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Classification, natural history, and evolution of the Epiphloeinae (Coleoptera: Cleridae). Part III. The genera *Parvochaetus*, n. gen., *Amboakis*, n. gen., and *Ellipotoma* Spinola

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Classification, natural history, and evolution of the Epiphloeinae (Coleoptera: Cleridae). Part III. The genera *Parvochaetus*, n. gen., *Amboakis*, n. gen., and *Ellipotoma* Spinola.

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Abstract. The checkered beetle genera *Parvochaetus*, n. gen. and *Amboakis*, n. gen. are described and the genus *Ellipotoma* Spinola is reviewed. Four new species plus *P. linearis* (Gorham), which represents a new combination, comprise *Parvochaetus*: *P. albicornis*, P. *froeschneri*, *P. fucolatus*, and *P. sandaracus*. *Amboakis*, a replacement name for the junior homonym *Teutonia* Opitz, involves four previously described species and 20 new species. The new species are *A. anapsis*, *A. atra*, *A. barinas*, *A. binotonis*, *A. cauca*, *A. charis*, *A. epiomidia*, *A. erythrohapsis*, *A. funebris*, *A. incondita*, *A. katatonis*, *A. linitis*, *A. mica*, *A. micula*, *A. prolata*, *A. rudis*, *A. taruma*, *A. selva*, *A. stenosis*, and *A. vesca*. Four previously described species now classified under *Amboakis* involve new combinations; they are *Epiphloeus capitatus* Gorham, *Epiphloeus nitidus* Gorham, *Phlogistosternus flavicollis* Zayas, and *Teutonia nova* Opitz. The bitypic *Ellipotoma* contains *E. tenuiformis* Spinola and *E. turmalis*, n. sp. Lectotypes are designated for *Epiphloeus capitatus* Gorham, *Apolopha linearis* Gorham, *Epiphloeus nitidus* Gorham, and *Ellipotoma tenuiformis* Spinola.

Parvochaetus specimens may be distinguished from *Amboakis* and *Ellipotoma* specimens by the extraordinarily slender antennal club. The expanded condition of the funicular antennomeres will separate specimens of *Parvochaetus* and *Amboakis* from those of *Madoniella*. Specimens of the bitypic genus *Ellipotoma* are very slender in body form and the elytral disk is devoid of secondary (2^o) setae. These features will easily separate *Ellipotoma* specimens from those of *Madoniella*. On the basis of adult external morphology *Parvochaetus* and *Amboakis* may be conveniently organized into monophyletic species groups, 5 in *Parvochaetus* and 9 in *Amboakis*.

Descriptions of the alimentary canal of *Amboakis nova* (Opitz) and of the stomodaeal valves of *A. nova* and *Ellipotoma tenuiformis* Spinola are provided and serve as basic data for subsequent analyses involving higher categories. The alimentary canal involves a well-differentiated stomodaeum, ventriculus, and proctodaeum. The ventricular papillae are poorly developed and there are 4 cryptonephridial Malpighian tubules. The stomodaeal valve is comprised of 4 primary lobes with the lateral lobes longer and more slender than shorter dorsal and ventral lobes; the ventral lobe is particularly broad. The male internal reproductive organs are characterized by having two pairs of accessory glands with the medial being longer than the lateral. A well-developed spermatheca and saccular bursa copulatrix are important features of the female internal organs.

Species descriptions, a key to species, and biological information are included. These checkered beetles are diurnal, considerably active flyers, and are predators of lignicolous insects and particularly of bark beetles. Included is a discourse of species level and supraspecific level discontinuities. Differences in the aedeagus, antennae, body form, presence or absence of 2^o setae, and arrangement of punctations on the elytral disc were important characters in the discernment of species. Forty characters of *Parvochaetus*, *Amboakis*, and *Ellipotoma* and their states were polarized to hypothesize intergeneric relationships and intrageneric relationships of *Parvochaetus* and *Amboakis*. Hennigian principles of phylogenetic analysis were implemented to prepare two trees.

The predominant distribution of *Parvochaetus*, *Amboakis*, and *Ellipotoma* taxa in South America suggests that the progenitor of these genera may have existed on that continent with subsequent dispersal and vicariant events distributing species throughout Middle America and onto islands of the Greater Antilles. Pre-Tertiary South American diversification produced 3 ancestral stocks, each of which fostered lineages that migrated northward via the proto-Antillean Archipelago across the isthmanian closure of the late Tertiary. These temporal frameworks, paleographic dispersals, and vicariant events would explain the presence of relatively primitive, and derived *Amboakis* elements in Mexico and the presence in Middle America of some more derived descendants from South American ancestral stocks.

Herein, is included a list of specimen repositories and collection managers, key to species groups and species, Table of character analysis, Table that describes distributions of these checkered beetles in montane and non-montane refugia, three halftone habitus illustrations, 146 line drawings, 16 SEM photographs, 10 distribution maps, and 2 diagrams that depict hypotheses of phylogeny.

Resumen. Los Coleópteros Cleridae del género *Parvochaetus*, gen. n., *Amboakis*, gen. n., y *Ellipotoma* Spinola son descritos y redescritos. Cuatro especies de *Parvochaetus* son nuevas; *P. linearis* fue descrito por Gorham: *P. albicornis*, *P. froeschneri*, *P. fucolatus*, y *P. sandaracus*. *Amboakis* incluye cuatro especies ya descritas y 20 especies nuevas. Las especies nuevas son *A. anapsis*, *A. atra*, *A. barinas*, *A. binotonis*, *A. cauca*, *A. charis*, *A. epiomidia*, *A. erythrohapsis*, *A. funebris*, *A. incondita*, *A. katatonis*, *A. linitis*, *A. mica*, *A. micula*, *A. prolata*, *A. rudis*, *A. taruma*, *A. selva*, *A. stenosis*, y *A. vesca*. Cuatro especies ya descritas están aquí incluidas en *Amboakis*, estas especies son *Epiphloeus capitatus* Gorham, *Epiphloeus nitidus* Gorham, *Phlogistosternus flavicollis* Zayas, y *Teutonia nova* Opitz. El género *Ellipotoma* incluye *E. tenuiformis* Spinola y *E. turmalis*, sp. n.. Se designan Lectotipos para *Epiphloeus capitatus* Gorham, *Apolopha linearis* Gorham, *Epiphloeus nitidus* Gorham, y *Ellipotoma tenuiformis* Spinola.

Los especimenes de *Parvochaetus* se pueden fácilmente discriminar de los de *Amboakis* y *Ellipotoma* por la maza antenal extraordinariamente más delgada. Los antenomeros expandidos permite separar los especimenes de *Parvochaetus* y *Amboakis* de los de *Madoniella*. Los especimenes de *Ellipotoma* tiene una forma general muy delgada y el disco elitral carece de setas secundarias. Estos caracteres fácilmente separan los especimenes de *Ellipotoma* de los de *Madoniella*. Sobre base de la morfología adulta externa *Parvochaetus* y *Amboakis* se pueden organizar prácticamente en grupos monofileticos, 5 en *Parvochaetus* y 9 en *Amboakis*.

Este estudio incluye la descripción del tracto digestivo de *Amboakis nova* (Opitz) y las valvas stomodeales de *A. nova* y *Ellipotoma tenuiformis* Spinola. El tracto digestivo incluye stomodaeum, ventriculus, y proctodaeum muy diferenciados. La papilla ventricular es poco desarrollada y presenta 4 tubos de Malpighi criptonefridiales. La valva stomodeal se compone de 4 lóbulos primarios, con el lateral más largo y delgado que los lóbulos dorsales y ventrales; el lobulo ventral es particularmente ancho. Los órganos reproductivos internos de los machos se caracterizan por tener dos pares de glándulas accesorias, las medianas siendo más largas que las laterales. Una espermateca muy desarrollada y una bursa copulatrix saccular son características importantes de los órganos internos de la hembra.

Estos Cleridae son diurnos, vuelan muy bien y son muy activos, son depredadores de insectos xilofilos y particularmente de los Scolytidae. Se incluye una discusión sobre las discontinuidades a nivel específico y supra-específico. Las diferencias en los aedeagos, antenas, forma del cuerpo, presencia o ausencia de setas secundarias y el arreglo de las puntuaciones sobre el disco elitral son caracteres muy importantes en la discriminación a nivel específico. El estado de cuarenta caracteres de *Parvochaetus*, *Amboakis*, y *Ellipotoma* se polarizo para preparar hipótesis de relaciones intra-genéricas y inter-genéricas de *Parvochaetus* y *Amboakis*. Los principios Hennigianos de análisis filogenético se implementaron para preparar dos árboles.

La distribución principalmente suramericana de las especies de *Parvochaetus*, *Amboakis*, y *Ellipotoma* sugiere que los ancestros de estos géneros pueden haber existido sobre este continente, con dispersión posterior y eventos vicariantes, distribuyendo especies de través de Mesoamérica y sobre las islas de las Antillas Mayores. La diversificación suramericana pre-terciaria produjo 3 stocks ancestrales, cada uno de ellos produciendo un linaje que se disperso hacia el norte vía el archipiélago proto-antillano de través del istmo cerrado al final del Terciario. Estos escenarios temporales, dispersiones paleográficas, y eventos vicariantes pueden explicar la presencia de elementos relativamente primitivos y derivados de *Amboakis* en Mexico y la presencia en Mesoamérica de descendientes más derivados de stocks ancestrales suramericanos.

Se incluye una lista de especimenes, su deposito en colecciones y las direcciones electrónicas de los curadores de dichas colecciones. También se incluye clave par grupos de especies y especies; tablas de analisis de caracteres; tablas que describen la distribución en refugios montañosos o no; tres dibujos de hábitos y 146 otros dibujos, 16 fotografías de microscopio electrónico, 8 mapas de distribución, y 2 diagramas que describen las hipótesis de filogenia.

Introduction

Compared to my experience with other epiphloeine generic taxa the three under study are somewhat unusual in that the diversity of their intergeneric and intrageneric characteristics are easy to identify and polarize evolutionarily. This made the preparation of descriptions and keys relatively easy. Usually, when preparing species-level keys within Epiphloeinae, I am perplexed to find convenient diagnostic characteristics and must resort to inconvenient characteristics of organs such as the aedeagus. Also, my assessments of the intergeneric relationships of these three genera are in conformity with phylogenetic thinking in a heretofore-unpublished subfamily level epiphloeine phylogeny.

I wish to reemphasize (Opitz, in press) how important it has been to receive material from many field biologists who collect Cleridae. It is through their generosity and trust in loans for prolonged periods that studies such as this one are possible; most often after several years of specimen accumulation. I appreciate their continued support and hope that they will continue to make their catches available for study so

that I may do justice to the considerable efforts that still must be devoted to make information of epiphloeine taxa accessible to naturalists and biologists.

Taxonomic History

Six previously described species are included in the definition of *Parvochaetus*, *Amboakis,* and *Ellipotoma*. *Apolopha linearis* Gorham (1883: 182) was reclassified under *Phyllobaenus* (*nec*, Dejean, 1837: 127) by Gahan (1910: 73, 74) and under *Phlogistosternus* (junior synonym of *Madoniella*) by Corporaal (1950: 252). This species is now a member of *Parvochaetus*.

Four other nominal species involve *Amboakis*. *Epiphloeus nitidus* Gorham (1877: 248) and *Epiphloeus capitatus* Gorham (1877: 248) were regrouped under *Phyllobaenus* (*nec*, Dejean, 1837: 127) by Gahan (1910: 73) and subsequently under *Phlogistosternus* by Corporaal (1950: 251, 252). More recently, Zayas (1988: 61) described *Phlogistosternus flavicollis* and Opitz (1997: 63) described *Teutonia nova*. Unfortunately, *Teutonia* Opitz (Opitz, 1997: 63) is predated by *Teutonia* Koenike (1889: 104) who applied the name to a genus of mites. The genus name *Amboakis* is proposed herein to receive *T. nova* and 23 other species. *Ellipotoma* Spinola (1844: 58) was described on the basis of *E. tenuiformis* Spinola.

Materials and Methods

This study is based on the adult morphology, external and some internal, of 14 specimens of *Parvochaetus*, n. gen., 338 specimens of *Amboakis*, n. gen., and 31 specimens of *Ellipotoma*. One specimen of *P. sandaracus*, n. sp., several of *A. nova* (Opitz), and 2 of *Ellipotoma tenuiformis* Spinola were disarticulated to investigate the external and internal morphological structures of the genera involved. The aedeagus of all available males were extracted from the abdomen, studied, and drawn with the aid of a Wild M5 stereoscopic microscope with camera lucida attachment. Details involving dissections and specimen preparation were the same as those described in Opitz (2005: 9).

Illustrations involving the internal reproductive organs show only one pair of male accessory glands and if observable one of a pair of ovaries. Specimens provided by Jim E. Wappes were preserved in Pampel's fixative. Such preservation makes possible study of the mesodermal internal organs, which have provided significant information for efforts in clerid systematics (Ekis and Gupta, 1971; Crowson, 1972; Ekis, 1978; Opitz, 2003).

Body length and width were measured with a plastic millimeter ruler at 120 X; length involved the distance from the frons to the elytral apex in lateral view, and width involved the distance across the dorsal aspects of the elytra at their widest portion. Measurements concerned with length/width proportionalities between two organs involved the following measurements: to compare width of the head to width of the pronotum-width across eyes in dorsal view and width across the pronotal disc in dorsal view; to compare width of the vertex to width of an eye - width across one eye in dorsal view to width across the vertex in dorsal view; to compare length and width of the pronotum-greatest length and greatest width across the pronotal disc in dorsal view; to compare length and width of the elytra-length distance from humeral margin to elytral apex and width distance across the widest portion of elytron. Names of antennal sensilla were adopted from Galahan (1975: 390). Key couplets address the presence or absence of secondary (2°) elytral setae. These setae are to be distinguished from primary setae (1°) in that they are shorter and more decumbent on the elytral surface. The 1° setae are considerably longer and suberect.

I relied on Nichols (1989), and previous works (Ekis, 1977a; Opitz, 2004), as sources for morphological orismology and on Brown (1956) for coinage of specific epithets. Arnett, et. al., (1993) was used to determine acronymical designations to identify repositories of specimens with exceptions involving those 4-letter acronyms established by home institutions since Arnett's publication. In species descriptions, primary type label information is provided in the exact sequence of notations as it is on the labels, and the types of labels on the pin are listed sequentially from top to bottom; this will avoid any potential confusion as to the identity of the primary type specimen. In the paratype portion of the description I list locality records as follows: Country: State, Province, or Department: Specific locality, date of collection, natural history information, identity of collector, and acronym of specimen repository and number of specimens in parenthesis. I examined the primary type of all previously described species.

Assessments of species level discontinuities

By some twist in logic, extinctions are an evolutionary taxonomist's best friend; they provide the gaps that stimulate inquiries of phylogenetic relationships. For the first time in my dealings with the

Table 1. Character matrix of 40 Morphological Characters involving Outgroup and Species Groups, and taxa of *Parvochaetus*, *Amboakis*, and *Ellipotoma*.

	Characters
	1 1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3
	0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9
Taxa	
Outgroup	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1
sandaraca	0 0 1 0 1 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
fucolatus	0 1 1 0 1 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
froeschneri	0 0 0 1 1 0 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
linearis	0 0 0 0 1 1 0 0 1 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
albicornis	0 0 0 0 0 0 1 1 1 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
erythrohapsis	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
micula	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
nitida	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 1 1 0 0 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
charis	0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0 0 1 0 1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
katatonus	0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0 0 0 1 1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
linitus	0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 1 1 0
nova	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 1 1 0 0 0 0 1 1 0
stenosis	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 1 1 1 0 1 1 1 1 0 0 0 0 1 1 0
anapsis	0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 1 1 0
Ellipotoma	0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 1 1 1 1 0

Epiphloeinae, I am grateful for the lack of morphologic continuance and cryptic species, especially in *Parvochaetus*. However, I suspect that the absence in *Parvochaetus* of the typical preponderance of continuance of characteristics at species level, that I usually note in epiphloeine external morphology, is more a manifestation of sporadic collecting in South America than extirpation by extinction events. It is my hope that the former might be the case.

The five species that comprise *Parvochaetus* are morphologically dissimilar externally and application of the reproductive isolation hypothesis (Mayr 1969: 25) is not problematic in this genus, nor in *Amboakis*, and in *Ellipotoma*. Judgments about species status in *Parvochaetus* are based on convexities of the eyes, color patterns on the cranium, pronotum, and elytra, form of the antennal club, form of the epipleural fold, distribution pattern of the elytral punctations, in correlation with differences of the aedeagus.

I also found considerable interspecific variation among species of *Amboakis*. Only in the *micula* group and *nova* group did I encounter the cryptic-like species level external morphology typical of epiphloeines. The abovementioned characters used to discern *Parvochaetus* species were also used to discriminate *Amboakis* species, although sometimes I had to rely heavily on the characteristics of the aedeagus. Integumental color and form of funicular antennomeres served to discriminate the two species of *Ellipotoma*.

Assessment of supraspecific discontinuities

Establishment of sister group relationships at the genus level has been the greatest challenge in my dealings with Epiphloeinae. When confronted with this problem my work plan has been as follows. Once a hypothesis of monophyly for a particular group of species has been established, I search for the taxon's sister group and determine whether the discontinuity between the new monophyletic taxon, and the one that I postulate represents its sister taxon, is of a magnitude worthy of generic status. My intent is to develop a generic concept in the Epiphloeinae that is based on a balance of morphological gaps. Whether the monophyletic groups in question reflect zoogeographic history and ecology is also a consideration in assessments of generic status.

Mimicry may be the most influential force of natural selection in the evolution of the Cleridae. Each group of checkered beetles examined, including representation of all major lineages from diverse zoogeographical regions and various continents, convinces me that these beetles have made an art of looking or behaving like some other organisms or some inanimate object; all, apparently, to refine predatory lifestyles (Waterhouse 1877: 8; Nicholson 1927: 64; Hudson 1934: 70; Hespenheide 1973: 52; Ekis 1977a: 4; 1977b: 200; Menier 1985: 76; Mawdsley 1994: 115; Opitz 2005: 13). Body conformation and color characteristics of the integument are part of the

evolutionary inertia towards mimicry and therefore often present useful characteristics for speculations about relationships. I use such characteristics in this study to estimate the evolutionary trends in *Parvochaetus*, *Amboakis*, and *Ellipotoma*.

Further, results of other workers suggest that a variety of checkered beetles synchronize their life habits with lignicolous prey species (Fiske 1908: 203; Balduf 1935: 107; Evenden 1943: 17: Knight 1961: 212; Cowan and Nagel 1965: 3; Thatcher and Pickard 1966: 956; Amman 1972: 529; Franklin and Green 1965: 202). Volatiles from host plants and lignicolous insect pheromones attract many species of Cleridae (Opitz 2004: 16). This suggests that the modifications of antennal structure, particularly notable in some groups, may be highly adaptive for the reception of chemical stimuli (Borden and Wood 1966: 253). I use modifications of the antenna to evolutionarily link *Parvochaetus*, *Amboakis*, and *Ellipotoma* especially those that involve increase in antennal surface area.

Phylogenetic methods

Hennigian principles (Hennig 1966: 88) were used to assess evolutionary relationships, preceded by an analysis of character phylogeny by the outgroup method of various authors as listed in Opitz (2004: 10; 2006: in press). I concur with Tuomikosky (1967: 138) who advocates the use of apotypic and plesiotypic rather than apomorphic or plesiomorphic on the grounds that hypothesis of evolutionary relationships may manifest as results of attributes that are not morphologic. The intergeneric phylogenetic hypothesis involving *Parvochaetus*, *Amboakis*, and *Ellipotoma* is depicted in figure 151. The hypothesis of intrageneric relationships in *Parvochaetus* and *Amboakis* is illustrated in figure 152.

Repositories of specimens

The following acronyms indicate collections from which specimens were borrowed or donated.

AMNH — American Museum of Natural History, Department of Entomology, Central Park West at 79th Street, New York, New York 10024-5192 (Lee Herman)

BMNH — British Museum of Natural History, Department of Entomology, SW 5BD, London, England (Maxwell V. L. Barclay)

CASC — California Academy of Sciences, Department of Entomology, Golden Gate Park, San Francisco, California 94118 (David H. Kavanaugh, Norman H. Penny)

CDAE — California Department of Food and Agriculture, Plant Pest Diagnostic/Entomology Laboratory, Entomological Collection. 3294 Meadowview Road, Sacramento, California 95832-1448 (Chuck Bellamy)

CMNC — Canadian Museum of Nature, Insect Collection, Post Office Box 3443, Station D, Ottawa, Ontario, Canada K1P 6P4 (Robert S. Anderson, Francois Genier)

CMNH — Carnegie Museum of Natural History, Invertebrate Zoology, 4400 Forbes Avenue, Pittsburgh, Pennsylvania 15213 (Robert L. Davidson)

CNCI — Agriculture-Food Canada, K.W. Neatby Building, 960 Carling Avenue, Ottawa, K1A OC6, Canada (Yves Bousquet Bouchard)

EMEC — Essig Museum of Entomology, University of California, College of Agriculture, Division of Entomology and Parasitology, California Insect Survey, Berkeley, California 94720 (Cheryl Barr)

FMNH — Field Museum of Natural History, Department of Entomology, Roosevelt Road at Lake Shore Drive, Chicago, Illinois 60605 (James H. Boone)

FSCA — Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture, P. O. Box 147100, Gainesville, Florida 32614-7100 (Michael C. Thomas, Paul E. Skelley).

IAVH — Istituto de Investigación de Recursos Biológicos Alexander von Humbolt, Carrera 7 No. 35-20, Bogotá D. C., Colombia (José Enrique Castillo)

IMLA — Fundacion Miguel Lillo, Dirección de Zoologia, Miguel Lillo 251, Entomologia. 4000 San Miguel de Tucumán, Argentina (Virginia Colomo de Correa)

INHS — Illinois Natural History Survey, Center for Biodiversity, 607 East Peabody Drive, Champaign, Illinois 61820-6970 (Kathleen R. Zeider)

JEWC — Jim E. Wappes Collection, 8734 Paisano Pass, San Antonio, Texas 78255 (Jim E. Wappes)

JNRC — Jacques Rifkind Collection, 5105 Morella Ave., Valley Village, California 91607-3219 (Jacques Rifkind)

KSUC — Kansas State University, Department of Entomology, 123 Waters Hall, Manhattan, Kansas 66506-3799 (Gregory Zolnerowich)

LACM — Natural History Museum of Los Angeles County, Entomology Section,900 Exposition Boulevard, Los Angeles, California 90007 (Brian P. Harris)

MCNZ — Fundacão Zoobotánica do Rio Grande do Sur, Museo de Ciências Naturais, Rua Dr. Salvador Franca, 1427 Caixa Postal 1188, 90001-970, Porto Alegre, RS, Brasil (M.H. M. Galileo)

MCZC — Museum of Comparative Zoology, Harvard University, Entomology, Cambridge, Massachusetts 02138 (Philip D. Perkins)

MEMU — Mississippi State University, Mississippi Entomological Museum. P. O. Box 9775, Mississippi State, Mississippi 39762 (Terry Scheifer)

MIZA — Universidad Central de Venezuela, Facultad de Agronomia, Departamento e Instituto de Zoologia Agricola, Apartado Postal 4579, Maracay 2101-A, Venezuela (Luis J. Joly)

MLPA — Universidad Nacional de la Plata, Museo de La Plata, División Entomología, Paseo del Bosque 1900, La Plata, Buenos Aires, Argentina (Norma Díaz)

MNHN — Museum d'Histoire Naturelle, Entomologie, 45 bis, Rue de Buffon, Paris (Ve), France (Jean J. Menier)

MZSP — Museu de Zoologia Universidade de Sao Paulo, Caixa Postal 42.694 01064-970, Sao Paulo, Brazil (Cleide Costa)

RGCG — Roland Gerstmeier Collection, Technische Universität München, Angewandte Zoologie, Alte Akademie 16, D-85350 Freising, Germany (Roland Gerstmeier)

RHTC — Robert H. Turnbow, Jr. Collection, Directorate of Engineering and Logistics, Fort Rucker, Alabama 36362-5000.

SEMC — University of Kansas, Snow Entomological Division, The Natural History Museum of the University of Kansas, Lawrence, Kansas 66045-2454 (Zachary Falin)

TAMU — Texas A & M University, College of Agriculture and Life Sciences, Department of Entomology, Minnie Belle Heep Building, College Station, Texas 77843-7029 (Edward G. Riley)

UCDC — University of California-Davis, Department of Entomology, R.M. Bohart Museum of Entomology, 1 Schields Avenue, Davis, California 95616-85849 (Steve L. Heydon)

UCRC — University of California, Riverside, Department of Entomology, UCR Entomology Research Museum, Riverside, California 92521-0314 (Doug Yanega)

UFPR — Universidad Federal do Paraná, Departamento de Zoologia/PG em Entomologia, CEP 81531-990 CxP 19020, Curitiba/PR/ Brasil (Luciane Marinomi).

UMRM — University of Missouri, Wilbur R. Enns Entomology Museum, Department of Entomology, 1-31 Agriculture Building, Columbia, Missouri 65211-7140 (Robert W. Sites)

UMSP — University of Minnesota, Department of Entomology, College of Agriculture, Food and Environmental Sciences, 219 Hodson Hall, 1980 Folwell Avenue, Saint Paul, Minnesota 55108-6125 (Philip J. Clausen)

UNAM — Experimentación Y Difución "Chamela", Instituto de Biologia, U.N.A.M., Universidad Autónoma de Mexico, Apartado 21, 48980 San Patricio, Jalisco, Mexico (Felipe Noguera Martinez)

USNM — United States Department of Agriculture. Systematic Entomology Laboratory, c/o National Museum of Natural History MRC 168, Washington, D.C. 20560-0165 (Natalia J. Vandenberg)

WFBC — William F. Barr Collection, 514 North Eisenhower Street, Moscow, Idaho 83843 (William F. Barr)

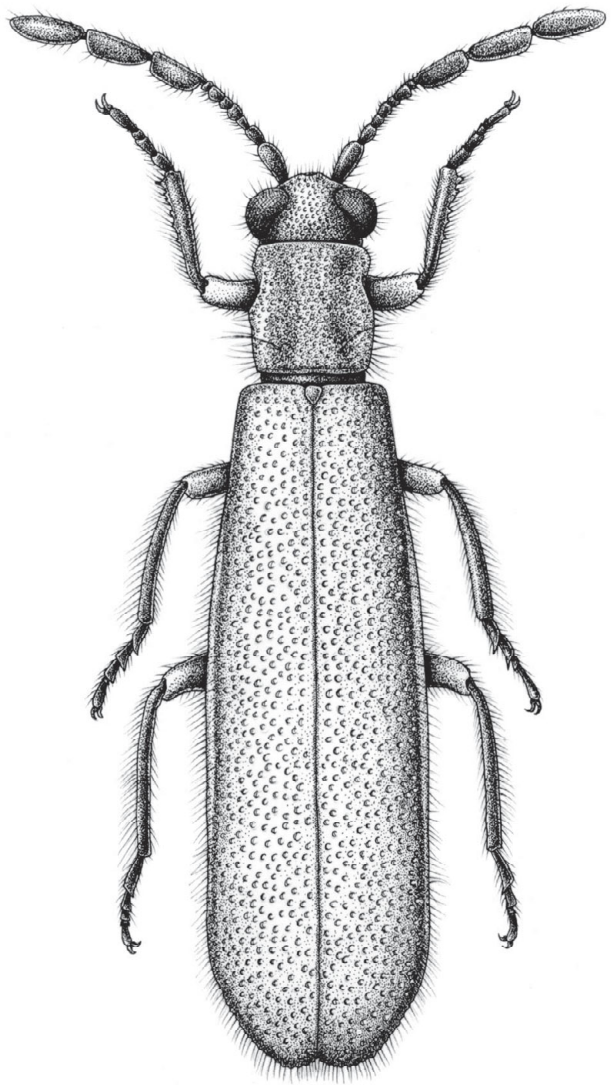


Figure 1. Habitus of *Parvochaetus sandaracus*, n. sp.

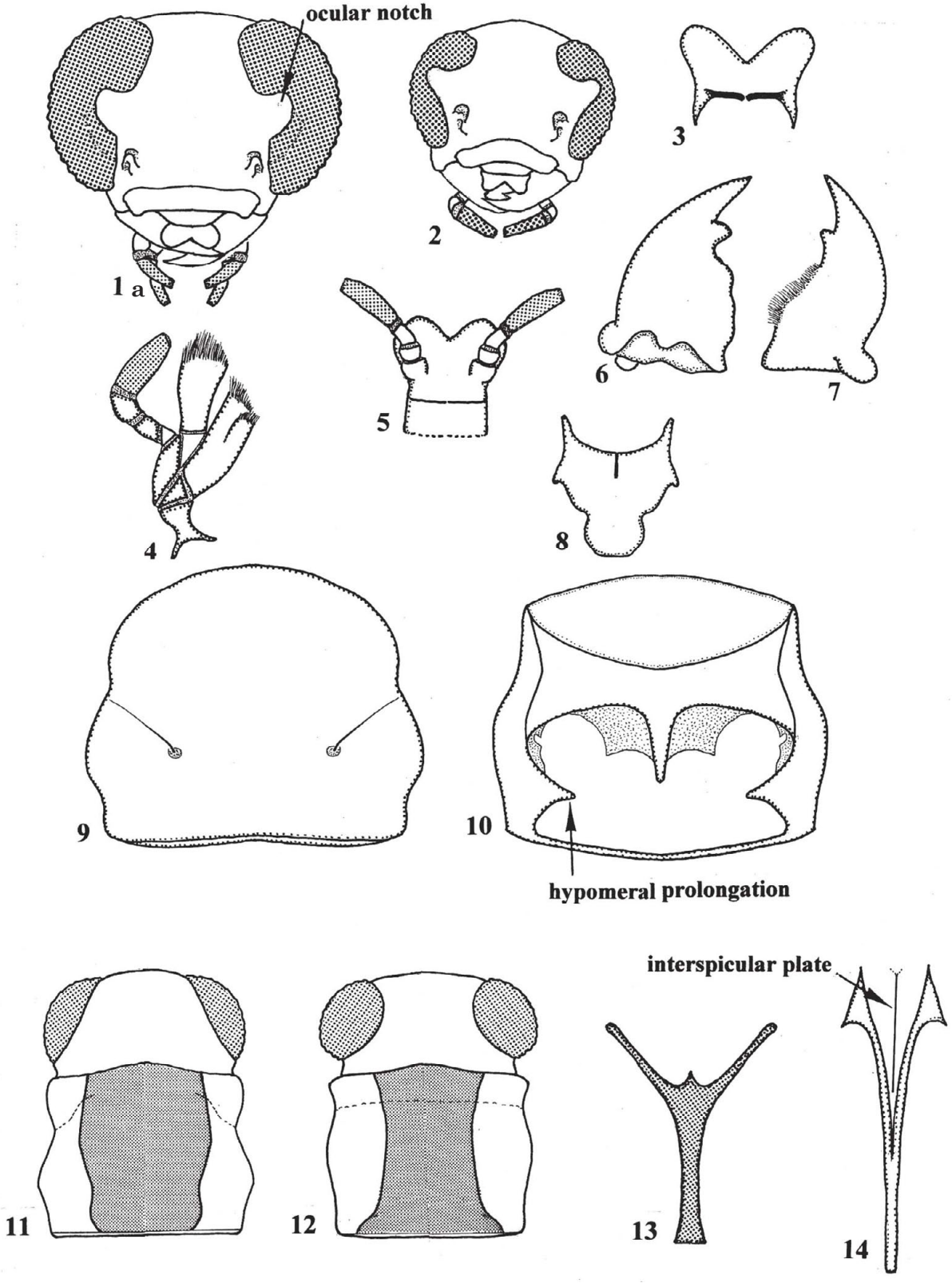
WFBM — University of Idaho, Division of Entomology, William F. Barr Museum, Moscow, Idaho 83844 (Frank Merickel)

WOPC — Weston Opitz Collection, Kansas Wesleyan University, Department of Biology, 100 E. Claflin Ave., Salina, Kansas 67401-6196.

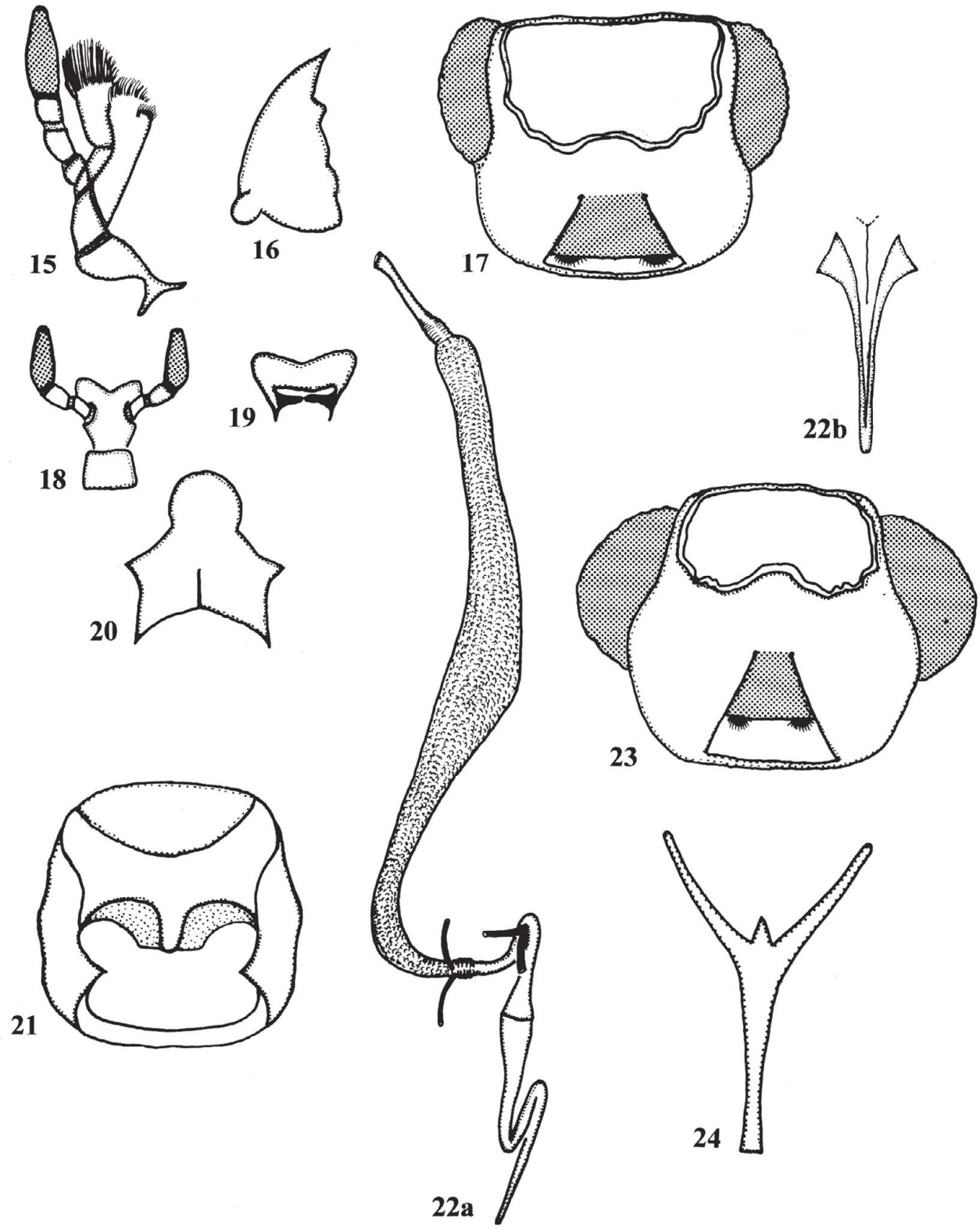
WSUC — Washington State University, Food Science and Human Nutrition Building, room 157, Department of Entomology, Pullman, Washington 99164-6382 (Richard S. Zack).

ZALF — Deutsches Entomologisches Institute, Leibniz-Zentrum für Agrarlandschaffs-und Landnutzungsforschung e. V. Ebersvalde Str. 84, D-15374 Müncheberg, Germany (Lothar Zerche)

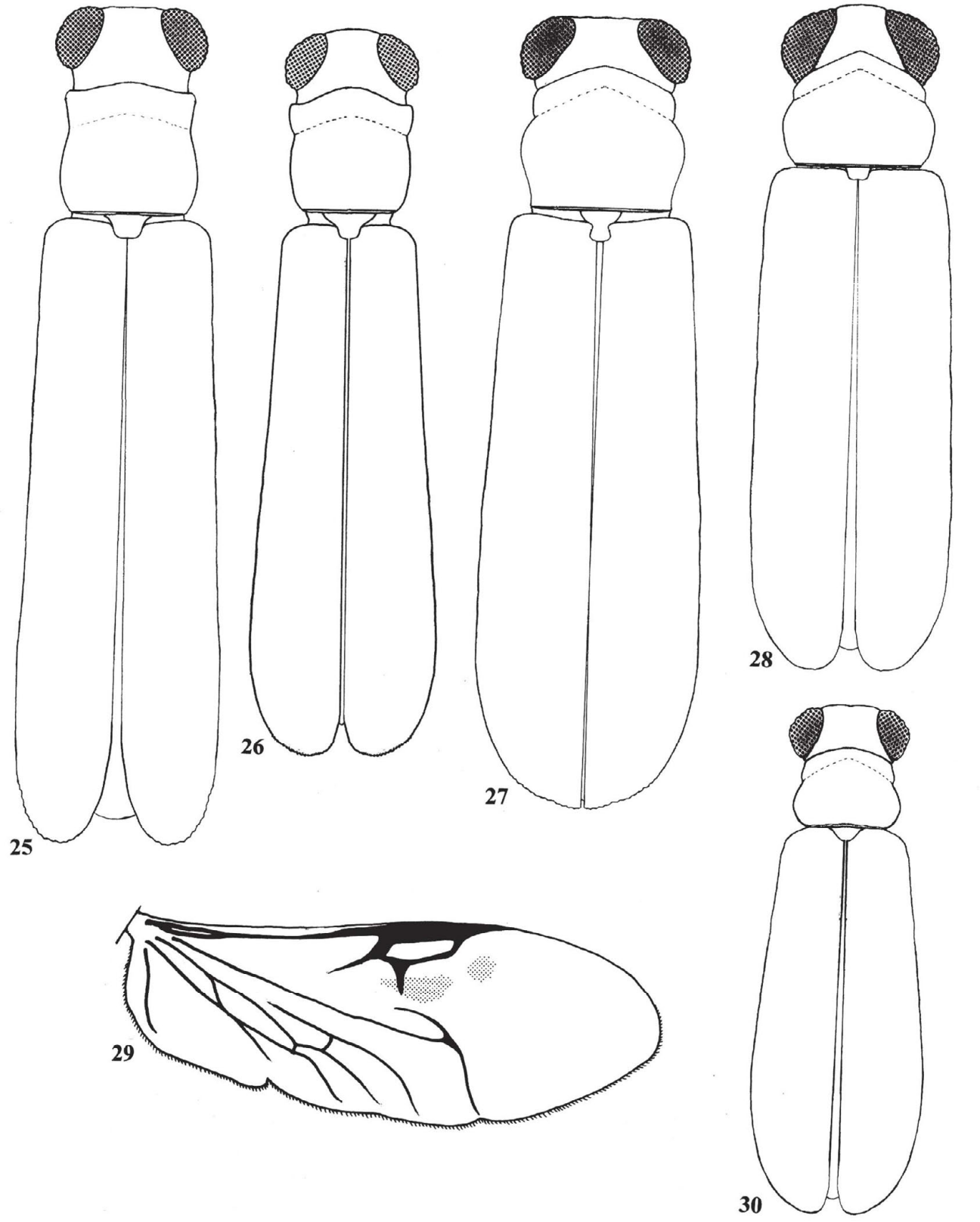
ZMAN — Zoologische Museum der Universiteite van Amsterdam, Institute for Biodiversity and Ecosystem Dynamics, Department of Entomology, Plantage



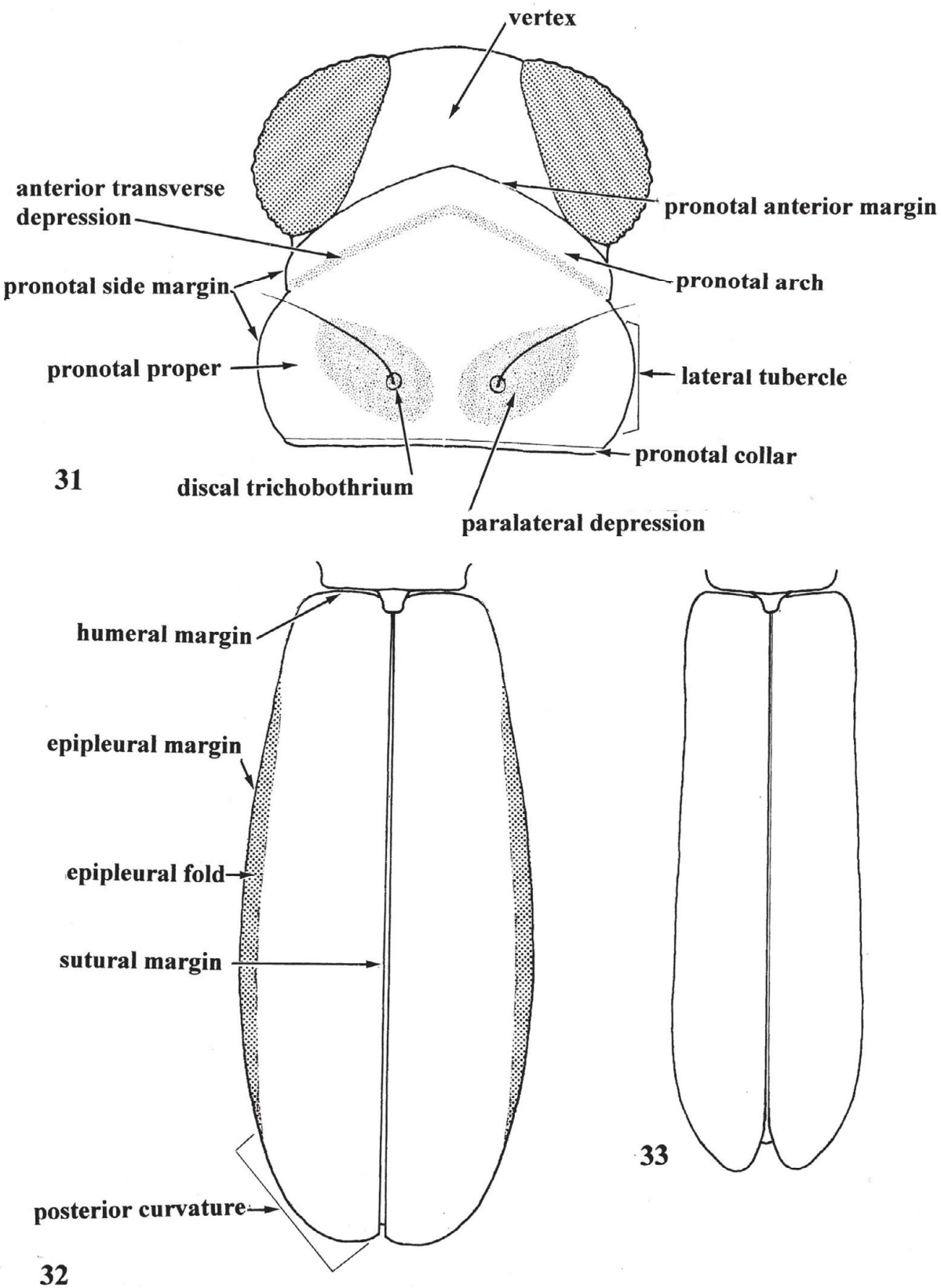
Figures 1a-14. Various organs. **1a-2.** Heads. **1a)** *Parvochaetus fucolatus*. **2)** *P. froeschneri*. **3-10.** *P. sandaracus*. **3)** Labrum. **4)** Maxilla. **5)** Labium. **6-7.** Mandible **6)** anterior view; **7)** posterior view. **8)** Mesonotum. **9)** Pronotum. **10)** Prothorax (ventral view). **11-12.** Forebodies. **11)** *P. albicornis*. **12)** *P. linearis*. **13-14.** *P. sandaracus*. **13)** Metendosternite. **14)** Spicular fork.



Figures 15-24. Various organs. **15-22b.** *Amboakis nova*. **15)** Maxilla. **16)** Mandible. **17)** Head (ventral view). **18)** Labium. **19)** Labrum. **20)** Mesonotum. **21)** Prothorax (ventral view). **22a)** Alimentary canal. **22b)** Spicular fork. **23)** *Parvochaetus sandaracus*, head (ventral view). **24)** Metendosternite, *A. nova*.



Figures 25-30. Body outlines and metathoracic wing. **25-28.** Body outlines. **25)** *Amboakis nova*. **26)** *A. stenosis*. **27)** *A. charis*. **28)** *A. capitata*. **29)** Metathoracic wing, *Parvochaetus sandaracus*. **30)** *A. micula*.



Figures 31-33. Forebody and outlines of elytra. **31)** Forebody, *Amboakis capitata*. **32-33**. Outlines of elytra. **32)** *Parvochaetus sandaracus*. **33)** *P. fucolatus*.

Middenlaan 64, 1018 DH Amsterdam, Netherlands (Ben J. H. Brugge)

ZMHB — Museum für Naturkunde, Institute für Systematische Zoologie, Invalidenstrasse 43, D - 10115, Berlin, Germany (Bernd Jaeger)

Natural history

Very little information is available about the life habits of *Parvochaetus*. Hopefully, one of the fringe benefits attained from elevating this monophyletic group of epiphloeines to genus status will be to alert and stimulate field entomologists likely to encounter these beetles in their field work to not only capture these beetles, but also observe them before they introduce them into the killing bottle.

Based on label information, parvochaetine beetles are active as adults in the southern half of Brazil during August, September, October, February, and April. Brazilian specimens have been collected at altitudes that range from 300 to 500 m. Labels by Champion do not provide a date of collection, but indicate that the insular Central American (*sic*, Opitz 2005: 106) *P. linearus* were taken at elevations ranging from 244 to 457 m. In recent years I experienced the environs of Bugaba, Panama, from which the aforementioned species is known. I suspect that *P. linearus* is no longer available in Bugaba due to the drastic deforestation that has taken place in that region of the Panamanian state of Chiriquí.

External morphology of *Parvochaetus* beetles suggest that they are predatory insects, and it is likely they may be found on recently felled hardwood tree trunks on which they conduct their predatory activities. Recently felled mahogany would be a good possibility for their collection since felled trunks of this tree species has yielded many specimens of epiphloeines akin to *Parvochaetus*. My suspicion is that they, like so many other epiphloeines, will be found on the underside of leaning felled-tree trunks during the warmer portions of the day, and quite active on sunlit bark during late mornings and late afternoons.

Specimens of *Amboakis* have been captured throughout the year. Those from Middle America (*sic*, Opitz 2005: 97) and South America mostly from May thru July, those from the Amazon Basin throughout the year, while those from southern portions of South America were most frequently captured during August thru February. The altitude range of *Amboakis* extends from 100 to 1220 m, with the highest altitude involving *A. linitis* from the La Vega highlands of the Dominican Republic.

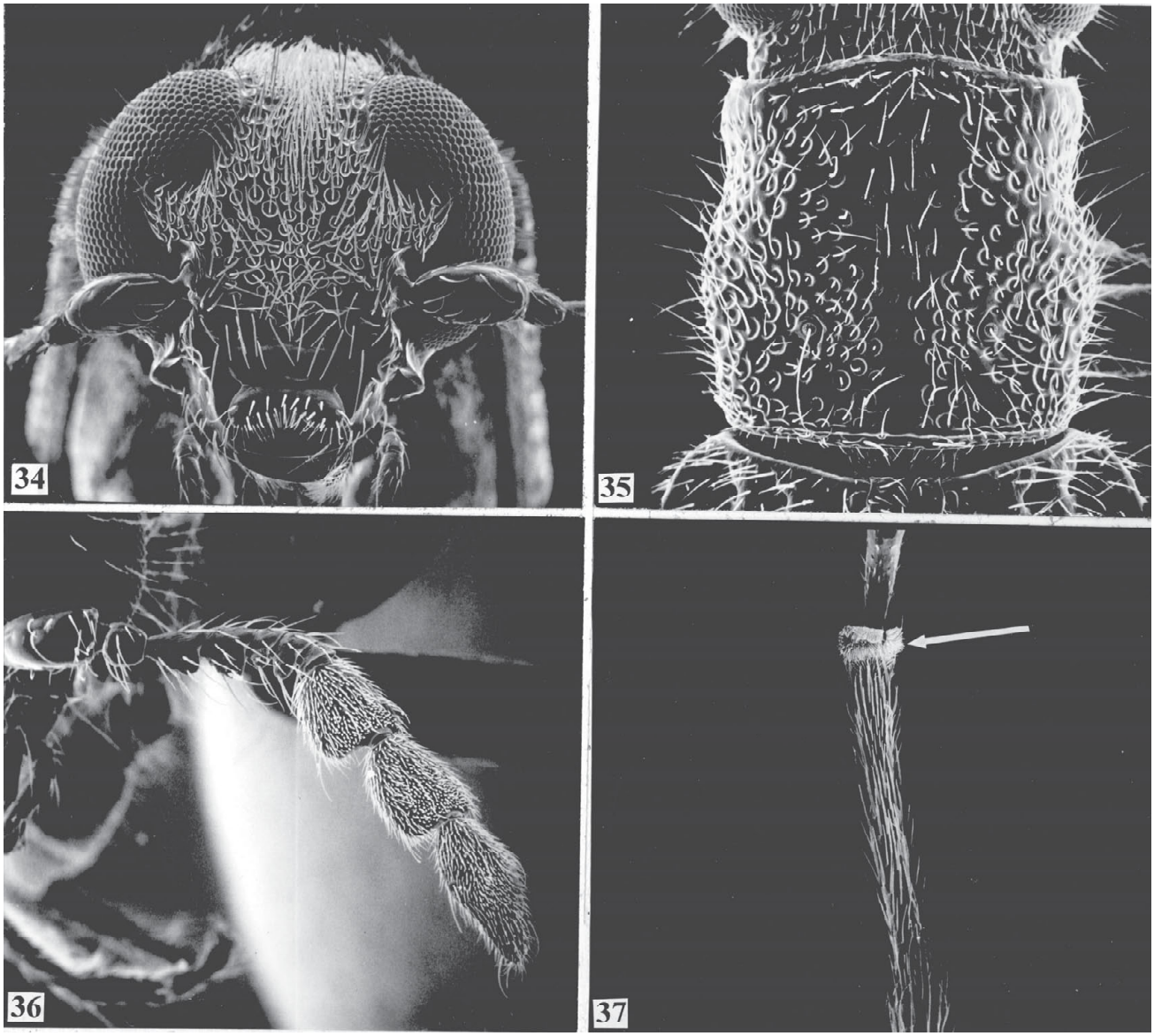
Amboakis beetles were captured with Malaise traps, Lindgren Traps, and beating sheets. I collected the holotype of *A. taruma* on a recently felled group of trees beside Rio Negro, a tributary of the Brazilian Amazon River. The specimen was located on the underside of a recently felled *Manilkara* whose trunk was inclined on its stump. An opened plastic sandwich bag was lifted to surround the specimen while the beetle specimen rested on the cooler underside of the leaning trunk. It was at this collecting spot that I became aware that specimens of lignicolous insects, including epiphloeine checkered beetles, may be captured by simply dragging a sweep net on the underside of a horizontal, freshly cut, tree trunk. Beating branches of *Quercus* is also a productive technique for collecting these beetles.

Collection label information provided by E. Campos and D. Cibrian suggests that *A. katatonus* populations may be synchronized with infestations of the scolytid *Dendroctonus mexicanus* Hopkins. Two specimens of *A. katatonis* were collected in a baited Lindgren trap set amongst an infestation of the aforementioned bark beetle. Lastly, Di Iorio captured two specimens from the dry liana of *Serjania foveata* Griseb., in Argentina.

Most of the information about the natural history of *Ellipotoma* originates from label information noted on the collection labels of *E. tenuiformis* Spinola specimens. However, in January of 1981, I collected one specimen, on bark of *Manilkara*, at night, amidst an infestation of bark beetles being attacked primarily by the epiphloeine *Plocamocera manausensis* Opitz. Henry A. Hespenheide collected these beetles at a fallen branch of *Pentaclathra macroloba* (Willd.) Kuntze, one or two specimens each day, over a period of 5 days; at Finca La Selva, Costa Rica. Specimens of *E. tenuiformis* have been captured at elevations ranging from 50 to 1372, some with Malaise traps.

Key to *Parvochaetus*, *Amboakis*, and *Ellipotoma*

Some genera of Epiphloeinae with a 10 antennomeral antenna are superficially similar. In this category I include an undescribed genus from the Dominican Republic, *Madoniella* Pic (1935: 10) (USA to Argentina), *Ellipotoma* Spinola (1844: 38) (Honduras to Brazil), *Parvochaetus*, n. gen. (Panama to Brazil), and *Amboakis*, n. gen. (Mexico to Argentina). A



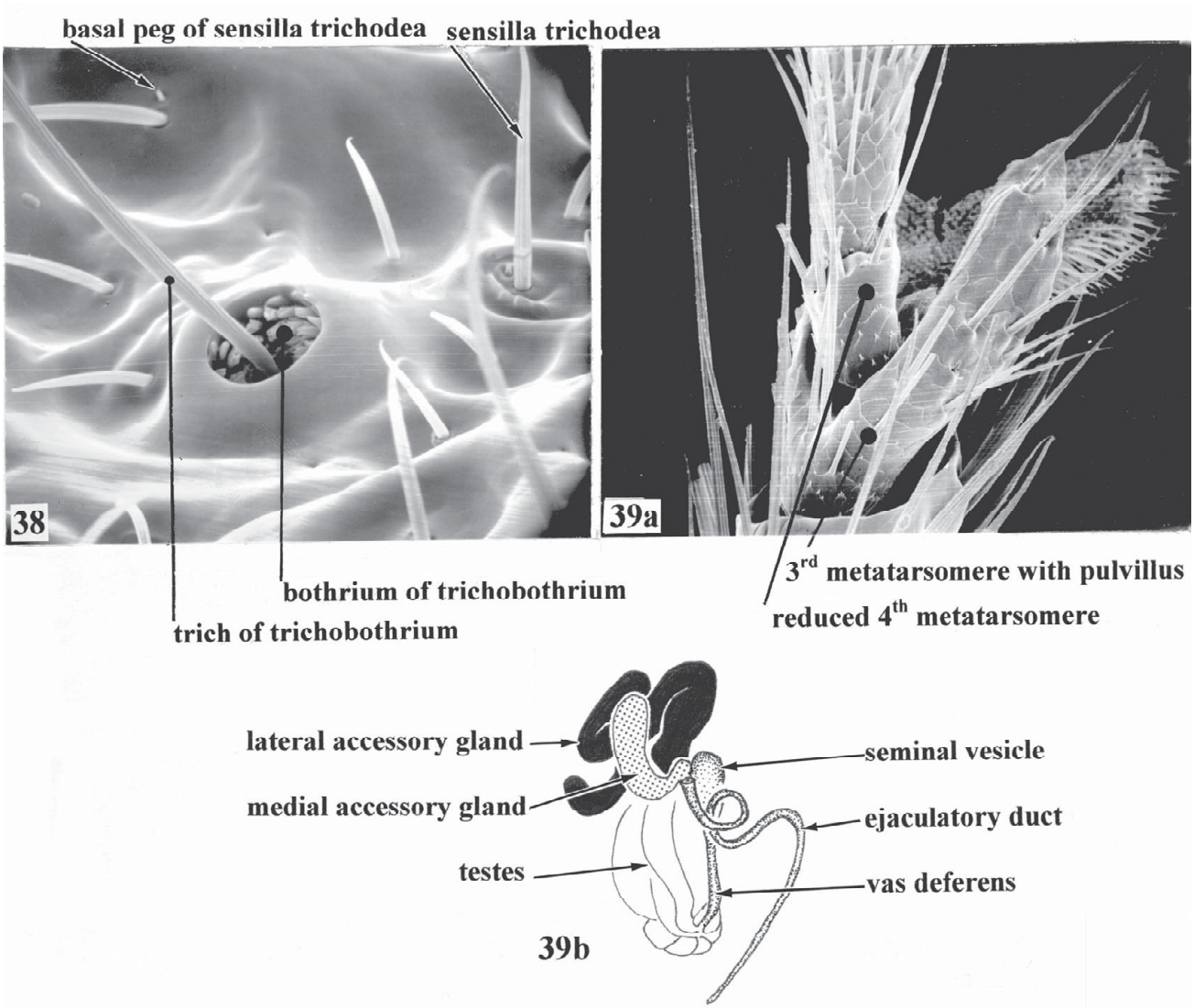
Figures 34-37. Various structures of *Amboakis nova*. **34)** Head. **35)** Pronotum. **36)** Antenna. **37)** Metatibia.

discussion of how specimens of these genera may be distinguished is included in their generic diagnosis.

Presence or absence of elytral 2° setae (compare figures 44 and 140), body form differences, differences in arrangement of elytral punctations, and differences in width of an eye in relation to width of the vertex will distinguish the members of these 3 genera. The shape of the antennae, with particular reference to the width of the funicular antennomeres and form of antennal club antennomeres, is also diagnostic although the shape of funicular articles in *Ellipotoma* approach what one finds in some *Amboakis* species (compare figures 96 and 137). Form of the antenna as depicted in figures 116g-j will distinguish the majority of specimens of these genera.

1. Elytral 2° setae absent (Fig. 140); funicular antennomere not expanded (compare figures 116g-116j); body form long very narrow-oblong (Fig. 127); anterior two thirds of elytral disc with punctations arranged in 9 rows (Honduras to Brazil) ..... *Ellipotoma* Spinola

1'. Elytral 2° setae present (Fig. 44); funicular antennomeres expanded (Figs. 116g-116h, 116j); body form not long very narrow-oblong (Figs. 1, 117); anterior two thirds of elytral disc with punctations arranged in 10 rows or seriate discally but somewhat scattered near sutural margin 2



Figures 38-39a. Trichobothrium and metatarsus of *Amboakis nova*. **38)** Pronotal trichobothrium (discal). **39a)** Metatarsus; **39b)** Male internal reproductive system, *Parvochaetus sandaracus*.

2(1'). First and second antennal club antennomere triagonal (Fig. 116h) (Mexico to Argentina) .... *Amboakis*

2'. First and second antennal club antennomeres relatively narrow-elongate (Fig. 116g) (Panama to Brazil) ..... *Parvochaetus*

Description of *Parvochaetus*

Type species: *Parvochaetus fucolatus* Opitz. Selected herein. This species most clearly characterizes my concept of the genus relative to antennal club form.

Diagnosis: The slender, but much longer, characteristic of the antennal club antennomeres conveniently distinguish the members of *Parvochaetus* from superficially similar specimens of *Ellipotoma*, *Amboakis* (compare figures 72, 73), *Madoniella* Pic (Fig. 43e), and from members of an undescribed genus from the Dominican Republic (Fig. 43d). Moreover, unlike in *Amboakis*, the funicular antennomeres in *Parvochaetus* are expanded to an extent that they appear lobate. In specimens of *Madoniella* and *Decorosa* the funicular antennomeres are not expanded but are elongate subfiliform.

Description: Size: Length 3.6-5.0 mm; width 0.80-2.0 mm. *Body Form*: Short narrow-oblong (as in figure 28). *Integumental Color*: Cranium bicolorous, variously infuscated, usually with dark streak behind eye; antenna, labrum, mandibles, palpi of maxillae and labium black or brown, last antennomere rarely

yellow at apex, remainder of mouthparts yellow light-brown; pronotum unicolorous brown or bicolorous brown-yellow or brown-red, pronotal sides entirely red or partially yellow, pronotal anterior angles rarely yellow; prosternum usually brown, rarely yellow; mesosternum and metasternum brown; mesoscutellum brown; elytra uniformly brown or disc brown but lower lateral region yellow; legs increasingly more yellow from proleg to metaleg; abdomen brown. *Vestiture*: Integument copiously vested with 1° suberect, and 2° decumbent setae; antennomeres 1 to 7 copiously vested with stout setae, club antennomeres profusely vested with fine declinate setae and longer more sparsely distributed stout setae; discal and paralateral trichobothrial setae of pronotum moderately long; elytral 2° setae minute, profusely distributed in spaces between punctations (= interstitial spaces) pygidium with six long marginal setae, two or four long discal setae, and assortment of short setae. *Head* (Figs. 1a, 2): Subquadrate in frontal view, usually as wide as pronotum, rarely wider than pronotum; cranium coarse-punctate; eyes subspheroid, boldly convex (Fig. 1a) or reduced in size (Fig. 2), eye notch large, deeply incised into eye; antenna (Fig. 1) inserted below ocular notch (Fig. 1a), club narrow and long, comprised of 10 antennomeres, scape short, robust, pedicel subglobose, funicular, antennomeres moderately (Fig. 74) or extensively (Fig. 76) broadened, lobate, antennomere 3 short triagonal (Fig. 72) or long triagonal (Fig. 78), antennomeres 4 and 6 notably larger than antennomeres 5 and 7, latter subacuminate at anterodistal angle, antennomere 7 small, antennomeres 8 and 9 rectangulate-narrow, antennomere 10 narrow ovate; labrum (Fig. 3) deeply, broadly incised; mandible (Figs. 6-7) not falciform, anterior dens subacute, median dens small, posterior dens broad and shallow; maxilla well developed, terminal palpomere digitiform, somewhat narrowed distally, laterolacinia well developed; labium well developed (Fig. 5), terminal palpomere digitiform, abruptly narrowed distally; gula (Fig. 23) broadly triangular. *Thorax*: Pronotum (Fig. 9) transverse or quadrate, lateral carina ends at posterior angle, anterior margin convex, side margins with swollen tubercle at middle (Fig. 31) and notably emarginate at anterior third, disc coarse punctate to extent that disc appears subrugose, disc undulate, discal trichobothria set in deep depressions, anterior transverse depression broad-shallow or only notable at sides (Fig. 11), pronotal collar and prebasal depression very narrow, hypomeral prolongations (Fig. 10) only feebly extended mesad, procoxal cavities (Fig. 10) open; elytra spatulate, side margins parallel, base truncate, apex rounded, about 2.6 to 2.8 X longer than broad, epipleural margin swollen or not, usually without minute serrations, disc with minute setose and oval asetose punctations, punctations diffusely distributed or seriate behind humerus then progressively less seriate towards elytral apex, sometimes seriate condition lost near sutural margin; metendosternite as in figure 13; mesoscutellum (Fig. 8) subquadrate; protibial anterior margin with 6 spines, tibial spur formula 0-1-1; tarsal pulvilli formula 3-3-1; empodium bisetose; tarsal claws with well-developed basal denticle; metathoracic wing as in figure 29. *Abdomen*: Six visible sterna; pygidium broad scutiform. *Male Genitalia*: Aedeagus short-lanceolate (Fig. 104), phallobasic rod (Fig. 114) usually prominent; spicular fork (Fig. 14) flared posteriorly, apodeme very long; interspicular plate finely lineate; parameres highly reduced. *Female Genitalia*: Ovipositor (Figs. 115, 116a) with dorsal lamina comprised of 4 lobes, ventral laminae comprised of 5 lobes. *Alimentary Canal*: No information available. *Male Internal Reproductive Organs* (Fig. 39b): Two pairs of accessory glands, medial pair shorter and more convoluted than lateral pair (Fig. 116e). *Female Internal Reproductive Organs*: No information available.

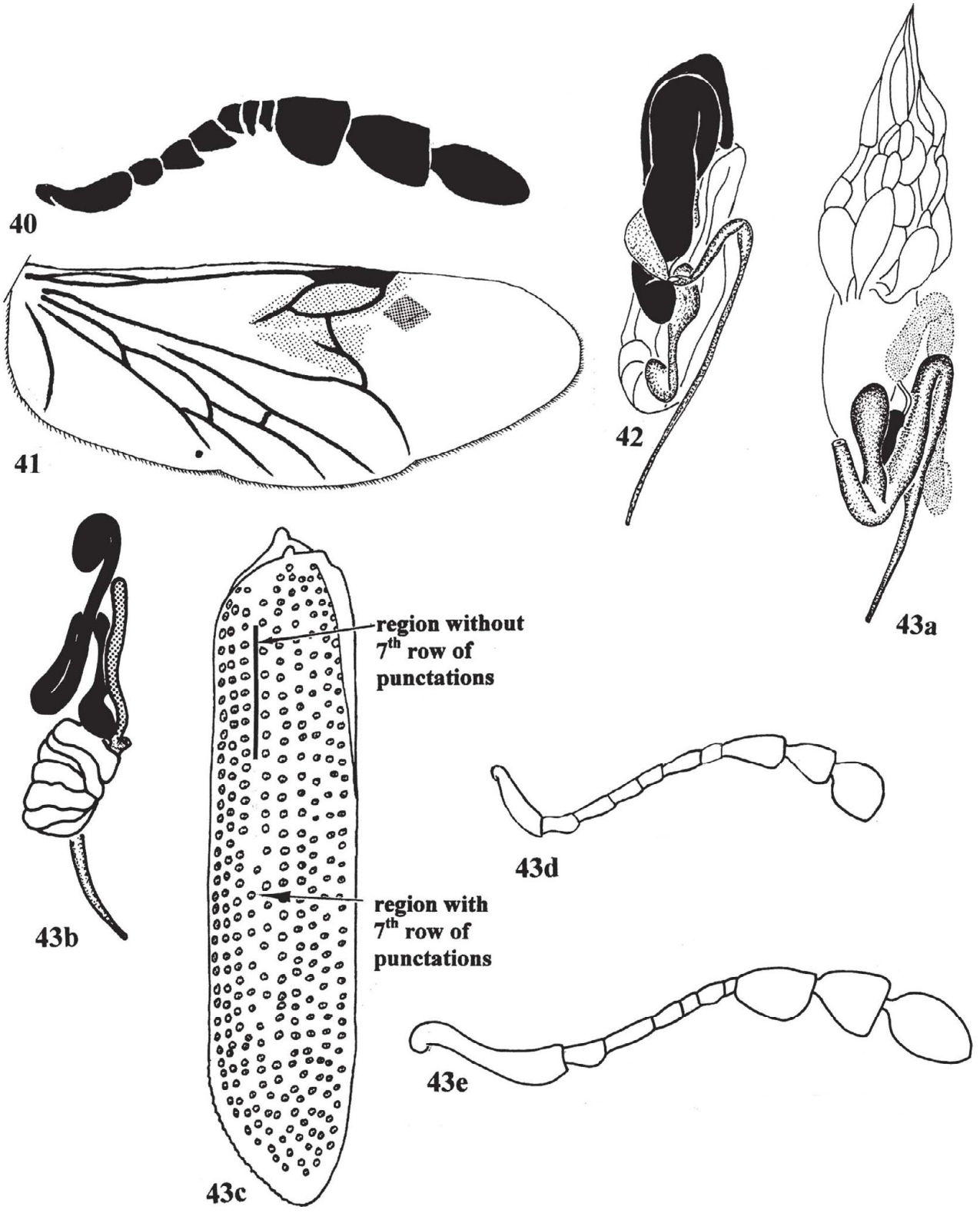
Distribution: The distribution of *Parvochaetus* extends from western Panama to southern Brazil.

Key to species groups and species of *Parvochaetus*

1. Lower aspects of the side margin of elytron yellow 2
1' Lower aspects of the side margins of elytron not yellow 4

2(1) Epipleural fold not swollen (Brazil: Guanabara) (*froeschneri* group) .... *Parvochaetus froeschneri*, n. sp.
2'. Epipleural fold swollen 3

3(2'). Pronotal sides red; elytral punctations subseriate on some areas of disc, punctations mostly diffusely distributed; antennal club particularly slender (Fig. 74). (Brazil: Rio Grande do Sul) (*fucolatus* group) . *Parvochaetus fucolatus*, n. sp.
3'. Pronotal side mostly brown, only anterior angles yellow; punctations diffusely distributed; antennal club not as slender as previous species (Fig. 72) (Brazil: Santa Catharina) (*sandaraca* group) ..... *Parvochaetus sandaraca*, n. sp.



Figures 40-43e. Various structures. **40-43**. *Amboakis nova*. **40)** Antenna. **41)** Metathoracic wing. **42)** Male internal reproductive organs. **43a)** Female internal reproductive organs. **43b**) *A. micula*, male internal reproductive organs. **43c-43d.** Species of undescribed genus from Dominican republic. **43c)** Elytron (ventral view). **43d)** Antenna. **43e)** *Madoniella dislocata* (Say), antenna.

4(1'). Median longitudinal pronotal dark band narrow (Fig. 12); last antennomere all brown; elytral punctations seriate in most of elytral disc (Panama: Chiriquí) (*linearis group*) .... *Parvochaetus linearis* (Gorham)

4'. Median longitudinal pronotal dark band broad (Fig. 11); last antennomere mostly yellow; elytral punctations not seriate in any portion of elytral disc (Brazil: Mato Grosso) (*albicornis* group) .....*Parvochaetus albicornis*, n. sp.

Descriptions of *Parvochaetus* species

Albicornis Group

The eyes are not bulgy in the members of this group. Also, these beetles are characterized by the incomplete development of the anterior transverse depression of the pronotum, and the elytral punctation are not seriate. The group is known from the Brazilian highlands of Mato Grosso.

Parvochaetus albicornis, new species
Figures 11, 78, 113, 116e; Map 1

Holotype: Male. Brazil: Mato Grosso: Sinop, Coordenadas, X-1974, 350 m, M. Alvarenga (MCNZ). (Specimen point-mounted, antenna and male symbol affixed to paper point; support card; locality label; MCNZ acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: None.

Diagnosis: The yellow color of the last antennomere will separate the members of this species from congeners, as will the broad dark-brown longitudinal stripe on the pronotal disc, narrow forebody, and exceptionally small diffusely distributed non seriated elytral punctations.

Description: *Size*: Length 4.5 mm. width 1.5 mm. *Integument*: Cranium mostly yellow, frons infuscated, epicranium with dark line behind eye; pronotum mostly black, discal sides broadly yellow; elytra brown; legs increasingly more yellow from proleg to metaleg. *Head*: As wide as pronotum (50:50); vertex wider than eye (20:16); funicular antennomeres considerably expanded, antennomeres 4-7 lobate (Fig. 78). *Thorax*: Pronotum (Fig. 11), lateral carina ends at posterior angle, transverse (50:45), lateral tuberculate present, punctations large rendering disc subrugose, disc surface very shiny in black portion of disc, somewhat undulate, discal trichobothrium set in deep depression; elytra 2.4x longer than wide, punctations small, scattered throughout disc; shallowly impressed, punctations about as wide as width of interstitial spaces, posterior curvature of epipleural margin minutely spinous, disc vested profusely with minute, pale, decumbent 2 setae; protibial anterior margin with 6 spines. *Abdomen*: Aedeagus as in figure 113. *Male Internal Reproductive Organs* (Fig. 116e): Two pairs of accessory glands; seminal vesicle robust.

Variation: One specimen examined.

Natural history: The holotype was collected during October at 350 m.

Distribution (Map 1): Known only from the type locality.

Etymology: The specific epithet *albicornis* is a Latin compound name that stems from the adjectival *albus* (= white) and the noun *cornu* (= horn). I refer to the bicolorous condition of the last antennomere.

Froeschneri Group

In these beetles the vertex is much narrower than the eye, the anterior transverse depression of the pronotum spans the length of the pronotal disc, and the elytral punctations are copiously diffused on the entire elytral disc. This group is known from southern Brazil.

Parvochaetus froeschneri, new species
Figures 2, 3, 5, 53,76, 114; Map 1

Holotype: Female. Represa R. Gde. GB Brasil, II-1961, F. M. Oliveira (DZUP) (Specimen point-mounted, antenna and female symbol affixed to paper point; support card; locality label; institutional repository label, DZUP acronymic label; holotype label; plastic vial with abdomen.)

Paratypes: One specimen from **Brazil**: **Guanabara**: Represa Rio Grande, day not noted-IV-1961, F. M. Oliveira (WOPC, 1).

Diagnosis: *Parvochaetus froeschneri* specimens are distinguishable from specimens of *P. sandaraca* and *P. fucolatus*, the other species in the genus with a yellow epipleural margin, by the flatness of the epipleural fold. In specimens of *P. sandaraca* and *P. fucolatus* the epipleural fold is convex.

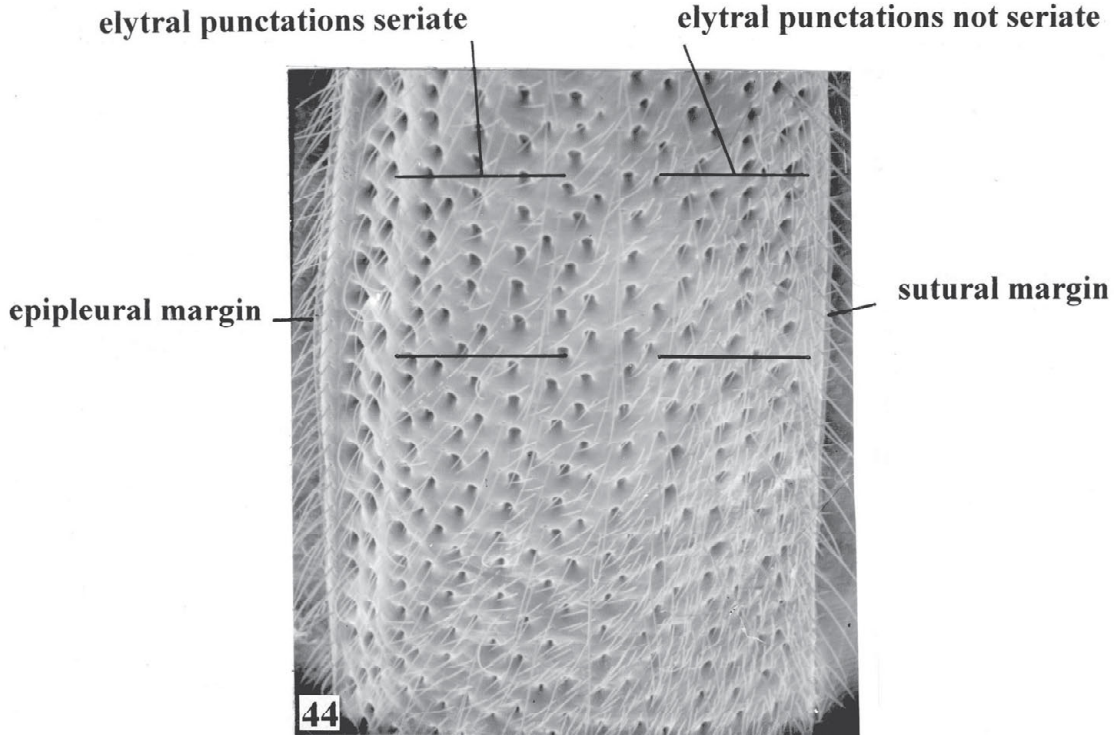


Figure 44. Elytron (dorsal view) of *Amboakis nova.*

Description: *Size*: Length 4.3-5.0 mm: width 1.6-1.8 mm. *Integument*: Cranium brown, clypeus yellow brown, vertex yellow; pronotum red brown; elytra red brown except yellow along epipleural margin; legs increasingly more yellow from proleg to metaleg. *Head*: As wide as pronotum (65:65); vertex narrower than eye (17:24); funicular antennomeres considerably expanded, 4-7 lobate (Fig. 76). *Thorax*: Pronotum (Fig. 53), transverse (65:50), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep depression, disc not undulate; elytra 2.8x longer than wide, punctations small, sometimes briefly seriate, mostly diffusely and profusely distributed, shallowly impressed, punctations not wider than width of interstitial spaces, epipleural margin minutely serrated in posterior third, disc vested profusely with dark, minute, decumbent 2 setae; protibial anterior margin with 7 spines. *Abdomen*: Aedeagus as in figure 114.

Variation: The two available specimens did not vary appreciably.

Natural history: The available specimens were collected during February and April.

Distribution (Map 1): Known only from the type locality.

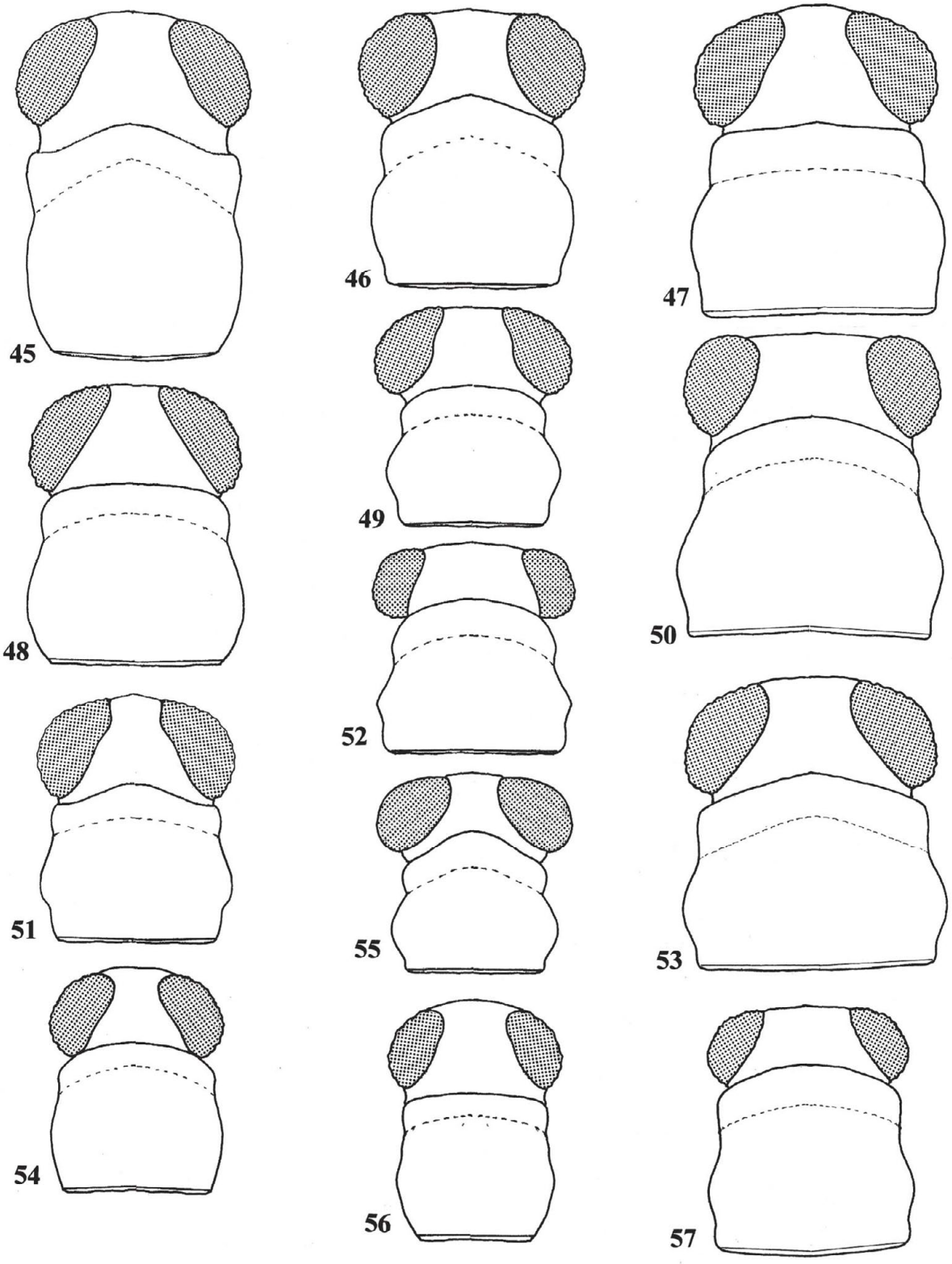
Etymology: The specific epithet is dedicated to Richard Froeschner for his helpful suggestions during my fellowship at the Smithsonian Institution, Washington, D. C.

Fucolatus Group

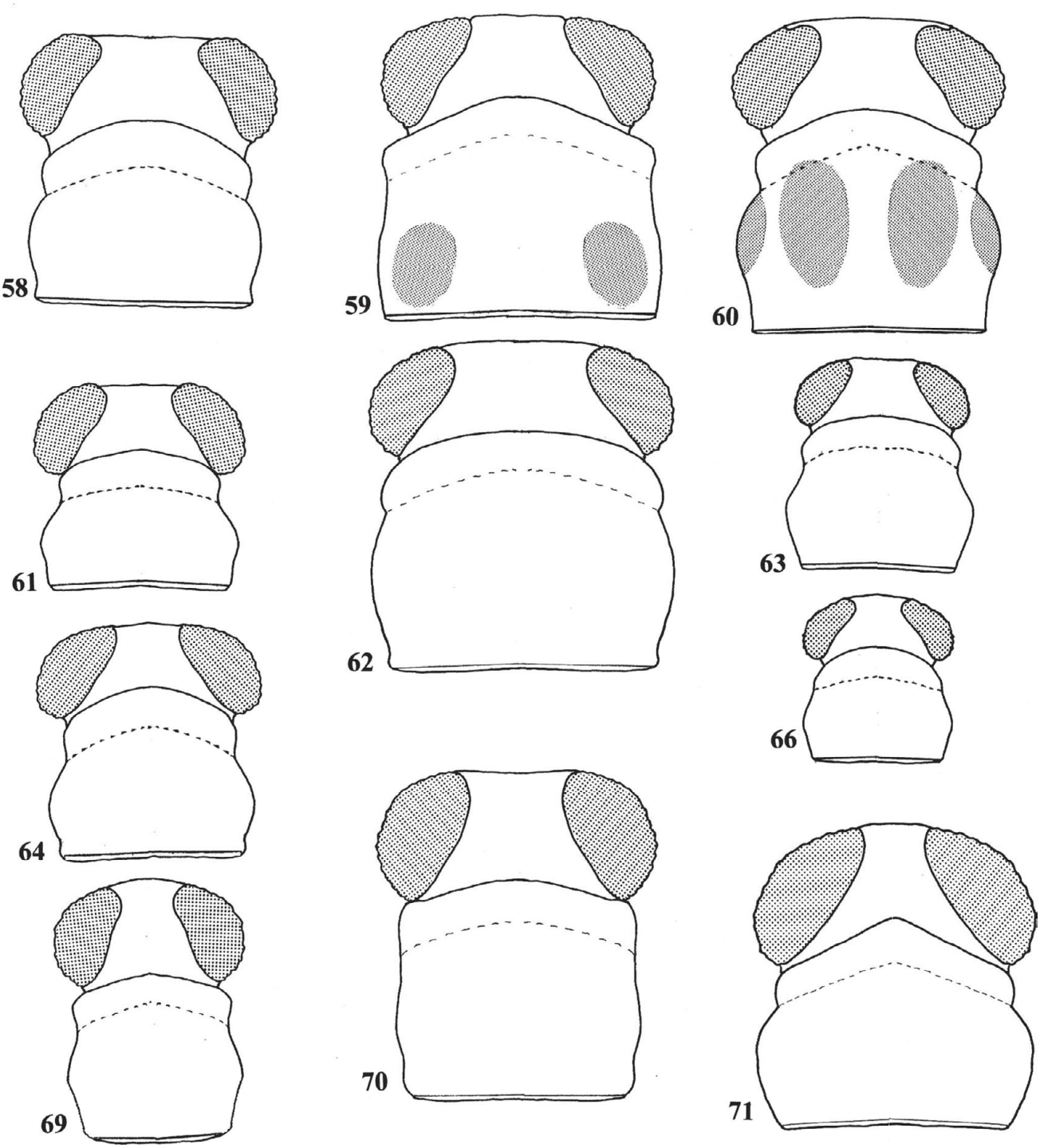
In these beetles the vertex is wider than the width of an eye, the antennal club is particularly slender, and the elytral punctations are unusually small and profusely, diffusely distributed on the entire surface of the elytral disc. This group occurs in the environs of southern Brazil.

Parvochaetus fucolatus, new species
Figures 1a, 33, 57, 74, 116g; Map 1

Holotype: Male. Brasil. GB. Represa do Rio Grande, a second label with- F. M. Oliveira, VIII-1963 (IZAV). (Specimen point-mounted, antenna and male symbol affixed to paper point; support card to which is affixed card with metathoracic wing; locality label; collection date and collector label; repository label, IZAV acro-



Figures 45-57. Forebodies. **45)** *Amboakis stenosis*. **46)** *A. vesca*. **47)** *A. nitida*. **48)** *A. cauca*. **49)** *A. incondita*. **50)** *Parvochaetus sandaracus*. **51)** *A. nova*. **52)** *A. rudis*. **53)** *P. froeschneri*. **54)** *A. funebris*. **55)** *A. taruma*. **56)** *A. barinas*. **57)** *P. fucolatus*.



Figures 58-71. Forebodies. **58)** *Amboakis atra*. **59)** *A. binotonis*. **60)** *A. charis*. **61)** *A. mica*. **62)** *A. katatonis*. **63)** *A. linitis*. **64)** *A. micula*. **65)** *A. erythrohapsis*. **66)** *A. flavicollis*. **67)** *A. epiomidia*. **68)** *A. prolata*. **69)** *A. selva*. **70)** *A. anapsis*. **71)** *A. capitata*.

nymic label; holotype label; plastic vial with abdomen.)

Paratypes: None.

Diagnosis: The reddish sides of the pronotum, exceptionally slender antennae (Fig. 74), and diffuse distribution of the elytral punctations throughout the elytral disc is a combination of characteristics that

will separate the members of this species from congeners.

Description: *Size*: Length 5.0 mm: width 1.6 mm. *Integument*: Cranium reddish-brown, frons infuscated, epicranium with dark streak behind eye; pronotum mostly brown, sides dark red; elytra brown, epipleural margin yellow; legs progressively more yellow from proleg to metaleg. *Head*: Wider than pronotum (52:49); vertex wider than eye (20:15); funicular antennomeres slightly lobate (Figs. 74, 116g). *Thorax*: Pronotum (Fig. 57), quadrate (46:46), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep depression; elytra (Fig. 33) 2.8x longer than wide, punctations small, profusely and diffusely distributed, shallowly impressed, punctations not wider than width of interstitial spaces, epipleural fold convex, epipleural margin minutely serrate at apex, disc vested profusely with minute, pale, decumbent, 2 setae; protibial anterior margin with 6 spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined

Natural history: The holotype was collected in August.

Distribution (Map 1): Known only from the type locality.

Etymology: The specific epithet is a Latin compound name that stems from the adjectival *fuco* (= rouge) and the noun *latus* (= side). I refer to the red coloration at the sides of the pronotal disc.

Linearis Group

In this group, the beetles have a vertex that is about as wide as the width of an eye, the pronotum is broadly yellow at the sides, the depression that holds the discal trichobothria are not as deep as in other species groups, and the elytral punctations are seriate on most of the elytral disc. Geographically this group occurs in eastern Panama.

Parvochaetus linearis (Gorham)

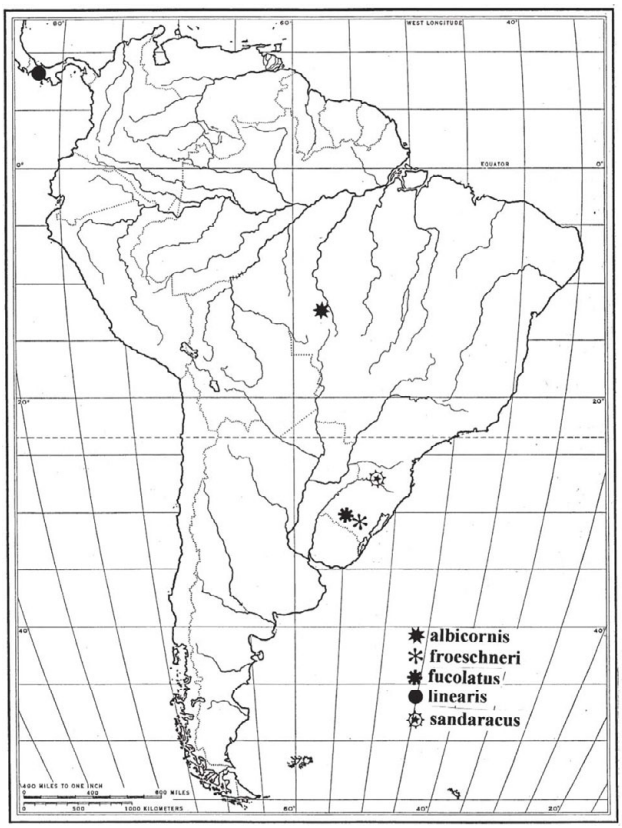
Figures 12, 80, 104; Map 1

Apolopha linearis Gorham 1883: 182. Lectotype male. Here designated. New combination. Bugaba, 800-1500 ft., Champion (BMNH). (Specimen point-mounted, male symbol affixed to paper point; locality label; lectotype type label.) Gahan 1910: 73, 74 (*Phyllobaenus*). Corporaal, 1950: 252 (*Phlogistosternus*).

Paralectotypes: One specimen from Panama: Chiriquí: Bugaba, 244-457 m, Champion (MNHN).

Diagnosis: The most prominent characteristic that distinguishes the members of parvochaetine genus is the dark-narrow longitudinal line on the pronotal disc (Fig. 12). Specimens of this species differ from superficially similar specimens of *P. albicornis* by having the antennal club entirely brown and the elytral punctations seriate in most of the disc.

Description: *Size*: Length 3.6-3.9 mm; width 0.80-1.0 mm. *Integument*: Cranium mostly yellow, frons infuscated, epicranium with dark line behind eye; pronotum mostly yellow, with broad, dark brown vertical line at middle of disc; elytra dark brown; legs increasingly more yellow from proleg to metaleg. *Head*: Wider than pronotum (53:49); vertex as wide as eye (18:18); funicular antennomeres considerably expanded (Fig. 80), antennomeres 4-7 lobate (Fig. 80). *Thorax*: Pronotum (Fig. 12), transverse (49:46), later-



Map 1. Geographic distribution of *Parvochaetus* species as indicated.

al tubercle present but small, punctations large rendering disc subrugose, discal trichobothrium set in shallow depression; elytra 2.6x longer than wide, punctations large, seriate in most of disc but scattered near sutural margin; deeply impressed, wider than width of interstitial spaces, distal curvature of epipleural margin minutely serrate, disc vested profusely with minute, pale, decumbent, 2° setae; protibial anterior margin with 5 spines. *Abdomen*: Aedeagus as in figure 104.

Variation: The two specimens examined did not vary appreciably.

Natural history: These beetles were collected from western Panama at altitudes ranging from 300 to 500 m.

Distribution (Map 1): Known only from the type locality.

Sandaracus Group

The beetles of this group have retained primitive characteristics such as eyes very bulgy, pronotal anterior transverse depression extending across entire pronotal disc, discal trichobothria set in very deep depression, and elytral punctations seriate in most of elytral disc. This group is known only from southern Brazil

Parvochaetus sandaracus, new species
Figures 1, 3-10, 13,14, 23, 29, 32, 33, 39b, 50, 72, 112, 115, 116; Map 1

Holotype: Male. Nova Teutonia, Santa Catarina, Brazil, IX-24-1940, 27°11'La.,52°23'Lo-on a second label, Fritz Plaumann Collector (AMNH). (Specimen point- mounted, antenna and male symbol affixed to paper point; support card; locality label; collector identification label, AMNH acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: Six specimens from **Brazil**: **Nova Teutonia**: Santa Catharina, 27-IX-1940, 2711'La, 52°23'Lo, F. Plaumann (AMNH, 1); *idem*, 3-X-1941, F. Plaumann (WOPC, 1); *idem*, collection day not noted-X-1973, F. Plaumann (WFBC, 1); *idem*, collection day not noted-X-1973, 300-500 m, (FMNH, 1); *idem*, collection day not noted-XI-1973, 300-500 m, F. Plaumann (ZMHB, 1); *idem*, collection day not noted-II-1978, 300-500 m, F. Plaumann (WOPC, 1)

Diagnosis: Specimens of *P. sandaracus* are distinguishable from superficially similar specimens of *P. fucolatus* by the explanate condition of the side margin of midelytron (compare figures 32, 33). Also, in specimens of *P. sandaracus* the cranial vertex has a tuft of silvery setae, the anterior angles of the pronotum are yellow, and the elytral punctations are seriate in most of the elytral disc, which is not the case in *P. fucolatus* specimens.

Description: *Size*: Length 4.0-5.0 mm: width 1.0-2.0 mm. *Integument*: Cranium yellow-red, frons densely vested with gold-colored setae, dark line behind eyes; pronotum dark brown, anterior angles yellow; elytra brown except yellow along epipleural margin; legs increasingly more yellow from proleg to metaleg. *Head*: As wide as pronotum (72:72); vertex wider than eye (30:23), with small tuft of white setae; funicular antennomeres considerably expanded, lobate (Fig. 72). *Thorax*: Pronotum (Fig. 50), transverse (72:60), lateral tubercle present but reduced, punctations large rendering disc subrugose, disc somewhat undulate, discal trichobothrium set in deep depression; elytra 2.2x longer than wide, outer margin notably explanate, punctations large, seriate in most of disc but scattered near sutural margin; deeply impressed, punctations about as wide as width of interstitial spaces, epipleuron swollen, epipleural margin not minutely serrate, disc vested profusely with minute pale decumbent 2° setae; protibial anterior margin with 6 spines. *Abdomen*: Aedeagus as in figure 112. *Male internal reproductive organs* (Fig. 39b): Lateral accessory gland considerably longer than medial gland.

Variation: The yellow discal streak adjacent to the epipleural fold varies in width. One specimen has a faintly developed, oblique, yellow fascia at about elytral distal third.

Natural history: The available specimens were collected from the type locality from September to November, at altitudes ranging from 300 to 500 m.
Distribution (Map 1): Known only from southern Brazil.

Etymology: The trivial name *sandaracus* (= reddish-yellow) is a Latin adjectival. I refer to the color of most of the cranium.

***Amboakis* Opitz**, n. name

Amboakis is a replacement name for *Teutonia* Opitz, 1997: 63 (nec Koenike, 1889: 104. nec Verhoeff, 1910: 427).

Type species: *Teutonia nova* Opitz, 1997: 63. Here designated.

Diagnosis: Specimens of *Amboakis* superficially resemble those of *Parvochaetus*, *Madoniella*, and to a lesser extent, of those of an undescribed genus from the Dominican Republic. However, beetles of the latter genus may be eliminated from consideration, when one is dealing with *Amboakis* specimens, because specimens of the undescribed genus have the funicular antennomeres filiform (Fig. 43d) whereas in *Amboakis* they are laterally expanded, and there is an incomplete expression of the 7th row of elytral punctations; the 7th row begins at the elytral posterior half (Fig. 43c). As in *Amboakis* beetles, those of *Parvochaetus* have the funicular articles considerably expanded, but members of these two genera are easily separated by the conformation of the antennal club (compare figures 73, 74). In specimens of *Parvochaetus* the club antennomeres are quite narrow and elongated, whereas those of *Amboakis* are wider and the 8th and 9th are more triangular.

The most reliable characteristic that distinguish the members of *Amboakis* from those of *Madoniella* is that the antenna of *Amboakis* beetles have the funicular antennomeres either slightly (Fig. 79) or considerably (Fig. 84) expanded. In *Madoniella* specimens the funicular articles are subfiliform (Fig. 43e). *Amboakis* specimens with slightly expanded funicular antennomeres may also be distinguished from *Madoniella* specimens by the macrosculpture of the pronotum. In *Amboakis* beetles, the pronotal disc is most often characterized by undulations and the discal trichobothria are usually set in deep transverse depressions. In *Madoniella* beetles, the pronotal disc is not undulate and the discal trichobothrium is set in a very shallow depression.

Description: Size: Length 2.3-6.0 mm; width .80-2.0 mm. *Body Form*: Short oblong subovoid (Fig. 30), long oblong subovoid (Fig. 27), short narrow-oblong (Fig. 28), long narrow-oblong (Fig. 25), or flared narrow-oblong (Fig. 26). *Integumental Color*: Cranium yellow, red yellow, red, light brown or dark brown, infuscated at frons or vertex or not; antenna, labrum, mandibles, palpi of maxillae, and labium black or brown, remainder of mouthparts yellow light-brown; prosternum yellow, yellow-brown, brown, or black, rarely infuscated; mesosternum and metasternum brown or black; elytra rarely uniformly dark brown or black, often with faintly indicated pale fascia near middle, rarely with a vertical stripe; legs yellow, yellow brown, brown, or black; abdomen brown or black. *Vestiture*: Integument copiously vested with 1° suberect, and 2° decumbent setae; antennomeres 1 to 7 vested with stout setae, club antennomeres profusely vested with fine declinate setae and longer more sparsely distributed stout setae; discal and paralateral trichobothrial setae of pronotum moderately long; elytral 2° setae short, sometimes profusely distributed on interstitial spaces; pygidiae with 6 long marginal setae, 2 long discal setae, and assortment of short setae. *Head*: Subquadrate in frontal view (Fig. 34), usually wider than width of pronotum, rarely only as wide as pronotum; cranium coarse-punctate; eyes subspheroid, boldly convex, eye notch small, not deeply incised into eye; antenna (Fig. 36) inserted below ocular notch (Fig. 34), loosely clubbed, comprised of 10 antennomeres, scape short, robust, pedicel subglobose, funicular, antennomeres moderately (Fig. 92) or extensively (Fig. 90) broadened, antennomere 3 short (Fig. 89) or long (Fig. 97) triagonal, antennomeres 4 and 6 notably larger than antennomeres 5 and 7 which are subacuminate at anterodistal angle, antennomere 7 minute, antennomeres 8 and 9 subquadrate, triagonal, or rectangulate, antennomere 10 ovate; labrum (Fig. 19) deeply, broadly incised; mandible (Fig. 16) not falciform, anterior dens subacute, medial dens narrow- truncate, posterior dens broad-truncate, penicillus conspicuous; maxilla (Fig. 15) well developed, terminal palpomere digitiform, somewhat narrowed distally, laterolacinia well developed; labium (Fig. 18) well developed, terminal palpomere digitiform, abruptly narrowed distally; gula (Fig. 17) broadly triangular. *Thorax*: Pronotum transverse or quadrate (Figs. 35), lateral carina ends at posterior angle, anterior margin convex or subconic, side margins with tubercle at middle (Fig. 21) or evenly rounded, notably emarginate at anterior third, disc fine or coarse punctate, if coarse punctate disc appears subrugose, discal trichobothria (Fig. 38) set in shallow spheroid or deep transverse depressions, small depression present at middle of base just in front of narrow, feebly impressed, sensilla trichodea with basal peg (Fig. 38) anterior transverse depression broad-shallow or only notable at sides, pronotal collar and prebasal depression very narrow, hypomeral prolongations (Fig. 21) only feebly extended mesad, procoxal cavities (Fig. 21) open; elytra spatulate, side margins parallel, base truncate, apex rounded, distal

third rarely flared, about 2.5x to 5.0x longer than wide, epipleural margin usually with minute serrations at distal third, disc with minute setose and oval asetose punctations, punctations usually seriate behind humerus then progressively less seriate towards elytral apex, sometimes seriate condition lost near sutural margin; metendosternite as in figure 24; mesoscutellum (Fig. 20) subquadrate; protibial anterior margin with 1 to 10 spines, tibial spur formula 0-1-1; tarsal pulvilli formula 3-3-1 (Figs 37, 39a); empodium bisetose; tarsal claws with well developed basal denticle; metathoracic wing as in figure 41. *Abdomen*: Six visible sterna; pygidium broad-scutiform. *Male Genitalia*: Aedeagus short-lanceolate, phallobasic rod (Fig. 114) usually very prominent; spicular fork broadly flared at sides (Fig. 22b), interspicular plate finely lineate; parameres highly reduced. *Female Genitalia*: Ovipositor, dorsal and ventral laminae comprised of six lobes. *Alimentary Canal* (Fig. 22a): Stomodaeal valve comprised of four primary folds, dorsal fold short and broad; ventricular papillae feebly developed; 4 cryptonephridial malpighian tubules. *Male Internal Reproductive Organs* (Fig. 42): Two pair of accessory glands; seminal vesicle robust; testis comprised of 12 follicles. *Female Internal Reproductive Organs* (Fig. 43a): Spermatheca not visibly sclerotized; spermathecal gland attached to subapex of spermatheca; bursa copulatrix well developed.

Distribution: The distribution of the species extend from Central Mexico to Argentina.

Etymology: The name *Amboakis* is a Greek compound name derived from *ambon* (= edge) and *akis* (= barb). I refer to the spines on the anterior edge of the protibiae, which characterize the members of this genus.

Key to species groups and species of *Amboakis*

It was not difficult to prepare this key of *Amboakis* because characteristics of the integument that have been found somewhat intraspecifically variable in other genera, such as color, correlate well with interspecific differences of the aedeagus.

1. Elytra narrowly oblong, about 3 times longer than wide (Figs. 25, 121) 2
1'. Elytra broadly oblong, about 2 times longer than broad (Fig. 28, 118) 11

2 (1). Elytral epipleural and sutural margins parallel (Fig. 25) 3
2'. Elytral epipleural and sutural margins not parallel, epipleural margin flared in posterior half (Fig. 124) (**Mexico**: **Oaxaca**) (*stenosis* group) ... . *Amboakis stenosis*, n. sp.

3(2). Pronotal punctations large, pronotal disc subrugose (*nova* group) 4
3'. Pronotal punctations small, disc not subrugose (*anapsis* group) 9

4 (3). Cranium black; head across eyes much wider than width of pronotum (Fig. 52) (**Bolivia**: **Cochabamba**) ..... *Amboakis rudis*, n. sp
4'. Cranium red; head across eyes slightly wider than width of pronotum (Fig. 51) 5

5(4'). Pronotal anterior margin and/or pronotal arch (Fig. 31) narrowly red 6
5'. Pronotal anterior margin and/or pronotal arch not red, black 7

6 (5). Humeral margin with posteriorly projected short pale longitudinal line (Fig. 121), or humeral margin at least pale, only pronotal anterior margin red (**Costa Rica**: **Heredia**) .... *Amboakis selva*, n. sp
6'. Humeral margin without posteriorly projected short pale vertical line; pronotal anterior margin and pronotal arch red (Fig. 117) (**Brazil**: **Bahia** ; **Goias**; **Nova Teutonia**; **São Paulo**. **Argentina**: **Corrientes**; **Missiones**)*Amboakis nova* (Opitz)

7(5'). Humeral margin with posteriorly projected long pale vertical line that connects with pale transverse line (Fig. 125) (**Colombia**: **Cauca**) .... *Amboakis cauca*, n. sp.
7'. Humeral margin without posteriorly projected pale vertical line 8

8(7'). Elytral punctations in middle half of elytra of same size, punctations shallowly impressed (Fig. 126) (**Panama**: **Chiriquí**) .... *Amboakis epiomidius*, n. sp.

8'. Elytral punctations in middle half of elytra not same in size, punctations near sutural margins smaller, punctations deeply impressed (**Bolivia**: **Cochabamba**) ..... *Amboakis vescus*, n. sp

9(3'). Cranium and pronotum unicolorous, yellow (Fig. 123) (**Venezuela**: **Apure**) .... *Amboakis anapsis*, n. sp.
9'. Cranium yellow; pronotum black 10

10(9'). Funicular articles very expanded (Fig. 89) (**Venezuela**: **Barinas**) ..... *Amboakis barinas*, n. sp

10'. Funicular articles slightly expanded (Fig. 91) (**Brazil**: **Amazonas**) ..... *Amboakis funebris*, n. sp.

11(1'). Elytral punctations diffuse near sutural margin, not seriate (*nitida* group) 12
11'. Elytral punctations seriate near sutural margin. 13

12 (11). Pronotum mostly yellow, pronotal arch yellow or black (Fig. 122) (**Brazil**: **Amazonas**) .... *Amboakis nitida* (Gorham)
12'. Pronotum black (Fig. 119) (**Brazil**: **Amazonas**; **Mato Grosso**) .... *Amboakis capitata* (Gorham)

13(11'). Elytral punctations arranged into 11 rows, few punctations misaligned near sutural margin (**Mexico**: **Michoacán**; **Jalisco**) (*katatonis* group) ..... *Amboakis katatonis*, n. sp.
13'. Elytral punctations arranged into 10 rows 14

14(13'). Pronotum with large black spots on the pronotum (*charis* group) 15
14'. Pronotum without spots on the pronotum 16

15(14). Pronotum with 4 large black spots (Fig. 60) (**Honduras**: **Olancho. Belize**: **Orange Walk**. **Panama**: **Chiriquí**) ..... *Amboakis charis*, n. sp.
15'. Pronotum with 2 large spots (Fig. 59) (**Cuba**: **Cienfuegos**) ..... *Amboakis binotonis*, n. sp.

16(14'). Cranium and pronotum concolorous, yellow (*linitis* group) 17
16'. Cranium and pronotum bicolorous, or if concolorous then black (*micula* group) 18

17(16). Elytra and legs black, with a bluish tinge, about 4 mm (**Dominican Republic**: **La Vega**) .... *Amboakis linitus*, n. sp
17'. Elytra dark brown, legs bicolorous with dorsal margin brown and remainder yellow, about 3 mm (**Cuba**: **Cienfuegos**; **Granma**) .... *Amboakis flavicollis* Zayas

18(16'). Pronotal disc mostly black, narrowly yellow only along anterior margin and in most of pronotal arch 19
18'. Pronotal disk concolorous, black 20

19(18'). Last antennomere more than twice as long as penultimate antennomere (Fig. 85) (**Brazil**: **Mato Grosso**; **Nova Teutonia**; **Paraná**) .... *Amboakis prolata*, n. sp.
19'. Last antennomere only slightly longer than penultimate antennomere (**Mexico**: **Guerrero**) (*erythrohapsis* group) . *Amboakis erythrohapsis*, n. sp.

20(18'). Pronotum with two broad yellow bands along sides 21
20'. Pronotum without broad yellow bands along sides, all black 22

21 (20). Elytra completely black (**Peru**: **Huanuco**. **Bolivia**: **Santa Cruz**; **Cochabamba**. **Brazil**: **Mato Grosso**) ..... *Amboakis micula*, n. sp.
21'. Elytra dark brown, with an oblique pale line behind middle (**Argentina**: **Salta**) .... *Amboakis atra*, n. sp.

22 (20'). Funicular antennomeres considerably expanded (Fig. 88) (**Brazil**: **Amazonas**) .... *Amboakis taruma*, n. sp.
22'. Funicular antennomeres not considerably expanded (Fig. 95) 23

23(22'). Pronotum strongly transverse (Fig. 61), ratio of pronotal width to pronotal length 50:40 (**Brazil**: **Amazonas**) ..... *Amboakis mica*, n. sp
23'. Pronotum moderately transverse (Fig. 49), ratio of pronotal width to pronotal length 45:38 (**Bolivia**: **Cochabamba**) .....*Amboakis incondita*, n. sp

Description of *Amboakis* species

Anapsis Group

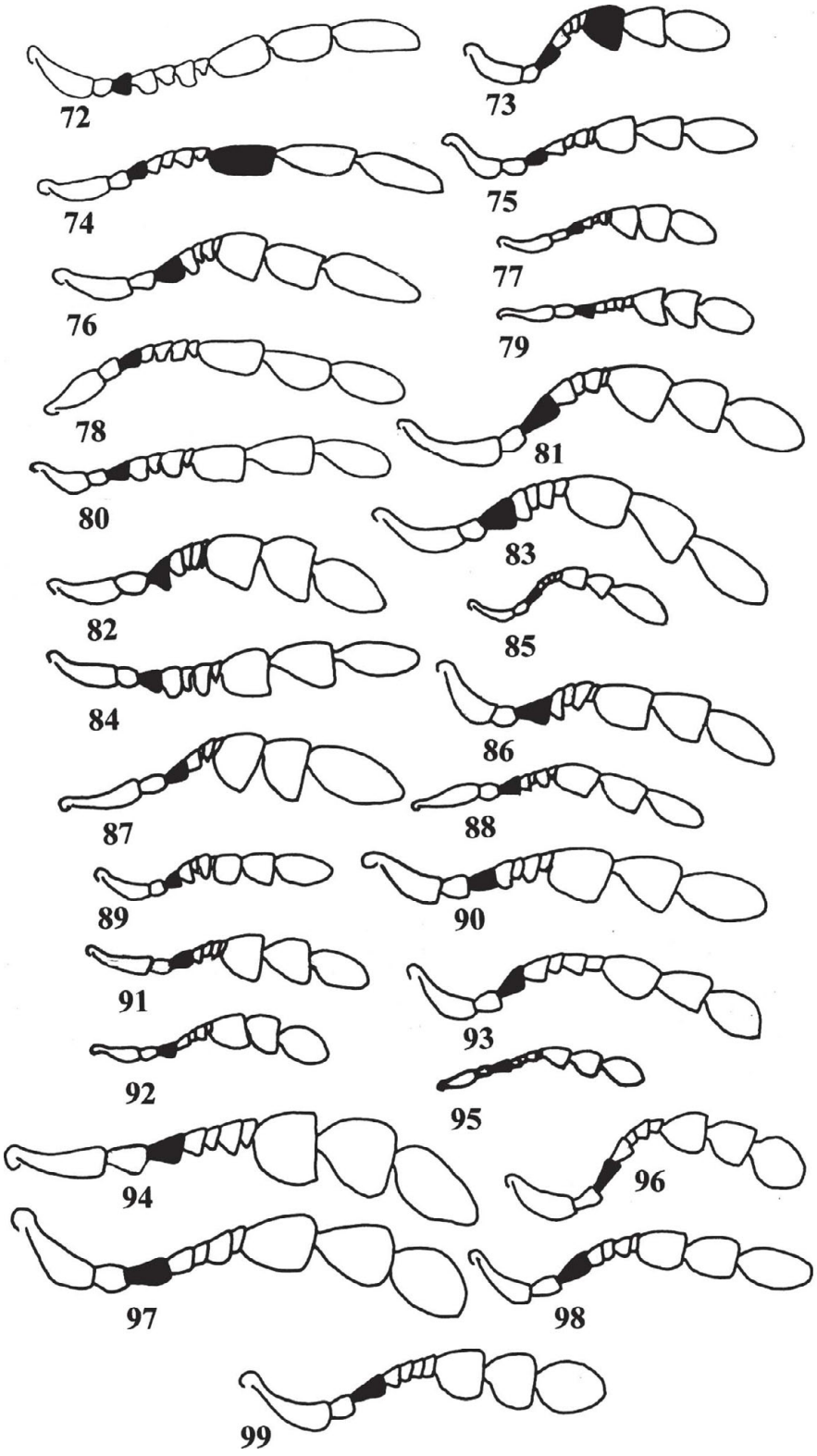
In these slender-bodied beetles the head is only slightly wider than the pronotum, the vertex is narrow, elytral punctations are small and seriate in most of the disc, but subseriate near the sutural margin. The minute, sparsely distributed, pronotal punctations is a derived characteristic of this group. In aggregate, this group extends from Venezuela to the Amazonian basin of Brazil.

Amboakis anapsis, new species
Figures 70, 82, 123; Map 2

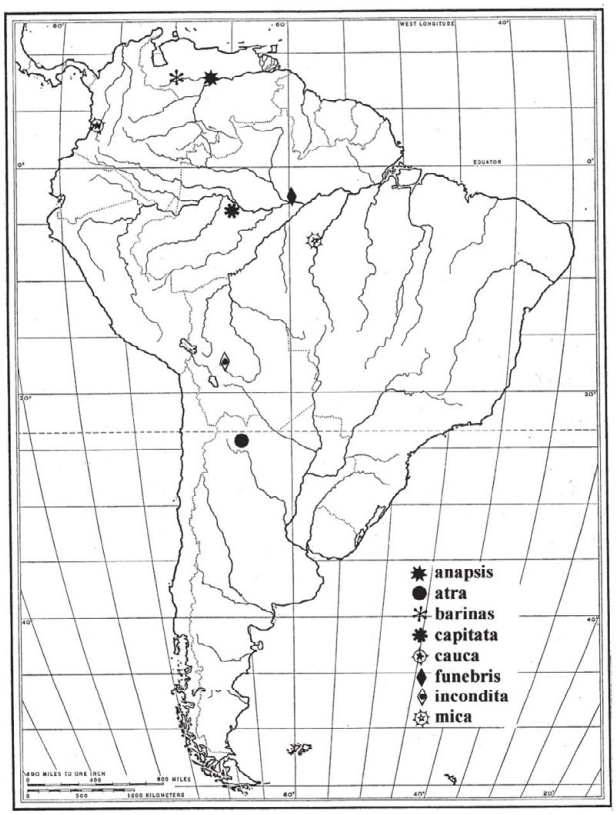
Holotype: Female. MUSEUM PARIS, VENEZUELA, Haute Apure, Bois du Gamero, (Rive Dr. du Sarare), M. Grisol, 1924 (MNHN). (Specimen point-mounted, antenna and female symbol affixed to paper point; locality label; MNHN acronymic label; holotype label.)

Paratypes: None.

Diagnosis: The members of this Venezuelan species are superficially very similar to specimens of the Brazilian *A. nitida* (Gorham) from which they may be separated by the shape of the pronotum (compare figures 47, 70). In *A. nitida* specimens the pronotal



Figures 72-99. Antennae. **72)** *Parvochaetus sandaracus*. **73)** *A. vesca*. **74)** *P. fucolatus*. **75)** *A. rudis*. **76)** *P. froeschneri*. **77)** *A. selva*. **78)** *P. albicornis*. **79)** *A. cauca*. **80)** *P. linearis*. **81)** *A. charis*. **82)** *A. anapsis*. **83)** *A. katatonis*. **84)** *A. nitida*. **85)** *A. prolata*. **86)** *A. atra*. **87)** *A. capitata*. **88)** *A. taruma*. **89)** *A. barinas*. **90)** *A. micula*. **91)** *A. funebris*. **92)** *A. epiomidia*. **93)** *A. flavicollis*. **94)** *A. stenosis*. **95)** *A. mica*. **96)** *A. linitis*. **97)** *A. binotonis*. **98)** *A. incondita*. **99)** *A. erythrohapsis*.



Map 2. Geographic distribution of *Amboakis* species as indicated.

arch is dark, which is not the case in *A. anapsis* beetles (compare figures 122, 123). Also, in *A. anapsis* specimens the elytra are proportionally more elongate.

Description: *Size*: Length 5.0 mm; 1.5 mm. *Integument*: Head, cranium yellow, with reddish tinge, pronotum yellow, with reddish tinge; elytra predominantly brown, with faintly visible pale spot near middle; femur yellow; tibiae and tarsi light brown. *Head*: Slightly wider than width of pronotum (67:65); vertex much narrower than eye (15:30); funicular antennomeres very expanded (Fig. 82). *Thorax*: Pronotum (Fig. 70), transverse (65:60), side margins more convex than tuberculate, punctations very small and sparsely distributed, discal trichobothrium set in deep transverse depression; elytra 2.6x longer than wide, form long narrow-oblong, elytra 4.7x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, posterior half of epipleural fold minutely serrate, serrations widely separated; protibial anterior margin with 10 spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined.

Natural history: No information available.

Distribution (Map. 2): Known only from the type locality.

Etymology: The specific epithet *anapsis* (= a lighting up) is a Greek verb. I refer to the light color of the forebody of this beetle.

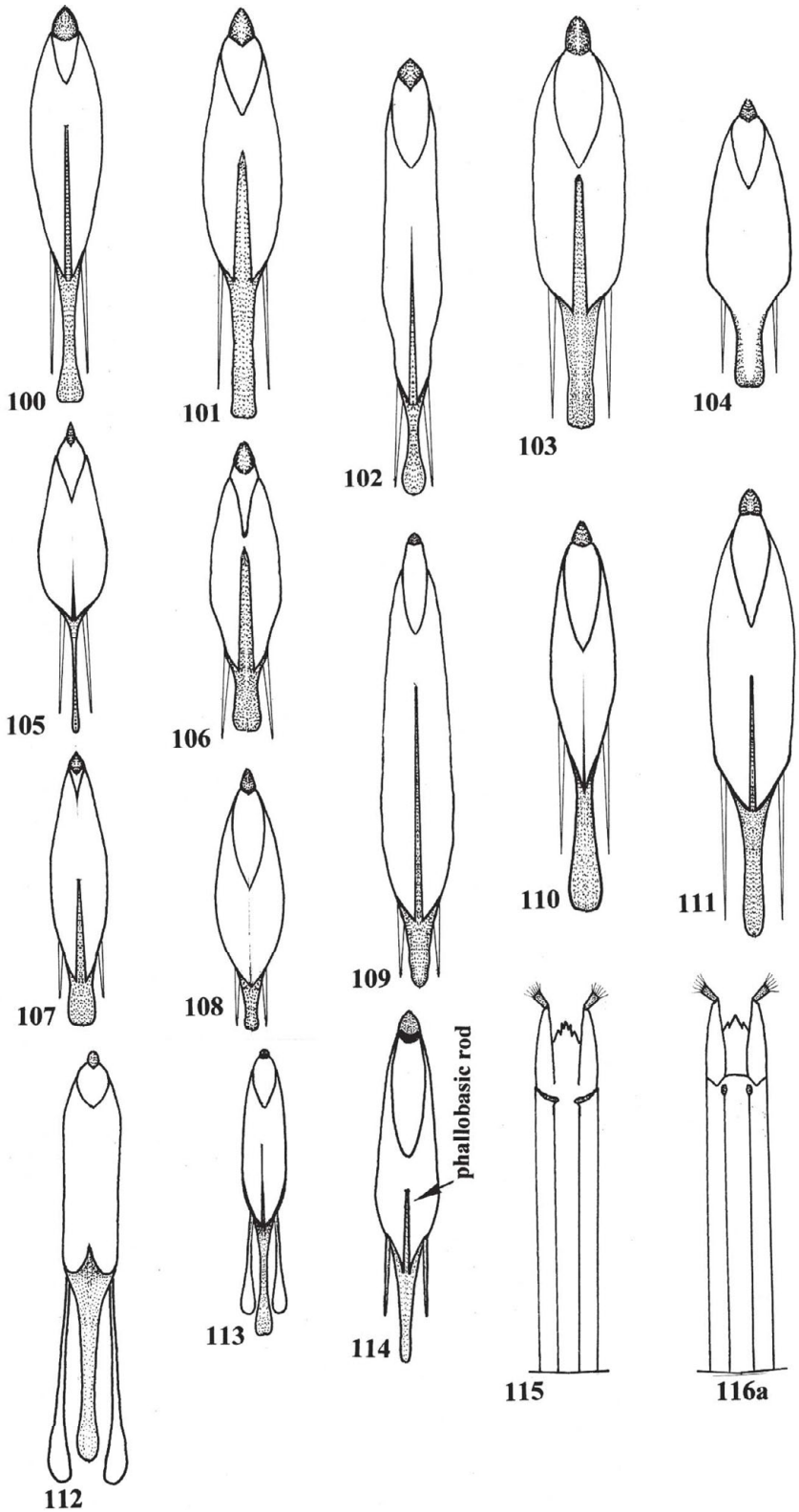
Amboakis barinas, new species
Figures 56, 89; Map 2

Holotype: Female. Rio Socopo, Venezuela, Barinas, 500 m, 18-IV-1072, J. & B. Bechyne leg. (IZAV). (Specimen point mounted, antenna and female symbol affixed to paper point; support card; collector label; repository label; IZAV acronymic label; holotype label; plastic vial with abdomen.)

Paratypes: None.

Diagnosis: These clerids may be distinguished from superficially similar specimens of *A. nova* and *A. anapsis* by the uniformly dark brown color of the pronotum. Also from *A. nova* specimens, these beetles may be distinguished by having the pronotal disc more finely punctate.

Description: *Size*: Length 3.1 mm; width 1.0 mm. *Integument*: Cranium mostly yellow, narrowly dark brown behind eyes; pronotum dark brown; elytra brown; femur yellow; tibiae and tarsi brown. *Head*: Slightly wider than width of pronotum (46:44); vertex narrower than eye (12:16); funicular antennomeres very expanded (Fig. 89). *Thorax*: Pronotum (Fig. 56), transverse (44:38), side margin more convex than tuberculate, punctations very small and sparsely distributed, discal trichobothrium set in deep transverse depression; elytra 2.6x longer than wide, form long narrow-oblong, elytra 4.6x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, posterior third of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 6 spines. *Abdomen*: Aedeagal information not available.



Figures 100-116a. Aedeagi and ovipositors. **100-114.** Aedeagi. **100)** *Amboakis selva*. **101)** *A. charis*. **102)** *A. katatonis*. **103)** *A. atra*. **104)** *Parvochaetus linearis*. **105)** *A. taruma*. **106)** *A. mica*. **107)** *A. incondita*. **108)** *A. flavicollis*. **109)** *A. erythrohapsis*. **110)** *A. rudis*. **111)** *A. micula*. **112)** *P. sandaracus*. **113)** *P. albicornis*. **114)** *P. froeschneri*. **115-116a.** Ovipositors of *Parvochaetus sandaracus* (**115,** ventral view; **116a,** dorsal view).

Variation: One specimen examined.

Natural history: The only available specimen was collected during May, at 500 m.

Distribution (Map 2): Known only from the type locality.

Etymology: The specific epithet *barinas* is a noun in apposition. I refer to the type locality, a fondly remembered Venezuelan city in which I resided during childhood.

Amboakis funebris, new species
Figures 54, 91; Map 2

Holotype: Female. Brazil: Amazonas: AM 010 km. 26, Reserva Ducke, IX-9- 1978, armadilla de Malaise (MZSP). (Specimen point-mounted, antenna and female symbol affixed to paper point; locality label; collecting technique label; MZSP acronymic label; holotype label; plastic vial with abdomen and ovipositor.)

Paratypes: None.

Diagnosis: From superficially similar specimens of *A. barinas*, *A. nova*, and *A. nitida* these beetles may be distinguished by the considerably less expansion of the funicular antennomeres (compare figures 40, 84, 89, and 91).

Description: *Size*: Length 4.0 mm; width 1.0 mm. *Integument*: Cranium yellow; pronotum dark brown; elytra dark brown, with pale spots on humeral margin; femora yellow, profemur faintly infuscated distally; tibiae and tarsi brown. *Head*: Wider than width of pronotum (59:56), vertex much narrower than eye (13:20); funicular antennomeres slightly expanded (Fig. 91). *Thorax*: Pronotum (Fig. 54), transverse (60:50), side margins more rounded than tuberculate, punctations very small and sparsely distributed, discal trichobothrium set in deep transverse depression; elytra 2.8x longer than wide, form long narrow-oblong, elytra 4.5x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, posterior half of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 7 spines.

Variation: One specimen examined.

Natural history: The holotype, the only available specimen, was collected in September, in a Malaise trap.

Distribution: (Map 2): Known only from the type locality.

Etymology: The trivial name *funebris* (= black) is a Latin adjective. I refer to the dark color of the pronotum.

Charis Group

The vertex in these beetles is about as wide as the width of an eye, the pronotal disc is coarsely punctate and dome shaped, and the elytral punctations are seriate and arranged in 10 rows. The elytral disc is profusely vested with pale, decumbent 2 setae. The dark spots on the pronotum are an apotypic characteristic of the group. This group is known from Honduras, Belize, Cuba, and Panama.

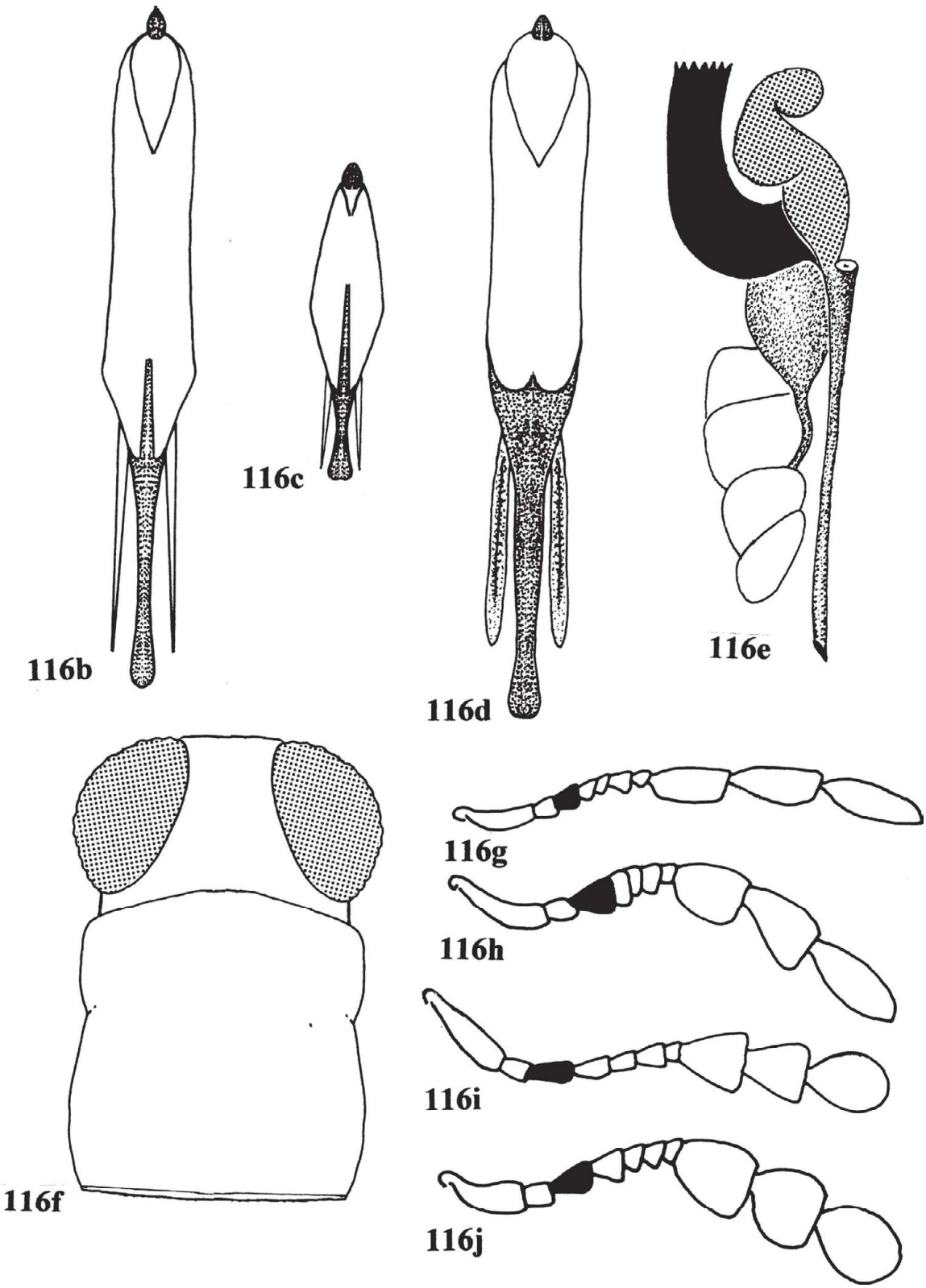
Amboakis binotonis, new species
Figures 59, 97; Map 9

Holotype: Female. Soledad, Cuba, Cienfuegos, June 1929, Darlington (MCZC). (Specimen point-mounted, antenna and gender label affixed to paper point; support card; locality label; MCZC acronymic label; holotype label; plastic vial with abdomen and ovipositor.)

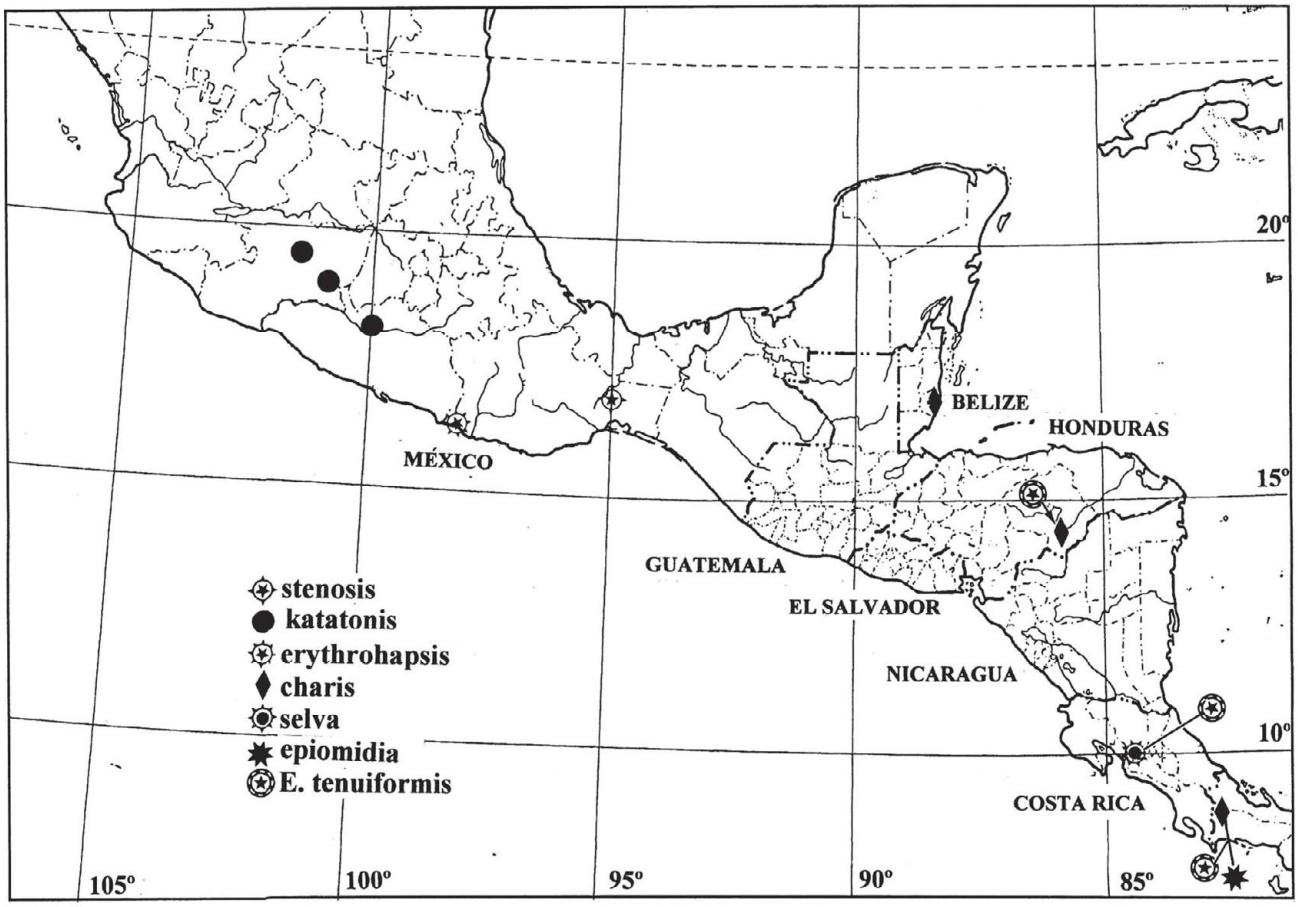
Paratypes: None.

Diagnosis: The two dark spots at the posterior angles of the pronotal disc (Fig 59) is a unique characteristic within *Amboakis*.

Description: *Size*: Length 6.0 mm: width 1.9 mm. *Integument*: Cranium mostly yellow, lower frons black; pronotum mostly yellow, with two large spots near the basal angles; elytra mostly brown, sutural margin yellow, disc with narrow vertical line behind middle; legs brown except metafemur yellow in basal half. *Head*: About as wide as pronotum (75:75); vertex narrower than width of eye (20:25); funicular articles slightly expanded (Fig. 97). *Thorax*: Pronotum (Fig. 59), transverse (75:60), side margins more convex than tuberculate, disc convex almost dome shaped, punctations large rendering disc subrugose, discal trichobothrium set in shallow spheroid depression; elytra 2.4x longer than wide, form oblong short-



Figures 116b-116j. Various structures. **116b-116d.** Aedeagi. **116b)** *Amboakis nova*. **116c)** *A. prolata*. **116d)** *Ellipotoma turmalis*. **116e)** *Parvochaetus albicornus*, male internal reproductive organs. **116f)** *E. turmalis*, forebody. **116g-116j.** Antennae. **116g)** *P. fucolatus*. **116h)** *A. katatonis*. **116i)** *E. tenuiformis*. **116j)** *E. turmalis*.



Map 3. Geographic distribution of *Amboakis* and *Ellipotoma* species as indicated.

subovoid, elytra 4.0x longer than pronotum, punctations large, seriate, deeply impressed, and arranged in 10 rows, punctations wider than width of interstitial spaces, punctation nodule present, posterior half of epipleural margin minutely serrate, disc vested profusely with short decumbent 2° setae; protibial anterior margin with 9 spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined.

Natural history: The holotype was collected from the type locality during June.

Distribution (Map 9): Known only from the type locality.

Etymology: The specific epithet is a Latin compound name derived from *nota* (=mark) and the prefix - *bi* (= two). I refer to the two spots at the base of the pronotum.

Amboakis charis, new species
Figures 27, 60, 81, 101; Map 3

Holotype: Male. Honduras: Olancho, P. N. La Muralla, 1 June 1996, T. Turnbow (FSCA). (Specimen pin-mounted; support card, male symbol affixed to support card; locality label; FSCA acronymic label; holotype label, machine printed.)

Paratypes: Nine specimens. **Honduras**: **Olancho**: La Marulla, 24-V-1995, R. H. Turnbow (WOPC, 1); *idem,* 25-V-1995, R. H. Turnbow (RHTC, 1); *idem*, 30-V-1995, R. H. Turnbow (WOPC, 1); *idem*, 31-V-1995, R. H. Turnbow (RHTC, 2; WOPC, 1). **Belize**: **Orange Walk**: 8 km S Orange Walk, 13-VIII-1977, C. W. O'Brien (WOPC, 1). **Panama**: **Chiriqui**: Hornito, 15-17-V-1993, 1372 m, E. Giesbert (FSCA, 1); Boquete, 27-V-1973, H. P. Stockwell (WOPC, 1)

Diagnosis: The most striking diagnostic feature of these beetles is the four dark spots on an otherwise yellow to yellow-red pronotum (Fig. 60); two spots

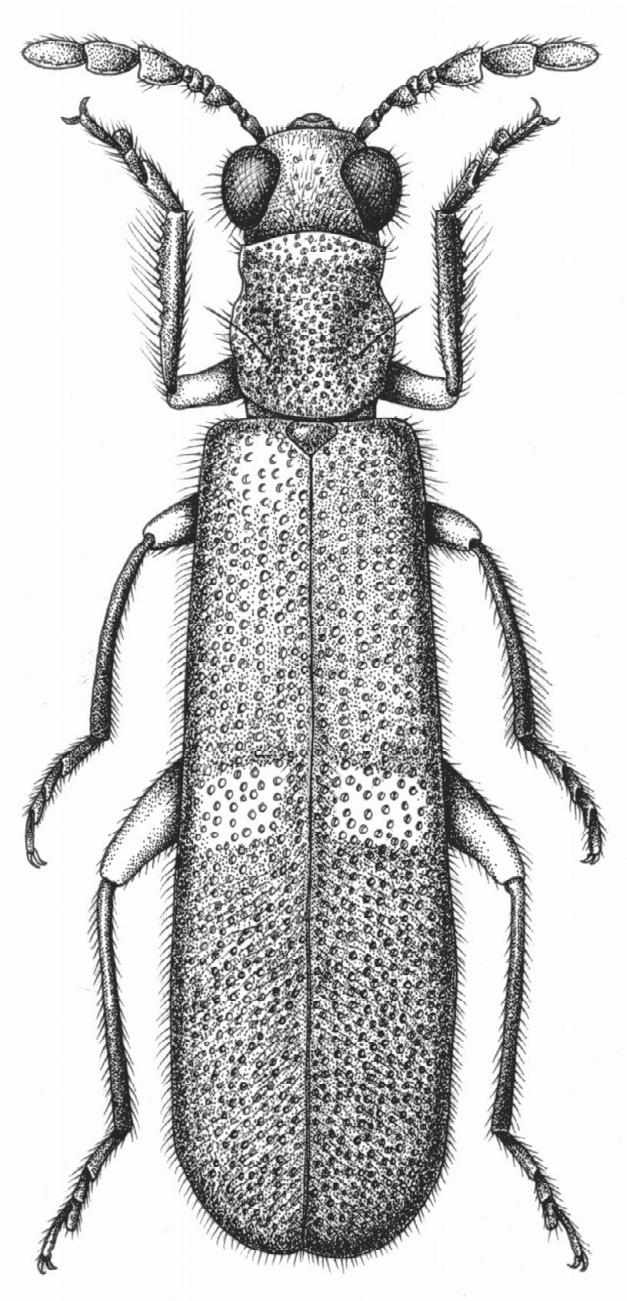


Figure 117. Habitus of *Amboakis nova* (Opitz)

centrally located on the pronotal disc and two at the pronotal lower sides. This characteristic is unique in *Amboakis*.

Description: *Size*: Length 5.6-6.2 mm; width 1.8-2.0 mm. *Integument*: Cranium yellow to yellow-red; pronotum mostly yellow to yellow-red, with four dark oval makings, two at the sides and two paralaterally at the center of the disc; elytra reddish, with 3 streaks of gold-yellow setae coalescing with aggregate of gold-yellow setae at elytral apex, setal streaks located at the elytral sides, disc, and along sutural margin and are best viewed when forebody is tilted upward; legs bicolorous, femur mostly yellow, profemur and mesofemur mostly yellow but with dorsal margin brown, metafemur entirely yellow, tibiae brown. *Head*: Wider than pronotum (96:91); vertex as wide as eye (30:30); funicular antennomeres slightly expanded (Fig. 81). *Thorax*: Pronotum transverse (Fig. 60) (91:78), lateral tubercle present, disc convex, almost dome shaped, punctations large, rendering disc subrugose, discal trichobothrium set in shallow spheroid depression; elytra 3.0x longer than wide, form long oblong-subovoid, elytra 4.5x longer than pronotum, punctations large, seriate, deeply impressed, and arranged in 10 rows, punctations wider than interstitial spaces, punctation nodule present, disc vested profusely with short decumbent pale setae and three streaks of linearly matted setae that coalesce with setae at elytral apex; anterior margin of protibia with 9 spines. *Abdomen*: Aedeagus as in figure 101.

Variation: The lighter regions of the integument tend towards yellow rather than red in the more southerly distributed specimens. Also, the number of spines on the anterior margin of the protibia varies from 7 to 9.

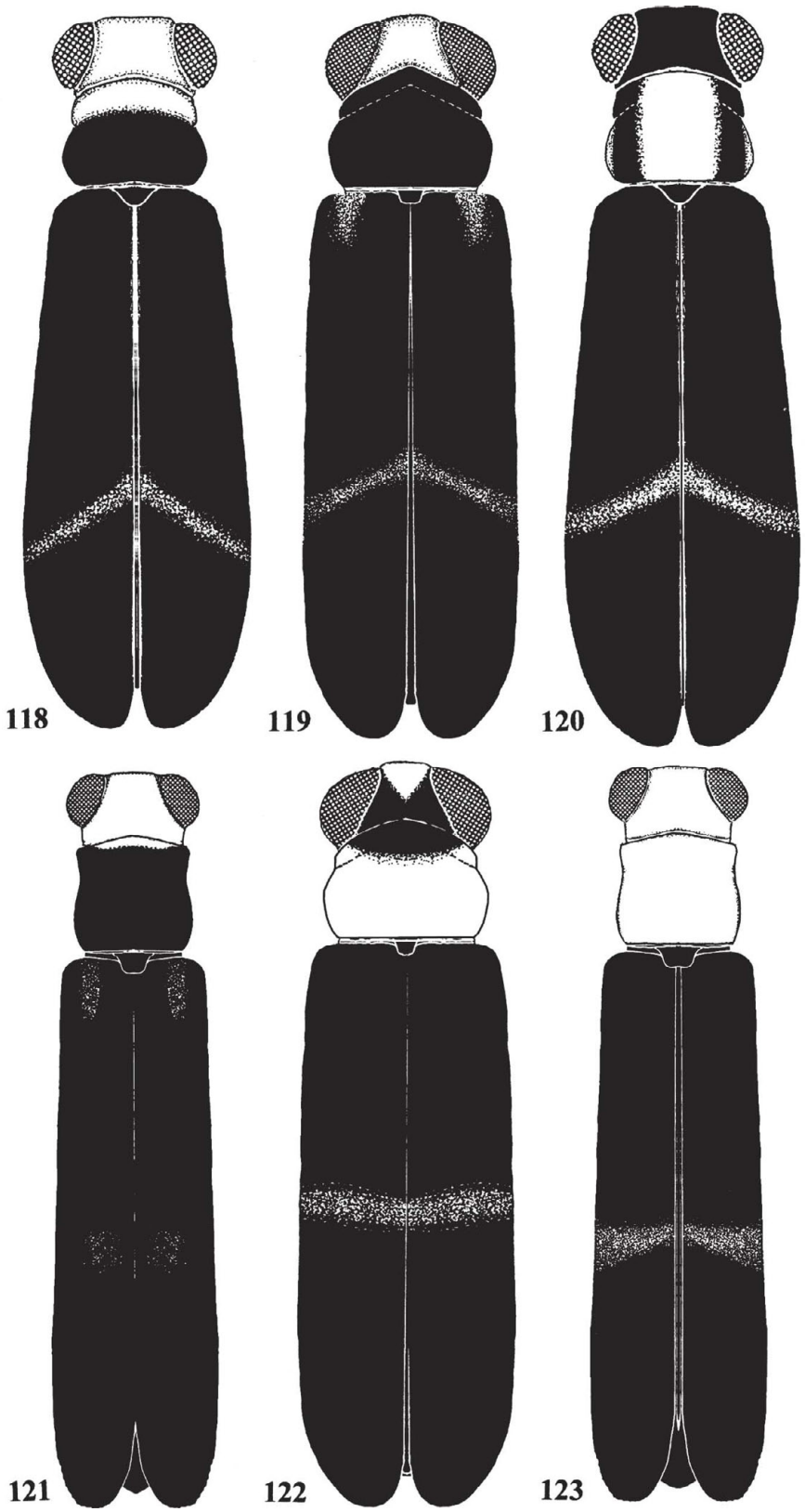
Natural history: Robert H. Turnbow collected the type series during May, and C. W. O'Brien obtained one from Belize during August. Ed Giesbert captured one specimen from Panama at 1372 m.

Distribution (Map 3): This species seems comprised of two disjunct populations, one from the more northern latitudes of Honduras and Belize, the other from eastern Panama.

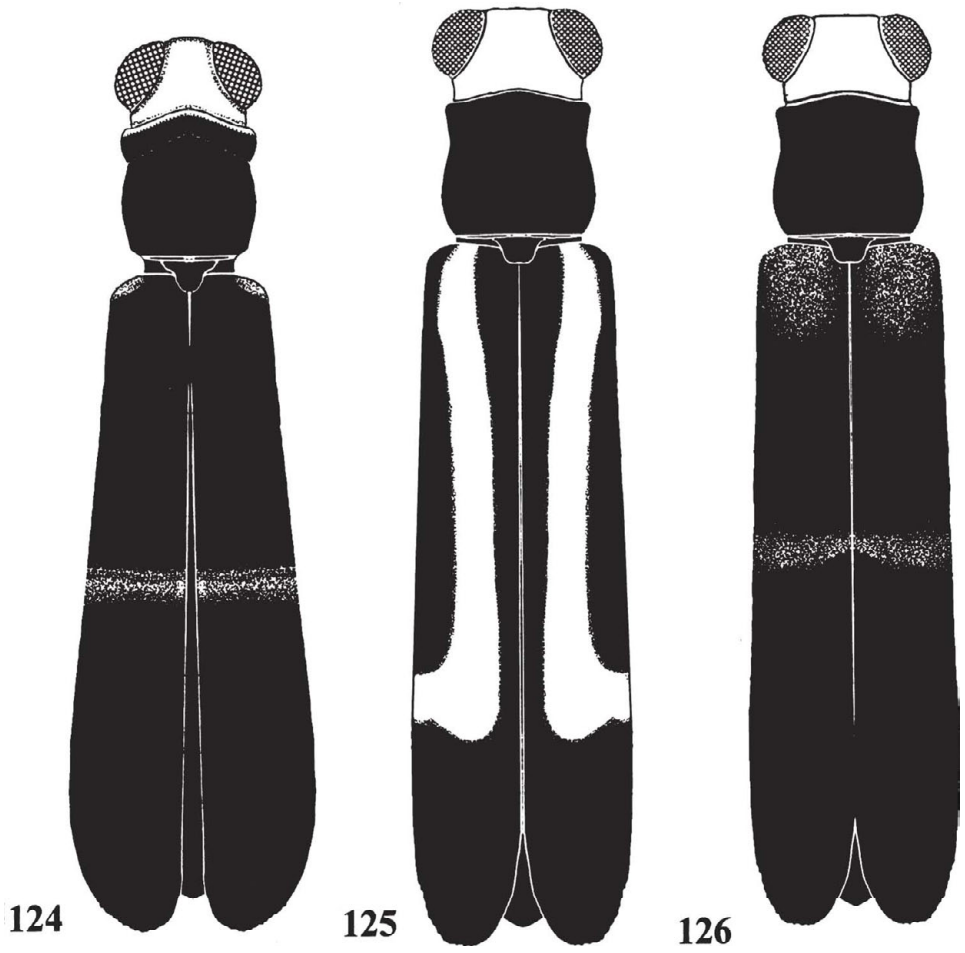
Etymology: The trivial name *charis* (= loveliness) is a Greek adjectival. With the use of this specific epithet I describe my first impression of this ornately patterned beetle.

Erythrohapsis Group

This monotypic group exhibits some of the more primitive characteristics of the genus. The body form is short narrow-oblong, the vertex is wider than an eye, funicular antennomeres are minimally expanded, pronotal disc is coarsely punctate, discal trichobothria are not set in a deep depression, and elytral punctations are large, seriate, and arranged in 10 rows. The absence of the anterior transverse depres-



Figures 118-123. Habiti. **118)** *Amboakis prolata*. **119)** *A. capitata*. **120)** *A. atra*. **121)** *A. selva*. **122)** *A. nitida*. **123)** *A. anapsis*.



Figures 124-126. Habiti. **124)** *A. stenosis*. **125)** *A. cauca*. **126)** *A. epiomidia*

sion on the pronotal disc is a derived feature of this group. The species group is known only from southwestern Mexico.

Amboakis erythrohapsis, new species
Figures 65, 99, 109; Map 3

Holotype: Male. Mexico: Guerrero: hwy. 134, 6.9 km, NE jct 200, 14 July 1985, R. Turnbow (FSCA). (Specimen point-mounted, antenna affixed to paper point; support card; male symbol and metathoracic wing affixed to card; support card; locality label; FSCA acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: None.

Diagnosis: The following combination of characteristics will distinguish the members of this species from congeners: Anterocentral region of pronotum red, funicular antennomeres slightly expanded, and elytral punctations large and seriate throughout elytral disc.

Description: *Size*: Length 5.0 mm: width 1.8 mm. *Integument*: Cranium red; pronotum mostly brown, pronotal red mark extends posteriorly considerably beyond normal width of pronotal arch; elytra mostly brown, with a faintly visible oblique fascia behind middle; legs dark brown. *Head*: Slightly wider than pronotum (65:62); vertex wider than eye (23:21); funicular antennomeres slightly expanded (Fig. 99). *Thorax*: Pronotum (Fig. 65), transverse (62:53), side margins more convex than tuberculate, disc convex, almost dome shaped, punctations large rendering disc subrugose, discal trichobothrium set in shallow spheroid depression: elytra, form short narrow-oblong, ratio of length to width 2.3x, ratio of elytral length to pronotal length 4.3x, punctations, large, deeply impressed, seriate, arranged into 10 rows, punctations wider than width of interstitial spaces, posterior half of epipleural margin minutely serrate; protibial ante-

rior margin with 7 spines. *Abdomen*: Aedeagus as in figure 109.

Variation: One specimen examined.

Natural history: The holotype was collected during July.

Distribution (Map 3): Known only from the type locality.

Etymology: The trivial name *erythrohapsis* is a Greek compound derived from *erythros* (= red) and *hapsis* (= arch). I refer to the red coloration of the pronotal arch.

Katatonis Group

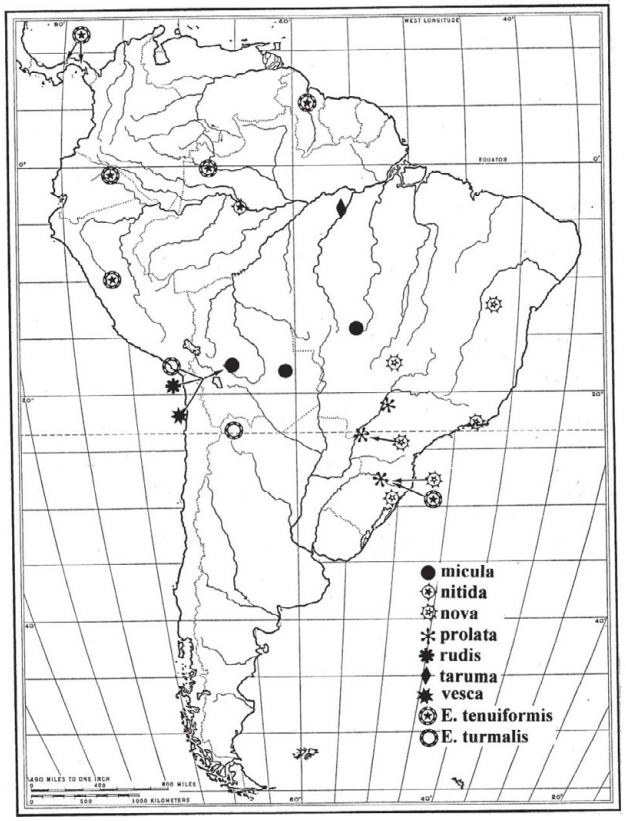
In this monotypic group the head is as wide as the pronotum, the pronotum is coarsely punctate, the sides of the pronotum are devoid of a lateral tubercle, and the elytral punctations are large and serially arranged. The serial arrangement of the elytral punctations and the mat of yellow gold setae on the lateral aspects of the pronotal disc are derived characteristics of the group. Geographically, the group is known only from west central Mxico.

***Amboakis katatonis*,** new species
Figures 62, 83, 102, 116h; Map 3

Holotype: Female. Ex WPA, Baited Lindgreen Trap B1, Near epidemic Dend. Mexicanus Infestation, Uruapan, 23 Jul 86, coll. E. Campos, D. Cibrian (FSCA). (Specimen point mounted, antenna and female symbol affixed to paper point; support card; locality label; FSCA acronymic label; holotype label; plastic vial with abdomen.)

Paratypes: Three specimens. **Mexico**: **Jalisco**: Estación Biologia Chamela, 4-VII-1995, collected with tropical net, R. L. Wescott (WFBC, 1); *idem*, 5 km SE Chamela, 13-14-VII-1981, J. D. Pinto (UCRC, 1): **Michoacán**: Uruapán, 23-VII-1986, from baited Lindgreen Trap near epidemic of *D. mexicanus*, R. Campos & D. Cibrian (WOPC, 1).

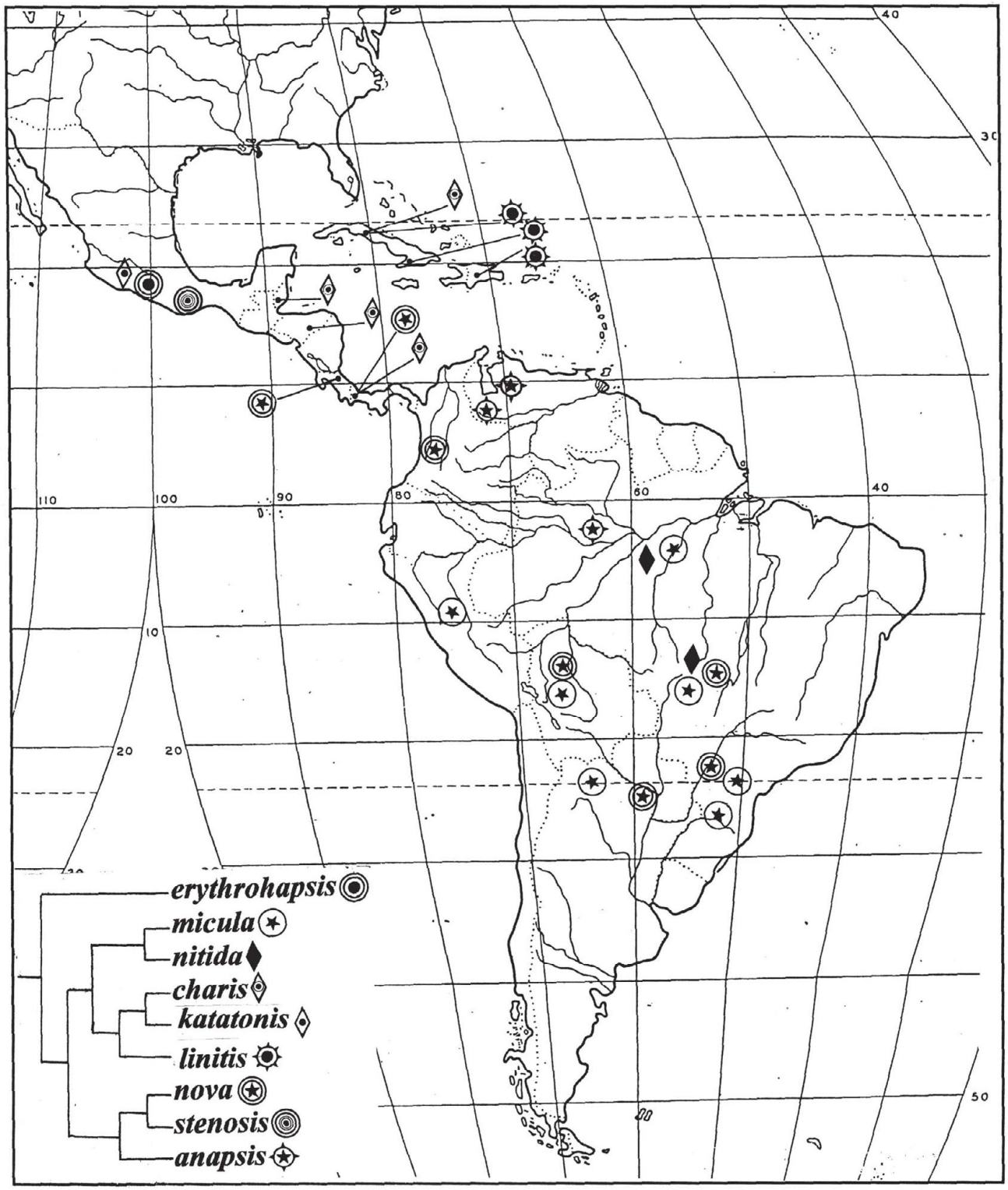
Diagnosis: Within *Amboakis*, only in specimens of this species is the pronotal anterior margin about as wide as the width of the head. The lateral aspects of the pronotum are densely vested with yellow-gold setae.



Map 4. Geographic distribution of *Amboakis* and *Ellipotoma* species as indicated.

Description: *Size*: Length 5.0-6.0 mm; width 1.8-2.0 mm. *Integument*: Cranium mostly yellow, frons infuscated; pronotum with broad discal dark brown line, yellow at sides; prosternum infuscated; elytra dark brown; legs dark brown. *Head*: As wide as width of pronotum (79:79); vertex wider than width of eye (27:20); funicular antennomeres very explanate (Figs. 83, 115h). *Thorax*: Pronotum (Fig. 62), transverse (80:66), side margins more rounded than tuberculate, disc convex nearly dome shaped, punctations large rendering disc subrugose, discal trichobothrium set in shallow spheroid depression; elytra 2.5x longer than wide, form short oblong-subovoid, elytra 4.2x longer than pronotum, punctations large, seriate, deeply impressed, and arranged in 11 rows, punctations wider than width of interstitial spaces, punctation nodules present, posterior half of epipleural margin minutely serrate; protibial anterior margin with 6 spines. *Abdomen*: Aedeagus as in figure 102.

Variation: The available specimens did not vary appreciably.



Map 5. Geographic distribution of *Amboakis* species groups.

Natural history: Specimens have been collected during July. Two were captured in a baited Lindgren trap near an outbreak of *Dendroctonus mexicanus* Hopkins.

Distribution (Map 3): Known only from the Mexican transvolcanic highlands of Jalisco and Michoacán.

Etymology: The trivial name *katatonis* (= broader than high) is a Greek adjectival. I refer to the robust forebody of these beetles.

Linitis Group

The members of this group have the head only slightly wider than the pronotum, the pronotum is subrugose punctate, and the elytral punctations are small and serially arranged in most of the disc. The punctations are subseriate near the sutural margin. The interstitial spaces of the elytral disc are profusely vested with pale, decumbent 2º setae. The concolorous yellow forebody of these beetles is an apotypic feature of the group, which is distributed in the West Indies, Cuba, and the Dominican Republic.

Amboakis flavicollis (Zayas)
Figures 66, 93, 108; Map 9

Phlogistosternus flavicollis Zayas 1988: 61. New combination. The type series consists of two Cuban specimens that are not available for study; one is from Cabo Cruz, province of Oriente, and the other from Trinidad, province of Las Villas. One specimen is pending lectotype designation. When one reads Zayas's original description, which includes a habitus illustration, there remains no doubt that the specimens before me belong to this species.

Paralectotypes: One specimen that is pending paralectotype designation.

Diagnosis: The dark dorsal margin of the legs distinguishes specimens of this species from those of *A. linitis* in which the legs are uniformly dark brown.

Description: *Size*: Length 3.0-3.5 mm: width .80-1.0 mm. *Integument*: Cranium yellow; pronotum yellow; elytra brown; legs mostly yellow, dorsal margin brown. *Head*: Wider than width of pronotum (54:51); vertex as wide as eye (19:19); funicular antennomeres slightly expanded (Fig. 93). *Thorax*: Pronotum (Fig. 66), transverse (51:42), lateral tubercle present, disc convex almost dome shaped, punctations large rendering disc subrugose, discal trichobothrium set in shallow spheroid depression; elytra 2.3x longer than wide, form short oblong-subovoid, elytra 4.1x longer than pronotum, punctations, large, seriate, arranged in 10 rows, punctations wider than width of interstitial spaces, deeply impressed, seriate in most of disc, scattered near sutural margin, posterior curvature of epipleural margin minutely serrate, disc vested profusely with pale, short decumbent 2º setae; protibial anterior margin with 4 spines. *Abdomen*: Aedeagus as in figure 108.

Variation: The specimens examined did not vary appreciably.

Natural history: The available specimens were collected in May and June.

Distribution (Map 9): I examined 19 specimens from: **Cuba**: **Granma**: Pico Turquino, 26-30-VI-1036, Darlington: **Cienfuegos**: Soledad, day not noted-IV-1936, Darlington; Buenos Aires, Trinidad Mountains, day not noted-VI-1939, Parsons. Specimens are deposited in MCZC and WOPC.

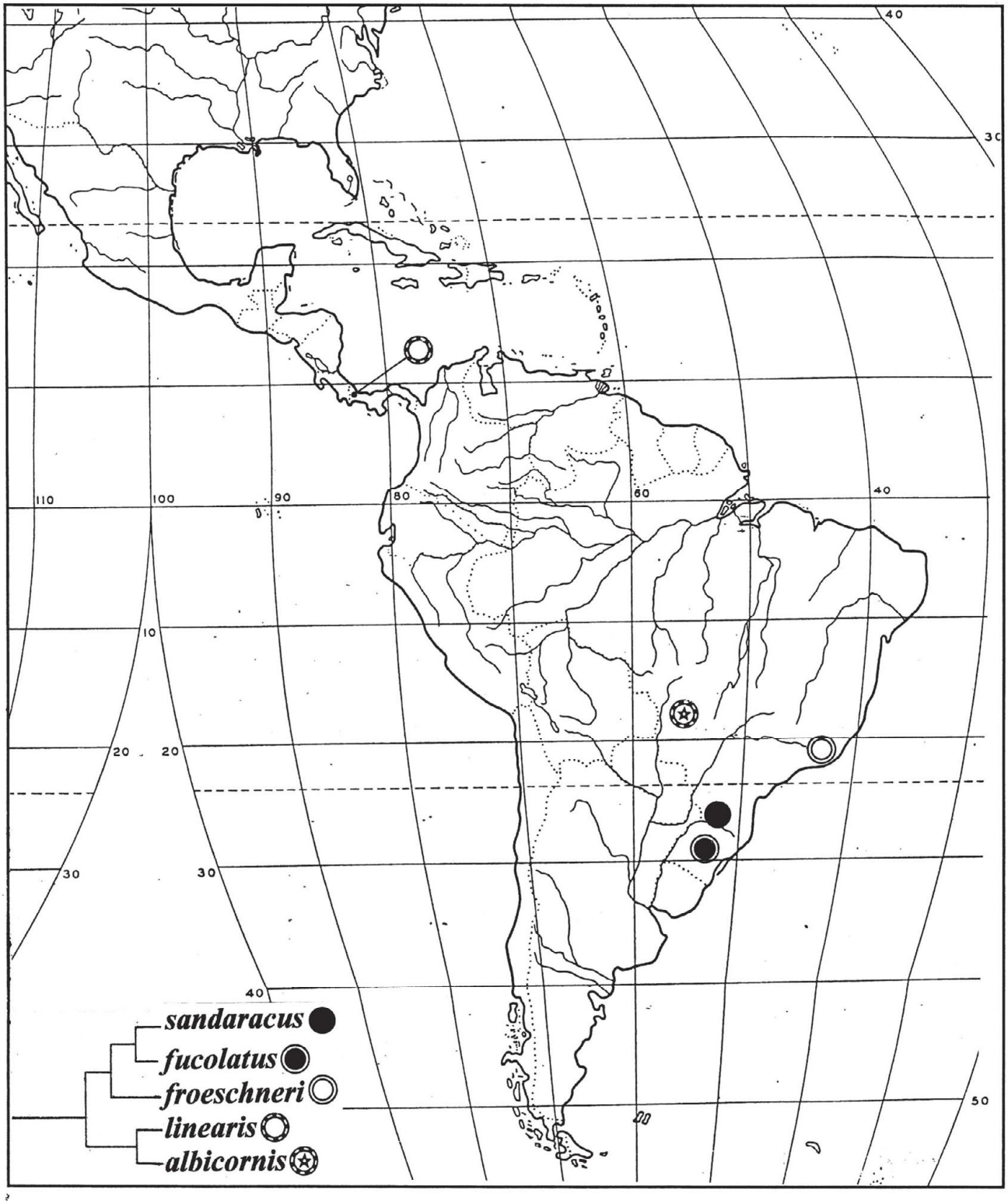
Amboakis linitis, new species
Figures 63, 96; Map 10

Holotype: Female. Mt. Diego de Ocampo, Dom. Rep., 3-4,000 ft., July'38, Darlington (MCZC). (Specimen point-mounted, antenna and female symbol affixed to paper point; support card; locality label; MCZC acronymic label; holotype label; plastic vial with abdomen and ovipositor)

Paratypes: None.

Diagnosis: Within the *linitis* group, only this species has the legs uniformly dark-brown.

Description: *Size*: Length 4.2 mm: width 1.3 mm. *Integument*: Cranium red; pronotum red; elytra mostly brown, with a bluish tinge, and a faintly visible pale line behind middle; legs brown. *Head*: Slightly wider than pronotum (62:60); vertex slightly broader than eye (22:20); funicular antennomeres slightly expanded (Fig. 96). *Thorax*: Pronotum (63), transverse (60:52), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in shallow spheroid depression; elytra 2.2x longer than wide, form short oblong-subovoid, elytra 3.8x longer than pronotum, punctations small, seriate in most of disc, diffuse near sutural margin, posterior curvature of epipleural margin minutely serrate, punctations not wider than width of interstitial spaces, shallowly impressed, disc vested profusely with pale, short, and decumbent 2 setae; protibial anterior margin with 3



Map 6. Geographic distribution of *Parvochaetus* species.

spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined.

Natural history: The specimen examined was collected during July at an altitude of 915 to 1220 m.

Distribution (Map 10): Known only from the type locality.

Etymology: The specific epithet *linitis* is a Latin adjectival that stems from *lino* (= spread over). I refer to the profusely distributed punctations over the elytral disc.

Micula Group

The short oblong-subovoid body form (Fig. 30) characterizes these beetles as do the presence of the anterior transverse depression on the pronotal disc, boldly convex eyes, and arrangement of the elytral punctations in 10 distinct rows. The undulated surface of the pronotal disc is a derived characteristic of this group. There are 6 species in this group with a combined geographic range that extends from Bolivia, thru Brazil, and southward to Argentina.

Amboakis atra, new species
Figures 58, 86, 103, 120; Map 2

Holotype: Male: Arg., Salta, Campo Quijano, 14.VIII 93, Di Iorio O.leg, emergido 20.XI.93, liana seca, *Serjania foveata* (IMLA). (Specimen point-mounted; antenna and male symbol affixed to paper point; locality label; natural history label; IMLA acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: One specimen. **Argentina**: **Salta**: Campo Quijano, 24-VIII-1991, Di Iorio O. (WOPC, 1).

Diagnosis: The diagonal pale fascia on the posterior third of the elytral disc (Fig. 120) will readily distinguish these beetles from other members of the *micula* group. Also, this is the only *Amboakis* species known from Argentina.

Description: *Size*: Length 4.0-4.1 mm; width 1.1-1.3 mm. *Integument*: Cranium reddish yellow, frons with brown spot near antennal carina; pronotum broadly black at middle, reddish yellow on upper sides and black at lower sides, elytra brown, with faint oblique yellow fascia at posterior third; legs mostly dark brown but becoming progressively more yellow from proleg to metaleg. *Head*: Wider than pronotum (70:61); vertex wider than eye (24:21); funicular antennomeres very expanded (Fig. 86). *Thorax*: Pronotum (Fig. 58), transverse (61:48), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse depression; elytra 2.4x longer than wide, form short oblong-subovoid, elytra 4.8x longer than pronotum, punctations large, wider than interstitial spa aces, deeply impressed, seriate, and arranged in 10 rows, posterior curvature of epipleural margin minutely serrate; protibial anterior margin with 1 large spine. *Abdomen*: Aedeagus as in figure 103.

Variation: The paratype has a few misaligned punctations near the sutural margin.

Natural history: The two available specimens emerged from dry lianas of *Serjania foveata*.

Distribution (Map. 4): This species is known only from northern Argentina.

Etymology: The trivial name *atra* (= black) is a Latin adjectival. I refer to the predominantly dark color of these beetles.

Amboakis incondita, new species
Figures 49, 98, 107; Map 2

Holotype: Male. Bolivia: Cochabamba, Germain (MNHN). (Specimen point- mounted, antenna and male symbol affixed to paper point; support card; locality label; MNHN acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: None.

Diagnosis: Within the *micula* group, these specimens superficially resemble the members of *A. mica* and *A. taruma*. Specimens of *taruma* may be eliminated from the comparison because their vertex is yellow. In specimens of the other two aforementioned species the cranium is entirely black. In *A. mica* specimens the funicular antennomeres are less expanded, elytral punctations are larger, and the pronotum is more transverse. The shape of the phallobasic apodeme will decisively distinguish these two species (compare figures 106, 107).

Description: *Size*: Length 3.8 mm; width 1.1 mm. *Integument*: Cranium; pronotum brown; elytra reddish brown; legs brown. *Head*: Wider than width of pronotum (53:41); vertex narrower than eye (15:20); funicular articles slightly expanded (Fig. 98). *Thorax*:

Pronotum (Fig. 49), transverse (45:38), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium deep transverse depression; elytra 2.4x longer than wide, form short oblong subovoid, elytra 4.5x longer than pronotum, punctations, large, wider than width of interstitial spaces, deeply impressed, seriate, and arranged in 10 rows, posterior half of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 4 spines. *Abdomen*: Aedeagus as in figure 107.

Variation: One specimen examined.

Natural history: No information available

Distribution (Map 2): Known only from the type locality.

Etymology: The specific epithet is a Latin adjectival stemming from *inconditus* (= rough). I refer to the rough punctations on the pronotal disc.

Amboakis mica, new species
Figures 61, 95, 106; Map 2

Holotype: Female. Jacareacanga, Par, Brasil, IV-1969, F. R. Barbosa (DZUP). (Specimen point-mounted, antenna and female symbol affixed to paper point; support card; locality label; collection ownership label; DZUP acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratype: One specimen from the same locality as the holotype (WOPC, 1).

Diagnosis: Within the *micula* group, these beetles are distinguishable by the uniformly dark brown head, thorax, and elytra, except in the case of *A. incondita* specimens where the pronotum is less transverse (compare figures 49, 61), the elytral punctations larger, and the funicular antennomeres more expanded (compare figures 95, 98).

Description: *Size*: Length 2.5-3.5 mm; width 0.80-1.2 mm. *Integument*: Cranium, pronotum, elytron dark brown; legs light yellow brown. *Head*: Wider than pronotum (55:50); vertex narrower than eye (17:20); funicular antennomeres slightly expanded (Fig. 95). *Thorax*: Pronotum (Fig. 61) transverse (50:40), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse depression; elytra 2.2x longer than wide, elytra 4.3x longer than pronotum, punctations large, wider than width of interstitial spaces, deeply impressed, seriate, and arranged in 10 rows, posterior half of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 2 spines. *Abdomen*: Aedeagus as in figure 106.

Variation: The available specimens do not vary appreciably.

Natural history: Specimens were collected in April.

Distribution (Map 2). These beetles are known only from the type locality.

Etymology: The trivial name *mica* (= morsel) is a Latin adjectival. I refer to the diminutive size of these beetles.

Amboakis micula, new species
Figures 30, 43b, 64, 90, 111; Map 4

Holotype: Female. Brazil: Mato Grosso: Diamantino, Facenda Rio Arinos, VIII-1983, Eurides Furtado (AMNH). (Specimen point-mounted, female symbol affixed to paper point; support card; locality label; AMNH acronymic label; holotype label.)

Paratypes: Sixteen specimens. **Peru**: **Huanuco**: Bella Durmiente, near Tingo Maria, C. W. & L. O'Brien (WOPC, 1). **Bolivia**: **Santa Cruz**: Buena Vista, vicinity Flora & Fauna Hotel, 22-26-X-2002, Morris & Wappes (JEWC, 1); 4-6 km SSE Buena Vista, F & F Hotel, 16-31-III-2003, R. Clarke (FSCA, 1): 4-6 km SSE Buena Vista, Flora & Fauna Hotel, 1-12-V-2004, J, E. Wappes (JEWC, 3; WOPC, 2): **Cochabamba**: Villa Tunari, 15-VII-2001, 16°54'S 65°22'W, Malaise trap, H. Heider (FSCA, 1); Cochabamba, collection date not noted, P. Germain (MNHN, 2; WOPC, 2). **Brazil**: **Mato Grosso**: Diamantino, Fazenda Rio Arinos, VIII-1983, Eurides Furtado (CMNH, 1; WOPC, 1); specific locality or date of collection not noted, 1886, P. Germain (MNHN, 1).

Diagnosis: Within the *micula* group, only *A. micula* and *A. prolata* have the entire length of the anterior pronotal margin yellow. *Amboakis micula* specimens may be distinguished from *A. prolata* specimens by having a shorter last antennomere (compare figures 85, 90).

Description: *Size*: Length 3.5-4.0 mm; width 1.0-1.2 mm. *Integument*: Cranium predominantly light yellow brown, dark brown near ocular notch; pronotum broadly black at disk, yellowish along upper sides, then brown on lower sides; elytra brown; legs bicolorous, yellow and brown, profemur brown in basal portion of anterior fascies and along dorsal margin, mesofemur brown along dorsal margin, metafemur yellow, tibiae progressively more yellow from protibia to metatibia. *Head*: Wider than pronotum (64:58); vertex narrower than eye (20:26); funicular antennomeres very expanded (Fig. 90). *Thorax*: Pronotum (Fig. 64) transverse (58:45), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse; elytra, form short oblong-subovoid; elytra 2.2x longer than wide, elytra 4.4x longer than pronotum, punctations large, wider than width of interstitial spaces, deeply impressed, and arranged in 10 rows, posterior half of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 3 spines. *Abdomen*: Aedeagus as in figure 111. *Male Internal Reproductive Organs* (Fig. 43b); Two pairs of accessory glands, lateral pair twice length of medial pair.

Variation: The intensity of the dark coloration of the lower sides of the pronotum varies as does the degree of darkness of the legs.

Natural history: Specimens were collected from Pará during July, Bolivia during March and July, and from Brazil during July.

Distribution (Map 2): Known from highlands of Brazil and south central Brazil.

Etymology: The specific epithet *micula* stems from the Latin *mica* (= bit). I refer to the small size of these beetles.

Amboakis prolata, new species
Figures 68, 85, 116c, 118; Map 4

Holotype: Male. Rondon, Parana, Brazil, 24.38° Lat., 54.07° Long., 24:XI:52, Fritz Plaumann leg.(FMNH). (Specimen point-mounted, male symbol affixed to paper point; support card; locality label; FMNH acronymic label; holotype label.)

Paratypes: One hundred and nineteen specimens. **Brazil**: **Pará** : Rondon, 24° 38' 54° 07', 21-X-1952, F. Plaumann (FMNH, 1); *idem*, 6-XI-1952, F. Plaumann (FMNH, 1); *idem*, 7-XI-1952, F. Plaumann (FMNH, 1); *idem*, 9-XI-1953, F. Plaumann (FMNH, 1); *idem*, 13-XI-1952, F. Plaumann (FMNH, 1; WOPC, 1): *idem*, 15-XI-1952, F. Plaumann (FMNH, 1; RGCG, 1); *idem*, 16-XI-1952, F. Plaumann (BMNH, 1; CMNC, 1; MZSC, 1; CDAE, 1; WSUC, 1); *idem*, 22-XI (CASC, 1); *idem*, 24-XI-1952, F. Plaumann (CMNC, 1; FSCA, 1); *idem*, 25-XI-1952, F. Plaumann (IZAV, 1; JNRC, 1); *idem*, 29-XI-1952, F. Plaumann (LACM, 1; MCZC, 1; MNHN, 1); *idem*, 30-XI-1952, F. Plaumann (SEMC, 1; TAMU, 1; USNM, 1); *idem*, 1-XII-1952, F. Plaumann (ZMAN, 1; ZMHB, 1); 2-XII-1952, F. Plaumann (FMNH, 2); *idem*, 3-XII-1952, F. Plaumann (FMNH, 2); *idem*, 4-XII-1952, F. Plaumann (FMNH, 2; AMNH, 1); *idem*, 6-XII-1952, F. Plaumann (FMNH, 1); *idem*, 7-XII-1053, F. Plaumann (FMNH, 7; WOPC, 1); *idem*,10-XII-1952, F. Plaumann (AMNH, 1); i*dem*, 11-XII-1952, F. Plaumann (FMNH, 1); *idem*, 12-XII-1952, F. Plaumann (FMNH); *idem*, 15-XII-1952, F. Plaumann (FMNH, 1); *idem*, 16-XII-1952, F. Plaumann (FMNH, 1; AMNH, 1); *idem*, 17-XII-1952, F. Plaumann (FMNH, 1); *idem*, 19-XII-1952, F. Plaumann (FMNH, 3); *idem*, 22-XII-1952, F. Plaumann (FMNH, 4; AMNH, 1); *idem*, 25-XII-1952, F. Plaumann (FMNH, 3); *idem*, 29-XII-1952, F. Plaumann (FMNH, 1); *idem*, 1-I-1953, F. Plaumann (UCDC, 1); *idem*, 3-I-1953, F. Plaumann (FMNH, 1); *idem*, 5-I-1953, F. Plaumann (FMNH, 1); *idem*, 8-I-1953, F. Plaumann (CNCI, 1); *idem*, 11-I-1953, F. Plaumann (CNCI, 1); *idem*, 18-I-1953, F. Plaumann (FMNH, 1; WOPC, 1): **Mato Grosso**: Rio Caraguata, 21° 48' 52° 27' 400 m, 26-III-1953, Fritz Plaumann (RGCG, 1); *idem*, day not noted-XII-1953, collector not noted (FMNH, 1); *idem*, day not noted-IV-1953, F. Plaumann (DEIC, 1; EMEL. FMNH, 1; INSB, 1; FMNH, 1; MLDA, 1; OSUC, 1; PMNH, 1, AMNH, 1); *idem*, 13-IV-1953, F. Plaumann (FMNH; 1; AMNH, 1); *idem*, 4-IV-1953, F. Plaumann (FMNH, 1); *idem*, 16-IV-1953, F. Plaumann (FMNH, 1); *idem*, 20-IV-1953, F. Plaumann (FMNH, 1); *idem*, day not noted-V-1953, F. Plaumann (FMNH, 1); *idem*, 22-X-1953, F. Plaumann (FMNH, 3); *idem*, 30-X-1953, F. Plaumann (WOPC, 1); *idem*, 2-XI-1953, F. Plaumann (FMNH, 1); *idem*, 3-XI-1953, F. Plaumann (WOPC, 1); *idem*, 4-XI-1953, F. Plaumann (FMNH, 2); *idem*, 5-XI-1953, F. Plaumann (AMNH, 1); *idem*, 15-XI-1053, F. Plaumann (FMNH, 3); *idem*, 17-XI-1953, F. Plaumann (FMNH, 1); *idem*, 20-XI-1953, F. Plaumann (AMNH, 1; WOPC, 1); *idem*, day not noted-XII-1953, F. Plaumann (FMNH, 1); *idem*, 2-XII-1953, F. Plaumann (FMNH, 3); *idem*, 4-XII-1953, F. Plaumann (FMNH, 1); *idem*, 7-XII-1953, F. Plaumann

Map 7. Geographic distribution of *Amboakis nova* species groups.

(FMNH, 1; WOPC, 1); *idem*, 10-XII-1953, F. Plaumann (FMNH, 1; AMNH, 1); *idem*, 11-XII-1953, F. Plaumann (FMNH, 1; AMNH, 2); *idem*; 14-I-1954, F. Plaumann (AMNH, 1): **Nova Teutonia**: Santa Catarina, 27° 18' B 52° 23' L, 4-IX-1965, 300 -500 m, Fritz Plaumann (AMNH, 1); *idem*, day not noted-X-1973

(FMNH, 1); *idem*, day not noted-IX-1973, F. Plaumann (WFBC, 5; WOPC, 1).

Diagnosis: The extraordinary length of the tenth antennomere readily identifies these clerids (Fig. 85) within *Amboakis*.

Description: *Size*: Length 2.5-3.5 mm; width .80-1.0 mm. *Integument*: Cranium mostly light brown, ocular notch and gena dark brown; pronotal proper brown, pronotal arch yellow; elytra brown, with faint oblique pale fascia behind middle; legs yellow. *Head*: Wider than width of pronotum (50:47); vertex narrower than eye (11:20); funicular antennomeres slightly expanded (Fig. 85). *Thorax*: Pronotum (Fig. 68), transverse (47:38), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse depression; elytra 2.4x longer than wide, elytra 4.2x longer than pronotum, punctations large, wider than width of interstitial spaces, deeply impressed, seriate, and arranged in 10 rows; posterior third of epipleural margin minutely serrate; protibial anterior margin with 2 spines. *Abdomen*: Aedeagus as in figure 116c.

Variation: The yellow fascia at midelytral disc varies in expression, as does the yellow band on the pronotal arch.

Natural history: Specimens were collected throughout the year from southern Brazil, at 400 m.

Distribution (Map 4): This species seems to be found only in southern Brazil.

Etymology: The trivial name stems from the Latin *prolatus* (= elongate). I refer to the extraordinary length of the last antennomere.

Amboakis taruma, new species
Figures 55, 88; Map 4

Holotype: Male. Brazil: Amazonas: 1 km W Taruma Falls, 28-II-1981, 100 m, Ginter Ekis (MCNZ). (Specimen point-mounted, antenna and male symbol affixed to paper point; support card with affixed metathoracic wing; locality label; MCNZ acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: None.

Diagnosis: Only in specimens of *A. taruma* and of *A. atra* is the cranium bicolorous. However, in *A. taruma* the vertex is considerably narrower and the cranial periphery around the eyes are dark.

Description: *Size*: Length 3.4 mm; width 1.0 mm. *Integument*: Cranium mostly yellow, some infuscation near antennal carina; pronotum brown; elytra brown; legs, femora yellow, tibiae light brown. *Head*: Wider than width of pronotum (55:47); vertex narrower than eye (13:20); funicular articles considerably expanded (Fig. 88). *Thorax*: Pronotum (Fig. 55), transverse (47:35), lateral tubercle present, punctations large rendering disc subrugose at sides, small flat anterocentral region subglabrous, discal trichobothrium set in deep transverse depression; elytra 2.3x longer than wide, form short oblong-subovoid, elytra 4.6x longer than pronotum, wider than width of interstitial spaces, deeply impressed, seriate, and arranged in 10 rows, epipleural margin minutely serrate along posterior curvature; protibial anterior margin with 2 spines. *Abdomen*: Aedeagus as in figure 105.

Variation: One specimen examined.

Natural history: The only available specimen was collected in a lowland tropical rain forest, settled on a felled tree trunk of *Manilkara*, at 100 m, beside the Amazonian tributary Rio Negro.

Distribution (Map 4): Known only from the type locality.

Etymology: The trivial name *taruma* constitutes a noun in apposition. I refer to Taruma Falls, the type locality of this species.

Nitida Group

The members of this bitypic group have a short narrow-oblong body form, legs are uniformly yellow, pronotal punctations are minute and sparsely distributed, and elytral punctations are small and not seriate along the sutural margin. Apotypic characteristics of this group involve the very narrow vertex and the minute size and sparse distribution of the pronotal punctations. The two species that comprise this group are known from the Amazon basin and the highlands of Mato Grosso, in Brazil.

Amboakis capitata (Gorham)
Figures 28, 71, 87, 119; Map 2

Epiphloeus capitatus Gorham 1877: 248. Lectotype female. Here designated. Upper side of locality label-Amazon, Bates; lower side of locality label-Ega (BMNH). New combination. (Specimen point-mounted, female symbol affixed to paper point; round lectotype label; support card; locality label; specimen number label; Fry collection label; round type label; rectangular Gorham type label; identification label; identification-locality label; Opitz identification label.) Gahan 1910: 72 (*Phyllobaenus*). Corporaal 1950: 251).

Paralectotypes: Two specimens. **Brazil**: **Amazonas**: Ega, Bates (BMNH, 2).

Diagnosis: Within the *nitida* group, *A. capitata* may be distinguished from *A. nitida* by the more acute extension of the anterocentral margin of the pronotum (compare figures 47, 71) and by the totally black coloration of the pronotum (compare figures 119, 122).

Description: *Size*: Length 4.2-6.0 mm: width 1.2-1.6 mm. *Integument*: Cranium reddish yellow; pronotum dark brown; elytra mostly, brown with faintly visible pale region near humeral angle and faintly visible diagonal fascia at middle; legs, mostly yellow, anterior fascies of profemur brown, protibia and mesotibia light brown. *Head*: Slightly wider than pronotum (80:78); vertex narrower than width of eye (22:30); funicular articles moderately expanded (Fig. 87). *Thorax*: Pronotum (Fig. 71), transverse (76:60), side margins more convex than tuberculate, punctations very small, sparsely distributed, discal trichobothrium set in deep transverse depression; elytra 2.9x longer than wide, form, short narrow-oblong, elytra 4.3x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, epipleural fold not minutely serrate; protibial anterior margin with 5 spines. *Abdomen*: Aedeagal information not available.

Variation: The available specimens did not vary appreciably.

Natural history: One specimen was collected during October in the central highlands of Mato Grosso, in Brazil.

Distribution (Map 2): In addition to the syntypic series I have examined three specimen from: **Brazil**:

Map 8. Geographic distribution of *Amboakis micula* species groups.

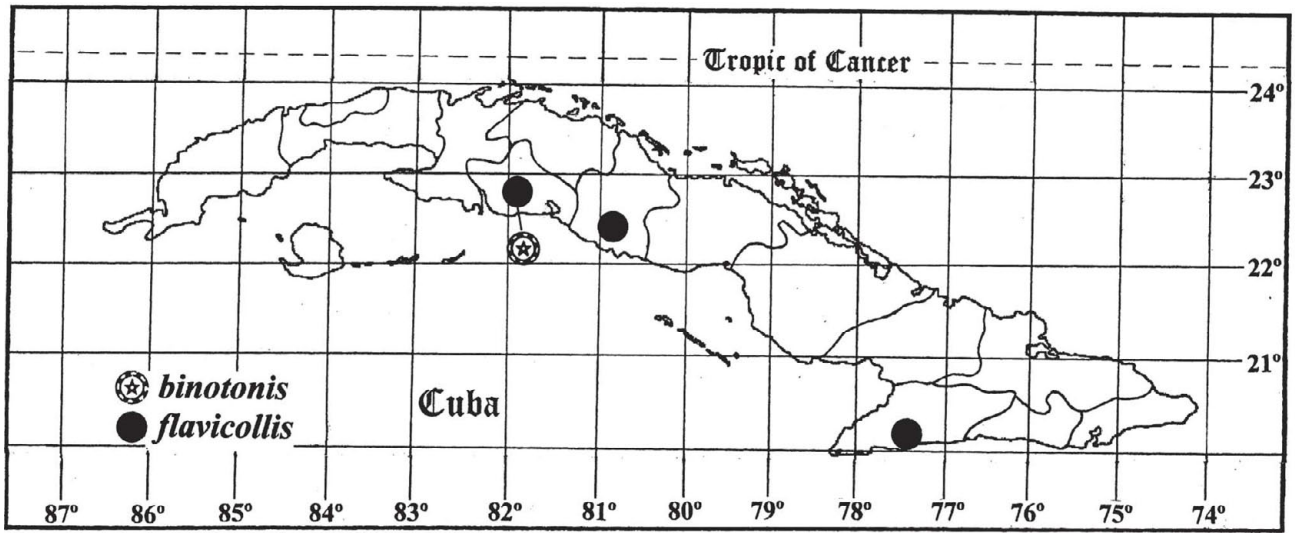
Amazonas: Teff [= Ega], M. de Mathan, day and month of collection not noted,1879: **Mato Grosso**: Sinop, day of collection not noted-X-1975, M. Alvarenga. Specimens are deposited in BMNH, MNHN, and WOPC.

Amboakis nitida (Gorham)
Figures 47, 84, 122; Map 4

Epiphloeus nitidus Gorham 1877: 248. Lectotype female. Here designated. Amazonas, Ega, Bates. (BMNH). (Specimen point-mounted, female symbol affixed to paper point; support card; round type label; round locality label; rectangular type label; Gorham type label; identification label; plastic vial with abdomen; lectotype label.) Gahan 1910: 72, 73 (*Phyllobaenus*). Corporaal 1950: 252 (*Phlogistosternus*).

Paralectotypes: One specimen. **Brazil**: **Amazonas**: Ega (= Tef ?) (BMNH).

Diagnosis: Distinguishable from other members of *Amboakis* by the coloration of the pronotum. Only in



Map 9. Geographic distribution of *Amboakis* species as indicated.

specimens of this species is the pronotal proper yellow and the central portion of the pronotal arch dark brown (Fig. 122).

Description: *Size*: Length 4.3-5.0 mm; width 1.3-1.8 mm. *Integument*: Cranium mostly yellow, epicranium dark brown; pronotum mostly yellow, pronotal arch brown; elytra dark brown, with faintly visible pale transverse line at middle; femur yellow; tibiae and tarsus brown. *Head*: As wide as pronotum (67:67); vertex narrower than eye (15:25); funicular antennomeres very expanded (Fig. 84). *Thorax*: Pronotum (Figure 47), transverse (67:53), tuberculate at middle, punctations very small, sparsely distributed, discal trichobothrium set in deep transverse depression; elytra 2.4x longer than wide, elytra 2.4 longer than pronotum, ratio of elytral length to pronotal length 4.0x, punctations small, not wider than width of interstitial spaces, punctations shallowly impressed, seriate in most of disc, scattered near sutural margin; posterior half of epipleural margin minutely serrate, serrations widely separated, posterior fourth of epipleural margin minutely serrate; protibial anterior margin with 9 spines. *Abdomen*: Aedeagal information not available.

Variation: The pronotum of specimen from Chapada is entirely reddish yellow.

Natural history: Known from the Amazonian basin of Brazil.

Distribution (Map 4): In addition to the types I examined 2 specimens from **Brazil**: **Amazonas**: Chapada; Tefe. Specimens are deposited in CMNH and WOPC.

Nova Group

Among these checkered beetles, body form is long narrow-oblong, the head is only slightly wider than the pronotum, the eye is slightly wider than the vertex, the cranium is almost always red, the pronotum is coarsely punctate, and the elytral punctations are seriate in most of the disc, but subseriate along the sutural margin. The red coloration of the pronotal arch and the pale, faintly visible, fascia at the middle of the elytral disc (Fig. 122) are derived characteristics for the group. The geographic range of this group extends from Panama to southern Brazil.

Amboakis cauca, new species
Figures 48, 79, 125; Map 2

Holotype: Female. COLOMBIA, Valle del Cauca, PNN Farallones de Cali, Anchcaya, 3°26'N 76°48', 900 m, Malaise, 27.iii.24.iv.2001, S. Sarria Leg. M. 1897 (IAVH). (Specimen minuten-mounted, minuten inserted on a Plastazote foam block; mount card with metathoracic wing and gender label; locality label; IAVH acronymic label; holotype label; plastic vial with abdomen and ovipositor.)

Paratypes: None.

Diagnosis: Among the known species of *Amboakis*, only in the members of this species does a vertical yellow elytral streak connect posteriorly, at about

elytral posterior third, to a transverse elytral streak (Fig. 125).

Description: *Size*: Length 1.0 mm: width 5.0 mm. *Integument*: Cranium red; pronotum black; elytra brown, with pale discal vitta confluent with postmedial pale fascia; legs bicolored, dorsal fascies brown, ventral fascies yellow. *Head*: Wider than pronotum (60:56); vertex narrower than width of eye (17:23); funicular articles moderately expanded (Fig. 79). *Thorax*: Pronotum (Fig. 48), transverse (55:48), side margins more convex than tuberculate, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse depression; elytra 3.2x longer than broad, form long narrow-oblong, elytra 4.6x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, epipleural margin not minutely serrate; protibial anterior margin with 7 spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined.

Natural history: The available specimen was collected in March or April, at 900 m.

Distribution (Map 2): Known only from the type locality.

Etymology: The trivial name *cauca* constitutes a noun in apposition and refers to the type locality.

Amboakis epiomidia, new species
Figures 67, 92, 126; Map 3

Holotype: Female. Panama : Chiriquí : Tole, Champion (BMNH). (Specimen card- mounted, antenna and female affixed to paper point; support card; locality label; BMNH acronymic label; holotype label; plastic vial with abdomen.)

Paratypes: Two specimens from the same locality as the holotype (BMNH, 1; WOPC, 1).

Diagnosis: These beetle closely resemble Brazilian *A. funebris*. However, *A. epiomidia* specimens have the anterior margin of the pronotum sharply projected anteriorly at the middle (Fig. 67) and the pronotal disc is more coarsely punctate.

Description: *Size*: Length 3.0-3.1 mm; width .80-.90 mm. *Integument*: Cranium yellow; pronotum brown; elytra mostly brown, basal fourth somewhat lighter near humerus, disk with faintly visible transverse line at middle; legs yellow. *Head*: Wider than width of pronotum (49:43); vertex slightly narrower than width of eye (12:15); funicular antennomeres slightly expanded (Fig. 92). *Thorax*: Pronotum (Fig. 67), transverse (43:38), punctations large rendering disc subrugose, side margins more convex than tuberculate, discal trichobothrium set in deep transverse depression; elytra 2.9x longer than broad, form long narrow-oblong, elytra 4.6x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, epipleural margin not minutely serrate; protibial anterior margin with 4 spines. *Abdomen*: Aedeagal information not available.

Variation: The light color markings on the elytral disc (Fig. 126) vary in expression.

Natural history: No information available.

Distribution (Map 3): Known only from western Panam.

Etymology: The specific epithet is a Greek compound noun derived from *omos* (= shoulder) and the prefix *epi-* (= upon). I refer to the pale markings near the humerus of the elytra.

***Amboakis nova* (Opitz)**
Figures 15-22b, 24, 25, 34-39a, 40-44, 51, 116b; Map 4

Teutonia nova Opitz, 1997: 63. Holotype. Male. Brazil: Santa Catarina, Nova Teutonia, 300-500 m, XI-1-1974, F. Plaumann (MZSP). (Specimen point-mounted, male affixed to paper point; support card; locality label; MZSP acronymic label; holotype label.) New combination.

Paratypes: One hundred and thirty-two specimens. **Brazil**: **Nova Teutonia**: Santa Catharina, 2711' 52º32', 30-XI-1940, F. Plaumann (AMNH, 1); 31-VIII-1941 (AMNH, 1); *idem*, 12-IX-1941 (AMNH, 2); *idem*, 27-IX-1941 (AMNH, 1); *idem,* 3-X-1941 (AMNH, 2); *idem*, 10-X-1941 (AMNH, 2); *idem*, 10-XI-1941 (AMNH, 1); *idem*, 21-XI-1941 (AMNH, 1); *idem*, 7-IX-1944 (AMNH, 9); *idem*, 18-IX-1944 (AMNH, 5); *idem*, 9-X-1944 (AMNH, 12); *idem*, 27-X-1944 (AMNH, 2); *idem*, 16-X-1952 (FMNH, 1); *idem*, day not noted-X-year not noted (FMNH, 1); *idem*, 28-IX-1960; *idem*, XI-year

not noted (FMNH, 1); *idem*, day not noted-IX-year not noted (FMNH, 1); *idem*, day not noted-X-1966 (WOPC, 1); *idem*, day not noted-IX-1972 (WOPC, 7); *idem*, day not noted-X-1973 (MCZC, 2); *idem*, day not noted-XI-1974 (FSCA, 4): **Rio de Janeiro**: Rio de Janeiro, day not noted-III-1970, M. Alvarenga (WOPC, 1; INHS, 2; MCZC, 3; SEMC, 3; KSUC, 2); *idem*, day not noted-XII-1970 (UMRM, 2; WOPC, 1); Represario, day not noted-V-1972 (WSUC, 1): **Goias**: Jatai, day not noted-XI-1972, M. Alvarenga (USNM, 3; WSUC, 1): **Pernambuco**: day not noted-IV-1972, M. Alvarenga (UCDC, 2): **Paraná** : Rondon, 28-VIII-1952, F. Plaumann (FMNH, 1); *idem*, day not noted-30-VIII-1952 (FMNH, 1): **São Paulo**: Teodoro Samparo, day not noted-VIII-1973, Malaise trap, F. M. Oliveira (UMSP, 2). Fifty-one additional paratypes are deposited in BMNH, CASC, CNCI, KSUC, IMLA, MHNP, WFBA, and in WFBM.

Diagnosis: Within the *nova* group, only in members of this species with the pronotum proper dark brown and the pronotal arch yellow. *Amboakis stenosis* specimens have a narrow yellow anterior margin on the pronotum which approximates the coloration of the pronotum of A. *nova*. But, unlike *A. nova*, the body form of *A. stenosis* is flared posteriorly (compare figures 117, 124).

Description: *Size*: Length 2.2-6.0 mm; width .50-1.8 mm. *Integument*: Cranium reddish-yellow; vertex vested with whorl of yellow-gold setae; pronotum black, pronotal arch yellow; elytra dark brown, with narrow pale oblique fascia at middle; legs bicolored, femora becoming progressively more yellow from profemur to metafemur, tibiae and tarsi brown. *Head*: Wider than width of pronotum (60:56), vertex narrower than width of eye (16:22); funicular antennomeres very expanded (Fig. 40). *Thorax*: Pronotum (Fig. 51), quadrate (55:55), side margin tuberculate, punctations large rendering disc subrugose, trichobothrium set in deep transverse depression; elytra, form long narrow-oblong, ratio of length to width 3.3x, ratio of length to pronotal length 4.6x, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc (Fig. 44), scattered near sutural margin serrate, posterior curvature of epipleural margin minutely serrate; protibial anterior margin with 9 spines. *Abdomen*: Aedeagus as in figure 116b. *Male Internal Reproductive Organs* (Fig. 42): Two pairs of accessory glands, medial pair considerably shorter and narrower than lateral pair; seminal vesicle robust. *Female Internal Reproductive Organs* (Fig. 43a): Bursa copulatrix well developed, spermathecal capsule slightly sclerotized, spermathecal gland attached to subapex of spermathecal capsule.

Variation: The extent of yellow on the pronotal arch and the expression of the oblique pale fascia at midelytron vary. In some specimens there are only 8 spines on the anterior margin of the protibia.

Natural history: Specimens have been collected throughout the year, several in a Malaise trap. The known altitudinal range of these beetles is 300-1650 m.

Distribution (Map 4): The known range of this species extends from southern Brazil to Argentina.

Material examined: In addition to the type series I examined 42 additional specimens from **Brazil**: **Rio de Janeiro**: Foresta da Tijuca, II-1961, C. A. Campo Seabra; Rio de Janeiro, III-1970, M. Alvarenga: **Nova Teutonia**: Santa Catarina, 27°11' 52°23', 30-IX-1940, F. Plaumann; *idem*, 31-VIII-1941; *idem*, 29-IX-1941; 3-X-1041; *idem*, 10-X-1941; *idem*, 9-VII-1944; *idem*, 9-X-1944; *idem*, 25-XI-1944: **Bahia**: Encruzilhada, XI-1974, M. Alvarenga: **Goias**: Goyas, Rio Verde, 1908, G. A. Baer: **São Paulo**: Ribeirao Pires, II-1898, E. Gounelle; S. Bocalna, S. J. Barreiro, XI-1968, 1650 m, Alvarenga & Seabra. **Argentina**: **Missiones**: Loreto, no day noted-I-2001, Malaise trap in subtropical wet forest: **Corrientes**: Gobernador Virasoro, Las Marias, 5-IX-1971, C. Porter- L. Stange. These additional specimens are deposited in AMNH, BMNH, CMNH, IMLA, IZAV, JNRC, INHS, LACM, MLPA, MNHN, TUMC, USNM, ZALF, ZMAN, and ZMHB.

Amboakis rudis, new species
Figures 52, 75, 110; Map 4

Holotype: Male. Cochabamba (Bolivie) Germain (MNHN). (Specimen point- mounted, antenna and male symbol affixed to paper point; support card; locality label; MNHN acronymic label; repository label; holotype label; plastic vial with aedeagus.)

Paratypes: One specimen. **Bolivia**: **Cochabamba**: Cochabamba, Germain (WOPC, 1).

Diagnosis: Within the *nova* group, the members of this species are most conveniently distinguished by the nearly quadrate condition of the pronotum, which

accentuates the convexity of the eyes (Fig. 52). Also, the pronotum is particularly roughly sculptured.
Description: Size: Length 3.5-4.2 mm; width 1.0-1.2 mm. *Integument*: Cranium dark brown, pronotal disc dark brown, pronotal arc and collar light brown, legs dark brown. *Head*: Wider than pronotum (55:48); vertex much wider than eye (25:15); funicular antennomeres slightly expanded (Fig. 75). *Thorax*: Pronotum, transverse (49:42), lateral tubercle present, punctations large rendering disc subrugose, trichobothrium set in deep transverse depression; elytra 2.6x longer than wide, form long narrow-oblong, elytra 4.5x longer than pronotum, punctations small, not wider than interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, posterior curvature of epipleural margin minutely serrate; protibial anterior margin with 4 spines. *Abdomen*: Aedeagus as in figure 110.

Variation: The available specimens are quite homogeneous.

Natural history: No information available.

Distribution (Map 4): Known only from the type locality.

Etymology: The specific epithet *rudis* (= rough) is a Latin adjective. I refer to the rough sculpturing of the pronotal disc.

Amboakis selva, new species
Figures 69, 77, 100, 121; Map 3

Holotype: Male. COSTA RICA, Heredia, Est. Biol. La Selva, 60-150 m. 1026'N 84°01'W, Mar 1994, INBio-OET (INBC). (Specimen point-mounted, antenna and male symbol affixed to paper point; support card; locality label; INBC acronymic label; holotype label; plastic vial with abdomen and aedeagus.)

Paratypes: Three specimens. **Costa Rica**: **Heredia**: Estación Biologica La Selva, 10°26'N 84°01'W, 3-V-1993, secondary forest, collector name not noted (WOPC, 1); *idem*, 1-XII-1993, collector name not noted (INBC, 1); 11 km SE La Virgen, 10°20'N 84°01'W, 20-IV-2003, 550 m, collector name not noted (WOPC, 1).

Diagnosis: Within the *nova* group, only in the members of this species is there a short pale longitudinal line extending from the humeral margin (Fig. 121).

Description: *Size*: Length 3.6-5.3 mm: width 1.0-1.7 mm. *Integument*: Cranium; red, pronotum dark brown, anterior margin red; elytra mostly dark brown, with short yellow longitudinal line that extends from humeral margins; legs mostly yellow, slightly infuscated along dorsal margin. *Head*: Wider than pronotum (52:47); vertex narrower than eye (14:20); funicular articles slightly expanded (Fig. 77). *Thorax*: Pronotum (Fig. 69), transverse (47:43), lateral tubercle present, disc notably sloped at sides, punctations large rendering disc subrugose, discal trichobothrium set in deep and transverse depression; elytra 2.7x longer than wide, form, long narrow-oblong, elytra 4.3x longer than pronotum, punctations small, at least as wide as width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, posterior fifth of epipleural margin minutely serrate, serrations widely separated; protibial anterior margin with 8 spines. *Abdomen*: Aedeagus as in figure 100.

Variation: There is variation in the expression of the short longitudinal line that begins on the humeral margin; sometimes it is only indicated by a dim pale streak. Also, the size of the reddish region on the anterocentral portion of the pronotal disc varies.

Natural history: These beetles were captured in April, May, and December at elevations ranging from 60-550 m.

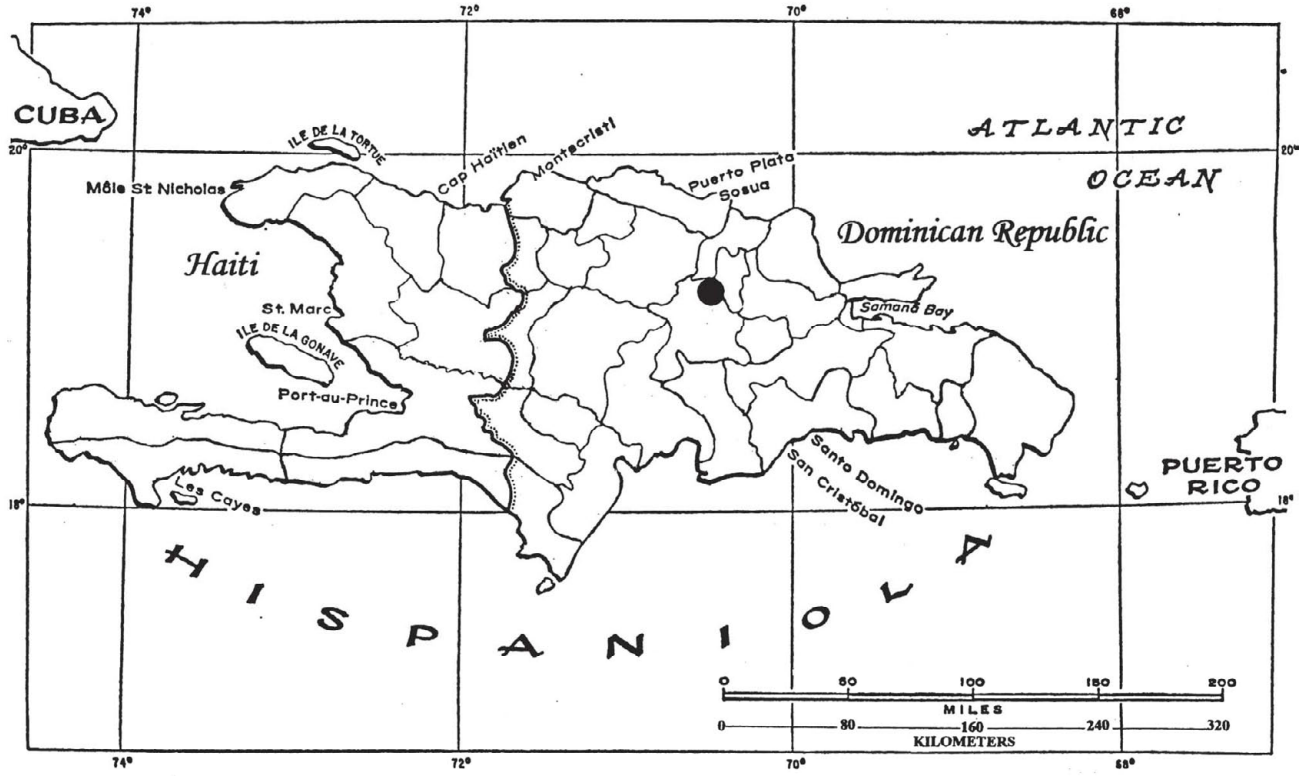
Distribution (Map 3): Known only from the environs of La Selva, Costa Rica.

Etymology: The specific epithet *selva* constitutes a noun in apposition that refers to the type locality.

Amboakis vesca, new species
Figures 46, 73; Map 4

Holotype: Female. Bolivia: Cochabamba: Germain (MNHN). (Specimen mounted on card, antenna and female symbol affixed to mount card; locality label; Fairmaire collection label; MNHN acronymic label; holotype label; plastic vial with abdomen.)

Paratypes: Three specimens from the same locality as the holotype (MNHN, 1; WOPC, 2).



Map 10. Geographic distribution of *Amboakis linitis*.

Diagnosis: Within the *nova* group, *A. vesca* specimens superficially resemble those of *A. epiomidia* from which they may be distinguished by having a more profusely punctate elytral disc. This difference between these species is most readily observed when one compares punctations along the elytral sutural margin where the interstitial spaces are very narrow in specimens of *vesca* and wide in specimens of *epiomidia*. Also, in specimens of *A. vesca* the short pale longitudinal line extends posteriorly from the humeral margin.

Description: *Size*: Length 4.0-4.2 mm; with 1.0-1.1 mm. *Integument*: Cranium mostly yellow, frons and postocular region dark brown; pronotum dark brown; elytra dark brown, with faint pale fascia at middle; femora yellow; tibiae and tarsi light brown. *Head*: Wider than pronotum (57:54); vertex narrower than eye (16:18); funicular antennomeres slightly expanded (Fig. 73). *Thorax*: Pronotum (Fig 46), transverse (53:50), lateral tubercle present, punctations large rendering disc subrugose, discal trichobothrium set in deep and transverse depression; elytra 3.1x longer than wide, elytra 4.9x longer than pronotum, punctations small, not wider than width of interstitial spaces, shallowly impressed, seriate in most of disc, scattered near sutural margin, epipleural margin not minutely serrate; protibial anterior margin with 9 spines. *Abdomen*: Aedeagal information not available.

Variation: The available specimens do not vary appreciably.

Distribution (Map 4): Known only from the western Andes of Bolivia.

Natural history: No information available.

Etymology: The trivial name *vescus* (= thin) is a Latin adjectival. I refer to the slender body form of these beetles.

Stenosis Group

In these beetles the body is particularly oblong, the head is only slightly wider than the pronotum, the vertex is narrower than an eye, the pronotum is nearly quadrate and rugosely punctate, and the elytral punctations are particularly small. The wedge shape of the elytra (Fig. 24) and diffuse distribution of

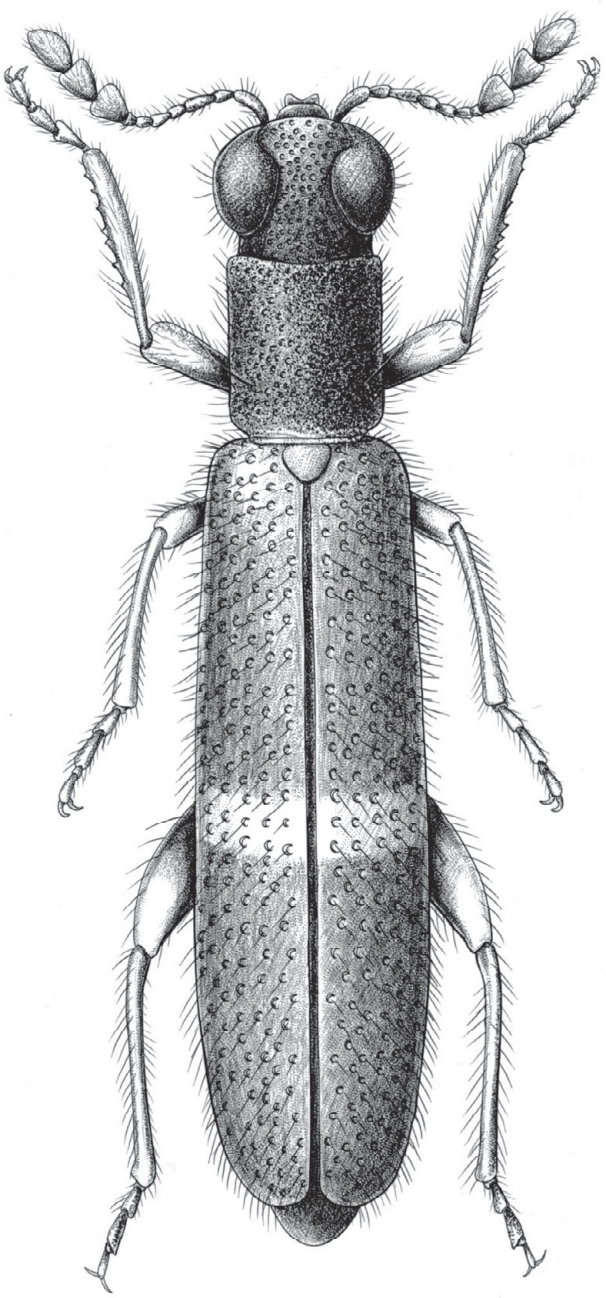


Figure 127. Habitus of *Ellipotoma tenuiformis* Spinola

small punctations on the elytral disc are apotypic characteristics of this monotypic group. This group is known only from southwestern Mxico.

Amboakis stenosis, new species
Figures 26, 45, 94, 124; Map 3

Holotype: Female. Mexico, Oaxaca, Sierra de Zempoaltepetl, 15.2 km S Benoto Juarez. On a second label: 5800', beating *Quercus*, July 1, 1989, J. Rifkind, coll (LACM). (Specimen point-mounted, antenna and female symbol affixed to paper point; support card; locality label; collection date label; LACM acronymic label; holotype label.)

Paratypes: None.

Diagnosis: The posteriorly flared body form (Fig. 124) is a unique characteristic in *Amboakis*.

Description: *Size*: Length 6.0 mm: width 1.4 mm. *Integument*: Cranium red; pronotum mostly black, anterior margin reddish; elytra black, with a faintly indicated pale transverse line at middle of disc; legs dark brown. *Head*: Slightly wider than pronotum (63:60); vertex narrower than eye (17:22); funicular articles slightly expanded (Fig.94). *Thorax*: Pronotum (Fig. 45), transverse (62:60), side margins more convex than tuberculate, disc notably sloped at sides, punctations large rendering disc subrugose, discal trichobothrium set in deep transverse depression; elytra 2.3x longer than wide, form flared narrow-oblong (Fig. 124), elytra 5.0x longer than pronotum, punctations small and scattered, not wider than width of interstitial spaces, shallowly impressed, epipleural margin minutely serrate at apex; protibial anterior margin with 8 spines. *Abdomen*: Aedeagal information not available.

Variation: One specimen examined.

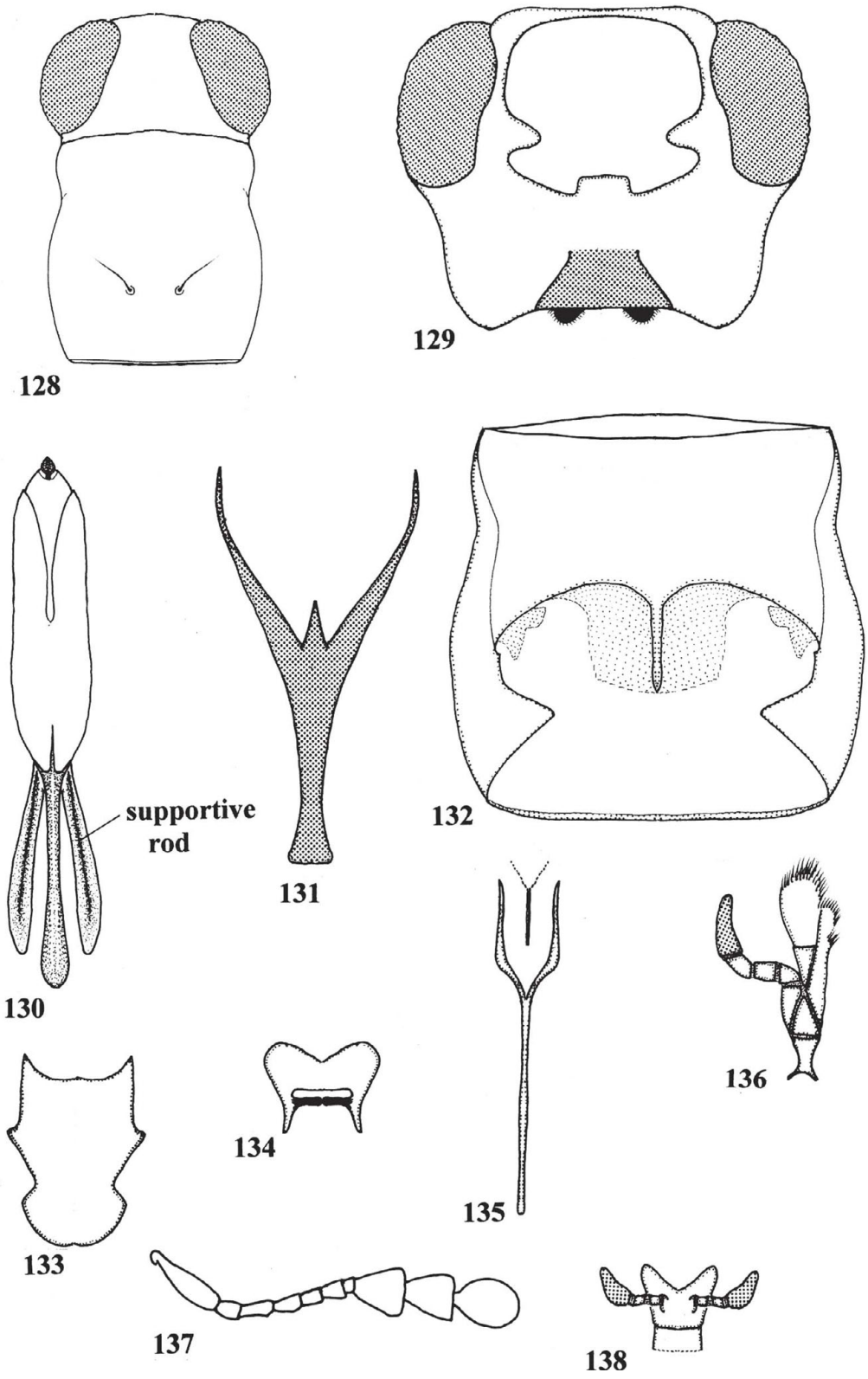
Natural history: The only available specimen was collected during July at 1768 m.

Distribution (Map 3): Known only from the type locality.

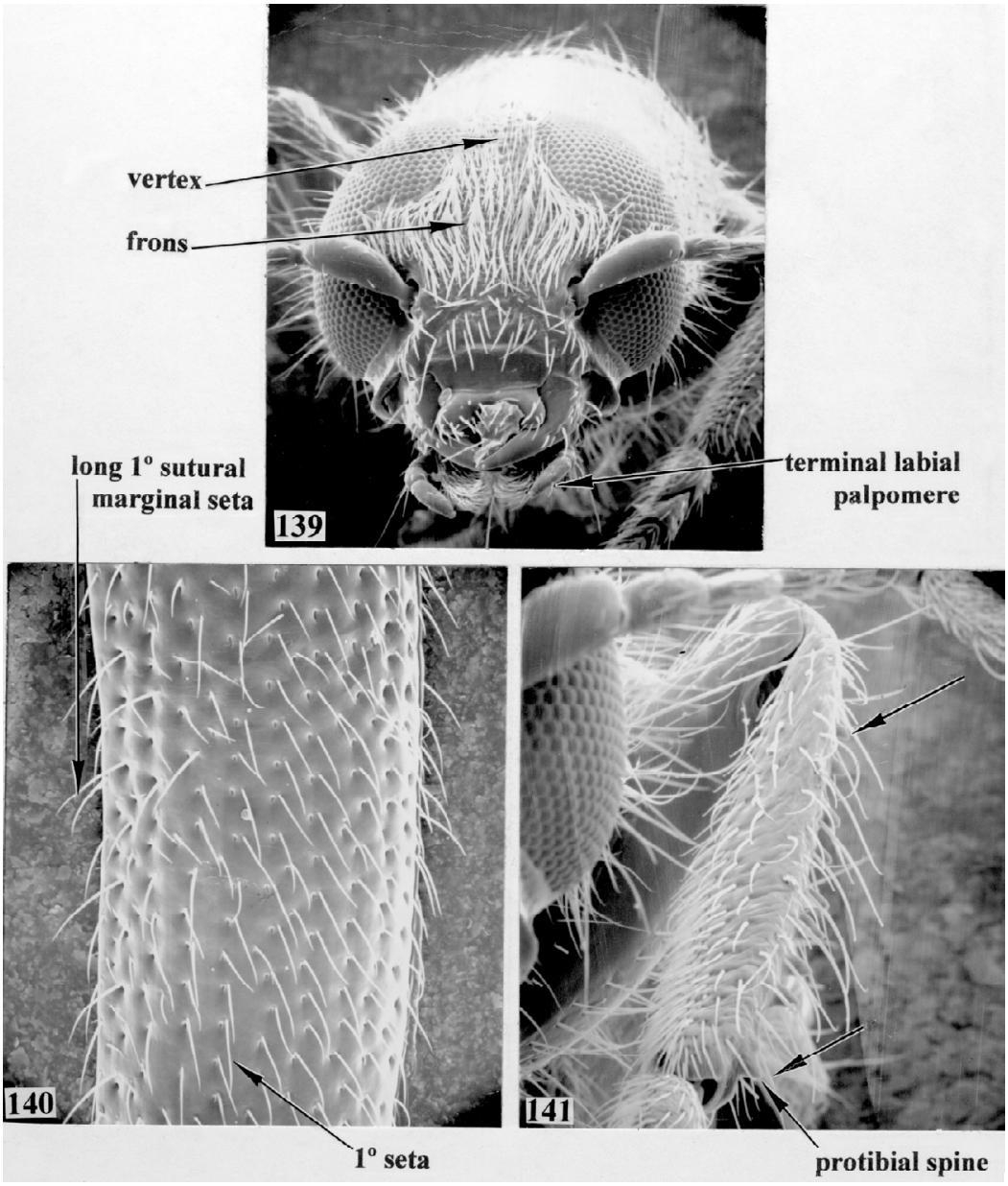
Etymology: The trivial name *stenosis* stems from the Greek *stenos* (= narrow) and the suffix *-is*. I refer to the narrow body form of these beetles.

Ellipotoma Spinola

Ellipotoma tenuiformis Spinola 1844: 36. Type species: *Ellipotoma tenuiformis* Spinola. Lacordaire 1857: 472. Gemminger and Harold 1869: 1750. Desmarest 1870: 267. Gorham 1877: 263. Gahan 1910: 73. Schenkling 1903: 88; 1910: 114. Wolcott 1911: 124. Blackwelder 1945: 388, Corporaal 1950: 252. Ekis 1975: 50. Opitz 1997: 60.



Figures 128-138. Various organs. *Ellipotoma tenuiformis* Spinola. **128)** Forebody. **129)** Head (ventral view). **130)** Aedeagus. **131)** Metendosternite. **132)** Pronotum (ventral view). **133)** Mesoscutellum. **134)** Labrum. **135)** Spicular fork (ventral view). **136)** Maxilla. **137)** Antenna. **138)** Labium.

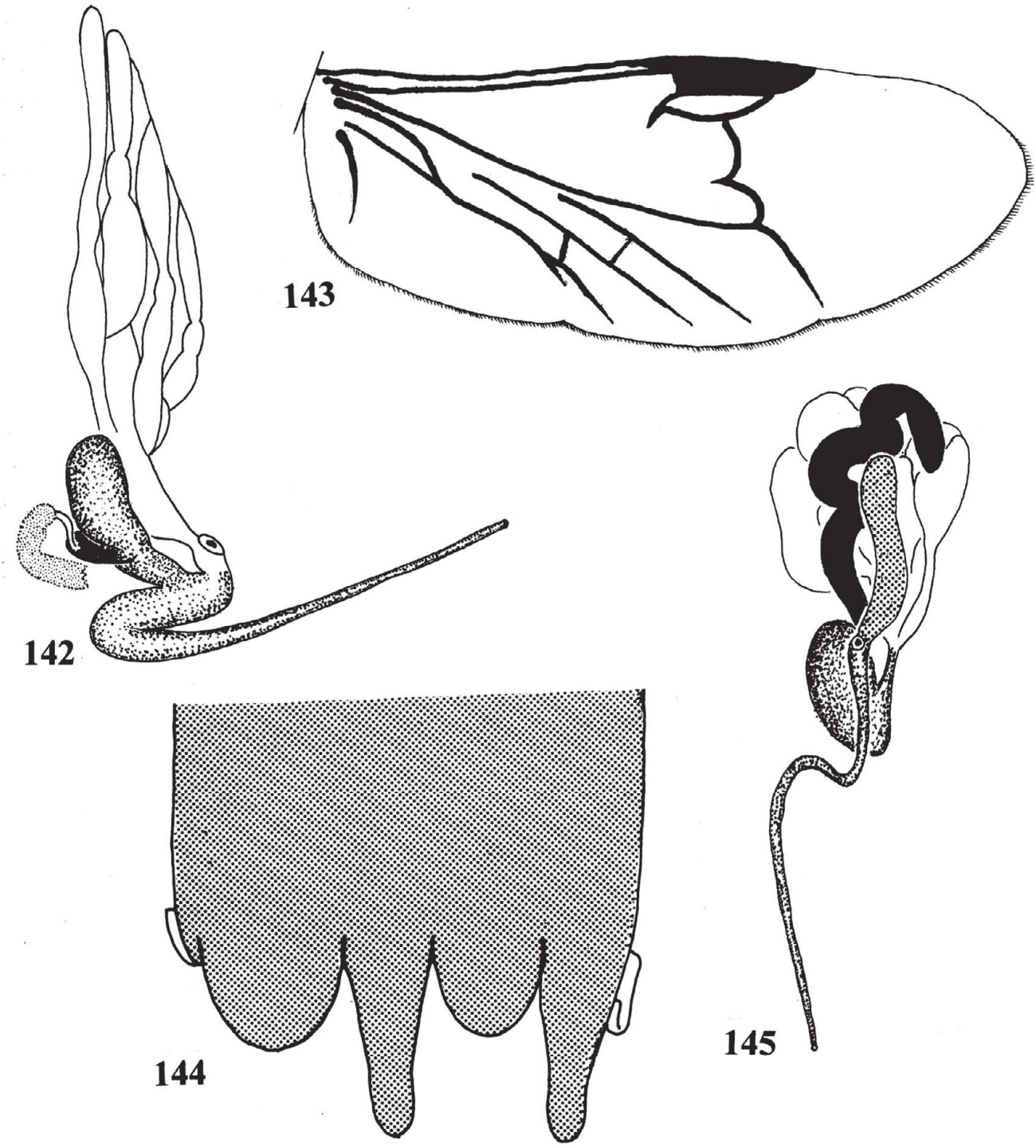


Figures 139-141. Various organs. *Ellipotoma tenuiformis* Spinola. **139)** Head. **140)** Elytra. **141)** Proleg.

Diagnosis: The members of this bitypic genus are most readily identified by their long very narrow-oblong body form (Fig. 127), narrow forebody (Fig. 128), 9 rows of elytral punctations, and absence of 2° elytral setae.

Type species: *Ellipotoma tenuiformis*, Spinola, 1844: 38.

Description: *Size*: Length 3.0-6.8 mm; width 0.80-2.0 mm. *Body Form*: Long very narrow-oblong (Fig. 127). *Integumental Color*: Cranium and pronotum black; antenna, labrum, mandibles, palpi of maxillae, and labium brown; prosternum, mesosternum, and metasternum black; elytra mostly black, with pale fascia at middle; legs yellow; abdomen black. *Vestiture*: Integument copiously vested with setae; antennomeres 1 to 7 vested with stout setae, club antennomeres vested with sensilla basiconica, sensilla chaetica, and sensilla trichodea (Fig. 149); discal and paralateral trichobothrial setae of pronotum moderately long; elytra (Fig. 140) vested only with 1° setae, setae reclinate except proclinate along sutural margin short; pygidiae with 6 long marginal setae, 2 long



Figures 142-145. Various organs. *Ellipotoma tenuiformis* Spinola. **142)** Female internal reproductive system. **143)** Metathoracic wing. **144)** Proventriculus (internal view). **145)** Male internal reproductive system.

discal setae, and assortment of short setae. *Head*: Subquadrate in frontal view (Fig. 139), about as wide pronotum; cranium coarse-punctate; eyes moderately convex, eye notch large, deeply incised into eye; antenna (Fig. 137) inserted below ocular notch (Fig. 139), loosely clubbed, comprised of 10 antennomeres, scape short, robust, pedicel subovoid, funicular antennomeres gradually more explanate towards club, antennomere three oblong, slightly expanded distally, antennomere 4 oblong, antennomere 5 subquadrate,

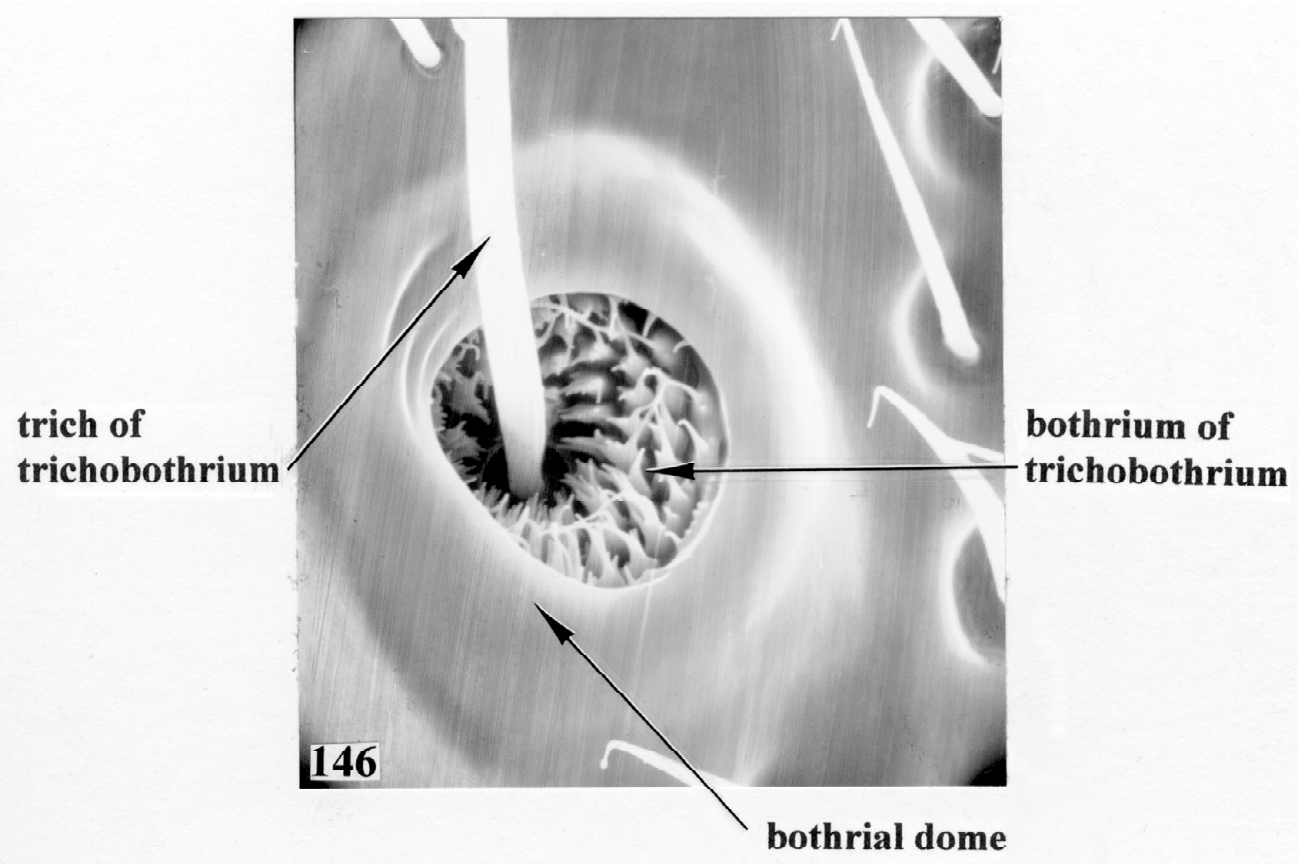
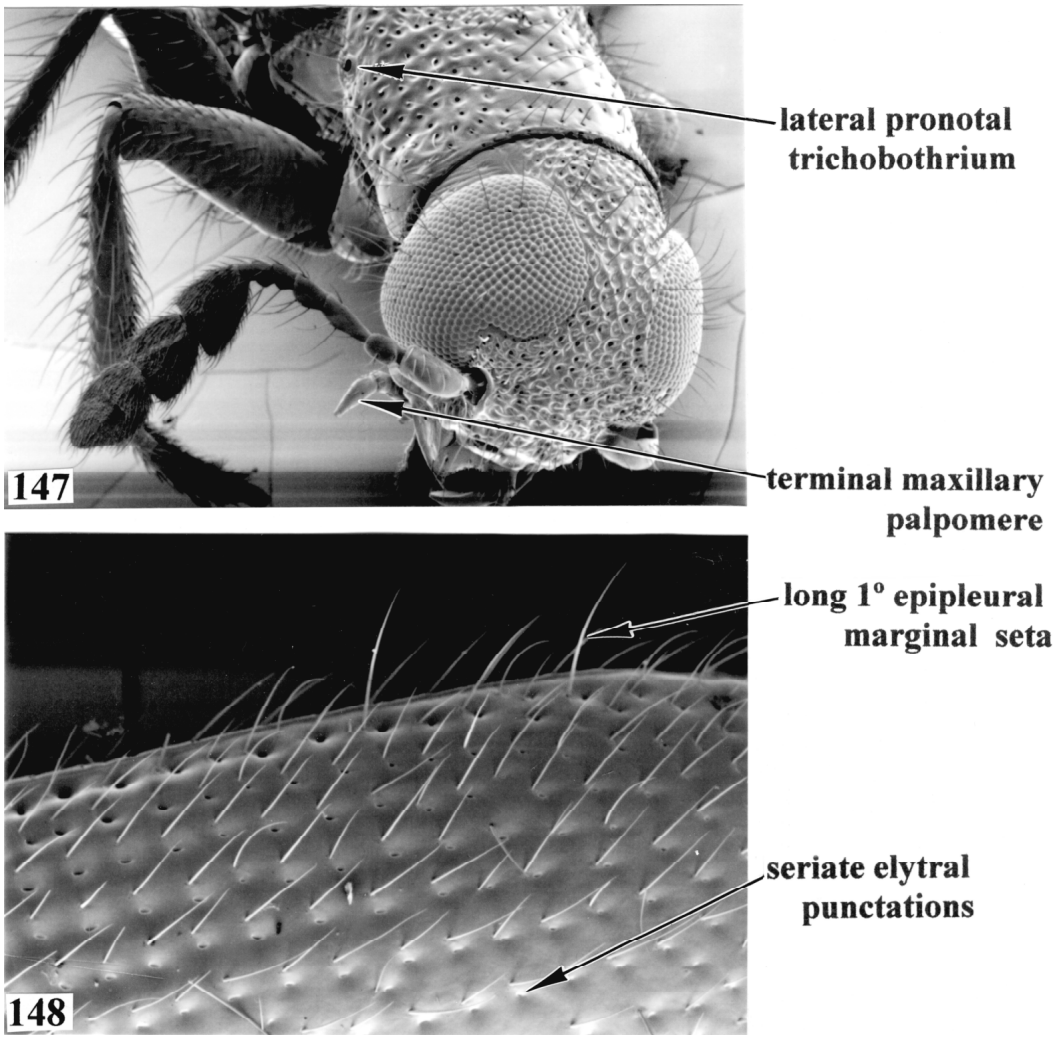


Figure 146. Pronotal Trichobothrium (discal) of *Ellipotoma tenuiformis* Spinola.

antennomere 6 transverse, antennomere 7 minute, antennomeres 8 and 9 triagonal, or rectangulate, antennomere 10 subspheroid; labrum (Fig. 134) deeply incised; mandible not falciform, anterior dens subacute, medial dens narrow- truncate, posterior dens broad-truncate, penicillus slightly developed; maxilla (Fig. 136) well developed, terminal palpomere digitiform, somewhat narrowed distally, slightly bent, laterolacinia well developed; labium (Fig. 138) well developed, terminal palpomere digitiform, slightly bent, abruptly narrowed distally; gula (Fig. 129) broadly trapezoidal. *Thorax*: Pronotum elongate (Figs. 128), lateral carina ends at posterior angle, anterior margin sublinear, side margins incised at anterior fifth, evenly rounded in remainder, discal trichobothria set in shallow spheroid discal depressions, bothrial dome present (Fig. 146), anterior transverse depression broad-shallow or only notable at sides, pronotal collar and prebasal depression very narrow, hypomeral prolongations (Fig. 132) only slightly extended mesad, procoxal cavities open; elytra spatulate, side margins parallel, base truncate, apex rounded, about 7 times longer than broad, epipleural margin without minute serrations at distal third, disc with small round punctations, punctations seriate behind humerus then progressively less seriate towards elytral apex, arranged in 9 rows, not wider than interstitial spaces; metendosternite as in figure 131. mesoscutellum (Fig. 133) transverse; protibial anterior margin with 10 spines, tibial spur formula 0-1-1; tarsal pulvilli formula 3-3-1; empodium bisetose; tarsal claws with well developed basal denticle; metathoracic wing as in figure 143. *Abdomen*: Six visible sterna; pygidium broad-scutiform. *Male Genitalia*: Aedeagus lanceolate (Fig. 130), phallobasic rod short, phallic struts with supportive rod, parameres reduced; spicular fork not flared at sides, apodeme very long; interspicular plate lineate. *Female Genitalia*: Ovipositor, dorsal and ventral laminae multilobed. *Alimentary Canal*: Stomodaeal valve (Fig. 144) comprised of four primary folds, dorsal fold broad-short, ventral narrow-short, lateral lobes narrow-long; ventricular papillae feebly developed; 4 cryptonephridial malpighian tubules. *Male Internal Reproductive Organs* (Fig. 145): Two pairs of accessory glands; seminal vesicle very robust. *Female Internal Reproductive Organs* (Fig. 142): Spermatheca not visibly sclero-



Figures 147-148. Forebody and elytra. *Ellipotoma tenuiformis* Spinola. **147)** Forebody. **148)** Elytra.

tized; spermathecal gland attached to subapex of spermatheca; bursa copulatrix well developed.

Distribution: The combined distribution of the species extends from Honduras to southern Brazil.

Description of *Ellipotoma* species

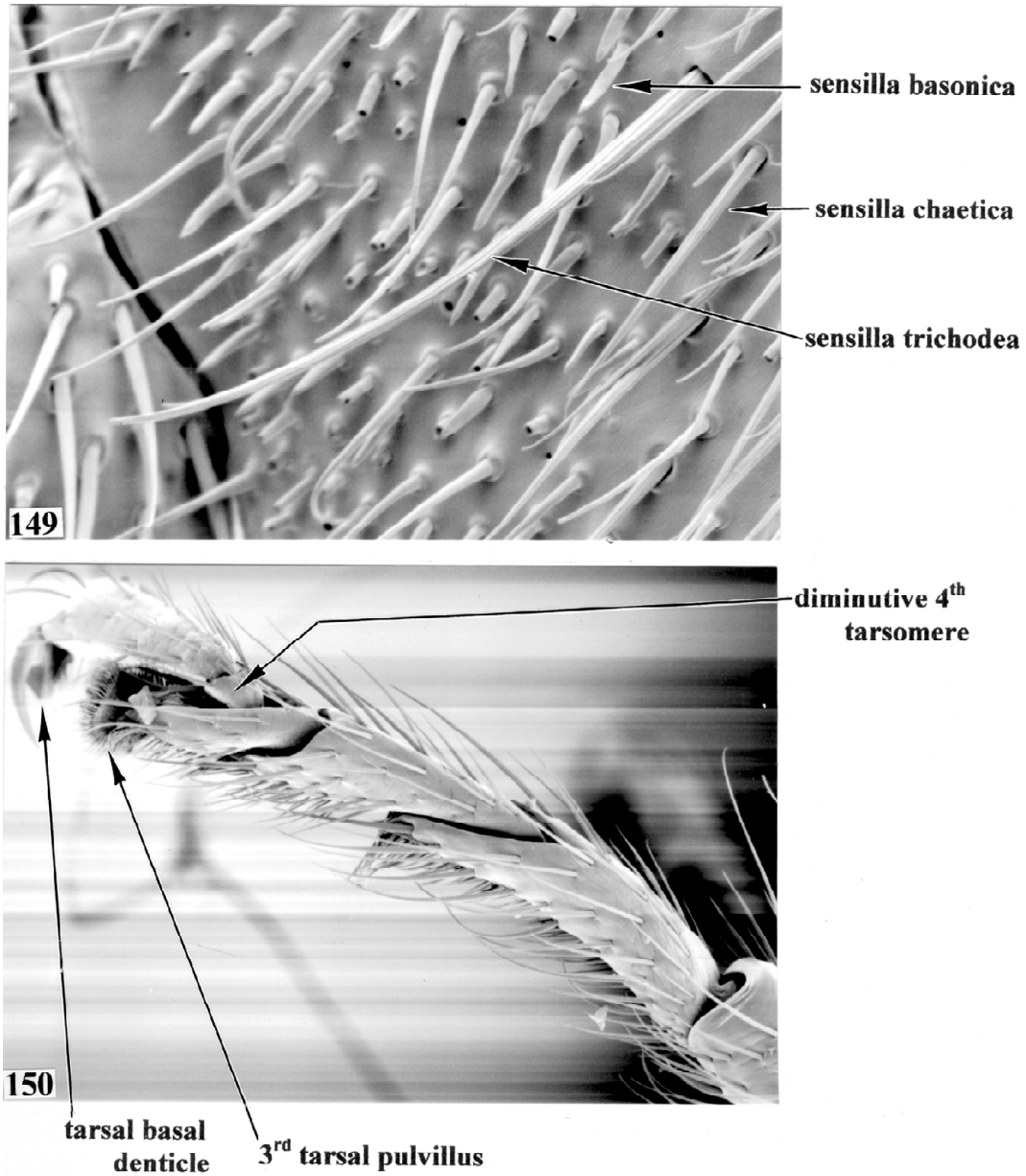
Ellipotoma tenuiformis Spinola
Figures 116i, 127-146; Map 4

Ellipotoma tenuiformis Spinola 1844: 38. Lectotype type. Female. Here designated. "Carthegene" (= Colombia) (MNHN). (Specimen pin-mounted, female symbol affixed to support card; locality label; identification label; R. Oberthur collection label; MNHN acronymic label; lectotype label.)

Paralectotypes: The original description does not indicate the number of specimens on which Spinola based the description of the species..

Diagnosis: The slender narrow-oblong body form (Fig. 127), in particular the uniformly slender forebody (Fig. 128), arrangement of elytral punctations in 9 rows, and absence of 2 setae on the elytral disc will distinguish the members of this species from those of *Parvochaetus* and *Amboakis*.

Description: *Size*: Length 3.0-6.8 mm; width 0.80-2.0 mm. *Integument*: Cranium and pronotum black; elytra dark brown, with pale midelytral fascia; legs yellow. *Head*: Slightly wider than width of pronotum (43:40), vertex narrower than width of eye (7:16); funicular antennomeres subfiliform (Fig. 137). *Tho-*



Figures 149-150. Tenth antennomere and metatarsus. *Ellipotoma tenuiformis* Spinola. **149)** Tenth antennomere. **150)** Metatarsus.

rax: Pronotum (Fig. 128), elongate (44:39), side margin incised anteriorly, curvate in remainder, punctations large rendering disc subrugose, trichobothrium set in deep spheroid discal depression; elytra 3.2x longer than wide, form long narrow-oblong, elytra 4.4x longer than pronotum. *Abdomen*: Aedeagus as in figure 130. *Internal Reproductive Organs*: Male (Fig. 145) with two pair of accessory glands, medial pair considerably shorter and than lateral pair; seminal vesicle robust; female (Fig. 142) with well-developed bursa copulatrix, spermathecal capsule not notably sclerotized, spermathecal gland attached to subapex of spermathecal capsule.

Variation: I have examined 5 specimens from Barro Colorado Island in Panama whose eyes are more convex and the elytra are more light brown, particularly near the humeral angle. I interpret these differences to represent intraspecific variation.

Natural history: Specimens have been collected in Honduras in June, in Costa Rica from March-June, in

Panama during February, March, May, and July, in Ecuador during September, and in Brazil during November and January. Nevermann gathered some specimens from dry wood of avocado. I collected one specimen in the environs of Manaus, Brazil, at night from the bark of the hardwood *Manilkara* while H. Hespenheide captured these beetle on a fallen branch of *Pentaclethra macroloba* (Willd.) Kuntze. Champion collected two Panamanian specimens, "on bark of fallen tree in forest; in the shade, all these specimens very active and difficult to secure". Specimens were collected at altitudes ranging from 25 to 1372 m.

Distribution (Map 4): The known range of this species extends from southern Honduras, east to Guyana, then to southern Brazil.

Material examined: In addition to the lectotype I examined 24 additional specimens from: **Honduras**: **Olancho**: P. N. La Muralla, 2-VI-1995, R. Turnbow. **Costa Rica**: **Heredia**: Finca Las Selva, 3 km S Puerto Viejo, 10°26' N 84°01' W, 3-IV-1984, at fallen branch of *Pentaclethra macroloba*, H. A. Hespenheide; *idem*, 4-IV-1984, H. A. Hespenheide; *idem*, 6-IV-1984, H. A. Hespenheide; *idem*, 7-IV-1984, H. A. Hespenheide; *idem*, 11- IV-1984, H. A. Hespenheide; *idem*, 11-V-1990, H. A. Hespenheide; *idem*, 18-VII-1994, H. A. Hespenheide; *idem*, 15-III-1993, 50-100 m, secondary forest, collector name not noted: **Puntarenas**: 6 km SE Santa Elena, 8-VI-1989, F. Hovore; Monteverde, 19-V-1985, 396 m, J. A. Chemsak; *idem*, 21-26-V-1979, 1372 m, J. M. & B. A. Campbell. **Panama**: **Chiriquí**: Finca La Suiza, 2-7-1997, J. Huether; *idem*, 1 km SE Hornito, 28-V-2-VI-1994, Malaise trap, F. Andrews & A. Gilbert: **Barro Colorado Island**: date of collection not noted-V-1929, Darlington: **Colón**: Palenque, 17-II-1999, R. Turnbow: **Darien**: Estación Rancho Frio, 21-III-4-IV-2000, Malaise trap, Cambra, Santos, Bermúdes. **Guyana**: **Mazaruni-Potaro**: Kartabo. **Ecuador**: **Tungurahua**: 38 km E Baños, 23-IX-1996, 1220 m, E. Giesbert. **Peru**: **Huánuco**: Pachitea: **Amazonas**. **Brazil**: **Amazonas**: Fonte Boa; **Pará**: **Nova Teutonia**: 27°11'S 29°23'W, collection day not given-X-1965. Specimens are deposited in: CDAE, CMNH, EMEC, FSCA, HAHC, INBC, JPHC, MCZC, MIUP, MNHN, RHTC, WOPC, ZALF, ZMAN, and ZMHB.

***Ellipotoma turmalis*,** new species
Figures 116d, 116f, 116j; Map 4.

Holotype: Male. Cochabamba (Bolivie) Germain (MNHN). (Specimen pin mounted, male symbol affixed to paper point; locality label; Fairmaire collection label; MNHN acronymic label; lectotype label; plastic vial with abdomen and aedeagus.)

Paratypes: Seven specimens from: **Bolivia**: **Cochabamba**: Cochabamba, Germain (MNHN, 2; WOPC, 4). **Argentina**: **Salta**: 17 km N La Caldera, Alto de la Sierra, 1550 m, 2-30-XII-1987, Malaise, subtropical humid forest, S. & J. Peck (CMNH, 1)

Diagnosis: The members of this species are easily distinguished from congeners by the predominantly yellow coloration of the elytra. Only the distal fifth of the elytra is black.

Description: *Size*: Length 5.0-6.3 mm; width 1.2-1.8 mm. *Integument*: Cranium, pronotum and venter black, antennae and legs brown; elytra yellow in proximal four-fifths and black in remainder. *Head*: Slightly wider than width of pronotum (57:54), vertex narrower than width of eye (15:20); funicular antennomeres expanded (Fig. 116j). *Thorax*: Pronotum (Fig. 116f), elongate (47:45), side margin incised anteriorly, curvate in remainder, punctations large rendering disc subrugose, trichobothrium set in deep spheroid discal depression; elytra 3.2x longer than wide, form long narrow-oblong, elytra 5.0x longer than pronotum. *Abdomen*: Aedeagus as in figure 116d.

Variation: The available specimens did not vary appreciably.

Natural history: Specimens were captured in a Malaise trap in Argentine subtropical humid forest, at 1550 m.

Distribution (Map 4): The known range of this species extends from central Bolivia to northern Argentina.

Etymology: The specific epithet *turmalis* (= of a troop) is a Latin adjective; referring to the slender erect body form of these beetles that to brings to mind the erect posture of a soldier.

Evolutionary considerations

In earlier works of Epiphloeinae (Opitz, 2004: 61; in press) I discussed the importance of including evolutionary syntheses in revisionary contributions. Hypotheses of evolutionary relationships among epiphloeine species and species groups is a critical step

towards an understanding of credible higher epiphloeine classifications. The overall objective of the epiphloeine series of revisions is to eventually provide a maximally informative classification of the subfamily. Herein, the species-level relationships of the genus *Parvochaetus* is resolved (Fig. 152). The expectation is that a more thorough survey of the South American Cleridae fauna will yield species that will expand the species composition of the *Parvochaetus* lineages.

The proposed phylogeny of the three genera treated herein, and of *Amboakis* taxa (Fig. 127) involves a complete resolution of sister-group relationships of all species groups except the *Amboakis nova* group. As in some of my previous works with Cleridae genera (Ekis 1977a: 203; 1977b: 221; Opitz 2004: 27; 2005: 20; in press) species level phylogeny is not possible for the relatively speciose genus *Amboakis*. I suspect that within Epiphloeinae the more speciose genera have diversified recently and have not experienced episodes of extinction to produce readily observable morphological gaps. In my judgment, species level phylogenies are only warranted when there is strong apotypic support for doing so, lest the heuristic value of the classifications proposed is minimally informative.

Characters selected for phylogenetic analysis

Forty morphological characters of adult *Parvochaetus*, *Amboakis*, and *Ellipotoma* were used in the analyses. The outgroup involves the remaining generic taxa of Epiphloeinae with funicular antennomeres greatly expanded, among which we may include the genus *Ichnea* Laporte and *Hapsidopteris* Opitz. For some characters, the outgroup extends to other generic epiphloeine taxa with 10 antennomeres minus the ones treated herein. Character states designated as "0" are considered plesiotypic whereas those given a value of "1" are judged apotypic.

Character 0-Vestiture of vertex: (0) without setal tuft; (1) with setal tuft
Character 1-Pronotal side's coloration: (0) not red; (1) red
Character 2-Epipleural fold: (0) not convex: (1) convex
Character 3-Last antennomere: (0) normal length; (1) extraordinary length
Character 4-Side margin of elytron coloration: (0) not yellow; (1) yellow
Character 5-Prosternum coloration: (0) not yellow; (1) yellow
Character 6-Eye size: (0) normal; (1) reduced
Character 7-Last antennomere coloration: (0) all brown; (1) brown and yellow
Character 8-Dark vitta on pronotal disc: (0) absent; (1) present
Character 9-Distribution of 2 setae on elytral disc: (0) normal; (1) profusely distributed
Character 10-Form of antennal club: (0) not slender; (1) slender
Character 11-Mandibular penicillus size: (0) normal; (1) exceptionally large
Character 12-Ocular notch interior angle; (0) acute; (1) obtuse
Character 13-Phallic struts: (0) not expanded; (1) expanded
Character 14-Funicular antennomeres: (0) not expanded; (1) slightly or moderately expanded
Character 15-Discal trichobothrium: (0) not in deep depression; (1) in deep depression
Character 16-Pronotal anterior transverse depression: (0) present; (1) absent
Character 17-Pronotal disc undulations: (0) absent; (1) present
Character 18-Pronotal extent of transverseness; (0) moderate; (1) extensive
Character19-Vertex width: (0) not exceptionally narrow; (1) exceptionally narrow
Character 20-Pronotal coloration: (0) without dark spots; (1) with dark spots
Character 21-Vestiture of pronotal sides: (0) without gold-colored setae; (1) with gold-colored setae
Character 22-Pronotal lateral profile: (0) not dome-shaped; (1) dome-shaped
Character 23-Forebody coloration: (0) not uniformly yellow; (1) uniformly yellow
Character 24-Body form: (0) not short-narrow oblong; (1) short-narrow oblong
Character 25-Distribution of elytral punctations: (0) not diffusely distributed; (1) diffusely distributed
Character 26-Elytral form: (0) not flared; (1) flared
Character 27-Pronotal arch coloration: (0) dark; (1) not dark
Character 28-Pronotal punctations size: (0) large; (1) small
Character 29-Body form: (0) not long-narrow oblong; (1) long-narrow oblong
Character 30-Ratio of elytral length to elytral width: (0) below 2.6; (1) 2.6 or higher
Character 31-Elytral punctation pattern near sutural margin: (0) seriate; (1) diffuse
Character 32-Antennomeres 8 and 9: (0) longer than wide; (1) about as long as wide
Character 33-Funicular antennomeres: (0) moderately expanded; (1) greatly expanded
Character 34-Body form: (0) not very long narrow-oblong; (1) very long narrow-oblong
Character 35-Elytral 2° setae: (0) present; (1) absent
Character 36-Phallic strut: (0) without rod; (1) with rod
Character 37-Elytral punctations: (0) large; (1) not large
Character 38-Third antennomere: (0) not expanded; (1) expanded

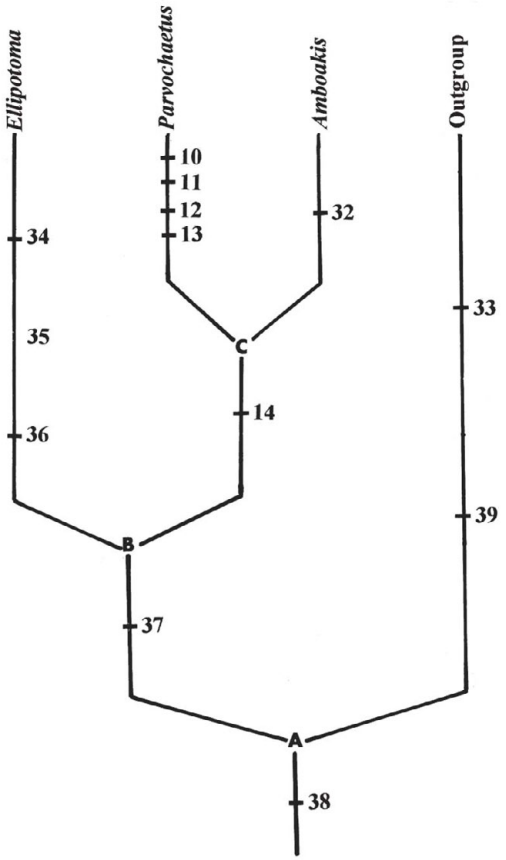


Figure 151. Hypothesis of phylogenetic relationship among *Ellipotoma*, *Parvochaetus*, and *Amboakis*

Character 39-Fifth antennomere: (0) not acuminate laterally; (1) acuminate laterally

Phylogenetic analysis of *Parvochaetus*, *Amboakis*, and *Ellipotoma*

An examination of 40 morphological characters resulted in the matrix depicted in Table 1. The matrix involves 5 species of *Parvochaetus*, 9 species groups for *Amboakis*, and 2 species of *Ellipotoma*. Although the outgroup for these 3 genera involve those genera with highly expanded funicular articles, the entire inventory of Epiphloeinae species at my disposal was used to determine the polarity states of characters such as structural composition of the funicular antennomeres, tibial spur formula and tarsal pulvilli formula, organization of elytral punctations, venation of the metathoracic wings, structural composition of the male and female internal organs, and configuration of the phallic apodeme.

Phylogenetic interpretations

Evidence suggests that ancestral *Parvochaetus-Amboakis-Ellipotoma* originated in South America. I base this conjecture on the largely South American distribution of the extant species, very southern South American relictual distribution of four *Parvochaetus* species, considerable morphologic diversification evident among these South American *Parvochaetus* species, substantial evolutionary inertia displayed by presumed South American ancestral stocks (ancestors A-F, see figure 152), and extensive South American proliferation of two distantly related *Amboakis* species group taxa, the *micula* (Map 8) and *nova* (Map 7) species groups. Such an interpretation of the center of origin for the progenitor of these genera would suggest an ancient origin of this line of epiphloeines, perhaps back to the Late Cretaceous or Early Tertiary, which would help explain the predominance of South American diversification of *Parvochaetus* and the relictual distribution of *A. erythrohapsis* in western Mexico. Such a scenario necessitates multiple dispersals into Middle American latitudes, followed by vicariant events linked to Caribbean tectonics.

Figure 151 depicts my hypothesis of phylogenetic relationships among the three genera included in this treatise. The initial divergence of the progenitor of these genera (ancestor A) would have taken place in South America. Cataclysmic events such as the Andean uplift, purported to have occurred over 27 million years ago (Ford, 2006: 99), would have provided evolutionary inertia for diversification of ancestral stocks. The ancestral stock that evolved towards *Ellipotoma* became progressively narrower in body form; this would have enabled these beetles to more efficiently enter the cylindrical galleries of wood infesting beetles. Also, there was a secondary loss of the 2^{o} elytral disc setae, possibly lessening integumental friction with the tubes of narrow wooden galleries.

The complementary stock produced ancestor B in which the funicular antennomeres first established their expanded form. This ancestor then bifurcated to produce the forbearers of *Parvochaetus* and *Amboakis* species. The *Parvochaetus* ancestor D (Fig. 152) apparently diversified in the refugial mountains of the Brazilian Highlands (Opitz 2005: 112). In this ancestor, there would have been a genetic fixation towards elongation and narrowing of the antennal club, undoubtedly an adaptation towards greater afferent efficiency. The importance of antennal surface as a function of afferent capabilities has been emphasized by Kaissling (1971: 357). Also, in ancestor

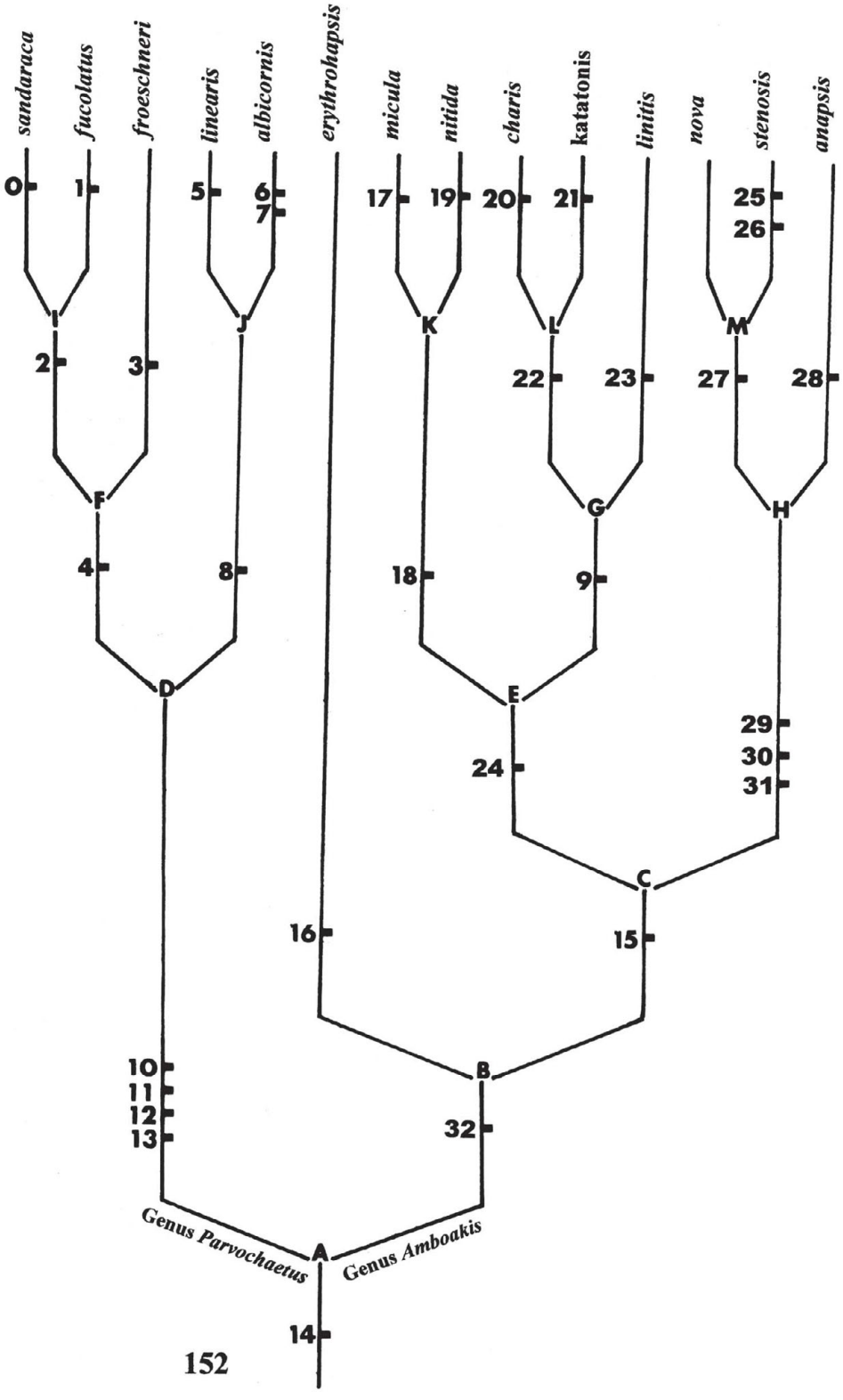


Figure 152. Hypotheses of phylogenetic relationships among species groups of *Parvochaetus* and *Amboakis*

D, the mandibular penicillus was enlarged, the ocular notch became obtuse, and the phallic struts significantly widened. A phallobasic rod became incorporated into the strut structure, presumably to strengthen the widened struts.

Ancestor D proliferated two lines of evolution. In one line, which generated ancestor F, the lateral aspects of the elytra became yellow. Then, ancestor F diversified to an extent that its two species, *sandaracus* and *fucolatus*, who apparently remained in the Brazilian Highlands, evolved a convex epipleural fold. Its sister lineage generated *froeschneri* in which the last antennomere of the antennal club became extraordinarily long. The progenitor of *linearus* and *albicornis* taxa emigrated northward from presumed southern ancestral grounds, *albicornis* to the highlands of Mato Grosso and *linearus* crossing the Panamanian isthmus to settle in montane Chiriquí. The presence of heretofore uncollected *Parvochaetus* taxa from the western and northern Andes is likely in view of the montane arbophilic habitats that were generated by the Andean uplifts.

The early diversification of ancestral *Amboakis* (ancestor B, figure 152) produced forbearers of the monotypic species group *erythrohapsis*. The available evidence suggests that there was considerable extinction in the evolutionary history of this *Amboakis* line and that its only known species evolved from progenitors that must have successful dispersed northward across several barriers (Isthmus of Panama, Isthmus of Tehuantepec, and the Nicaraguan Depression) to settle in the western highlands of the Mexican Sierra Transvolcanica.

The second line of evolution from ancestor B generated ancestor C in which the pronotal discal trichobothrial organ became set in a deep transverse depression, perhaps signifying a more intensive role for trichobothrial antipredatory function (Opitz 2004: 21). Ancestor C generated ancestral *Amboakis* that became more widespread in distribution with particular copious divergences in the highlands of the South American Altiplano Complex, Amazon Basin, and mountainous regions of Middle America. Ancestor E developed a line of *Amboakis* that evolved a shorter, more squat, body form. From this ancestor evolved ancestral species K that in time generated the speciose species group *micula* and the bitypic group *nitida*.

The second lineage from ancestor E produced progenitor G whose species evolved profuse distribution of 2° setae on the elytral disc. The dome-shaped pronotum developed in ancestor L, whose descendants produced the Middle American *charis* group and the Middle American-West Indies *katatonis* group. The complimentary stock eventually gave rise to the *linitis* taxa that became exclusively Greater Antillean.

Ancestor C also produced a lineage in which the elytral punctations near the sutural margin became diffusely distributed. These changes eventually led to ancestor H whose subsequent evolution generated two stocks, one of which produced the South American *anapsis* group while the complementary stock yielded ancestor M whose further evolution produced the speciose *nova* group and the most derived species in the genus, the monotypic Mexican *stenosis* group.

Zoogeographic considerations

The known distributions of *Parvochaetus*, *Amboakis*, and *Ellipotoma* are depicted in 10 maps and presence of species in refugial forests is noted in Table 2. The Table presents species distributions in endemic regions (clerofaunas) and in essence defines geophysical parameters of the species of the three genera under study. The regions, save the Northern Antilles, are defined in Opitz (2005: 105), and in essence are extensions of biogeographic concepts advocated by Erwin and Pogue (1988: 181), Liebherr (1994: 847), and Whitehead and Ball (1997: 396).

Proposals of checkered beetle biogeographical patterns, and attempts to correlate such patterns with environmental parameters and geophysical prehistoric events is risky, especially when epiphloeines are involved. Fieldwork suggests that these beetles are rarely collected in numbers unless they are taken amidst bark beetle infestations. Moreover, their thoracic structure is typical of strong fliers, which makes them capable of distant dispersion as bark beetle infestations subside. Collecting these insects away from predatory aggregates is very chancey with the result that few locality records are available for in depth analyses of zoogeography. The following comments about *Parvochaetus*, *Amboakis*, and *Ellipotoma* zoogeography are tentative. I hope that they will stimulate future discourse.

The known distribution of *Parvochaetus* is somewhat enigmatic (Map 1). Four of the five species that comprise the genus are known only from southern Brazil. The fifth, *P. linearus*, has been found only in western Panama; constituting a difference in latitudinal terrain of about 30°. Minimal collecting efforts could explain this geographic disjunction. However, I have examined hundreds of checkered beetles from Panama to Brazil gathered by knowledgeable collectors such as J. & B. Bechyné, E. Klages, M. Alvarenga, E. Furtado, and W. Hansen. Further, H. Bates

Table 2. Distribution of species of *Amboakis*, *Parvochaetus*, and *Ellipotoma* in Areas of Endemism.

Areas of Endemism*	No. of Species of *Amboakis*	No. of Species of *Parvochaetus*	No. of Species *Ellipotoma*
Northern Antilles	●●●		
Mexo-America	●●●		
Nuclear Central America	●+		
Insular Central America	●●+	●	
SA-Cordillera Occidental	●●		
SA-Cordillera Oriental	●●		●
SA-Amazon Basin	●●●●●		
SA-Altiplano Complex	●●●		
SA- Brazilian Highlands	●●●	●●●●	●

and W. Mann were particularly resourceful in their historical collecting in the Amazon Basin (Chapin 1927: 1).

The considerable field efforts of the above-mentioned naturalists provide some basis for the assumption that collection-related biases might not be the answer to the distribution disjunction under consideration. Perhaps the geographic disparity represents widespread taxa distribution followed by range reduction caused by environmental shifts during Middle American and South American paleohistory. Initially, there would have been a proliferation of *Parvochaetus* species throughout Amazonia, then range disruption and vicariance, and possibly extirpation, by glaciations, changes in river courses, climatic shifts, and possibly influx of inland sea waterways (Erwin 1981: 177). Ultimately, the northern peripheral taxa of *Parvochaetus* would have dispersed to the refugial highlands of western Panama, prior to Andean orogeny during the Miocene and early closure of the Panamanian portal; events that commenced about 25 million years ago (Ford 2006: 99; Donnelly 1988: 25). At the other geographic extreme, the more southern members of the genus took refuge in the Atlantic forests of the Brazilian Highlands. Should specimens of *Parvochaetus* become available from the upper Amazon, then the distribution of the genus would parallel the biogeographic character of the *formicaria* lineage of the carabid genus *Agra* (Erwin and Pogue 1988: 181) with the exception that *Parvochaetus*, apparently, did not cross the Nicaraguan Depression (Whitehead and Ball 1997: 397).

Unlike in my treatment of *Parvochaetus*, I have considerable natural history information about *Amboakis* beetles that is relevant to their ecology and distribution; including personal experience with a live member of *A. taruma*. I concur with Erwin (1981: 175) that, "Correlation of habitat sequences with behavioral and structural characteristics adds power to phylogenetic and zoogeographic analysis".

The known methods used to collect *Amboakis* checkered beetles confirm my personal observations and conclusions that these beetles, as most other epiphloeines (Opitz 2004: 13), are primarily arbophilic taxa. Field observations (Opitz 2004: 13) suggest that they have strong bionomic ties with wood degradation habits of lignicolous insects involving especially tree volatiles such as oleoresins (Harwood and Rudinsky 1966: 29) and pheromone-emitting bark beetles to which they, like many other groups of clerids, are strongly attracted (Piman and Vite 1971: 404; Whittaker and Foemy (1971: 759; Vite and Williamson 1970: 238; Dixon and Payne 1979: 180, 1980: 381; Billings and Cameron 1984: 1545; Mizell et al., 1984: 180; Billings 1986: 488). Any attempt to make zoogeographic sense of *Amboakis* species must

take into account parameters such as ecological ties with forest-dwelling insects, and in particular, association with bark beetle infestations, present and past deforestation practices, capability of disbursement as strong flyers, and collection-based biases.

Assuming that my hypothesis of *Amboakis* species group phylogeny approximates reality, then the following distributional relationships come to light (see Map 5): One, there is considerable geographic distance between the primitively characterized survivor species of ancestral *Amboakis* (*A. erythrohapsis*) and the *micula*, *charis*, and *nova* groups which also display plesiotypic taxa; two, the *charis* group ancestral stock evolved into species that became widely distributed in Central America (= Mexico to Panama, *sensu* Opitz 2005: 102) with one species extended into western Cuba; three, post-ancestral evolution of the *micula* and *nova* groups involved extensive radiation in South America; four, two out of the three sister species groups have close geographic ties between them, whereas there is considerable terrain between the highly derived monobasic *stenosis* group and the northernmost species taxon (*A. selva*) of its sister species group *nova*.

Credible conjecture identifying the geographic origin of *Amboakis* taxa is germane to a synthesis to correlate present distributions with historical biogeography. While the descendants of *Amboakis* ancestral taxa K and M (see figure 152) diversified extensively in South America, the most plesiotypic species of the genus, *A. erythrohapsis*, is known only from the Sierra Transvolcanica of Mexo-America (= southern border of USA to the Isthmus of Tehuantepec, sensu Opitz 2004: 282), the putative vicariant of the more ancient Mexican terrain of Sierra Madre Oriental (Liebherr 1994: 855). Noteworthy is the putative absence of *Amboakis* from the Sierra Madre Oriental and its presumed absence from the entire eastern side of Mexico.

A possible scenario for the geographic disparity between *A. erythrohapsis*, and other basic stocks of the genus that generated Middle American *Amboakis* endemics, might be that source populations of *Amboakis* from South America generated lineages that moved northward in several waves, the first occurring prior the Andean orogeny, some 27 MYA (Ford 2006: 99). This early wave of *Amboakis* would have traversed an early Panamanian portal perhaps interrupted by a proto-Antillean archipelago during late Cretaceous or early Cenozoic (Savage 1982: 485; Rosen 1975: 445). This ancestral *Amboakis* fauna would have generated the relatively primitive lineage leading to *A. erythrohapsis*. The absence of close relatives of *erythrohapsis* in the rest of Middle America could be attributed to extirpation by the vicissitude character of that region during the middle Tertiary (Savage 1982: 473; White 1986: 176)).

If we root ancestral *Amboakis* to early Tertiary, take into account possible barriers to west-east dispersals (Ball 1992: 367), and assume recent immigration of the genus into Belize and Central Honduras, then the absence of *Amboakis* from Mexico's eastern slopes may be interpreted as a consequence of the Yucatanian Bolide impact as predicted by Alvarez and Asaro (1990: 78). Elsewhere (Opitz 2004: 108), I alluded to the preponderance of monotypic clerine genera in the environs of the Isthmus of Tehuantepec, reflecting on the possibility that many lineages would have been drastically reduced in species taxa as a result of the Yucatanian Bolide impact. Alternatively, its absence from that region may be a manifestation of destruction of habitat and/or due to the conventional collection biases.

A few comments about the vicariant sister pair involving the Central American *A. charis* and the Cuban *A. binotonis* may be informative to date the ancestry of *Amboakis*. A prehistorical (mid-Eocene, some 48 MYA) close association between Cuba and Mexo-America has been hypothesized by Sykes, et al. (1982: 10,666) and Rosen (1985: 652). Assuming absence of over sea dispersal, we may reasonably postulate that considerable diversification of *Amboakis* had already taken place in Mexo-America and Nuclear Central America (= Isthmus of Tehuantepec to Nicaraguan Depression, *sensu* Opitz 2004: 106) while Insular Central America (= Nicaragua Depression to Colombian border, *sensu* Opitz 2004: 106) existed as an island archipelago and served as a formidable barrier to south to north or north to south dispersal (Keigwin 1982: 351; Donnelly 1988: 23). This supports the view that considerable *Amboakis* evolution had taken place somewhere north of the Nicaraguan Depression, probably in Mexo-America, with subsequent vicariant episodes promulgating the extant distributional patterns in Middle America and Northern Antilles.

In conclusion, the predominant distribution of *Parvochaetus*, *Amboakis*, and *Ellipotoma* taxa in South America suggests that the progenitor of these genera may have existed on that continent. Early South American diversification would have produced 3 ancestral stocks, each of which fostered lineages that expanded northward twice after closures of the Pacific and Atlantic portals; the early Cenozoic land connection (White 1986: 180) and the much later isthmian closure of the late Tertiary (Ford 2006: 99).

These temporal frameworks and paleographic dispersals and vicariance events would explain the presence of relatively primitive *Amboakis* elements in Mexico and the presence in Middle America of the more derived elements of South American ancestral stocks.

Clave para *Parvochaetus*, *Amboakis*, y *Ellipotoma*

Hay una variedad de géneros, superficialmente similares, en la sub-familia Epiphloeinae, que comparten el carácter de antenas con 10 antenomeros. En esta categoría se incluye *Decorosa* Opitz (Opitz, en prensa) (Republica Dominicana), *Madoniella* Pic (1935: 10) (USA hasta Argentina), *Ellipotoma* Spinola (1844: 38) (Honduras hasta Brasil), *Parvochaetus*, gen. n. (Panama hasta Brasil), y *Amboakis*, gen.n. (Mexico hasta Argentina). Se ofrece una discusión sobre la discriminación de estos géneros.

La presencia o ausencia de setas secundarias sobre los elitros (comparación entre figuras 44 y 140), la forma general del cuerpo, los diferentes arreglos de las puntuaciones elitrales, y la diferencia de anchura de ojo con relación a la anchura del vertex son claves para discriminar las especies entre estos tres géneros. La forma de las antenas, especialmente la anchura de los antenomeros funiculares y la forma de los antenomeros de la maza antenal, también es carácter diagnostico, aunque la forma de los artejos funiculares en *Ellipotoma* se acerca a la que se encuentra en algunas especies de *Amboakis* (comparar figuras 96 y 137). La forma de la antena (Figuras 116e-g) podrá distinguir la mayoría de las especies de estos géneros.

1. Setas secundarias elitrales ausentes (Fig. 140); antenomeros funiculares no ensanchados (Figuras 116g-116j); forma del cuerpo ovalado alargado (Fig. 127); dos tercios anteriores del disco elitral con puntuaciones arregladas en 9 líneas (Honduras hasta Brazil) .. *Ellipotoma* Spinola
1'. Setas secundarias elitrales presentes (Fig. 44); antenomeros funiculares ensanchados (Fig. 116g-116h, 116j); forma del cuerpo no tan alargado (frontispiece y figura 117); dos tercios anteriores del disco elitral con puntuaciones arregladas en 10 líneas, a veces un poco desordenadas cerca del margen sutural 2

2(1'). Primero y secundo antenomeros de la maza antenal triangulares (Fig. 116f) (Mexico hasta Argentina) ..... *Amboakis*
2'. Primero y secundo antenomeros de la maza antenal alargados (Fig. 116e) (Panama hasta Brasil) ..... *Parvochaetus*

Clava para los grupos de especies y las especies de *Parvochaetus*

1. Márgenes laterales de los elitros estrechamente amarillos 2
1' Márgenes laterales de los elitros oscuros 4

2(1) Pliegue epipleural no hinchado (Brasil: Guanabara) (grupo *froeschneri*) .... *Parvochaetus froeschneri*, sp. n.
2'. Pliegue epipleural hinchado 3

3(2'). Lados del pronoto rojos; puntuaciones elitrales sub-seriadas en algunas partes del disco, puntuaciones distribuidas de manera difusa en su mayoría; maza antenal particularmente delgada (Fig. 74) (Brasil: Río Grande del Sur) (grupo *fucolatus*) ..... *Parvochaetus fucolatus*, sp.n.
3'. Lados del pronoto principalmente oscuro, solo los ángulos anteriores son amarillos; punctuaciones distriubidas de manera difusa; maza antenal menos delgada que en las especies anteriores (Fig. 72) (Brasil: Santa Catarina) (grupo *sandaraca*) ..... *Parvochaetus sandaraca*, sp.n.

4(1'). Pronoto oscuro con una línea vertical estrecha (Fig. 12); ultimo antenomero completamente café; puntuaciones elitrales seriadas en la mayor parte del disco elitral (Panama: Chiriquí) (gropo *linearis*) ..... *Parvochaetus linearis* (Gorham)
4'. Pronoto oscuro con una línea vertical ancha (Fig. 11); ultimo antenomero principalmente amarillo; puntuaciones elitrales no seriadas en ninguna parte del disco elitral (Brasil: Mato Grosso) (grupo *albicornis*) .... *Parvochaetus albicornis*, sp.n.

Clave para los grupos de especies y para las especies del genero *Amboakis*

No fue muy difícil de preparar esta clave de *Amboakis* ya que los caracteres externos como el color, que son a veces variables adentro de algunas especies de otros géneros, aquí corresponden bien a las diferencias inter-específicas de los aedeagos.

1. Elitros ovalados estrechos, alrededor de 3 veces más largos que ancho (Figs. 25, 121) 2
1'. Elitros ovalados más anchos, alrededor de 2 veces más largos que anchos (Fig. 28, 118) 11

2 (1). Epipleuras elitrales y márgenes sutúrales paralelas (Fig. 25) 3
2'. Epipleuras elitrales y márgenes sutúrales no paralelas, margen epipleural abriéndose en la mitad posterior (Fig. 124) (Mexico: Oaxaca) (grupo *stenosis*) ..... *Amboakis stenosis*, sp. n.

3 (2). Puntuación elitral gruesa, disco pronotal subrugoso (grupo *nova*) 4
3'. Puntuación elitral fina, disco pronotal no subrugoso (grupo *anapsis*) 9

4 (3). Cranium negro; cabeza a altura de los ojos, mucho mas ancha que el pronoto (Fig. 52) (Colombia: Cochabamba) ..... *Amboakis rudis*, sp. n.
4'. Cranium rojo; cabeza a altura de los ojos, solo un poco mas ancha que el pronoto (Fig. 51) 5

5 (4'). Margen anterior del pronoto y/o arco pronotal (Fig. 31) con un poco de rojo 6
5'. Margen anterior del pronoto y/o arco pronotal sin rojo, solo negro 7

6 (5). Margen humeral con una línea vertical clara posterior (Fig. 121), o margen humeral por lo menos pálido con solo el margen anterior rojo (Costa Rica: Heredia) ..... *Amboakis selva*, sp. n.
6'. Margen humeral sin línea vertical clara posterior; margen anterior del pronoto y arco pronotal rojo (Fig. 117) (Brasil: Bahía; Goias; Nova Teutonia; Sao Paulo. Argentina: Corrientes; Misiones) ... . *Amboakis nova* (Opitz)

7 (5'). Margen humeral con una línea pálida vertical larga que se conecta con una línea transversal pálida (Fig. 125) (Colombia: Cauca) .... *Amboakis cauca*, sp. n.
7'. Margen humeral sin línea pálida vertical 8

8 (7'). Todas las puntuaciones de la parte media del elitro del mismo tamaño, puntuaciones no muy profundas (Fig. 126) (Panama: Chiriquí) .... *Amboakis epiomidius*, sp. n.
8'. Puntuaciones de la parte media del elitro de tamaños diferentes, las puntuaciones cercanas al margen sutural son mas pequeñas, las puntuaciones en general profundamente impresas (Bolivia: Cochabamba) ..... *Amboakis vescus*, sp. n.

9(3'). Cranium y pronoto unicolores, amarillo (Fig. 123) (Venezuela: Apure) ... *Amboakis anapsis*, sp. n.
9'. Cranium amarillo; pronoto negro 10

10 (9').Artículos funiculares muy ensanchados (Fig. 89) (Venezuela: Barinas) .... *Amboakis barinas*, sp. n.
10'. Artículos funiculares poco ensanchados (Fig. 91) (Brasil: Amazonas) ... *Amboakis funebris*, sp. n.

11 (1'). Puntuación elitral difusa cerca del margen elitral, no seriadas (grupo *nitidus*) 12
11'. Puntuación elitral seriada cerca del margen elitral 13

12 (11). Pronoto mayormente amarillo, arco pronotal amarillo o negro (Fig. 122) (Brasil: Amazonas) ..... *Amboakis nitida* (Gorham)
12'. Pronoto negro (Fig. 119) (Brasil: Amazonas; Mato Grosso) ..... *Amboakis capitata* (Gorham)

13(11'). Puntuaciones elitrales arregladas en 11 líneas, algunas puntuaciones están fuera de las líneas cerca del margen sutural (Mexico: Michoacán; Jalisco) (grupo *Katatonis*) .... *Amboakis katatonis*, sp. n.
13'. Puntuaciones elitrales arregladas en 10 líneas 14

14 (13'). Pronoto con grandes manchas negras (grupo *charis*) 15
14'. Pronoto sin manchas negras 16

15 (14). Pronoto con 4 manchas negras amplias (Fig. 60) (Honduras: Olancho. Belize: Orange Walk. Panama: Chiriquí) ..... *Amboakis charis*, sp. n.
15'. Pronoto con 2 manchas negras amplias (Fig. 59) (Cuba: Cienfuegos) .. *Amboakis binotonis*, sp. n.

16(14'). Cranium y pronoto unicolores, amarillo (grupo *linitis*) 17
16'. Cranium y pronoto bicolores, o si son unicolores, entonces son negros (grupo *micula*) 18

17(16). Elitros y patas negras, con un matiz azulado, tamaño de aproximadamente 4 mm (Republica Dominicana: La Vega) .... *Amboakis linitus*, sp. n.
17'. Elitros café oscuro, patas bicolores con margen dorsal café y lo demás amarillo, tamaño de aproximadamente 3 mm (Cuba: Cienfuegos; Granma) ..... *Amboakis flavicollis* Zayas

18 (16').Disco pronotal mayormente negro, estrechamente amarillo solamente en el margen anterior y en parte del arco pronotal 19
18'. Disco pronotal unicolor, negro 20

19 (18'). Ultimo segmento de las antenas mas de dos veces mas largo que el penúltimo (Fig. 85) (Brasil: Mato Grosso; Nova Teutonia; Paraná) .... *Amboakis prolata*, sp. n.
19'. Ultimo segmento de las antenas solo levemente mas largo que el penúltimo (Mexico: Guerrero) (grupo *erythrohapsis*) .... *Amboakis erythrohapsis*, sp. n.

20 (18'). Pronoto con dos bandas amarillas anchas a lo largo de los lados 21
20'. Pronoto sin bandas amarillas a lo largo de los lados, completamente negro 22

21 (20). Elitros completamente negros (Perú: Huanuco. Bolivia: Santa Cruz; Cochabamba. Brazil: Mato Grosso) ..... *Amboakis micula*, sp. n.

21'. Elitros café oscuro, con una línea pálida oblicua atrás de la mitad (Argentina: Salta) .... *Amboakis atra*, sp. n.

22 (20'). Antenomeros funiculares muy extendidos (Fig. 88) (Brasil: Amazonas)*Amboakis taruma*, sp. n.

22'. Antenomeros funiculares no muy extendidos (Fig. 95) 23

23(22'). Pronoto muy transverso (Fig. 61), la relación entre lo ancho y lo largo del pronoto es de 50:40 (Brasil: Amazonas) ..... *Amboakis mica*, sp. n.

23'. Pronoto muy transverso (Fig. 49), la relación entre lo ancho y lo largo del pronoto es de 45:38 (Bolivia: Cochabamba) .....*Amboakis incondita*, sp. n.

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