

AMERICAN MUSEUM NOVITATES

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CITY OF NEW YORK MAY 1, 1953 NUMBER 1616

THE WATER BEETLES OF THE BAHAMA ISLANDS, BRITISH WEST INDIES (COLEOPTERA: DYTISCIDAE, GYRINIDAE, HYDROCHIDAE, HYDROPHILIDAE)¹

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The Bahama Islands, British West Indies, lying just off the coast of Florida, offer many possibilities for faunal comparisons, but there are to date very few published records for aquatic Coleoptera. The reason for this dearth of information lies largely in the fact that the fauna as a whole is representative of the coastal lowlands over a vast part of the Antillean-Caribbean region, and entomologists have considered it merely a mixture of North and South American forms. In my opinion, however, the extensive ranges of many of the species together with the isolation of populations on various islands offer many possibilities for the study of speciation and ecological adaptations.

The paucity of species in the coastal lowlands of the Antilles is largely a reflection of the lack of variety of aquatic habitats in which water beetles can live, not to barriers to migration. On the Bahamas the available habitats are about at a minimum, consisting mainly of small and often transient rain-water pools, small, semi-permanent, fresh-water ponds with poorly developed aquatic vegetation, artificial cisterns and pools, brackish lagoons, tidal pools, and the "pannes" and "potholes" of the salt marshes. Potholes in limestone areas, fresh-water marshes, and water-holding plants may present other types of conditions locally. Swift streams, large rivers, springs, deep lakes, and many other

¹ Contribution No. 497 from the Department of Zoology, Indiana University, aided by a grant from the National Science Foundation.

types of situations are completely lacking, but if such situations existed they would doubtless long since have been populated from the larger islands of the Antilles or from the North American mainland.

All the species of aquatic beetles known from the Bahamas are characterized by their high vagility and relatively great tolerance to severe physical conditions. It is probable that they are relatively less tolerant of various biotic influences such as fungal infections, the attacks of water mites, and competition, predation, and parasitism in general, and so are seldom found in what might be called "mature" aquatic situations which occur inland on the Coastal Plain of the United States and in the larger islands of the Antilles.

Three loosely definable ecological groups of species can be recognized in the Bahamas: (1) Pioneer species of temporary situations. Such forms as *Laccophilus proximus*, *Thermonectus basillaris*, and *Tropisternus lateralis* can be found in almost any collection of water be it a rain-filled ground pool, bucket, or wash tub. The adults may also be found in various brackish situations, even sometimes in salt water proper. (2) Detritus pond species which find suitable habitats only where some organic material has accumulated in water. *Enochrus ochraceus* is the only undoubted species of this group so far recorded, and the most characteristic forms such as the species of *Celina* and *Hydrovatus* seem to be completely missing. (3) Brackish-water species which occur mostly in semi-permanent tidal pools or in salt-marsh situations. Some brackish pools may contain highly characteristic associations of such species as *Tropisternus quadristriatus*, *Enochrus pygmaeus*, and *E. reflexipennis*, but the adults at least are often found in fresh-water situations. The larger water beetles such as the species of *Cybister* and *Hydrophilus* might be thought of as forming a fourth group largely characteristic of permanent ponds or other situations with deeper water.

An ecological classification, such as the above, is, of course, very rough, and practically no two situations could be expected to show exactly the same combination of forms. The limits of toleration of salinity, temperatures, depth of water, predators, and other factors would have to be considered for each species in order to present an exact classification. Any particular aquatic habitat probably owes its fauna to the peculiarities of the avail-

able species acted upon by the biotic and physical conditions.

On the basis of the material at hand, the fauna of the Bahamas differs considerably from that of the Florida Keys. The Keys have, however, been more thoroughly investigated, and the fauna would be expected to show close affinity with that of the rest of Florida. When the Bahamas have been thoroughly worked for water beetles the differences noted may decrease considerably.

The material on which the present paper is based was largely collected on the Bimini group of islands by Dr. Mont A. Cazier, Dr. Frederick Rindge, Dr. and Mrs. C. Vaurie, and others working in connection with the Lerner Marine Laboratory on North Bimini. Specimens of all species and subspecies listed are in the American Museum of Natural History.

I wish to express my appreciation to Dr. Cazier for the opportunity of examining the material from the American Museum collection, and to Mr. Hugh B. Leech of the California Academy of Sciences for determining the specimens of *Berosus* and for other help and suggestions.

FAMILY DYTISCIDAE

ARTIFICIAL KEY TO THE GENERA AND SPECIES RECORDED FROM THE BAHAMAS

1. Large beetles, varying in length from about 25 to over 30 mm. in length; color usually black, or black with greenish reflections, and a yellow border at sides of elytra and pronotum. *Cybister*, 2
 Smaller beetles, usually not over 14 mm. in length 3
2. Average size larger, length about 30.0 to 33.7 mm.; lateral yellow margins of pronotum and elytra broad, usually continuous to the tips of the elytra so that the yellow margin seems to be continuous all around; females with only one claw on the posterior tarsus; greatest width at about apical two-thirds of elytra, narrowed anteriorly. *Cybister occidentalis*
 Average size smaller, length varying from about 26.0 to 32.0 mm., the larger size attained only by the largest females; lateral yellow margins of pronotum and elytra narrower, often separated from margin in the posterior portion of elytra by a black stripe or area, not continuous to tip of elytra, but usually terminating before the tip in an irregular yellow spot; female with one large and a small rudimentary claw on the hind tarsus; greatest width at about apical two-thirds of elytra, but body form more ovate, not markedly narrowed in front; females sometimes smooth like the males *Cybister fimbriolatus crotchii*
3. Scutellum exposed 4
 Scutellum concealed beneath bases of elytra; elytra more or less uniformly variegated throughout, the bases not conspicuously lighter and without a conspicuous pre-apical transverse blotch of black; under surface nearly

- uniformly reddish yellow, not infusate; male with a series of ridges on hind coxal plates forming a stridulating file; length about 3.4 to 4.5 mm.
 *Laccophilus proximus*
4. Elytra smooth, or with irregular scratches or striae, not striate or grooved; hind tarsal claws unequal in length 6
 Each elytron with one submarginal and a number of discal striae or grooves; hind tarsal claws nearly equal in length *Copelatus*, 5
5. Each elytron with one submarginal and 10 other distinct striae; pronotum of both sexes with numerous fine, short scratches or striae; elytra of female often with short scratches between the deeply impressed striae; dorsum predominantly reddish or light reddish brown, with the bases of elytra lighter, giving the impression of a transverse fascia; length rarely exceeding 4.5 mm. *Copelatus caelati pennis*?
 Each elytron with one submarginal and eight other striae (the short sutural stria near the elytral apex is not counted and may be absent); pronotum without fine striae in male, with only a few towards the sides in the female; dorsum dark brown or piceous, the bases of the elytra not lighter in color; length around 6.0 mm. *Copelatus chevrolati chevrolati*
6. Eyes emarginated by sides of head above the bases of the antennae; anterior tarsi of male widened and with small suction cups beneath, but not forming a round or oval adhesion disk; length about 11.5 to 13.5 mm.
 *Rantus calidus*
 Eyes not emarginated by sides of head; anterior tarsi of male expanded into round or oval adhesion disks; body form more ovate, less elongate 7
- Apical spurs of hind tibiae acutely pointed; outer margin of wing of metasternum straight; elytra usually with a distinct submarginal yellow stripe extending backward from an incurved humeral spot; length about 11.0 to 12.0 mm. *Hydaticus bimarginatus*
- Apical spurs of hind tibiae blunt or emarginate; outer margin of wing of metasternum strongly arcuate; elytra with an indefinite marginal yellow stripe, and usually with a distinct transverse yellowish fascia at base; length about 9.0 to 11.5 mm. *Thermonectus basillaris*

***Laccophilus proximus* Say**

Laccophilus proximus SAY, 1823, Trans. Amer. Phil. Soc., vol. 2, no. 1, p. 101 [South Carolina].

Laccophilus americanus AUBÉ, 1838, Species général des coléoptères, vol. 6, p. 22 [Antilles, Cuba, Guadeloupe, and the United States].

I cannot detect any significant differences between specimens from the Bahamas and from southern Florida. There is a considerable amount of variation in populations from the various islands of the West Indies, and subspecific differences doubtless exist, but a detailed statistical study will be necessary before the status of the variants can be established. The name *americanus* will probably be found to apply to the Bahama and South Florida form.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, May, June, August, 1951, M. A. Cazier, C. and P. Vaurie (13). *New Providence* (M.C.Z.). *Cat Island*, July, 1933, W. J. Clench (M.-C.Z.). *Nassau* (M.C.Z.).

***Copelatus caelatipennis* Aubé?**

Copelatus caelatipennis AUBÉ, 1838, *Species général des coléoptères*, vol. 6, p. 382 [Antilles, Brazil].

The use of the name *caelatipennis* for the Florida and Bahama species does not seem to be justified, but until the type can be examined definite proof for its rejection is lacking. Schaeffer (1908) seems to have been the first to identify material from Texas and Florida as doubtfully *caelatipennis*. Sharp (1882) describes the pronotum of *caelatipennis* as having fine striae, but does not include the United States in the range. Aubé does not mention the fine scratches or striae of the pronotum either in the description or in comparison with other species.

A single female from São Paulo, Brazil, determined by Régimbart and kindly lent to me by Dr. Frederico Lane of the Museu Paulista, is very similar to Florida specimens and possesses the characteristic striae on the pronotum. In females from Florida, however, the scratches may also appear on the elytra. Other Brazilian specimens I have seen identified as *caelatipennis* are quite unlike Florida material. The male genitalia are very distinctive in the Florida form and should allow ready identification when compared with other forms.

Copelatus angustatus Chevrolat and *C. fragilis* Sharp both lack the pronotal scratches. The former fits the description of *caelatipennis* much better than the Florida-Bahama form in my opinion.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, July, 1951, C. and P. Vaurie (one male).

***Copelatus chevrolati chevrolati* Aubé**

Copelatus chevrolati AUBÉ, 1838, *Species général des coléoptères*, vol. 6, p. 389 [North America—United States].

Specimens from Bimini are apparently identical with material from Florida. The two examined have the short striae near the suture at the apex of the elytra characteristic of typical *chevrolati*. The variety *australis* Schaeffer, which lacks the apical striae,

is very uncommon in Florida, but seems to be the characteristic form in parts of Texas and probably indicates the presence of a geographical subspecies in that region.

Chevrolati occurs in a variety of types of situation generally of a more permanent nature than those in which *caelatipennis* is found. It may be characteristic of detritus ponds.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, May, August, 1951, C. and P. Vaurie, M. Cazier, and W. Gertsch (two).

***Rantus calidus* (Fabricius)**

Dytiscus calidus FABRICIUS, 1792, *Entomologia systematica* . . . , vol. 1, p. 193 [South America].

Bahama specimens of this widely distributed and variable species do not seem to be subspecifically different from those I have seen from Florida and from elsewhere in the Antilles. Methods of preservation and the way in which specimens are dried apparently influence the color considerably and introduce a possible source of confusion. Size and shape also differ from place to place and within series from single localities. A detailed study of the variation would be of interest.

Calidus occurs in a variety of situations in Florida ranging from wooded swamps, springs, and small streams in the northern portion to cisterns, ditches, borrow pits, canals, and even brackish situations in the southern part and on the Florida Keys.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, May, 1951, M. Cazier and W. Gertsch (three).

***Hydaticus bimarginatus* (Say)**

Dytiscus bimarginatus SAY, 1834, *Trans. Amer. Phil. Soc.*, vol. 4, p. 442 [New Orleans, Louisiana].

The Bahama specimens before me are relatively dark and similar in general to specimens from the flatwoods of Florida. All are females and vary considerably in the development of the marginal and submarginal yellow stripes of the elytra and in the definiteness of the pronotal markings. In one the yellow submarginal stripe is very definite and the pronotal markings distinct; another has the pronotal markings diffuse, the submarginal stripe very narrow and interrupted, and also lacks the vermiculate sculpture at the sides of the pronotum. Other speci-

mens are intermediate between these extremes. None show the widening of the marginal stripe described as characteristic of *rimosus* Aubé.

This species seems to be rather characteristic of clear, often temporary, fresh-water ponds. The adults may also be found in brackish-water situations.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, May, June, August, 1951, C. and P. Vaurie, M. Cazier, and W. Gertsch (five). *North Bimini*, July, 1951, C. and P. Vaurie (one).

***Thermonectus basillaris* (Harris)**

Dytiscus basillaris HARRIS, 1829, New England Farmer, vol. 8, no. 1, p. 1 [? Massachusetts].

This widely distributed species is highly variable, but a detailed study will be necessary before subspecies can be defined with any degree of certainty. Material from the Bahamas is similar to that from the Florida Keys which differs in several respects, mainly color pattern, from specimens from other parts of Florida.

Basillaris occurs in many types of temporary situations and occasionally in brackish water. One record for Florida is from the open bay off Lower Matecumbe Key.

RECORDS FOR BAHAMA ISLANDS: *Cat Island*, Arthurs Town (M.C.Z.).

***Cybister (Nealocomerus) occidentalis* Aubé**

Cybister occidentalis AUBÉ, 1838, Species général des coléoptères, vol. 6, p. 67 [Havana, Cuba].

Several specimens of this species from Cat Island are smaller than Cuba or Florida examples but do not seem to be subspecifically distinct. The male genitalia are, as far as I can tell, identical with those of specimens from Cuba except for their smaller size. The smaller size may indicate a geographical race if it is consistent.

RECORDS FOR BAHAMA ISLANDS: *Cat Island*, July 10, 1933, W. J. Clench (M.C.Z.).

***Cybister (Nealocomerus) fimbriolatus crotchii* Wilke, new combination**

Cybister crotchii WILKE, 1920, Arch. Naturgesch., div. A, vol. 85, no. 2, p. 246

[new name for *Cybister olivieri* Crotch, preoccupied by *Cybister olivieri* Crotch, 1872 = *Dytiscus costalis* Olivier, 1795 (*species incertus*)].

Crotch (1872) proposed the name *olivieri* for the insect figured by Olivier (1795, pt. 40, pl. 1, fig. 7) as *Dytiscus costalis* Fabricius, the latter according to Crotch a *Dytiscus*. Later (1873) Crotch used the name again, designating as type a specimen from Florida in the LeConte collection.

The figure given by Olivier (1795) represents a large cybisterine beetle somewhat similar to *Cybister fimbriolatus*, but the localities cited are Cayenne (French Guiana) and Surinam (Dutch Guiana), the latter the same locality cited by Fabricius (*Systema entomologiae*, 1775, p. 230, *fide* Sharp, 1882). There seems to be little reason to doubt that the insect illustrated by Olivier was from South America so that it is probably a *Megadytes* not a *Cybister*. There seems to be no good reason for the assumption made by Crotch that *Cybister olivieri* Crotch, 1872, is the same as the species he described in 1873 from Florida, so the name *crotchii* should be used to replace *olivieri* Crotch, 1873.

I have examined the specimens of *olivieri* Crotch, 1873, in the LeConte collection at the Museum of Comparative Zoölogy which are undoubtedly the ones before Crotch at the time he characterized the species. One of these, the label specimen, is a smooth female, but the male cotype is indistinguishable from small males in my collection which show in series intergradation of characters towards typical *fimbriolatus* Say. Among the 200 or more specimens of *crotchii* which I have examined, I have seen two smooth females other than Crotch's type. One of these is from Alachua County, Florida; the other in the Fall collection at the Museum of Comparative Zoölogy is marked "South Philadelphia." Both these two specimens and Crotch's type are smaller than the average of all Florida specimens, and I believe that they represent the extreme of reduction of the female elytral sculpture which is generally somewhat reduced throughout Florida and most of the adjoining Coastal Plain region.

All the differences cited by Crotch, 1873, between his *olivieri* and *fimbriolatus* break down when large series of specimens are examined, i.e., the characters are variable and do not seem to vary concomitantly. If we restrict the usage of the concept to only those forms in which the female has no elytral sculpture other than the series of punctures also found in the males, we

exclude nearly 99 per cent of all specimens, and there is no criterion for separating the males. In general, however, specimens from Florida, the Bahamas, and the Coastal Plain region westward into Louisiana and north along the east coast are similar and rather distinct from more northern and western examples of *fimbriolatus*. They are smaller, darker, more shining, and the females are less roughly sculptured.

Within this region the ridges of the male stridulating plate are not constant in number. Most specimens have three definite and one vague ridge, as does Crotch's cotype male of *olivieri*, but others have four definite ridges and in some cases a fifth vague ridge. Most specimens of typical *fimbriolatus* have four definite ridges and often a fifth vague ridge. I have, however, seen a male of the Texas subspecies of *fimbriolatus* in which the left side has four definite ridges, but the right only three definite ridges and one vague ridge.

The pronotal process differs in shape in the sexes. In the female type of *olivieri* it is evenly rounded anteriorly; in the male cotype it is slightly sulcate along the ventral side and emarginate at the base so as to appear bifurcate. In males from Florida, the latter condition is common, but specimens occur in which the base is rounded as in the females. The prosternal process in the males of typical *fimbriolatus* seems always to be rounded at the base. This may be simply a phenomenon associated with the relative sizes of the parts.

The sexual sculpture of the elytra, pronotum, and head of what I consider the normal female of *crotchi* consists, as in the female of *fimbriolatus*, of many fine, short scratches which are especially numerous on the sides of the pronotum and bases of the elytra. The elytral apices, a strip along the suture, and the disk of the pronotum are usually smooth. The males are ordinarily smooth except for three longitudinal series of punctures on each elytron, but some specimens of both sexes have the elytra peculiarly pustulate or with little rounded depressions which give the appearance of pebbling.

The small rudimentary claw of the hind tarsus of the female varies considerably, but it is detectable in all specimens of *crotchi* and typical *fimbriolatus* I have examined. It usually lies along the inner face of the larger claw on the under side of the tarsus and extends about one-third of the free length of the larger claw beyond the extreme tip of the last tarsal segment. It is always

fine and closely appressed to the larger claw so that examination is often difficult. The males seem always to lack a secondary claw.

The angulation of the hind femora is another variable character. In some specimens of *crotchii* the outer hind angle is quite blunt, in others rather acute. In none of my Florida specimens is the angulation as marked as in *explanatus* LeConte or even *cavicollis* Sharp.

Typical *fimbriolatus* occasionally has a shimmering green or olivaceous appearance to the dorsum. None of the specimens of *crotchii* examined shows a tendency towards green, most of them being very black or brown when teneral.

There is considerable variation in the size and body proportions, but actual measurements do not seem to show significant differences between *crotchii* and *fimbriolatus*, although it is evident that northern examples of *fimbriolatus* average larger in size.

I have been unable to detect significant differences between the male genitalia of *crotchii* and typical *fimbriolatus*, but Mr. Hugh B. Leech disagrees with me on this point. The slight differences in size, shape, and color which I can detect seem to me explainable on the basis of individual variation.

Leech has examined all my Florida material and agrees with me that there appears to be only one form involved, with the possible exception of a few specimens from the western part of the state. It is true that to an experienced coleopterist the Florida form has a characteristic facies which seems always to distinguish it, but I believe that there is evidence of intergradation in the variation outlined above. It is possible that *crotchii* developed in Florida under conditions of relative isolation, and has only recently come back into contact with the range of typical *fimbriolatus* which it hybridizes, but I am inclined to think that the two forms intergrade over a wide area in the Coastal Plain region.

At present, I would restrict the range of *crotchii* to Florida, the Bahamas, the coastal regions of Georgia, north perhaps to southern Pennsylvania, then west along the Gulf to Louisiana. Typical *fimbriolatus* ranges from New York and Virginia to Illinois, Kansas, parts of Texas, east to Georgia, and perhaps northwestern Florida.

The large species of *Cybister* tend to occupy the deeper parts

of ponds, ditches, and similar situations. All the species frequently come to light, and most casual records are from that source. Specimens of *crotchi* have been taken in company with *occidentalis* in a borrow pit on Big Pine Key, Florida.

RECORDS FOR THE BAHAMA ISLANDS: *South Bimini*, May, 1951, Cazier, Gertsch (one female). This specimen can be matched exactly with specimens from Dade and Monroe counties, Florida.

FAMILY GYRINIDAE

Dineutus (Cyclinus) carolinus mutchleri Ochs

Dineutus carolinus mutchleri OCHS, 1924, Amer. Mus. Novitates, no. 125, p. 3 [Nassau, Bahamas, British West Indies].

I have not seen this subspecies from the Bahamas, but believe that it is identical with the mainland form occurring throughout southern Florida and on the Florida Keys. Ochs based his concept of the typical form on specimens from Texas (Ochs, 1929) rather than from the type locality, South Carolina, so that it is possible that *mutchleri* may prove to be a direct synonym of *carolinus* and the Texas form be unnamed. Specimens from northern Florida, however, do not agree perfectly with those from the southern part of the state so that it is possible that several subspecies are involved.

It is interesting to note that *carolinus* is the only truly lenitic species of the genus found in Florida. All of the other species are either typical stream forms or else occur along the margins of lakes where there is some wave action.

RECORDS FOR BAHAMA ISLANDS: *Nassau* (types in the American Museum of Natural History); Blue Hills (W. W. Worthington, in Carnegie Museum), recorded by Ochs, 1929.

FAMILY HYDROCHIDAE

Hydrochus sp.

A single male *Hydrochus* from Andros Island does not seem to be any of the common Florida species. It somewhat resembles *H. equicarinatus* Blatchley and *H. simplex* LeConte but is larger and differs in several minor respects. The genitalia are unlike those of a male from Broward County, Florida, which I have compared with Blatchley's type of *equicarinatus*. No species of *Hydrochus* has been recorded from the Florida Keys.

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Mangrove Cay), May-June, 1917, W. M. Mann (one male).

FAMILY HYDROPHILIDAE

ARTIFICIAL KEY TO THE GENERA AND SPECIES RECORDED FROM THE BAHAMAS

1. Large beetles, usually over 25 mm. in length; color shining black without lighter markings; ventral surface with a keel and a large backward-projecting spine; (tips of elytra without small spines characteristic of *H. insularis* Castelnau).....*Hydrophilus ater intermedius*
Smaller beetles, usually less than 12 mm. in length; color variable, but dorsum often with some markings; venter with or without keel and spine 2
2. Size intermediate, length usually from 8 to 12 mm.; venter with keel and backward-projecting spine.....*Tropisternus*, 3
Size smaller, rarely exceeding 7 mm. in length; ventral surface without a definite keel or spine..... 4
3. Elytra, pronotum, and head with a yellow border; pubescent area on base of hind femur not extending beyond the tip of the trochanter, and with its outer edge curved, not straight; fifth apparent abdominal sternite with a small carina produced into a small spine which projects beyond the hind margin.....*Tropisternus lateralis*
Elytra, pronotum, and head without a yellow border; pubescent area on base of hind femur trapezoidal in shape and exceeding the tip of the trochanter, its outer border straight; fifth apparent abdominal sternite without a free spine, simply carinate with a small bunch of hairs at the extremity.....*Tropisternus quadristriatus*
4. First segment of middle and hind tarsi elongate, longer than the second; convex, often shining black beetles living in dung, moist earth, or decaying vegetation—only rarely in water.....Subfamily Sphaeridiinae
First segment of middle and hind tarsi very short, shorter than the second and often barely visible..... 5
5. Middle and hind tibiae fringed on the inner side with long swimming hairs; pronotum detached in outline.....*Berosus*, 6
Middle and hind tibiae without fringes of swimming hairs; pronotum continuous in outline with the elytra..... 9
6. Size small, length less than 3.0 mm.; pronotum usually without dark markings; only one small lobe in the emargination on the hind margin of the penultimate (fifth) abdominal sternite.....*Berosus exiguus*
Size larger, length ranging from about 3.5 to 6.0 mm.; pronotum with or without dark markings; two small teeth or indistinct lobes in the emargination of the penultimate (fifth) abdominal sternite..... 7
7. Pronotum with a central dark spot or pair of distinct dark spots; elytra usually with dark spots forming a distinct pattern; emargination of penultimate sternite with two small but distinct teeth..... 8
Pronotum usually testaceous without definite darker markings; elytra with only vague darker markings; emargination of penultimate sternite with indefinite lobes, not distinct teeth; body form broader and more

- compact (specimens from Bimini have a greenish cast to the elytra which may be due to algal growths); length about 4.0 mm. *Berosus metalliceus*
8. Elytra and pronotum of female and pronotum of male distinctly microreticulate (alutaceous), not strongly shining; elytral striae not very deeply impressed on the disk; length about 3.7 to 6.0 mm. *Berosus infuscatus*
- Elytra and pronotum of male and elytra of female not microreticulate, appearing very smooth and shining between the coarser punctures; elytral striae more deeply impressed on the disk; length about 4.5 mm. (*Berosus striatus* complex) *Berosus stribalis*?
9. Maxillary palpi stout and short, little longer or shorter than the antennae, the last segment as long as, or longer than, the penultimate; last segment of tarsus shorter than the preceding ones united; very small, very convex beetles, length less than 2.0 mm.; antennae eight-segmented. *Paracymus subcupreus*?
- Maxillary palpi slender, much longer than the antennae, the last segment shorter than the penultimate; larger, less convex beetles, usually over 3.0 mm. in length; antennae nine-segmented. *Enochrus*, 10
10. Prosternum with a longitudinal carina; color of dorsum often very light testaceous without dark markings except for four small black dots on the pronotum and the dark head; length about 3.5 to 4.1 mm. *Enochrus pygmaeus pygmaeus*?
- Prosternum simple, at most with a small anterior elevation, not carinate; color usually darker. 11
11. Last abdominal sternite with a small, semicircular notch fringed with russet or golden hairs at middle of hind margin; mesosternal lamina feeble, not produced or mucronate; general color brownish yellow or darker without definite markings; length about 3.0 to 4.0 mm. *Enochrus ochraceus*
- Last abdominal sternite with margin entire, not notched; mesosternal lamina with anterior angle produced. 12
12. Color brownish, head more or less dark brown; size larger, about 5.0 mm. in length. *Enochrus* sp. near *hamiltoni*
- Color brownish yellow, head often nearly testaceous, but dark basally; elytra with margins somewhat explanate or flattened near the apex; size smaller, about 3.0 to 4.0 mm. in length. *Enochrus reflexipennis*?

Paracymus subcupreus (Say) ?

Hydrophilus subcupreus SAY, 1825, Jour. Acad. Nat. Sci. Philadelphia, vol. 5, p. 189 [North America—no definite locality].

A single male *Paracymus* from South Bimini has the antennae eight-segmented and the elytra coarsely punctate as in typical *subcupreus* from northern localities in the United States. The genitalia, however, differ from those of any specimen I have seen, and the size is rather small. *P. nanus* Fall is quite different, the

antennae being seven-segmented and the mesosternal process more strongly produced and laminate.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, August, 1951, C. and P. Vaurie (one male).

***Enochrus (Methydrus) pygmaeus pygmaeus* (Fabricius)?**

Hydrophilus pygmaeus FABRICIUS, 1792, *Entomologia systematica*, vol. 1, p. 186 [South America, but later, in 1801, *Systema Eleutheratorum*, p. 254, the locality is cited "Americae meridionalis insulis" or the West Indies. See also D'Orchymont, 1933, p. 307].

Enochrus pygmaeus is part of a complex of closely related species or geographical forms which Leech (1948) calls the "*Enochrus pygmaeus* complex." At present, it is almost impossible to assign names to any of the variants with any degree of certainty, but it seems probable that Bahama material represents the typical form. Leech (1948) has made a preliminary division of the North American mainland forms including *nebulosus* (Say), *pectoralis* (LeConte), *nigellus* (Sharp), and others.

Specimens from Andros Island differ somewhat from specimens from the Florida Keys, but both the Bahama and Florida specimens differ markedly from material from Indiana, Michigan, and other inland localities. The latter have the head more coarsely punctate, the prosternum less acutely carinate, and the color darker. The genitalia, however, do not seem to show any significant differences. The Andros Island specimens are fairly large (average length, 3.78 mm.; largest female, 4.1 mm.; smallest male, 3.66 mm.) Specimens from Vaca Key, Florida, average about 3.53 mm. in length; largest female, 3.59 mm.; smallest male, 3.41 mm.

In Florida *pygmaeus* is very abundant in brackish situations on the Florida Keys and elsewhere. A slightly larger, darker form more like specimens from the northern United States occurs in the Everglades and localities in the northern part of Florida. This may be an argument for the retention of *nebulosus* (Say) as a distinct species occupying fresh-water situations.

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Mangrove Cay), May-June, 1917, W. M. Mann (five).

***Enochrus (Methydrus) ochraceus* (Melsheimer)**

Philydrus ochraceus MELSHEIMER, 1844, *Proc. Acad. Nat. Sci. Philadelphia*, p. 101 [Pennsylvania].

This name probably covers a complex containing a number of closely related forms. Bahama specimens are variable in size but do not seem to differ significantly from material from the eastern United States.

Ochraceus is apparently a characteristic detritus pond species, both adults and larvae being found in such situations. I have never taken it in brackish water, but the adults fly readily to light, and there is no reason why adults should not occur in almost any habitat in an area where there are any suitable breeding places.

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Fresh Creek), May–June, 1917, W. M. Mann (one). *South Bimini*, May, June, and August, 1951, C. and P. Vaurie, M. Cazier, and W. Gertsch (11).

***Enochrus (Lumetus)* sp. near *hamiltoni* (Horn)**

Three females from South Bimini apparently represent an undescribed species allied to *hamiltoni* (Horn). Males will be necessary to establish the exact status of the form.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, July 20, 1950, and July 3, 1951, C. and P. Vaurie (three females).

***Enochrus (Lumetus) reflexipennis* (Zimmermann)?**

Philydrus reflexipennis ZIMMERMANN, 1869, Trans. Amer. Ent. Soc., vol. 2, p. 250 [New Jersey].

I have not seen authentic specimens of *reflexipennis* from New Jersey or other northern localities, but specimens from the salt marshes of Florida and from Bimini agree with Horn's descriptions and figures (1890), except in their darker coloration. The head in several specimens examined is nearly testaceous, and I have no doubt that teneral specimens might be entirely testaceous. The explanate or flattened margins of the elytra towards the apex distinguish the species from *hamiltoni* or *horni* Leech.

The species is apparently a brackish-water form throughout its range.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, July, and August 21, 1951, C. and P. Vaurie (two males).

***Tropisternus (Pristoternus) lateralis* (Fabricius)**

Hydrophilus lateralis FABRICIUS, 1775, Systema entomologiae, vol. 1, p. 228 [South America].

Bahama specimens of *lateralis* apparently represent a subspecies distinct from *nimbatus* (Say), the common form throughout most of Florida and the eastern United States. I have not been able to find biometrical means of separating the populations on the basis of small samples, but differences in the average length of the mesosternal and metasternal processes and the proportions of the pronotum are indicated from my studies.

In nearly all the Bahama specimens examined the tip of the metasternal spine exceeds the posterior margin of the second apparent abdominal sternite, while in Indiana and Florida specimens of typical *nimbatus* the tip of this spine often does not exceed the middle of the second sternite. Bahama specimens are also darker in color beneath and somewhat more coarsely punctate. The small ridge or carina and the spine of the apical ventral sternite is similar to that of *nimbatus* and unlike that of South American *lateralis*.

Lateralis occurs in a wide variety of temporary fresh-water situations and also in brackish water, but it is doubtful that it breeds in brackish situations.

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Fresh Creek), May-June, 1917, W. M. Mann (one). *North Bimini*, June, 1951 (one). *East Bimini*, June, 1951 (one). *South Bimini*, May, June, 1951, and April, 1952 (157). The Bimini specimens were collected by M. Cazier, W. Gertsch, C. and P. Vaurie, and Ernst Mayr.

***Tropisternus (Pristoternus) quadristriatus* Horn**

Tropisternus quadristriatus HORN, 1871, Trans. Amer. Ent. Soc., vol. 3, p. 331 [near sea coast of New Jersey].

This brackish-water species is widely distributed along the eastern seaboard of North America and probably throughout the West Indies into South America. There are indications that *salsamentus* Fall may be a West Coast representative of the species. *Quadristriatus* is extremely common in Florida in brackish situations on the Florida Keys, and the adults are sometimes found in fresh water some distance inland. Specimens from Bimini are apparently specifically identical with others examined from Florida, South Carolina, Rhode Island, and Massachusetts.

RECORDS FOR BAHAMA ISLANDS: *North Bimini*, November, 1947, and June, 1951, J. A. Oliver, C. and P. Vaurie (three).

East Bimini, June, 1951, M. Cazier, C. and P. Vaurie (two).
South Bimini, June, July, August, 1951, M. Cazier, C. and P. Vaurie (six).

***Hydrophilus ater intermedius* DuVal**

Hydrophilus intermedius DUVAL, 1856, *in* de la Sagra, Historia fisica, politica y natural de la isla de Cuba, Secunde Parte: Historia natural, Paris, vol. 7, p. 48 [Cuba].

I have not seen the original description of this species, but Knisch (1924) places *intermedius* as a subspecies of *ater*. (See also Leng and Mutchler, 1917, p. 196.)

Specimens from Bimini differ from Mexican material of *ater* in several minor respects: the elytra are somewhat more deeply and regularly punctate; the anterior claw of the male protarsus is more pointed at the tip; the ridge on the last abdominal sternite is accompanied by several small rugae at the sides; and the male genitalia differ slightly in the shape of the parameres and the aedeagus. I am not sure that these differences will hold when larger series are examined, but I think that they indicate that *intermedius* may be a good geographic (allopatric) subspecies.

It is rather interesting that this form is not yet known from Florida, while *H. insularis* Castelnau which occurs on the Florida Keys in brackish and fresh-water situations has not yet been found in the Bahamas.

RECORDS FOR BAHAMA ISLANDS: *North Bimini*, June, 1951, M. Cazier and C. and P. Vaurie (one female). *South Bimini*, June, 1950, July, 1951, M. Cazier, F. Rindge, C. and P. Vaurie (two males, one female).

***Berosus (sensu stricto) infuscatus* LeConte**

Berosus infuscatus LECONTE, 1855, Proc. Acad. Nat. Sci. Philadelphia, vol. 7, p. 365 [middle and southern states: New Orleans, Louisiana].

Bahama specimens are apparently identical with those from the Florida Keys. The male genitalia are well illustrated by D'Orchymont (1946).

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Mangrove Cay), May-June, 1917, W. M. Mann (one male). *South Bimini*, June, 1950, July, 1951, M. Cazier, F. Rindge, C. and P. Vaurie (four males, four females).

***Berosus (sensu stricto) stribalus* D'Orchymont?**

Berosus (sensu stricto) stribalus D'ORCHYMONT, 1946, Bull. Mus. Roy. Hist. Nat. Belgique, vol. 22, no. 13, p. 19 [Cuba].

Specimens from the Bahamas were tentatively determined as this species by Mr. Hugh B. Leech, who is making a special study of the genus. The genitalia are illustrated by D'Orchymont (*loc. cit.*).

RECORDS FOR BAHAMA ISLANDS: *Andros Island* (Fresh Creek), May-June, 1917, W. M. Mann (one male, one female). *South Bimini*, August, 1951, C. and P. Vaurie (one female).

***Berosus (sensu stricto) metalliceus* Sharp**

Berosus metalliceus SHARP, 1882, Biologica Centrali Americana, Insecta, Coleoptera, vol. 1, pt. 2, p. 83 [Mexico: Tres Marias Islands].

This interesting brackish-water species has so far been reported only from the Pacific coast of North America. I cannot, however, find any significant differences between Bahama specimens and a pair from Isabel Island (Sinaloa, Mexico) sent me by Leech, who considers the Bahama form very similar if not identical with West Coast *metalliceus*. A study of larger series may indicate that the Antilles form is subspecifically distinct.

The illustration of the male genitalia in D'Orchymont (1946) is not an exact representation of the structure in the specimens I have seen, but I believe the differences noted are due to the drawing. I can see no real differences in the genitalia of the Mexico and Bahama specimens.

RECORDS FOR BAHAMA ISLANDS: *South Bimini*, July, August, 1951, C. and P. Vaurie (five males, one female, all apparently teneral and with a peculiar greenish cast to the elytra which I believe may be due to algal growths of some kind).

***Berosus (sensu stricto) exiguus* (Say)**

Hydrophilus exiguus SAY, 1825, Jour. Acad. Nat. Sci. Philadelphia, vol. 5, p. 189 [Cincoteague Island, Virginia—on sea shore].

The small forms or species of *Berosus* now placed as *exiguus* probably represent a complex. Bahama specimens are similar to material from southern Florida and the coastal region of the eastern United States so they may be *exiguus* proper. There is considerable difference in size, but Leech considers all the Bahama specimens to be the same species.

Specimens have been taken in Florida in both brackish and fresh-water situations.

RECORDS FOR BAHAMA ISLANDS: *North Bimini*, October, 1947, J. A. Oliver (one). *South Bimini*, June, July, 1951, C. and P. Vaurie (two).

SUBFAMILY SPHAERIDIINAE

Several genera and species of this subfamily are probably to be found in the Bahamas. The only species in the material at hand is *Dactylosternum abdominale* Fabricius, represented by a single specimen from South Bimini, July 1951, C. and P. Vaurie.

OTHER SPECIES THAT PROBABLY OCCUR

In addition to the species recorded, several others very probably occur in the Bahamas. The absence of *Megadytes fraternus* Sharp and *Hydrophilus insularis* Castelnau from the material examined is rather surprising, since both of these species occur in southern Florida. In other families, *Haliplus confluentus* Roberts or related species of Haliplidae may be expected in brackish situations with *Octhebius attritus* LeConte (Limnebiidae). *Pelonomus obscurus gracilipes* Chevrolat (Dryopidae) undoubtedly occurs in fresh-water situations.

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