

The New World Eupariini: Revision of the genus *Auperia* Chevrolat, 1864 (= *Phalangochaeta* Martinez, 1952) (Coleoptera: Scarabaeidae: Aphodiinae)

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The New World Eupariini: Revision of the genus *Auperia* Chevrolat, 1864 (= *Phalangochaeta* Martinez, 1952) (Coleoptera: Scarabaeidae: Aphodiinae). - Sixteen species of the Neotropical genus *Auperia* are recognized, including 8 species described as new: *Auperia domingo* sp. n., *A. guayara* sp. n., *A. iquitosae* sp. n., *A. loretoensis* sp. n., *A. panamensis* sp. n., *A. puyoensis* sp. n., *A. rondoniae* sp. n., and *A. teutoniae* sp. n. A lectotype of *Ataenius arator* Harold is designated, and the following new synonyms are proposed: *Auperia* Chevrolat (= *Phalangochaeta* Martinez syn. n.); *A. transversaria* (Schmidt) (= *Euparia bolivari* Petrovitz syn. n.); *A. denominata* Chevrolat (= *Ataenius arator* Harold syn. n. = *Ataenius benjaminbanderae* Islas syn. n. = *Ataenius euglyptus* Bates syn. n. = *Ataenius sciurus* Cartwright syn. n. = *Phalangochaeta grandis* Petrovitz syn. n.). A key is provided, each taxon is diagnosed and illustrated, available biological information and distribution data are given. A taxonomic background of the genus is included and phylogenetic hypothesis is presented for the relationship among discussed taxa.

Key-words: Coleoptera - Scarabaeidae - Aphodiinae - *Auperia* - Neotropical Region - taxonomy - new species - new synonyms - phylogeny.

INTRODUCTION

The present revision is one of the series of comprehensive papers dealing with the New World genera and species of Aphodiinae (Stebnicka, 1999a, 1999b, 2000, 2001a, 2001b). The work treats the genus *Auperia* Chevrolat, long known as *Phalangochaeta* Martinez, *Euparia* Le Peletier de St Fargeau & Serville or *Ataenius* Harold, and clarifies its status and identity of species previously described in various genera. This remarkable genus is noteworthy because of its apparent rarity and strikingly peculiar morphological characters. It consists presently of the sixteen, mostly forest-dwelling and litter-inhabiting species from the Central and South America, West Indies and Florida, including eight species described herein as new. All taxa are diagnosed, keyed and illustrated, a cladistic analysis determines the monophyly of the genus and its species relationships. Sufficient data were available to outline the major patterns of the species distribution, which will change only slightly with addition of the yet unworked material and of the future field collections.

TAXONOMIC BACKGROUND

The following historical outline is based on a careful study of the original literature and on the type species of all species involved.

Scarabaeus stercorator Fabricius, 1775, was the first euparine species described from South America (Brazil, Rio de Janeiro). The unique type specimen of that species preserved in Banks Collection in London was never studied by subsequent authors until its redescription by Landin (1956) and Stebnicka (1998). In the course of over hundred years, most authors have applied Fabricius' name to the various species. A misidentification of *S. stercorator* has been initiated by Jacquelin du Val (1856) in her contribution to the Coleoptera of Cuba, in which she introduced without any description (nomen nudum) a new generic name "*Auperia*" in combination with specific name *stercorator* Fabricius. Since the true *stercorator* does not occur in Cuba or anywhere in the West Indies, Jacquelin du Val unintentionally used Fabricius' name to any other undescribed species. Even if the name "*Auperia*" resulted from a misspelling of the existing name *Euparia* Le Peletier (1828), it has been applied in its original spelling by Chevrolat (1864) for a number of new species described by him from Cuba. Chevrolat (1864: 413) also listed "*Auperia stercorator*" with a brief Latin diagnosis that is far from being adequate to the true Fabricius' species, and seems to concern a variety of his species *terminalis* var. *ciliata* (1864: 414) or another unknown species. However, just below the mentioned diagnosis, Chevrolat (1864: 413) continued as follows [original citation]:

"J'ai reçu sous le même no d'envoi, un insecte qui n'est peut-être que l'autre sexe de l'*A. stercorator* et qui présente des différences assez notables: taille plus élevée et corps élargi, ponctuation en général plus fine et plus serrée: prothorax nettement coupé droit sur les côtés, offrant près du bord une teinte rougeâtre assez étendue en largeur et en hauteur; élytres à stries légères, sillonnées, étroites, renfermant chacune une ligne mince peu élevée, interrompue par une série de petits points peu profonds et réguliers, interstices relativement larges, peu élevés; angle huméral aigu, creusé en dedans; pattes couleur de poix. (*A. denominata* Nob.) – Long. 6 mill., lat. 3 mill. Cuba. Deux exemplaires. Coll. de l'auteur." The lectotype of *denominata* fits into cited description in all the essential features characterizing the genus *Auperia*.

In 1867(a), Harold established the genus *Ataenius* using formula "new genus" in his description of *Ataenius scutellaris* from "Columbia". Since then, all authors considered *A. scutellaris* to be the type species of the genus *Ataenius* by indirect original designation (fixed by Cartwright, 1974). Afterwards, Harold (1870) transferred *Scarabaeus stercorator* Fabricius to *Ataenius* together with all species described by Chevrolat (1864) except *Auperia denominata*, and he commented *Ataenius* and *Auperia* as follows [original citation]:

„Jacquelin Duval (1856) erwähnt dieselbe ebenfalls in Ramon de la Sagra's Geschichte von Cuba, indem er den *Scarab. stercorator* Fabr. als Einwohner dieser Insel nachweist; zugleich ändert er den Gattungsnamen in *Auperia* ab, weil derselbe in der Botanik (Primulaceae) schon in Gebrauch ist, worin ich ihm jedoch nicht gefolgt bin, da ich keinen Collisionsfall hierin erkenne. Seine *Auperia stercorator* ist schwerlich die Art des Fabricius, jedenfalls aber ein *Ataenius*. Zu dieser Gattung gehören auch

die von Chevrolat in Ann. Soc. France, 1864 beschriebenen *Auperia stercorator* Fabr., *rhyticephala*, *sulcatula* and *terminalis*...". In this quotation a binomen "*Auperia denominata*" has been omitted, being regarded by Harold as synonymous with *Auperia stercorator*. Furthermore, in 1867(b) Harold described the true *stercorator* under the name *Ataenius opacus* from Brazil, and in 1875 he followed a misidentification of Fabricius' species presenting its putative "redescription" that fits to at least three various species excluding the true *stercorator*.

As may be concluded from the aforesaid statements, a misidentified species *Scarabaeus stercorator* Fabricius, 1775 (presently *Ataenius stercorator*) can not be considered as type species of any existing genus, such as *Auperia*, *Ataenius* nor *Euparia*, in the meaning of Art. 70.3 of the 'Code' (ICZN, 1999). The generic name *Auperia* Chevrolat, 1864 used in a single combined description with indicated species-group name does not contravene a provision of Art. 27 – 31 of the 'Code' and should be considered as valid (in the meaning of Art. 12.2 of the 'Code'). The nominal species *Auperia denominata* Chevrolat, 1864 should be fixed as type species of the genus *Auperia* (in the meaning of Art. 67.2, 69.2A.3 of the 'Code').

COLLECTIONS STUDIED

Approximately 700 representatives of *Auperia* have been selected from the material consisting of the over 20000 euparine specimens identified at present, including all the type specimens available in various collections. The following institutions and private collections kindly contributed material for this study. The abbreviations cited below are used in all text citations:

BMNH	British Museum of Natural History, London
CAS	California Academy of Sciences, San Francisco
CFC	Carlos Flechtmann Collection, Brasilia (Brazil)
CMN	Canadian Museum of Nature, Ottawa
DEIE	Deutsches Entomologisches Institut, Eberswalde
FSCA	Florida State Collection of Arthropods, Gainesville
HAHC	Henry & Anne Howden Collection, Ottawa
HNHM	Hungarian Natural History Museum, Budapest
IBMZ	Instituto de Biología y Museo de Zoología, Mexico City
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles
ISEA	Institute of Systematics and Evolution of Animals PAS, Krakow
JSC	Joachim Schulze Collection, Berlin
MCZC	Museum of Comparative Zoology, Harvard University, Cambridge
MHNG	Muséum d'histoire naturelle, Geneva
MMU	The Manchester Museum, University of Manchester
MZUSP	Museu de Zoologia, Universidade de São Paulo
NRS	Naturhistoriska Riksmuseet, Stockholm
PSC	Paul Skelley Collection, Gainesville
RTC	R. Turnbow Collection, Gainesville
SMTD	Staatliches Museum für Tierkunde, Dresden

- UNSM University of Nebraska State Museum, Lincoln, Nebraska
 USNM United States National Museum of Natural History, Washington DC
 WWC William Warner Collection, Arizona
 ZMHB Zoologisches Museum für Naturkunde der Humboldt Universität, Berlin

TAXONOMY AND PHYLOGENY

Auperia Chevrolat

Auperia Chevrolat, 1864: 413.

Euparia Le Peletier St.-Fargeau & Serville, 1828: 357 (partim).

Ataenius Harold, 1867a: 82 (partim).

Phalangochaeta Martinez, 1952: 92-94. – Petrovitz, 1973: 179-180; Dellacasa, 1988: 271 (catalogue); Stebnicka, 1998: 200, fig. 1, 3. **New synonymy.**

Type species: now fixed (under Article 70.3 of the Code) as *Auperia denominata* Chevrolat, 1864, misidentified as *Scarabaeus stercorator* Fabricius, 1775.

Description. Length 3.0 – 8.0 mm. Body variously shaped and sculptured; dorsum usually unicolorous, dark castaneous to black, elytra on apical declivity and/or at apex frequently covered with minute setae. Head broad, usually as wide as pronotum, moderately to strongly gibbose medially, frontal suture often indicated by small convexities at eyes, clypeus emarginate anteriorly or slightly truncate; surface punctate, punctures of median area of head usually elongate in shape. Eye well developed, partially visible or not visible from directly above. Pronotum transverse with punctate fovea on each side of disc; base usually without marginal line, crenate by close punctures, more or less excised near posterior angles; lateral margin usually thickened, minutely crenate-fimbriate; anterior angles rounded, often produced forwards, posterior angles right-angled, rarely truncate. Scutellum triangular, relatively small, in some species foveate or carinate. Elytra with basal bead, single or double humeral denticles and 10 striae and intervals including marginal one; striae punctate, in some species partially margined by lines, intervals smooth or punctate, rarely lateral intervals granulate. Flight wings functional. Ventral thoracic sclerites variously shaped; prosternal process widely triangular, often carinate medially; mesosternum lower than metasternum with short or long intercoxal carina (Figs 15-17, 36, 40) or with callosity (Figs 18-19, 33-35, 37); meso-metasternal suture usually visible, metasternum convex, often with diagonal fossulae or pits; lateral metasternal triangle distinct, rarely vague; mesocoxae separate; abdomen with 5-6 visible, coalesced sternites, sternites fluted (longitudinally strigose) along sutures, first sternite margined by line; pygidium with median transverse carina, often with longitudinal carina on scabrous disc. Legs usually moderate in length; profemur anteriorly with perimarginal groove; meso- and meta-femur usually narrow, parallel-sided rarely mesofemur fusiform; protibia relatively short and narrow with three small teeth on outer side; mesotibia and metatibia slightly widened toward apex with longitudinal, setaceous lines; apex of metatibia with small accessory spine and with or without fringe of few setae; apical spurs located close together below tarsal insertion; tarsus short to moderate in length, hind tarsus usually covered with close pale setae. External sexual differences usually slight, apparent mostly on ventral sclerites.

Male genitalia (Figs 6-14, 26-32) generally homogenous in shape, relatively small, moderately sclerotized; phallobase without hump, equal to length of parameres or longer; phallobase and parameres fused; apical portion of internal sac (Fig. 13) usually very large, furnished with sclerites and spicules. Labro-epipharyngeal complex (Figs 38-39) adapted to soft saprophagy.

Affinity. The closest relatives of this genus are the two monotypic genera such as the Panamanian *Batesiana* Chalumeau and Ecuadorian *Napoa* Stebnicka. Both these genera are distinctly modified, associated with termites and/or ants and share with *Auperia* the general characters of the head, legs and the male genitalia, also a similar structure of meso-metasternum found in some species of *Auperia*.

Bionomy. Based on information taken from labels, adult specimens of *Auperia* have been collected frequently in Central and South America in lowland and montane tropical forests from 100-1520 m by flight interception traps, malaise traps, sifting leaf litter and detritus remnants, in burrows of small mammals and nests of ants and termites, and to a lesser extent under bark.

PHYLOGENETIC HYPOTHESIS

The Eupariini are difficult for cladistic analysis, because in most of their representatives the number of parallel characters is distinctly higher than the number of unique synapomorphies. This analysis concerns a phyletic sequence of taxa within the tribe. Species of the genus *Auperia* form the ingroup, *Ataenius perforatus*-group of species (Stebnicka 2001b) is consistently the basal outgroup, with *Airapus parvispinus* (Schmidt) as the more immediate outgroup to *Auperia*. The Asian-Australian genus *Airapus* Stebnicka & Howden contains a heterogeneous assemblage of 22 species sharing with *Auperia* some similar character states. While this may not show relationship, it is suitable for the comparison of characters. The 21 binary characters are defined in matrix and coded in Table 1. The cladogram displaying character state changes was

TABLE 1
Matrix of taxa and character states used in the cladistic analysis

Taxa	Characters:	01234	56789	11111	11111	2
				01234	56789	0
<i>Ataenius perforatus</i> -group		00000	00000	00000	00000	0
<i>Airapus parvispinus</i>		00000	00000	00001	01000	0
<i>Auperia amazonica</i>		01101	11000	11110	11111	0
<i>A. angusticollis</i>		11001	11000	10110	00011	1
<i>A. capitosa</i>		11000	10100	00111	00010	0
<i>A. denominata</i>		11001	01000	10110	00001	1
<i>A. domingo</i> sp. n.		01001	11000	00110	10101	0
<i>A. guayara</i> sp. n.		01001	11010	00110	10001	1
<i>A. huebneri</i>		01101	11000	11111	11111	0
<i>A. iquitosae</i> sp. n.		01000	10100	00111	00000	0
<i>A. loretoensis</i> sp. n.		01011	11000	00111	11111	0
<i>A. minuta</i>		01011	11000	00111	11111	0
<i>A. panamensis</i> sp. n.		11001	11000	10110	00001	1
<i>A. puyoensis</i> sp. n.		01001	11000	00111	11101	0
<i>A. rondoniae</i> sp. n.		11001	01000	10110	00001	1
<i>A. squamosa</i>		01101	11001	01110	11101	0
<i>A. teutoniae</i> sp. n.		01001	11000	00111	11111	0
<i>A. transversaria</i>		01001	11000	10111	11101	0

prepared using WINCLADA 0.9.9 (Nixon 1999) under accelerated transformation (ACCTRAN) that accounts for homoplasy in terms of reversals to the plesiomorphic condition. Using the heuristic search with random addition sequence, the two equally parsimonious trees were generated, each with a length of 33 steps and consistency and retention indices 63 and 83 respectively.

Character states used in the cladistic analysis. Scores for character states: plesiomorphic = 0; apomorphic = 1.

0. Average body size – medium (0), large (1). 1. Head size – medium (0), large (1). 2. Anterior clypeal emargination – distinct (0), indistinct (1). 3. Clypeal carina – absent (0), present (1). 4. Pronotal shape – subquadrate (0), transverse (1). 5. Basal marginal line of pronotum – present (0), absent (1). 6. Side of pronotum – not explanate (0), explanate (1). 7. Posterior angle of pronotum – prominent (0), truncate (1). 8. Basal lobe of pronotum – absent (0), present (1). 9. Elytral striae 8-9 – smooth (0), granulate (1). 10. Elytral interval 10th – convex shining (0), flattened opaque (1). 11. Elytral preapical umbone – not indicated (0), indicated (1). 12. Prosternal process – small (0), broad (1). 13. Space between mesocoxae – \leq to width of mesofemur (0), $>$ than width of mesofemur (1). 14. Surface of mesosternum – carinate (0), calloused (1). 15. Metasternal lateral triangle – wide (0), narrow (1). 16. Metasternal fossulae – absent (0), present (1). 17. Profemur surface – scabrous opaque (0), punctate shiny (1). 18. Metafemur posterior line – complete (0), incomplete (1). 19. Basal tarsomere of metatarsus – \leq to four tarsomeres (0), $>$ than four tarsomeres (1). 20. Setae of metatarsus – short scarce (0), long close (1).

Synapomorphies that conclusively establish the monophyly of *Auperia* are discussed relative to the presented cladogram (Fig. 1) as follows: Character 1 – head large. This state is shared by members of some specialized euparine genera, e.g. those associated with social insects, and it occurs rarely in the genus *Ataenius*. Character 5 – lack of basal marginal line of pronotum; this state is variable and occurs in various genera and species of Aphodiinae; synapomorphy for the clade with subsequent change to margined pronotum in *denominata* + *panamensis* line. Character 12 – prosternal process broad. Plesiotypically, the prosternal process is small or medium sized. This state usually depends on the mesosternal structures and as the synapomorphy for *Auperia* it is widely triangular and often carinate medially. Character 13 – widely separate mesocoxae. Although this state is variable and more or less remarkably manifested among Eupariini (Stebnicka 2001c), it is synapomorphic for *Auperia*. Character 7 – posterior angles of pronotum truncate. Synapomorphy for lineage *capitosa* + *iquitosae*; the remaining species of *Auperia* have the posterior angles of pronotum prominent.

Synapomorphies for the following two main lineages of *Auperia* are: Characters 4, 6 – pronotum transverse with explanate sides. These states are also shared by members of some specialized euparine genera, e.g. *Batesiana* Chal. Plesiotypically, pronotum is subquadrate and its sides are steep. Character 15 – lateral metasternal triangle narrow. This state with subsequent change to wide triangle is variable and usually correlated with more or less elevated metasternal disc. Character 19 – metatarsal basal tarsomere longer than four tarsomeres. This state occurs occasionally among members

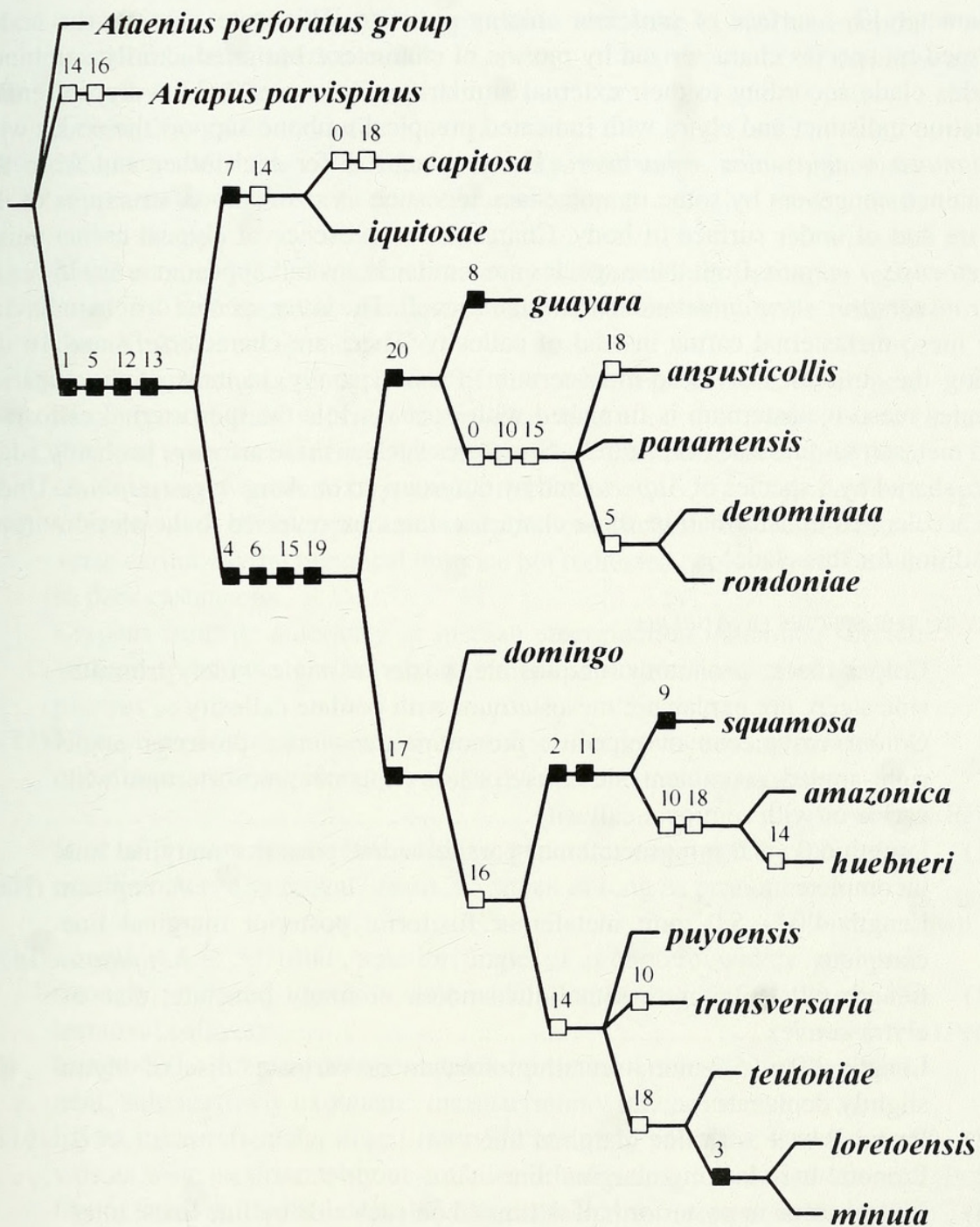


FIG. 1

Cladogram depicting hypothetical relationships among members of the genus *Auperia* Chevrolat, with *Ataenius perforatus*-group and *Airapus parvispinus* (Schmidt) as outgroups. Numbering of characters corresponds to that in the character matrix (Table 1).

of various genera including *Ataenius*, however, most of the euparine species have the first tarsomere of hind tarsus equal to or shorter than following tarsomeres combined. Character 20 – metatarsus with long close setae, synapomorphy for nodes formed by *guayara* and *angusticollis* + *panamensis* + *denominata* + *rondoniae*. The latter four nodes are not supported by synapomorphy and show reversals to the plesiomorphic condition, though this group of closely related species is very distinct within *Auperia*.

Character 17 – surface of profemur shining punctate. This state supports the nodes formed by species characterized by mosaic of characters, but satisfactorily combined in this clade according to their external similarity. Characters 2, 11 – clypeal emargination indistinct and elytra with indicated preapical umbone support the nodes with *squamosa* + *amazonica* + *huebneri*. These species differ each other and from the remained congeners by some unique characters such as size, colour, structures of the elytra and of under surface of body. Character 3 – presence of clypeal carina unites *loretoensis* + *minuta*. Both these species are similar in overall appearance to *puyoensis* + *transversaria* + *teutoniae* and to *domingo* as well. The latter species differs in having the meso-metasternal carina instead of callosity. There are characters 14 and 16 defining the structures of meso-metasternum. Plesiotypically, in most of the euparine species meso-metasternum is furnished with carina, while the mesosternal callosities and metasternal fossulae occur rarely. Structures such as these are most probably adaptive, shared by 8 species of *Auperia* and by outgroup taxon *Airapus parvispinus*. Under the accelerated transformation, these character states are reversed to the plesiomorphic condition for this clade.

KEY TO THE SPECIES OF *AUPERIA*

- 1 Colour black; pronotum subquadrate, posterior angle widely truncate, side steep, not explanate; mesosternum with cordate callosity 2
- Colour castaneous or piceous; pronotum transverse, posterior angle right-angled, prominent, side more or less explanate; mesosternum with carina or with semioval callosity 3
- 2(1) Length 6.0 - 8.0 mm; metafemur parallel-sided, posterior marginal line incomplete *A. capitosa* (Har.)
- Length 4.0 - 5.0 mm; metafemur fusiform, posterior marginal line complete *A. iquitosae* sp. n.
- 3(1) Length 6.0 - 7.5 mm; scutellum smooth or finely punctate; disc of elytra convex 4
- Length 3.0 - 5.2 mm; scutellum foveate or carinate; disc of elytra slightly deplanate 7
- 4(3) Pronotal base with fine marginal line 5
- Pronotal base lacking marginal line 6
- 5(4) Elytral striae in posterior half delimited on each side by fine lines; intervals usually distinctly punctate, apically carinate, 10th interval with median row of minute granules *A. denominata* Chevr.
- Elytral striae impressed, without marginal lines; intervals usually impunctate, 10th interval without granules *A. rondoniae* sp. n.
- 6(4) Pronotum short, side widely explanate *A. angusticollis* (Schm.)
- Pronotum moderate in length, side explanate in anterior half *A. panamensis* sp. n.
- 7(3) Mesosternum with carina 8
- Mesosternum with callosity 9
- 8(7) Lateral area of pronotum with deep punctures forming large pits, pronotal base lobed at middle *A. guayara* sp. n.

- Lateral area of pronotum with punctures moderate in size and depth; pronotal base unlobed at middle *A. domingo* sp. n.
- 9(7) Length 4.8 – 5.2 mm 10
- Length 3.8 – 4.0 mm 12
- 10(9) Head on each side of median convexity with large, round punctures separated by about one diameter; mesosternal callosity narrow with carina inside *A. teutoniae* sp. n.
- Head on each side of median convexity with moderate punctures separated by less than one diameter; mesosternal callosity wide without carina inside 11
- 11(10) Pronotal punctures on each side of disc same size as those on clypeal disc; elytra slightly widened in posterior third *A. transversaria* (Schm.)
- Pronotal punctures on each side of disc larger than those on clypeal disc; elytra strongly widened in posterior third *A. puyoensis* sp. n.
- 12(9) Clypeus with distinct median emargination, surface with slight transverse carina; elytral preapical umbone not indicated; colour rusty brown to dark castaneous 13
- Clypeus truncate anteriorly or median emargination indistinct, surface without transverse carina; elytral preapical umbone indicated; colour piceous 14
- 13(12) Disc of pronotum with moderate in size, deep punctures separated by one diameter; elytra elongate, about 3 times as long as pronotum *A. minuta* (Petr.)
- Disc of pronotum with fine, shallow punctures separated by more than one diameter; elytra oval, about 2.5 times as long as pronotum *A. loretoensis* sp. n.
- 14(12) Length 4.8 – 5.0 mm; anterior angle of pronotum widely rounded, strongly produced forwards, side widely explanate; mesosternum with semioval callosity *A. huebneri* (Petr.)
- Length 3.0 – 4.5 mm; anterior angle of pronotum obtuse, slightly prominent, side narrowly explanate; mesosternum with carina 15
- 15(14) Elytra microreticulate, discal intervals minutely punctate, lateral intervals as wide as striae without granules or tubercles *A. amazonica* (Petr.)
- Elytra shining, discal intervals with distinct rows of punctures, lateral intervals wider than striae with granules or tubercles *A. squamosa* (Petr.)

***Auperia denominata* Chevrolat**

Figs 2, 6, 15, 20

Auperia denominata Chevrolat, 1864: 413.*Auperia stercorator*: Chevrolat, 1864: 413 (nec Fabricius, 1775).*Ataenius arator* Harold, 1869: 102; Schmidt, 1922: 441; Dellacasa, 1988: 89 (catalogue). **New synonymy.***Ataenius stercorator*: Harold, 1870: 22 (non Fabricius, 1775, nec Chevrolat, 1864); 1875: 70-71 (non Fabricius, 1775).*Ataenius euglyptus* Bates, 1887: 97; Schmidt, 1922: 457; Dellacasa, 1988: 126 (catalogue). **New synonymy.***Ataenius denominatus*: Schmidt, 1922: 422 (as synonym of *stercorator*); Chalumeau, 1980: 85 (nota).

Ataenius brevinotus Chapin, 1940: 39-40; Woodruff, 1973: 114; Chalumeau, 1980: 90, 91 (as synonym of *denominatus*); Dellacasa, 1988: 273 (catalogue) (as synonym of *stercorator*).

Ataenius benjaminbanderai Islas, 1955: 497-499, fig. 3. **New synonymy.**

Ataenius sciurus Cartwright, 1974: 65; Dellacasa, 1988: 343 (catalogue). **New synonymy.**

Phalangochaeta grandis Petrovitz, 1973: 179-181; Dellacasa, 1988: 287 (catalogue). **New synonymy.**

Type material. Auperia denominata: described from Cuba. Lectotype designated by Cartwright (1973) with 5 labels 'Cuba', 'Coll. C. Felsche Kauf 20, 1918', 'Cuba Poey', '*denominatus* Chevrolat', 'stercoraria L Laval K 118 Inl Cuba Havan D. Poey 449', '*Ataenius denominatus* (Chevrolat) det. O.L. Cartwright', in SMTD.

Invalid lectotype designated by Chalumeau (1980), with large white label "*Auperia denominata* Ch. M.n.s. 2 Zar. III 193/449", "Cuba Gundlach", "*Ataenius denominatus* (Chevrolat)", lectotype des. F. Chalumeau '79', in ZMHB.

Ataenius arator: described from Brazil. Lectotype (here designated), labelled 'arator Typ', '*Ataenius arator*/Brasil' with green labels 'Brasilien', '27', 'Coll. C. Felsche Kauf 20, 1918', in SMTD.

A. euglyptus: described from Mexico. Lectotype designated by Cartwright (1964) labelled 'Las Vigas Mexico Hoege', '*Ataenius euglyptus* Bates', 'B.C.A. Col. II (2) *Ataenius*', '*Ataenius euglyptus* Bates, det. Cartwright 64', in BMNH.

A. brevinotus: described from Cuba. Type Nr 23554 labelled 'Baragua Cuba May 7, 1926' 'T.P.R.F.Ent.457', *At. denominatus* (Chevrolat) det. O.L. Cartwright, in MCZC (not seen by the author).

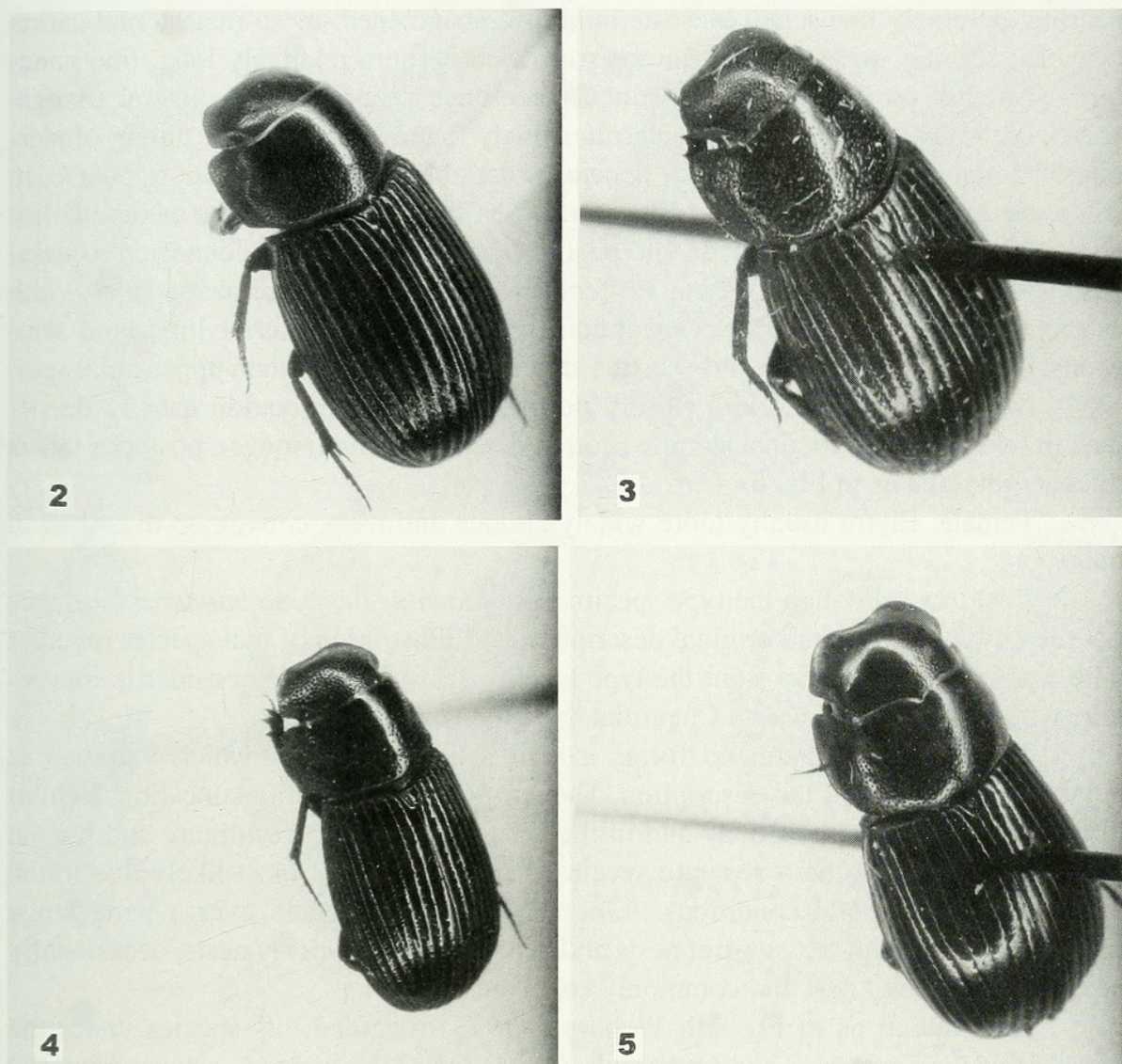
A. sciurus: described from Florida. Holotype male, labelled "Florida, 7 mi N Gainesville, 22.I.1947. J.C. Moore", No 71745 USNM. Paratype, labelled 'Welaka Fla, Putnam Co. J.C. Moore', '*sciurus* nest 25.VII. 46', '*Ataenius sciurus* Cartwright', in MHNG.

Phalangochaeta grandis: described from Brazil. Holotype male, labelled 'Brasilien, SP, Barueri, 15.XII.1970, K. Lenko', "*Phalangochaeta grandis* Petrovitz", "*Phalangochaeta arator* det. Chalumeau '81", in MHNG.

Ataenius benjaminbanderai: Holotype (unicum) Mexico, San Luis Potosi, cd. Valles, 3.X.1954, leg. Islas, in IBMZ (not seen by the author, see under Remarks).

Other specimens (92). **Belize**: Belmopan, 25.VIII.1972, S. & J. Peck (HAHC-CMN). **Bolivia**: La Paz, Yolosa nr Rio Coroico, 15.XI.1998, V. Tichy (JSC). **Brazil**: (Ro) Rondonia, 62 km SW Ariqueles nr Fzda Rancho Grande, 5-17.X.1993, black light trap, J.E.Eger (WWC); (Sc) Nova Teutonia, XII.71, leg. Plaumann (ISEA, USNM); **Colombia** (no additional data) (ZMHB). **Ecuador**: Limoncocha, 0.23S, 76.38W, 300 m, leg. Stockwell (CMN). **Guatemala**: Péten, Tikal Ruins, 12-28.V.1991, L. Limoges (CMN); Zacapa, 12 km S San Lorenzo 510 m, 16.VI.1993, H. & A. Howden (ISEA). **French Guyana**: Mt Grand Matoury, 2-11.X.1995, M. Kocian (ISEA); Cayenne (20 km SW), 4.48N, 52.28W, 26-28.V.1887, J. Ashe & R. Brooks (HAHC-CMN). **Honduras**: Morazan, 4 km W Zamorano, El Macuelis, 17.VI. 1994, H. & A. Howden. **Mexico**: San Luis Potosí, cd. Valles, Palma Hotel, 8-23.VIII.1969, S. Peck (CMN); 10 km E cd. Valles, 21.VIII.1988, R. Turnbow (FSCA); Mexico (no additional data) Coll. C. Felsche Kauf 20, 1918 (ZMHB); Veracruz; Motzorongo Sta at Veracruz, R. Becker (MHNG); Jalcomulco, Hoege, G. Kolze (ZMHB); Oaxaca, 9.VII-3.VIII.1965, G. Nelson (ISEA). **Panama**: Colon Prov., Santa Rita Ridge, 10.VI.1977, H. & A. Howden (CMN). **Venezuela**: Bolivar, 15 km E Caicara, 12.VI.1996, H. & A. Howden (CMN). **USA** Florida: Levy Co. 3-8 mi SW Archer, 6.II, 10.II.1989, Thomas & Skelley (ISEA, PSC). **Cuba**: Oho (no additional data) (ZMHB).

Description. Length 6.4-7.0 mm. Body (Fig. 2) elongate oblong, convex, moderately shining, colour dark castaneous to black. Head convex medially, slightly reflexed clypeal margin broadly rounded on each side of moderate median emargination, sides arcuate to obtusely rounded gena; clypeus minutely transversely wrinkled just above emargination, punctures gradually fine to moderate and slightly elongate upward over median convexity to vertex, separated by one diameter or less, punctures



FIGS 2-5

Habitus: 2 – *Auperia denominata* Chevrolat; 3 – *A. panamensis* sp. n.; 4 – *A. puyoensis* sp. n.; 5 – *A. capitosa* (Harold).

on vertex round, usually separated by one diameter, in some specimens closer. Pronotum short and wide, sides visible from directly above, more or less explanate in anterior half; anterior angles rounded, side straight or slightly arcuate toward obtuse or slightly acutely prominent posterior angle; base with distinct marginal line, more or less deeply excised on sides; lateral edge very finely crenate, fringed with minute, close setae; pronotal punctures variable, disc with scattered, very fine to fine punctures becoming quite dense, larger and coarser toward sides and here separated by less than one diameter, in some specimens contiguous and rugose. Elytra convex, sides arcuate, humeral denticle sharply pointed, sculpture variable; discal striae 1-3, 4, usually finer than remaining with shallow punctures, in most specimens lateral and apical striae margined by very fine, alutaceous lines and with deep, slightly crenating punctures; lateral and apical intervals convex to carinate, punctures of intervals 8-9 distinct, closer at shoulders, 10th interval flattened, opaque with median row of minute granules

bearing extremely fine setae. Mesosternum low, shagreened, meso-metasternal carina (Fig. 15) shining, wide between mesocoxae; metasternum relatively long, fine punctures scattered on disc, midline distinct, sometimes deeper at ends, lateral triangle broad, scabrous inside; abdominal sternites finely fluted along sutures, fluting of sternite 5th longer and coarser; surface punctures variable, moderate in size to coarse, in some specimens elongate, usually concentrated on sides being less close medially; disc of pygidium deeply eroded, wide and coarsely punctate apical lip connected to basal cusp by shining longitudinal carina. Profemur scabrous; mesofemur nearly same width as metafemur, closely punctate; metafemur with complete posterior line; tarsi setaceous, basal tarsomere of posterior tarsus about one-third longer than upper tibial spur.

Male. Pronotal disc less closely punctate, basal emargination usually deeper than in female, 5th abdominal sternite shorter, disc of pygidium longer, posterior tarsus thicker; genitalia as in Fig. 6.

Female. Elytra usually more widely arcuate and more convex on disc than in male.

Remarks. Although the type specimen of *Ataenius benjaminbanderai* Islas was not seen by the author, the original description and illustration of that species together with a series of specimens from the type locality are sufficient to consider it conspecific with *Auperia denominata* Chevrolat.

The material examined forms a confusing complex in which variation is notable, as indicated in the description. The specimens from various localities exhibit differences in the shape of body and in the pronotal and elytral sculpture and may at first glance appear to be a separate species. Such variation is most likely due to the different environmental conditions. *Auperia denominata* occurs over a wide range being associated with fox squirrel nests and sciurus (*Sciurus niger*) nests, occasionally taken in horned owl nest and commonly collected at light.

Distribution as in Fig. 20. Woodruff (1973) recorded this species under the name *Ataenius brevinotus* and Cartwright (1974) under the name *A. sciurus* from the following Florida localities: Highlands Co. near Lake Placid; Merritt Island; Manatee Co. Oneco; Dade Co., Matheson Hammock; Hillsborough Co. Plant City; Alachua Co. vicinity of Gainesville; Pinellas Co., Dunedin.

Auperia angusticollis (Schmidt) comb. n.

Figs 7, 20

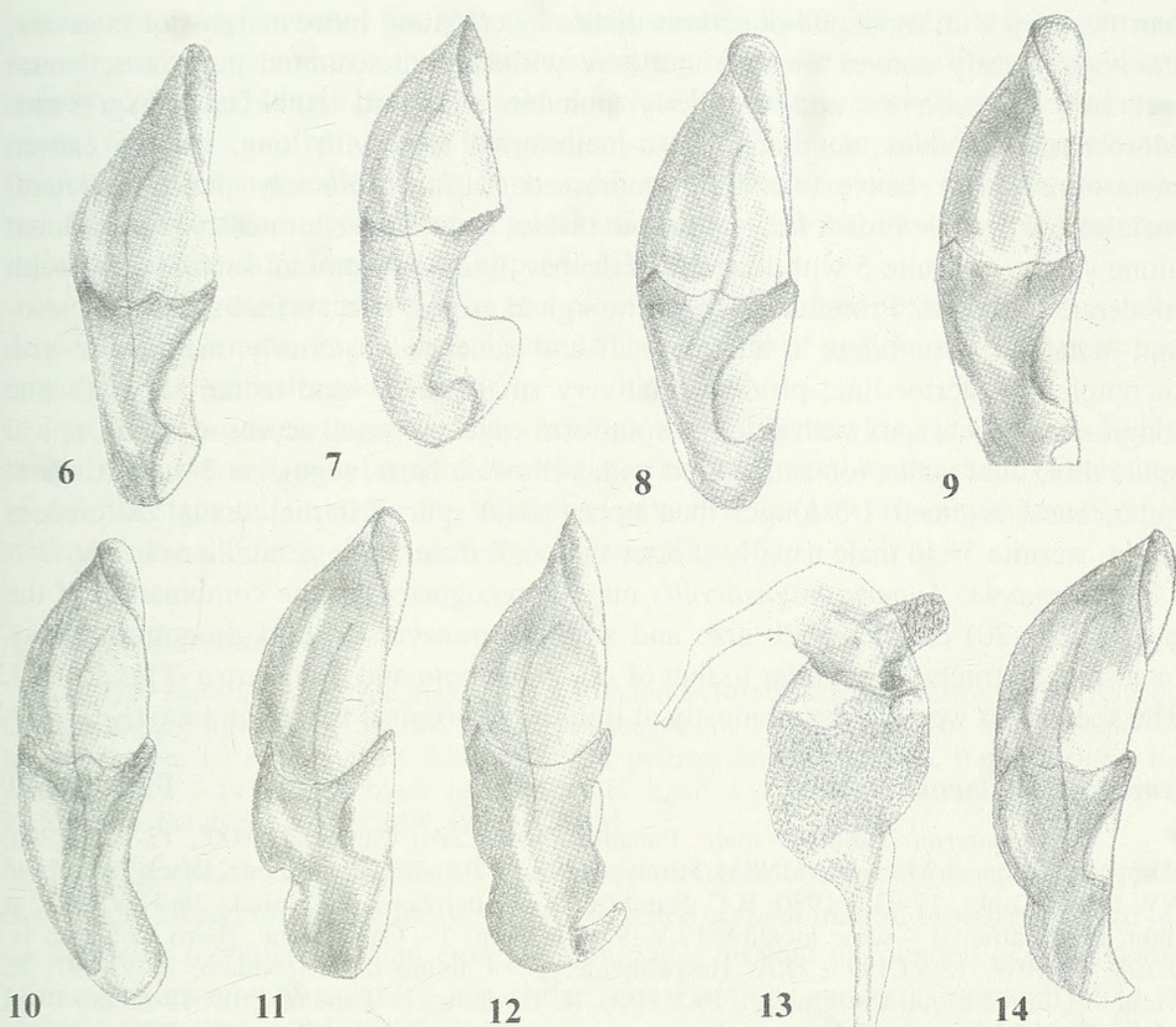
Ataenius angusticollis Schmidt, 1909: 19-21; 1910, tb.2, fig. 31; 1922: 441.

Phalangochaeta angusticollis: Martinez, 1952: 95-99, figs 18-27, 49; Dellacasa, 1988: 314 (catalogue).

Type material. Holotype (sex not determined) labelled 'Typus' 'Bolivia', *At. angusticollis* in NRS. Paratypes not designated, 3 female specimens labelled 'Syntypes', 'Bolivia, Coll. Kraatz', '*Ataenius angusticollis* Schmidt, Cartw. 71', in DEIE.

Other specimens (42). **Bolivia:** Prov. Sara, Dep. Santa Cruz de la Sierra, 500 m, 1.IV.1904, J. Steinbach (ZMHB); Ichilo, Buena Vista, coll. Martinez (CMN); Santa Cruz, 3.7 km SSE Buena Vista, Hotel Flora & Fauna, 430 m, 14-19.X.2000, B.K. Dozier (FSCA, ISEA); Santa Cruz, vicinity of Buena Vista, 28.X.1998, V. Tichy (JSC).

Description. Length 6.0 - 7.5 mm. Body strongly convex, glabrous, moderately shining, colour dark castaneous. Head large, deflexed, nearly as wide as pronotum, strongly gibbose medially; clypeal margin widely rounded on each side of wide, shal-



FIGS 6-14

6-11: Aedeagus in lateral view: 6 – *Auperia denominata* Chevrolat; 7 – *A. angusticollis* (Schmidt); 8 – *A. panamensis* sp. n.; 9 – *A. rondoniae* sp. n.; 10 – *A. guayara* sp. n.; 11 – *A. domingo* sp. n. 12-13: *A. transversaria* (Schmidt): 12 – aedeagus in lateral view; 13 – penis, saccus internus. 14: *A. puyoensis* sp. n.: aedeagus in lateral view.

low median emargination, edge deflexed at middle, ended by triangular process, sides of clypeus arcuate to obtuse, prominent gena; surface narrowly smooth just above median emargination, median area from side to side with moderate, longitudinal punctures blending into vertical band of round punctures separated by one diameter or less. Pronotum strongly transverse, slightly converging posteriorly; anterior angles obtusely rounded, slightly produced forward, side margin thickened, reflexed, finely crenate by punctures; posterior angles right-angled, base slightly excavate near posterior angles, marginal line lacking; surface deplanate near anterior angles with diagonal depression laterally; punctures mixed minute and moderate, anterior median area with finer punctures gradually increasing in size and density toward sides, becoming very dense and confluent along lateral margin. Scutellum triangular, convex at middle, impunctate. Elytra strongly arcuate, widest just behind the middle, slightly deplanate apically; humeral denticles moderate in size, acute, elytral base finely margined; striae

narrow, deep with moderate punctures distinctly crenating inner margins of intervals; intervals slightly convex on disc and here with minute scattered punctures, lateral intervals 8-9 convex and distinctly punctate, interval 10th flat, shagreened. Mesosternum convex, scabrous; meso-metasternal area with long, shining carina; metasternal plate convex, midline impressed, surface minutely punctate, lateral metasternal triangle broad, finely punctate inside; abdominal sternites 1-4 finely fluted along sutures, sternite 5 with longer and deeper fluting; abdominal surface shiny with moderate punctures. Profemur wide, perimarginal groove fine, surface scabrous; meso- and metafemora scabrous in anterior half and punctate posteriorly, metafemur with incomplete posterior line; protibia relatively small; meso- and metatibiae with fine longitudinal lines, apex with external spiniform edge and small accessory spine, apical spurs thin; hind tarsus robust covered with yellowish hairs, segments 2-4 short, triangular, basal segment 1/3 longer than upper tibial spur. External sexual differences slight; sternite 5th in male usually shorter than in female; male genitalia as in Fig. 7.

Remarks. *Auperia angusticollis* may be recognized by the combination of the range (Fig. 20) coupled with size and strongly transverse, short pronotum; meso-metasternal structure is similar to that of *A. denominata* and *A. guayara* (Figs 15, 16). The specimens were collected mostly at light in the tropical transition forest.

***Auperia panamensis* sp. n.**

Figs 3, 8, 21

Type material. Holotype male: Panama, Prov. Cerro Campana 2800', 13-14.V.1996, Wappes, Huether & Morris, in UNSM. Paratypes (9): 2 - Panama, Canal Zone, Black Tank Road NW Gatun Locks, 17-31.V.1980, B.C. Ratcliffe; 1 - Canal Zone, Ft. Gulick, 28-31.V.1981, at light, H.J. Harlan; 1 - same locality, 17.V.1976, at light; 1 - Canal Zone, Barro Colorado Is. 9.10V, 79.50W, 15.VI.1977, H.A. Hespenheide; 1 - Camino del Oleoducto, 26.V.1997, R. Turnbow; 2 - Chiriqui, Chiriquicito, 16.V.1996, R. Turnbow; 1 - Panama Prov. 13-18 km W El Llano, 29.V-3.VI.1983, J.E. Wappes. Paratypes are in: CMN, FSCA, ISEA, PSC, RTC, UNSM.

Description. Length 6.5 - 7.0 mm. Body (Fig. 3) elongate oblong, convex, shining, reddish black. Head convex medially, slightly reflexed clypeal margin broadly rounded on each side of moderate median emargination, sides arcuate to widely rounded gena; clypeus minutely transversely wrinkled just above emargination, punctures gradually fine to moderate and slightly elongate upward over median convexity to vertex, separated by one diameter or less, punctures on vertex coarse, round, separated by less than one diameter. Pronotum short and wide, explanate in anterior half; anterior angles rounded, produced, side straight or slightly arcuate toward obtuse posterior angle; base slightly excised laterally without marginal line, lateral edge very finely crenate, fringed with minute, close setae; pronotal disc with scattered, very fine to fine punctures becoming quite dense, larger and coarser toward sides with intermixed fine punctures and here separated by less than one diameter. Elytra convex, sides arcuate, humeral denticle raised in sharp vertical carina; discal striae 1-3 finer than remained with shallow punctures, lateral and apical striae deep with slightly crenating punctures; lateral and apical intervals convex, punctures of intervals 8-9 and those on shoulders scattered, 9th interval convex, 10th interval flattened, subopaque; apical margin of elytra distinctly reflexed and transversely wrinkled. Mesosternum low, shagreened, mesometasternal carina wide between mesocoxae, shining; metasternum relatively long, fine punctures scattered on disc, midline distinct, lateral triangle broad, scabrous

inside; abdominal sternites finely fluted along sutures, fluting of sternite 5 longer and coarser; surface punctures rather coarse, extending from side to side; disc of pygidium deeply eroded and longitudinally wrinkled, apical lip wide, coarsely punctate and connected to basal cusp by shining longitudinal carina. Profemur scabrous; mesofemur fusiform, widest at middle, nearly same width as metafemur, closely punctate; metafemur with almost complete posterior line; tarsi setaceous, basal tarsomere of posterior tarsus about one-third longer than upper tibial spur.

In male, the pronotal disc is less closely punctate, basal emargination usually deeper than in female, 5th abdominal sternite shorter, disc of pygidium longer, posterior tarsus thicker; genitalia as in Fig. 8.

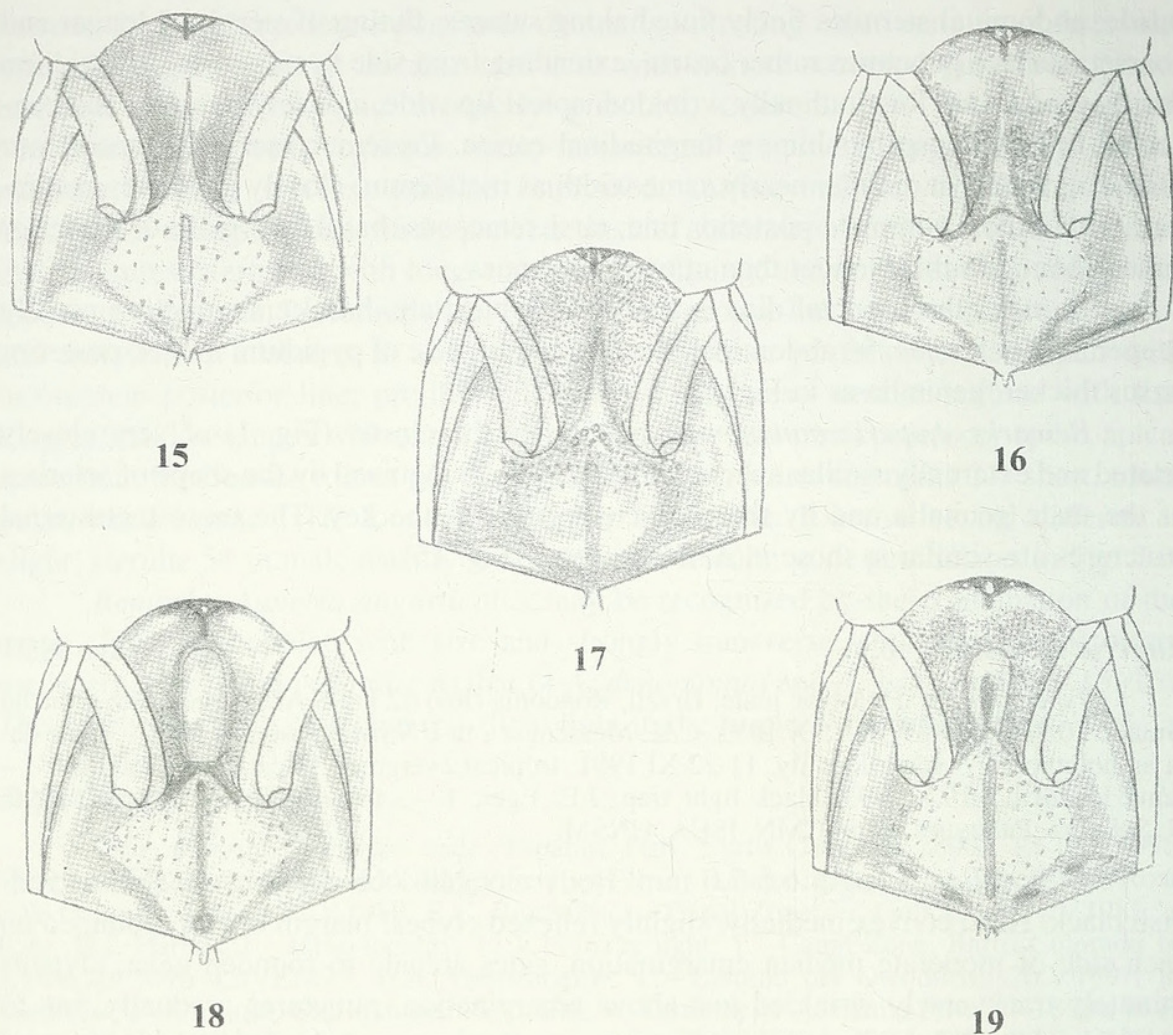
Remarks. *Auperia panamensis* belongs to the cluster (Fig. 1) of very closely related and externally similar species which can be recognized by the shape of sclerites of the male genitalia and by the characters given in the key. The meso-metasternal structures are similar to those in *A. denominata* (Fig. 15).

Auperia rondoniae sp. n.

Figs 9, 21

Type material. Holotype male: Brazil, Rondonia (Ro) 62 km S Ariquemes, Faz. Rancho Grande 10.32S, 62.48W, 5-15.X.1993, C.K. Messenger, in UNSM. Paratypes (6). 3 - same data as holotype; 1 - same locality, 11-22.XI.1991, tropical evergreen forest, B.C. Ratcliffe; 1 - same locality, 5-19.X.1993, black light trap, J.E. Eger; 1 - same locality, 23-24.VIII.1996, U. Schmitz. Paratypes are in CMN, ISEA, UNSM.

Description. Length 6.5-7.0 mm. Body elongate oblong, convex, shining reddish black. Head convex medially, slightly reflexed clypeal margin broadly rounded on each side of moderate median emargination, sides arcuate to rounded gena; clypeus minutely transversely wrinkled just above emargination, punctures gradually fine to moderate and slightly elongate upward over median convexity to vertex, separated by one diameter or less, punctures on vertex round, separated by one diameter. Pronotum short and wide, explanate in anterior half; anterior angles rounded, produced, side straight or slightly arcuate toward obtuse posterior angle; base excised laterally with fine marginal line, lateral edge very finely crenate, fringed with minute, close setae; pronotal disc with scattered, very fine to fine punctures becoming quite dense, larger and coarser toward sides and here separated by less than one diameter. Elytra convex, sides arcuate, humeral denticle raised in sharp vertical carina; discal striae 1-3 finer than remained with shallow punctures, lateral and apical striae deep with slightly crenating punctures; lateral and apical intervals convex, punctures of intervals 8-9 and those on shoulders scattered, 9th interval convex to subcarinate, 10th interval flattened, subopaque. Mesosternum low, shagreened, meso-metasternal carina wide between mesocoxae, shining; metasternum relatively long, fine punctures scattered on disc, midline distinct, lateral triangle broad, scabrous inside; abdominal sternites finely fluted along sutures, fluting of sternite 5th longer and coarser; surface punctures moderate in size, vanishing at middle; disc of pygidium deeply eroded, apical lip wide, coarsely punctate and connected to basal cusp by shining longitudinal carina. Profemur scabrous; mesofemur and metafemur fusiform, closely punctate; metafemur with complete posterior line; tarsi setaceous, basal tarsomere of posterior tarsus about one-third longer than upper tibial spur.



FIGS 15-19

Meso-metasternum: 15 – *Auperia denominata* Chevrolat; 16 – *A. guayara* sp. n.; 17 – *A. domingo* sp. n.; 18 – *A. transversaria* (Schmidt); 19 – *A. teutoniae* sp. n.

In male, the pronotal disc less closely punctate, basal emargination usually deeper than in female, 5th abdominal sternite shorter, disc of pygidium longer, posterior tarsus thicker; genitalia as in Fig. 9.

Remarks. Externally, *Auperia rondoniae* is closest to *A. panamensis*. It can be distinguished with certainty by the characters of the male genitalia which are most similar to those of *A. denominata*, however, the latter species differs by having the apical declivity of elytra with more elevated intervals and with striae margined by lines. The meso-metasternal structures are similar to those in *A. denominata* (Fig. 15)

***Auperia guayara* sp. n.**

Figs 10, 16, 21

Type material. Holotype, male: Bolivia, Guayaramerin (Beni), 23.XI.1966, np. 399 lamping, Balogh & Mahunka & Zicsi, in HNHN. Paratypes (3), same data as holotype, in HNHN, ISEA.

Description. Length 4.2-5.0 mm. Body elongate oval, convex, moderately shining, colour dark castaneous. Head convex medially, slightly reflexed clypeal margin

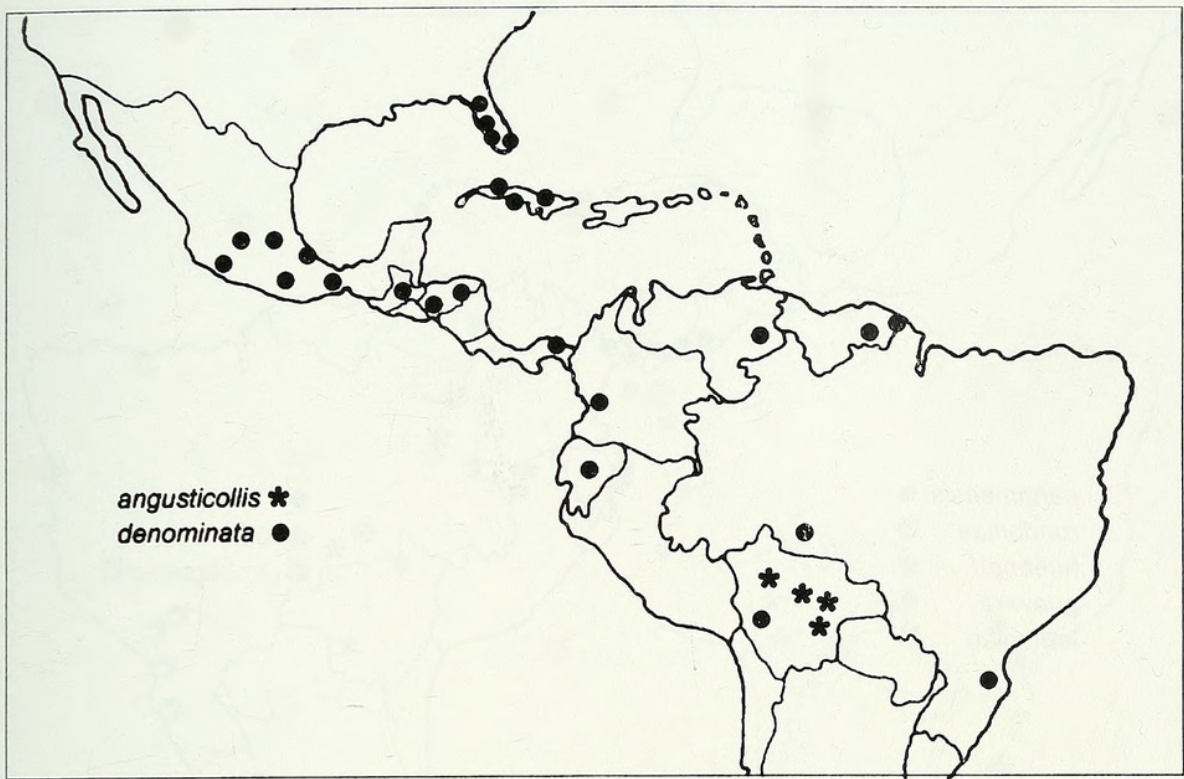


FIG. 20

Known distribution of *Auperia denominata* Chevrolat and *A. angusticollis* (Schmidt).

broadly rounded on each side of moderate median emargination, sides arcuate to obtuse gena; clypeal surface narrowly shiny just above emargination, punctures gradually fine to moderate and slightly elongate upward over median convexity to vertex, generally separated by one diameter. Pronotum wide, slightly diverging toward base, sides visible from directly above, narrowly explanate in anterior half; anterior angle rounded, side arcuate toward right-angled posterior angle, side margin finely crenate and fringed with minute setae; base without marginal line, on sides more or less deeply excised and distinctly lobed medially; pronotal punctures on anterior disc moderate in size, increasingly larger toward base, separated by about one diameter, on sides very coarse, pitted and contiguous. Elytra relatively short, convex, sides arcuate, humeral denticle small; discal striae 1-3 finer than remaining with shallower punctures moderately crenating margins of intervals; intervals 1-3 convex, lateral and apical intervals subcarinate, microreticulate with scattered fine punctures and minute setae, 10th interval flattened, opaque. Mesosternum low, rugosely shagreened with rather long pale hairs; meso-metasternal carina (Fig. 16) shining, long, wide between mesocoxae; metasternum relatively long, punctures grouped at mesocoxae, midline shallow, lateral triangle broad, scabrous inside; abdominal sternite 3 with short deep fluting, sternites 4-5 coarsely fluted along sutures; surface punctures moderate in size, extending from side to side; disc of pygidium deeply eroded and finely granulate. Profemur scabrous, rugose; mesofemur shorter and wider than metafemur, with setigerous punctures at knee, metafemur with almost complete posterior line; metatarsus relatively short, densely setaceous, basal tarsomere about one-third longer than upper tibial spur.

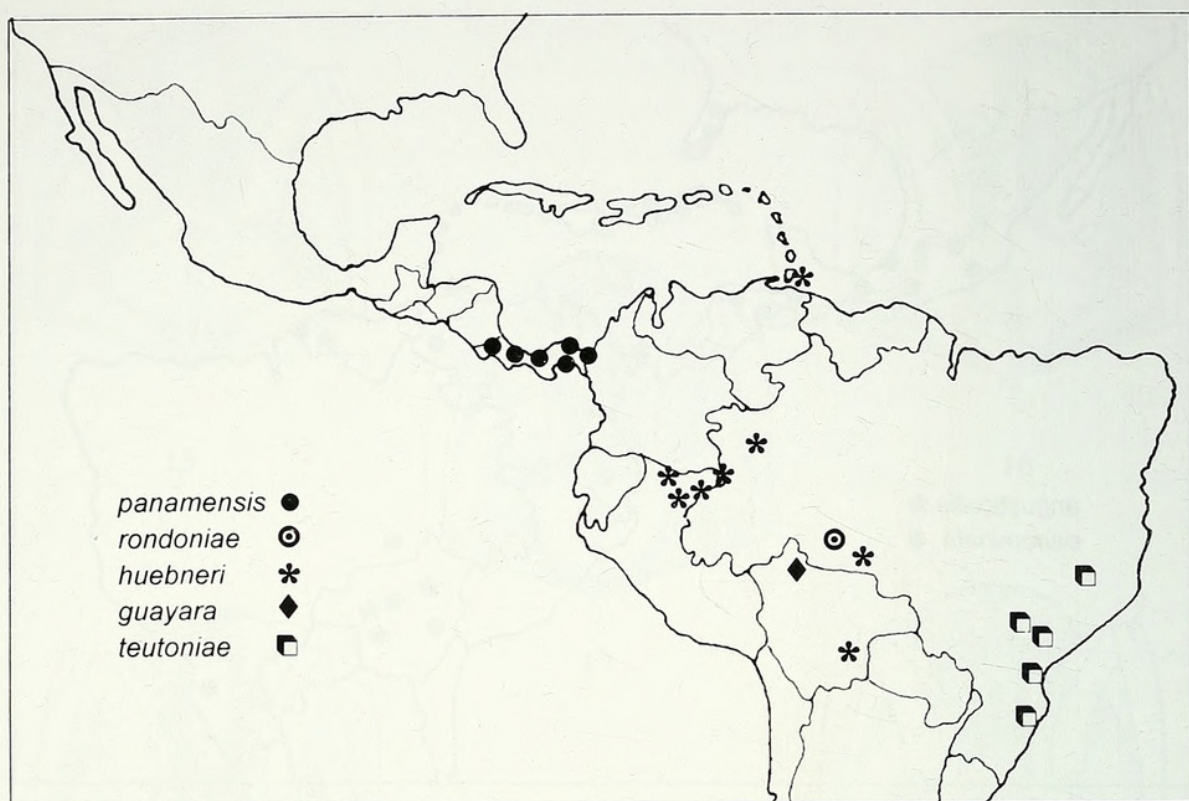


FIG. 21

Known distribution of *Auperia panamensis* sp. n., *A. rondoniae* sp. n., *A. huebneri* (Petrovitz), *A. guayara* sp. n. and *A. teutoniae* sp. n.

In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 10.

Remarks. *Auperia guayara* is most closely related to the cluster of species including *A. angusticollis*. It can be easily distinguished from all these species by its smaller size and the coarse pronotal punctures forming large pits.

Auperia domingo sp. n.

Figs 11, 17, 22

Type material. Holotype male, Ecuador, Pich 500 m, 4 km SE Sto Domingo, 8.VI.1976, Ber. 342 forest litter, S. & J. Peck, in HAHC(CMN). Paratype female, Costa Rica, Hamburg Farm nr Siquirres, E. Reimoser, in MHNG.

Description. Length 4.8-5.0 mm. Body elongate, widest at apical third of elytra, shining, colour castaneous. Head gibbose medially, clypeal margin widely rounded on each side of shallow median emargination, side arcuate toward obtuse, protruding gena; clypeal surface anteriorly with wide, smooth area extending from gena to gena, middle of head with fine, slightly elongate punctures separated by one diameter, closer and slightly confluent at eyes, blending into vertical band of round punctures separated by one diameter. Pronotum transverse, base without marginal line, excavate laterally, crenate by fine close punctures; anterior angle broadly rounded, posterior angle right-angled, side slightly explanate, edge minutely crenate and fringed with minute setae visible under high magnification; pronotal disc distinctly convex, punctures scattered, mixed fine and moderate, those on each side of disc larger, sepa-

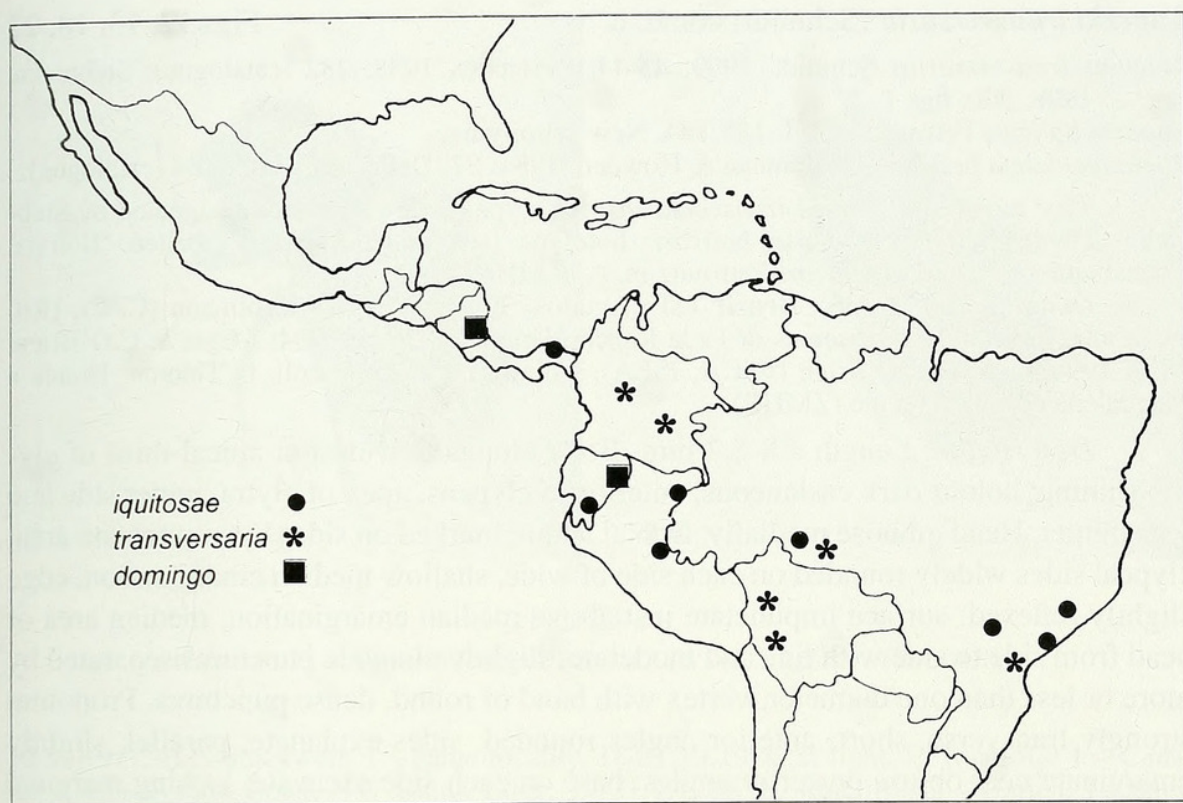


FIG. 22

Known distribution of *Auperia iquitosae* sp. n., *A. transversaria* (Schmidt) and *A. domingo* sp. n.

rated by one diameter becoming increasingly larger and denser toward lateral margin and here strongly rugose. Elytra arcuate, edge minutely crenate and setigerous like as pronotal side, humeral denticle conical, acute; striae deep, stria punctures close each other, crenating margins of intervals; intervals convex, discal intervals 1-4 minutely punctate, intervals 5-9 from base to apex with 2 irregular rows of fine, shallow punctures separated by 2-3 diameters, minutely setigerous at apex of elytra. Mesosternum flattened, shagreened, median carina (Fig. 17) wide basally, shining, meso-metasternal suture distinct, 6-8 large punctures just below suture; metasternal midline deep, surface punctures fine to moderate, grouped near mesocoxae, lateral metasternal triangle narrow, shagreened inside; abdominal sternites at middle with very short fluting increasingly longer to sides; longest on sternite 5th; abdominal surface shining with moderate, minutely setigerous punctures extending from side to side, coarser and denser near epipleura; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina lacking. Profemur shining with coarse, confluent punctures; mesofemur as wide as metafemur, punctate; metafemur with almost complete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; metatarsus very long, basal tarsomere 1/3 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 11.

Remarks. Externally, *Auperia domingo* is very similar to the remaining three species of the group, namely *transversaria*, *puyoensis* and *teutoniae*. It differs from all these species by having the mesosternum with carina.

***Auperia transversaria* (Schmidt) comb. n.**

Figs 12, 13, 18, 22

Ataenius transversarius Schmidt, 1909: 43-44; Dellacasa, 1988: 282 (catalogue); Stebnicka, 1998: 200, figs 1, 3.

Euparia bolivari Petrovitz, 1973: 183-184. **New synonymy.**

Phalangochaeta bolivari: Chalumeau & Howden, 1984: 87; Dellacasa, 1988: 284 (catalogue).

Type material. *Ataenius transversarius*: lectotype (Bolivia, Songo) designated by Stebnicka (1998), in NRS. *Euparia bolivari*: holotype (sex undetermined), labelled 'Bolivia, Cochabamba', "*Euparia bolivari* Petrovitz m. ", in MHNG.

Other specimens (36). **Brazil:** (SP) Agudos, 30.III.1993, C. Flechtmann (CFC); (Ro) Rondonia, 62 km SW Ariquemes nr Fzda Rancho Grande, 8-20.XI.1994, J.Eger & C.O'Brien, 18.IX.1994, C.W. & L.O'Brien (FSCA, ISEA). **Colombia:** Bogota, coll. O Thieme; Honda a Magdalena coll. O. Thieme (ZMHB).

Description. Length 4.8-5.2 mm. Body elongate, widest at apical third of elytra, shining; colour dark castaneous, anterior of clypeus, apex of elytra, under side and legs lighter. Head gibbose medially, frontal suture marked on sides by impunctate area; clypeal sides widely rounded on each side of wide, shallow median emargination, edge slightly reflexed; surface impunctate just above median emargination, median area of head from side to side with fine and moderate, slightly elongate punctures separated by more or less than one diameter, vertex with band of round, dense punctures. Pronotum strongly transverse, short; anterior angles rounded, sides explanate, parallel, slightly emarginate near obtuse posterior angles; base on each side excavate, lacking marginal line, finely crenate by close punctures; pronotal surface with shallow depression on each side, punctures fine anteriorly, gradually increasing in size toward sides and base, large and very close on sides, rugose along lateral margin. Scutellum impressed at base. Elytra margined, humeral denticles moderate; striae strongly impressed with large punctures crenating inner margins of intervals, especially at apex; intervals convex on disc, subcarinate laterally, intervals 5-9 from base to apex with irregular rows of minutely setigerous punctures. Prosternum with wide process; mesosternum with oval, shagreened callosity (Fig. 18) separated from metasternum by meso-metasternal suture, two diagonal fossulae below suture; metasternal midline strong, metasternal disc closely punctate; abdominal sternites fluted along sutures, fluting gradually longer toward sides, penultimate sternite with coarse fluting; surface punctures moderate, extending from side to side, less close at middle of abdomen. Profemur shining, closely punctate; metafemur with complete posterior line; apex of metatibia with spiniform edge and accessory spine; tarsal segments setaceous, basal segment of metatarsus long, about 1/3 longer than upper tibial spur and longer than remaining tarsal segments combined. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Figs 12-13.

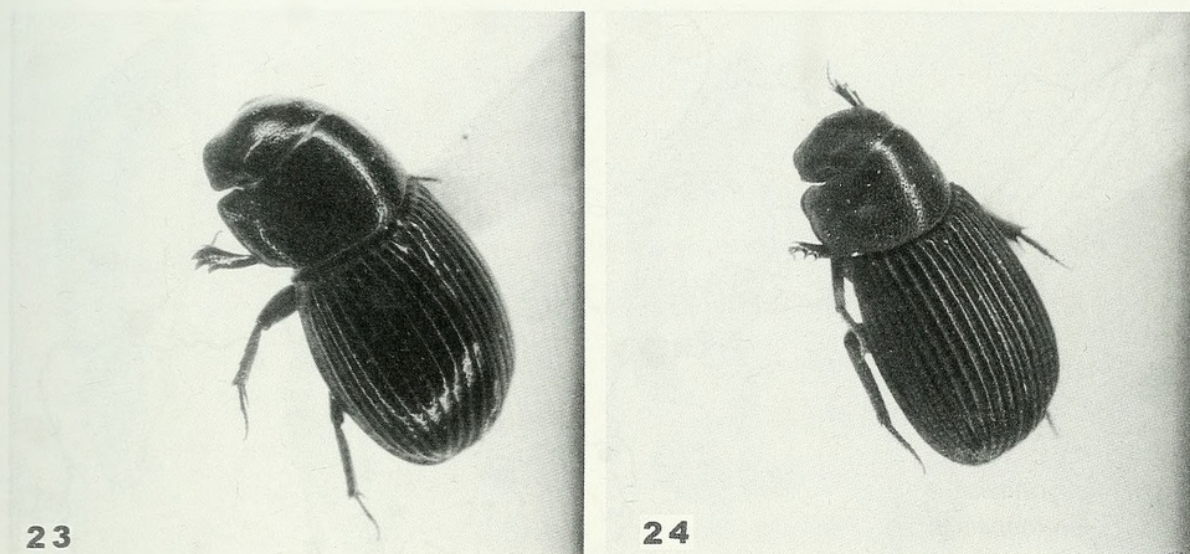
Remarks. *Auperia transversaria* belongs to the group of four species possessing the same size, colour and, at first glance, the same appearance. It is most close to *A. puyoensis* (see Remarks under that species).

The specimens were collected in Brazil on *Pinus caribaea hondurensis* stand.

***Auperia puyoensis* sp. n.**

Figs 4, 14, 25, 37

Type material. Holotype male, Ecuador, Pastaza 900 m, 22 km SE Puyo, 15.VII.1976, forest litter, S. & J. Peck, in CMN. Paratypes (53): 3 - same data as holotype; 13 - Panama: 4 - Maje Station, 18.V.1974, black light trap, Engelman & Ramirez; 3 - Colon, Santa Rita Ridge,



FIGS 23-24

Habitus: 23 – *Auperia iquitosae* sp. n.; 24 – *A. huebneri* (Petrovitz).

10.VI.1977, H.P. Stockwell; 1 – same locality, 18-21.VI.1974, at light, B. Ratcliffe; 1 – Canal Zone, Black Tank Road, NW Gatun Lock, 17-31.V.1980, B. Ratcliffe; 2 – Darien, Estacion Ambiental Cana, 07.45N, 77.41W, 700 m, 3.VI.1996, tropical montane forest litter, R. Anderson; 2 – Panama, Chiriqui, Chiriquicito, 16.V.1996, R. Turnbow; 37 – Venezuela: 18 – Miranda, Guatopo Nat. Park, Agua Blanca, 35 km N Altigracia, 3.VI.1987, 400 m, sifted insect bait, S. & J. Peck; 10 – Sucre, 7 km S El Pilar, 29.VII.1987, rainforest remnant leaf and log litter, S. & J. Peck; 1 – Guarica, Guatopo Nat. Park S border, 24 km W Altigracia, 10.VI.1987, 300 m, forest leaf litter, S. & J. Peck; 1 – Tachira, Fundacion Presa Las Cuevas, 600 m, 14.VI.1989, rain forest log litter, S. & J. Peck; 6 – same locality, 11.VII.1989, rain forest litter, S. & J. Peck; 1 – Aragua, Maracay, Rancho Grande, 1-10.VII.1987, cloud forest, Bordon & Peck. Paratypes are in: CMN, FSCA, ISEA, UNSM.

Description. Length 4.8-5.0 mm. Body (Fig. 4) elongate, widest at apical third of elytra, shining, colour dark reddish brown. Head moderately convex medially, clypeal margin widely rounded on each side of shallow median emargination, side arcuate toward obtuse, protruding gena; clypeal surface just above emargination with 2-3 slight transverse rugae, median area and vertex with moderate in size, rather deep, slightly elongate punctures separated by one diameter. Pronotum transverse, nearly parallel-sided, base without marginal line, excavate laterally, crenate by fine close punctures; anterior angle broadly rounded, posterior angle right-angled, side more or less explanate, edge minutely crenate and fringed with minute setae visible under high magnification; pronotal disc weakly convex, surface punctures variable in distribution, usually fine anteriorly, separated by 2 diameters, those on posterior disc about 2 times larger, separated by one diameter, punctures become increasingly larger and denser toward lateral margin and here strongly rugose. Elytra arcuate, edge minutely crenate and setigerous like as pronotal side, humeral denticle conical, acute; striae deep striae punctures close each other, crenating margins of intervals; intervals convex, discal intervals 1-4 impunctate, intervals 5-9 from base to apex with irregular rows of fine, deep, setigerous punctures separated by one diameter or less. Mesosternum flattened, shagreened and longitudinally wrinkled, median callosity surrounded by narrow,

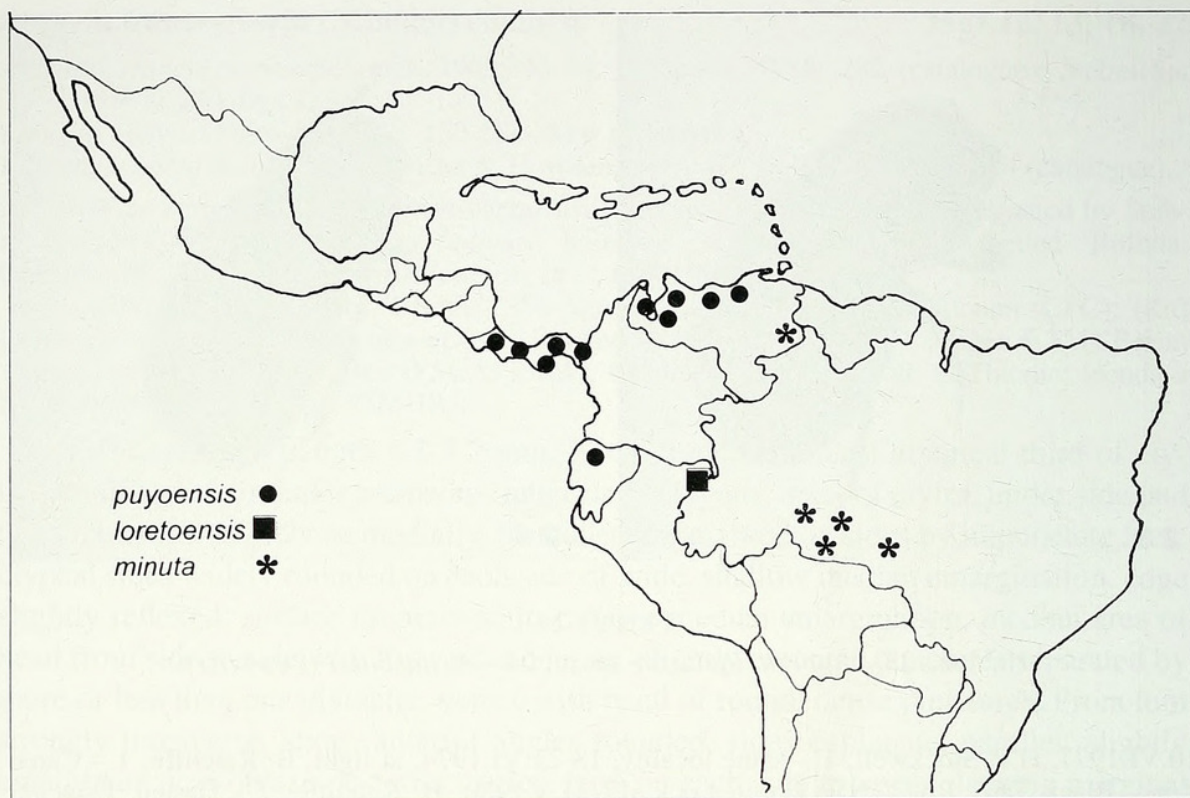


FIG. 25

Known distribution of *Auperia puyoensis* sp. n., *A. loretoensis* sp. n. and *A. minuta* (Petrovitz).

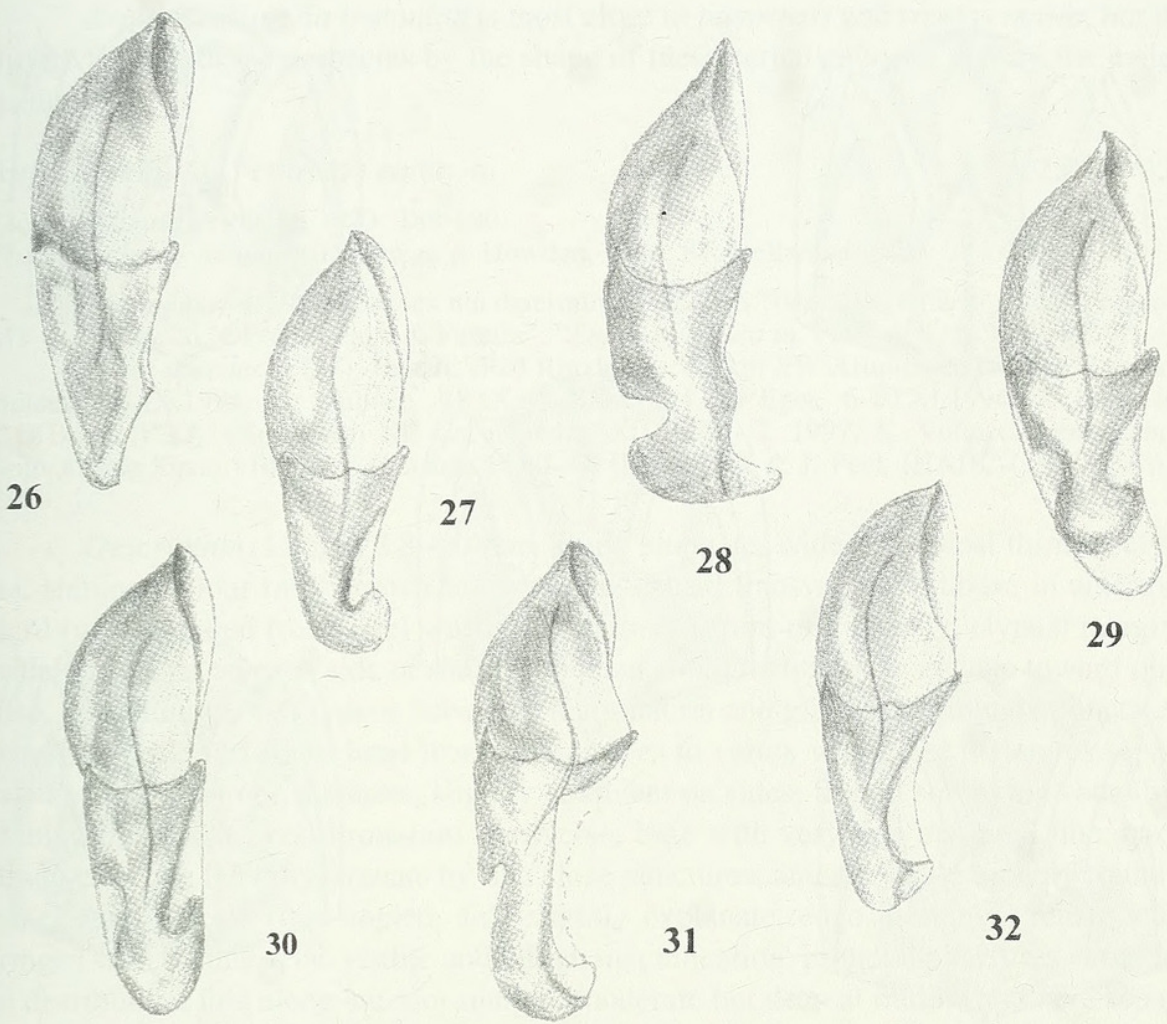
shining margin; mesometasternal suture distinct, two diagonal fossulae just below suture; metasternal midline deep, surface punctures moderate, concentrated near meso-coxae, lateral metasternal triangle narrow, shagreened inside; abdominal sternites 2-4 with fluting longest on sides, fluting of sternite 5th extending from side to side; abdominal surface at middle with fine scattered punctures, on sides punctures coarse, close, minutely setigerous; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina weak or invisible. Profemur shining with coarse, confluent punctures; mesofemur slightly wider and more closely punctate than metafemur; metafemur with almost complete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; metatarsus relatively long, basal tarsomere $\frac{1}{4}$ longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 14.

Remarks. *Auperia puyoensis* may represent a geographic form of *A. transversaria* to which it is most closely related, but differs from that species by having the more coarse punctures of the head, the pronotal punctures larger and the elytra more arcuate. The meso-metasternal structures are similar to those in *A. transversaria* (Fig. 18).

Auperia teutoniae sp. n.

Figs 19, 21, 26

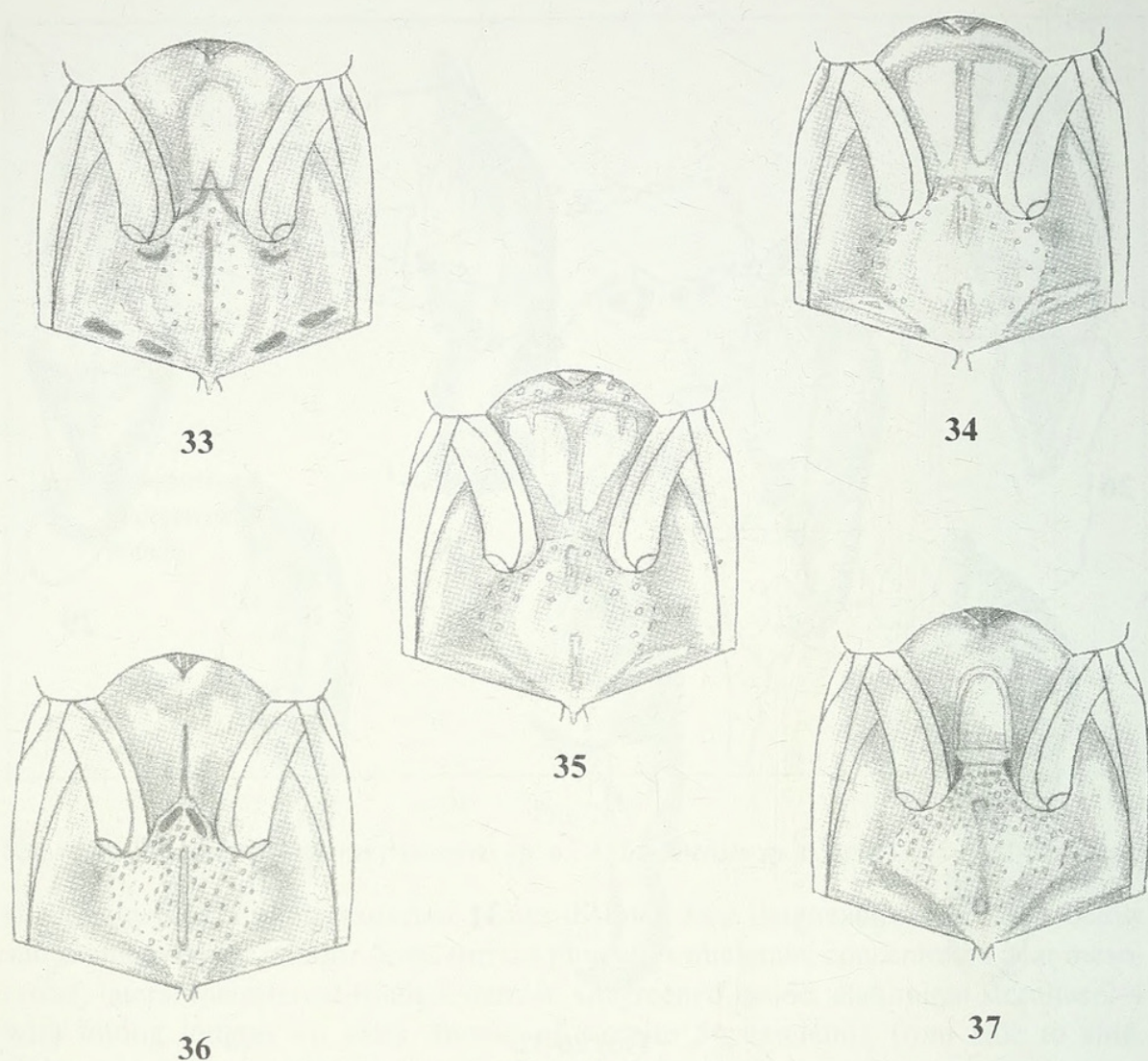
Type material. Holotype male, Brazil: (Sc) Nova Teutonia, Santa Catarina, IX.1972, F. Plaumann, in CMN. Paratypes (8): 2 - Brazil (RJ), Nova Friburgo, XI.1999, P. E. Grossi; 2 - Brazil (MG), Vicosa, 15.XII.1982, P.S.Fiuza; 1 - Brazil (MG), Lambary, XI.1924, coll. Halik; 2 - Brazil (Ba) Bahia, Encruzilhada, 980 m, XI.1972, M. Alvarenga; 1 - Brazil (no other data). Paratypes are in: FSCA, ISEA, MHNG, USNM.



FIGS 26-32

Aedeagus in lateral view: 26 – *Auperia teutoniae* sp. n.; 27 – *A. minuta* (Petrovitz); 28 – *A. loretoensis* sp. n.; 29 – *A. capitosa* (Harold); 30 – *A. iquitosae* sp. n.; 31 – *A. huebneri* (Petrovitz); 32 – *A. squamosa* (Petrovitz).

Description. Length 4.8-5.0 mm. Body elongate, widest in apical third of elytra, shining, colour dark reddish brown. Head moderately convex medially, clypeal margin widely rounded on each side of shallow median emargination, side arcuate toward obtusely rounded gena; clypeal surface just above emargination with minute granules, median area upward to vertex with large, round and deep punctures separated by one diameter, vertex with regular band of two times smaller punctures separated by less than one diameter. Pronotum transverse, parallel-sided, base without marginal line, deeply excavate laterally, crenate by close punctures; anterior angle broadly rounded, posterior angle right-angled, protruding laterally when viewed from directly above; side explanate, edge minutely crenate and fringed with minute setae visible under high magnification; pronotal disc weakly convex, punctures anteriorly scattered, fine with intermixed larger ones, the latter closer at base, separated by 1-2 diameters, those on sides twice larger, denser toward lateral margin and here strongly rugose. Elytra arcuate, humeral denticle conical acute; striae deep, strial punctures close each other, crenating margins of intervals, 10th stria with row of elongate tubercles; intervals



FIGS 33-37

Meso-metasternum: 33 – *Auperia minuta* (Petrovitz); 34 – *A. capitosa* (Harold); 35 – *A. iquitosae* sp. n.; 36 – *A. amazonica* (Petrovitz); 37 – *A. huebneri* (Petrovitz).

convex, discal intervals 1-4 impunctate, intervals 5-9 from base to apex with irregular rows of fine, distinctly setigerous punctures separated by one diameter or less. Mesosternum flattened, shagreened, median callosity (Fig. 19) in form of loop with shining carina inside of scabrous area; meso-metasternal suture distinct, two diagonal fossulae just below suture; metasternal midline deep, surface punctures moderate, concentrated near mesocoxae, lateral metasternal triangle narrow, shagreened inside; abdominal sternites 2-4 with fine fluting, sternite 5th concave with coarser fluting; abdominal surface at middle with fine scattered punctures, on sides punctures larger but shallow, minutely setigerous; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina invisible. Profemur shining with coarse, confluent punctures; mesofemur as wide as metafemur but more closely punctate; metafemur with incomplete posterior line visible in apical half; metatibia with longitudinal, setigerous lines and small accessory spine apically; metatarsus relatively long, basal tarsomere 1/3 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 26.

Remarks. *Auperia teutoniae* is most close to *puyoensis* and *transversaria*, but it differs from both these species by the shape of mesosternal callosity and by the male genitalia.

Auperia minuta (Petrovitz) comb. n.

Figs 25, 27, 33

Euperia minuta Petrovitz, 1973: 188-190.

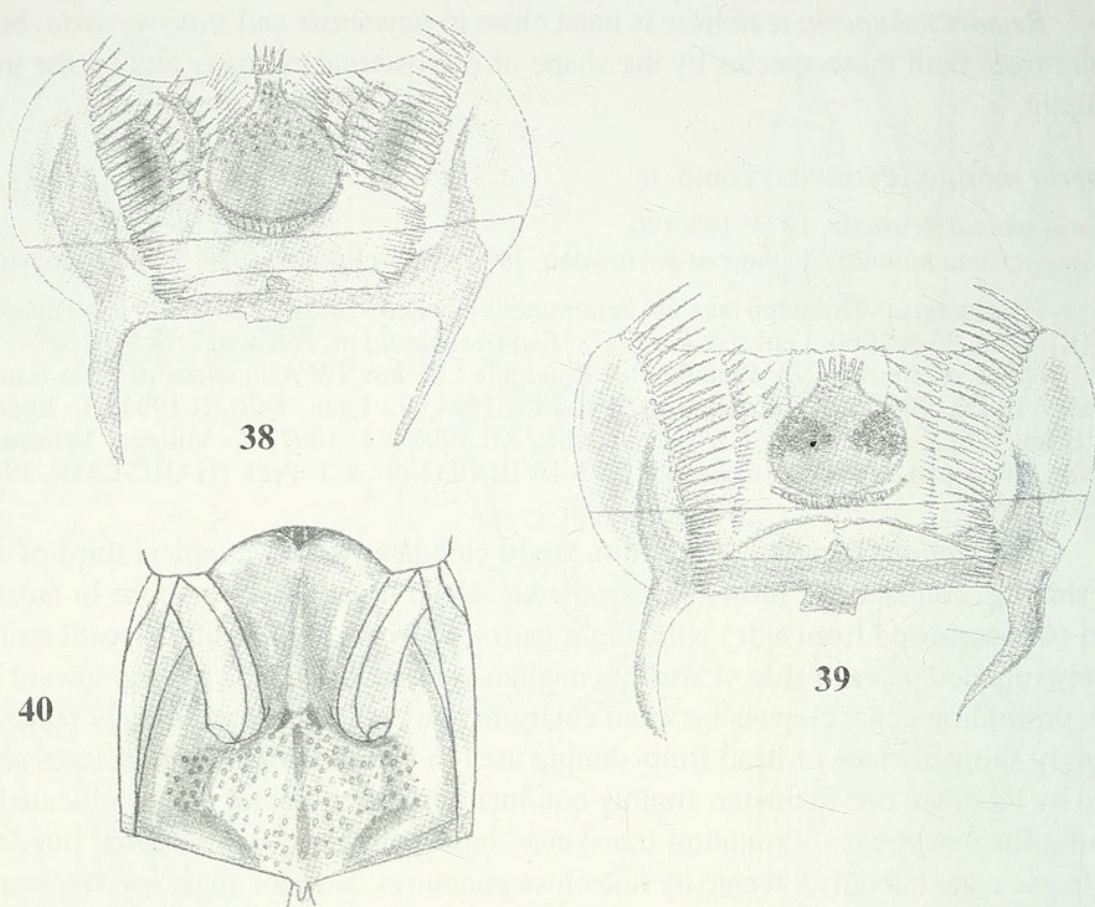
Phalangochaeta minuta: Chalumeau & Howden, 1984: 87; Dellacasa, 1988: 284 (catalogue).

Type material. Holotype (sex not determined) labelled "Brasilien, Utariti, Rio Papagaio, MT (Kl. 477), 26.X.1966, Lenko & Pereira", "*Euperia minuta* m. Petrovitz", in MHNG.

Other specimens (28). **Brazil:** (Ro) Rondonia, 62 km SW Ariquemes nr Fzda Rancho Grande, 18.IX.1994, K. Vulinec, 18.IX, 8-20.X.1994, J. Eger, 6-20.XI.1994, J. Eger & C.O'Brien (PSC); (Ro) 9 km NE Cacaullandia, XII.1996 - I. 1997, K. Vulinec. **Venezuela:** Bolivar, Rio Sipao 110 km E Caicara, 17.VI-4.VIII.1987, S. & J. Peck (HAHC-CMN, ISEA, PSC).

Description. Length 3.8-4.0 mm. Body elongate, widest at apical third of elytra, shining, colour rusty brown to castaneous. Head transversely gibbose in anterior third (when viewed from side) with slight carina in front of gibbosity, clypeal margin widely rounded on each side of shallow median emargination, side arcuate toward obtuse, protruding gena; clypeus between emargination and gibbosity minutely punctate, strongly shiny, surface of head from shining area to vertex with close punctures separated by less than one diameter, slightly confluent on sides; frontal suture indicated by shining lines near eyes. Pronotum transverse, base with very fine marginal line, narrowly excavate laterally, crenate by fine close punctures; anterior angle broadly rounded, posterior angle right-angled, side slightly explanate, edge minutely crenate and fringed with minute setae visible under high magnification; pronotal punctures variable in distribution, fine along anterior margin, moderate but deep at middle and here separated by about one diameter, larger and denser on sides, rugose along lateral margin. Scutellum concave at middle. Elytra relatively long, slightly arcuate with relatively strong humeral denticle; striae deep, stria punctures close each other, crenating margins of intervals; intervals convex, discal intervals 1-4 very finely punctate, intervals 5-9 from base to apex with 1-2 irregular rows of fine, not close punctures. Mesosternum flattened, shagreened, median callosity (Fig. 33) opaque, meso-metasternal suture distinct, two diagonal fossulae just below suture and two small transverse pits at metacoxae; metasternal midline deep, surface punctures fine to moderate, scattered, lateral metasternal triangle narrow, shagreened inside; abdominal sternites at middle with very short fluting increasingly longer to sides; longest on sternite 5th; abdominal surface shining with moderate, minutely setigerous punctures extending from side to side, coarser and denser near epipleura; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina lacking. Profemur shining with coarse punctures; mesofemur as wide as metafemur, punctate; metafemur with incomplete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; metatarsus very long, basal tarsomere 1/5 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 27.

Remarks. The species is most closely related to *A. loretoensis* sp. n. (see Remarks under that species), both species have similar meso-metasternal structures (Fig. 33). Specimens were collected to light traps in forest.



FIGS 38-40

38, 39: epipharynx: 38 – *Auperia puyoensis* sp. n.; 39 – *A. capitosa* (Harold). 40: *A. squamosa* (Petrovitz): meso-metasternum.

***Auperia loretoensis* sp. n.**

Figs 25, 28

Type material. Holotype male, Peru, Loreto 1.5 km N Teniente López, 2.35S, 76.06W, 230-305 m, 18-26.VII.1993, R. Leschen, in HAHC-CMN. Paratype female, same data as holotype, in ISEA.

Description. Length 3.8-4.0 mm. Body oblong oval, widest at middle of elytra, shining, colour reddish black. Head transversely gibbose in anterior third (when viewed from side) with slight carina in front of gibbosity, clypeal margin widely rounded on each side of shallow median emargination, side arcuate toward obtuse, protruding gena; clypeal surface just above emargination narrowly shiny, minute punctures gradually increase in size upward to vertex, at middle of head slightly elongate, separated by one diameter, vertical band with round punctures separated by less than their diameter. Pronotum transverse, slightly diverging toward base, base without marginal line, narrowly excavate laterally, crenate by fine close punctures; anterior angle broadly rounded, posterior angle right-angled, side slightly explanate, edge minutely crenate and fringed with minute setae visible under high magnification; pronotal punctures fine along anterior margin, moderate and shallow at middle and here separated by more than one diameter, larger and denser on sides, rugose along lateral margin. Scutellum concave at middle. Elytra arcuate with relatively strong humeral denticle;

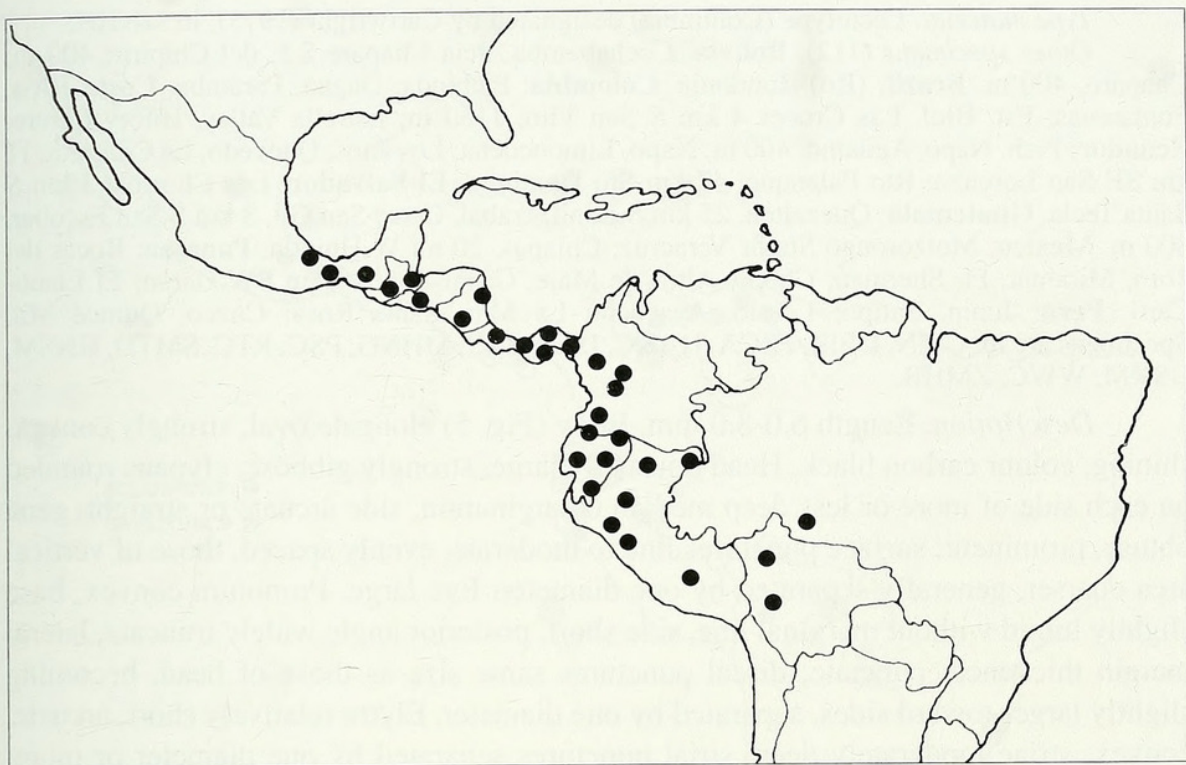


FIG. 41

Known distribution of *Auperia capitosa* (Harold).

striae deep, stria punctures close each other, crenating margins of intervals; intervals convex, discal intervals 1-4 finely punctate, intervals 5-9 from base to apex with 2 irregular rows of fine, close punctures. Mesosternum flattened, shagreened, median callosity opaque, meso-metasternal suture distinct, two diagonal fossulae just below suture and two small transverse pits at metacoxae; metasternal midline deep, surface punctures fine to moderate, scattered, lateral metasternal triangle narrow, shagreened inside; abdominal sternites at middle with very short fluting increasingly longer to sides; longest on sternite 5th; abdominal surface shining with moderate, minutely setigerous punctures extending from side to side, coarser and denser near epipleura; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina lacking. Profemur shining with coarse punctures; mesofemur as wide as metafemur, punctate; metafemur with incomplete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; metatarsus very long, basal tarsomere 1/5 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 28.

Remarks. *Auperia loretoensis* is most close to *A. minuta*, but it differs from that species by having the pronotum more transverse and less densely punctate and the elytra relatively shorter with punctures on lateral intervals more pronounced than in *minuta*; the meso-metasternal structures are almost the same in both species (Fig. 33).

Auperia capitosa (Harold) comb. n.

Figs 5, 29, 34, 39, 41

Ataenius capitosus Harold, 1867: 83.- Schmidt, 1922: 440; Petrovitz, 1976: 289-290; Dellacasa, 1988: 105 (catalogue).

Type material. Lectotype (Columbia) designated by Cartwright (1973), in MNHN.

Other specimens (112). **Bolivia:** Cochabamba, Pcia Chapare S.F. del Chipiriri 400 m; Chaparo, 400 m. **Brazil:** (Ro) Rondonia. **Colombia:** Pichinda, Dagua, Paramba. **Costa Rica:** Puntarenas, Est. Biol. Las Cruces 4 km S San Vito, 1150 m; Estrella Valley, Hitory-Cerere. **Ecuador:** Pich. Napo, Aguamo, 400 m; Napo, Limoncocha; Los Rios, Quevedo; La Chiquita, 11 km SE San Lorenzo; Rio Palenque, 47 km Sto Domingo. **El Salvador:** Los Chorro, 3 km S Santa Tecla. **Guatemala:** Quezalten, 25 km S Zunil; Izabal, Cerro San Gil, 8 km S San Escobar, 800 m. **Mexico:** Motzorongo Sta nr Veracruz; Chiapas, 20 mi W Huixtla. **Panama:** Bocas del Toro, Miramar, Ft. Sherman; Chepo, Altos de Maje; Canal Zone, 8 km SW Gatun; El Llano-Carti. **Peru:** Junin, Satipo; Loreto; Ayacucho La Mar, Santa Rosa; Cuzco, Quince Mil. Specimens are in: CMN, DEIE, FSCA, HAHC, ISEA, JSC, MHNG, PSC, RTC, SMTD, UNSM, USNM, WWC, ZMHB.

Description. Length 6.0-8.0 mm. Body (Fig. 5) elongate oval, strongly convex, shining, colour carbon black. Head unusually large, strongly gibbose, clypeus rounded on each side of more or less deep median emargination, side arcuate or straight, gena obtuse, prominent; surface punctures fine to moderate, evenly spaced, those of vertical area coarser, generally separated by one diameter. Eye large. Pronotum convex, base slightly tumid without marginal line, side short, posterior angle widely truncate, lateral margin thickened, punctate; discal punctures same size as those of head, becoming slightly larger toward sides, separated by one diameter. Elytra relatively short, arcuate, convex; striae moderately deep, stria punctures separated by one diameter or more; intervals flat or weakly convex on disc, elevated apically, 10th interval convex, shining; surface of intervals smooth, almost impunctate, in some specimens extreme apex of elytra with minute setae. Mesosternum very low, broad callosity (Fig. 34) shagreened, opaque; metasternum elevated, disc long, midline usually broken at middle, ended by pits, lateral triangle broad, shagreened; abdominal sternites 2-4 finely fluted along sutures, fluting of sternite 5 longer and coarser, surface of sternites with evenly spaced, moderate punctures; disc of pygidium deeply eroded and longitudinally wrinkled, median longitudinal carina and basal cusp shining, apical margin thick, punctate. Profemur scabrous, punctate; mesofemur slightly wider than metafemur with fine punctures concentrated in anterior apical half; metafemoral posterior line incomplete, usually visible in apical 1/3 or in apical half; metatibia as long as metafemur; basal tarsomere of hind tarsus equal in length to upper tibial spur. Epipharynx as in Fig. 39.

Male. Fifth abdominal sternite shorter than in female, disc of pygidium longer, tarsomeres of metatarsus thicker; genitalia as in Fig. 29.

Female. Pronotum usually more convex than in male, punctures coarser.

Remarks. Variation in the series of specimens of this common species is not great and does not seem to affect the characters that distinguish *A. capitosa* from other species in the genus. The size of the black shining body combined with characters of the head, pronotum and metasternum remain sufficiently constant for species recognition. The specimens examined were collected through the year, taken from basal debris of *Bactris* palm and commonly collected at light at altitude 400-1200 m.

Auperia iquitosae sp. n.

Figs 23, 30, 35

Type material. Holotype male, Peru, Prov. Loreto, 160 km NE Iquitos, Explorama Lodge, Rio Yanamono 1 km from Amazon River, 1-5.IX.1992, window trap, P.E. Skelley, in FS-CA. Paratypes (11): 1 - same data as holotype; 3 - Brazil: (Ro) Rondonia, 62 km S Ariquemes, Faz. Rancho Grande, 5-15.X.1993, C. & K. Messenger; 2 - same locality, 8-20.XI.1994, J. Eger

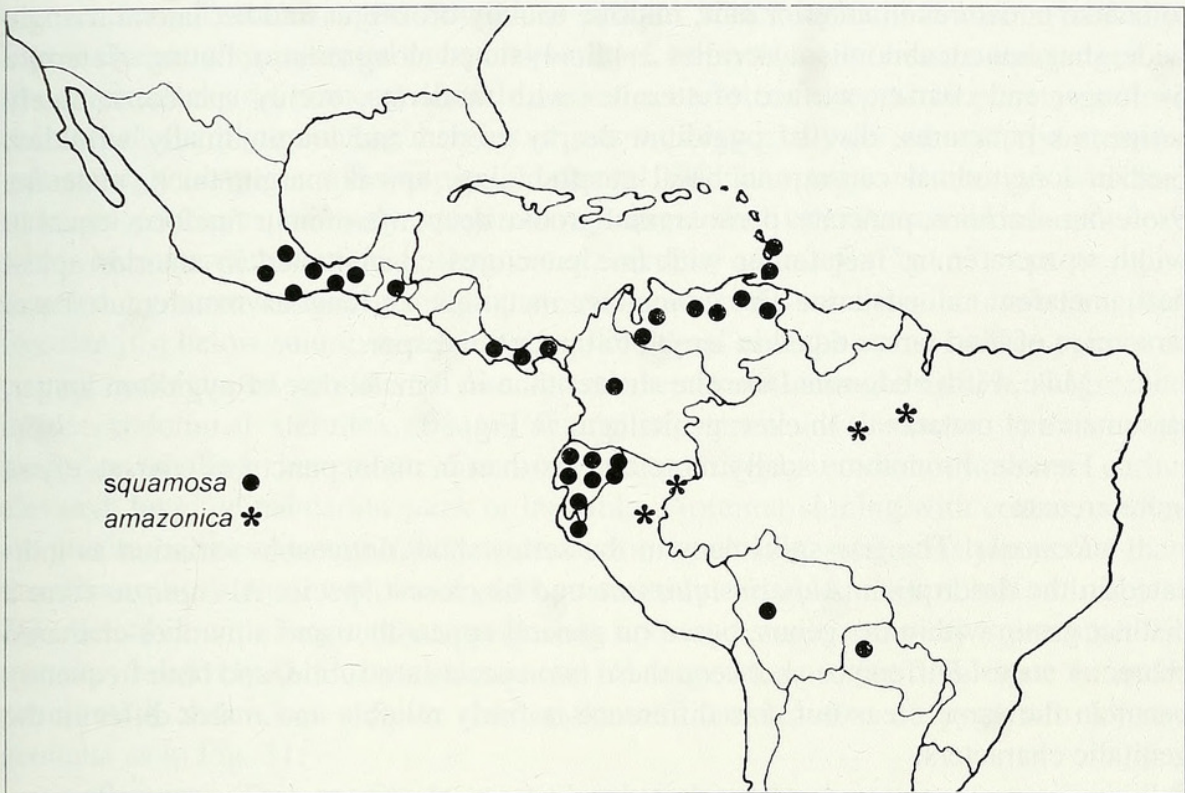


FIG. 42

Known distribution of *Auperia squamosa* (Petrovitz) and *A. amazonica* (Petrovitz).

& C.O'Brien; 1 - Brazil (MG), Ipatinga, IX.1993, E. Grossi; 1 - Brazil (ES), Linhares, XI.1988; 1 - Ecuador, Napo, Limoncocha 250 m, 18.VI.1976, forest litter, *Ficus* fruits, S. & J. Peck; 1 - Panama, Bocas d. Toro, Miramar, 9N, 82.15W, VII.1979, H. Wolda; 1 - Peru, Madre do Dios, Rio Tambopata Res. 30 km SW Pto Maldonado, 290 m, 2-5.XI.1979, subtropical moist forest, J.B. Heppner. Paratypes are in: FSCA, ISEA, MZUSP, UNSM, USNM.

Description. Length 4.0-5.0 mm. Body (Fig. 23) oblong oval, strongly convex, shining black, legs usually reddish. Head unusually large, strongly gibbous, clypeus rounded on each side of more or less deep median emargination, side arcuate to obtuse, prominent gena; frontal suture marked by slight elevation near eye, minute punctures of clypeal surface become more evident at middle of head, those of vertical area fine to moderate, evenly spaced, generally separated by one diameter. Eye moderate in size. Pronotum subquadrate, convex, base without marginal line; anterior angles obtusely rounded, produced, side short, straight toward widely truncate posterior angle, lateral margin thickened, punctate; pronotal punctures variable in size and density, usually very fine punctures along anterior margin become increasingly larger to base and to sides, everywhere separated by two diameters or less. Elytra relatively short, arcuate, convex, humeral denticle relatively small; striae moderately deep, strial punctures separated by 2-3 diameters; intervals flat or weakly convex on disc, elevated apically, 10th interval convex, shining; sculpture of intervals variable, in most specimens intervals smooth, almost impunctate, in some minutely punctate or distinctly punctate, sometimes extreme apex of elytra with minute setae. Mesosternum very low, broad callosity (Fig. 35) shagreened, opaque; metasternum elevated, disc long with moderate

to coarse punctures in anterior half, midline usually broken at middle, lateral triangle wide, shagreened; abdominal sternites 2-4 finely fluted along sutures, fluting of sternite 5th longer and coarser, surface of sternites with moderate, evenly spaced, minutely setigerous punctures; disc of pygidium deeply eroded and longitudinally wrinkled, median longitudinal carina and basal cusp shining, apical margin thick, punctate. Profemur scabrous, punctate, perimarginal groove deep; mesofemur fusiform, equal in width to metafemur, metafemur with fine punctures concentrated in anterior apical half; metafemoral posterior line complete; metatibia as long as metafemur; basal tarsomere of hind tarsus equal in length to upper tibial spur.

Male. Fifth abdominal sternite shorter than in female, disc of pygidium longer, tarsomeres of metatarsus thicker; genitalia as in Fig. 30.

Female. Pronotum usually more convex than in male, punctures coarser, elytra more arcuate.

Remarks. The few specimens in the series show noticeable variation as indicated in the description. *Auperia iquitosae* and its closest species *A. capitosa* form a distinct group within the genus, based on general appearance and a number of shared character states. Differences between these two species are subtle, and both frequently occur in the same areas but size difference is fairly reliable and males differ in the genitalic characters.

Auperia huebneri (Petrovitz) comb. n.

Figs 21, 24, 31, 37

Euparia huebneri Petrovitz, 1970: 232-233.

Phalangochaeta huebneri: Chalumeau & Howden, 1984: 87; Dellacasa, 1988: 284 (catalogue).

Type material. Holotype (sex not determined), labelled 'Brazil, Manaus, Amazonas, leg. Huebner', '*Euparia huebneri* m. Petrovitz', in MZUSP. Paratype, same data as holotype, in MH-NG.

Other specimens (26). **Bolivia:** Santa Cruz, 4-6 km SSE Buena Vista, Hotel Fauna & Flora, 14-16.X.2000, J. Wappes (FSCA). **Brazil:** (Am) Amazonas, Rio Demiti nr Little Homestead, 0.35N, 66.41W, 4.IX.1978, K.E.Ball; (Ro) Rondonia, 9 km NE Cacauplandia, XII.1996-I.1997, K. Vulinec & D. Mellow; (Ro) 62 km S Ariquemes, Fzda Rancho Grande, 18.IX.1994, C.W. & L. O'Brien (PSC). **Colombia:** Leticia, Amazonas, 700 ft, 25.II.1974, H. & A. Howden, 28.II.1974, S. & J. Peck (CMN). **Peru:** Prov. Loreto, Rio Yarapa, Puerto Miguel 200 m, 16-23.XII.1994, G. Holzinger (ISEA); Loreto, 160 km NE Iquitos, Explor.Camp on Rio Sucusari 2 km from Rio Napo, 27-31.VIII.1972, P. Skelley (ISEA, PSC); Loreto, Ramon Castilla, 24.II.1972, H. & A. Howden (CMN). **Trinidad:** 13 km S Arima, 2 km W Taiparo, Quesnell Farm, 50 m, 22.VI-8.VII.1993, S. & J. Peck (CMN).

Description. Length 4.8-5.0 mm. Body (Fig. 24) oblong oval, microreticulate, moderately shiny, colour piceous black. Head strongly gibbose medially, clypeal emargination indistinct, side widely rounded toward obtuse gena; clypeal surface in front of gibbosity narrowly shiny, smooth, median area with fine, very close punctures tending laterally to coalesce, punctures of vertical band round, nearly contiguous; frontal suture slightly elevated near eye. Pronotum strongly transverse, slightly diverging basally, sides widely explanate, edge minutely crenate and fringed with minute setae visible under high magnification; base without marginal line, excavate laterally, crenate by fine close punctures; anterior angle broadly rounded, and produced forward, posterior angle right-angled, prominent; pronotal disc weakly convex, punctures moderate, separated by one diameter, those on sides twice larger, almost contiguous and strongly

rugose along lateral margin. Scutellum opaque with longitudinal carina medially. Elytra arcuate with indicated preapical umbone, edge minutely crenate and setigerous like as pronotal side, humeral denticle conical acute; striae deep, stria punctures close each other, sharply crenating margins of intervals especially on sides of elytra; intervals strongly convex, carinate apically, interval 10th flat opaque, all intervals with fine scattered punctures minutely setigerous on apical declivity. Prosternal process very wide. Mesosternum flattened, shagreened, median callosity (Fig. 37) opaque, surrounded by narrow, shining margin; meso-metasternal suture distinct, two diagonal fossulae just below suture; metasternal midline deep, ended by pits, surface punctures coarse, concentrated on sides of disc, lateral metasternal triangle narrow, shagreened inside; abdominal sternites opaque, fluting of sternites 4-5 coarse, surface with moderate, shallow punctures; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina weak or invisible. Profemur shining with coarse, confluent punctures; mesofemur slightly wider and more closely, setigerously punctate than metafemur; metafemur with incomplete posterior line visible in apical half or in apical 2/3; metatibia with longitudinal, setigerous lines and small accessory spine apically; metarsus relatively short, basal tarsomere 1/3 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 31.

Remarks. This species is most closely related to *A. amazonica* and similar externally; it differs from that species by having the body significantly larger, the anterior angle of pronotum strongly produced forwards and mesosternum with callosity. Examples of *A. huebneri* were collected to UV light in Varzea forest.

Auperia amazonica (Petrovitz) comb. n.

Figs 36, 42

Phalangochaeta amazonica Petrovitz, 1961: 148-149; Dellacasa 1988: 287 (catalogue).

Type material. Holotype (sex not determined), labelled 'Braz. Amazonia, Manaus II.1955, leg. Cappelletto, "*Phalangochaeta amazonica* Petrovitz", in MHNG. Paratype "Amazonas, Nhamunda 1959, Cappelletto", in MHNG.

Other specimens (6). **Brazil:** Amazonas (Am) Nhamunda 1959, Cappelletto (MHNG). **Peru:** Prov. Loreto, Yacumama Lodge near junction of Rio Marañon and Rio Ucayali, 73.5W, 54.8S, 6-20.VIII.1994, P. Skelley (PSC); Loreto, 160 km NE Iquitos, Explor. Camp on Rio Sucusari 2 km from Rio Napo, 27-31.VIII.1992, P. Skelley (ISEA, PSC).

Description. Length 3.0-3.2 mm. Body oblong oval, microreticulate, moderately shiny, colour piceous black. Head moderately gibbose medially, clypeus truncate anteriorly, side widely rounded toward rounded gena; clypeal surface in front of gibbosity microreticulate and minutely granulate, median area with fine, very close punctures tending laterally to coalesce, separated by less than one diameter, punctures of vertical band round, nearly contiguous; frontal suture slightly elevated near eye. Pronotum strongly transverse, sides explanate, edge minutely crenate and fringed with minute setae visible under high magnification; base without marginal line, excavate laterally, crenate by fine punctures; anterior angle rounded, side arcuate toward prominent posterior angle; pronotal disc weakly convex, punctures fine, evenly distributed, separated by one diameter, those on sides twice larger, almost contiguous and strongly rugose along lateral margin. Scutellum opaque with longitudinal carina medially. Elytra weakly widened in apical third with indicated preapical umbone, edge minutely

crenate and setigerous like as pronotal side, humeral denticle conical acute; striae deep, stria punctures close each other, slightly crenating margins of intervals; intervals 1-4 convex, intervals 5-9 carinate, interval 10th flat opaque, all intervals with fine scattered punctures minutely setigerous on apical declivity. Mesosternum weakly convex, shagreened, meso-metasternal carina (Fig. 36) fine, suture distinct, two diagonal fossulae just below suture; metasternal midline deep, broken at middle, surface punctures coarse, lateral metasternal triangle narrow, shagreened inside; abdominal sternites opaque, fluting of sternites 3-5 fine, longer on sides than at middle; surface with moderate, shallow punctures; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina weak or invisible. Profemur shining with coarse, confluent punctures; mesofemur slightly wider and more closely setigerously punctate than metafemur; metafemur with incomplete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; metarsus relatively short, basal tarsomere 1/3 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; aedeagus similar to that of *A. huebneri*.

Remarks. *A. amazonica* is the smallest member of the genus being most close to *A. huebneri* and slightly less so to *A. squamosa*. It differs from both these species by the characters given in the key. A small series of specimens were taken to UV & black-light on sheet.

***Auperia squamosa* (Petrovitz) comb. n.**

Figs 32, 40, 42

Euparia squamosa Petrovitz, 1976: 280-282.

Phalangochaeta squamosa: Dellacasa, 1988: 287 (catalogue).

Type material. Holotype (sex undetermined), labelled 'Ecuador, Archidona Oriente', "*Euparia squamosa* Petrovitz", in IRSNB. Paratype 'Ecuador, Verst.O. des Andes Santo Domingo 600 m', 'J. & N. Leleup', in MHNG.

Other specimens (242). **Bolivia**: Cochabamba, 177 km E Cochabamba at Lagunitas, 100 m, R. Anderson (CMN). **Colombia**: Ibaque (ISEA). **Ecuador**: Pich 16 km S Sto Domingo, Tinalandia 680 m, 15.VI.1975; 47 km S Sto Domingo, Rio Palenque Sta. 18-30.V.1975; Napo 500 m, 12 km SW Tena, 10.VIII.1976; Napo 250 m, Limoncocha, 18.VI.1976, S. & J. Peck (CMN); Limoncocha, 40 km E Puerto Francisco de Orellana (La Coca), Rio Napo, 21-27.IX.1979, J. Balogh (HNHM); Cotopaxi, Volcan Cotopaxi NNE Latacunga, 23.VI.1975; Manabi 450 m, 78 km NE Chone, 85 km WSW Sto Domingo, 9.VI.1976, S. & J. Peck (CMN, ISEA). **Guatemala**: Isabal, 1 km SE Mariscos, 200 m, 26.VI.1993, R. Anderson (CMN). **Mexico**: Chiapas, 6 km SW Ocosingo, 1400 m, 22.IX.1991, R. Anderson; Bonampak Rd, 100 km SE Palenque 230 m, 8.VII.1982, 8 VI.1993, S. & J. Peck; Veracruz, 33 km NE Catemaco, 160 m, Los Tuxtlas Biol.Sta., 1.VIII.1983, S. & J. Peck, 18-22.VII.1984, D.H. Lindemann; Fortin, 5.VIII.1969, S. & J. Peck; Cordoba, 4.VIII.1969, S. & J. Peck (HAHC-CMN, ISEA); Oaxaca, 6 km S Valle Nacional, 200 ft, 19.V.1971, S. & J. Peck (CMN). **Panama**: Chiriqui, 20 km N San Felix, 950 m, 8.VI.1995, R. Anderson; Panama prov., Interamerican Hwy 3 km E Ipeti, 3.V. 1992, S. Stockwell; Cerro Campana, 800 m, 5.VI.1995, R. Anderson (CMN). **Paraguay**: Cordillera N Emboscada Rio Piribebuy, 5.IV.1985, Miss. Mus. Geneva (MHNG). **Venezuela**: Aragua, Rancho Grande, 4.VII-9.VIII.1986, B. Gill; 19-27.II.1971, S. Peck; Tiara 50 km SW Caracas, 22.II.1971; Merida, Tovar, 1000 m, 22.VI.1989; Bolivar, 10 km N Corocito, 18.VI-3.VII.1987; Rio Caura rainforest, S. & J. Peck (CMN); Aragua, PN Henri Pitier, E.B. Rancho Grande, 1150 m 12.V.1998; Tachira, PN Chorro del Indio, 10 km NE San Cristobal, 1300 m, 28.V.1998, R. Anderson (CMN, ISEA). **Trinidad**: Tunapuna, Mt St Benedict, 240 m, M. Tabor, 4.VI.1993; 19 km N Aima, Lalaja Trace, 650 m, 8.VI.1993, S. & J. Peck (CMN).

Description. Length 4.0-4.5 mm. Body oblong oval, shining, colour piceous black. Head moderately gibbous medially, clypeus truncate anteriorly or shallowly

emarginate, side widely rounded toward obtuse, more or less protruding gena; clypeal surface in front of gibbosity narrowly shiny, or impunctate shining area extends to front of median convexity; median area of head with fine to moderate and coarse, more or less close punctures tending laterally to coalesce, separated by less than one diameter, punctures of vertical band round, very dense to contiguous; frontal suture slightly elevated near eye. Pronotum transverse, side reflexed in anterior half, edge minutely crenate and fringed with minute setae visible under high magnification; base without marginal line, excavate laterally or not, more or less densely crenate by fine punctures; anterior angle rounded, side arcuate toward prominent or obtuse posterior angle; pronotal disc convex, punctures variably spaced, usually fine anteriorly, increasingly larger toward base and here separated by about one diameter, on sides twice larger, contiguous and rugose. Scutellum shiny with longitudinal carina medially. Elytra relatively short, arcuate, with more or less distinct preapical umbone, edge minutely crenate and setigerous, humeral denticle conical acute; elytral striae 1-3 narrow with fine punctures, striae 4-9 gradually deeper and wider with larger punctures, striae 8-9 wider than lateral intervals; intervals 1-4 convex or flat, each with irregular rows of distinct punctures, intervals 5-9 carinate, intervals 8-9 swollen or granulate or tuberculate, interval 10th flat opaque; apical declivity of elytra setigerously punctate-granulate, setae hair-like to squamous. Mesosternum weakly convex, shagreened, meso-metasternal carina (Fig. 40) long, suture distinct, two diagonal fossulae just below suture; metasternal midline deep, broken at middle, surface punctures coarse, closest in anterior half of disc, lateral metasternal triangle narrow, shagreened inside; abdominal sternites microreticulate, usually shining, fluting of sternites 3-5 long; surface punctures moderate to coarse, often longitudinal, extending from side to side; disc of pygidium deeply eroded, transverse carina elevated, longitudinal carina weak or invisible. Profemur shining with coarse, confluent punctures; mesofemur slightly wider and more closely setigerously punctate than metafemur; metafemur with complete posterior line; metatibia with longitudinal, setigerous lines and small accessory spine apically; hind tarsus moderate in length, basal tarsomere 1/4 longer than upper tibial spur. In male, penultimate abdominal sternite shorter than in female, disc of pygidium longer; genitalia as in Fig. 32.

Remarks. *Auperia squamosa* is characterized by very advanced variation, both geographic and ecological, affecting the punctuation of the head and elytra, the shape of pronotum and sculpture of the ventral sclerites. In some specimens, sculpture of the head and of the lateral elytral intervals and setation of elytra may all be greatly reduced. It seems to be noteworthy that such extreme forms of *A. squamosa* are similar externally to some species of *Ataenius*, e.g. to the sympatric *A. depilis* Petr. and to the unusually variable *A. scutellaris* Har. These species will be discussed in the ongoing revision of the species-groups of *Ataenius*.

A. squamosa occurs over a wide range and in diverse habitats; long series have been found in the wet montane forest litter, shrubs litter, coffee forest litter, buttress litter, decayed *Ficus* fruits, in paramo moss and in broken termite nests.

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REFERENCES

- BATES, H. W. 1887. Col.:Lam. (Copridae, Aphodiidae, Orphnidae, Hybosoridae, Geotrupidae, Trogidae, Aclopidae, Chasmatopteridae, Melolonthidae). *Biologia Centrali-Americana, Insecta* 2: 26-160.
- CARTWRIGHT, O.-L. 1973. Additional lectotype designations in the Aphodiinae. *The Coleopterist Bulletin* 27: 41-43.
- CARTWRIGHT, O.-L. 1974. *Ataenius, Aphotaenius and Pseudataenius* of the United States and Canada. *Smithsonian Contributions to Zoology* 154: 1-106.
- CHALUMEAU, F. 1980. Désignation de types de Scarabaeoidea (Coleoptera) Néotropicaux et observations diverses. *Nouvelle Revue d'Entomologie* 10: 79-96.
- CHALUMEAU, F. & HOWDEN, H.-F. 1984. Le genre *Euparia* Saint-Fargeau & Serville, 1828. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 57: 85-94.
- CHAPIN, E. A. 1940. A revision of the West Indian beetles of the Scarabaeid subfamily Aphodiinae. *Proceedings of the United States national Museum* 89: 1-41.
- CHEVROLAT, A. 1864. Coléoptères de l'île de Cuba. Notes, synonymies et descriptions d'espèces nouvelles. V. *Annales de la Société entomologique de France* 4: 405-418.
- DELLACASA, M. 1988. Contribution to a world-wide catalogue of Aegialiidae, Aphodiidae, Aulonocnemidae, Termitotrogidae (Coleoptera, Scarabaeoidea). *Memorie della Società entomologica italiana* 67: 3-455.
- DU VAL P.N.C.J. 1856. Coleoptera of Cuba. *Ramon de la Sagra: Historia física, política y natural de la Isla de Cuba*. Pt.2. Historia natural 7: 1-136. Paris.
- FABRICIUS, J. C. 1775. Systema Entomologiae, sistens Insectorum Classes, Ordines, Genera, Species, adiectis Synonymis, Locis, Descriptionibus, Observationibus. *Flensburgi et Lipsiae*: 1-832.
- HAROLD, E. 1867a. Diagnosen neuer Coprophagen. *Coleopterologische Hefte* 1: 76-83.
- HAROLD, E. 1867b. Diagnosen neuer Coprophagen. *Coleopterologische Hefte* 2: 94-100.
- HAROLD, E. 1869. Diagnosen neuer Coprophagen. *Coleopterologische Hefte* 5: 94-104.
- HAROLD, E. 1870. Die Arten der Gattung *Euparia*. *Coleopterologische Hefte* 6: 19-30.
- HAROLD, E. 1875. Verzeichniss der Von Dr. Teuscher in Cantagallo gesammelten coprophagen Lamellicornien. *Coleopterologische Hefte* 13: 57-72.
- INTERNATION COMMISSION OF ZOOLOGICAL NOMENCLATURE, 1999. International Code of Zoological Nomenclature (4th ed.), London. *The International Trust for Zoological Nomenclature*, XXIX + 306 pp.

- ISLAS, S. F. 1955. Tres especies nuevas de Aphodinos mexicanos. *Anales del Instituto de Biología Mexico C* 1: 493-499.
- LE PELETIER de SAINT-FARGEAU A. & SERVILE J. G. A. 1828. Scarabé. In: LATREILLE P. A. Histoire Naturelle. Entomologie ou Histoire Naturelle des Crustacés, des Arachnides et des insectes. *Encyclopédie Méthodique*. Paris (Agasse), 10: 346-382.
- MARTINEZ, A. 1952. Scarabaeidae nuevos o poco conocidos. III. *Mision de Estudios de Patologia regional argentina* 23: 53-118.
- PETROVITZ, R. 1961. Neue und bemerkenswerte Aphodiinae aus dem Museo entomologico del Pontificio Instituto Missioni estere, Monza. *Bolletino della Societa entomologica italiana* 91: 144-149.
- PETROVITZ, R. 1970. Neue neotropische Aphodiinae und Hybosorinae. *Entomologische Arbeiten aus dem Museum Georg Frey* 21: 225-243.
- PETROVITZ, R. 1973. Neue Aphodiinae, Hybosorinae und Acanthocerinae aus der Neotropischen Region. *Studia entomologica* 16: 141-202.
- PETROVITZ, R. 1976. Acanthocerinae und Aphodiinae aus Ecuador und von den Galapagos-Inseln. *Mission Zool. Belge iles Galapagos et Ecuador* (N. et J. Leleup, 1964-1965) 3: 275-292.
- SCHMIDT, A. 1909. Eine Serie neuer Aphodiinen und eine neue Gattung. (Fortsetzung V). *Societas entomologica* 24: 43-44.
- SCHMIDT, A. 1910. Coleoptera Lamellicornia Aphodiinae. *Genera Insectorum* 110: 1-155.
- SCHMIDT, A. 1922. Coleoptera, Aphodiinae. *Das Tierreich* 45: 614 pp.
- STEBNICKA, Z. 1998. Lectotype designations, new synonymies and distribution records of the Neotropical Eupariini (Coleoptera: Scarabaeoidea: Aphodiinae). *Acta zoologica cracoviensis* 41: 199-205.
- STEBNICKA, Z. 1999a. Neotropical Eupariini: New and little known genera and species (Coleoptera: Scarabaeoidea: Aphodiinae). *Revue suisse de Zoologie* 106: 285-300.
- STEBNICKA, Z. 1999b. *Lomanoxia* Martinez, 1951, and a new tribe Lomanoxiini with notes on comparative morphology (Coleoptera: Scarabaeoidea: Aphodiinae). *Acta zoologica cracoviensis* 42: 279-286.
- STEBNICKA, Z. 2000. The genus *Passaliolla* Balthasar, 1945 in Central and South America (Coleoptera: Scarabaeidae: Aphodiinae: Eupariini). *Acta zoologica cracoviensis* 43: 233-239.
- STEBNICKA, Z. 2001a. A revision of the Neotropical species of *Saprosites* Redtenbacher, 1858 (Insecta: Coleoptera: Scarabaeidae: Aphodiinae: Eupariini). *Entomologische Abhandlungen* 59: 221-242.
- STEBNICKA, Z. 2001b. The New World species of *Ataenius* Harold, 1867. I. Revision of the *A. crenator*-group, *A. nugator*-group and *A. perforatus*-group (Coleoptera: Scarabaeidae: Aphodiinae: Eupariini). *Acta zoologica cracoviensis* 44: 253-283.
- STEBNICKA, Z. 2001c. Aphodiinae (Insecta: Coleoptera: Scarabaeidae). *Fauna of New Zealand* 42: 64 pp.
- WOODRUFF, R. E. 1973. Arthropods of Florida and Neighbouring Land Areas. The Scarab Beetles of Florida. Pt.I. *The Laparosticti* 8: 1-220.



Stebnicka, Z T. 2002. "The New World Eupariini: Revision of the genus Auperia Chevrolat, 1864 (= Phalangochaeta Martinez, 1952) (Coleoptera: Scarabaeidae: Aphodiinae)." *Revue suisse de zoologie* 109, 741–775.
<https://doi.org/10.5962/bhl.part.79568>.

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