Fitzroy Harbor, July 11, 1938. *Quebec:* Montreal, July 26, 1902; Mt. St. Hilaire, June, July, 1909; Rigaud, July, 1899; Hemmingford, June 26, 1923; Covey Hill, June 27, 1927; St. Chrysostome, June 28, 1927; Boucherville, June 27, 1902; Knowlton, June 20, 23, July 18, 21, 1929, July 9, 1927; Quebec; Wakefield, June 26, 1926; Kazubazua, July 17, 1927. *Saskatchewan:* Carnduff, June 16, 1900; Pike Lake, May 24, 1940.

UNITED STATES: *Alabama:* Mobile Co.: Mobile, June 8–15, 1929, Apr. 6. *California:* Lake Co.: June 10, 1915. *Colorado:* Weld Co.: Greeley. *Connecticut:* Litchfield Co.: Cornwall, June 7, 1925, Aug. 4, 10, 1920; Litchfield, Apr. 16, 1922, July 6, 1925, Aug. 20, 1924, Sept. 4, 1924, Sept. 30, 1901, Nov. 17, 1921. Hartford Co.: East Hartford, Aug. 2, 1905, Aug. 13, 1906. New Haven Co.: New Haven, June 6, 1925. Tolland Co.: Storrs, Aug. 5, 1946. *District of Columbia:* Four Mile Run, Washington, May 29, 1930; East Branch, Potomac River, Mar. 3, 1923, Mar. 18, 1924, June 19, 21, 1911, June 28, 1925; Woodridge, May 15, 1918, June 3, 1919; Rock Creek, Washington, June 13, 1898, June 22, 1902, Aug. 10, 1902; Washington, May 14, 1921. *Georgia:* Houston Co.: Perry, Aug. 12, 1939. *Illinois:* Cook Co.: Glencoe, May 31, 1909, June 4, July 3, 1913; Palos Park, June 17, 1917, July 6, 1932, July 11, 1920, Aug. 2, 1919; Chicago, May 10, 1909, May 25, May 26, June 2, 1904, June 5, 17, 1906, June 16, 1907, June 22, 1923, July 12, 1911, Aug. 5, 1906, Aug. 9, 1902; Evanston, June 27, 1925; Fort Sheridan, June 20, 1916. Kane Co.: Elgin, June 1, 1923, June 9, 16, 1921. Lake Co.: Lake Forest, June 26, 1899. McHenry Co.: Algonquin, June 28, 1909. St. Clair Co.: Apr. 21, 1919, Apr. 29, 1895. *Indiana:* Lake Co.: May 27, 1912, May 29, 1903; Hessville, May 30, 1906; Miller, May 30, 1906, July 11, 1915. Kosciusko Co.: June 22, 1908. Warren Co.: Pine, May 12, 1907, May 21, 1905, June 6, 1909. *Iowa:* Dickinson Co.: June 22, 1935, June 29, 1940, July 25, 1938; Lake Okoboji, June 19, 1917, July 22, 23, 1917. Henry Co.: Mt. Pleasant, May 17, 1939, June 23, 1942. Winnebago Co.: Winnebago, July 4, 1940. Hancock Co.: July 3. Lee Co.: July 19, 1949; Fort Madison. Johnson Co.: Iowa City, May 30. *Kansas:* Douglas Co.: 900 feet. Riley Co.: May. *Louisiana:* One ♀, no data. *Maine:* Lincoln Co.: Jefferson, July 24, 26, 28, 29, 1946, July 20, 21, 1952; Glendon, July 30, 1946. Oxford Co.: Paris, June 29, 1945. *Maryland:* St. Marys Co.: Hills Bridge, Patuxent River, Aug. 3, 26, 1924. Prince Georges Co.: Hyattsville, May 29, 1910; Blandensburg, May 10, 1917; Lakeland, May 22, 1915, July 24, 1910. Montgomery Co.: Great Falls, May 15, 1914, May 23, Aug. 15, 1915. Garrett Co.: Muddy Creek, June 11, 1953. *Massachusetts:* Hampden Co.: Agawam, Sept. 4, 1899; Chicopee, July 20, 1896; West Springfield, May 18, 1903. Essex Co.: Lawrence, June 14, 1916. Barnstable Co.: Mashpee, June 14, 1949; Hyannis, June 15, 1949. Middlesex Co.: Ashland, July 27, 1949; Sherborn, May 17, June 15, 1949; Tyngsboro. Bristol Co.: New Bedford, June 10. *Michigan:* Wayne Co.: May 28, 1948; Detroit, Oct., June 13, 1909; Grosse Ile, May 21, 1949, June 29, 1947. Ottawa Co.: Macatawa Beach, June 10, 1906. Ingham Co.: Agricultural College, May 15, 1896, July 12, 1923; East Lansing, July. Oakland Co.: June 19, 1947, June 30, 1929; Waterford Twp., June 21, 23, 1923. Kent Co.: June 13, 1948; Grand Rapids. Iosco Co.: July 22, 1950. Gladwin Co.: July 21, 1949. Huron Co.: July 9, 1950; Point aux Barques, June 17, 1922; Port Austin, June 18, 1922; Sand Point, June 23, 1922. Ionia Co.: June 10, 1950, Aug. 5, 1951. Saginaw Co.: June 12, 1949. Clare Co.: June 4, 5, 1949, Aug. 2, 1951. Antrim Co.: July 10, 1949. Isabella Co.: July 24, 1948, July 27, Aug. 7, 1949. Missaukee Co.: June 4, 1949. Midland Co.: May 24, 1951, June 7, 1949, June 7, 1950, June 8, 14, 26, 30, 1949, July 7, 1948, July 7, 1950, July 14, 1948, July 26, 1949, Aug. 25, 1948, June 10–14, July 30, Aug. 5, 1951, Sept. 5, 1937. Arenak Co.: May 30, 1951. Cheboygan Co.: June 29, 1929, July 20, 1933; Douglas Lake. Marquette Co.: Marquette. Chippewa Co.: Whitefish Point. Eaton Co.: Grand Ledge, July 22. Bay Co.: May 26, 1951. Gratiot Co.: Ithaca, July 28, 1906. Oceana Co.: Pentwater, July 19, 1920. Monroe Co.: Stony Creek, June 24, 1917. Washtenaw Co.: May 3, 31, 1930; Ann Arbor, May 31, 1920, June 17, 1916, June 20, 1893, July 4, 1901, July 8, 1929; Dexter, May 20, 1941. Livingston Co.: E. S. George Reserve, July 4, 1939. Macomb Co.: New Baltimore, July 22, 26, 1893. *Minnesota:* Ramsey Co.: Elks Golf Ponds, St. Paul, July 14, 1921. *Missouri:* Hickory Co.: West Quincy, Aug. 18, 1912. *Nebraska:* Lancaster Co.: Lincoln, May 22, 1912. Sarpy Co.: Childs Point, Bellevue. Cass Co.: Rock Bluff. *New Hampshire:* Belknap Co.: Center Harbor, July 13, 1942. Grafton Co.: Franconia. *New Jersey:* Burlington Co.: Masonville, May 28, 1922; Mt. Holly, June 12, 1927; Great Swamp Branch, Atsion, July 4, Aug. 2, 1947, Aug. 21, 1949; Albertson Brook, Atsion, June 18, Aug. 2, 6, 1947, July 5, Aug. 8, 1948, Aug. 21, 1949; Lenola, Aug. 11, 1940; Indian Mills, May 15, 22, June 13, July 10, 1948, Aug. 6, 1947;

Oswego Lake, Penn State Forest, Oct. 2, 16, 1948; Taunton Lake, May 21, 1949; Upper Mill, June 2, 1950; Mt. Misery Brook, June 6, 1950; Riverton, July 16, 1905. Camden Co.: May 27, 1951, June 23, 1940; Atco, July 21, 1945, June 3; Westville, Aug. 6, 1927; Clementon, Aug. 6. Ocean Co.: Warren Grove, June 21, 1947. Essex Co.: Orange. Morris Co.: Newfoundland, July 4, 1910; Boonton, July 1, 1924. Bergen Co.: Westwood, July 21, 26; Fort Lee, July 11, 1895, July 14, 1892, July 25, 1894; Hackensack, July 1, 1925. Somerset Co.: Raritan. Sussex Co.: Franklin, May 3, 1923; Stockholm, June 10, 1949. Salem Co.: Parvin State Park, June 10, July 25, 1947; Centerton, May 27; Elmer, May 30. Gloucester Co.: Bridgeport, May 20, 1906. *New York:* Suffolk Co.: Yaphank, May 29, 1930, June 20, 1911; Cold Spring; Orient, Sept. 6, 1949; Riverhead, July 9, 1951. Richmond Co.: Staten Island. Kings Co.: Cypress Hills, Sept. 26, 29, 1905. Essex Co.: Top of Mt. Whiteface, July 7, 1922. Tioga Co.: Spencer Lake, Aug. 26, 1912, Aug. 26, 1917; Oswego Lake, July 15, 1941. Tompkins Co.: Ithaca, May 5, 20, 1904, June 1, 9, 1922, June 5, 1897, June 12, 18, 1917, July 2, 1885, July 6, 1916, July 13, 1921, Aug. 5, 1920, Sept. 24, 1922, Sept. 26, 1893. Genesee Co.: Oakfield, June 22, 1922. Rockland Co.: West Nyack, Aug. 26, 1920; Ramapo Mts. Monroe Co.: Rochester, Apr. 10, June 19, 1902; Hilton, June 25, 1954. Niagara Co.: Olcott, May 10, July 5, 1925, July 22, Aug. 12, 1939; Wilson, May 22, 1941. Cayuga Co.: North Fairhaven, June 4, 1921. Oswego Co.: Pulaski, June 20, 1925. Orleans Co.: Lakeside Park, July 9, 29, Aug. 8, 1921. Washington Co.: Bumpo Pond, 2000 ft., July 28, 1920. Yates Co.: Potter Swamp, June 14, 1915. Greene Co.: Catskill. Westchester Co.: Bronxville, July 2, 1911; New Rochelle, June 11, 1940. Albany Co.: Albany, Oct. 27, 1927; Vorheesville, June 19, 1923; Altamont, June 13, 1926. Erie Co.: Buffalo, June, 1885, June, 1886, Aug. 8, 1905. Dutchess Co.: Poughkeepsie, May 19, 1903. Warren Co.: Lake George, July 21–25, 1914. Ulster Co.: Esopus, Aug. 4, 1892, Aug. 10, 1893. Orange Co.: Pine Island, June 21, 1913. Wayne Co.: Clyde, Aug. 25. Queens Co.: Kissina Park, Mar. 19, 1911; Rosedale, June 3. *North Carolina:* Craven Co.: Havelock, June 28, 1923. Transylvania Co.: Lake Toxaway. Macon Co.: Highlands, June 11, 1933. *Ohio:* Auglaize Co.: May 20. Franklin Co.: Columbus, July 27. Summit Co.: June 5, 1935. Lorain Co.: May 21, 1944. Vinton Co.: Aug. 16, 1945. Montgomery Co.: Dayton, July 1, 1905. Knox Co.: July 12, 20, 1942. Fairfield Co.: May 8, 1947. *Pennsylvania:* Pike Co.: Baoba, July 17, 28, 1922. Philadelphia Co.: Mt. Airy, June 22, July 30; Tinicum Island, May 20, 1898; Tacony, July 22, 1922; Philadelphia, June 10, Aug. 3, 1917. Monroe Co.: Pocono Lake, Aug. 3, 12; Effort, June 6, 1931; Water Gap. Northampton Co.: Easton, June 25, 1936. Fulton Co.: Cowans Gap, Aug. 5, 1951. Huntington Co.: Shade Gap, Aug. 20, 1946. *Rhode Island:* Providence Co.: Cranston, May 9, 1912. *Texas:* One ♂, no data. *Virginia:* Fairfax Co.: Mt. Vernon, July 4, 1904. Greene Co.: Dyke, May 18, 1911, May 28, 1915. Norfolk Co.: Dismal Swamp, Aug. 13, 1934. Princess Anne Co.: Virginia Beach, Nov. 11, 1907. *Wisconsin:* Milwaukee Co.: July 1, 10, 1900. Dodge Co.: Beaver Dam, June 12, 1910. Waukesha Co.: Muskego, July 21, 1939. Bayfield Co.: Bayfield. Dane Co.: Aug. 12, 1899. *West Virginia:* Preston Co.: Cranesville, July 21, 1914.

Donacia texana Crotch

Delaware: New Castle Co.: Townsend, Aug. 24, 30. *Florida:* Osceola Co.: Kissimmee. Putman Co.: Crescent City. Gulf Co.: Dead Lake, Wewahitchka, Apr. 6, 1927. Alachua Co.: Gainesville, Apr. 8, 1935. *Georgia:* Charlton-Ware Cos.: Okefenokee Swamp, July 27, 1939. *Louisiana:* St. Tammany Par.: Covington, May 28. *Michigan:* Washtenaw Co.: Ann Arbor, July 27, 1927; Three Sister Lake, June 21. *Mississippi:* Stone Co.: Perkinston, May 14, 1930. *Missouri:* Carter Co.: Ozark Mts., Van Buren, June 17, 1930. *New Jersey:* Burlington Co.: Masonville, June 24, July 30, 1922. Somerset Co.: Neshanic, June. Gloucester Co.: Malaga, July 3. Salem Co.: Centerton, May 28, June 8, 30, July 2, 24; Palatine, May 30, July 15; Elmer, May 30. Bergen Co.: Alpine. Camden Co.: July 5, 1947; Clementon, June 25, 1904, Aug. 13. *New York:* Westchester Co.: White Plains, Aug. *Oklahoma:* Latimer Co.: June 11, 1931. *Pennsylvania:* Bucks Co.: Bristol, June 16, 30, 1923, June 20, 1929, Aug. 18, 20, 21, Sept. 2, 4, 1922. *Texas:* Travis Co.: Austin, May 7. Comal Co.: New Braunfels, Oct. 27, 1905. Tom Green Co.: Christoval, Apr. 27, 1915. *Virginia:* Fairfax Co.: Fairfax, Sept. 19, 1921; Black Pond, Fairfax, Sept. 14, 1913.

Donacia tuberculifrons Schaeffer

CANADA: *Manitoba:* Selkirk, June 10, 1911; Winnipeg, June 12, 1911. *Ontario:* Toronto, July 1; Ottawa, June 9, 1949; Lyn, July 7, 1926. *Quebec:* St. Johns Co., July; Boucherville, June 27; Lanoraie, July 15; St. Placide, June 20, 21, 1931; Rigaud, Sept.

UNITED STATES: *Connecticut:* Litchfield Co.: Litchfield, June 4, 1925, June 9, 1924, June 15, 1924. *District of Columbia:* Eastern branch, Potomac River, Mar. 18, 1924, June 18, 19, 1923; Washington, May 14, 1921, May 29, 1907, May 30, 1906; Licking Banks, Bennings, June 7, 1914.

Illinois: Cook Co.: West Pullman, July 10, 1910; Chicago, Aug. 9, 1902; Glencoe, July 3, 1914. Lake Co.: Lake Forest, June 13, 1906. *Indiana:* Lake Co.: May 25, 1903, May 27, 1906; Pine, May 27, 1906, May 28, 1905; Miller, May 30, 1906. Porter Co.: Ogden Dunes, June 12, 1934. *Iowa:* Dickinson Co.: Lake Okoboji, June 22, 1917, June 24, 1936, July 16, 1917. Warren Co.: June 12, 1940. *Michigan:* Wayne Co.: Grosse Ile, May 31, 1949, June 29, 1947. *Minnesota:* Marshall Co.: Middle River, June 20, 1938. St. Louis Co.: Duluth. *Nebraska:* Cuming Co.: June, 1888. Lancaster Co.: Lincoln, May, June. Holt Co.: *New Jersey:* Burlington Co.: Centreton, May 21, June 11, 1944. Camden Co.: Camden, Dec. 12. Sussex Co.: Hopatcong. *New York:* Erie Co.: Buffalo. Tompkins Co.: Ithaca, May 27, 1920, May 30, 1895, Sept., 1894. *Pennsylvania:* Delaware Co.: Moores, June 3, June 16, 1923; Essington, June 5, 1922. Monroe Co.: Effort, June 6, 1931. Northampton Co.: Belfast, May 27, 1937. *Utah:* Box Elder Co.: Mouth Bear River, June 6, 1915. *Vermont:* Addison Co.: Ferrisburg, July, 1906. *Virginia:* Greene Co.: Dyke, May 28, 1915. *Wisconsin:* One ♂, no locality data.

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