

BREDIN-ARCHBOLD-SMITHSONIAN  
BIOLOGICAL SURVEY OF DOMINICA

The Superfamily Scarabaeoidea  
(Coleoptera)

OSCAR L. CARTWRIGHT  
and  
FORTUNÉ E. CHALUMEAU

SMITHSONIAN CONTRIBUTIONS TO ZOOLOGY • NUMBER 279

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SMITHSONIAN INSTITUTION PRESS

City of Washington

1978

## ABSTRACT

Cartwright, Oscar L., and Fortuné E. Chalumeau. Bredin-Archbold-Smithsonian Biological Survey of Dominica: The Superfamily Scarabaeoidea (Coleoptera). *Smithsonian Contributions to Zoology*, number 279, 32 pages, 16 figures, 1978.—Forty species and subspecies of Scarabaeoidea: 2 Passalidae, 1 Ceratocanthidae, and 37 Scarabaeidae are listed from Dominica; 23 species and 1 subspecies were found for the first time on the island. For each species are given the type-locality, location of type if known, specimens examined, dates collected, Dominican distribution, previously known distribution and pertinent remarks. Most of the species are illustrated by photographs or artists drawings.

OFFICIAL PUBLICATION DATE is handstamped in a limited number of initial copies and is recorded in the Institution's annual report, *Smithsonian Year*. SERIES COVER DESIGN: The coral *Montastrea cavernosa* (Linnaeus).

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### Library of Congress Cataloging in Publication Data

Cartwright, Oscar Ling.

The Scarabaeoidea of Dominica (Coleoptera).

(Smithsonian contributions to zoology ; no. 279)

Bibliography: p.

1. Scarabaeidae. 2. Passalidae. 3. Ceratocanthidae. 4. Insects—Dominica. I. Chalumeau, Fortuné E., joint author. II. Title. III. Title: Bredin-Archbold-Smithsonian biological survey. IV. Series: Smithsonian Institution. Smithsonian contributions to zoology ; no. 279. QL1.S54 no. 279 [QL596.S3] 591'.08s [595.7'64] 78-606088

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**Introduction**

According to Hodge (1943:349-375) the tropical West Indian Island of Dominica, a 290 square mile (751 km<sup>2</sup>) British Associated State, is one of the Lesser Antilles (Figure 1). About thirty miles (48.3 km) long and fifteen miles (24 km) in greatest width, it is situated between the French West Indian Islands of Guadeloupe, about 28 miles (45 km) away slightly west of north, and Martinique, 25 miles (40 km) slightly east of south. The land slopes upward to a central ridge whose greatest elevation is recorded on Morne Diablotin, 4747 feet (1447 m). Although well within the tropics, the heat is not unbearable since the wind blows almost continuously. The yearly average is about 79° F (26° C) at Roseau, average maximum 84° F (29° C) and minimum about 75° F (24° C). In the interior of the island the temperatures are markedly lower—about 10 degrees lower at 1800 feet (2898 m). Rainfall is heavy and varies seasonally with marked differences on the east, windward side, and leeward or western side. The dry season occurs from mid-

January to mid-June and the rainy season from mid-June to mid-January. April is the driest month. Even on the drier leeward coast, however, the average annual rainfall is about 75 inches (190.5 cm). Windward coast stations regularly average more than 100 inches (250 cm) and in the rain-forest belt average more than 200 inches (500 cm). On the highest mountain summits, although unrecorded, precipitation is enormous and possibly reaches 400 inches (1016 cm) a year. The heaviest monthly rainfall recorded in Dominica was 56 inches (142 cm) at windward Castle Bruce for September 1906. The rains are tropical downpours, heavy but of short duration and local occurrence. During the day even in the rainy interior any given area usually has intermittent brilliant sunshine.

The island had a population of 75,000 in 1975. The principle crops are: bananas, citrus, coconuts, and vanilla. Some cattle are produced.

**MATERIAL STUDIED.**—This study of the Scarabaeoidea of Dominica is based very largely on two accumulations of specimens, those in the National Museum of Natural History, Smithsonian Institution (USNM, for the former United States National Museum) and those in the collection of Fortuné E. Chalumeau in Sainte Anne, Guadeloupe, French West Indies. After learning the authors had independently started on papers on this group it was

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decided to combine the work to save duplication of effort, data, and publication of results.

**ACKNOWLEDGMENTS.**—The major part of the Smithsonian specimens were collected by the Bredin-Archbold-Smithsonian Survey of the insects of Dominica, from May 1964 through October 1966. We are indebted to and especially grateful to J. Bruce Bredin and John D. Archbold for their

very generous support of this survey. Much of the material would not have been available without their help. Members of the survey teams who visited Dominica at various times and who collected Scarabaeoidea were D. M. Anderson, Dale F. Bray, Ernest L. Bell, J. F. Gates Clarke, Thelma M. Clarke, D. R. Davis, O. S. Flint, R. J. Gagné, A. B. Gurney, H. H. Hobbs, Jr., D. L. Jackson, J. P. E. Morrison, Paul J. Spangler, T. J. Spilman, G. Steyskal, E. L. Todd, and W. W. Wirth.

Non-survey entomologists who have collected scarab specimens, most of which are now in the USNM collection, include R. T. Bell, R. E. Blackwelder, L. E. Chadwick, E. A. Chapin, H. W. Foote, E. G. Matthews, A. H. and G. E. Verrill.

Specimens in the Chalumeau collection were collected by F. Chalumeau, Yves Cambefort, Y. Gysin, and Chester Roys.

Illustrations were drawn by L. Michael Druckenbrod, Smithsonian artist. Photographs were made by Victor E. Krantz, Smithsonian photographer.

As originally written this paper included descriptions designating as new the following five species: *Aegidium dominicensis*, *Saprosites wirthi*, *Rhyparus spilmani*, *Phyllophaga cambeforti*, *Phyllophaga dominicensis*, *Epiphileurus gysini*, and the subspecies *Cyclocephala tridentata dominicensis*. Unfortunately Dr. Chalumeau's doctoral dissertation (1977b) appeared before publication of the present paper, with these original descriptions translated into French. It therefore takes priority in citations referring to these names. Because the thesis is written in French and had limited distribution (but satisfying the criteria of validity under the ICZN), the full descriptions in English have been retained in the present paper.



FIGURE 1.—Map of Dominica showing localities mentioned in text.

**SCARABAEOIDEA**

**Key to the Families**

- 1. Plates of antennal club not capable of close apposition .....**PASSALIDAE**
- Plates of antennal club flattened and capable of closing .....2
- 2. Body capable of being rolled into a ball .....**CERATOCANTHIDAE**
- Body not capable of rolling into a ball .....**SCARABAEIDAE**

**PASSALIDAE**

**Key to the Species**

- 1. Smaller species, 18 mm or less; head without a horn .....  
.....*Spasalus puncticollis* (Saint Fargeau and Serville)
- Larger species, 45 mm or more; head with central horn .....  
.....*Passalus unicornis* Saint Fargeau and Serville



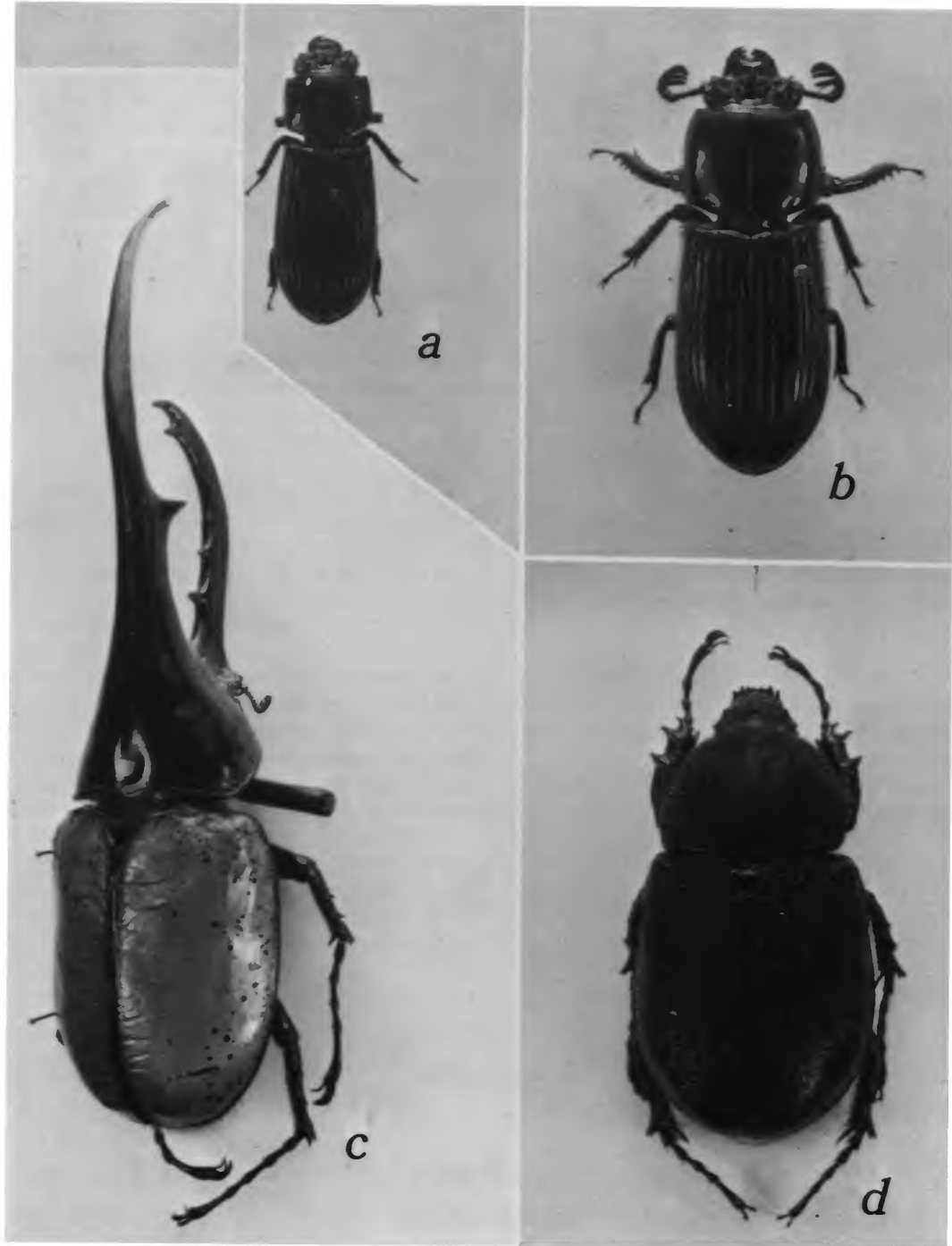


FIGURE 2.—Passalidae: *a*, *Spasalus puncticollis* (Saint-Fargeau and Serville); *b*, *Passalus unicornis* Saint-Fargeau and Serville. Scarabaeidae: *c*, *Dynastes hercules hercules* (Linnaeus), male; *d*, *Dynastes hercules hercules* (Linnaeus), female.

*Spasalus puncticollis* (Saint-Fargeau and Serville)

FIGURE 2a

*Spasalus puncticollis* Saint-Fargeau and Serville, 1825:21.  
*Spasalus puncticollis*.—Kaup, 1869:28.

TYPE-LOCALITY.—Antilles d'Amerique.

LOCATION OF TYPE.—Probably destroyed.

SPECIMENS EXAMINED.—38.

DATES COLLECTED.—Jan, Feb, Jun, Jul, Aug, Nov.

DOMINICAN DISTRIBUTION.—Jean (609.6 m), La Plaine, Fortune, Clarke Hall, Portsmouth, Roseau, near Rosalie, Pont Cassé, Morne Macaque.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Antilles.

REMARKS.—Average length 18 mm. The species is found in various species of decaying trees. There may be a possible synonymy with *Spasalus crenatus* (MacLeay, 1819:106) found in Puerto Rico. MacLeay described *crenatus* in the genus *Paxillus*. Gravelly (1918:50) and Reyes-Castillo (1970:135) kept *crenatus* in *Paxillus*.*Passalus unicornis* Saint-Fargeau and Serville

FIGURE 2b

*Passalus unicornis* Saint-Fargeau and Serville, 1825:20.

TYPE-LOCALITY.—Guadeloupe (de Cayenne).

LOCATION OF TYPE.—Museum National d'histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—55.

DATES COLLECTED.—Feb, Mar, May, Jun, Jul, Aug, Oct, Nov, Dec.

DOMINICAN DISTRIBUTION.—Clarke Hall, Pont Cassé, En Haut Jean, S. Chiltern, Sylvania, Grand Bay, Laudat, Teme Fermean Trail, Morne Plat Paya, Cabrit Swamp, Warner Road, Jean (610 m), Magua, Fortune, Syndicate Estate, St. Andrew, St. Paul, Portsmouth, Morne Macaque.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Martinique, Antilles, South America.

REMARKS.—Average length 50 mm. Specimens were collected in various species of decaying trees.

## CERATOCANTHIDAE

*Cloetotus allorgei* Paulian

FIGURE 3

*Cloetotus allorgei* Paulian, 1947:27.

TYPE-LOCALITY.—Guadeloupe, Trois Rivieres.

LOCATION OF TYPE.—Museum National d'histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—12.

DATES COLLECTED.—Mar, May, Jun, Aug, Oct, Nov.

DOMINICAN DISTRIBUTION.—Fresh Water Lake, NW Pont Cassé, Grand Bay, Long Ditton, Morne La Croix, Laudat, G'leau Gommier.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe.

REMARKS.—The use of the name "Ceratocanthidae" in place of "Acanthoceridae" was pointed out by Martinez in 1968 and also noted by Cartwright and Gordon, 1971:275. *Cloetotus allorgei* differs from *Cloetotus pauliani* Chalumeau and Cambefort (1976:135), a very similar species also described from Guadeloupe, in the much stronger more noticeable sculpture practically covering the entire surface of the head and pronotum. In *C. pauliani* the head and pronotum, except for lateral margin and anterior angles, are smooth, polished, and shiny. These are small species 4.5 to 5 mm (extended). Specimens were taken by beating dried tree ferns, searching under trunks, and sifting dead leaves in mesophytic forest.

## SCARABAEIDAE

## Key to the Subfamilies

1. Last two segments of antennal club gray-tomentose, not shining; mostly dung beetles .....2  
 Entire antennal club glabrous, polished or sparsely hairy, never tomentose; not dung beetles .....4
2. Metatibiae with one apical spur; metacoxae usually well separated; pygidium exposed .....4  
 .....SCARABAEINAE  
 Metatibiae with two apical spurs; all coxae approximate; pygidium exposed or not .....3
3. Mandibles and labrum covered by clypeus .....APHODINAE  
 Mandibles and labrum exposed .....ORPHNINAE

- 4. Mandibles bent, expanded, and leaflike, plainly visible from above .....DYNASTINAE  
Mandibles not bent or leaflike, rarely visible from above .....5
- 5. Claws, especially on hind legs, almost always of unequal length; metatibiae with two apical spurs .....RUTELINAE  
Claws of equal length, metatibiae without apical spurs .....6
- 6. Clypeus not emarginate laterally before eyes .....MELOLONTHINAE  
Clypeus emarginate laterally before eyes .....CETONINAE

**SCARABAEINAE**

**Key to the Species**

- 1. Clypeus with two or four teeth, male without horns .....2  
Clypeus rounded, without teeth, male with two long arcuate horns .....  
.....*Onthophagus antillarum* Arrow
- 2. Clypeus with middle two teeth much larger; metasternum practically smooth; posterior femur without anterior marginal line .....*Pseudocanthon sylvaticus* Matthews  
Clypeus with four teeth nearly equal; metasternum finely punctate; posterior femur with a fine anterior marginal line .....*Pseudocanthon caeranus* Matthews



FIGURE 3.—*Cloeotus allorgei* Paulian.

***Onthophagus antillarum* Arrow**

FIGURE 4c,d

*Onthophagus antillarum* Arrow, 1903:510.

TYPE-LOCALITY.—St. Vincent; Grenada, Balthezar, Mt. Gay Estate.

LOCATION OF TYPE.—British Museum (Natural History), London, England.

SPECIMENS EXAMINED.—71.

DATES COLLECTED.—Jan, Mar, May, Sep. Oct, Nov.

DOMINICAN DISTRIBUTION.—Clarke Hall, Cafe, Southern Chiltern, Morne Guy, St. Joseph (Layou), Bellevue (Chopin), Pont Cassé, Marigot, near Roseau.

PREVIOUSLY RECORDED DISTRIBUTION.—St. Vincent, Grenada, Guadeloupe, Martinique, Dominica.

REMARKS.—Length 4.5–7 mm. Collected on cow dung and human excrement. The Dominican specimens, especially the females, are darker in color than those from the other islands.

***Pseudocanthon sylvaticus* Matthews**

FIGURE 4b

*Pseudocanthon sylvaticus* Matthews, 1966:91.

TYPE-LOCALITY.—Morne Micotrin, Dominica.

LOCATION OF TYPE.—National Museum of Natural History, Smithsonian Institution, Washington, D. C., USNM 69823.

SPECIMENS EXAMINED.—18.

DATES COLLECTED.—Apr, May, Oct, Nov.

DOMINICAN DISTRIBUTION.—6.4 km E Pont Cassé, Morne Micotrin.

PREVIOUSLY RECORDED DISTRIBUTION.—Dominica:



FIGURE 4.—Scarabaeidae: a, *Pseudocanthon caeranus* Matthews; b, *Pseudocanthon sylvaticus* Matthews; c, d, *Onthophagus antillarum* Arrow; e, *Phyllophaga dominicensis* Cartwright and Chalumeau; f, *Phyllophaga cambeforti* Cartwright and Chalumeau; g, *Anomala insularis* (Castelnau); h, *Leucothyreus guadulpiensis* Burmeister; i, *Cyclocephala tridentata dominicensis* Cartwright and Chalumeau.

St. Paul Parish, 2.6 km NW of Pont Cassé, St. David Parish: Castle Bruce Junction, 4 km E of Pont Cassé on Rosalie Road, Morne Macaque.

REMARKS.—Length 5.5–6.5 mm. Found, according to Dr. Matthews, in highland humid forests above 427 m. It is not attracted to light and is probably nocturnal in its activity. Collected under cow dung at edge of forest and in traps baited with cow dung. None came to carrion.

*Pseudocanthon caeranus* Matthews

FIGURE 4a

*Pseudocanthon caeranus* Matthews, 1966:93.

TYPE-LOCALITY.—Macoucheri, Dominica.

LOCATION OF TYPE.—National Museum of Natural History, Smithsonian Institution, Washington, D. C., USNM 69824.

SPECIMENS EXAMINED.—68.

DATES COLLECTED.—Feb, May, Aug, Nov.

DOMINICAN DISTRIBUTION.—Macoucheri, Portsmouth, Morne LaCroix, St. Joseph, Pont Cassé.

PREVIOUSLY RECORDED DISTRIBUTION.—Dominica: Salisbury, Clarke Hall, Greenhill Estate, Rodney's Rock (Taron Point).

REMARKS.—Length 4.5–5.5 mm. Dr. Matthews states this is a species of lowland coastal forest and scrub. It was collected in tall natural grass and scrub on a steep slope near the sea and in a patch of moist shady woods. Most of the specimens were collected on the leeward side of the island, not much above sea level. It is probably nocturnal. Specimens came to traps baited with cow dung or human excrement. Chalumeau and Cambefort collected specimens at an elevation of 610 m in the high forest.

## APHODIINAE

### Key to the Genera

1. Middle and hind tibiae with transverse carinae; pygidium free, without longitudinal groove basally, not held by tips of elytra ..... *Aphodius*  
Middle and hind tibiae without transverse carinae; pygidium not free, with longitudinal furrow basally, held by tips of elytra ..... 2
2. Head always tuberculate ..... 5  
Head never tuberculate ..... 3
3. Elytra with large glandular areas apically ..... *Rhyparis*  
Elytra apically normal ..... 4
4. Pronotum broader than elytra at base; hind tibia arcuate; lateral margins of pronotum strongly explanate in front ..... *Euparis*  
Pronotum not broader than elytra at base; hind tibia not arcuate; lateral margins of pronotum not explanate in front ..... *Atacnius*
5. Upper apical spur of hind tibia as long as first two tarsal segments or longer; tarsus shorter than tibia; tarsal segments more or less strongly triangularly expanded ..... *Psammodius*  
Upper apical spur of hind tibia usually shorter, rarely somewhat longer than first tarsal segment; tarsus as long as tibia; tarsal segments not triangularly expanded, slender ..... 6
6. Elytra margined across base by a carina ..... *Pleurophorus*  
Elytra not margined across base ..... *Seprosites*

### *Aphodius*

#### Key to the Species

- Species 4.0 to 5.0 mm in length; yellowish with brown or black markings .....  
..... *A. (Nialus) lividus pseudolividus* (Balthasar)
- Species 4.0 mm or less in length; dark reddish brown ..... *A. (Nialus) cuniculus* Chevrolat

*Aphodius (Nialus) lividus pseudolividus*  
(Balthasar)

*Aphodius pseudolividus* Balthasar, 1941:148.

*Aphodius (Nialus) lividus pseudolividus* (Balthasar).—Chalumeau, 1977a:234.

*Scarabaeus lividus* Olivier, 1789:86.

*Aphodius lividus*.—Creutzer, 1799:44.

*Aphodius (Nialus) lividus*.—Reitter, 1892:202.

TYPE-LOCALITY.—America meridionale.

LOCATION OF TYPE.—Probably in Balthasar Collection.



SPECIMENS EXAMINED.—20.

DATES COLLECTED.—May, Sep.

DOMINICAN DISTRIBUTION.—Grande Savane, Morne Guy, Bellevue (Chopin), Pont Cassé.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Martinique, Cuba, Jamaica, Grenada; practically all West Indian Islands (Chapin, 1940).

REMARKS.—Length 3–6 mm. Common in cow dung and other excrement. Balthasar described *A. pseudolividus* from America meridionale; however, we do not believe it to be more than a subspecies, if that. We separated it from *S. lividus* Olivier by the following differences: general color darker, metatarsi as long as upper spine of posterior tibiae, pronotum a little longer and larger, laterally less convex, more abundant punctations above, and the apex of the parameres less curved. *Aphodius lividus* and its subspecies have practically a worldwide distribution.

***Aphodius (Nialus) cuniculus* Chevrolat**

FIGURE 5

*Aphodius cuniculus* Chevrolat, 1864:411

*Aphodius (Nialus) cuniculus* Chevrolat.—Schmidt, 1913:169.

*Aphodius granarius* var. *guadeloupensis* Fleutiaux and Sallé, 1890:46.

TYPE-LOCALITY.—Cuba.

LOCATION OF TYPE.—Museum National d'histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—81.

DATES COLLECTED.—Jan, Feb, Mar, Apr, May, Jul, Aug, Sep, Oct.

DOMINICAN DISTRIBUTION.—Clarke Hall, Macoucheri, Cafe, Grand Bay, La Plaine, W. Cabrit, Pt. Mulaitre Estate, Cabrit Swamp, Melville Hall Estate, Grande Savane, Bellevue (Chopin), St. Joseph (Layout), Roseau, Pont Cassé.

PREVIOUSLY RECORDED DISTRIBUTION.—Cuba, Guadeloupe, Martinique, Jamaica, Vieques, St. Thomas, St. John, St. Croix, St. Kitts, Antigua, Montserrat, Dominica, St. Lucia, Barbados, St. Vincent, Carriacou, Grenada, Tobago, Désirade, Marie-Galante, le Saintes.

REMARKS.—Length 2.5–4 mm. Common in cow dung.

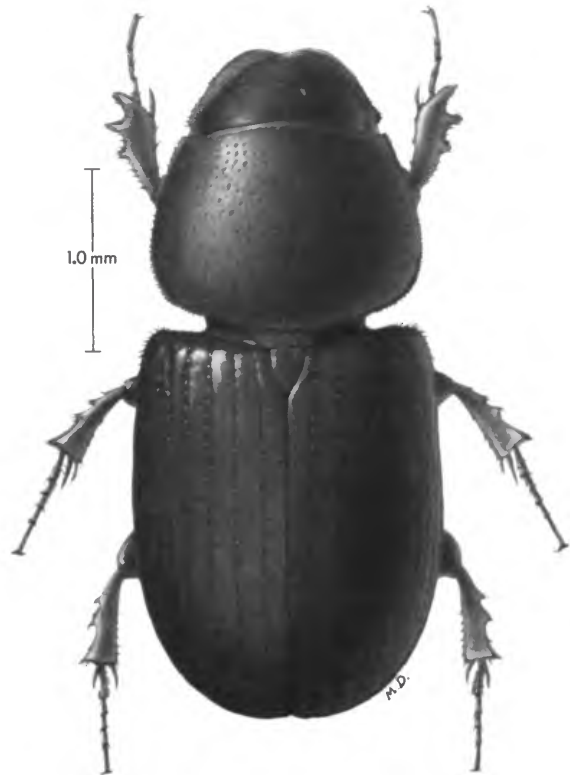


FIGURE 5.—*Aphodius (Nialus) cuniculus* Chevrolat.

***Rhyparus***

***Rhyparus spilmani* Cartwright and Chalumeau**

FIGURE 6

*Rh[yparus] spilmani* Cartwright and Chalumeau, in Chalumeau, 1977b:76.

DESCRIPTION OF MALE.—Elongate, widest at anterior third of elytra, very dark brown, feebly shining. Clypeus with double edge, the lower slightly angulate downward and backward; edges separated by a coarsely punctate groove from gena to gena; upper edge with 4 wide, slightly recurved teeth, lateral 2 separated by a narrow notch from the obtusely rounded genae, margin shallowly emarginate between teeth, disc convex, with 2 slightly elongate tubercles at middle separated by slightly more than their length, disc separated from slightly concave surrounding area by a sharply edged cir-

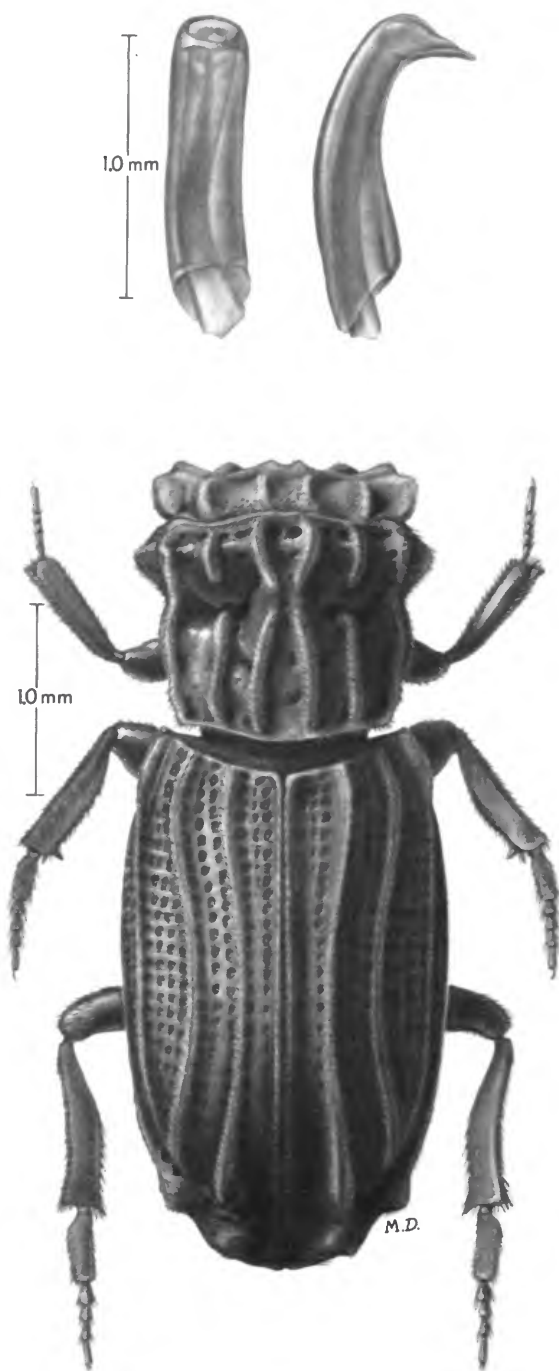


FIGURE 6.—*Rhyparus spilmani* Cartwright and Chalumeau, with genitalia.

cular furrow, the circle broken slightly anteriorly by shallow moderate sized punctations which extend upward to the middle tubercles, and each side ending posteriorly in a small, very deep pit, above and outside the pits the circular groove is again evident as the frontal suture; surface of clypeus and genae otherwise with scattered fine setigerous punctations, the fine setae recumbent. Four moderately high frontal ridges or elongate tubercles, middle two slightly closer together; a deep furrow follows curvature of eye into a large pore or pit at base of gena; occipital area above frontal ridges with a band of close moderate, setigerous punctations separated by their diameters or less, recumbent setae pointing forward about twice as long as the diameter of the punctations.

Subquadrate pronotum slightly wider than long, constricted at apical third, 8 longitudinal ridges almost equally separated along anterior margin, all are depressed or interrupted at apical third, 1st pair less so than the others but they are crowded toward each other and almost obliterated between the deep transverse pits, then diverge and continue to base of pronotum; next or 2nd pair bend downward into pit and are widely completely broken, then continue to base; 3rd pair depressed at anterior third but are unbroken and continue to base, appearing from above as a slight S curve; 4th or outside pair appear as lateral margins of pronotum, sharply arched outward over anterior third, less so over middle third, then continue almost straight to base of pronotum; between ridges in anterior fourth are 2 transverse rows of coarse punctations, transverse smooth area between these rows appearing as a low transverse carina; at posterior third coarse deep punctations almost perforate the middle ridges, similar coarse deep punctations at base of pronotum lie close on each side of ridge; longitudinal ridges minutely setigerously punctate their full length, setae extremely fine and short, general surface otherwise shiny smooth; basel pronotal margin sharply carinate.

Elytra very dark brown, moderately shining, nearly parallel, slightly wider at anterior sixth; length 3 mm, width 1.9 mm. Counting sutural, 5 longitudinal costae on each elytron. Sutural costae flattened and minutely alutaceous over anterior two-thirds, 2nd pair elevated at each end and lightly arcuate inward; 3rd pair doubly arcuate and elevated entire length; 4th pair shorter, ending an-

teriorly in the slightly bulbous humeri, equally elevated entire length; 5th pair elevated entire length, doubly arcuate and ending posteriorly in a double swelling, the first near elytral edge, second at an upward angle culminating in larger swellings opposite the posterior ends of 2nd pair of costae before joining sutural costae, and enclosing grayish masses of granular material on ends of 2nd, 3rd, and 4th costae and 2 patches of same on inside margins of 5th. First two elytral intervals on each elytron with double rows of very coarse, deep punctations except over apical declivity; third intervals with four rows of similar punctations; fourth with two rows; and fifth with a single row except at extreme posterior where it widens to a triangular group in the enclosed area. All costae and ridges have near their summits on each side, a row of close, short, very fine whitish appressed hairs directed obliquely backward.

On underside prosternal process conspicuously higher than its basal plane, anterior part with a shallow elongate punctation with carinate edges and a carina continuing forward to rounded tip, lateral margins carinate; posterior part forms a four-pointed star, sides of star excavated laterally. Mesosternum shagreened, covered with extremely short, extremely fine appressed hair, except in a shallow, rather wide, groove extending backward into a pit between the middle coxae. Metasternum extending triangularly forward between the middle coxae and joining a vertical carina-like piece to the mesosternum at a lower level; metasternum roughly sculptured, a large deep punctation or pit each side just behind middle coxae, posterior to these a deep moderately wide middle furrow, gradually deeper to posterior coxae; lateral to the pits behind middle coxae, a flat smooth depressed area, deeper at anterior end, bordered on outer side by a high thin carina, beyond the carina a rather wide coarsely punctate lateral groove which extends backward to posterior angle of metasternum then inward over three-fourths the distance to the midline; enclosed surface of metasternum roughly, coarsely, setigerously punctate, setae fine, appressed, directed backwards.

Abdominal segments widely and deeply separated, their deep posterior margins appear to be a distinct narrow membrane, anteriorly they are bordered by a row of very coarse, deep, shiny punctations, laterally each segment has a large deep triangular depression, the elevated middle of each segment is

minutely alutaceous with well separated, appressed, moderately long, fine hair; terminal segment three times as long as preceding segments, with two median, deep, large, shiny pits, surface otherwise the same. Pygidium separated into three feebly shining smooth areas by a high Y-shaped carina, the edges and carina sparsely covered with minute appressed hair. Anterior femora with deep groove anteriorly, surface coarsely, closely, setigerously punctate, the hairs appressed and slightly longer than diameter of punctations, posterior edge quite deeply sinuate; tibiae underside with two rows of shallow, coarse punctations separated by a lengthwise carina, two apical teeth. Middle femora with groove on each side, the posterior edge with two broad undulations; middle tibiae with a sharp apical tooth at right angles to tip. Posterior femora slender, curved to hug body; tibiae arcuate, with inner terminal spine directed inward and backward; basal segment of tarsus subequal to remaining four segments combined.

**HOLOTYPE MALE.**—Length 4.6 mm, width 1.9 mm.

**ALLOTYPE.**—Female length 5.0 mm, width 2.0 mm; duplicates the external characters of the holotype except that the terminal apical tooth of the inner side of the middle and hind tibiae are lacking.

**LOCATION OF TYPES.**—Holotype collected at Clarke Hall, Dominica, 20–27 Jul 1964, in light trap by T. J. Spilman, USNM 74071, National Museum of Natural History, Smithsonian Institution, Washington D.C. Allotype collected in Guadeloupe, Morne-à-Louis, 7 Feb 1974, F. Chalumeau; in collection of F. Chalumeau. One paratype collected in Guadeloupe, Morne-à-Louis, 20 May 1974, F. Chalumeau; in collection of F. Chalumeau. Specimens were collected in sifting vegetal debris at an elevation of about 762 m.

**REMARKS.**—This species, which is named after the collector of the holotype, is separated from all other American species by having four rows of punctations on the third elytral interval. Other American species were discussed by Cartwright and Woodruff (1969).

### *Euparia*

#### *Euparia baraudi* Chalumeau and Gruner

FIGURE 7

*Euparia baraudi* Chalumeau and Gruner, 1974:796.

**TYPE LOCALITY.**—Vernou, Guadeloupe.

LOCATION OF TYPE.—Collection of F. Chalumeau, Sainte Anne, Guadeloupe, French West Indies.

SPECIES EXAMINED.—2.

DATES COLLECTED.—21 Apr, 4 Aug.

DOMINICAN DISTRIBUTION.—Clarke Hall.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe.

REMARKS.—Length 5–5.5 mm. This species is very close to *Euparia castanea* Serville (1825:357), but is more slender, slightly smaller and darker in color. *Euparia baraudi* also has the anterior pronotal

angles much more deeply excavated. It is attracted to lights. *E. baraudi* is also close to *E. bordoni* Petrovitz (1963:315), but is slightly smaller and narrower. *E. baraudi* is slightly but noticeably constricted along the pronotal margin at anterior third so that the entire margin is very slightly doubly sigmoid in outline, while *E. bordoni* is only weakly S-shaped. The anterior angles of the pronotum are more widely, less deeply concave in *E. bordoni* and the posterior angles of the pronotum are less than a right angle. In *E. baraudi* they are greater than right angles.

### *Ataenius*

#### Key to the Species

1. Species less than 3.5 mm in length .....2  
Species more than 3.5 mm in length .....3
2. With distinct clypeal teeth; clypeus shining and granulate anteriorly, shallowly alutaceously punctate basally; elytral intervals with a row of close, very short setae .....*A. vincentiae* Arrow  
Without clypeal teeth; clypeus with close elongate punctations; elytral intervals without setae .....*A. gracilis* (Melsheimer)
3. Elytra with moderate wide yellowish apical and lateral margins .....*A. luteomargo* Chapin  
Elytra without yellowish margins .....4
4. Clypeus with distinct teeth; surface alutaceous but weakly shining .....*A. temperei* Chalumeau and Gruner  
Clypeus rounded each side, without distinct teeth .....5
5. Surface lustre dull, elytra very finely alutaceous .....*A. picipes* Fleutiaux and Sallé  
Surface shining .....6
6. With group of 3 to 6 large punctations at base of middle legs .....*A. strigicauda* Bates  
Without group of large punctations at base of middle legs .....7
7. Posterior marginal lines of middle and posterior femora deep, coarse, and complete; metasternum with scattered punctations .....*A. scutellaris* Harold  
Posterior marginal lines of middle and posterior femora not reaching coxae .....8
8. Ninth elytral interval closely, finely punctate; pronotal margin broken by fringe setae; apical setae of hind tibiae always in a group of four .....*A. picipis* Harold  
Ninth elytral interval not differing from others .....9
9. Accessory spine of posterior tibiae very short, half or less the length of the setal fringe, with intervening seta between accessory spine and spurs .....*A. edwardsi* Chapin  
Accessory spine strong, longer than tibial fringe of setae, without intervening seta between accessory spine and spurs .....*A. cribrithorax* Bates

#### *Ataenius vincentiae* Arrow

*Ataenius vincentiae* Arrow, 1903:513.

TYPE-LOCALITY.—St. Vincent, West Indies.

LOCATION OF TYPE.—British Museum (Natural History), London, England.

SPECIMENS EXAMINED.—1.

DATE COLLECTED.—2 Mar.

DOMINICAN DISTRIBUTION.—Portsmouth.

PREVIOUSLY RECORDED DISTRIBUTION.—Guade-

loupe, St. Vincent, Dominican Republic, Puerto Rico, El Salvador.

REMARKS.—Length 3 mm. Superficially *A. vincentiae* resembles *A. gracilis* in being small and slender; however, in addition to the differences given in the key, in *A. vincentiae* the dull alutaceous intervals of the elytra are carinate, the carinae broken into a series of shining points. *Ataenius gracilis* is smoother, more shining, with the head punctations united into close short longitudinal



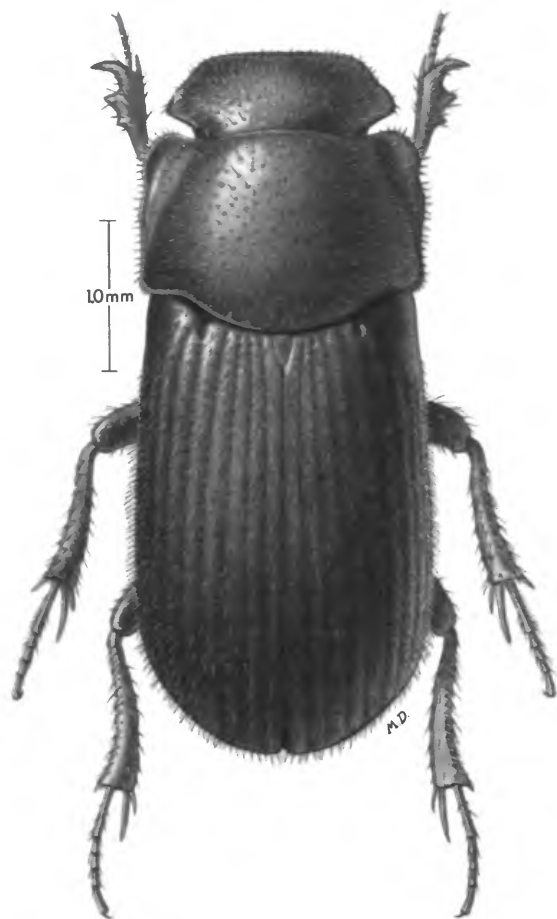


FIGURE 7.—*Euparia baraudi* Chalumeau and Gruner.

lines. Also close to *A. carinator* Harold (1874:20) but *A. vincentiae* is shorter with different punctations on head and pronotum. It is attracted to lights.

***Ataenius gracilis* (Melsheimer)**

*Oxyomus gracilis* Melsheimer, 1845:137.

*Ataenius gracilis* (Melsheimer).—Harold, 1867b:281.

*Aphodius chilensis* Solier, 1851:72.

*Ataenius chilensis* (Solier).—Harold, 1967b:281.

TYPE-LOCALITY.—Pennsylvania.

LOCATION OF TYPE.—Museum of Comparative Zoology, Harvard College, Cambridge, Massachusetts.

SPECIMENS EXAMINED.—10.

DATES COLLECTED.—Feb, Mar, Apr, Aug, Sep.

DOMINICAN DISTRIBUTION.—Roseau, Clarke Hall, La Plaine.

PREVIOUSLY RECORDED DISTRIBUTION.—Cuba, Jamaica, Hispaniola, Puerto Rico, Vieques, St. Croix, St. Kitts, Marie-Galante, Guadeloupe, Barbados, St. Vincent, Grenada, Colombia, Peru, Argentina, Chile, United States.

REMARKS.—Length 2.8–3.5 mm. A common species over the eastern half of the United States. While listed from several countries in South America it seems not to have been taken in Central America. It is attracted to lights.

***Ataenius luteomargo* Chapin**

*Ataenius luteomargo* Chapin, 1940:36.

*Aphodius marginellus*.—Chevrolat, 1864:414 [not Fabricius].

*Ataenius terminalis*.—Arrow, 1903:512 [not Chevrolat].

*Ataenius versicolor*.—Hinton, 1937:183 [not Schmidt].

TYPE-LOCALITY.—Dominica.

LOCATION OF TYPE.—National Museum of Natural History, Smithsonian Institution, Washington, D.C., USNM 53328.

SPECIMENS EXAMINED.—234.

DATES COLLECTED.—Taken in every month of the year.

DOMINICAN DISTRIBUTION.—Clarke Hall, Cabrit Swamp, W. Cabrit, Syndicate Estate, P. Mulatre Estate, Melvele Hall Estate, Grand Bay, Cafe, Portsmouth Bay, Pont Cassé, Bellevue, St. Joseph, Portsmouth.

PREVIOUSLY RECORDED DISTRIBUTION.—Jamaica, Hispaniola, Puerto Rico, St. Kitts, Antigua, Montserrat, Guadeloupe, Dominica, St. Lucia, Barbados, Grenada, Marie-Galante, Désirade, Les Saintes.

REMARKS.—Length 4–4.5 mm. Chapin (1940:37) stated that on the islands where this species occurs, it appears to be by far the most common *Ataenius*. It comes to lights.

***Ataenius temperei* Chalumeau and Gruner**

*Ataenius temperei* Chalumeau and Gruner, 1974:799.

TYPE-LOCALITY.—Guadeloupe, Deux-Mamelles.

LOCATION OF TYPE.—Collection of F. Chalumeau, Sainte Anne, Guadeloupe, French West Indies.

SPECIMENS EXAMINED.—50.

DATES COLLECTED.—All months except Jan, Sep, Nov.



DOMINICAN DISTRIBUTION.—Clarke Hall, Grand Bay, Fond Figues, Pont Cassé, Syndicate Estate, Trafalgar Falls.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe.

REMARKS.—Length 4–4.2 mm. Attracted to lights. The type was collected in decaying leaves along a river. *Ataenius temperei* is very similar to *A. abditoides* Chapin (1940:18) described from St. Lucia, but *A. temperei* is slightly darker, broader, noticeably larger on direct comparison, punctations are larger, and the pronotal foveae are broader. This is the only Dominican *Ataenius* not taken in cow dung.

#### *Ataenius picipes* Fleutiaux and Sallé

*Ataenius picipes* Fleutiaux and Sallé, 1890:397.

*Ataenius tenebrosus* Arrow, 1903:512.

TYPE-LOCALITY.—Guadeloupe.

LOCATION OF TYPE.—Museum National d'histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—17.

DATES COLLECTED.—Mar, Apr, May, Sep, Dec.

DOMINICAN DISTRIBUTION.—Clarke Hall, Cabrit Swamp, Pt. Mulatre Estates.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Hispaniola, Puerto Rico, Vieques, Trinidad, Grenada, Martinique, Brazil.

REMARKS.—Length 3.7–4.5 mm. Upper surface opaque, elytral intervals flat, punctations of elytra extremely fine, punctations of pronotum moderate; very close basally and on sides, gradually very fine in median anterior area. Attracted to lights.

#### *Ataenius strigicauda* Bates

FIGURE 8

*Ataenius strigicauda* Bates, 1887:96.

TYPE-LOCALITY.—Cordoba [Veracruz], Mexico.

LOCATION OF TYPE.—British Museum (Natural History), London, England.

SPECIMENS EXAMINED.—43.

DATES COLLECTED.—Jan, Feb, Mar, Apr, Jul, Sep, Oct, Nov, Dec.

DOMINICAN DISTRIBUTION.—Springfield Estate, Clarke Hall, Antrim 305 m, NW Pont Cassé, Cafe,

Grand Bay, Bernard Estate near Portsmouth, St. Joseph, vers Rosalie, Morne Macaque.

PREVIOUSLY RECORDED DISTRIBUTION.—Mexico to Argentina, West Indies, Cuba, Bahamas, Jamaica, Hispaniola, Puerto Rico, St. Croix, Guadeloupe, Dominica, St. Lucia, Barbados, St. Vincent, Trinidad, Grenada, Becquia, Martinique.

REMARKS.—Length 4.5–6 mm. The small patch of 3 to 6 coarse punctations on each side of the metasternum at base of middle legs will serve to separate *A. strigicauda* from other large species of *Ataenius*. Attracted to lights.

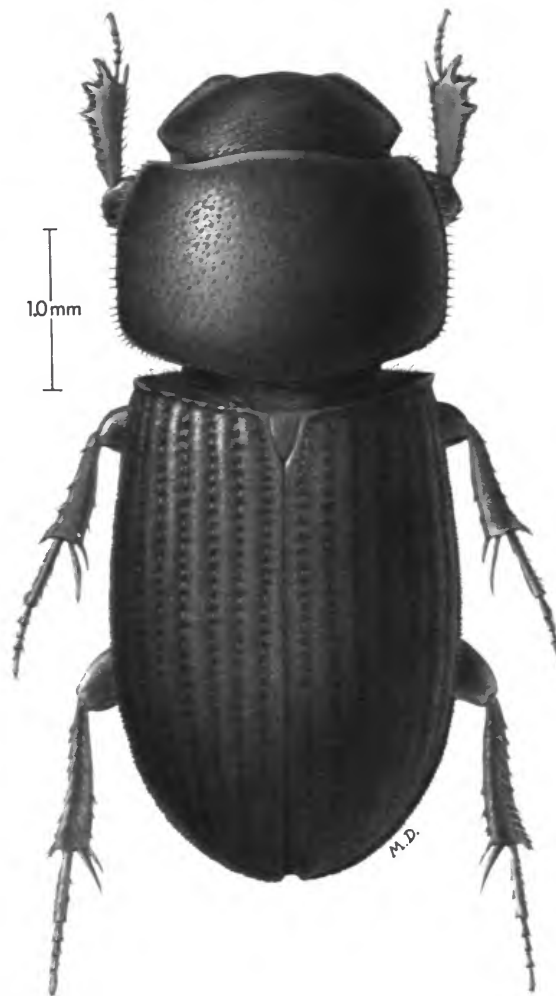


FIGURE 8.—*Ataenius strigicauda* Bates.

***Ataenius scutellaris* Harold**

*Ataenius scutellaris* Harold, 1867a:82.

*Ataenius frater* Arrow, 1903:512.

TYPE-LOCALITY.—Caracas.

LOCATION OF LECTOTYPE.—Museum National d'Histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—124.

DATES COLLECTED.—Apr, May, Jun, Jul, Sep, Oct, Nov.

DOMINICAN DISTRIBUTION.—Clarke Hall, Springfield Estate, Cabrit Swamp, Pt. Mulatre Estate, Portsmouth Bay, Grande Savane, Cafe, Warner, St. Joseph (Layou), St. Paul, Roseau.

PREVIOUSLY RECORDED DISTRIBUTION.—Mexico, British Honduras, Guatemala, Nicaragua, Colombia, Venezuela, Brazil, Bahamas, Jamaica, Hispaniola, Puerto Rico, St. Thomas, Tortola, St. Croix, St. Kitts, Antigua, Montserrat, Dominica, Barbados, St. Vincent, Grenada, Trinidad, Lesser Antilles.

REMARKS.—Length 4–5 mm. The type of *A. frater* Arrow, described from St. Vincent, is in the British Museum (Natural History) in London, England. Cartwright (1964) designated the lectotype for *A. scutellaris*. Intervals of elytra shining, flat basally, apically over declivity becoming convex, the polished convexity ever narrower with alutaceous margin each side; the tenth interval is exceptional in being flat and alutaceous throughout its length. Comes to lights.

***Ataenius picinus* Harold**

*Ataenius picinus* Harold, 1867b:281.

*Ataenius duplopunctatus* Lea, 1923:6.

*Ataenius saluator* Fall, 1930:99.

*Ataenius queirozii* Paulian, 1934:219.

*Ataenius darlingtoni* Hinton, 1937:179.

*Ataenius boucomontii* Paulian, 1937:1.

*Ataenius alegrus* Balthasar, 1947:50.

*Saprosites rugosus* Richards, 1959:41.

TYPE-LOCALITY.—Chile.

LOCATION OF LECTOTYPE.—Museum National d'Histoire Naturelle, Paris, France.

SPECIMENS EXAMINED.—6.

DATES COLLECTED.—Jun, Nov.

DOMINICAN DISTRIBUTION.—Cabrit Swamp.

PREVIOUSLY RECORDED DISTRIBUTION.—Brazil,

Uruguay, Argentina, Australia, New Zealand, Fiji, New Caledonia, New Hebrides, United States.

REMARKS.—This most widely distributed of all *Ataenius* species may be recognized by its large size, length 4.7–5.5 mm, with the ninth elytral interval closely and finely punctate, the pronotal margin broken by fringe setae, and the apical setae of the hind tibiae always in a group of four. Attracted to lights. Synonymy of the various species was established by Cartwright in 1964, 1970, and 1974.

***Ataenius edwardsi* Chapin**

*Ataenius edwardsi* Chapin, 1940:26.

TYPE-LOCALITY.—Jamaica, British West Indies.

LOCATION OF TYPE.—National Museum of Natural History, Smithsonian Institution, Washington, D.C., USNM 53324.

SPECIMENS EXAMINED.—1.

DATE COLLECTED.—Apr.

DOMINICAN DISTRIBUTION.—Sylvania Estate.

PREVIOUSLY RECORDED DISTRIBUTION.—Jamaica, Hispaniola, Puerto Rico, St. Croix, Antigua, Dominica, St. Lucia, Barbados, St. Vincent, Carriacou, Grenada, Guadeloupe.

REMARKS.—Length 4–4.5 mm. Metasternum with small patch of setigerous punctations confined to posterior half of the median area. Comes to lights.

***Ataenius cribrithorax* Bates**

*Ataenius cribrithorax* Bates, 1887:95.

TYPE-LOCALITY.—Cordova, Mexico.

LOCATION OF LECTOTYPE.—British Museum (Natural History), London, England.

SPECIMENS EXAMINED.—39.

DATES COLLECTED.—Mar, Apr, Nov.

DOMINICAN DISTRIBUTION.—Grand Bay, Geneva, Roseau, Marigot.

PREVIOUSLY RECORDED DISTRIBUTION.—Mexico, Guatemala, Nicaragua, Panama, Cuba, Jamaica, St. Thomas, Virgin Islands, Martinique.

REMARKS.—Length 3.8–4 mm. Some of the specimens were collected on cow dung. Characters given in the key will differentiate this species from closely related species. Attracted to lights.

*Psammодиус**Psammодиус cameneni* Chalumeau

FIGURE 9

*Psammодиус cameneni* Chalumeau, 1976:128.

TYPE-LOCALITY.—Guadeloupe.

LOCATION OF TYPE.—Collection of F. Chalumeau, Sainte Anne, Guadeloupe, French West Indies.

SPECIMENS EXAMINED.—3.

DATE COLLECTED.—2 Mar 1964.

DOMINICAN DISTRIBUTION.—Portsmouth.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Puerto Rico.

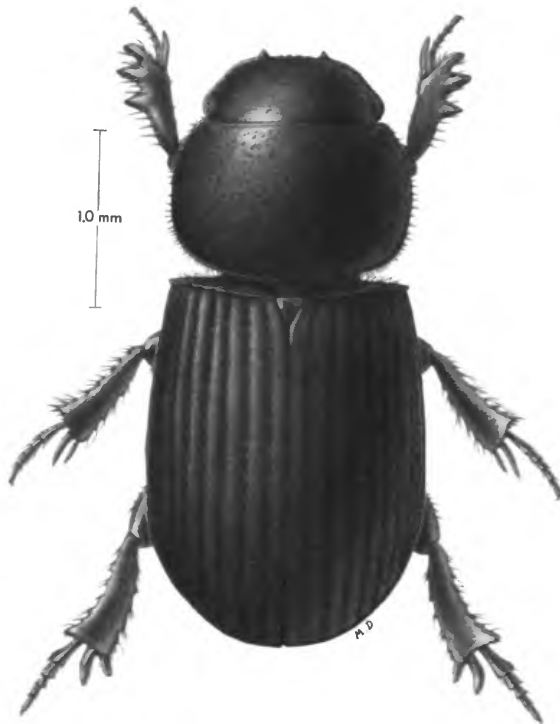
REMARKS.—Length 3.5–3.8 mm. This species will key to couplet 29 in the key given by Cartwright (1955:419). However, *P. integer* Bates from Mexico is slightly smaller and the uniformly distributed, close, fine punctations of the pronotum, though becoming very fine, extend laterally to the margin.FIGURE 9.—*Psammодиус cameneni* Chalumeau.*Psammодиус formosus* Cartwright, also from Mexico, has the pronotum smooth over the anterior third and fewer scattered punctations posteriorly. It comes to lights.*Pleurophorus**Pleurophorus parvulus* (Chevrolat)

FIGURE 10

*Psammодиус parvulus* Chevrolat, 1864:415.*Diastictus parvulus* (Chevrolat)—Schmidt, 1922:488.*Pleurophorus parvulus* (Chevrolat)—Chapin, 1940:8.

TYPE-LOCALITY.—Cuba.

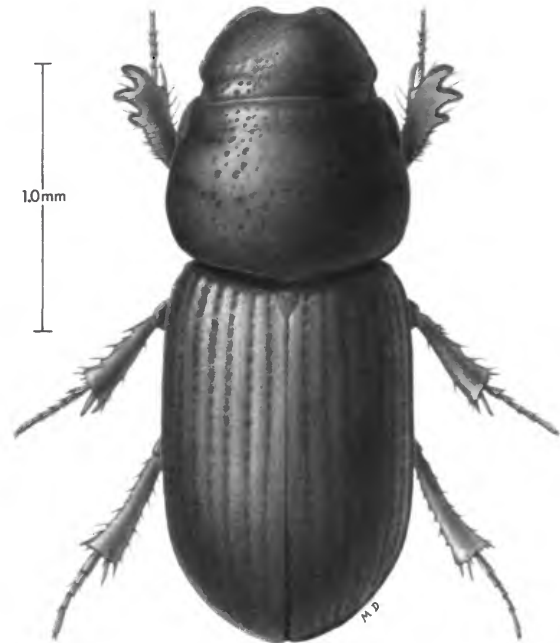
LOCATION OF TYPE.—Probably lost.

SPECIMENS EXAMINED.—1.

DATE COLLECTED.—26 Jun 1936.

DOMINICAN DISTRIBUTION.—402 m N of Boeri River, 805 m from coast.

PREVIOUSLY RECORDED DISTRIBUTION.—Cuba, Guadeloupe, St. Croix, Trinidad, Colombia, Jamaica, Dominica, St. Vincent, Grenada.

FIGURE 10.—*Pleurophorus parvulus* (Chevrolat).

REMARKS.—This smallest of all scarabs, length 1.8 mm, is a humus feeder. Cartwright (1948:135) collected a closely related species, *P. caelicollis* Cartwright, in a wash of dead leaves and sand along a mountain trail. Dr. R. E. Blackwelder (1943:594, Sta. 252) collected our only *P. parvulus* Dominican specimen "flying at dusk." In Guadeloupe *Pleurophorus parvulus* (Chevrolat) is more common and comes to lights.

This species appears similar to species of *Diasticus* but careful study led Blackwelder (1944:216) and Cartwright (1948:216) to agree with Dr. Chapin in placing it in the genus *Pleurophorus*.

### *Saprosites*

#### *Saprosites wirthi* Cartwright and Chalumeau

FIGURE 11

*S[aprosites] wirthi* Cartwright and Chalumeau, in Chalumeau, 1977b:72.

DESCRIPTION OF MALE.—Shining dark red-brown, cylindrical. Clypeus broadly, shallowly emarginate, the very finely reflexed margin broadly arcuate each side; genae similarly reflexed, barely noticeably separated from clypeus, sharply rounded, slightly more than right angles; clypeal surface closely minutely punctate anteriorly, gradually becoming more noticeably punctate upward to occipital area where the punctations are still rather fine.

Pronotum subquadrate, width 1.7 mm, length 1.2 mm, convex, laterally posterior two-thirds of the margin invisible from above; sides and posterior angles of pronotum strongly carinately margined, base with margin, surface with mixed coarse and very fine punctations, the latter evenly distributed everywhere, generally separated by about twice their diameters, except in anterior angles where they increase in size to nearly half the diameter of the intermixed large coarse punctations, the coarse punctations, scattered evenly separated by less than one to six or more diameters, are slightly larger toward the base of pronotum and absent on and from lateral callus to posterior angles.

Elytral width 1.7 mm, length 2.7 mm. Striae deep, deep punctations separated by nearly the width of the intervals; intervals convex, minutely punctate, the 4th and 5th joining at apical declivity.

Underside generally devoid of hair; mesosternum very narrow and convex between middle coxae; midline of metasternum strong, ending anteriorly in a deep pit, surface of metasternum with close minute punctations, laterally with close fine punctations, the entire surface very minutely alutaceous under high magnification ( $\times 45$ ); abdominal sternites shining, the posterior 4 bordered anteriorly with a marginal row of close coarse punctations, the first three shorter at middle than at sides, the terminal sternite one-fourth longer at middle, pygidium convex, finely punctate. Anterior femora margined in front, others without marginal lines, under high magnification surface with extremely fine microsculpture and scattered very fine punctations; anterior tibiae with three large teeth, a smaller tooth between the 2nd and 3rd and a series of decreasingly smaller teeth after the 3rd; mid-

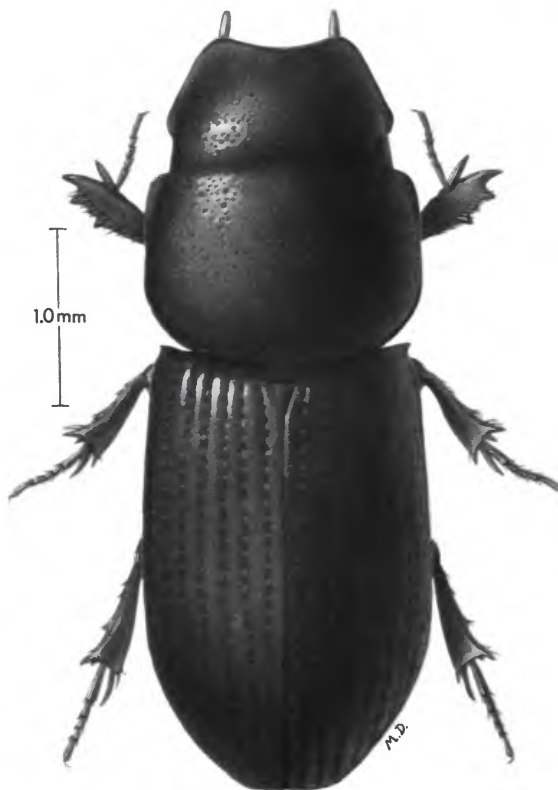


FIGURE 11.—*Saprosites wirthi* Cartwright and Chalumeau.



dle and posterior tibiae with 2 triangular teeth between the spurs and outside spine, each of the teeth with a fine hair on each side near its base; first tarsal segment as long as long spur, and shorter than the following four combined. (The 2 intermediate terminal teeth are also found in the genus *Aphotaenius*.)

**HOLOTYPE.**—Male, length 4.5 mm, width 1.7 mm.

**ALLOTYPE.**—Female, length 4.8 mm, width 1.8 mm. The only noticeable difference from the male seems to be in relative lengths of the abdominal sterna, the next to last is not shorter at middle and is about as long as the terminal.

**LOCATION OF TYPES.**—Holotype and allotype taken with larvae and pupae in decaying heart of *Euterpe* palm, 2.7 km East of Pont Cassé, Dominica, 12 Mar 1965, by W. W. Wirth. In the collection of the National Museum of Natural History, Smithsonian Institution, USNM 74070.

**REMARKS.**—The specimens are slightly larger than any other species of *Saprosite* described from the West Indies.

## ORPHNINAE

### *Aegidium dominicensis* Cartwright and Chalumeau

FIGURE 12

*A[egidium] dominicensis* Cartwright and Chalumeau, in Chalumeau, 1977b:78.

**DESCRIPTION OF MALE.**—Dark reddish brown, moderately shining. Head quadrangular; anterior clypeal margin weakly reflexed, slightly higher at middle and at broadly rounded corners which curve inward above small triangular genae, joining short lateral carina forming clypeo-frontal suture and the carina backward above each eye; surface of head slightly elevated at middle of clypeus and depressed behind clypeo-frontal sutural area, noticeably alutaceous just behind anterior clypeal margin, very finely closely punctate to shallowly moderately punctate at middle of clypeus, the larger punctations separated by about their diameter; frontal area with scattered punctations separated by one to four diameters, smoother toward base.

Pronotum 5.2 mm long, 8 mm wide, sides widely rounded from anterior angles to scarcely noticeable

posterior angles, margined sides and base coarsely crenate at sides, with short, strong setae in crenations; a strong broadly based, sharply pointed horn at middle of anterior margin, heavy, broad based, much larger lateral horns slightly recurving inward and backward, excavated under their inner anterior edges which curve downward and inward, ending about 0.8 mm from the anterior pronotal margin away from the anterior pronotal angles; middle third of pronotum depressed, the depression with distinct posterior and lateral slopes but anteriorly opening broadly to each side; surface within the depression with moderately deep, sharply arcuate punctations, separated by less than one to four times their width, elsewhere with shallow coarse scattered punctations across the base to fine punctations anteriorly; surface of lateral horns largely smooth.

Elytra 9.0 mm long, 8.0 mm wide. Elytral intervals indistinct and masked by close, coarse punctations which decrease in size posteriorly, becoming elongate over posterior third, dense and confused at apex; the coarse punctations a trifle larger at sides of elytra.

Mesosternum with close, transverse fine punctations bearing fine short hair, very narrow and concave between coxae. Metasternum with fine post-marginal line, finely punctate at middle, to gradually larger and elongate at sides; posterior coxal plates with transverse punctations forming lines which break to elongate punctations laterally. Abdominal sternites shorter at middle, with fine hair and elongate punctations; terminal sternite equal in length from side to side; pygidium with close, fine transversely elongate punctations, gradually curving around to apex. Anterior femora without marginal line, with scattered fine punctations; anterior tibiae with acuminate terminal inner tooth, four external teeth. Middle femora with posterior row of bristle-like setae and two or three coarse setae bearing punctations at knee. Posterior femora with scattered fine to moderate punctations, post femoral line over half femoral length from knee; posterior tibiae closely moderately punctate on flat inner face, terminal edge slightly less than half as long as outside edge; tarsus placed between spurs, first tarsal segment subequal to short spur, and to following three segments combined; long spur equal to combined lengths of first two tarsal segments. (See Figure 12 for genitalia.)

**HOLOTYPE.**—Male, length 15 mm, width 8 mm.



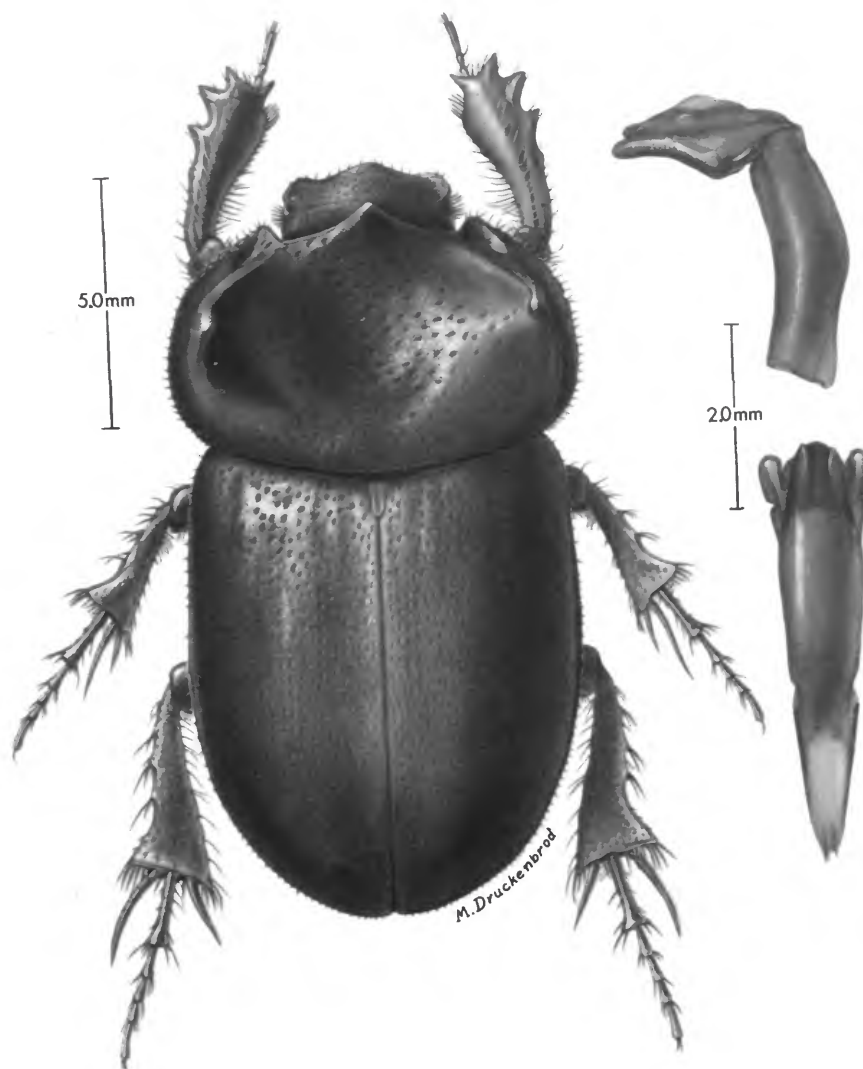


FIGURE 12.—*Aegidium dominicensis* Cartwright and Chalumeau, with genitalia.

ALLOTYPE.—Female, length 13 mm, width 6 mm. Differs from male in having pronotum convex with a barely visible depressed longitudinal midline and rather dense moderately coarse evenly spaced punctations throughout. The abdominal sternites are equal in length from side to side except for the terminal sternite which is slightly longer at middle.

Variation in the males is toward the female char-

acters, the horns decrease in size, the depressed areas fill and the punctations of the pronotum increase in size and number. The smallest of five males is 11 mm in length, the smallest of three females, 12 mm.

LOCATION OF TYPES.—Holotype collected at Morne Nicholls, Dominica, 9 Nov 1964, by P. J. Spangler; USNM 74069, National Museum of Natu-

ral History, Smithsonian Institution. Allotype female taken 1.8 km E of Pont Cassé, 18 Aug 1964, T. J. Spilman, in banana trash (USNM). Six paratypes all from Dominica, 2 ♀ from Fond Figues, 21 Nov 1964, P. J. Spangler (FC, USNM); 1 ♂ 2.4 km E of Pont Cassé, 5 Sep 1965, in fallen banana stem, D. M. Anderson (USNM); 1 ♂ 1.8 km E of Pont Cassé, 18 Aug 1964, in banana trash, T. J. Spilman (USNM); 1 ♂ Pont Cassé, 23–27 Oct 1966, A. B. Gurney (USNM); 1 ♂, 2.4 km E of Pont Cassé, 9 Sep 1965, in rotting banana trunks, D. M. Anderson (USNM). Paratypes in collections of National Museum of Natural History and F. Chalumeau.

REMARKS.—Superficially this species closely resembles *Aegidium asperatum* Borre (1886:25) from Panama and Nicaragua but it differs in the coarse, round punctations laterally on the elytra, the central pronotal depression of the male does not reach

the posterior margin, the elytra lack distinct ridges, the hind tibiae extend further laterally at apex, and the genitalia is different. In *A. asperatum* Borre the elytra are finely punctate laterally with elongate punctations, the central pronotal depression reaches the base widely, the elytra have distinct ridges, in fully developed males the apical width of the hind tibiae is about half its length, in *A. dominicensis* the apical width is less than one-third its length, and the aedeagus is different.

The fully developed male of *A. dominicensis* differs from that of *A. parvulum* Westwood (1846:174) in having less developed elytral costae, more evenly distributed elytral punctations and deeper more noticeable depressions in the anterior pronotal angles. In *A. parvulum* the more elongate punctations on the disc of the elytra are very much closer together.

## MELOLONTHINAE

### *Phyllophaga*

#### Key to the Species

- Over 13.5 mm in length; color dark brown; tarsal claws toothed at middle.....  
 .....*P.(Cnemarachis) dominicensis* Cartwright and Chalumeau  
 Less than 11.5 mm in length; color yellowish; tarsal claws cleft apically .....  
 .....*P.(Cnemarachis) cambeforti* Cartwright and Chalumeau

### *Phyllophaga (Cnemarachis) dominicensis* Cartwright and Chalumeau

FIGURES 4e, 13a,b

*Phyllophaga dominicensis* Cartwright and Chalumeau, in Chalumeau, 1977b:102.

DESCRIPTION OF MALE.—Color reddish brown, head and pronotum darker, more shining than elytra. Vertex of head smooth; front convex; punctations coarse, umbilicate, deep, scattered anteriorly and closer posteriorly; with a longitudinal median depression; clypeo-frontal suture sinuate, deep and well defined; clypeal punctations coarse, deep, and umbilicate; anterior margin reflexed, emarginate at middle, rounded each side.

Pronotum convex,  $\frac{1}{3}$  wider than long, fine perimarginal groove, lateral margins finely crenulate, basal margin slightly bisinuate, lateral margins slightly sinuate outward over anterior third; surface moderately coarsely punctate, the punctations um-

bilicate, closely but irregularly spaced, generally separated by one diameter or less on disc, slightly finer and closer anteriorly and basally.

Scutellum with scattered fine umbilicate punctations, closer toward sides.

Elytra with fine umbilicate punctations, closer in area near scutellum where they are separated by one to three times their diameter, gradually more widely separated posteriorly and laterally until generally separated by four to six times their diameter. Sutural interval noticeably elevated its entire length, with scattered fine punctations in a more or less irregular line lengthwise.

Apical process of prosternum with long diverging teeth, some scattered setae. Abdominal sterna connate, very convex; the four anterior sterna with scattered fine punctations at middle, gradually more numerous and coarser at sides, many with fine setae; 5th sternum with numerous punctations along anterior edge bearing very long fine hairs half the

length of the sternum. Propygidium set with somewhat cuneiform, rather close umbilicate punctations bearing rather long setae, the interval between them finely shagreened; a narrow impunctate band at base, which becomes gradually broader toward sides. Pygidium cone-shaped, apex subtruncate, slightly convex, with some punctations bearing short setae. Tarsi as long or longer than tibiae. Tarsal claw toothed at middle. The remarkably complex aedeagus is shown in Figure 13a.

**HOLOTYPE.**—Male, length 14 mm.

**ALLOTYPE.**—Female, length 14 mm; differs from male in having coarser, closer elytral punctation and in being quite shiny as compared to the dull, much less shiny elytra of the male.

**LOCATION OF TYPES.**—Holotype collected at St. Joseph (Layout), 23 May 1973, F. Chalumeau; in collection of F. Chalumeau. Allotype: Clarke Hall, 10 Feb 1965, J. F. G. and Thelma M. Clarke (FC). Paratypes as follows: (3) St. Joseph (Layout), 21, 23 May 1973, 22 May 1974, F. Chalumeau (FC); (1) Pont Cassé, 22 May 1974, F. Chalumeau (FC); (19) Bellevue (Chopin), 22 May 1973, F. Chalumeau (FC); (16) 0.8 km W to 8 km E, Pont Cassé, 8 Apr to 27 Jul 1964, O. S. Flint Jr. (USNM); (1) Fond Figes, May 1965, O. S. Flint, Jr. (USNM); (7) Sylvania Estate, 28 Jan 1965, J. F. G. and Thelma M. Clarke (USNM); (14) 1.9 km E to 1.6 km W,

Pont Cassé, 27, 29, 31 Jan 1965, J. F. G. and Thelma M. Clarke (USNM); (1) S. Chiltern, 8 Dec 1964, P. J. Spangler (USNM); (3) Syndicate Estate, at light, 5 Mar 1964, Dale F. Bray (USNM); (3) 1.6 km W, Pt. Lolo, 31 Jan 1965, J. F. G. and Thelma M. Clarke (USNM); (1) Clarke Hall, 5 Oct 1964, P. J. Spangler (USNM); (1) Clarke Hall, 13 Jan 1965, J. F. G. and Thelma M. Clarke (USNM); (2) 8 km W, Pt. Lolo, 25 Jan 1965, J. F. G. and Thelma M. Clarke (USNM); (45) 6.4 km W, Pt. Lolo, 19 Feb 1965, J. F. G. and Thelma M. Clarke (USNM); (14) Antrim, 10–18 Mar 1956, J. F. G. Clarke (USNM); (7) D'leau Gommier, 17 Mar 1965, J. F. G. Clarke (USNM); (3) 8 km W, Pt. Lolo, 25 Jan 1965, at light, W. W. Wirth (USNM); (1) Fond Figes, 6 Apr 1964, O. S. Flint, Jr. (USNM); (1) Central Forest Res., 30 Nov 1964, Bell and Bell (USNM); (1) Laudat, 3 Jan 19?? (USNM); (8) Roseau, at light, 22–31 Jan 1968, B. Malkin (Field Museum); (8) Bataka, 30 Jan 1968, B. Malkin (Field Museum).

**REMARKS.**—The specimens vary from 13.5 to 14.5 mm in length. Numerous specimens have the apical declivity darker in color. The ecology of the species is unknown. It is a common species attracted to lights.

Lawrence W. Saylor (1942:157–165) erected the genus *Cnemarachis* for West Indian species of *Phyllophaga* with claws toothed rather than cleft and

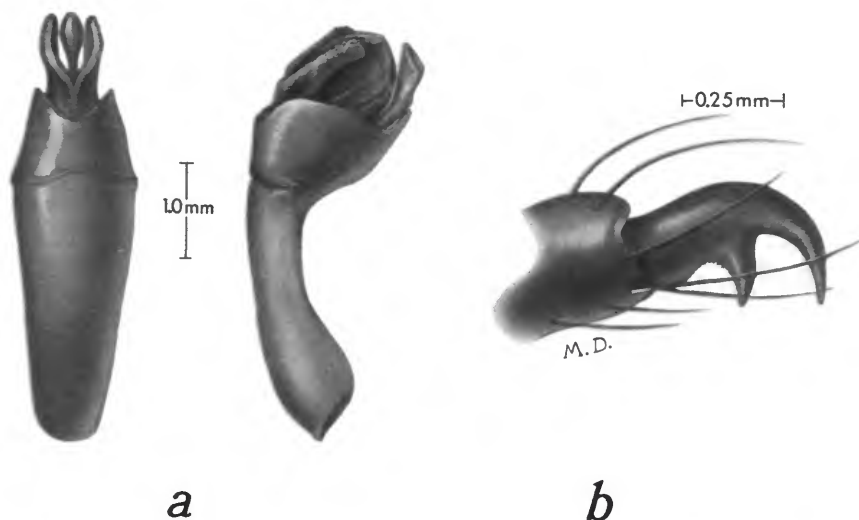


FIGURE 13.—*Phyllophaga dominicensis* Cartwright and Chalumeau: a, genitalia; b, claw.

with other minor differences; however, we agree with Sanderson (1951:249-250) in accepting the name with no more than subgeneric rank.

*Phyllophaga (Cnemarachis) cambeforti*  
Cartwright and Chalumeau

FIGURES 4f, 14a,b

*Phyllophaga* *cambeforti* Cartwright and Chalumeau, in Chalumeau, 1977b:92.

**DESCRIPTION OF MALE.**—Color light yellowish brown; head, pronotum, antennae and legs darker. Vertex of head smooth; front very convex, coarsely punctate, the punctations deep, scattered anteriorly, close posteriorly and in the short longitudinal median groove; clypeo-frontal suture sinuate, well defined, separating clypeus from front by a deep transverse groove; clypeal punctations coarse and close, anterior margin reflexed, with broad shallow median emargination, rounded each side.

Pronotum convex, punctations moderately coarse, rather close on the disc where they are separated by one or two diameters, close, finer anteriorly, slightly more scattered posteriorly and laterally; pronotum twice as wide as long, barely bisinuate at base, slightly more so at apex, lateral margins sinuate outward in apical half, convergent in basal half, edges strongly crenulate.

Scutellum with moderately coarse scattered punctations.

Elytra rather finely and closely punctate on disc and posterior, still finer and closer laterally, sparse on apical declivity. Sutural interval raised its entire length, some sparse median punctations posteriorly from basal quarter.

Apical process of prosternum with long diverging teeth, some scattered setae. Abdominal sterna connate and convex; the 4 anterior sterna with shallow, rather coarse, setigerous, well separated punctation at middle, deeper and coarser at sides; 5th sterna with closer, more numerous punctations with scattered very long hairs anteriorly. Propygidium with rather coarse, scattered, punctation, shagreened between the punctations; a narrow impunctate band along the base becomes gradually broader laterally. Pygidium cone-shaped, slightly convex, with coarse shallow punctation, the punctations separated on average by one or two diameters, the interval between them delicately alutaceous. Tarsal claws cleft at apex. The aedeagus is shown in Figure 14a.

**HOLOTYPE.**—Male, length 11 mm, width 5 mm.

**ALLOTYPE.**—The female has a shorter antennal club and more convex abdomen. It measures 10.5 mm in length, 4.5 mm in width.

**LOCATION OF TYPES.**—Holotype collected at St.

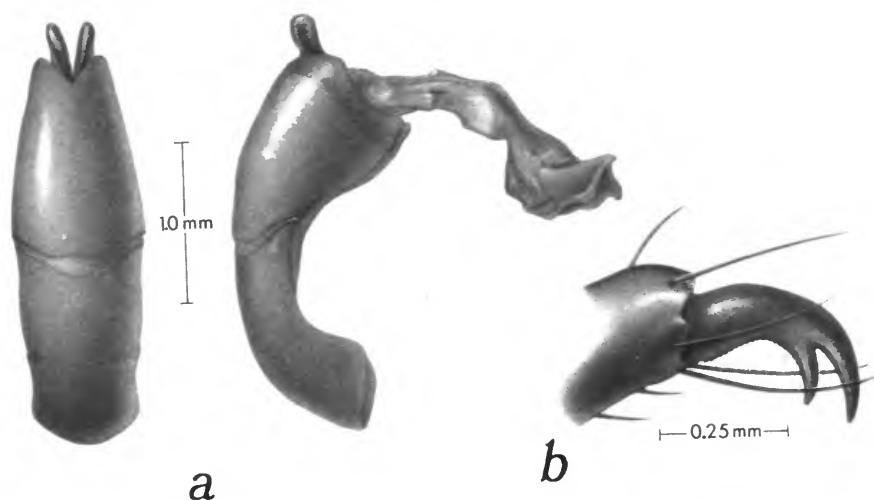


FIGURE 14.—*Phyllophaga cambeforti* Cartwright and Chalumeau: a, genitalia; b, claw.

Joseph (Layout), 23 May 1973, F. Chalumeau; in Chalumeau collection. Allotype collected at Grande Savane, 1 Jul 1964, T. J. Spilman (FC). Paratypes, 51 as follows: (5) Roseau, 22 Jun 1937, Chester Roys (FC); (1) St. Joseph (Layout), 15 Apr 1973, Gruner (FC); (4) St. Joseph (Layout), 21 23 May 1973, F. Chalumeau (FC); (28) Grande Savane, 13, 14, 20 May 1964, 14 Jun 1964, J. F. G. and Thelma M. Clarke (USNM); (10) Grande Savane, 1 Jul 1964, T. J. Spilman (USNM); (1) Springfield Estate, 1 Jun 1965, D. R. Davis (USNM); (1) Clarke Hall, 1-10 May 1964, J. F. G. and Thelma M. Clarke (USNM);

(1) Cabrit Swamp, 18 Jun 1964, J. F. G. and Thelma M. Clarke (USNM). Paratypes in collections of F. Chalumeau, National Museum of Natural History, Smithsonian Institution, and Centre de Recherches Agronomiques des Antilles-Guyane in Duclos, Guadeloupe.

REMARKS.—This species varies from 10 to 11.5 mm in length. It is close to *P. blackwelderi* Saylor (1940:309) from St. Lucia, and *P. patrueloides* Paulian (1947:56) from Guadeloupe. Not common; adults are attracted to lights; its ecology is unknown.

## RUTELINAE

### Key to the Genera

1. Scutellum very large, reaching middle of elytra ..... *Macraspis*  
Scutellum about one-fourth length of elytra ..... 2
2. All internal claws cleft at apex; pronotum short, less than half the width ..... *Leucothyreus*  
Only first two pairs of internal claws cleft at apex; pronotum normal, length more than half its width ..... *Anomala*

### *Macraspis*

#### *Macraspis tristis* Castelnau

FIGURE 15b

*Macraspis tristis* Castelnau, 1840:117.

TYPE-LOCALITY.—Guadeloupe.

LOCATION OF TYPE.—Possibly in Museum d'Histoire Naturelle, Paris, but Dr. A. Descarpentries writes that the Guadeloupe labels of *M. tristis* are not in handwriting of Castelnau.

SPECIMENS EXAMINED.—21.

DATES COLLECTED.—Mar, May, Jun, Jul.

DOMINICAN DISTRIBUTION.—Clarke Hall, Springfield Estate, Portsmouth, St. Andrew.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Dominica.

REMARKS.—Length 23-25 mm. This large, approximately 2.5 cm long, shining, black scarab beetle with very large noticeable scutellum resembles no other Dominican beetle. It is attracted to flowers of *Poinciana regia* Bojer (flametree). The larvae are found in various decaying trees up to 900 m above sea level.

### *Leucothyreus*

#### *Leucothyreus guadulpiensis* Burmeister

FIGURE 4h

*Leucothyreus guadulpiensis* Burmeister, 1844:501.

TYPE-LOCALITY.—Guadeloupe.

LOCATION OF TYPE.—Possibly in the Institut des Martin-Luther Universität, Halle.

SPECIMEN EXAMINED.—144.

DATES COLLECTED.—Every month except Aug, Sep, Dec.

DOMINICAN DISTRIBUTION.—Pont Cassé, Grand Bay, 8 km W Pt. Lolo, Fond Figue, Springfield Estate, Trafalgar Falls 366 m [1200 ft], Chiltern, W. Cabrit, Bagatelle, Bellevue (Chopin), Belle-Fille.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe.

REMARKS.—Easily recognized by the size, average 10 mm, color dark reddish black, prominent eyes, semicircular clypeus, and especially by the pronotum being more than twice as wide as long. The adults fed on citrus leaves at night. Chalumeau and Gruner (1976:107-110) compare this species with other closely related Antillean species of *Leucothyreus*.



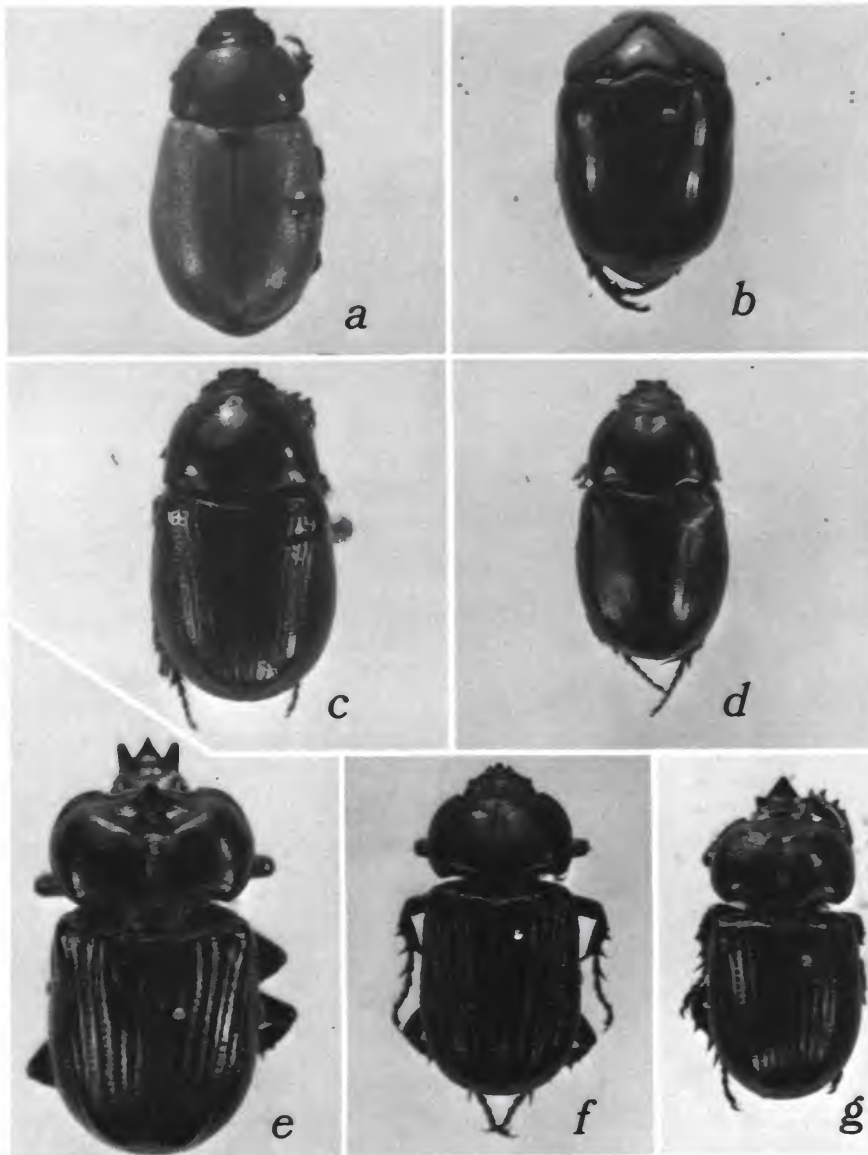


FIGURE 15.—Scarabaeidae: a, *Cyclocephala melanocephala rubiginosa* Burmeister; b, *Macraspis tristis* Castelnau; c, *Ligyris cuniculus* (Fabricius); d, *Ligyris ebenus* (DeGeer); e, *Phileurus didymus* (Linnaeus); f, *Phileurus valgus antillarum* Prell; g, *Homophileurus quadrituberculatus* (Palisot de Beauvois).

*Anomala**Anomala insularis* (Castelnau)

FIGURE 4g

*Euchlora insularis* Castelnau, 1840:136.*Anomala insularis* (Castelnau).—Burmeister, 1844:538.

TYPE-LOCALITY.—Saint-Domingue.

LOCATION OF TYPE.—Unknown.

SPECIMENS EXAMINED.—18.

DATES COLLECTED.—Jan, Feb, Mar, Apr, May,  
Jun.DOMINICAN DISTRIBUTION.—Clarke Hall, 8 km W  
Pt. Lolo, Pont Cassé, Syndicate Estate, Springfield  
Estate, Sylvania.PREVIOUSLY RECORDED DISTRIBUTION.—Saint-Domingue,  
Guadeloupe, Martinique, Marie-Galante.REMARKS.—In addition to characters given in the  
key to genera, the species is of moderate size for an  
*Anomala*, 12 to 15 mm in length, and normally  
shows variable amounts of yellow color on sides  
and base of pronotum, plus yellowish brown areas  
or streaks lengthwise on the elytra. The larvae have  
been collected in decaying bread fruit (*Artocarpus  
incisa* L.) and mangos (*Mangifera indica* L.).

## DYNASTINAE

## Key to the Tribes and Species

1. Head and pronotum in both sexes unarmed, without tubercles, carinae, or horns and never depressed or foveate (Cyclocephalini) .....2  
Head and/or pronotum, at least in the male, with tubercles, carinae, horns or depressed or foveate .....3
2. Bicolored species; dark red-brown pronotum contrasting with lighter yellowish elytra; pronotum and elytra without markings; clypeus not densely sculptured .....  
.....*Cyclocephala melanocephala rubiginosa* Burmeister  
Unicolorous species; pronotum usually with two dark spots, elytra with traces of spots or lines; clypeus densely rugose-punctate .....  
.....*Cyclocephala tridentata dominicensis* Cartwright and Chalumeau
3. Very large species, over 50 mm in length; male glabrous; with long, head and pronotal horns, one above the other; female without horns, closely roughly punctate, pronotum densely covered with short brownish hair (Dynastini) .....  
.....*Dynastes hercules hercules* (Linnaeus)  
Species less than 50 mm in length; other characters not as above .....4
4. Clypeus truncate or broadly rounded at middle (Oryctini) .....5  
Clypeus sharply acuminate at middle (Phileurini) .....7
5. Large species, 35 mm or more in length; males with 3 long slender pronotal horns.....  
.....*Strategus verrilli* Ratcliffe  
Smaller species, not more than 30 mm in length; males without long slender pronotal horns .....6
6. Large size, 25 to 30 mm in length; hind tibiae with terminal fringe of 6 setae .....  
.....*Ligyris ebemus* (DeGeer)  
Moderate size, 14 to 20 mm in length; hind tibiae with terminal fringe of 16 setae .....  
.....*Ligyris cuniculus* (Fabricius)
7. Size large, 45 mm in length; pronotum with strong median anterior tubercle; apex of hind tibia with one tooth at outside angle .....*Phileurus didymus* (Linnaeus)  
Size smaller, 36 mm or less in length; median anterior pronotal tubercle weak or absent; apex of hind tibia with more than one apical tooth .....8
8. Size 36 mm in length; Pronotum with a transverse row of four tubercles at top of anterior declivity; apex of hind tibia with three teeth .....  
.....*Homophileurus quadrituberculatus* Chevrolat  
Size 25 mm or less in length; pronotum without transverse row of tubercles; apex of hind tibia different .....9
9. Pronotum with median longitudinal groove behind an anterior tubercle .....  
.....*Phileurus valgus antillarum* Prell  
Pronotum with median longitudinal groove but lacking the anterior tubercle .....  
.....*Hemiphileurus laeviceps* Arrow

## CYCLOCEPHALINI

*Cyclocephala melanocephala rubiginosa*  
Burmeister

FIGURE 15a

*Cyclocephala melanocephala rubiginosa* Burmeister, 1847:59.  
*Melolontha melanocephala* Fabricius, 1775:36.  
*Cyclocephala melanocephala* (Fabricius)—Latreille, 1829:552.

TYPE-LOCALITY.—Martinique.

LOCATION OF TYPE.—Probably lost.

SPECIMENS EXAMINED.—85.

DATES COLLECTED.—Every month except Aug and Sep.

DOMINICAN DISTRIBUTION.—Cabrit Swamp, Clarke Hall, Fond Figues, Grand Bay, Mouth of Layou River, Macoucheri, Pont Cassé, Portsmouth, St. Joseph (Layout).

PREVIOUSLY RECORDED DISTRIBUTION.—Martinique, Guadeloupe.

REMARKS.—The length, 9–14 mm, averages smaller than *C. melanocephala*. The type of *M. melanocephala* Fabricius is in the Banks collection, British Museum (Natural History) and its type-locality is Brazil. Usually the reddish pronotum contrasting with yellowish elytra will identify this subspecies. Attracted to lights. Endrödi (1966) monographed the Cyclocephalini.*Cyclocephala tridentata dominicensis*  
Cartwright and Chalumeau

FIGURE 4i

[*Cyclocephala*] *tridentata* *dominicensis* Cartwright and  
 Chalumeau, in Chalumeau, 1977b:135.

DESCRIPTION.—Color yellowish brown, shining; base of head and two rectangular discal spots on pronotum dark brown, the spots separated by a narrow longitudinal line of the general color of the remainder of the pronotum. This subspecies differs from typical *tridentata* as follows: body broader and longer on average, general color darker, pronotum less convex with darker and more regular spots, elytral punctuation finer and more scattered, and the parameres of the aedeagus slightly more elongated with the sinuosity in lateral view barely more noticeable.

HOLOTYPE.—Male, length 14 mm, width 8.0 mm.

ALLOTYPE.—Female, length 13.5 mm, width 8.0 mm.

LOCATION OF TYPES.—Holotype collected at Belle Fille, Dominica, 26 Feb 1974, F. Chalumeau, in collection of F. Chalumeau. Allotype collected at Geneva, Dominica, 22 May, F. Chalumeau, in collection of F. Chalumeau. Paratypes: (1) Geneva, 22 May 1973, F. Chalumeau (FC); (1) Bellevue (Chopin), 22 May 1973, F. Chalumeau (FC); (1) St. Paul, 5 Aug 1973, Cambefort (FC); (1) Belle Fille, 25 Feb 1974, F. Chalumeau (FC); (1) St. Joseph (Layout), 25 Feb 1974, F. Chalumeau (FC); (1) Pont Cassé, 24 Feb 1974, F. Chalumeau (FC); (14) Clarke Hall, 29 Jan 1964, H. H. Hobbs, Jr. (USNM); (50) Antrim, 305 m, 11 Mar 1956, J.F.G. Clarke (USNM). Paratypes in collections of F. Chalumeau, National Museum of Natural History, Smithsonian Institution, and Centre de Recherches Agronomiques de Antilles-Guyane in Duclos, Guadeloupe.

REMARKS.—Specimens vary in length from 8.6 to 14.0 mm. Over 1500 specimens have been collected in every month of the year except August. Among the localities not listed for the designated paratypes are: Cabrit Swamp, Castle Bruce, Freshwater Lake, Fond Figues, D'leau Gommier, Grand Bay, La Plaine, Layout, Macoucheri, Mouth of Layou River, Pt. Lolo, Portsmouth, Soufrière, S. Chiltern, Springfield Estate, Sylvania Estate, Syndicate Estate, and Trafalgar Falls. In Guadeloupe it is a pest of sugar-cane, eating the roots of the plants.

The lectotype of *C. tridentata* Fabricius is in the Zoologische Museum der Universität in Copenhagen, Denmark.

## DYNASTINI

*Dynastes hercules hercules* (Linnaeus)

FIGURE 2c,d

*Scarabaeus hercules* Linnaeus, 1758:345.*Dynastes hercules* (Linnaeus).—Kirby 1825:566.*Dynastes hercules hercules* (Linnaeus).—Ohaus, 1913:131.*Dynastes lagaii* Verrill, 1906:318.*Dynastes vulcan* Verrill, 1906:319.

TYPE-LOCALITY.—“Habitat in America.”

LOCATION OF TYPE.—Lectotype by Chalumeau in Linnaean Society, London, England.

SPECIMENS EXAMINED.—10.

DATES COLLECTED.—Jan, Feb, Apr, May, Aug, Nov.

DOMINICAN DISTRIBUTION.—Coulihaut Forest, Clarke Hall, Pont Cassé, Fresh Water Lake, St. Joseph (Layout).

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Dominica.

REMARKS.—This is by far the largest beetle found on Dominica and one of the largest scarab beetles in the world. A fully developed male, including the pronotal horn will measure up to 175 mm (over 6¾ in) in length. The female lacks the pronotal horn, averages about 65 mm in length, and the pronotum and elytra are covered by short brownish pile. The elytra of the male are olive green and glabrous.

The species is attracted to lights and is rather common. Gruner and Chalumeau (1978) have studied the biology in Guadeloupe. The larvae are found in decaying trees, quite often in decaying trunks of "Gommier blanc" (*Dacryodes excelsa* Vahl) and "Paletuvier gris" (*Amanoa caribaea* Krug and Urban), the life cycle requiring 13 to 24 months. The adult male is capable of changing the olive green color of the elytra to black within a few minutes. Hinton and Jarman (1972, 1973) reported this is brought about by injecting water into the spongy layer of the cuticle.

It is interesting that North American species of the same genus have the same ability to change color. A common legend is believed in both places also. Natives in Dominica say that the adult males, the "Scieur-de Bois" (wood-sawyer), grasp limbs up to 20 cm in diameter between the horns of the head and pronotum and cut them off by flying round and round. They point to the sawed branches of "Pois doux" (*Inga* sp.), which they find in the forest, not realizing the female Cerambycid beetle, *Oncideres amputator* (Fabricius), lays its eggs in the branch and then saws it off with its mandibles. Cartwright heard the same legend concerning *Dynastis tityus* L. while working in South Carolina. The real culprit was *Oncideres cingulatus* (Say).

## ORYCTINI

### *Strategus verrilli* Ratcliffe

*Strategus verrilli* Ratcliffe, 1976:157.

*Strategus tricornis* sensu Verrilli, 1906:317 [not Jablonsky].

*Strategus vulcanus* sensu Arrow, 1911:151 [not Fabricius].

TYPE-LOCALITY.—Dominica.

LOCATION OF TYPE.—Lost or destroyed.

SPECIMENS EXAMINED.—None.

DATES COLLECTED.—Unknown.

REMARKS.—Dr. Ratcliffe gives a summary of about all that is known concerning this species. We have seen no specimens. The male of the species has three long, slender pronotal horns. Its length was given by the describer as 1.45 inches (3.68 cm) exclusive of horns.

In Guadeloupe, *Strategus syphax* (Fabricius), which is perhaps the same taxon as the Ratcliffe species, came to lights from July to October. Its larvae have a saprophytic diet and have been taken by Chalumeau in decaying trunks of *Tabebuia pallida* Myers and in dung-compost.

### *Ligyris ebenus* (DeGeer)

FIGURE 15d

*Scarabaeus ebenus* DeGeer, 1774:317.

*Ligyris ebenus* (DeGeer).—Bates, 1888:318.

TYPE-LOCALITY.—Surinam.

LOCATION OF LECTOTYPE.—In Institut für Spezielle Zoologie und Zoologisches Museum, Berlin. Selected by Endrödi, 1969:52.

SPECIMENS EXAMINED.—5.

DATES COLLECTED.—Apr, Jul.

DOMINICAN DISTRIBUTION.—Clarke Hall, St. Andrew.

PREVIOUSLY RECORDED DISTRIBUTION.—Surinam, Guadeloupe, Martinique, Marie-Galante, Saint-Martin, Saint-Dominique, Mexico, Colombia, Venezuela, Brazil, Guayana.

REMARKS.—Length 25–30 mm. The genus *Ligyris* may be recognized by a shallow pit at middle of anterior margin of the pronotum. This plus size and the characters given in the key will determine the species. Larvae feed on tubers of various species of Dioscoreaceae and Convolvulaceae. In small gardens the damage may be important.

Apparently Blackwelder (1957:995) and Endrödi (1969:51) were both in error in stating that Burmeister (1847:524) placed *Scarabaeus ebenus* De Geer in the genus *Ligyris*. The first record of such action that we have found was Bates (1888:318).

*Ligyris cuniculus* (Fabricius)

FIGURE 15c

*Geotrupes cuniculus* Fabricius, 1801:20.*Ligyris cuniculus* (Fabricius).—Saylor, 1946:42.

TYPE-LOCALITY.—“Habitat in America.”

LOCATION OF TYPE.—Zoology Museum, Kiel, Germany. (Lectotype by Landin in Cartwright, 1959:517).

SPECIMENS EXAMINED.—82.

DATES COLLECTED.—All months except Mar, Apr, and Dec.

DOMINICAN DISTRIBUTION.—Clarke Hall, Grand Savane, mouth of Layou River, Cabrit Swamp, Roseau, Portsmouth.

PREVIOUSLY RECORDED DISTRIBUTION.—Cuba, St. Thomas, Jamaica, Haiti, Puerto Rico, Bahama Islands, Brazil, Trinidad, French Guayana, Guadeloupe, St. Vincent, Barbados, Bermuda, United States, Martinique, St. Martin, St. Berthelémy, Marie-Galante, Le Sainte, La Désirade.

REMARKS.—Length 14–20 mm. This is a common West Indian species. A full discussion concerning this and other *Ligyris* is given by Endrödi (1969:39). Especially on Guadeloupe and Martinique *L. cuniculus* is a pest of sugar-cane, eating the young plants. Where sugar-cane is not grown, its diet is saprophytic or coprophagous (Chalumeau and Gruner, 1977).

## PHILEURINI

*Phileurus didymus* (Linnaeus)

FIGURE 15e

*Scarabaeus didymus* Linnaeus, 1758:347.*Phileurus didymus* (Linnaeus).—Latreille, 1807:103.

TYPE-LOCALITY.—“Habitat in America.”

LOCATION OF LECTOTYPE.—May be in collection of Ludovica Ulrica, Uppsala, Sweden (Landin, 1956:7).

SPECIMENS EXAMINED.—2.

DATES COLLECTED.—Jun, Aug.

DOMINICAN DISTRIBUTION.—Clarke Hall.

PREVIOUSLY RECORDED DISTRIBUTION.—Mexico, Guatemala, Nicaragua, Costa Rica, Colombia, Trinidad, Brazil, Ecuador, Peru, Puerto Rico, Dominica, St. Vincent, Grenada, Guadeloupe.

REMARKS.—This is the largest Dominican *Phi-**leurus*, 45 mm in length. The hind tibiae have a single apical tooth at the outside angle. Larvae are found in decaying palm trees.*Phileurus valgus antillarum* Prell

FIGURE 15f

*Phileurus valgus antillarum* Prell, 1912:179.

TYPE-LOCALITY.—Guadeloupe.

LOCATION OF TYPE.—Unknown.

SPECIMENS EXAMINED.—3.

DATES COLLECTED.—Jul, Aug, Oct.

DOMINICAN DISTRIBUTION.—Clarke Hall, E. Pont Cassé, Springfield Estate.

PREVIOUSLY RECORDED DISTRIBUTION.—Guadeloupe, Venezuela, Désirade, Cuba, Saint Martin, Martinique, Saint-Barthelémy.

REMARKS.—Length 17–25 mm. Distinguishing characters are given in the key. Larvae and adults were collected in decaying “Pois-doux” (*Inga* sp.)*Homophileurus quadrituberculatus*  
(Palisot de Beauvois)

FIGURE 15g

*Scarabaeus quadrituberculatus* Palisot de Beauvois, 1806:42.*Homophileurus quadrituberculatus* (Palisot de Beauvois).—Kolbe, 1910:341.

TYPE-LOCALITY.—St. Domingue.

LOCATION OF TYPE.—Unknown.

SPECIMENS EXAMINED.—1.

DATA COLLECTED.—26 Feb, J.F.G. and Thelma M. Clarke.

DOMINICAN DISTRIBUTION.—Macoucheri.

PREVIOUSLY RECORDED DISTRIBUTION.—Honduras, Nicaragua, Costa Rica, Guiana, Brazil, Ecuador, Bolivia, Cuba, Puerto Rico, Grenada, Hispaniola.

REMARKS.—The four tubercles in a transverse row across the pronotum will identify this species. In addition the apex of the hind tibia has three teeth. It is 36 mm in length, the second largest Dominican species.

*Hemiphileurus laeviceps* Arrow

FIGURE 16a-c

*Hemiphileurus laeviceps* Arrow, 1947:222.*Ep[iphileurus] gysini* Cartwright and Chalumeau, in Chalumeau, 1977b:152.



**DESCRIPTION OF MALE.**—Shining, dark reddish black. Clypeus with median, rather sharp, high, anterior tubercle from which four distinct carinae extend backward, enclosing three smooth, shining concave areas, the two inner carinae extending back to the inner bases of two strong, blunt, slightly recurved horns, the two outside carinae curving gently upward to sharp angles forming the anterior limit of wide lateral notches anterior to the semi-circular genae; the outside carinae outline a narrow concave clypeal margin just above the mandibles; base of head deeply, smoothly excavated behind the horns, a few fine to moderate punctations back and around base of the horns; the horns are twice as far apart as the distance from horn to genal notch.

Pronotum 9.0 mm wide, 6.0 mm long, convex, anterior angles acute, posterior angles broadly rounded, finely margined all around, surface with scattered fine to moderate punctations, a little closer and finer anteriorly and laterally, a trifle coarser and closer in median, shallow, longitudinal depressed line over basal two-thirds.

Elytra 12 mm long, 10 mm wide. Shoulders smooth, impunctate; intervals noticeably convex, striae deep, coarsely annularly punctate, striae 3, 4, and 5 ending apically in a smooth callosity. Scutellum smooth.

Prosternal postcoxal process high, apically flattened, smooth, triangular, slightly convex in middle; the posterior angle of the triangle with a separating suture. Mesosternum smooth and shiny

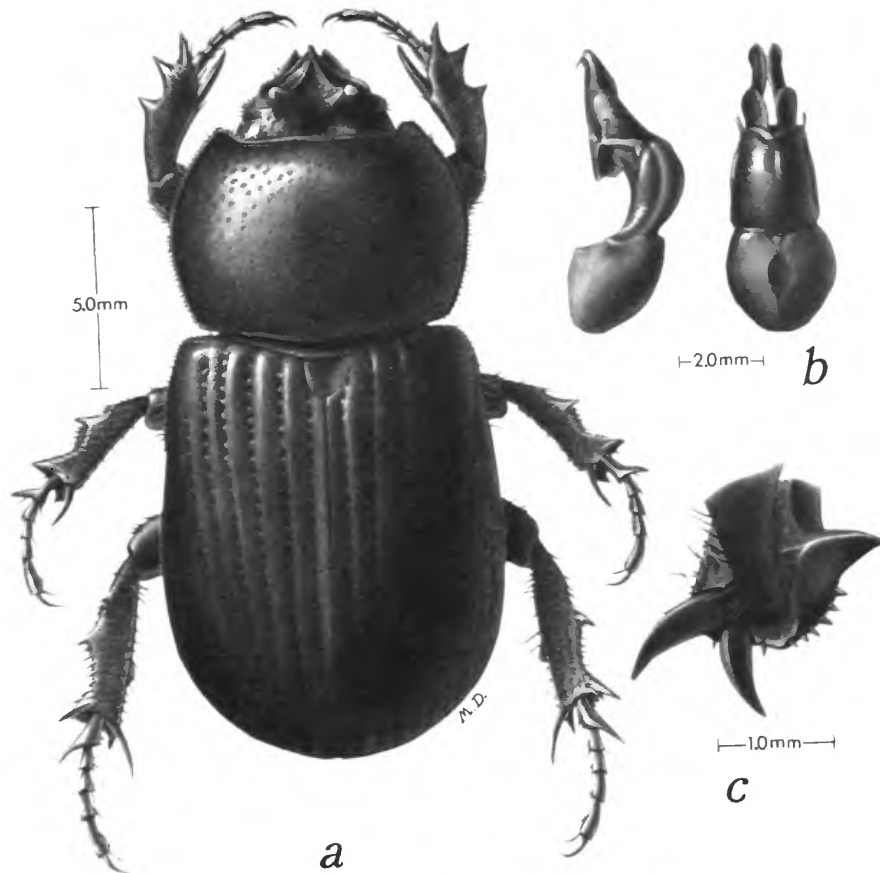


FIGURE 16.—*Hemiphileurus laeviceps* Arrow: a, whole specimen; b, genitalia; c, end view of posterior tibia.

at middle, closely punctate anteriorly with short decumbent hair. Metasternum smooth, shining at middle with fine longitudinal midline, coarse annular punctations outward toward sides and along postcoxal plates which are similarly coarsely punctate. Abdominal sternites generally smooth except for an anterior borderline of close moderate annular punctations and median line of five or six hairs bearing punctations near the sides; except the terminal sternite which has rows of very close fine punctations along the anterior margin, the posterior margin fringed with long hair and broadly emarginate. Pygidium very convex, maginal carina fine laterally, very much wider apically; surface with deep moderate punctations separated by one to four or five times their diameters, much finer and closer at base. Apex of hind tibia with a very strong terminal spine opposite the spurs and seven strong but short stubby setae along the edge, six in a group close together, another close to the spurs (group of six on one leg, seven on the other!) Hind tarsus subequal in length to length of tibia. Aedeagus very distinct (see Figure 16).

**HOLOTYPE.**—Male, length 20 mm, width 10 mm.

**ALLOTYPE.**—Female, length 19 mm, width 9 mm. Head similar to that of male except that the two posterior horns are reduced to low rounded tubercles, the three smooth areas behind the apical clypeal tubercle are noticeably finely punctate and the basal punctations are closer and finer. The pronotal punctations are more widely scattered. The pygidium is more densely punctate especially along base and sides, the marginal head gradually and only slightly wider at apex. Terminal abdominal sternite finely closely punctate over anterior half, gradually less closely over apical half. The sternite is broadly rounded apically in contrast to that of the male which is broadly emarginate.

**LOCATION OF TYPES.**—The holotype of *Hemiphileurus laeviceps* Arrow is in the British Museum (Natural History). The holotype, allotype, and

three paratypes of *E. gysini* were collected in Dominica, June–July, H. W. Foote, Yale Expedition 1913; in the National Museum of Natural History, Smithsonian Institution, USNM 74072. Other paratypes: (1) Warner Road, 1 Jul 1964, in rotten log, Thelma M. Clarke (USNM); (1) Magua, 20 Sep 1964, T. J. Spilman (USNM); (1) Rivière Lacroix, 3 Aug 1973, in decaying Mango tree, Jürg Gysin (FC); (1) Rivière Lacroix, 3 Aug 1973, Yves Cambefort (FC); (3) Morne Macaque, 11 Feb 1976, F. Chalumeau (FC); (4) Pont Cassé, 13 Feb 1976, F. Chalumeau (FC). Paratypes in collections of the National Museum of Natural History, Smithsonian Institution, and F. Chalumeau.

**REMARKS.**—Dr. E. A. Chapin, formerly head of the Entomology Department of the National Museum of Natural History, had labeled this species as an undescribed species of *Hemiphileurus*. Larvae and adults were collected by Chalumeau in decaying *Inga* sp. and *Rangifera indica*.

## CETONIINAE

### *Paragymnetis lanius guadalupiensis* (Gory and Percheron)

*Gymnetis guadalupiensis* Gory and Percheron, 1833:351.

*Paragymnetis lanius guadalupiensis* (Gory and Percheron).—Schürhoff, 1937:67.

**TYPE-LOCALITY.**—Guadeloupe, Vernou.

**LOCATION OF TYPE.**—Neotype by Chalumeau in Museum National d'Histoire Naturelle, Paris, France.

**SPECIMENS EXAMINED.**—Sight record of one flying.

**DATE.**—One flying 4 Aug.

**DOMINICAN DISTRIBUTION.**—near Portsmouth.

**PREVIOUSLY RECORDED DISTRIBUTION.**—Guadeloupe.

**REMARKS.**—Considered to be very rare. Tawny, with a few smooth black spots. Length 20 mm.

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**Text-reference system** (author/year/page within the text, with the full reference in a "Literature Cited" at the end of the text) must be used in place of bibliographic footnotes in all scientific series and is strongly recommended in the history and technology series: "(Jones, 1910:122)" or ". . . Jones (1910:122)."

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**A few points of style:** (1) Do not use periods after such abbreviations as "mm, ft, yds, USNM, NNE, AM, BC." (2) Use hyphens in spelled-out fractions: "two-thirds." (3) Spell out numbers "one" through "nine" in expository text, but use numerals in all other cases if possible. (4) Use the metric system of measurement, where possible, instead of the English system. (5) Use the decimal system, where possible, in place of fractions. (6) Use day/month/year sequence for dates: "9 April 1976." (7) For months in tabular listings or data sections, use three-letter abbreviations with no periods: "Jan, Mar, Jun," etc.

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