

ANTHICIDAE (COLEOPTERA) OF THE VIRGIN ISLANDS

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ABSTRACT

Eight species in two subfamilies of Anthicidae are known from the Virgin Islands: *Neoeurygenius portoricensis* Abdullah (Eurygeniinae); *Anthicus antilleorum* Werner, *A. crinitus* LaFerté-Sénéctère, *A. floralis* (Linnaeus), *A. tobias* Marseul, *Vacusus vicinus* (LaFerté-Sénéctère), *Sapintus teapensis* (Champion), and *Acanthinus trifasciatus* (Fabricius) (Anthicinae). In addition to a key to these species, each is diagnosed and illustrated, and the Virgin Islands distribution given. The biogeographical composition of the fauna is discussed. A key to the subfamilies and tribes of West Indian anthicids is provided.

RESUMEN

Existen ocho especies en tres subfamilias de Anthicidae en las Islas Vírgenes: *Neoeurygenius portoricensis* Abdullah (Eurygeniinae); *Anthicus antilleorum* Werner, *A. crinitus* LaFerté-Sénéctère, *A. floralis* (Linnaeus), *A. tobias* Marseul, *Vacusus vicinus* (LaFerté-Sénéctère), *Sapintus teapensis* (Champion), y *Acanthinus trifasciatus* (Fabricius) (Anthicinae). Además de las claves para la identificación de estas especies, cada una es diagnósticada e ilustrada. Se incluye la distribución de las especies en las Islas Vírgenes. Se discute la composición biogeográfica de la fauna. Se ofrece una clave para las subfamilias y tribus de los Anthicidae de las Antillas.

The Virgin Islands are located at the eastern extreme of the Greater Antilles. The northern islands lie on the submerged Puerto Rican Bank, while St. Croix and its satellite islands are separated by a deep trench from the northern islands (Heatwole & MacKenzie 1966). These islands are an important mixing zone for the Greater and Lesser Antillean faunas (Koopman 1975, Smith et al. 1991), as well as the anthropophilous fauna resulting from three centuries as a center of trade. This paper is one in a series documenting the beetle fauna of the Virgin Islands (Ivie 1983, Ivie & Miller 1984).

The most recent classification for the Anthicidae is summarized by Lawrence & Newton (1995), with Anthicidae divided into 10 subfamilies, three of which (Anthicinae, Macratriinae, and Eurygeniinae) occur in the West Indies. No world-wide diagnosis for the family in this sense has been published, but the diagnosis of Lawrence & Britton (1994) will work for the West Indies.

This work brings the number of Virgin Islands species to eight, of which two are West Indian endemics, and three are definitely introduced anthropophilous species. The other three species have mainland American-Antillean distributions. The Virgin

Islands, with less than 1/4 of 1% of the Greater Antillean land area, harbor more than 25% of the recorded West Indian anthicid fauna. Collecting bias is one, but perhaps not the only, factor in the apparent richness of the fauna. Werner (1983b) treated the anthicine fauna (as Anthicidae in the old sense) of the larger islands of the Greater Antilles, but neglected the local island distributions within the Virgin Islands. All but two of the Virgin Islands Anthicidae, *Neoeurygenius portoricensis* Abdullah and *Acanthinus trifasciatus* (Fabricius), were included in that paper.

Although there is a rich descriptive literature, the biology of the Anthicidae is poorly known (Young 1991a, 1991b, Lawrence & Britton 1994). Relatively few larvae have been described, and most are Anthicinae that seem to be fungivores and/or found in stored products (Kitayama 1982).

Material examined is deposited in the following collections: Floyd G. Werner, Tucson (FGWC, now in the University of Arizona collection), Virgin Island Beetle Fauna Project, Bozeman (MAIC), Museum of Comparative Zoology, Cambridge (MCZC), National Museum of Natural History, Washington (NMNH), The Ohio State University, Columbus (OSUC), Richard S. Miller, Bozeman (RSMC), University of California, Davis (UCDC), Virgin Islands Bureau of Fish and Wildlife, St. Croix (VIFW).

In the species treatments below, no attempt was made to provide all references. In addition to the original citation and the last comprehensive treatment, only those references, synonymies, etc. that include figures or West Indian distributional data have been listed. For detailed distribution records outside the West Indies, see the literature cited. Under Material Examined, only Virgin Islands specimens are listed.

Because Werner (1983b) did not treat the Eurygeniinae and Macratriinae as members of the Anthicidae, and because the key to subfamilies by Abdullah (1969) will misplace some genera, we include a key to the West Indian subfamilies and tribes.

KEY TO THE SUBFAMILIES AND TRIBES OF WEST INDIAN ANTHICIDAE

- 1. Antenna filiform, without trace of club; neck more than 1/2 as wide as head across eyes (Fig. 1); maxillary palpi subserrate, first and third segments subequal, second greater than 1/2 as large as third; Puerto Rico & St. Thomas Eurygeniinae (*Neoeurygenius portoricensis* Abdullah)
- 1'. Antenna with last three segments elongate and subserrate; neck less than 1/2 width of head; maxillary palpi serrate, first and second segments smaller than, but as wide as third; Cuba & St. Vincent Macratriinae (*Macratria*)
- 1". Antenna with slight but distinct, symmetrical, clavate club; neck of variable width, but if wide, pronotum extending above head as a forward projecting horn; maxillary palpi vaguely subserrate, first and second segments less than half size of large triangular third; widespread in West Indies Anthicinae 2
- 2. Pronotum with anteriorly projecting horn; prosternum very short before coxae Notoxini
- 2'. Pronotum and prosternum simple (Figs. 2-8) Anthicini

Neoeurygenius portoricensis Abdullah
Fig. 1

Neoeurygenius portoricensis Abdullah 1963: 183, Figs. 1-14; Abdullah 1964: 199. Type locality: Ensenada, Puerto Rico.

Neoeurygenius portoricensis is the only eurygeniine recorded from the West Indies and is apparently closely related to *N. grahami* Abdullah (1964) from Arizona.

Little is known about the biology of this subfamily, with the only described larva being a soil-living predator (Young 1991b). The Virgin Islands specimens were taken at lights on a beach cabana. The area has sandy soil for a considerable distance inland, backed by a flood plain from a fresh water gut (dry stream course).

Diagnosis. In addition to the characters in the key above, *N. portoricensis* can be distinguished from other West Indian anthicids by its large size (5.5-6.0 mm), reticulate punctate pronotum, coarse elytral punctation, and mottled elytral pubescence.

Distribution. Puerto Rico (Ensenada, Guayanilla), St. Thomas.

Material Examined. St. Thomas: 3—Est. Enighed, Magen's Bay Arboretum, light, 01 JAN 1993, V[irgin] I[island] B[eetle] F[auna] P[roject] colrs., (MAIC).

KEY TO THE SPECIES OF ANTHICINI OF THE VIRGIN ISLANDS

1. First visible abdominal sternite grooved behind coxa, groove lined with silky pubescence; elytra unicolorous (Fig. 7), with moderately dense recumbent undercoat of diagonal setae, overlain with obvious longitudinally decumbent setae *Sapintus teapensis* (Champion)
- 1'. First ventrite simple behind coxa; elytra bicolored, setae of a single type or undercoat arranged longitudinally and overcoat of scattered and inconspicuous erect setae 2
2. Pronotum dull, alutaceous; pronotum with lateral erect setae on raised points; last two antennomeres lighter than remainder; pre-median fascia of elytron (when present) distant from basal margin (Fig. 8) *Acanthinus trifasciatus* (Fabricius)
- 2'. Pronotum shining, setae inserted in punctures; antennomeres unicolorous; premedian fascia of elytron (when present) on basal margin 3
3. Pronotum not constricted anterior to thin basal transverse sulcus, widening in a straight line in basal 2/3, broadly rounded to neck in anterior 1/3; elytron with basal (may be light or obsolete), postmedian, and apical fasciae (Fig. 6) *Vacusus vicinus* (LaFerté S enect ere)
- 3'. Pronotum constricted anterior to thin basal transverse sulcus, slightly to obviously concave in basal 2/3, then abruptly rounded to neck; elytra with apical 2/3-3/4 dark or with isolated apical light spots 4
4. Pronotum and elytra with fine, closely appressed setae 5
- 4'. Pronotum and elytra with coarse, semi-erect setae 6
5. Profemora clavate; pronotum broad, slightly constricted before base (Fig. 5); elytra light in basal 1/4, uniformly dark behind . . . *Anthicus floralis* (Linnaeus)
- 5'. Profemora linear; pronotum narrow, strongly constricted (Fig. 4); each elytron with isolated pale spot in dark apical 3/4 *Anthicus tobias* Marseul
6. Elytral setae longer than width of metafemora; elytron light in basal 1/3 (Fig. 3), with variable to obsolete light spot on suture at apical 1/3 *Anthicus crinitus* LaFert e-S enect ere
- 6'. Elytral setae shorter than width of metafemora; elytron light in basal 1/4, with isolated light spot in apical 1/4 *Anthicus antilleorum* Werner

Anthicus antilleorum Werner

Fig. 2

Anthicus antilleorum Werner 1983b: 218, figs. 9, 19. Type locality: Barangua, Cuba.

Werner (1983b) noted color variation among specimens of *A. antilleorum*, individuals from Jamaica being darker in color than those from Cuba and Hispaniola. These dark specimens do not always exhibit the pale elytral spot, which is used in Werner's

key. Werner (1983b, Fig. 9) shows the apical elytral spot attaining the elytral apex. However, a specimen from St. Croix has the spot isolated pre-apically (Fig. 2).

Anthicus antilleorum is known only from the Greater Antilles and one island in the Bahamas. Given its known distribution, it can be expected to eventually be found on Puerto Rico. The St. Croix specimen was beaten from low shrubs on the extreme east end of St. Croix, a xeric, windswept and rocky area without trees.

Diagnosis. *Anthicus antilleorum* may be distinguished by the piceous elytra with the basal 1/4 rufotestaceous and a variable elliptical light spot at the apex (Fig. 2), in addition to scattered, sparse, tactile setae on the elytra.

Distribution. Cuba, Cat Island (Bahama Is.), Jamaica, Hispaniola, Tortola, St. Croix.

Material Examined. Tortola: 1—Brandywine Bay, J. F. G. Clark (NMNH). St. Croix: 1—Est. A Piece of Land, East End, Point Udall, 09 JAN 1993, VIBFP colr., beating vegetation, (MAIC).

Anthicus crinitus LaFerté-Sénéctère

Fig. 3

Anthicus crinitus LaFerté-Sénéctère 1848: 204; Werner 1975: 472, figs. 2, 5; Werner 1983b: 232. Type locality: Egypt or Senegal.

Figures 2 and 5 in Werner (1975) are mislabeled. These figures, labeled as the habitus of *A. cribratus* and male genitalia of *A. antiochensis*, respectively, are actually of *A. crinitus* (Werner 1983b). Figure 4 of that paper is mislabeled as the male genitalia of *A. crinitus*.

Anthicus crinitus is distributed widely in Africa and Asia, and was first found in the Western Hemisphere on Puerto Rico in 1936 (Werner 1975). The Virgin Islands material was taken in this anthropophilus species was taken in an urban area at Red Hook.

Diagnosis. *Anthicus crinitus* is distinguished by a combination of double elytral vestiture and dark elytra with an apical pale spot (Fig. 3).

Distribution. Old World (becoming cosmopolitan), Hispaniola, Puerto Rico, St. Thomas.

Material Examined. St. Thomas: 1—Red Hook, 26 JUL 1980, M. A. Ivie, at UV light, (MAIC).

Anthicus tobias Marseul

Fig. 4

Anthicus tobias Marseul 1879: 125; Werner 1961b: 70, figs. 1-3; 1964: 235; 1983b: 233; Miskimen & Bond, 1970: 86. Type locality: Mesopotamie.
Strictocomus tobias: Bonadona 1958: 108, Fig. 40, L.

Although not found in stored products, this species is probably anthropophilus, and is becoming cosmopolitan (Werner 1961b, 1983b). The Virgin Islands material was taken at light and at alcohol bait in low-lying secondary tropical dry forest.

Diagnosis. Among Virgin Islands anthicids, *A. tobias* is recognizable by the lightly punctate elytra and the elytral color: basal 1/3 rufous, concolorous with head and pronotum; remainder piceous, except for isolated, light testaceous (almost white) subapical spot (Fig. 4).

Distribution. Cosmopolitan, Jamaica, Hispaniola, St. Thomas, St. John, St. Croix.

Material Examined. St. Thomas: 1—Est. Enighed, Magen's Bay Arboretum, 01 JAN 1993, VIBFP colrs. (MAIC). St. John: 1—Lameshur Bay-VIERS, 12 MAR 1984, at uv light, WB Muchmore, (MAIC). St. Croix: 83—Golden Grove, D. F. Keaveny, at

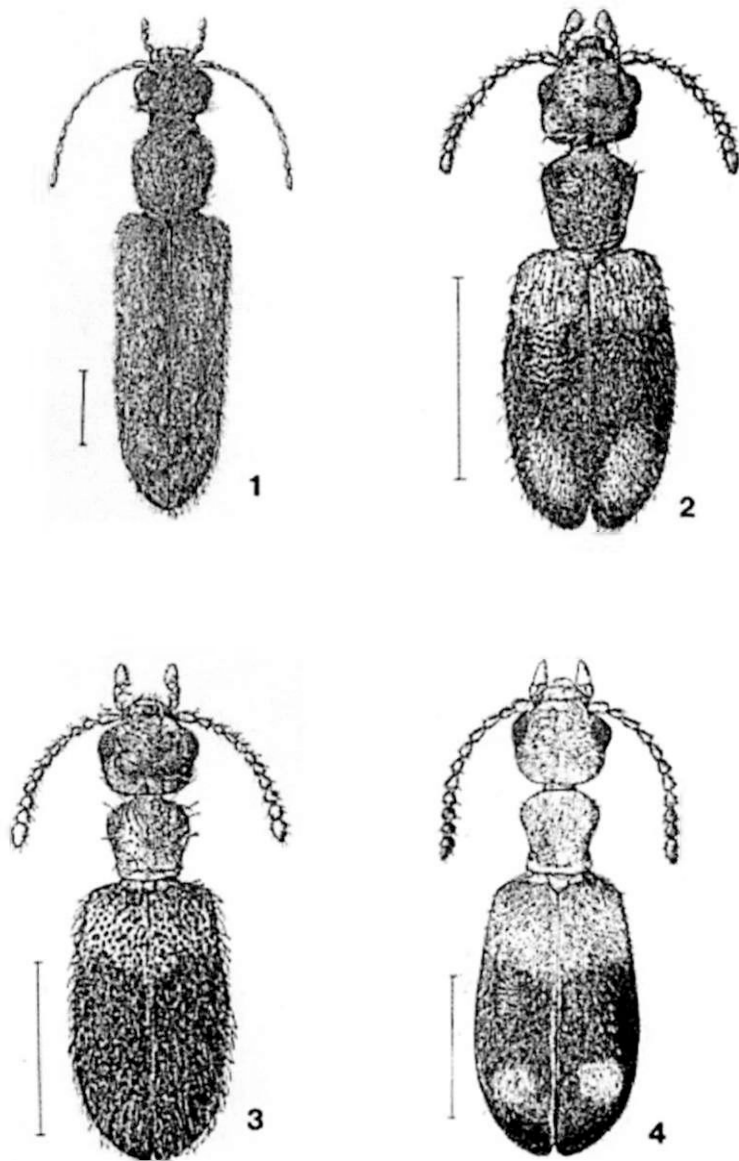


Figure 1. *Neoeurygenius portoricensis* Abdullah.
Figure 2. *Anthicus antilleorum* Werner.
Figure 3. *Anthicus crinitus* LaFerte-Senectere.
Figure 4. *Anthicus tobias* Marseul.

uv light, with the following dates: 21 JAN 1980, 28 FEB 1980, 08 MAR 1980, 10 MAR 1980, 18 APR 1980, 24 APR 1980, 02 MAY 1980, 07 MAY 1980, 12 MAY 1980, 16 MAY 1980, 18 MAY 1980, 21 MAY 1980 (FGWC, MAIC, OSUC, RSMC, UCDC); 6—Sprat Hall, 30 JUN-14 JUL 1982, J. A. Yntema, ex. vane trap ETOH bait, (MAIC, VIFW).

Anthicus floralis (Linnaeus)

Fig. 5

Meloe floralis Linnaeus 1758: 420. Type locality: Europe.

Anthicus floralis: Champion 1896: 47; Blackwelder 1945: 433; Hinton 1945:197, figs. 233-243; Werner 1983b: 232; Bousquet 1990: 62, Fig. 178.

Omonadus floralis: Kitayama 1982: 89, fig. 7; DeLobel & Tran 1993: 290, Fig. 115.

Anthicus (Omonadus) floralis: Werner & Chandler 1995: 21.

An Old World species, *Anthicus floralis* has been spread through its association with stored products, notably grain, and is called the "narrow-necked grain beetle" (Bousquet 1990). It is often listed in the genus *Omonadus* Mulsant and Rey, especially in European literature. Whether *Omonadus* should be considered a valid genus, a subgenus, or a synonym is still disputed (see Werner & Chandler 1995 for a discussion). Hinton (1945) discussed the larva and its biology, recording it from a variety of decaying plant materials and stored products. Kitayama (1982) included the species in his key to larval Anthicinae.

Diagnosis. The elytral color pattern and vestiture will distinguish this species: the basal 1/4 to 1/3 rufous, and remainder piceous (Fig. 5); dorsal vestiture of very short, appressed setae, with only very few short, erect setae. Werner (1983b) mentioned a pair of protuberances medially, near the anterior margin of the pronotal disc. These seem to vary, and may be difficult to see.

Distribution. Cosmopolitan, Jamaica, Hispaniola, Puerto Rico, St. Croix, Guadeloupe, Grenada.

Material examined. St. Croix: 1—Golden Grove, 16 MAY 1980, D. F. Keaveny, at UV light (MAIC); 1—Sprat Hall, 15-30 SEP 1982, J. A. Yntema (NAIC).

Vacusus vicinus (LaFerté-Sénéctère)

Fig. 6

Anthicus vicinus LaFerté-Sénéctère 1848: 157. Type locality: America boreali. Champion 1890: 242, Tab. 10, Fig. 23; Blackwelder 1945: 435.

Vacusus vicinus: Werner 1961a: 799, Fig.; Werner 1983b: 234.

Werner (1983b) keyed this species based on its being "luteous to rufous, elytra with apex and interrupted submedian band dark." However, Werner (1961a) stated that this species was variable in color. Specimens from the southern parts of the range, including the West Indies, exhibit the color pattern quoted above. The dark markings on most specimens from the northwestern parts of the range are reduced, while specimens from northeast are darker and may be largely piceous.

Diagnosis. *Vacusus vicinus* may be distinguished from other Virgin Islands species by the following combination of characters: dorsal surface shining, punctation widely spaced; pronotum with sides not distinctly constricted basally; color rufous with humeral region, median band and apex darker (Fig. 6).

Distribution. Southern United States to Venezuela, Cuba, Jamaica, Hispaniola, Puerto Rico, St. Croix.

Material examined. St. Croix: 1—H. A. Beatty, no specific locality (MCZC).

Sapintus teapensis (Champion)
Fig. 7

Anthicus teapensis Champion 1890: 249, Tab. 10, Fig. 28. Type locality: Tabasco, Mexico.

Sapintus teapensis: Werner 1983a: 233; Werner 1983b: 424, Fig. 26.

This species was taken at light on the USDA Agricultural Experiment Station, on the central plain of St. Croix. The light was located between a secondary dry forest and agricultural plots.

Diagnosis. *Sapintus teapensis* is the only Virgin Islands anthicid with unicolorous elytra, and exhibits the following other diagnostic features: first visible abdominal sternite with transverse impression just posterior to hind coxae; elytral vestiture distinctly dimorphic, and the two types of setae oriented diagonally to one another.

Distribution. SE Mexico to S. Brazil, Cuba, Jamaica, Hispaniola, Puerto Rico, St. Croix.

Material Examined. St. Croix: 5—Golden Grove, D. F. Keaveny, at UV light, with the following dates: 16 MAY 1980, 21 MAY 1980, 09 JUN 1980, (FGWC, MAIC).

Acanthinus trifasciatus (Fabricius)
Fig. 8

Anthicus 3 fasciatus Fabricius 1801: 291 (No. 14). Type locality: St. Thomas.

Anthicus trifasciatus: LaFerté-Senectère 1848: 139; Fleutiaux & Sallé 1889: 432; Champion 1896: 47; Leng & Mutchler 1914: 466; Blackwelder 1945: 435.

Acanthinus trifasciatus: Werner 1966: 1272, figs. 3, 6.

Acanthinus trifasciatus (Fabricius) was described from material collected by Smidt in "America meridionali" (Fabricius 1801). The type locality of this species should be restricted to St. Thomas, Virgin Islands, as evidenced by the facts that Smidt lived and collected on St. Thomas (Zimsen 1964, Ivie 1985, M. A. Ivie unpubl.), and that it has been rediscovered in the Virgin Islands. A type specimen still exists in Copenhagen (Zimsen 1964).

LaFerté-Senectère (1848) correctly recognized this species from St. Thomas, in the then Danish West Indies, basing his redescription of the species on a St. Thomian specimen (possibly the type). This record was repeated by Leng & Mutchler (1914), Blackwelder (1945), and Werner (1966). Fleutiaux & Sallé (1889) and Champion (1896) recorded this species from the Lesser Antilles. In spite of this, Werner (1983b) did not include the species in his Greater Antillean paper because he had not seen Antillean specimens of the species (Werner in litt.).

Acanthinus trifasciatus is the only member of the *spinicollis* species group (*sensu* Werner 1966) present in the West Indies. It is found in northern South America and through the Lesser Antilles, just reaching into the Greater Antilles in the Virgin Islands. The other species of the *Acanthinus spinicollis* group are found in South and Central America, with the northern range limit in southern Florida and Texas.

Acanthinus trifasciatus will key to couplet 22 in Werner (1983b). Usually, it may be distinguished on elytral color alone (Fig. 8); however, Champion (1896) stated that the elytral markings are often indistinct or partly obliterated. Werner's (1983b) key should be modified so that the first choice of couplet 21 should lead to the following:

22a. Elytra with 3 dark bands (Fig. 8); antennae dark, last 2-3 antennomeres lighter; pronotum with lateral tubercles at base of tactile setae
..... *Acanthinus trifasciatus* (Fabricius)

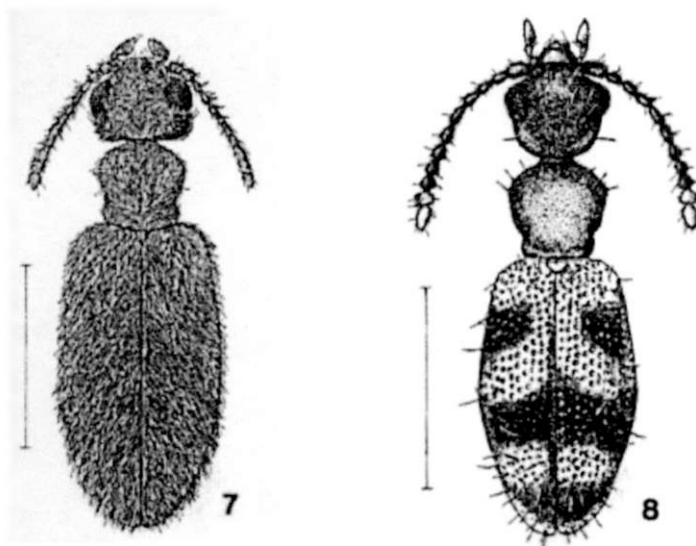
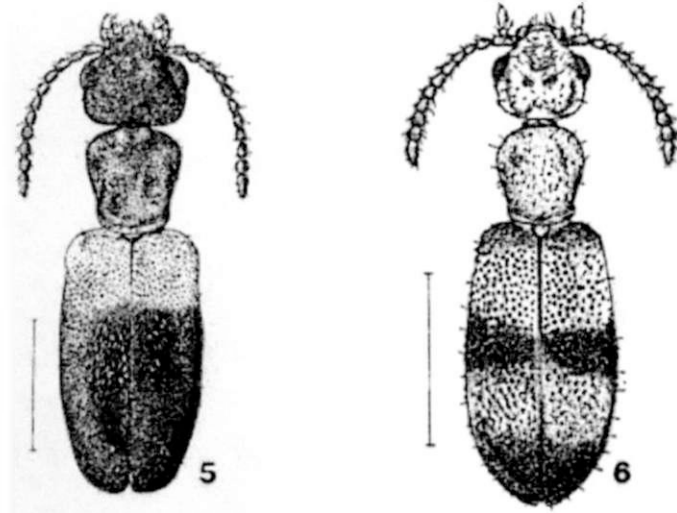


Figure 5. *Anthicus floralis* (Linneaus).
Figure 6. *Vacusus vicinus* (LaFerte-Senectere).
Figure 7. *Sapintus teapensis* (Champion).
Figure 8. *Acanthinus trifasciatus* (Fabricius).

22a'. Elytra with one or no bands; antennae unicolorous; pronotum without lateral tubercles 22

This species lives in dead leaves, branches, and orchard refuse (Werner 1966). The St. Croix specimen was taken in beach wrack.

Diagnosis. Among Virgin Islands Anthicidae, this distinctive species may be recognized by its finely granulate head and pronotum, antennomeres 10-11 pale, the trimaculate elytral color pattern, and by the erect, sparse tactile elytral setae.

Distribution. Northern South America, Aruba, Curaçao, Trinidad, St. Thomas, St. Croix, Guadeloupe, St. Vincent, Mustique, Grenada.

Material Examined. St. Croix: 1—Butler Bay Beach, 10 JAN 1993, s[ea] l[evel], D. S. Sikes colr., beach wrack, (MAIC).

DISCUSSION

The anthicid fauna of the Virgin Islands exhibits a mixed biogeographic pattern of anthropophilous introductions, Antillean endemics, and widespread, lowland Neotropical species. The Old World species *Anthicus floralis*, *A. crinitus*, and *A. tobias* have been carried to, and presumably established in, the Virgin Islands. To this list, we can expect to eventually add *Anthicus formicarius* (Goeze), the fourth cosmopolitan anthicid species recorded from the Antilles (Werner 1983b).

Neoeurygenius portoricensis and *Anthicus antilleorum* are both endemic to the Greater Antilles. The only recognized congener of the first is from the southwestern USA (Abdullah 1964), while the second belongs to a circum-Caribbean species-group (Werner 1983b).

The remaining three species are widespread Neotropical species. Perhaps *Acanthinus trifasciatus* is the most interesting in that it is a northern South American species that seems to have reached this corner of the Greater Antilles via colonization of the Lesser Antilles. *Sapintus teapensis* and *Vacusus vicinus* show the opposite pattern, both being widespread in the Neotropical Region (with the range of *V. vicinus* extending into the Nearctic), including the Greater Antilles, but being unknown from the Lesser Antilles. Both apparently reached the Virgin Islands via the Greater Antilles, corresponding with their Greater Antillean geologic origin.

Several more species of Anthicidae can be expected to be found in the Virgin Islands, and potentially dozens of new records for individual islands await discovery. Having been connected to Puerto Rico during the Pleistocene (Heatwole & MacKenzie 1966), the northern Virgin Islands may harbor more of the West Indian endemic species that occur on that island. Two examples are species of *Notoxus* and *Macratrria*. The first occurs on Puerto Rico, favoring sandy areas which abound in these islands famous for their beaches. The attraction of species of *Notoxus* to cantharidin (Chandler 1978) could be exploited to check for its presence in the Virgin Islands. *Macratrria* is not known from islands near the Virgin Islands, but Antillean species occur both to the north and south. We hope that this paper will encourage the collection and report of such new discoveries.

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