

A New Tribal Placement for *Glyptolenus mirabilis* (Straneo) (Coleoptera: Carabidae), comb. n., and Description of *G. straneo*, sp. n. from Ecuador

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Abstract

The Neotropical species, *Sculpturia mirabilis* Straneo, originally described as a member of the tribe Pterostichini, is recognized and recombined as a member of the genus *Glyptolenus* Bates (tribe Platynini) based on characters of the protibia, defensive pygidial glands, internal female reproductive tract, and male genitalia. This action makes *Sculpturia* Straneo 1991 a junior synonym of *Glyptolenus*. A closely related species, *Glyptolenus straneo*, sp. n. is described from the Rio Napo, Ecuador. Both species belong to Whitehead's *Glyptolenus nigrinus* complex of South America. Modifications to Whitehead's (1974) key are provided to permit identification of both newly recognized species of *Glyptolenus*.

Keywords: Carabid beetle, Neotropical, Platynini, Pterostichini, *Sculpturia* Straneo.

Introduction

In 1991, Stefano Straneo described a species of carabid beetle from Pará, Brazil, assigning it to a new genus in the Pterostichini – *Sculpturia* – based on its 'rather extraordinary appearance' (Fig. 1). About the same time, the junior author noted a similarly extraordinary specimen while visiting the Universidad Central de Maracay, Venezuela. In 1998, the senior author collected a series of equally extraordinary, though specifically distinct beetles from the Rio Napo, Ecuador (Fig. 2). This paper places the extraordinary characters displayed by these two species into a phylogenetic

context, thereby allowing them to be classified as members of the genus *Glyptolenus* Bates, of the tribe Platynini.

Materials and methods

Specimens were examined using stereo and compound light microscopy. Dissection protocols follow Liebherr (1992), Will and Liebherr (1997[1998]), and Will (2000). Specimens were received on loan from T. Deuve, Museum National d'Histoire Naturelle (MNHP); R. Sciaky, Museo Civico di Storia Naturale di Milano (MSNM); G. Onore, Pontificia Universidad Católica del Ecuador, Quito (PUCE); and L.T. Joly, Universidad Central de Venezuela, Maracay (UCVM). In addition, several specimens were examined by C. Costa, Museu de Zoologia, Universidade de São Paulo (MZSP). Type specimens are also deposited in the Cornell University Insect Collection (CUIC), Carnegie Museum of Natural History, Pittsburgh (CMNH), and Kipling W. Will collection (KWWC).

Results

Glyptolenus mirabilis (Straneo), comb. n., new tribal placement

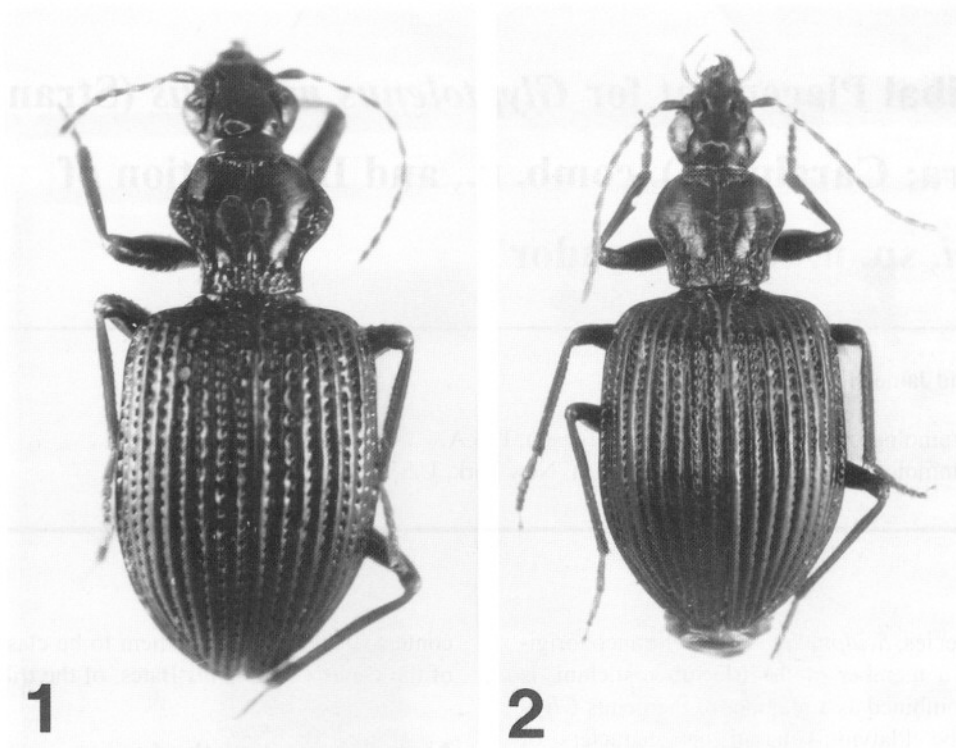
Sculpturia mirabilis Straneo 1991:297.
(Figs. 1, 3–5, 8, 9)

HOLOTYPE ♂, Brazil, Pará, Coraci 15km NW Canindé, Rio Gurupi, IV-1963, B. Malkin (MZSP); 5 paratypes same locality and date (MSNM, 3; MZSP, 2).

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Figs. 1–2. Dorsal habitus. Fig. 1. *Glyptolenus mirabilis* (Straneo). Fig. 2. *G. straneoii*, sp. n.

Taxonomic placement

This species is readily classified as a member of tribe Platynini by the following combination of characteristics: (1) antennae filiform and antennomeres symmetrically joined; (2) lack of an external elytral plica in company with rounded elytral apex that covers the abdominal tergites; (3) presence of a dorsal lobe on the defensive gland reservoir (Fig. 3); (4) male protarsomeres symmetrically expanded; (5) apex of male aedeagal median lobe oriented to left when aedeagus held in repose, parameres subequal, the right (ventral in aedeagal repose) slightly smaller than the left (Fig. 4); (6) female basal gonocoxite with apical fringe of setae, the apical gonocoxite with large lateral and dorsal ensiform setae, and the bursa copulatrix predominantly membranous (Fig. 8).

Placement in *Glyptolenus* Bates sensu Perrault (1991) is based on: (1) externally canaliculate tibiae (Whitehead, 1974); (2) parallel-sided, dorsally trisulcate basal tarsomeres with a dense ventral covering of setae, and (3) fourth meso- and metatarsomeres with outer apical lobes distinctly longer than the inner lobes (Perrault, 1991).

Among *Glyptolenus*, this and the following newly described species are added to the *Glyptolenus nigritus* complex, previously constituted to include *G. nigritus* (Chaudoir), *G. transformatus* Bates, and *G. latitarsis* Bates (Whitehead, 1974). All species of this group share: (1) bisetose elytral interval 3; (2) dorsomedially sulcate tarsomeres 1–4;

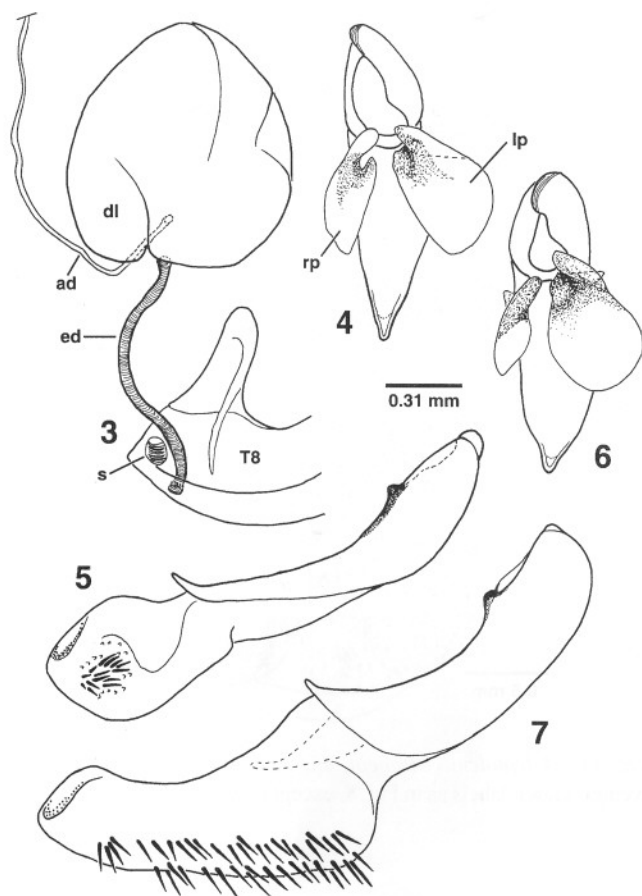
(3) non-spinose elytral apex; and (4) presence of the anterior pronotal seta.

Glyptolenus mirabilis and the following newly described species are characterized by: (1) basally constricted pronotum with rugose base and variously rugose lateral marginal depressions and disc (Figs. 1, 2, 9); (2) convex elytra with deeply punctate striae and basally carinate interval 7.

Diagnosis

Differentiated from the other members of the *G. nigritus* complex by the absence of the basal pronotal seta. Among described *Glyptolenus* species, the basal pronotal setae are otherwise absent only in *G. smithi* Liebherr (1997) of the island of St. Vincent. *Glyptolenus smithi* differs greatly from this species by, among other characters, its smooth pronotal base and lateral margins, basally punctate and apically evanescent elytral striae, and three dorsal elytral setae.

Pronotal setation was incorrectly noted by Straneo (1991, Fig. 1), as he indicated that both lateral and basal pronotal setae were present. We personally examined three paratypes (MSNM), and were assisted by C. Costa who examined the holotype and the other two paratypes (MZSP). All specimens of the type series plus a seventh specimen from Venezuela (see **Distribution** below) exhibit glabrous hind pronotal angles (Fig. 9). As all known specimens of *G. mirabilis* are covered with a thick coat of environmental varnish (see



Figs. 3–7. *Glyptolenus mirabilis* (Straneo). Fig. 3. Pygidial defensive gland reservoir, afferent duct (ad), and efferent duct (ed) opening posterad tergite 8, ventral view; dl = dorsal lobe, s = spiracle. Fig. 4. Male aedeagus, euventral view; lp = left paramere, rp = right paramere. Fig. 5. Male aedeagus, left lateral view, eudorsal surface below, internal sac everted. Figs. 6–7. *G. straneo* sp. n. Fig. 6. Male aedeagus, euventral view. Fig. 7. Male aedeagus, left lateral view, eudorsal surface below, internal sac everted.

Remarks below), it would have been impossible for Straneo to assuredly assess the presence or absence of a seta or the telltale socket should a seta have been broken off. Most likely he assumed their presence on dirty specimens due to: (1) his placement of *G. mirabilis* in Pterostichini, and (2) the almost universal presence of basal pronotal setae in individuals of pterostichine taxa.

Male genitalia. Aedeagal median lobe broad dorsolaterally, with acuminate apex (Fig. 4); apex distinctly downturned and ending with finely rounded tip (Fig. 5); basal sagittal crest short, shallow; median lobe melanized near parameral articulation; aedeagal internal sac slightly longer than broad, bearing ovoid field of spike-like macrotrichia on left, lateral side.

Female reproductive tract. Basal gonocoxite with apical fringe of 9–10 setae; apical gonocoxite triangular with finely rounded apex, 3 lateral and 1 dorsal ensiform setae, and 2 apical nematiform setae; bursa copulatrix ovoid-elongate,

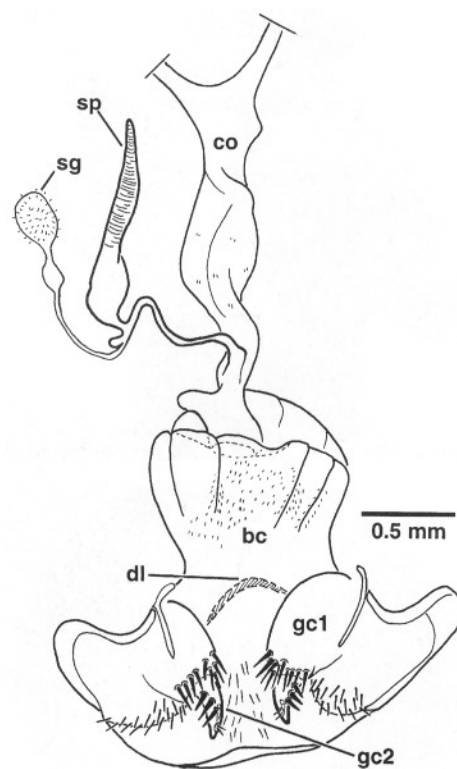


Fig. 8. *Glyptolenus mirabilis* (Straneo), female reproductive tract (ventral view); bc = bursa copulatrix, co = common oviduct, dl = dorsal lobe, gc1 = basal gonocoxite, gc2 = apical gonocoxite, sg = spermathecal gland, sp = spermatheca.

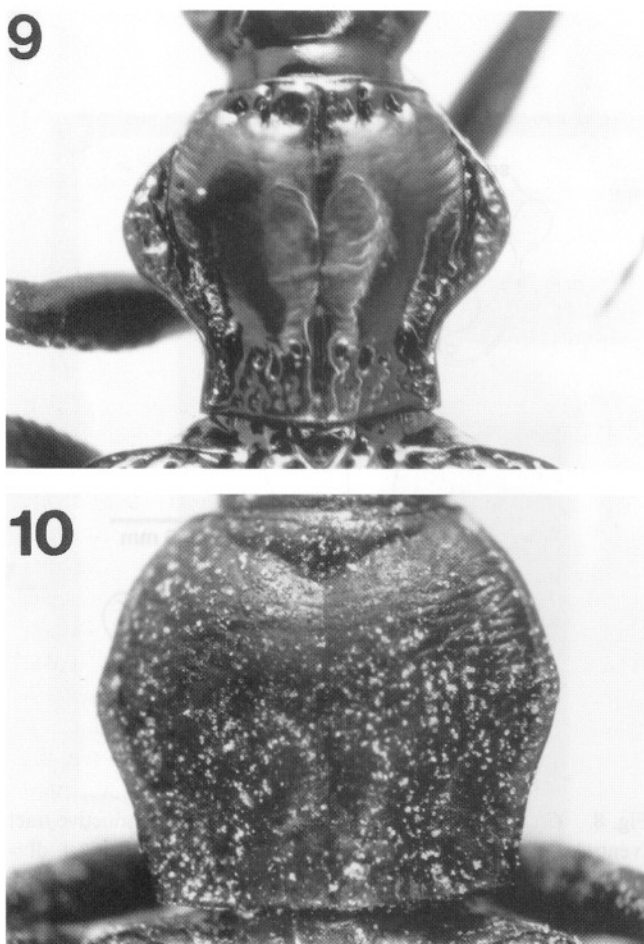
with sparse luminal covering of spike-like microtrichia on ventral side equidistant from vagina and entrance of common oviduct, and indistinct dorsal lobe (Fig. 8); spermatheca with basal digitiform process from which arises the spermathecal gland duct, spermathecal reservoir elongate, with approximately 30 closely-spaced constrictions along its length; spermathecal duct sinuate, inflexible.

Distribution

The type series of this species comprises specimens from Pará, Brazil, near Canindé, Rio Gurupi. One ♂ agreeing with the three studied paratypes (MSNM), is from: Venezuela, T. F. Amazonas, Sn. Carlos de Rio Negro, 7–13–XI–1982, A. Chacon & G. Yopez (UCVM). Thus the known range of this species is extended over 2300 km from eastern Pará state to southern Venezuela.

Remarks

All examined specimens had the pronotal rugosities and many of the elytral striae and stria punctures filled with a hardened environmental varnish, consistent with residence in dense layers of decaying plant material. Such a microhabitat is the source for specimens of the following species, sug-



Figs. 9–10. Pronotum, dorsal view. Fig. 9. *Glyptolenus mirabilis* (Straneo). Fig. 10. *G. nigritus* Bates (unique holotype) (MNHP).

gesting that species of this complex should be sought in these very patchily distributed situations.

Glyptolenus straneo, sp. n.
(Figs. 2, 6, 7, 11)

HOLOTYPE ♂. 0°40'36"S 76°24'2"W Ecuador: Napo, Yasuni Scientific Station; 22.IV.1998 Coll. K. Will 210m; Leaf litter under fallen *Ficus* (CUIC). **ALLOTYPE** ♀, same data and deposition. **PARATYPES**, same data (1 ♂, 1 ♀, PUCE; 1 ♂, 1 ♀, CMNH; 1 ♀, CUIC; 1 ♀, KWWC).

Diagnosis

Pronotum cordate (Fig. 2), basolateral margins parallel anterad obtuse, setose hind angles, pronotum widest at lateral setae, areas surrounding lateral setae smooth or slightly wrinkled, median disc finely wrinkled, alutaceous, median base deeply rugose with deep, linear median longitudinal impression extending from base to disc; elytral intervals broadly convex, striae with deep, round punctures, seventh

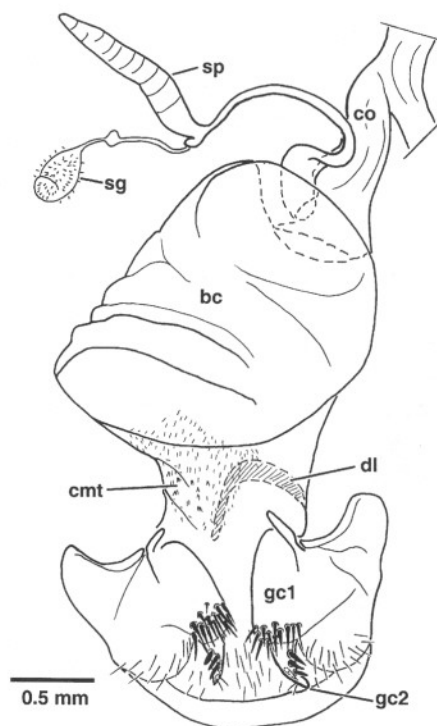


Fig. 11. *Glyptolenus straneo*, sp. n., female reproductive tract (ventral view); labels as in Fig. 8, except cmt = cristate microtrichia.

interval basally carinate; elytral epipleura basally covered with broad, irregular wrinkles (irregular surface more punctate in *G. straneo*); basal two tarsomeres medially canaliculate, dorsal surface trisulcate; male aedeagal internal sac with two dorsal rows of elongate spines (Fig. 7), visible as dark parallel rows of appressed spines lining inner dorsal surface of median lobe in uneverted condition. Standardized body length 6.2–6.9 mm.

Description

Head capsule convex, vertex inflated between posterior margins of eyes, supraorbital groove deep, extended around posterior margin of eye to 1/3 breadth of eye in lateral view, extended deeply to anterior supraorbital seta where it connects with sharply incised supra-antennal groove; frontal grooves very deep anteriorly, inner surface tripunctate, shallower posterad obtuse angle and connected to supraorbital groove just anterad anterior supraorbital seta; two supraorbital setae each side, the posterior 2/3 distance from posterior margin of eye to neck constriction, the anterior set in broadly rounded fovea before middle of eye; eyes very convex, ocular ratio (maximum distance across eyes: minimum distance between eyes) 1.88–2.00; labrum elongate, median length 0.4 × maximum apical width, anterior margin slightly emarginate medially, 6-setose; clypeus irregularly wrinkled in anterior half, a single seta each side, inflated just anterad frontoclypeal suture which is indistinctly

impressed, the sclerites best discerned by transverse sculpticells on clypeus and isodiametric sculpticells on frons; antennal scape inflated, convex on anterior and dorsal faces, a single long seta on outer-apical surface, pedicel with single seta on outer face, third antennomere glabrous except for apical ring of 6 setae, basal 1/4 of fourth antennomere glabrous, apical 3/4 covered with pelage of fine setae as are apical 7 antennomeres, all antennomeres beyond pedicel with apical ring of setae; mandibles moderately elongate, extending 0.4x total length beyond apical margin of labrum; mentum with acute median tooth; mentum setae situated posterad maximum excavation of anterior mentum margin, and anterad shallowly and broadly impressed mentum pits; submentum with two setae each side, a longer medial and shorter lateral seta.

Prothorax. Pronotum cordate, parallel basolateral margins dorsally incised surrounding insertions of basal setae, hind angles slightly obtuse, basal margin slightly trisinate, small, slightly raised expansions posterad deep laterobasal depressions, median basal margin convex, without marginal bead; median base strongly rugose, the rugosities longitudinally oriented and irregular, deep median groove extended from basal margin anterad to disc; laterobasal depressions flat-bottomed, raised portion in anterior 1/3 of depression; pronotal disc smooth, with fine irregular transverse wrinkles, median longitudinal impression narrow medially, deeper in anterior third near and anterad anterior transverse impression; lateral marginal depressions explanate, surface crenulate, narrowed to less than half of width near obsolete front angles, margined laterally by very fine lateral bead; lateral setae surrounded by slightly irregular foveae; anterior transverse impression consisting of 3–4 deep punctures connected by irregular shallow groove; anterior marginal bead complete, broadest medially. Prosternal process depressed medially, more impressed inside deep marginal bead that bears small posteroventral denticle; posterior surface flattened.

Elytra broadly convex, inflated relative to smaller forebody; elytral striae impressed, with deep, round punctures in basal 3/4 of length, the punctures continued in progressively shallower form to apex; elytral intervals broadly rounded, seventh interval basally carinate, the sixth and seventh striae approaching each other near base to form the carina; seventh and eighth intervals slightly carinate apically; subapical sinuation absent, the elytral lateral margin convex apically to tightly rounded, nondenticulate sutural apex; parascutellar seta present; two short dorsal elytral setae present in third interval, the apical dorsal elytral seta absent; three groups of lateral setae, 6 near humeral angle, 6 dorsad position of third visible abdominal ventrite, and 4 near apex of ninth interval; 1 apical setae near sutural apex. Epipleura irregularly wrinkled in basal half of elytra, with only a few slight wrinkles in apical half.

Pterothorax. Metathoracic wings fully developed, with reflexed apex; metepisterna elongate, lateral margin 1.8 × length of anterior margin.

Abdomen. Sternites smooth medially, sternites 3–7 with depressed, wrinkled area laterally, very fine wrinkles along lateral margin.

Legs. Profemur without anteroventral setae, with 2 posteroventral setae; outer face of protibia bisulcate, a distinct median carina separating the two longitudinal impressions, anterior and posterior sulci also present, therefore the outer half of the tibia quadrisulcate; protarsi with median dorsal sulcus and two dorsolateral sulci visible on basal two tarsomeres; mesocoxa with single ridge seta; mesofemur with 2 posteroventral setae; mesotibia with single sulcus on outer face accompanying dorsolateral sulci, the anterior half of the leg segment trisulcate; mesotarsomeres subparallel, median and dorsolateral sulci present on basal three tarsomeres, tarsomere 4 with outer apical lobe as long as median tarsomere length measured from insertion of tarsomere 5 to base, median relative mesotarsomere lengths for basal four segments, 2.1, 1.1, 1.0, 0.5, third segment quadrate; metacoxa bisetose, medial seta absent; metafemur without anteroventral setae; metatibia with outer sulcus plus dorsolateral sulci, the outer face trisulcate; metatarsomeres subparallel, basal three with median and dorsolateral sulci, tarsomere 4 with outer apical lobe as long as median base, inner lobe 3/4 length outer lobe, median relative metatarsomere lengths for basal four segments, 2.9:1.2:1.0:0.6, third tarsomere 1.6 × as long as broad; fifth tarsomeres apparently glabrous ventrally.

Microsculpture. Frons and vertex of head with distinct isodiametric sculpticells, clypeus with transverse sculpticells; pronotal disc with transverse sculpticells, 2–3 × as wide as long, producing alutaceous sheen; rugose pronotal base and lateral depressions with irregular transverse sculpticells, about 2 × as wide as long; elytral intervals with fine transverse lines barely forming a mesh, the sculpticells 4 × or more as broad as long.

Coloration. Dorsum of body piceous with alutaceous sheen, cupreous reflection from elytra and pronotal disc; femora piceous, tibiae and tarsi slightly paler, more brunneous; abdominal ventrites and elytral epipleura concolorous with femora.

Male genitalia. Aedeagal median lobe broad dorsolaterally, apically acuminate with rounded tip (Fig. 6); in lateral view, apex slightly downturned with finely rounded tip (Fig. 7); basal sagittal crest short, shallow; aedeagal internal sac elongate, bearing two dorsal rows of elongate spike-like macrotrichia, a left row of 24 macrotrichia and a right row of 19.

Female reproductive tract. Basal gonocoxite with apical fringe of 12–14 setae (Fig. 11); apical gonocoxite triangular with finely rounded apex, 3 lateral and 1 dorsal ensiform setae, and 2 apical nematiform setae; bursa copulatrix ovoid-elongate, with a marked dorsal lobe, and sparse luminal covering of doublet and triplet cristate microtrichia on right side near vagina (Fig. 11); spermatheca with basal digitiform process from which arises the spermathecal gland duct, spermathecal reservoir columnar, with approximately 10 small

constrictions along its length; spermathecal duct slender, flexible.

Distribution

This species is known only from the Napo district of Ecuador. Whitehead (1974: 129) reported specimens in the Jacques Negre and General Collections (MNHP) from Moyobamba and Aguaytia, Peru that agree with regard to pronotal configuration: i.e., 'non-rugose pronotal disc and ... broad, punctate pronotal explanations.' A concerted search through those collections as well as through the material used as the basis for Perrault (1991) did not result in rediscovery of these specimens, so we cannot assess their relevance to the two species herein.

Etymology

This species epithet memorializes both the contributions of Dr. Stefano Straneo to South American entomology, and his worldwide studies of the carabid tribe Pterostichini.

Remarks

Specimens of *Glyptolenus straneo* were found only amongst collections of leaf litter under a recently fallen *Ficus* tree. An apparently undescribed *Glyptolenus* species, similar to *G. rivalis* (Chaudoir), was also found at the Yasuni Scientific Station in this same microhabitat. Other associated beetle species include: two species of *Diploharpus* (Perigonini), *Zuphium* sp. (Zuphiini), *Pentagonica* sp. (Odacanthini) and several unidentified Staphylinidae.

Modifications to Whitehead's (1974) Key to Described Species of *Glyptolenus*

- 5(4). Pronotal disc not rugose mesad lateral seta, lateral pronotal explanation narrow; impunctate; Central America *G. latitarsis* Bates
- 5'. Pronotum rugose immediately mesad lateral seta, the lateral pronotal margin expanded laterally, obtusely angulate at lateral seta; South America 5a
- 5a(5). Elytral striae impunctate; pronotal disc immediately mesad lateral seta indistinctly separated from disc by shallow longitudinal depression, median disc with indistinct transverse wrinkles, median base wrinkled, not punctate (Fig. 10) *G. nigritus* (Chaudoir)
- 5a'. Elytral striae markedly punctate; pronotal disc surrounding lateral seta distinctly separated from disc by deeper longitudinal depression (Figs. 1, 2, 9), median disc smooth or wrinkled, median base punctate 5b
- 5b(5a). Pronotum with broadly elevated, rugose, lateral explanations surrounding lateral seta, the explanations

distinctly separated from the smooth median pronotal disc by a deep, elongate canaliculate depression (Fig. 9); pronotal epipleura distinctly punctate; male aedeagal internal sac with small, ovoid, dorso-apical field of spike-like macrotrichia (Fig. 5) *G. mirabilis* (Straneo)

- 5b'. Pronotal lateral explanations narrower, less rugose, less distinctly separated from pronotal disc shallow depression most evident anterad seta; pronotal epipleura with finely incised transverse wrinkles; male aedeagal internal sac with elongate, dorsal field of spike-like macrotrichia (Fig. 7) *G. straneo*, new species

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