

A NEW *STRONGYLUM* KIRBY FROM THE PUERTO RICAN BANK
(COLEOPTERA: TENEBRIONIDAE)

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Abstract.—*Strongylium paddai*, new species, is described from the northern Virgin Islands. A key to the species of *Strongylium* known from the eastern Antilles is provided. Biogeographic implications of this species for the evolution of Puerto Rican Bank wood-borers suggest that larval rafting may be of more importance than adult flight in maintaining inter-island contact.

While preparing a faunal treatment of the Tenebrionidae of the Virgin Islands, an undescribed species of *Strongylium* was discovered in material assembled from several sources. This species is especially interesting because of its biogeographic implications.

The genus *Strongylium* Kirby, with over 700 described species world-wide is the largest genus of Tenebrionidae (Gebien, 1948: 519). The Neotropics are especially rich in species, with over 320 described, but only nine are yet known from the West Indies. Of these, four are known only from Cuba (Blackwelder, 1945: 545). All of the Cuban species are various shades of blue or purple, and Mäklin (1864) gives comparative diagnoses for all four. Marcuzzi's (1962: 39) record of *Strongylium* cfr. *curticorne* Champion from Cuba probably belongs to one of these species.

The other five known West Indian species occur on the eastern Antilles, from Puerto Rico to Martinique. All are castaneous to black with metallic greenish-bronze reflections. Since only two were treated by Mäklin, a key to these species is presented.

KEY TO THE *STRONGYLUM* OF THE EASTERN ANTILLES

1. Eyes large, nearly contiguous above, elytra variable 2
- Eyes smaller, not nearly contiguous above; elytra uniformly colored ... 3
2. Elytra with two yellow maculae; scutellum finely punctate; 7–7.25 mm.
Guadeloupe *S. delauneyi* Fleutiaux and Sallé
- Elytra uniformly colored; scutellum densely punctate; 21 mm. Martinique
..... *S. chalcopterum* Mäklin
3. Base of elytra 1.5 times as wide as base of pronotum; pronotum as long
as wide, with a pit on each side of disk; face strongly rugose between eyes;
5.25 mm. Guadeloupe *S. guadeloupense* Gebien
- Base of elytra only a little wider than base of pronotum; pronotum dis-

- tingtly wider than long, disk without pits; face between eyes simply punctate 4
4. Elytra with striae reduced or obsolete at apical $\frac{1}{4}$ (Fig. 2); face finely to moderately punctate, punctures often separated by more than 2 diameters; 8–10 mm. Puerto Rico *S. pulvinatum* Mäklin
- Elytra with striae deep to apex (Fig. 1); face coarsely punctate, punctures separated by about 1 diameter; 8–12 mm. Northern Virgin Islands *S. paddai* n. sp.

Strongylium paddai Ivie and Triplehorn, NEW SPECIES

Fig. 1

Description.—Holotype male: Elongate, robust, piceous with greenish-bronze metallic reflections, shining. Head moderately coarsely punctate, except for a narrow, irregular, impunctate line on frons, punctures becoming distinctly strigulose on vertex; eyes large, laterally prominent, strongly reniform, separated dorsally by a distance subequal to length of 4th antennomere; genae slightly reflexed above antennal insertions; clypeus truncate apically, hind margin closely approaching eyes (about 2 facets distance); antenna reddish-brown, long, slender, ratio of antennomeres from base to apex: 2:1.5:6:4:4:4:4:4:4:5. Pronotum transverse ($\frac{2}{3}$ broader than long), lateral margins feebly sinuate, without trace of marginal bead, broadest anterior to middle, anterior margins broadly, shallowly emarginate, thickened medially, anterior angles rounded, basal margin feebly emarginate, thickened and subtended by a deep groove; basal angle nearly right, surface coarsely and densely punctured, most punctures separated by less than their diameters, continuing on hypomeron without obvious change in size and density; prosternum almost smooth, process transversely, deeply concave between coxae. Elytra with striae deeply sulcate on disc, punctures deep with diameters subequal to $\frac{1}{5}$ width of intervals; decreasing gradually in size apically in correspondingly shallower sulci; intervals moderately convex basally, feebly so apically, epipleural fold obsolete at extreme base, continuous to apex. Metasternum and abdominal sterna finely, shallowly, sparsely punctate. Legs moderate, stout, coarsely punctate. Length: 8.8 mm, width: 3.3 mm.

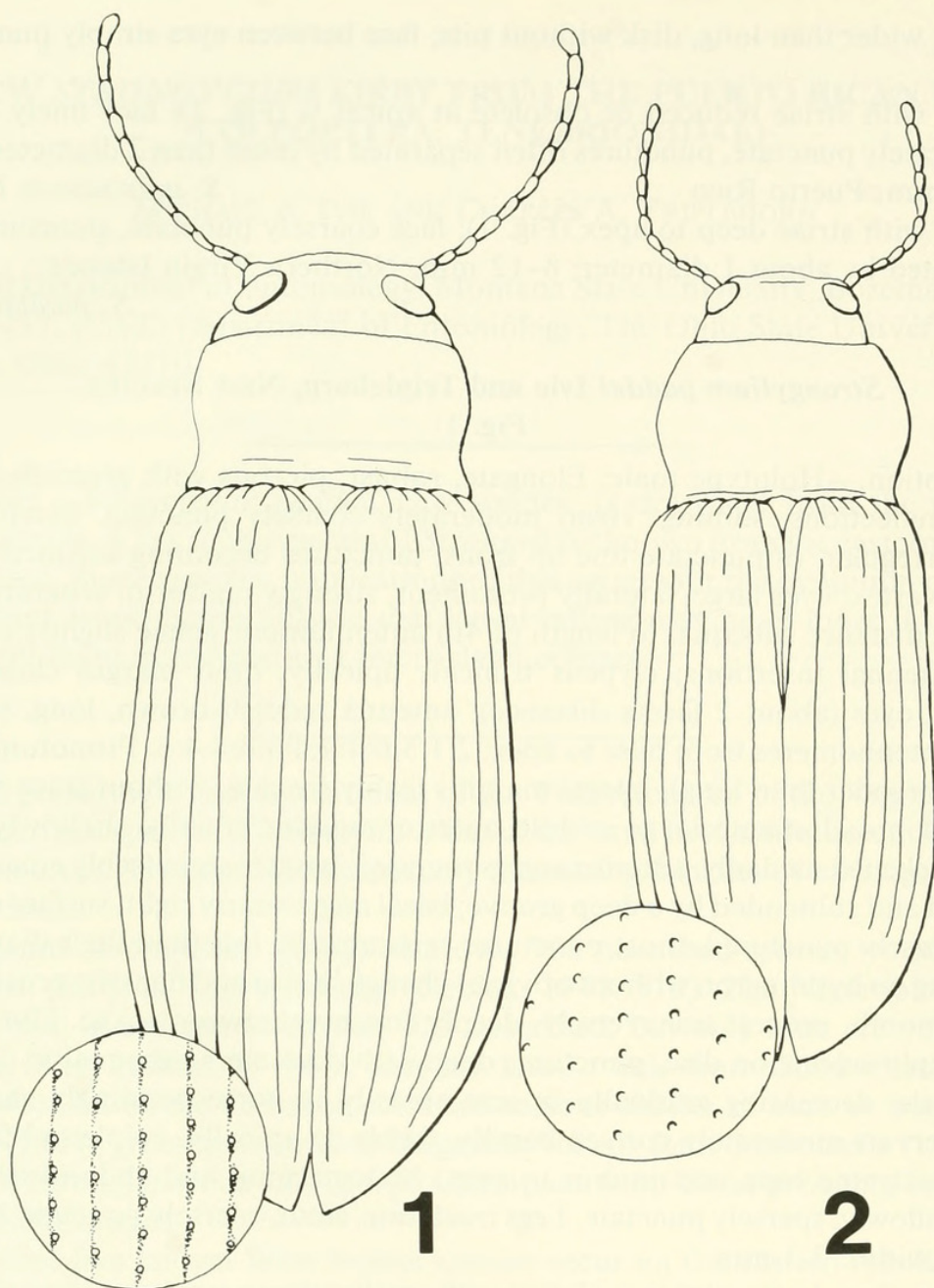
Allotype, female: Similar to male but with smaller, less prominent eyes; distance separating eyes dorsally subequal to combined length of antennomere 2 and 3; and the apical antennomere shorter than in male. Length: 8.8 mm, width: 3.2 mm.

Variation.—Background color varies from ferruginous to piceous, and the metallic reflections, which are most noticeable on the head, are sometimes absent. Size, length 8–12 mm, width 2.7–4.4 mm, appearing to be independent of sex.

Diagnosis.—The unicolorous, ferruginous to piceous integument with greenish-bronze metallic reflections, complete elytral striae, transverse pronotum and simply punctate face will distinguish this species from all previously described West Indian *Strongylium*.

Etymology.—This species is named in honor of Darshan S. Padda, Director of the Virgin Islands Experiment Station and Virgin Islands Cooperative Extension Service, St. Croix, who first suggested a faunal investigation of Virgin Island insects to one of us (MAI).

Holotype [♂].—Virgin Is., St. John; Lameshur Bay, VIERS; 08 March 1984;



Figs. 1-2. 1, *Strongylium paddai* Ivie and Triplehorn. 2, *Strongylium pulvinatum* Mäklin. Insets show details of striae on apical third of elytra.

blacklight trap; W. B. Muchmore colr. Allotype [♀]: Virgin Is., St. John; Lameshur Bay, VIERS; 15 August 1980; at uv light, M. A. Ivie. Deposited in NMNH.

Paratypes (33).—Virgin Islands: ST. JOHN: 15, Lameshur Bay, Virgin Islands Ecological Research Station, various dates III-1984, W. B. Muchmore; 2, *ibid.* 18-27 VII-1972, A. B. Gray; 1, Est. Carolina, NW of Coral Bay, 250 ft., 16 V, 1982; 1, Cinnamon Bay, 9-15 IV 1979, S. Foster and N. Hinnebusch; 2, Francis Bay, 25 III 1958, J. F. G. Clark; 1, Lind Point, 26 II 1962, H. B. Muller; 1, Virgin Island Nat'l Park, 28 I 1970; 1, near Trunk Bay, 15 VIII 1962; 1, no exact location, 18 VI 1971. ST. THOMAS: 2, Red Hook, 27 VII and 16 VIII 1979, M. A. Ivie; 1, Charlotte Amalie, 9 VI 1979, M. A. Ivie; 2, Frenchmans Bay Est., 750 ft., VI

1979, M. A. Ivie. PETER ISLAND (BRITISH VIRGIN ISLANDS): 1, Little Bay, 30 III 1958, J. F. G. Clark. ANEGADA: 1, Flamingo Pond, 23 VIII 1980, M. A. Ivie. TOBAGO ISLAND (U.S. VIRGIN ISLANDS): 1, 2 IV 1966.

Paratypes are deposited in BMNH, MAIC, MCZC, NMNH, OSUC, and VIER.

Biology.—A single *Strongylium* larva, presumed to be *S. paddai*, was extracted by Berlese funnel from material sifted from a very dry, crumbly rotten stump near the beach at Red Hook, 27 VII 1980, St. Thomas (specimen in MAIC). An adult *S. paddai* was found beneath the intact bark of the same stump.

Adults have also been taken at both white and ultraviolet light, and in Malaise traps.

Discussion.—*Strongylium paddai* belongs to Mäklin's Div. V A ** (hereafter referred to as the *pulvinatum* species-group), whose only previously included species is *S. pulvinatum* (for a diagnosis, see Mäklin, 1864). A species-group of such a widespread genus apparently endemic to the Puerto Rican Bank is surprising, given the rather small representation of the genus in the West Indies. The phylogenetic distance implied by the other West Indian species being placed in other Divisios (Mäklin's category roughly corresponding to a subgenus), and the isolated geographic distribution of the *pulvinatum* species-group, implies a zoogeographic history independent of other species of West Indian *Strongylium*. Hypotheses of origin of the lineage, both phylogenetic and zoogeographic, must await further studies, but the intraspecies-group clade is of interest to studies of the Puerto Rican Bank fauna.

A post-Pleistocene eustatic rise separated Greater Puerto Rico into many smaller islands (Puerto Rico and the northern Virgin Islands) roughly 8–10,000 y.b.p., with the northern Virgin Islands remaining coalesced for ca. 2000 years (Heatwole and MacKenzie, 1967). In small, flightless, litter-dwelling beetles [e.g. *Nesopalla* (Ceratocanthidae) and *Antillomonomma* (Monommidae)], this is hypothesized to be sufficient isolation and time to explain endemic sister-species in Puerto Rico and the northern Virgin Islands. However, until now, no group of flighted wood-boring beetles has been found to have endemic sister-species on these two island groups. The relatively small distance involved (ca. 64 km), and ability of wood-boring Coleoptera larvae to survive inside floating wood (Heatwole and Levins, 1972; Ivie and Miller, 1984) seemed sufficient for the genetic contact needed to maintain specific identity.

The case of *Strongylium paddai* and *pulvinatum* is the first discovered to challenge this view. Although *Strongylium* are wood-borers, the larvae are associated with decaying wood (Triplehorn and Spilman, 1973). The larval *S. paddai* was found in very crumbly, rotten wood. This larva was small and probably had not been in the wood since it was sound. This habitat would waterlog and sink very quickly, not serving well as a rafting habitat. Since the capacity for flight in *S. paddai* is unchallengeable, it seems that the assumed genetic contact between other species of Puerto Rican Bank wood-borers is more likely to be the result of larval rafting than adult flight capacity, as supported by evidence reported by Heatwole and Levins (1972).

Material cited is deposited in the following museums, as indicated by the associated acronyms: National Museum of Natural History, Washington (NMNH); British Museum (Natural History), London (BMNH); Museum of Comparative

Zoology, Cambridge (MCZC); Virgin Islands Ecological Research Station, St. John (VIER); The Ohio State University, Columbus (OSUC); Michael A. Ivie, private collection, Bozeman (MAIC).

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