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New species of darkling beetles (Coleoptera: Tenebrionidae) from San Salvador Island, Bahamas

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Table of contents

Abstract

In preparation for a survey and annotated checklist of the Tenebrionidae of San Salvador Island, Bahamas, nine new species of darkling beetles are described. All are so far known only from this island and probably endemic. The majority of them are flightless. All inhabit maritime sand scrub habitats. The new taxa, in the sequence described herein, are: *Trientoma jilae*, **n. sp.**, *Trientoma voegeliorum*, **n. sp.**, *Branchus geraceorum*, **n. sp.**, *Adelina bacardi*, **n. sp.**, *Blapstinus kalik*, **n. sp.**, *Diastolinus this*, **n. sp.**, *Diastolinus that*, **n. sp.**, *Nautes guanahani*, **n. sp.**, *Lobopoda deyrupi*, **n. sp.** Digital images of the holotypes are included. Diagnoses of the new species, with comparisons

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among related ones, are provided, and notes on habitats and collections are given. One species, *Blapstinus humilis* Casey, is brought out of synonymy under *B. fuscus* Casey and provisionally recognized as valid, pending further revisionary work.

Key words: Bahamas, beach insects, darkling beetles, images of holotypes, island endemism, maritime scrub, new species, San Salvador Island, Tenebrionidae

Introduction

San Salvador Island, centrally located in the Bahamian archipelago, is the site of the first landfall made by Columbus and crew on 12 October 1492. After more than five centuries of European settlement, however, the "Age of Discovery" has not ended for this small island. While much of the geology and biota are well known, certain groups of insects have been neglected. The nine new species of Tenebrionidae described in this paper exemplify this, with most having been discovered with only 14 days of recent focused fieldwork, and supplemented by examination of unidentified specimens in the collection at the Gerace Research Center, San Salvador, and other institutions. Prior to this study, Tenebrionidae were listed only at the family level for San Salvador (Elliott 1993) and a review of entomological studies in the Bahamas (Elliott 2003) showed that darkling beetles had never been a focal group of any specialist. A few San Salvador records of widespread species had been reported in two revisionary studies (Campbell 1971; Watrous and Triplehorn 1982). Only 28 species were known from the Bahamian region at the onset of my studies (Steiner 2005a, 2005b).

With the availability of the Gerace Research Center (formerly the Bahamian Field Station) to biologists, San Salvador, by default, can be expected to receive more thorough coverage in faunal surveys, relative to the more isolated islands without such facilities. The focus on Tenebrionidae as a "target taxon" on this 161 km² island has resulted in the discovery of a surprisingly rich fauna for a relatively small and remote island, perhaps richer than expected for some larger Bahamian islands, with a high number of probable island endemics. In preparation for an annotated checklist of the darkling beetles of San Salvador, with images of all known species and some habitat description (as part of a planned survey and atlas of the Tenebrionidae of the Bahamian region), the new taxa are proposed here. A key to the species known from San Salvador will be provided in that work in progress, and keys to species Caribbean-wide will appear in reviews of selected genera.

Methods

Three visits for sampling beetles on San Salvador were made, two of which were 4-day

periods in late June (2003 and 2005) in conjunction with the 10th and 11th Symposia on the Natural History of the Bahamas, and the third for one week in mid-February 2004. Specimens were selectively sampled using manual techniques and targeting known microhabitats of tenebrionids: under leaf litter and beach drift on sand, under palm thatch and leaf litter in maritime scrub habitats, under bark of dead trees or associated with polypore fungi on dead wood. A number of the specimens were collected on the grounds of the Gerace Research Center, but visits to other interior hardwood and coastal scrub and beach localities were made. Florescent lights at the GRC and a black light with sheets placed at the edge of scrub forest and a clearing (large concrete catchment south of the Center) were gleaned for specimens from 1800–2400 hrs. One Malaise trap was placed near this site, and a series of 12 yellow bowl pitfall traps (with sea water and detergent) were placed in the beach front vegetation.

Material was preserved and prepared using suggested techniques (Steiner 2005b), sorted to species, and identified using monographic literature and by comparisons among previously identified specimens. Additional unidentified specimens were borrowed from the conservatory collection at the Gerace Research Center (GRCC). Others were borrowed from two institutions in Florida, USA: Archbold Biological Station, Lake Placid (ABSC), and Florida State Collection of Arthropods, Gainesville (FSCA), and the collection of M. A. Ivie (MAIC). Specimens at the GRCC and others are to be incorporated into the Bahamian National Insect Collection (BNIC), Nassau. The following descriptions include characters used in previous treatments of the genera involved; the ocular index for Alleculinae was calculated using the method described in earlier works (Campbell 1966, Campbell and Marshall 1964). Holotypes and genitalia were imaged using Automontage ™ software and measurements were done by rule under a dissecting microscope. The sequence of taxa described below follows the tribal placement and classification of Aalbu et al. (2002). Holotypes and the majority of paratypes are deposited in the U.S. National Museum of Natural History, Smithsonian Institution, Washington, DC; some paratypes are deposited in the collections listed above (abbreviations used following specimen data) and some will be deposited in additional institutions. The type localities and associated specimens are listed first under “material examined” followed by alphabetical listings of place names for additional material.

New Species Descriptions

Trientoma jilae, new species

(Figs. 1A–B, 2A, 3A–B, 3E)

Description

Holotype, MALE: Body length 9.1 mm; greatest width 4.2 mm (at about basal 1/5th of elytra); robust, elongate-oval in outline (Fig. 1A–B, 3E), with pronoto-humeral margin

nearly continuous; color black dorsally, very dark brown ventrally, with appendages dark brown; surfaces variably shining to alutaceous, with very minute, fine golden setae.

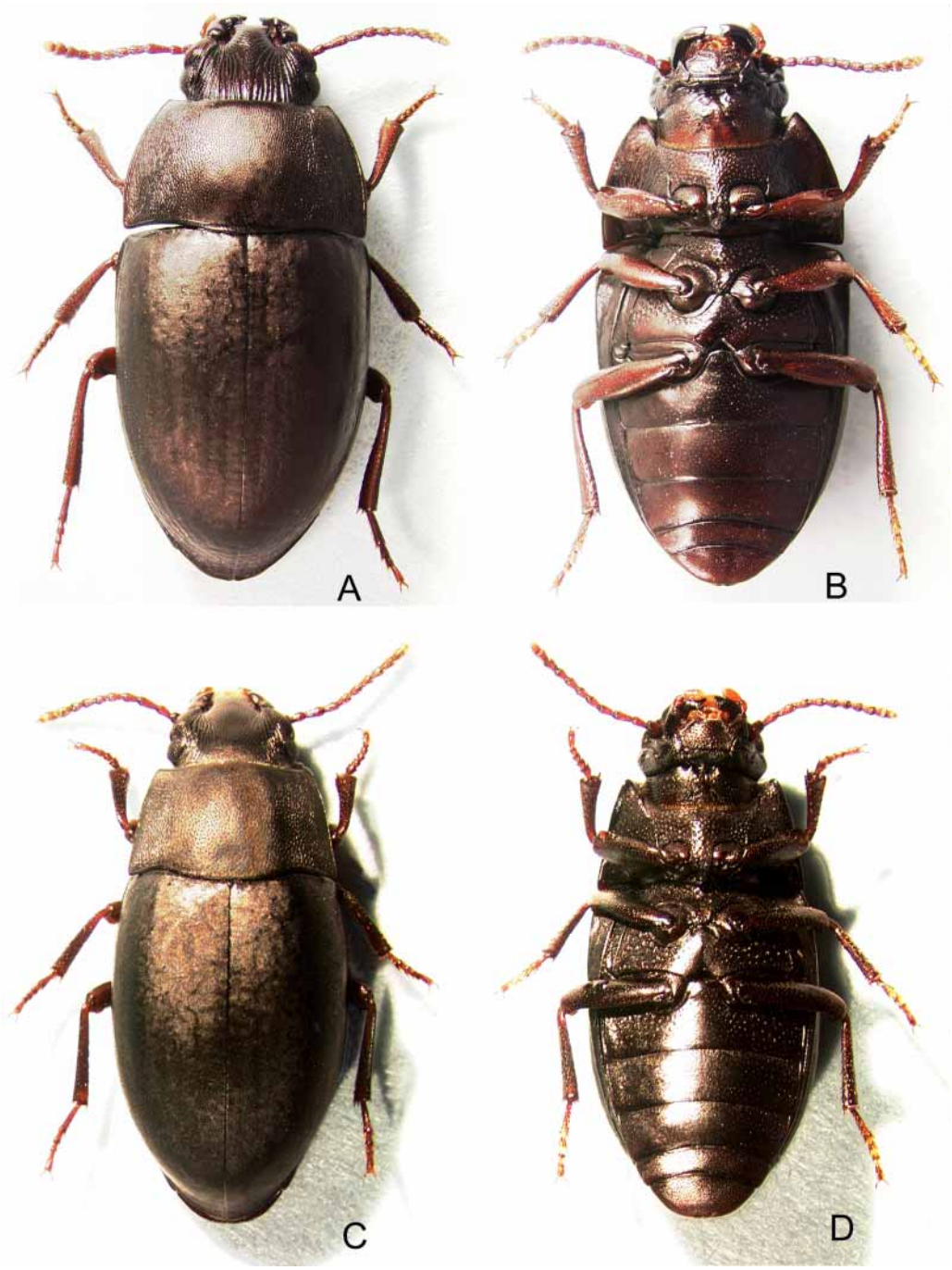

FIGURE 1. Two *Trientoma* species, holotypes. A, *T. jilae*, new species, dorsal view; body length 9.3 mm. B, same, ventral view. C, *T. voegeliorum*, new species, dorsal view; body length 6.2 mm. D, same, ventral view.

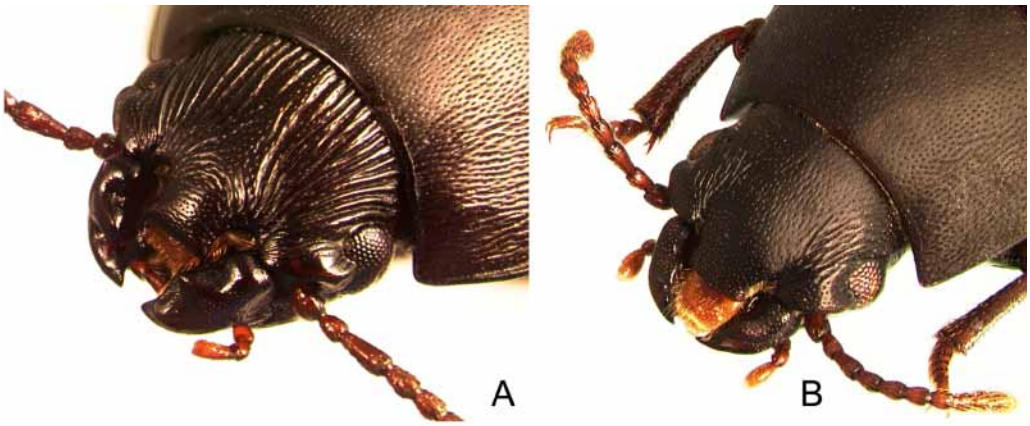

FIGURE 2. Two *Trientoma* species, holotypes, oblique frontal views of heads, imaged to scale with each other. A, *T. jilae*, new species; head width at eyes 2.3 mm. B, *T. voegeliorum*, new species, head width at eyes 1.6 mm.

Head (Fig. 2A) with fused frons, clypeus evenly convex; surface with small punctures, transverse, arcuate rugae across fronto-clypeal region, becoming heavily rugose-carinate, polished laterally; punctures separated by one to two times the diameter of a puncture; rugose area covering much of frons (except for median triangular area) from lateral clypeal invaginations to vertex, posterad of eye; lateral-most carina above eye wider, more elevated than others; epistomal surface smooth, less rugose, with small scattered punctures. Clypeus with truncate apex; margin very slightly produced medially, expanded laterally. Antennae 2.6 mm long; second antennomere (pedicellus) only ½ as long as third antennomere; antennomere 10 widest; smaller apical antennomere paler brown.

Prothorax transverse, as wide as elytra at humeri, widest at posterior corners; sides feebly curved and gradually converging from base to narrowly rounded anterior corners; posterior and anterior margins smoothly sinuate from sides to middle, edges narrowly polished; posterior corners slightly produced posteriorly. Pronotum with lateral margins strongly beaded; pronotal surface evenly convex across disc, very slightly explanate at posterolateral corners, alutaceous, with fine punctures medially, punctures becoming larger and elongate laterally, coalescing, forming rugulose lateral thirds of disk which are feebly shining. Ventral surfaces of prothorax coarsely punctate, episternum longitudinally punctate-rugose; punctures of prosternum separated usually by less than their diameters; prosternal process with a median furrow between procoxae, raised, polished at sides, deflexed before prominent, horizontal apex in lateral view; surface polished, punctures few. Mesosternum punctate as on prosternum but median punctures larger, more separated, and surfaces more shining; mesepimeron mostly impunctate, with a few small punctures anteriorly; metasternite with punctures more widely spaced than on prosternum, of varying size, from very fine medially to large and deep laterally, where confined to anterior half.

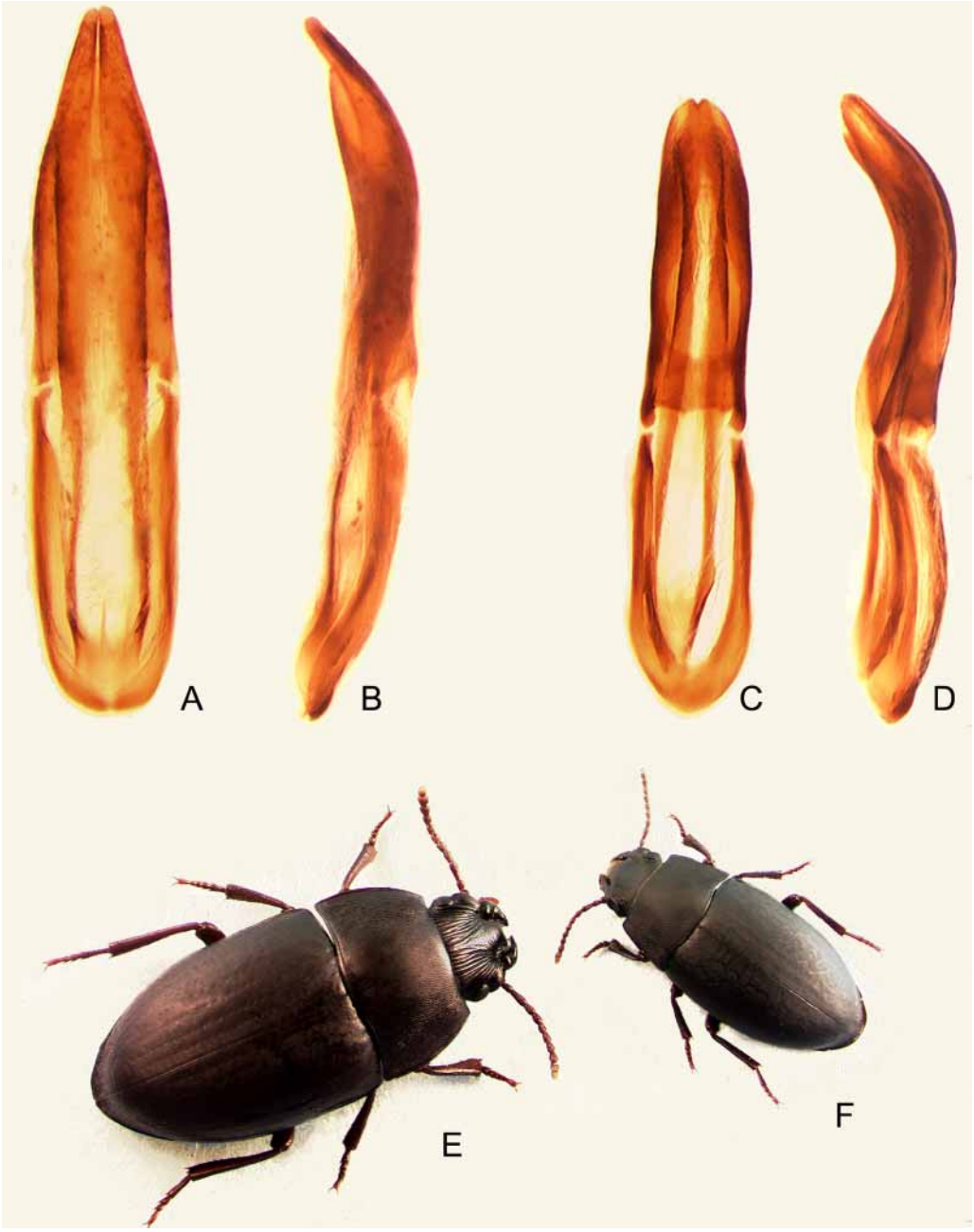

FIGURE 3. Two *Trientoma* species, holotypes, imaged to scale with each other. A-B, *T. jilae*, new species, male genitalia, dorsal and lateral views, respectively; length of tegmen 1.6 mm. C-D, *T. voegeliorum*, new species, male genitalia, dorsal and lateral views, respectively; length of tegmen 1.3 mm. E-F, dorsal views of *T. jilae* (body length 9.3 mm) and *T. voegeliorum* (body length 6.2 mm), respectively.

Legs with surfaces more shining than ventral sclerites, finely punctate, sparsely setose. Front tibia widened from base to broad, truncate apex; margins feebly arcuate; dorsolateral edge nearly straight, with a row of stout tooth-like setae. Tarsi unmodified; hind tarsi about 2/3rds as long as hind tibiae; basal tarsomere nearly as long as remaining three combined.

Elytra with sides evenly arcuate from humeri to apices; middle of dorsum nearly flat; striae feebly defined with inconspicuous, widely spaced, small, shallow punctures with polished centers; lateral stria along epipleural bead with a series of larger punctures along mid-length; dorsal surface smooth, distinctly alutaceous, with extremely small, fine golden setae. Epipleurae smooth; width narrowing gradually from humerus to elytral apex, concave near humerus, flat along mid-length, becoming grooved toward elytral apex.

Abdomen with all sternites smooth, evenly convex across middle, minutely punctate, feebly alutaceous. Tegmen 1.6 mm long; widest at hinge of basal and apical piece (Fig. 3A), nearly as wide, sub-parallel along middle 3/5ths; apical piece narrowing from mid-length to apices of parameres, with sides straight, converging, then abruptly narrowing to narrowly rounded apices, these touching at cleft, forming a small emargination; in lateral view (Fig. 3B) arched dorsally, with apical and basal piece with feeble dorsal emargination at junction; apex of parameres simple, slender and narrowly rounded. Ratio of length of apical piece to basal piece 15:13.

FEMALE. Similar to male except abdominal sternites 1, 2 slightly more convex medially.

Material examined

"BAHAMA ISLANDS: San Salvador, Sandy Point, 23°58'N, 74°33'W, 17 February 2004 / W. E. Steiner & J. M. Swearingen collectors" (holotype and 13 paratypes); same data except "19 February 2004" (2 paratypes); same data except "Sandy Hook, 23°58'N, 74°28'W, 20 February 2004 (1 paratype).

Variation

Specimens range from 7.9–9.2 mm in length; in general, the smallest are males, largest, females.

Diagnosis

The larger body size, surface features, and form of the aedeagus will serve to identify this species. The size range does not overlap with that of its smaller congener described below. It appears to be closely related to *Trientoma wickami* Casey (1907), the only other *Trientoma* described from the Bahamas ("Egg Island") but the holotype has a nearly smooth vertex, not rugose, the pronotum is finely punctate, not rugose laterally, and the strial punctures are more distinct. Other related but undescribed species in this group are known from other Bahamian islands, including the Turks and Caicos.

Etymology

The specific name "*jilae*" is derived from the name "Jil" + the Latin genitive possessive feminine ending "-ae" to honor my wife, Jil Marie Swearingen, who discovered the first specimen of this distinctive beetle and has helped in countless ways in Bahamian fieldwork, including photography of the habitats and collection sites.

Distribution

Trientoma jilae is known only from San Salvador Island and is presumably endemic. The only two sites where it was found are on the southern points of the island, and in a small forested area at Sandy Point was it discovered in numbers.

Habitats and collection notes

All specimens were collected on deep, coarse, coral sand under leaf litter, palm thatch and wood debris on high sandy ground behind the beach strand, in sites partly shaded by shrub and tree canopy, e.g. *Bursera simaruba, Coccothrinax argentata, Coccoloba uvifera*. *Trientoma jilae* was found to be locally abundant on the forested upper area behind the beach and at the foot of a steep hill at Sandy Point, the type-locality. Specimens were found co-occurring with the *Branchus* and larger *Diastolinus* species described in this paper, in dry sites at edges of light gaps but under larger accumulations of palm thatch and leaf litter. Two associated larvae, most likely belonging to this species, were found just beneath the surface in the loose sand beneath the litter layer.

***Trientoma voegeliorum*, new species**
(Figs. 1C–D, 2B, 3C–D, 3F)

Description

Holotype, MALE: Body length 6.2 mm; greatest width 2.7 mm (at about basal 2/5ths of elytra); robust, elongate-oval in outline (Fig. 1C–D, 3F), with pronoto-humeral margin nearly continuous; color black with appendages dark brown; surfaces feebly shining, alutaceous, with very minute short golden setae.

Head (Fig. 2B) with fused frons, clypeus evenly convex; surface with small punctures medially, becoming longitudinally rugose laterally but similarly punctate over epistoma; punctures separated by one to two times the diameter of a puncture; rugose area beginning at lateral clypeal invaginations, extending, widening posteriorly above eyes to point not far posterad of eye. Clypeus weakly trilobed, margin slightly produced medially, expanded laterally. Antennae 1.8 mm long; second antennomere (pedicellus) about 2/3rds as long as third antennomere; antennomere 10 widest, weakly clasping smaller apical antennomere.

Prothorax transverse, as wide as elytra at humeri, widest at posterior corners; sides feebly curved and gradually converging from base to narrowly rounded anterior corners; posterior, anterior margins smoothly sinuate from sides to middle, edges narrowly

polished; posterior corners produced posteriorly. Pronotum with lateral margins narrowly beaded; surface evenly convex across disc, very slightly explanate at posterolateral corners, very finely punctate medially as on head, punctures becoming larger, elongate laterally, with some coalescing, appearing rugulose in lateral quarters of disk. Ventral surfaces of prothorax densely punctate except posterior third of episternum smoothed; punctures of varying size, separated by less than their diameters; prosternal process broadly lanceolate, with apex deflexed, surface flat, punctate as on prosternum. Mesosternum punctate as on prosternum but anterior punctures larger, more separated, median depression nearly impunctate, smooth; mesepimeron impunctate; metasternite with punctures more widely spaced than on prosternum, of varying size, from very fine medially to large, deep laterally.

Legs with surfaces finely punctate, sparsely setose. Front tibia widened from base to broad, truncate apex; margins feebly arcuate; dorsolateral edge with row of stout tooth-like setae. Tarsi unmodified; hind tarsi about 2/3rds as long as hind tibiae; basal tarsomere nearly as long as the remaining three combined.

Elytra with sides evenly arcuate from humeri to apices; striae not defined; surface smooth, imperceptibly punctate but with reticulate alutaceous luster; laterally with extremely small, fine golden setae. Epipleurae smooth; width narrowing abruptly from humerus to about basal 1/3rd, then gradually narrowing and becoming concave to narrowly grooved at elytral apex,.

Abdomen with sternites smooth, convex across middle but sternites 1 and 2 slightly flattened medially, minutely punctate except for sternite 1 which has scattered large punctures (similar to those on metasternite) basomedially, becoming smaller posteriorly. Tegmen 1.3 mm long; widest near base of basal piece (Fig. 3C), narrowing to sub-parallel along length of apical piece, then abruptly narrowing to a broadly rounded apex with small triangular median emargination (division of parameres); in lateral view (Fig. 3D) sinuate, with apical and basal piece arched dorsally but with dorsal emargination at junction; apex of parameres simple, broadly rounded. Ratio of length of apical piece to basal piece 14:11.

FEMALE. Similar to male except abdominal sternites 1 and 2 slightly less flattened medially (more evenly convex).

Material Examined

"BAHAMA ISLANDS: San Salvador, Sandy Hook, 23°58'N, 74°28'W, 18 February 2004 / W. E. Steiner & J. M. Swearingen collectors" (holotype and 30 paratypes); same data except "20 February 2004" (13 paratypes); same data except "French Bay Beach, 23°57'N, 74°32'W, 21 June 2003" (1 paratype).

Variation

Specimens range from 5.3–6.7 mm in length; the smallest are males, largest, females.

Diagnosis

The smaller size, surface features, and form of the aedeagus will serve to identify this species. The size range does not overlap with that of its larger congener, *T. jilae*, which has a completely rugose frons and faint strial punctures.

Etymology

The specific name honors Vince and Sandy Voegeli of the Gerace Research Center, San Salvador, in recognition of their continuing logistic support and hospitality during fieldwork on the island. The name is formed by a combination of the proper name "Voegeli" + the Latin plural possessive ending, "-orum."

Distribution

Trientoma voegeliorum is known only from San Salvador Island and is presumably endemic. Two *Trientoma* species often co-occur on West Indian islands but usually have differential habitat occurrence and differ in size and appearance. In this case, either *T. jilae* or *T. voegeliorum* were found to be dominant at a particular locality (i.e., rarely share the same microsite) behind beaches of the southern parts of the island.

Habitats and collection notes

All specimens were collected under leaf litter, palm thatch and wood debris on high sandy ground behind the beach strand, usually in sites shaded by shrub canopy, e.g. *Coccoloba uvifera*. It was found to be most abundant on the relatively barren flats behind the beach at Sandy Hook, the type-locality; specimens were found co-occurring with the larger *Diastolinus* species described in this paper, in open dry sites but under larger accumulations of palm thatch at bases of *Coccothrinax argentata* trunks and leaf litter at edges of shrubs.

***Branchus geraceorum*, new species**
(Figs. 4A–F)

Description

Holotype, MALE: Body color very dark brown except elytral sutural carina blackish; outline oval (Figs. 4A–B), nearly continuous except for slight emargination between posterior angle of pronotum and elytral humerus; form convex, about equally so dorsally, ventrally; body length 14.2 mm, greatest width 7.8 mm at basal 1/3 of elytra; dorsum dull (except for raised polished elytral carinae), covered with fine, decumbent, pointed, tapered, golden brown setae (Fig. 4C).

Head less than ½ as wide as pronotum, widest at eyes and equally so at epistomal canthi; frons with triangular concavity across middle. Antenna with segment 3 slightly shorter than combined length of segments 4 and 5; segments 9, 10, 11 wider than long,

forming weak club. Mentum broadly heart-shaped, without sharp angles; surface flat, punctuate except for polished anteromedian area, punctures bearing minute setae. Gena slightly produced anteriorly, not extending to half length of mentum.

Prothorax about twice as wide as long, broadest at basal 1/3, sides evenly arcuate, anterior margin broadly, evenly emarginate, anterior, posterior angles produced, the latter with rounded, flattened apices directed posteriorly; lateral margin very slightly explanate, with very fine polished bead on dorsal side of edge (often obscured by scalelike setae) and dense row of oblique overlapping scalelike setae on edge; pronotum evenly convex, surface with shallow rounded punctures, many contiguous, each with flattened blunt scalelike seta extending only to posterior margin of puncture (in most cases, but some closer to margins extend slightly beyond puncture edge); punctures absent along narrow smooth midline, on small, slightly raised areas on middle of each side of disk; ventral surfaces sparsely punctate laterally, more densely so medially, most dense, fine on prosternal process, with setae slender, hairlike, curved, nearly erect, very dense, fine, golden on prosternal process.

Thoracic ventrites somewhat polished, with deep, rounded, setiferous punctures large, scattered laterally, small, very dense medially, with dense golden setae as on prosternal process; Legs polished, with scalelike setae especially on tibiae; more hairlike on femora, forming relatively dense patches on flat ventral surfaces; tibial spurs well developed. Protibia broad, truncate at apex, forming a tooth at outer angle; apical half of anterior edge bearing row of short, sharp spines. Meso, metatibiae expanded at apex; metatibia feebly arcuate. Tarsi with conspicuous golden setae on ventral surfaces, the patches divided medially.

Elytra widest near basal 3/5ths, about 2.5 times longer than wide; surface generally smooth except for five raised, polished carinae (Figs. 4A, 4C) on disk and a sutural carina, latter extending to apex of elytron but very narrowed to apex; first, third, fifth discal carinae less prominent at elytral base; second, fourth carinae more raised at elytral base; third, fifth carinae longest, tapering, extending to about apical one-third of elytron; other carinae becoming narrow, broken toward mid-length of elytron. Scalelike setae similar to those on pronotum but more elevated, decurved, arising from very inconspicuous punctures, distributed sparsely, evenly on interval surfaces but more closely spaced, in a row along each side of carinae (Fig. 4C). Margin of pseudepipleuron well defined basally (with scalelike setae more dense than on elytral disk), becoming obscure at about apical one-fourth of elytron; scalelike setae on pseudepipleron similar in size, arrangement to those of elytral disk. Epipleuron long, tapered to elytral apex, generally 1/4th as wide as pseudepipleuron but abruptly widened at base, without setae except for a few along edge; apical part (opposite abdominal ventrites 4 and 5) forming a smooth groove between beaded edges. Abdominal sternites polished, with large punctures laterally; punctures absent in median areas of abdominal sternites 1–4 except on intercoxal process; sternite 5 with punctures less dense medially. Tegmen (Figs. 4D–E) 5 mm long, with apical piece

longer than basal piece, flattened, truncate at apex, sinuate across apex with asymmetric edge between sharp, lateral projections. Median lobe with slender arching rodlike apex, ending with bulbous tip (Fig. 4F).

FEMALE**.** Similar to male but averaging larger, more robust, inflated. Secondary sexual differences include lack of the arcuate form of the hind tibia, relatively reduced setose flat ventral surfaces on the meso-, metatibiae, and more convex abdominal sternites.

Variation

Specimens range from 12.5 to 15.5 mm long. Some specimens have a soil encrustation that obscures some of the punctures and setae.

Material examined

"BAHAMA ISLANDS: San Salvador, Sandy Point, 23°58'N, 74°33'W, 19 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (Holotype and 24 paratypes); same data except "17 February 2004 (2 paratypes); same data except "25 June 2005 / W. E. Steiner, J. M. Swearingen & D. J. Lodge, collectors" (3 paratypes); "BAHAMA ISLANDS: San Salvador, near Altar Cave, 23°59'N, 74°32'W, 19 February 2004 / W. E. Steiner, J. M. Swearingen & S. Voegeli collectors" (1 paratype); "BAHAMAS, SAN SALVADOR, 19 JUNE 1999, M. & L. DEYRUP / YELLOW BOWL TRAP, COPPICE FOREST SOUTH OF BAHAMIAN FIELD STATION" (1 paratype, ABSC); "BAHAMAS: San Salvador Is., Dump, 13 Feb 1982, N. B. Elliott (1 paratype, GRCC); same data except "17 Jan 1982" (1 paratype, GRCC); "BAHAMA ISLANDS: San Salvador, East Beach, 24°06'N, 74°25'W, 22 June 2003 / W. E. Steiner & J. M. Swearingen, collectors" (6 paratypes); same data except with the label "Reared from larva found 22 June 2003; pupated 19 Nov., eclosed 4 Dec., preserved 22 Dec. '03" (1 paratype, with associated larval and pupal exuviae in gelatin capsule); same data except "18 February 2004" (8 paratypes); "BAHAMA ISLANDS: San Salvador, Long Bay (Columbus Landing), 24°02'N, 74°31'W, 18 February 2004 / J. Winter, et al. collectors; in loose fine sand in weedy gap, coastal forest" (1 paratype); "SAN SALVADOR, BAHAMAS, 17 JUNE 1993, M. DEYRUP / THICK COPPICE-FOREST, HILL TRAIL NORTH OF OSPREY POND" (1 paratype, ABSC); "BAHAMA ISLANDS: San Salvador, North Point, near Govt. Dock, 24°07'N, 74°26'W, 15 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (1 paratype); "BAHAMA ISLANDS: San Salvador, 1 km S Rocky Point, 24°07'N, 74°31'W, 17 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (14 paratypes); "BAHAMA ISLANDS: San Salvador, Sandy Hook, 23°58'N, 74°28'W, 20 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (3 paratypes); "BAHAMAS: San Salvador, Sandy Point / J. H. Knowles coll., 26 VI 65" (1 paratype, FSCA; teneral, with damaged right elytron); "BAHAMAS: San Salvador, 2.3 mi. E. Watling's Castle, 30-XII-63, D. R. Paulson" (4 paratypes, FSCA; one mislabeled from Mexico by the same collector; that label inverted and new label added by

WES). Additional non-paratypic specimen: “BAHAMA ISLANDS: San Salvador, Long Bay (Columbus Landing), 24°02’N, 74°31’W, 16 February 2004 / W. E. Steiner, J. M. Swearingen, J. Winter, et al. collectors” (1 elytron only).

FIGURE 4. *Branchus geraceorum*, new species, holotype. A, dorsal view; body length 14.2 mm. B, same, ventral view. C, detail of dorsum including scutellum and elytral suture. D-E, male genitalia, dorsal and lateral views, respectively; length of tegmen 5 mm. F, apical piece and apex of median lobe, oblique lateral view.

Diagnosis

Branchus geraceorum is distinct in having the raised, polished, elytral carinae. It also lacks large punctures on the elytral surfaces, present in all other known *Branchus* species. It is the largest known darkling beetle on San Salvador. A key to *Branchus* species will be provided in a future monograph of the group. *Branchus geraceorum* belongs to the "*floridanus* group" (Steiner 1991) that includes the type species, *B. floridanus* LeConte (1866), illustrated by Triplehorn and Weems (1964) from southern Florida, and *B. woodi* LeConte (1866) from New Providence, *B. saxatilis* Steiner (2005a) and several other species to be described. All of the members of this group have the same distinctive form of the male genitalia, with minor variations; the external characters are more useful for recognizing the species.

Etymology

The specific name honors Donald and Kathy Gerace, founders of the Gerace Research Center (formerly the Bahamian Field Station), San Salvador, in recognition of their contributions to science, education and conservation. The name is formed by a combination of the proper name "Gerace" + the Latin plural possessive ending, "-orum."

Distribution

Branchus geraceorum is known only from San Salvador but occurs at a number of sites around the island.

Habitats and collection notes

Specimens of this *Branchus* had been known to me for a number of years, borrowed from a few U.S. museums for an ongoing revision, and recognized as an undescribed, distinct species probably endemic to San Salvador. Having only a few specimens, most in poor condition, recent efforts were made to collect more of the beetles on two visits to the Gerace Research Center, examining the optimum habitats for these beetles (Steiner 1991, 2005a) at several sites around the island, with success. Specimens were collected under leaf litter, palm thatch and wood debris on high sandy ground behind the beach strand, in sites partly shaded by shrub or small tree canopy, e.g. *Bursera, Coccothrinax, Coccoloba* on deep, coarse, coral sand. At Sandy Point, the type-locality; specimens were found in the greatest number and concentration, co-occurring with the larger of each of the two *Diastolinus* and *Trientoma* species described in this paper, at edges of light gaps in dry sites but under larger accumulations of palm thatch and leaf litter. Beetles are usually exposed at the sand surface but nestled in small depressions or sometimes immediatlely under the sand surface. Associated larvae (to be described in a future work) occur deeper in the sand, usually 2–6 cm, and are often found in greater numbers than adults. In June 2005, larvae were also found in fine sand under mixed leaf litter in swales of the hardwood forest interior behind the GRC.

***Adelina bacardi*, new species**
(Figs. 5A–F)

Description

Holotype, MALE: Body length 6 mm; greatest width (along mid-length of elytra) 2.3 mm.; oblong-oval, somewhat flattened dorsally, ventrally, parallel-sided along mid-length of elytra (Fig. 5A); color amber-brown throughout; dorsal surfaces finely alutaceous, shining but not highly so; ventral surfaces more polished.

Head (Figs. 5B–C) wider than long, widest anterior to eyes at laterally expanded epistoma; with transverse depression between frons and clypeus along suture; clypeus transverse, with anterior margin convex, evenly rounded, continuous with epistomal margin; epistomal margins expanded, elevated, produced anteriorly into prominent conical horns with apices curving ventrally; surface of frons with small punctures separated by about the diameter of a puncture laterally and across clypeus, becoming finer, inconspicuous, more widely spaced on vertex. Eyes narrow, wider than long in dorsal view, with truncate mesal margins; larger ventrally, wider than long. Antennae 2.7 mm long; scapus short, about twice as wide as long; pedicellus small, globular; third antennomere slightly shorter than, first two combined; antennomeres 4–11 moniliform, elliptical, slighly flattened, widest toward apices, about twice as long as wide.

Prothorax nearly as wide as hind body, widest (2.2 mm) at anterior 1/3rd; transverse, quadrate at base with acute posterolateral angles, narrower than elytra at humeri, broadly rounded at anterior corners but not inflated; sides very narrowly sinuate near base, broadly convex laterally; pronotum with lateral and posterior margins finely beaded, basal margin narrowly sinuate from sides to middle; anterior margin broadly concave, rounded. Pronotum broadly convex laterally, nearly flat across disc, with a slightly concave area basally, bearing a polished midline; basolateral foveae not deep; surfaces very finely punctate; punctures separated by two to three times diameter of a puncture. Prosternum densely punctate to transversely rugose in anterior half with many punctures coalesced; propleura more evenly punctate; prosternal process narrowed between coxae to a width only 1/4th the width of a coxa, broadly expanded posteriorly to a sloping apex, with a median furrow in area between coxae, then rounded, convex between furrow and obtusely pointed apex. Mesosternum indistinctly punctate, broadly concave medially, with a median furrow, rounded, smooth at bottom, extending to apex between mesocoxae. Metasternite finely punctate, punctures of median flat area very small, becoming larger laterally, separated by about the diameter of a puncture.

Legs with surfaces finely punctate, very finely setose; front tibia slightly arcuate, gradually widened from base to apex; outer margin nearly straight, with crenulate edge; inner margin arcuate, spurs short, thick, curved; tarsomeres unmodified except basal first tarsomere with a small conical ventral process.

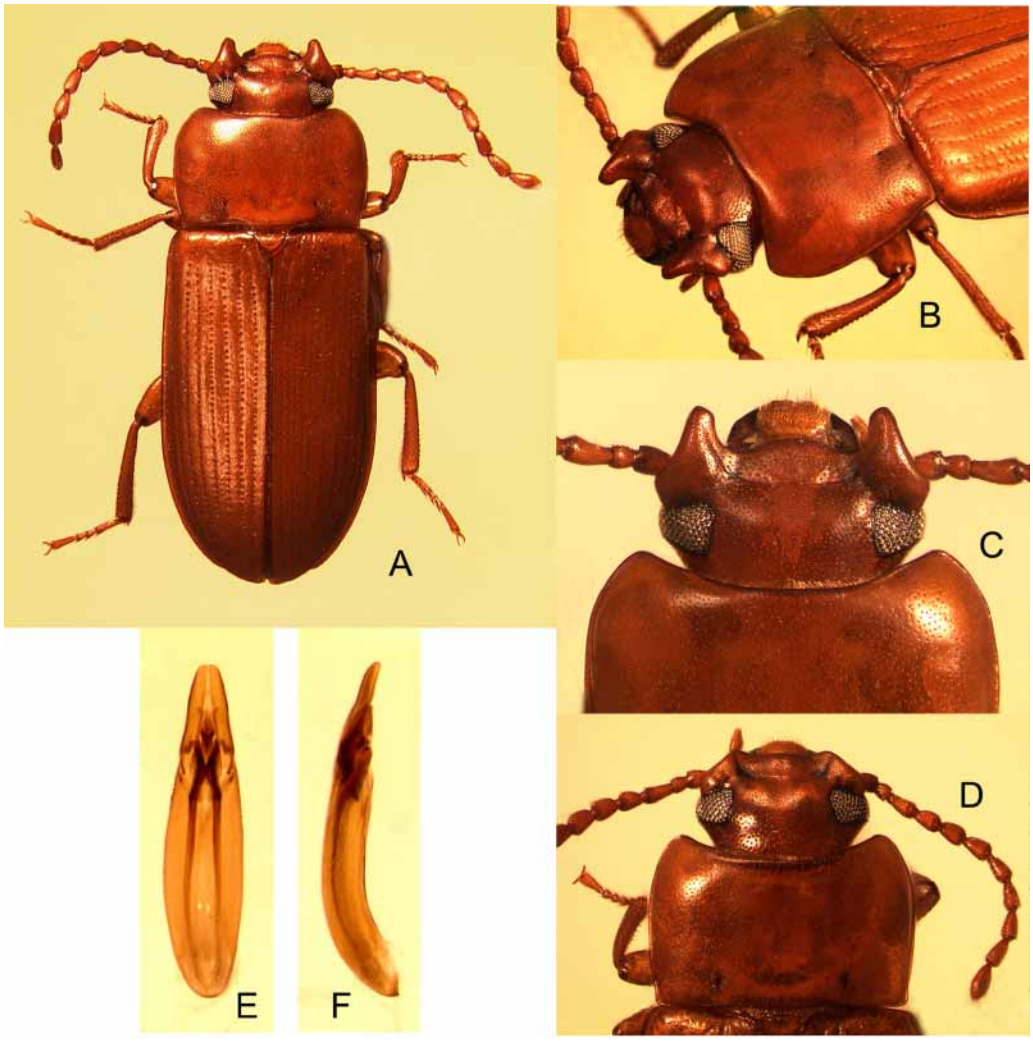

FIGURE 5. *Adelina bacardi*, new species. A, holotype, dorsal view; body length 6 mm. B, same, oblique frontal view. C, same, head, enlarged; width of head 1.3 mm. D, Fore-body of a "minor" male paratype; width of head 1.1 mm. E-F, male genitalia of holotype, dorsal and lateral views, respectively; length of tegmen 1.2 mm.

Elytra about 3 times as long as wide; strial punctures small, regularly spaced, separated by about the diameter of a puncture; intervals with extremely fine scattered punctures, barely visible; edge of lateral declivity of elytron not sharply defined, beginning at the seventh stria, obscured basally on smooth, rounded humerus, obscure toward apex. Epipleurae impunctate; of even width along most of mid-length, then narrowed opposite 4th abdominal sternite to a point opposite basal 1/3rd of fifth sternite.

Abdomen with sternites punctate as on metasternite; sternites 1–3 with lateral shallow concavities surrounded by slightly raised zones; sternite 2 nearly flat to slightly concave

medially; sternite 5 more that twice as wide as long, with a transverse smooth fovea along base, convex across apical half. Tegmen 1.2 mm long, arched dorsally in basal 1/3rd; sides evenly arcuate in dorsal view, widest at about mid-length of basal piece. Apical piece in dorsal view (Fig. 5E) widest at base, sides converging gradually, nearly straight in basal half, then curved, narrowing to rounded apex; in lateral view (Fig. 5F) with apex narrowly rounded, slightly deflexed. Ratio of length of apical piece to basal piece 1:2.

FEMALE. Of the same size range and coloration seen in males but, as in other *Adelina* species, lacking the frontal processes, with front margin of head nearly evenly rounded.

Material Examined

"BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 20 February 2004 / Under bark of dead standing *Terminalia catappa* in mixed scrub forest; coll. W. E.Steiner & J. M. Swearingen" (holotype and 2 paratypes); same data except "23 June 2005 / Under bark of fallen leaning *Bursera simaruba* in mixed scrub forest; W. E. Steiner & J. M. Swearingen collectors" (3 paratypes); BAHAMA ISLANDS: San Salvador, near small pond 2 km W of Gerace Research Ctr.; 24°07'N, 74°28'W / 25 June 2005; W. E. Steiner, J. M. Swearingen & D. J. Lodge collectors / Under dry thin loose bark of fallen trunk and branches of *Metopium toxiferum* in coastal forest" (4 paratypes).

Variation

Some male specimens are smaller than the holotype, 4.6 to 5 mm in length; frontal horn development is much reduced (Fig. 5D). Most horned male beetles, including members of this genus (Doyen 1984) typically have this kind of variation from "minor" to "major" horn development. "Minor" males may be mistaken for females.

Diagnosis

This species superficially resembles a member of the genus *Sitophagus* because of its more robust form and obscure elytral declivity, but the latter feature occurs on the 8th interval in *Sitophagus*; *S. hololeptoides* Laporte, which occurs in the Bahamas, is of similar size and form, but the epistomal horns curve inward and upward, and most flagellomeres are as wide as long (see Doyen 1984). Among *Adelina* species, those of more robust form and having the elytral declivity on the 7th interval belong to the "second groupe" of Ardoin (1977), a group of few species compared to the "premiere groupe." *Adelina bacardi* is most similar to *A. dominicana* Ardoin in the shape of the epistomal projections, but the tegmen of the latter (Ardoin 1977, Fig. 20, O) has the apical piece distinctly angulate on sides, with a triangular, acute apex, not rounded.

Etymology

The color of the beetle is that of the amber-brown rum enjoyed at the symposia of the Natural History Conferences of the Bahamas, Gerace Research Center, San Salvador. The

proper name "Bacardi," used here as a noun in apposition, also recognizes the late Luis F. Bacardi of the family-owned distillery, whose endowment continues to support habitat conservation, and the Bacardi Family Foundation, working in partnership with the Bahamas National Trust to ensure natural resource protection in the Bahamas.

Distribution

Adelina bacardi is known only from San Salvador Island. While possibly endemic to the island, the hind wings are fully developed, so it could be far more widespread, as are many other *Adelina* species.

Habitats and collection notes

As noted in the label data, all were taken under loose bark of dead standing or leaning wood of a variety of tree species. Adults and associated larvae were found under thin dry bark of branches as well as main trunks, by holding a net under each piece of bark as removed, and examining the debris. The June 2005 occurrences were associated with trees broken by Hurricane Frances in September 2004.

***Blapstinus kalik*, new species**
(Figs. 6A–E)

Description

Holotype, MALE: Body length 4.7 mm; greatest width (at about mid-length of elytra) 1.3 mm; elongate oval in outline (Fig. 6A, 6C); color dark brown with slightly paler, reddish brown sutural edges, sides of elytra; surfaces dull, with appressed fine golden setae; antennae, maxillary palpi and tarsi reddish brown, slightly less dull than body.

Head (Fig. 6B) with frons, clypeus evenly convex; surface with small punctures separated by about twice diameter of a puncture. Eyes narrowly divided. Antennae 1.2 mm long; third antennomere slightly shorter than first two combined.

Prothorax transverse, slightly narrower than elytra at humeri, with sides nearly parallel from base to mid-length, then converging to narrowly rounded apical corners; apical margin evenly, broadly concave; basal margin sinuate, produced posteriorly at middle. Pronotum with all margins narrowly beaded; pronotal surface evenly convex across disc, evenly punctate; punctures separated by about three times diameter of a puncture. Prosternum densely punctate with some punctures coalesced. Mesosternum finely punctate, somewhat shining; metasternite somewhat polished medially; punctures separated by about twice their diameters, with setae becoming longer, closer laterally.

Legs with surfaces punctate, finely setose. Front tibia gradually widened from base to obliquely truncate apex; inner margin sinuate, outer margin evenly arcuate, each bearing row of small stout spines in apical 3/5ths; posteroventral surface with irregular patch of stout spines in apical half. Front, middle tarsi with tarsomeres 1–3 broadened, with densely

setose adhesive pads; front tarsomeres 2 and 3 most dilated, slightly wider than long. Hind tarsi about 3/5ths as long as hind tibiae; basal tarsomere slightly longer than second and third combined.

Elytra with sides evenly arcuate from humeri to apices; strial punctures small, not deep, separated by two or three times their diameters; intervals very feebly convex, with scattered inconspicuous punctures. Epipleurae appearing smooth except for marginal bead; width narrowing from humerus to point opposite 1st abdominal sternite, of even width to point opposite posterior corner of 4th sternite, then narrowing opposite 5th sternite to elytral apex. Hind wings fully developed.

Abdomen with sternites appearing more polished medially with more widely spaced punctures; punctures of alutaceous lateral areas inconspicuous; golden setae forming dense patches at sides of sternites 1–4 (Fig. 6C). First, second sternites with areas of median 1/5th slightly concave, forming an oval, non-setose smooth area. Sternite 5 with distinct median concavity with finer, denser punctures; posterior margin evenly rounded. Tegmen 1.5 mm long; arched dorsally, widest at about mid-length of basal piece, narrowing apically, with contiuous outline to apical piece; apical piece in dorsal view (Fig. 6D) with sides sinuate; parameres becoming divided near mid-length of apical piece, narrowed to pointed, close apices, in lateral view strongly undulate (Fig. 6E). Ratio of length of apical piece to basal piece 2:5. Median lobe with a very fine, spine-like apex lying above, between parameres.

FEMALE**.** Similar to male except: Front, middle tarsi with basal 3 tarsomeres not expanded and without dense adhesive pads; front tibiae with inner margins arcuate (not sinuate) and spines inconspicuous; abdominal sternites 1, 2 evenly convex, setose across middle; median concavity of abdominal sternite 5 indistinct, with evenly spaced punctures over surface.

Material examined

"BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 17 February 2004 / W. E. Steiner & J. M. Swearingen collectors" (holotype); same data except "19 June 2004" (1 paratype); same data except "21 June 2004" (1 paratype); same data except "22 June 2004 / Under matted grass and leaf litter, edge of low scrub" (6 paratypes); same data except second label "At black light, scrub forest edge at open catchment" (23 paratypes); same data except "16 February 2004 / "At black light, scrub forest edge at open catchment" (2 paratypes); same data except "17 February 2004 (1 paratype); same data except "25 June 2005" / "At black light, coastal sandy scrub forest; coll. W. E. Steiner & J. M. Swearingen (3 paratypes); same data except "26 June 2005" / Under matted grass and leaf litter, edge of low scrub" (1 paratype); "SAN SALVADOR, BAHAMAS, 10 JUNE 1995, M. & S. DEYRUP / OUTSIDE CAVE NEAR LIGHTHOUSE" (2 paratypes).

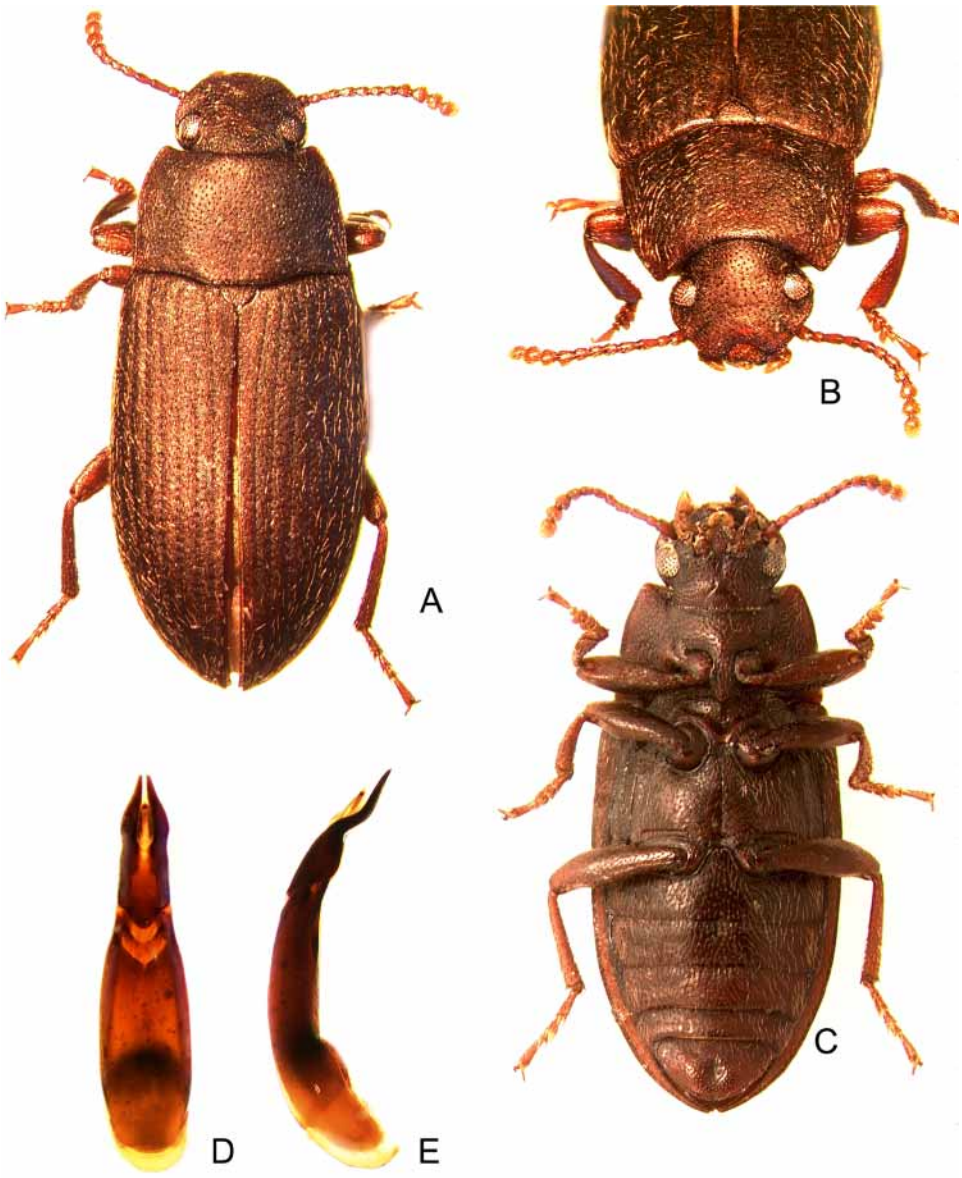

FIGURE 6. *Blapstinus kalik*, new species. A, holotype, dorsal view; body length 4.7 mm. B, same, frontal view. C, male paratype, ventral view. D-E, male genitalia of holotype, dorsal and lateral views, respectively; length of tegmen 1.5 mm.

Variation

Specimens range from 4.4–5.4 mm in length; the smallest are males, largest, females. In some older specimens, setae have been abraded.

Diagnosis

The small, elongate and somewhat flattened body, brownish coloration, dull luster and

vestiture of golden fine setae (most conspicuous in the lateral abdominal patches) will separate this species from all other opatrine tenebrionids known from San Salvador. *Blapstius kalik* belongs to a group of closely related species including *B. haitensis* Marcuzzi, *B. aciculus* Blatchley, and other mostly undescribed circum-Caribbean forms. Comparisons among the aedeagi and details of the male front tibiae will be most useful in separating these.

Etymology

Kalik is the name of the national beer of the Bahamas; the shape of the aedeagus is reminiscent of a bottle opener. The name is used as a noun in apposition.

Distribution

Blapstius kalik is known only from San Salvador Island and, while fully winged, is presumably endemic. Closely related forms are known from islands of some of the other Bahamian Banks.

Habitats and collection notes

The majority of specimens were collected at black light sheets in interior scrub; others were found under matted dead grass and leaf litter on fine sandy soil at the edges of open areas and dense scrub. Larvae of related species are known to live in sandy soils.

***Diastolinus this*, new species**
(Figs. 7A, 7C, 8A, 8C)

Description

Holotype, MALE: Body length 6.6 mm; greatest width (at about mid-length of elytra) 2.9 mm.; robust, broadly oval in outline (Fig. 7A); color black with appendages very dark brown to black; dorsal surfaces feebly shining, alutaceous; venteral surfaces more polished (Fig. 7C), with scattered golden setae.

Head with frons, clypeus evenly convex; surface with very small punctures separated by two to four times the diameter of a puncture, more closely spaced near epistomal margin. Eyes small, ventral half smaller than dorsal, divided by about 2/3rds width of ventral half of eye. Antennae 1.5 mm long; third antennomere shorter than first two combined; apical (11^{th}) antennomere brown, paler in apical half; antennomere 11 globular, widest, more so than antennomere 10.

Prothorax transverse, as wide as elytra at humeri, with sides nearly parallel from base to mid-length, then converging to rounded apical corners; apical margin evenly, broadly concave; basal margin slightly sinuate from sides to middle. Pronotum with all margins narrowly beaded except for middle of anterior margin where bead becomes obsolete;

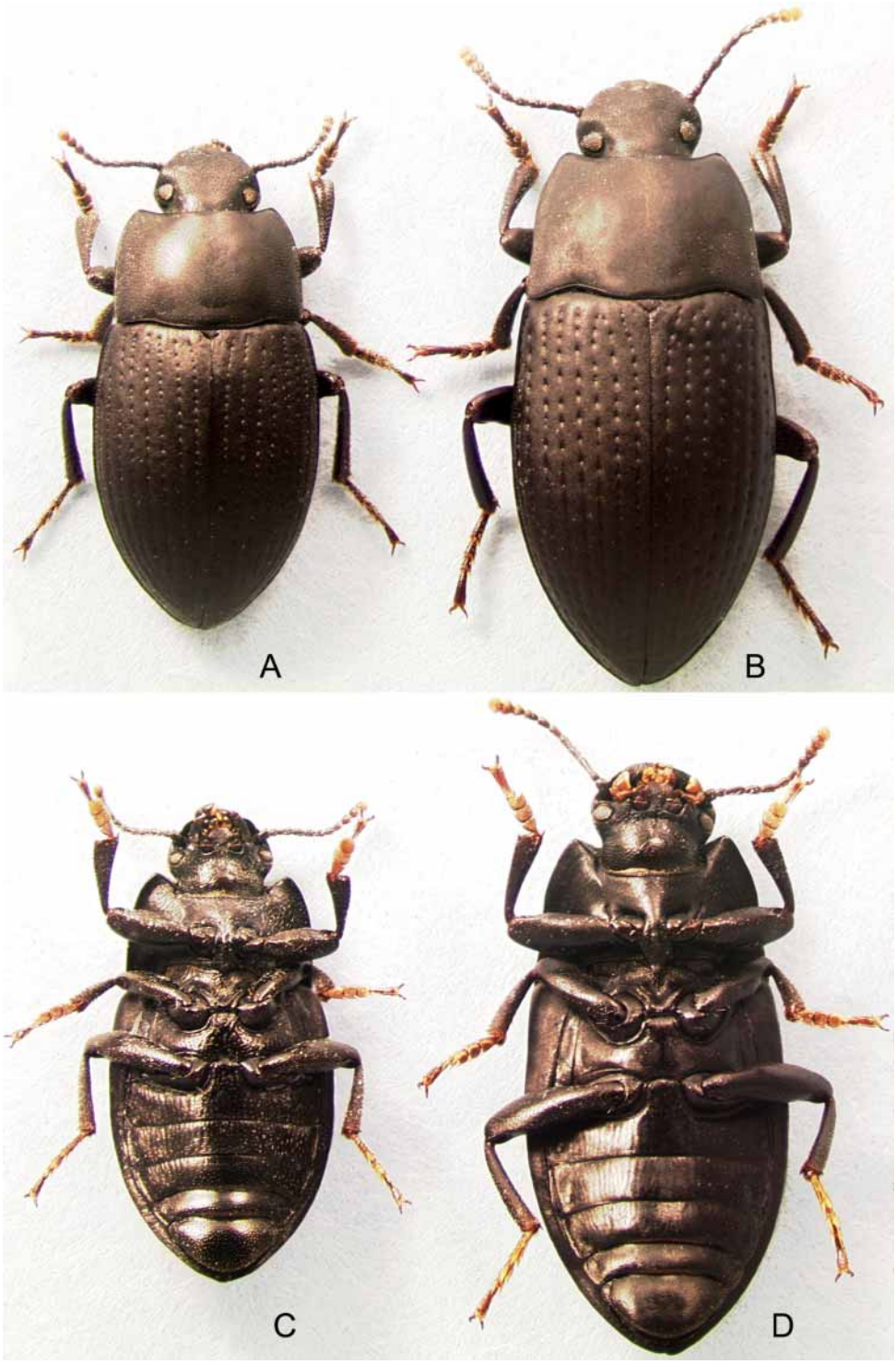

FIGURE 7. Two *Diastolinus* species, holotypes, imaged to scale with each other. A, *D. this*, new species, dorsal view; body length 6.6 mm. B, *D. that*, new species, dorsal view; body length 8.1 mm. C-D, same, ventral views, respectively.

pronotal surface evenly convex across disc, finely punctate; punctures separated by about three to five times diameter of a puncture, being closer, slightly larger laterally. Ventral surfaces of prothorax feebly rugose, with some punctures, more so medially; prosternal process lanceolate, more polished, raised laterally, medially with longitudinal ridges. Mesosternum densely punctate-rugulose; metasternite with coarse punctures,furrows medially; punctures becoming smaller, sparser between middle, hind coxae, then obsolete laterally, where surface becomes more alutaceous.

Legs with surfaces punctate, finely setose. Front tibia robust, gradually widened from base to obliquely truncate, broad apex; inner margin feebly arcuate, nearly straight along mid-length; outer margin feebly sinuate, posteroventral surface with stout setae in apical 2/3rds, especially dense along outer margin. Front, middle tarsi with tarsomeres 1–3 broadened, with densely setose adhesive pads; front tarsomeres 2, 3 most dilated, twice as wide as long. Hind tarsi about 4/5ths as long as hind tibiae; basal tarsomere slightly longer than the second, third combined.

Elytra with sides evenly arcuate from humeri to apices; striae very slightly impressed; strial punctures small, not deep, polished at center, often irregularly spaced; intervals very feebly convex, without visible punctures, lateral intervals bear minute golden setae. E pipleurae appearing smooth except for furrow parallel to marginal bead from about basal 1/3rd to near apex; width narrowing from humerus to elytral apex, ending in a single narrow polished edge.

Abdomen with sternites punctate, smooth medially except coarsely rugose on intercoxal process; sternites 1–3 feebly longitudinally rugose; sternites 1, 2 with slight concavities medially. Sternite 5 with a flat area apicomedially; posterior margin evenly rounded. Tegmen 2.1 mm long; strongly arched dorsally, widest at about mid-length of basal piece, narrowing apically, with small emargination at junction of basal and apical piece; apical piece in dorsal view (Fig. 8A) with sides sinuate, nearly parallel at middle for about 1/4th its length; parameres becoming divided near basal 1/5th, narrowed abruptly in apical 1/5th to narrowly rounded, close apices and in lateral view slightly undulate with sharp, flattened tips (Fig. 8C). Ratio of length of apical piece to basal piece 3:7.

FEMALE. Similar to male except: Front, middle tarsi with basal 3 tarsomeres not expanded, without dense adhesive pads; front tarsi with tarsomeres not much wider than long; abdominal sternites 1 an 2 with small flat area across middle, not concave; median flat area of abdominal sternite 5 smaller, indistinct, may be slightly concave apically.

Material examined

"BAHAMA ISLANDS: San Salvador, Sandy Point, 23°58'N, 74°33'W, 19 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (Holotype and 11 paratypes); same data except "17 February 2004 (4 paratypes); same data except "25 June 2005 / W. E. Steiner, J. M. Swearingen & D. J. Lodge, collectors" (3 paratypes); "SAN SALVADOR, BAHAMAS, 14 June 1993, M. DEYRUP / Beach near BFS [= Bahamian Field Station]"

(1 paratype, GRCC); "BAHAMA ISLANDS: San Salvador, Barkers Point, 24°07'N, 74°29'W, 24 June 2005 / W. E. Steiner, J. M. Swearingen et al. collectors" (2 paratypes); "THE BAHAMAS, San Salvador Island, CCFL [=College Center of the Finger Lakes] VI-9-1978, A. G. Scarbrough (3 paratypes, MAIC); "BAHAMA ISLANDS: San Salvador, Dim Bay (beach) near Fortune Hill, 24°02'N, 74°26'W, 18 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (4 paratypes); "BAHAMA ISLANDS: San Salvador, East Beach, 24°06'N, 74°25'W, 18 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (7 paratypes); "BAHAMA ISLANDS: San Salvador, French Bay Beach, 23°57'N, 74°32'W, 21 June 2003' (19 paratypes); same data except "17 February 2004" (2 paratypes); "BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 14 February 2004 / W. E. Steiner & J. M. Swearingen collectors" (2 paratypes); same data except "26 June 2005 / W. E. Steiner & J. M. Swearingen collectors" (9 paratypes); same data except 19–22 June 2003 / Yellow bowl pitfall trap among sparse plants on beach dune; collrs. W. E. Steiner & J. M. Swearingen" (1 paratype); "BAHAMA ISLANDS: San Salvador, Grotto Beach, 23°59'N, 74°32'W, 19 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (3 paratypes); "BAHAMA ISLANDS: San Salvador, Rice Bay (beach), 24°07'N, 74°26'W, 16 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (3 paratypes); "BAHAMA ISLANDS: San Salvador, Sandy Hook, 23°58'N, 74°28'W, 20 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (16 paratypes); "BAHAMA ISLANDS: San Salvador, Target Beach, 24°0'N, 74°32'W, 25 June 2005 / W. E. Steiner, J. M. Swearingen et al. collectors" (4 paratypes); "SAN SALVADOR, BAHAMAS, 18 June 1993, M. DEYRUP / ON BEACH, 3 DOG SITE" (3 paratypes, GRCC); "THE BAHAMAS, San Salvador Island, [no other data] Nov. 27, 1975 / Steven Young" (1 paratype, GRCC); same data except "Dec. 2, 1975" (1 paratype, GRCC); same data except "2 Dec. 1975 / Rick Hopkins" (1 paratype, GRCC).

Variation

Specimens range from 5.6–6.6 mm in length; the smallest are males, largest, females.

Diagnosis

The robust body and relatively stout legs, antennal coloration, surface features of the ventral sclerites, and form of the aedeagus will serve to identify this species. A more detailed list of compared characters will be discussed following the description its other new congener, below. As discussed in previous works (Steiner 2005a, 2005b) the genus needs redefinition and may be considered a complex of circum-Caribbean species groups under *Blapstinus*. Flight wings are vestigial and elytra are fused; the metasternite is short, with middle and hind coxae separated by less that the diameter of a coxa.

Etymology

The specific name "*this*" is from the Greek word meaning "shore" or "beach" in

reference to the habitat of the beetle, discussed below. The name is used as a noun in apposition.

Distribution

Diastolinus this is known only from San Salvador Island and is probably endemic. Closely related forms are known from islands of some of the other Bahamian Banks.

Habitats and collection notes

All specimens, referred to as "the smaller *Diastolinus*" in field notes, were collected along the edge of the upper beach strand on pure sand under dry deposits of leaf litter or under low spreading plants. Specimens from Sandy Point were on wide, open beach dunes with sparse vegetation, sometimes clustered under isolated small plants with wind-deposited litter at the base.

***Diastolinus that,* new species**
(Figs. 7B, 7D, 8B, 8D)

Description

Holotype, MALE: Body length 8.1 mm; greatest width (at about basal 2/5ths of elytra) 3.5 mm.; robust, elongate-oval in outline (Figs. 7B, 7D); color black with appendages very dark brown to black; antennal apex and tarsi brown; surfaces feebly shining, alutaceous, with very minute short golden setae.

Head with frons, clypeus evenly convex; surface with very small punctures separated by two to four times diameter of a puncture, more closely spaced near epistomal margin. E yes small, ventral half smaller than dorsal, divided by about 1/2 the width of the ventral half of eye. Antennae 2.1 mm long; third antennomere as long as the first two combined; antennomeres 1–8 dark brown; antennomeres 9–11 light brown to yellowish; antennomeres 10, 11 of equal width.

Prothorax transverse, as wide as elytra at humeri, widest at posterior corners; sides nearly straight, gradually converging base to apical 2/5ths, then narrowing to rounded apical corners; apical margin evenly, broadly concave; basal margin strongly sinuate from sides to middle, with corners produced postteriorly. Pronotum with all margins narrowly beaded except for middle of anterior margin where bead becomes obsolete; pronotal surface evenly convex across disc, very finely punctate; punctures inconspicuous, separated by about three to five times diameter of a puncture, being closer, slightly larger laterally. Ventral surfaces of prothorax feebly rugose, impunctate; prosternal process lanceolate, with a feeble median carina. Mesosternum punctate-rugulose; metasternite genrally smooth, alutaceous except for polished, narrow, median longitudinal furrow.

Legs with surfaces finely punctate, setose. Front tibia gradually widened from base to obliquely truncate apex; margins feebly arcuate; posteroventral surface with stout setae in

apical 2/3rds. Front middle tarsi with tarsomeres 1–3 broadened, with densely setose adhesive pads; front tarsomere 2 most dilated but less than twice as wide as long. Hind tarsi nearly as long as hind tibiae; basal tarsomere slightly longer than the second, third combined.

FIGURE 8. Two *Diastolinus* species, holotypes, male genitalia imaged to scale with each other. A, *D. this*, new species, dorsal view; length of tegmen 2.1 mm. B, *D. that*, new species, dorsal view; length of tegmen 2.5 mm. C-D, same, lateral views, respectively.

Elytra with sides evenly arcuate from humeri to apices; striae very slightly impressed; strial punctures small, not deep, polished at center, often irregularly spaced; intervals very feebly convex, without visible punctures; minute golden setae barely visible on intervals. Epipleurae appearing smooth; width narrowing from humerus to elytral apex, edges meeting in a narrowly rounded end.

Abdomen with sternites finely punctate; sternites 1–3 feebly longitudinally rugose; sternites 1 and 2 with slight concavities medially. Sternite 5 with a flattened area medially; posterior margin evenly rounded. Tegmen 2.5 mm long; strongly arched dorsally, widest at about mid-length of basal piece, narrowing apically and with small emargination at junction of basal and apical piece; apical piece in dorsal view (Fig. 8B) with sides sinuate; parameres becoming divided near basal 1/4th, narrowed abruptly in apical 1/4th to narrowly rounded, close apices, in lateral view distinctly undulate with sharp, flattened, upturned tips (Fig. 8D). Ratio of length of apical piece to basal piece 3:7.

FEMALE. Similar to male except: Front and middle tarsi with basal 3 tarsomeres not expanded, without dense adhesive pads; front tarsi with tarsomeres not much wider than

long; abdominal sternites 1 and 2 with small flat area across middle, not concave; abdominal sternite 5 evenly convex, with apex truncate to shallowly emarginate for about 1/5th the width of sternite; at emargination, surface of sternite is abruptly deflexed, the marginal bead becomes obscured.

Material examined

"BAHAMA ISLANDS: San Salvador, Sandy Point, 23°58'N, 74°33'W, 19 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (Holotype and 7 paratypes); same data except "17 February 2004 (8 paratypes); same data except "25 June 2005 / W. E. Steiner, J. M. Swearingen & D. J. Lodge, collectors" (9 paratypes);); "BAHAMA ISLANDS: San Salvador, near Altar Cave, 23°59'N, 74°32'W, 19 February 2004 / W. E. Steiner, J. M. Swearingen & S. Voegeli collectors" (12 paratypes); "BAHAMA ISLANDS: San Salvador, Barkers Point, 24°07'N, 74°29'W, 24 June 2005 / W. E. Steiner, J. M. Swearingen et al. collectors" (2 paratypes); "THE BAHAMAS, San Salvador Island, CCFL VI-9-1978, A. G. Scarbrough (1 paratype, MAIC); same data except "Rd. N. CCFL, 1-VI-1980" (1 paratype, MAIC); same data except "Rd. S. CCFL, 5-VI-1980" (1 paratype, MAIC); "THE BAHAMAS, San Salvador Island, 8 Dec. 1979 / Crest Site / D. Dowling" (3 paratypes, GRCC); "BAHAMA ISLANDS: San Salvador, Dim Bay (beach) near Fortune Hill, 24E02'N, 74E26'W, 18 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (2 paratypes); "BAHAMAS: San Salvador Is., Dump, 24 Feb 1982, N. B. E lliott (1 paratype, GRCC); "THE BAHAMAS, San Salvador Island, 6 June 1978, P. Salbert / DUMP" (1 paratype, GRCC); "BAHAMA ISLANDS: San Salvador, East Beach, 24°06'N, 74°25'W, 22 June 2003/ W. E. Steiner & J. M. Swearingen, collectors" (7 paratypes); same data except "18 February 2004" (4 paratypes); "THE BAHAMAS, San Salvador Island, 7 Dec. 1976 / Farquharson Plantation, G[name illegible]" (1 specimen, prothorax and head only, GRCC); "BAHAMA ISLANDS: San Salvador, French Bay Beach, 23°57'N, 74°32'W, 21 June 2003" (13 paratypes); same data except "17 February 2004" (9 paratypes); "BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 19 June 2003 / W. E. Steiner & J. M. Swearingen collectors" (2 paratypes); same data except "20 June 2003" (5 paratypes); same data except "14 February 2004" (4 paratypes); same data except "19 February 2004" (3 paratypes); same data except "20 February 2004" (2 paratypes); same data except "23 June 2005" (2 paratypes); same data except "26 June 2005" (4 paratypes); "BAHAMA ISLANDS: San Salvador, Green Cay, 24°09'N, 74°30'W, 26 June 2005 / W. E. Steiner, J. M. Swearingen et al. collectors" (15 paratypes); "BAHAMA ISLANDS: San Salvador, Grotto Beach, 23°59'N, 74°32'W, 19 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (6 paratypes); "BAHAMA ISLANDS: San Salvador, Long Bay (Columbus Landing), 24°02'N, 74°31'W, 16 February 2004 / W. E. Steiner, J. M. Swearingen, J. Winter, et al. collectors" (8 paratypes); "BAHAMA ISLANDS: San Salvador, North Point, near Govt. Dock, 24°07'N, 74°26'W, 15 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (4

paratypes); "THE BAHAMAS, San Salvador Island, Dec. 1976 / Near Polaris, S. Claflin" (1 paratype, GRCC); same data except "Nov. 28, 1977 / T. Shlothauer" (1 paratype, GRCC); same data except "M. Pearson" (1 paratype, GRCC); same data except "23 Nov. 1978, S. Halwick, leg." (1 paratype, GRCC); same data except "28 Nov. 1978 / D. Dowling" (1 paratype, GRCC); same data except "D. Horner" (1 paratype, GRCC); same data except second label (collector name?) illegible (1 paratype, GRCC); "BAHAMA ISLANDS: San Salvador, Rice Bay (beach), 24°07'N, 74°26'W, 16 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (2 paratypes); "BAHAMA ISLANDS: San Salvador, 1 km S Rocky Point, 24°07'N, 74°31'W, 17 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (15 paratypes); "BAHAMA ISLANDS: San Salvador, Sandy Hook, 23°58'N, 74°28'W, 18 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (25 paratypes); same data except "20 February 2004" (12 paratypes); "THE BAHAMAS, San Salvador Island, [no other data] 24 Nov. 1975 / Shelly Metz" (1 paratype, GRCC); same data except "26 Nov. 1975 / Larry Weill" (2 paratypes, GRCC); same data except "27 Nov. 1975 / E. Pecker, K. Rapp" (2 paratypes, GRCC); same data except "P. Salbert" (2 paratypes, GRCC); same data except "1 Dec. 1975 / Shelley Metz" (1 paratype, GRCC); same data except "E. Pecker, K. Rapp" (1 paratype, GRCC); same data except "P. Salbert" (2 paratypes, GRCC); same data except "2 Dec.1975 / K. Rapp, E . Pecker" (2 paratypes, GRCC); same data except "5 Dec. 1975 / G Jamison" (2 paratypes, GRCC); same data except "November 23, 1977 / N. Pearson" (1 paratype, GRCC); same data except collector label absent (1 paratype, GRCC); "THE BAHAMAS, San Salvador Island, 2 Dec. 1976 / Watling's Castle, S. I[name illegible], leg." (1 paratype, GRCC); "BAHAMA ISLANDS: San Salvador, White Cay, 24°10'N, 74°28'W, 26 June 2005 / W. E. Steiner, J. M. Swearingen et al. collectors" (31 paratypes).

Variation

Specimens range from 6.7–9.2 mm in length; the smallest are males, largest, females. Individuals of the series from White Cay are consistently smaller than those from mainland sites, with an average length of about 7.3mm.

Diagnosis

The larger size, antennal coloration, surface features of the ventral sclerites, and form of the aedeagus will serve to identify this species. The size range does not overlap with that of *D. this*. The pale antennal apex including 3 segments, with the 10th and 11th of equal width, will separate it from *D. this*, which has only the 11th segment brown and wider than the rest. The smooth dull luster of the ventral sclerites also makes *D. that* easy to separate from *D. this*, which has a more shining, punctate venter.

Etymology

The specific name, used as a noun in apposition, is the English pronoun used to refer

to the more distant one, "that," rather than "this," the one nearby. Of the two *Diastolinus* species on San Salvador, *D. this* occurs at one's feet at the beach, while *D. that* lives farther inland.

Distribution

Diastolinus that is known only from San Salvador Island and is probably endemic. Two *Diastolinus* species often co-occur on West Indian islands and in this case, both *D. this* and *D. that* have been found at the same localities, but show distinct microhabitat separation, as described below.

Habitats and collection notes

All specimens, referred to as "the larger *Diastolinus*" in field notes, were collected under leaf litter, palm thatch and wood debris on high sandy ground behind the beach strand, usually in sites shaded by shrub canopy, e.g. *Coccoloba uvifera*. A few specimens were found under matted dead grass and debris along foundations of buildings at the Gerace Research Center. *Diastolinus that* is possibly the most common and abundant tenebrionid on the island, and was the only tenebrionid found on two offshore cays. It was common at all sites where *Branchus geraceorum* was found. On the relatively barren flats behind the beach at Sandy Hook, specimens were found nearly co-occurring with *D. this*, less than one meter apart, but *D. this* was limited to the open primary beach dune crest, while specimens of *D. that* were found under larger accumulations of leaf litter under and at edges of shrubs.

***Nautes guanahani*, new species**
(Figs. 9A–D)

Description

Holotype, MALE: Body length 5.6 mm; greatest width (at basal 1/4th of elytra) 2.4 mm; ovoid (Figs. 9A–B), parallel-sided along mid-length of elytra; color dark brown with a very faint metallic purplish luster; surfaces finely alutaceous, not shining; antennae, maxillary palpi, tarsi light brown.

Head with shallow transverse depression between frons and clypeus; surface with punctures separated by as much as diameter of a puncture but some coalesce. Antennae 2.8 mm long; third antennomere longer than the first two combined.

Prothorax transverse, with evenly rounded sides, slightly narrower at base than front, narrower than elytra at humeri; pronotum with all margins beaded, slightly explanate laterally; pronotal surface evenly convex across disc, punctate; punctures separated by less than the diameter of a puncture, some are elongated and coalesce, except medially, where punctures are larger, more widely spaced. Prosternum densely punctate with many punctures coalesced; propleura with fine longitudinal wrinkles, not punctate. Metasternite

somewhat polished medially; punctures separated by more than their diameters across middle, becoming indistinct, sparser toward sides.

Legs with surfaces punctate, very finely setose; front, middle tarsi with tarsomeres 1–3 broadened, with densely setose adhesive pads. Hind tarsi about 3/5ths as long as hind tibiae; basal tarsomere as long as the second and third combined.

Elytra with sides nearly parallel from basal 1/6th to apical 1/3rd, then evenly rounded and narrowed to apices; strial punctures moderately large, elongate and closely spaced, often coalescing; intervals convex, with scattered small punctures. Epipleurae impunctate; of even width along most of mid-length, then narrowed opposite 4th abdominal sternite (where surface becomes concave) to a point opposite corner of fifth sternite.

Abdomen with sternites appearing polished medially; punctures of this region distinct, separated by distances subequal to their diameters; punctures of alutaceous lateral areas smaller. First, second sternites with areas of median 1/5th flat to slightly concave; these areas with smaller, denser punctures bearing conspicuous golden setae directed posteromedially. Sternites 3–5 evenly convex across middle. Tegmen (Figs. 9C–D) 2 mm long; narrow, widest at about apical 1/4th of basal piece; apical piece in dorsal view with sides slightly convex, evenly narrowed to a rounded apex. Ratio of length of apical piece to basal piece 1:2.5.

FEMALE. Similar to male except: Front, middle tarsi basal 3 tarsomeres not expanded, without dense adhesive pads; abdominal sternites 1, 2 evenly convex, punctate across middle, without flattened setose areas.

Material examined

"BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 21 June 2003 / W. E. Steiner & J. M. Swearingen collectors" (holotype); same data except "18 February 2004" (1 paratype, female). Other non-paratypic specimens: "BAHAMA ISLANDS: San Salvador, Sandy Hook, 23°58'N, 74°28'W, 20 February 2004 / W. E. Steiner & J. M. Swearingen, collectors" (1 hind body); "BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 23 June 2005 / W. E. Steiner & J. M. Swearingen collectors" (1 pair of elytra).

Variation

The female paratype is 6.4 mm in length; female Helopini are generally larger than males and both sexes are known to vary widely in size. The elytra of the non-paratypes are both smaller and larger than those of the types, with an elytral length ranging from 3.7–5.7 mm.

FIGURE 9. *Nautes guanahani*, new species, holotype. A, oblique lateral view; body length 5.6 mm. B, same, dorsal view. C-D, male genitalia, dorsal and lateral views, respectively; length of tegmen 2 mm.

Diagnosis

The dull luster of most body surfaces of *N. guanahani* will separate it from the closely related *N. azurescens* (J. du Val) which has several color forms in Cuba, Florida, and

Grand Bahama (Steiner 2005a). While the male genitalia are very similar between the two species, external features are distinct; specimens of *N. azurescens* are consistently polished, often metallic green to blue, and generally larger in size. In *N. guanahani* the appendages are relatively shorter and thicker, punctures of the pronotum and head are larger and closer, some coalescing, and the body form is slightly more robust. Other species to be described, however, are known from other islands; those from dry scrub habitats tend to be smaller, darker, with dull surfaces, and may be flightless.

Etymology

Guanahani is the Arawak name for the island of San Salvador. The name is used as a noun in apposition.

Distribution

Nautes guanahani is known only from San Salvador Island and is presumably endemic. Hind wings are present, but it is not known if this species can fly; the related *N. azurescens* does fly. No other Helopini are known from San Salvador.

Habitats and collection notes

The holotype was on a cement wall in open sandy turf of the GRC, found after dark under artificial lights. The female paratype was taken at night under loose dry bark on a dead standing trunk of *Terminalia*, where fragments of other specimens were noted; the pair of elytra listed above was collected in the same manner at this site. The hind body found at Sandy Hook was among *Coccothrinax* litter on sandy flats behind the beach. The scarcity of specimens may be due to a narrow season of emergence at a different time of year than sampled.

***Lobopoda deyrupi*, new species**
(Figs. 10A–G)

Description

Holotype, MALE: Body length 5.7 mm; greatest width (at basal 1/3rd of elytra) 2.9 mm; elongate-oval (Fig. 10A), color brown, surfaces smooth, shining, with short, fine golden setae; antennae yellow-brown, basal segments of the flagellum darkest; femora pale yellow except brownish basally; tibiae brown, with apical 1/3 of front tibia becoming yellowish; front tarsi yellow; middle, hind tarsi brownish basally, becoming yellowish apically.

Head (Fig. 10B) with punctures of vertex slightly smaller than those of pronotum. E yes narrowly separated dorsally by less than 1/6th the greatest width of an eye; ocular index 8. Third antennomere 3 times as long as second, shorter than fourth. Maxillary palpus

yellow, with apical segment twice as wide as long; width shorter than length of third antennomere.

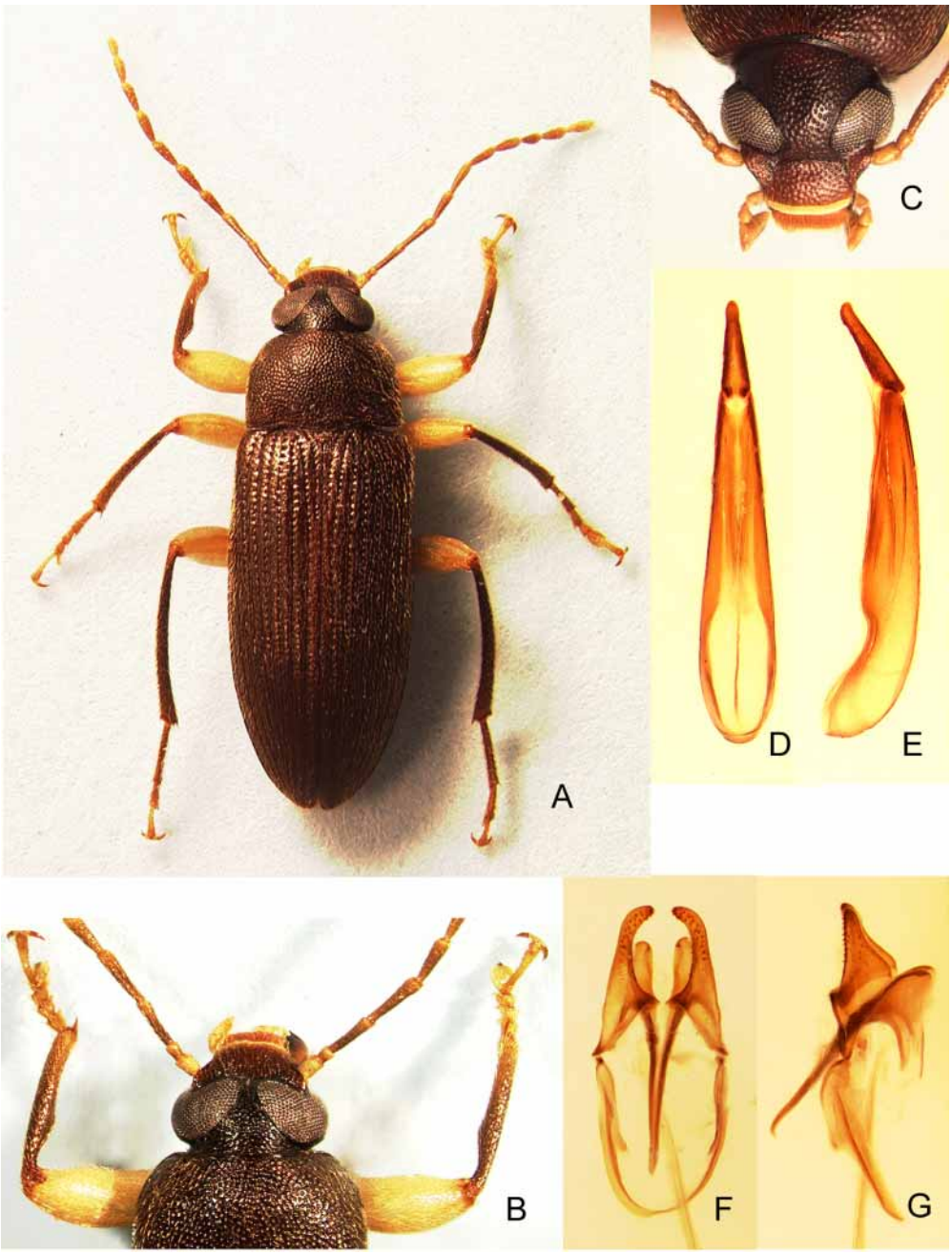

FIGURE 10. *Lobopoda deyrupi*, new species. A, holotype, dorsal view; body length xx mm. B, same, detail of fore-body. C, head of female paratype showing smaller, widely separated eyes; width of head mm. D-E, male genitalia, holotype, dorsal and lateral views, respectively; length of tegmen 1.4 mm. F-G, sternites 8 and 9, dorsal and lateral views, respectively; length including ring sclerite 1.9 mm.

Prothorax parallel-sided in basal half, evenly narrowing, rounded in apical half; pronotal surface densely punctate; punctures separated by less than the diameter of a puncture, some coalesce; basal, median foveae shallowly impressed. Prosternum densely, finely punctate; proepisternum coarsely punctate in anterior half. Mesosternal depression moderately impressed, V-shaped with apex of V indistinct. Metasternite with moderately dense punctures separated by about their diameters across middle, becoming larger and sparser toward sides.

Legs finely setose; anterior tibia with ventral triangular expansion (Fig. 10B) at basal 2/5ths. Tarsal claws with 7–8 teeth. Hind tarsi about 3/5ths as long as hind tibiae; basal tarsomere as long as remaining 3 tarsomeres combined.

Elytra with sides nearly parallel from just behind humeri to about mid-length, then gradually narrowed to narrowly rounded apices; strial punctures moderately large, closely spaced, coalescing into furrows toward apex; intervals convex, polished, with scattered small setigerous punctures. Epipleurae finely, sparsely punctate; very slightly widened before apex, then narrowed to a point opposite fifth sternite.

Abdomen with sternites evenly punctate; punctures shallow, separated by about twice their diameters. Fifth (visible) sternite with broad shallow concavity at middle; apical margin evenly convex. Lobes of eighth sternum (Fig. 10F) pincer-like in ventral view, broad at base in lateral view (Fig. 10G); inner margins evenly curved from base to narrowly rounded apex; inner sides with a mixture of fine setae and scattered dentiform setae, latter becoming larger, more dense at apex of lobe. Lobes of ninth sternite broad in lateral view, with apices evenly rounded. Length of tegmen 1.4 mm; apical piece in dorsal view (Fig. 10D) evenly narrowed in basal 4/5ths, very slightly widened before rounded apex; apex in lateral view (Fig. 10E) slightly upturned; sides, ventral edge with scattered small dentiform setae. Ratio of length of apical piece to basal piece 1:3.5.

FEMALE**.** Similar to male except: Eyes widely separated dorsally by 2/3rds the greatest width of an eye; ocular index 28.5; anterior tibia evenly arcuate, gradually widening from base to apex; fifth sternite with flattened area medially.

Material examined

"BAHAMAS, SAN SALVADOR, 20 JUNE 1999, M. & L. DEYRUP / YELLOW BOWL TRAP, COPPICE FOREST SOUTH OF BAHAMIAN FIELD STATION" (Holotype and 2 paratypes); same data except "18 JUNE 1999" (2 paratypes); "SAN SALVADOR, BAHAMAS, 15 JUNE 1993, M. DEYRUP / THICK COPPICE-FOREST, HILL TRAIL NORTH OF OSPREY POND / MALAISE TRAP" (5 paratypes); same data except "16 JUNE 1993" (3 paratypes), "17 JUNE 1993" (2 paratypes), "18 JUNE 1993" (4 paratypes), "19 JUNE 1993" (4 paratypes); BAHAMA ISLANDS: San Salvador, French Bay Beach, 23°57'N, 74°32'W, 21 June 2003 / Under fallen leaves of *Coccothrinax argentata* in coastal scrub / W. E. Steiner & J. M. Swearingen collectors" (1 paratype); BAHAMA ISLANDS: San Salvador, Gerace Research Ctr., 24°07'N, 74°26'W, 21 June

2003 / At black light, scrub forest edge at open catchment / W. E. Steiner & J. M. Swearingen collectors" (1 paratype); same data except "22 June 2003" (1 paratype); same data except "14 February 2004 / Under fallen leaves of *Coccothrinax argentata* in coastal scrub" (1 paratype); same data except "20 February 2004 / Under coconut on sandy soil, coastal scrub edge at roadside" (1 paratype).

Variation

Among the 28 beetles of the type-series, body length ranges from 5.5 to 6.5 mm; females are generally larger than males. In some specimens, coloration of the legs was darker or dull yellow, probably due to some difference in preservation.

Diagnosis

Lobopoda deyrupi keys to *L. bahamensis* Campbell (1966) in the Flavipes Group of the subgenus *Flavipoda* Campbell; all known members of the group are endemic to Cuba or the Bahamas (Campbell 1971). However, *L. deyrupi* is the smallest known member of this group; all others are at least 7 mm in length and usually exceed 10 mm. *Lobopoda bahamensis* has uniformly tan-colored legs and is 8–9.5 mm long. The small size, bicolored legs, and details of the male terminalia of *L. deyrupi* will separate it from other Bahamian *Lobopoda* species. Calculations of the ocular index (Campbell and Marshall 1964) used in the description are also useful, but they differ more between the sexes than vary among species of the Bahamas.

Etymology

Named in honor of Mark A. Deyrup, research biologist at Archbold Biological Station, Lake Placid, Florida, who collected the majority of the known specimens of this distinctive beetle. The name is formed from the proper name "Deyrup" + the Latin genitive possessive masculine "-i."

Distribution

Lobopoda deyrupi is known only from San Salvador Island and is presumably endemic. Like all members of the genus, it is a winged species, but most tend to be very precinctive in distribution, with many island endemics (Campbell 1971). No other *Lobopoda* are known from San Salvador.

Habitats and collection notes

Other than the label data cited above, beetles have been taken under fallen thatch palm (*Coccothrinax argentata*) leaves in dense coastal scrub, and under leaf litter and coconut husks at the edge of a clearing in scrub, on loose sandy soil. Larvae probably live in sandy soils; a specimen of a related species was recently reared from a larva found in mixed sand and humus from a similar habitat on New Providence.

***Blapstinus humilis* Casey, new status**

In making identifications of species of *Blapstinus* from the Bahamas, comparisons among southern Florida species and many specimens from Cuba, Hispaniola, Puerto Rico, and the Virgin Islands were warranted. Dissections of male aedeagi were done. The type specimens of *B. humilis* Casey (1890) and recent conspecific specimens from Florida appear to match Bahamian specimens (Great Exuma and San Salvador). I am provisionally using the name in this study. It should be noted at present that the same species, based on comparisons made among dissected specimens, also occurs in Cuba, Puerto Rico, St. Croix, and Hispaniola and probably involves some synonymy under an older name, plus synonymy of more recent names, e.g., *B. dominicus* Marcuzzi (1962). The Central American species described by Champion (1885) could also be involved, as other tenebrionid species have been shown to have a wide circum-Caribbean distribution.

Blapstinus humilis Casey, however, was placed in synonymy under *B. fuscus* Casey, from Texas, by Davis (1970, unpublished thesis). This was recognized (and so validated) in a checklist of Florida beetles (Peck and Thomas 1998). With examination of Casey's type material, however, I believe that Davis was incorrect in this decision. He made a dissection of the aedeagus of Casey's only male specimen of *B. humilis* labeled "Fla." but did not dissect any of the type series of *B. fuscus*. He illustrated the aedeagus of the Texas form but did not compare it to the Florida type. The first of nine Casey specimens of *B. fuscus*, labeled as lectotype by Davis, has now been dissected and compared among all examples mentioned above, plus other abundant material from eastern Texas. The two populations appear too distinct to be considered as one species: In the Texas specimens, aedeagi have parameres more broad with sides gradually curved from base to apex; body surfaces have noticeably more conspicuous setae, and antennae are consistently longer, than in Florida specimens. The latter have parameres narrow, with sides parallel in the basal 3/4ths, and the general body outline is relatively more parallel-sided than the elongate-oval form of the Texas specimens. Therefore, while the two taxa may be part of a large circum-caribbean complex, *B. humilis* should be brought out of synonymy and recognized as a valid species until further revision of this difficult group can be carried out.

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