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A new genus and species of termitophilous Eupariini from Ecuador with checklist of the Neotropical genera (Coleoptera: Scarabaeoidea: Aphodiinae)

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Abstract. *Napoa peckorum*, new genus, new species of termitophilous Eupariini from Napo, Ecuador is described and illustrated, notes on its affinities and adaptive characters are provided, the structures of possible mycangial function are found among Aphodiinae for the first time. A checklist of the Neotropical genera of Eupariini is included.

Key words: Scarabaeoidea, Aphodiinae, Eupariini, genera, new taxa, New World.

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I. INTRODUCTION

This study was prompted, in part, by the discovery of an undescribed species among unsorted material in the Canadian Museum of Nature, Ottawa. The specimens were collected from a nest of termites and exhibit a number of the character states suggesting their association with termites or ants. One of the features being unique among Aphodiinae, is the presence of pockets or cavities of possible mycangial function. These structures are frequently found on the beetles that show much more pronounced burrowing adaptations. The most detailed account of the morphology and function of mycangia was provided by BATRA (1963). An organ of this type is usually located on the body surface or on the mandibles and consists of more or less deep pocket or cavity in the cuticle, whose opening may be masked by pubescence or coating. These cavities generally have glands opening into them and producing an oily secretion in which spores or conidia of the „ambrosia" fungus may be carried and kept alive for periods often of many months. In Scolytidae (SCHEDL 1962), external transport of fungi involves the uses of various types of pits or recesses in the outer integument of the beetle. Mycangia are frequently associated with the basal articulation of appendages or with intersegmental junctions, and SCHEDL (1962) suggested that this might it possible for the cavities to be voided of their contents by body movements. As CROWSON (1981) stated, the structures of possible mycangial function occur on various parts of the body in beetles of many families but they are hardly known in Scarabaeoidea. The new genus fits to the general tribal definition as given by STEBNICKA & HOWDEN (1996), and offers some insight into the kinds of specific adaptation that are observed in the Eupariini.

Since the publication of DELLACASA's (1988, 1989, 1991, 1996) catalogue, several genera of the Neotropical Eupariini have been described, transferred to the other tribes or recognized as synonyms. Because of the confused state of some taxa and a number of undescribed ones, it would be inadvisable to give any key to the genera before ongoing revisions of the particular species-groups and descriptions are completed. Therefore, I herewith provide a revised and updated list of the Neotropical genera of Eupariini with numbers of hitherto recognized Western Hemisphere species to reflect the additions and changes.

The specimens upon which this paper is based are deposited in the Canadian Museum of Nature, Ottawa (CMN), and in the Institute of Systematics and Evolution of Animals (ISEA), Kraków.

I wish to thank Henry F. HOWDEN (CMN, Ottawa) for friendship and valuable cooperation.

Napoa gen. nov.

Type species ***Napoa peckorum*** sp. n.

D i a g n o s i s. Body (Fig. 1) oval, plump. Head very large, genal angles prominent, rounded, abutting prothoracic edge. Antenna 9-segmented, antennal club circular. Eye well developed, visible dorsoventrally when head is raised, facets clearly visible. Mouthparts adapted to soft food. Pronotum (Fig. 2) strongly transverse, excavate ventrally to receive fore legs; posterior angles and base with double edge, upper basal edge trilobed, lower edge straiht, slightly longer than upper edge, space between edges slightly concave to receive base of elytra. Scutellum medium-sized, triangular. Elytra almost globular, strongly convex discally, humeri and apices denticulate; striae limited by undulate lines, striae 1-6 narrow with elongate punctures, lateral striae wider than intervals with deep punctures; discal intervals narrowly elevated at middle with row of close punctures on each side, elevation on lateral and apical area of elytra broken into irregular tubercles and swellings; epipleura from base to apex nearly equal in width, surface strongly transversely strigose. Metathoracic wings brachypterous. Prosternum, mesosternum and mesocoxae (Fig. 3) with distinct

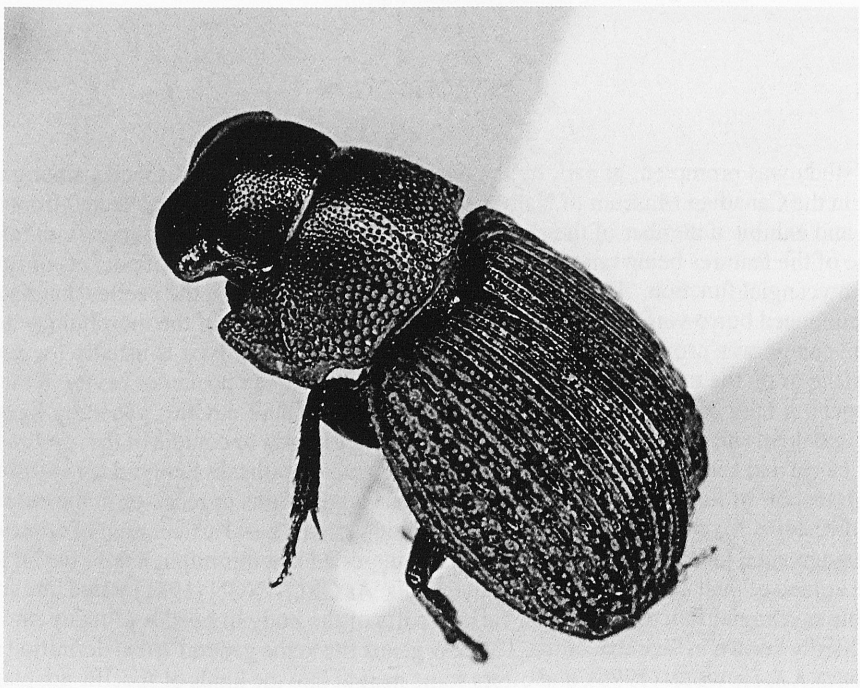


Fig. 1. *Napoa peckorum* sp. n.: habitus.

pockets or cavities of possible mycangial function; mesosternum deplanate and calloused; mesocoxae separate, subparallel; metasternum convex; six visible abdominal sternites coalesced, crenate along sutures; exposed portion of pygidium with longitudinal carina. Profemur wide, perimarginal groove deep; meso- and metafemora slightly fusiform, posterior femoral lines strong, grooved; meso- and metatibiae with two apical spurs; tarsi setaceous; claws very fine, hornlike.

A f f i n i t y. After comparing the representatives of all related genera with those of *Napoa peckorum*, I consider the latter sufficiently distinct to warrant a separate genus. The closest relatives of this distinctly modified scarab appear to be the genera *Batesiana* CHALUMEAU and *Phalangochaeta* MARTINEZ by virtue of a similar mesosternal structure, the general characters of the legs and the male genitalia. But *Napoa* differs from *Batesiana* by the shape and sculpture of the head and pronotum, and from *Phalangochaeta* by the characters of the pronotum and elytra. An unusual sculpture of the elytra in *Napoa* resembles that in the Australian species *Gongrolophus storeyi* STEBNICKA & HOWDEN, 1996 placed in the tribe Odontolochini.

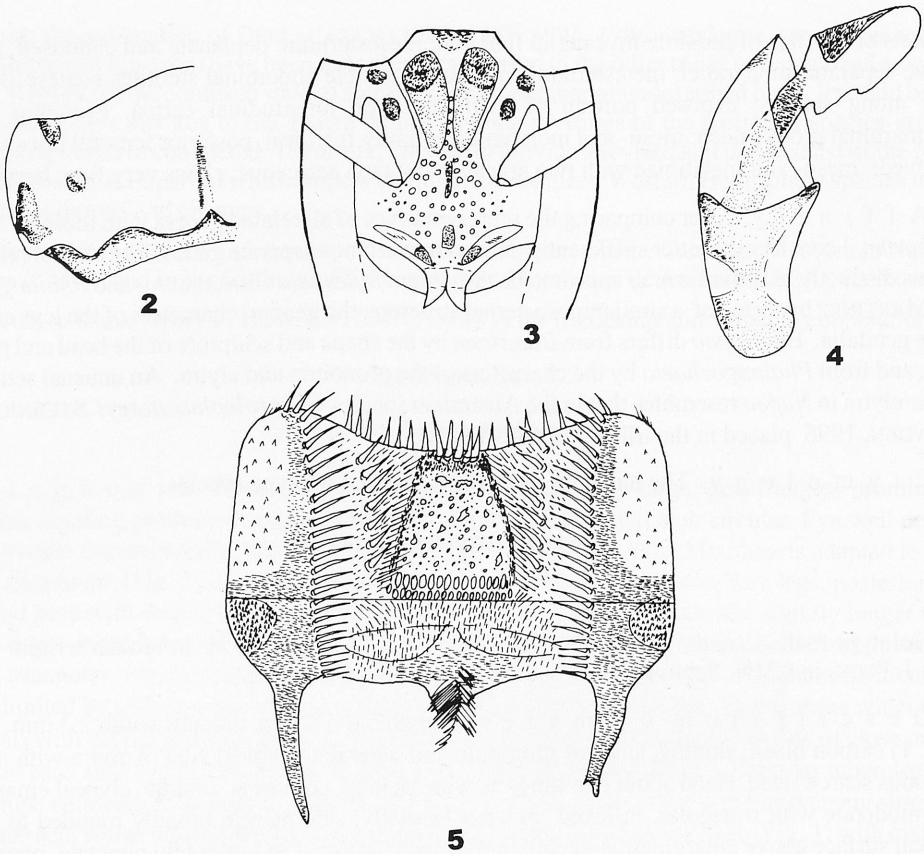
E t y m o l o g y. The name refers to the locality of the type species.

Napoa peckorum, sp. nov.

(Figs 1-5)

Holotype male, Ecuador, Napo 500 m, 12 km SW Tena, 10.vii.1976, in broken termite nests, S. & J. PECK, in CMN. Paratype male, same data as holotype, in ISEA.

D e s c r i p t i o n o f m a l e s. Length 5.0-5.2 mm, greatest width 2.3 mm. Body (Fig. 1) carbon black, shining, sides of pronotum and lateral and apical area of elytra with inconspicuous scarce setae. Head about two times as wide as long, convex at middle, clypeal emargination moderate with triangular, inflexed process medially, side margin broadly rounded to gena; clypeal surface above emargination deeply transversely grooved and minutely punctate, punctures become gradually larger and closer toward vertex and here separated by less than one diameter. Pronotum (Fig. 2) convex on disc without marginal lines; anterior angles acutely produced, lateral edge slightly sinuate fringed with extremely short setae, posterior angles and base with double edge; pronotal surface shining except two coated, irregular depressions at lateral margin; disc with oblique fovea above depression and shallow punctate median line; punctures in anterior median area of pronotum same size as those of vertex, punctures of lateral and basal area significantly larger and closer, slightly irregular in size and distribution, generally separated by less than one diameter. Scutellum shining, convex at base. Elytra widest at middle, epipleural humeral denticle small obtuse, humeral umbone weakly indicated; striae gradually broadened toward apex and lateral margin with gradually larger punctures forming circular pits; median elevation of discal intervals 1-3 contiguous with row of close punctures on each side, elevation on the remaining intervals broken into unequal tubercles, granules and swellings. Prosternal process widely triangular, flattened, concave at base, two transverse concavities filled with coating on each side of process. Mesosternum deplanate, callosity (Fig. 3) with pocket-like cavities located just below prosternum and separated by elevated carina; space between mesocoxae equal to width of mesofemur; two coated cavities (Fig. 3) located in proximal half of mesocoxa. Metasternum convex, as long as mesosternum, midline broken at middle, punctures deep separated by less than one diameter, lateral metasternal triangle irregular in shape, deep. Abdominal sternites crenate along sutures, surface punctures finer than those of metasternum, slightly confluent; exposed portion of pygidium concave on each side of fine longitudinal carina, apical margin narrowly convex, finely crenate. Legs relatively short; profemur scabrously, closely punctate; meso- and metafemora strongly grooved posteriorly, surface punctures close, separated by less than one diameter; protibia narrow, relatively small, tridentate; meso- and metatibiae as long as femora, slightly widened apically, setaceosus without accessory spines, apical



Figs 2-5. *Napoa peckorum* sp. n. : 2 – left half of pronotum; 3 – meso- and metasternum; 4 – male genitalia, lateral view; 5 – epipharynx.

spurs fine; tarsus shorter than tibia, joints setaceous; basal segment of metatarsus equal in length to following tarsal segments combined. Genitalia as in Fig. 4. Epipharynx as in Fig. 5.

Female unknown.

R e m a r k s. The species is easily recognizable by its body form, sculpture of the elytra and double, strongly sinuate base of the pronotum, however, since the female is unknown, it is not excluded that some of the characters may be sex dependent. According to SCHEDL (1962), mycangia are often, but not always, confined to the female sex, and represented only by vestiges in the males, as observed in most of the Scolytidae-beetles.

The host-relations of termitophilous beetles have been comparatively little investigated. Some of the species are essentially commensals, living on the host's fungus gardens, and do not as a rule develop the elaborate trichomes found in the more specialized myrmecophiles. The relations of scarabs to the ants and termites most probably cover a wide range from a kind of scavenging symbiosis through commensalism and inquilinism to parasitism and predation.

E t y m o l o g y. The species is named in honour of Jarmila and Stewart PECK, the collectors of many interesting species of scarabs.

II. CHECKLIST OF THE NEOTROPICAL GENERA OF EUPARIINI WITH DISTRIBUTION DATA AND NUMBERS OF HITHERTO RECOGNIZED WESTERN HEMISPHERE SPECIES

Aphotaenius CARTWRIGHT, 1952 (CHALUMEAU 1983a); (type species *Ataenius carolinus* VAN DYKE) – 4 species (STEBNICKA 1998b).
Distribution: Central and South America, USA.

Arupaia STEBNICKA 1999 (type species *Euparia friedenreichi* HAROLD) – monotypic.
Distribution: South America.

Ataeniopsis PETROVITZ, 1973 [type-species *Ataeniopsis notabilis* PETROVITZ (= *regulus* BALTHASAR)] – approx. 12 species (CHALUMEAU 1992).
Distribution: Central and South America, West Indies, USA.

Ataenius HAROLD, 1867 (type species *Ataenius scutellaris* HAROLD) – 12 species-groups with approx. 170 species (STEBNICKA 1998b).
Distribution: worldwide.

Batesiana CHALUMEAU, 1983b (type species *Euparia tuberculata* BATES) – monotypic.
Distribution: Central America.

Bruchaphodius MARTINEZ, 1952 (type species *Euparia bruchi* SCHMIDT) – 3 species.
Distribution: South America.

Euparia St FARGEAU & SERVILLE, 1828 (type species *Euparia castanea* St FARGEAU & SERVILLE) – 3 species (CHALUMEAU & HOWDEN 1984).
Distribution: Central and South America, West Indies, USA.

Euparixia BROWN, 1927 (type species *Euparixia duncani* BROWN) – 5 species (WOODRUFF & CARTWRIGHT 1967).
Distribution: Central America, USA.

Euparixoides HINTON, 1936 (type species *Euparixoides cribratus* HINTON) – 2 species (STEBNICKA 1998a).
Distribution: Central and South America.

Flechtmanniella STEBNICKA, (nomen novum, see p. 287 of this volume) (type species *Euparia laticollis* PETROVITZ) – monotypic.
Distribution: South America.

Haroldiataenius CHALUMEAU, 1981 (type species *Ataenius mariarum* BATES) – 2 species.
Distribution: Central America.

Iarupea MARTINEZ, 1953 (type species *Iarupea lopeteguii* MARTINEZ) – 3 species (STEBNICKA 1999).
Distribution: South America.

Iguazua STEBNICKA, 1997 (type species *Iguazua lilloana* STEBNICKA) – monotypic.
Distribution: South America.

Lomanoxoides STEBNICKA, 1999 (type species *Euparia bitubericollis* SCHMIDT) – 5 species.
Distribution: Central and South America.

Martineziella CHALUMEAU, 1986 (type species *Oxyomus excavaticollis* BLANCHARD) – 7 species (CHALUMEAU 1983b).

Distribution: Central and South America, West Indies, USA.

Myrmecaphodius MARTINEZ, 1952 (type species *Myrmecaphodius proseni* MARTINEZ) – monotypic (STEBNICKA 1999).

Distribution: South America.

Napoa STEBNICKA (here described) (type species *Napoa peckorum* STEBNICKA) – monotypic.

Distribution: South America.

Nettelislasia MARTINEZ, 1952 (type species *Nettelia euparinoides* ISLAS) – monotypic.

Distribution: Central America.

Paraplesiataenius CHALUMEAU, 1992 **stat. nov.** (type species *Ataenius tremolerasi* SCHMIDTt) – 3 species.

Distribution: Central and South America.

Parataenius BALTHASAR, 1961 [type species *Parataenius mirabilis* BALTHASAR (= *derbesis* SOLIER)] – 5 species (CHALUMEAU 1992).

Distribution: Western Hemisphere, Australia, New Zealand, Europe (Portugal).

Passaliolla BALTHASAR, 1945 (type species *Saprosites eugastricus* HAROLD) – approx. 7 species (BALTHASAR 1965).

Distribution: Central and South America.

Phalangochaeta MARTINEZ, 1952 (type species *Ataenius angusticollis* SCHMIDT) – approx. 25 species (STEBNICKA 1998B).

Distribution: Central and South America, West Indies, USA.

Saprositellus BALTHASAR, 1967 (type species *Saprositellus denticulatus* BALTHASAR) – monotypic.

Distribution: South America.

Saprosites REDTENBACHER, 1858 (type species *Saprosites peregrinus* REDTENBACHER) – approx. 18 species.

Distribution: worldwide.

Selviria STEBNICKA, 1999 (type species *Selviria matogrossoensis* STEBNICKA) – monotypic.

Distribution: South America.

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