Classification, natural history, and evolution of Epiphloeinae (Coleoptera, Cleridae) : Part IV. The genera Pyticeroides Kuwert, 1894 and Diapromeces Opirtz, 1997

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Classification, natural history, and evolution of Epiphloeinae (Coleoptera, Cleridae) Part IV. The genera *Pyticeroides* Kuwert, 1894 and *Diapromeces* Opitz, 1997

by **Weston Opitz**

Abstract. This portion of a series of revisions of Epiphloeinae genera deals with the multispecies genus *Pyticeroides* Kuwert, 1894 (type species *Pyticeroides arrogans* Kuwert, 1894; type locality – Perú: Amazonas) and the monotypic genus *Diapromeces* Opitz, 1997 (type species *Diapromeces aclydis* Opitz, 1997; type locality – Brazil: Santa Catarina: Nova Teutonia). *Diapromeces* is represented by *D. aclydis*. *Pyticeroides* is revised to include *P. manni* Chapin, 1927, Bolivia-Beni; *P. chiriquianum* (Gorham, 1883), Panamá-Chiriquí; *P. laticornis* (Say, 1835), USA-New Jersey; *P. arrogans*, Perú-Amazonas; *P. trilineatum* (Chevrolat, 1874), México-Jalisco; and 27 new species with their type-locality country and states as follows: *P. inexilis*, Brazil-São Paulo; *P. petilus*, Bolivia-Cochabamba; *P. iscus*, Brazil-Pará; *P. jubaris*, Brazil-São Paulo; *P. decurialis*, Brazil-Espíritu Santo; *P. ichnopsis*, Brazil-Bahia; *P. notialis*, Argentina-Tucumán; *P. rifkindi*, Costa Rica-San José; *P. tessares*, Honduras-Olancho; *P. acaris*, Colombia-Magdalena; *P. similis*, Brazil-Rondonia; *P. caligneus*, Brazil-Paraná; *P. roseicollis*, Costa Rica-Guanacaste; *P. stenotes*, Venezuela-Aragua; *P. eurides*, Brazil-Mato Grosso; *P. strictus*, Bolivia-Cochabamba; *P. vichadium*, Colombia-Vichada; *P. maesi*, Nicaragua-Granada; *P. cinericius*, Brazil-Mato Grosso; *P. hansoni*, Ecuador-Napo; *P. fustis*, Brazil-Mato Grosso; *P. luteolus*, Brazil-Nova Teutonia; *P. quadratus*, Brazil-Goias; *P. inconscriptus*, México-Chiapas; *P. caecoatus*, México-Chiapas; *P. plautus*, México-Oaxaca; *P. enormis*, Bolivia-Cochabamba. A neotype is selected for *P. laticornis*. Lectotypes are designated for *P. chiriquianum*, *P. arrogans*, and *P. trilineatum*. The mouthparts and structural composition of the alimentary canal leave little doubt that these checkered beetles are predatory. Many specimens of *P. laticornis* have been captured from dead wood infested with a variety of lignicolous eggs, immatures, and adult insects on which the adults and larvae of *P. laticornis* feed. Temporally, these beetles are collected throughout the year in the subtropical and tropical environs, and were captured at elevations of 30 m to 1630 m, with the aid of Malaise traps, sticky traps, beating sheet, and ultraviolet light. Three larval specimens of *P. laticornis* were examined, redescribed, and illustrated. It is suggested that the epicranial suture is well developed in checkered beetle larvae, but that only in the members of the Thaneroclerinae is the coronal component of the suture present. The most definitive characteristic of these beetles within the subfamily Epiphloeinae is that the antennae are comprised of nine antennomeres. All other known members of the subfamily Epiphloeinae have the antenna comprised of 11, 10, or 8 antennomeres. Additional autapotypic characteristics of *Pyticeroides* include presence of paralateral postocular streaks on the cranium, presence of an indentation on the posterior border of the eyes, presence of a pronotal discal vitta, pronotal arch uniformly narrow-transverse, paralaterally depressed pronotal disc, and incised mesoscutellum. Forty-eight adult anatomical characters were used to postulate the evolution of the *Pyticeroides* species groups and of the monotypic *Diapromeces*. Two reconstructed phylogenies were generated manually and one with the Hennig86 computer program. There is considerable discussion about the significance of a bifid condition of the fifth antennomere in *P. enormis* sp.nov. One suggestion is that this antennal apotypy represents a transitional form of the fifth antennomere, an amalgamation from an ancestral condition characterized by an antenna composed of 10 antennomeres. Alternatively, the bifid antennomere may represent a developmental anomaly. Amidst the discussion of species group phylogeny, there are comments about the apparent relationships between geologic and environmental instabilities as natural selection factors for the more notable structural variations in the genus. Structural variations are more prominent among those species that exist in the montane regions of the western and northern Andes, and that the more homogeneous components of the genus correlate with more stable geologic and environmental environs of flat terrain. Included in this work is a Spanish translation of the abstract, discussions about the species groups of *Pyticeroides*, and key to species. Also, there is a treatise of natural history, discussion of species groups and troublesome key couplets, and a treatise of evolutionary interpretations. There are 114 line drawings, 6 distributional maps, 13 electron micrographs, 3 phylogenetic trees, and a table listing the distribution of character states among species groups that were used in the phylogenetic analysis.

Key words. Coleoptera – Cleridae – Epiphloeinae – *Pyticeroides* – *Diapromeces* – taxonomy – phylogeny – zoogeography – new species.

Contents

Introduction

One of the pleasantries inherent in the field of systematic entomology is the association one makes with people that have a passion for collecting insects. These colleagues bring much joy to hobbyists and academicians alike when they make their "catches" available to others. Collection-oriented naturalists come from all walks of life and most share a passion for inquiry and discovery and seemingly would go to the ends of the earth to capture the unknown beetle or butterfly that must surely be there.

Recent loans, exchanges, and gifts from James Wappes, Robert Turnbow, Jr., Fred Andrews, Jacques Rifkind, Frode Ødegaard, Wilford Hanson, Michael Thomas, Paul Skelley, Angel Solis, Jean-Michel Maes, John Balderson, Albert Allen, and most recently Michael Sharkey have brought much pleasure to my laboratory. These colleagues, and many others, continue to fuel my intensity for checkered beetle systematics and I thank them for it!

There is another side of this coin, however, and that is that with every shipment of material I receive I invariably become aware of how much there is yet to be done and how comparatively little I know about the material that is before me. Then, there is the inevitable delightful anxiety of receiving that solitary female specimen that potentially represents a new species in a world of beetle research that for the most part is dependant on the attributes of the aedeagus.

Of the various research projects to which I am committed, the one concerning the subfamily Epiphloeinae has proven to be the most difficult, mostly because this is a group with many genera laden with cryptic species. Moreover, unless one happens to be at the right place, at the right time, when adult emergence and predation on emerging lignicolous insects are in temporal synchrony (Opitz 2004: 6), these epiphloeines are likely to be gathered one or two specimens at a time. More often than not, it takes many years to accumulate sufficient specimens for a reasonable understanding of intraspecific variation, and to justify morphologically based credible hypotheses about the phenotypes that we presume represent species-level discontinuities.

Sometimes, an effort in my search for epiphloeine species goes something like this: I study the male of a new species from Chiapas, México. A year later, I may get a potentially conspecific female from Cerro Campana, Panamá. Then one year later, I get the elusive male from Cerro Campana and after further study discover that the recently arrived Panamanian male is yet another new species. On many occasions, such was the story in my recent work of *Plocamocera* Spinola, 1844 (Opitz 2004) and this has also often been the circumstance with my present treatise about *Pyticeroides*. To approximately quote my friend and colleague, William F. Barr, *"time and time again I get a shipment and almost always am surprised to find something totally unexpected in the form of one specimen, invariably never to see another one of the same kind."* It was this bit of wisdom in cleridology, and his continued support in many ways, that compelled me to describe *Barriella longicornis* Opitz (2003), based on one specimen held in abeyance for some 20 years during which time no other representative of that taxon has become available (Opitz 2003: 37). For these reasons, I am compelled to plead for patience to those of you who lend checkered beetles to cleridologists.

In my previous contributions (OPITZ 2004; OPITZ 2006) I added 76 new species to our inventory of epiphloeines. In this treatise, involving the sister taxa *Pyticeroides* Kuwert, 1894 and *Diapromeces* Opitz, 1997, I add 27, and the surprise of epiphloeine diversity goes on and on with my hope that it will not end too soon so that in my lifetime I will have the opportunity to discover and make known a significant representation of this fascinating group of checkered beetles.

The higher classification of the Cleridae has had a flurry of activity within the last two decades. Many of the contributions may be attributed to the comprehensive works of KOLIBÁČ (1997, 2003, 2004) who recommends various classificatory changes in the higher classification of Cleridae and Cleroidea. However, to maintain consistency in my presentations of epiphloeine generic-level taxa, I will, at least for now, follow the higher classification of CROWSON (1964), which assesses the epiphloeine Cleridae lineage worthy of subfamily status. It is my intent to ultimately provide a catalogue of the epiphloeine species taxa, which will be the last contribution of the epiphloeine series of revisions. Part of the catalogue will involve an assessment of whether the epiphloeines should be redefined as a subfamily or reduced to tribal status as recommended by Kolibáč and other authors (LAWRENCE et al. 1999).

Material

Repository of Specimens

The following acronyms taken from ARNETT et al. (1993) indicate collections from which specimens were borrowed. Names and e-mail addresses of curators of these collections are in parentheses.

AMNH . . . . . American Museum of Natural History, Department of Entomology, Central Park West at 79th Street, New York, New York 10024-5192, USA (Lee Herman, herman@amnh.org)

BMNH . . . . . British Museum of Natural History, Department of Entomology, SW 5BD, London, UK (Maxwell V. L. Barclay, m.barclay@nhm.ac.uk)

CASC . . . . . California Academy of Sciences, Department of Entomology, Golden Gate Park, San Francisco, California 94118, USA (David H. Kavanaugh, dkavanaugh@calacademy.org)

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

CHAH . . . . . Henry A. Hespenheide Collection, University of California, Los Angeles, Department of Organismic Biology, Ecology and Evolution, 621 Charles E. Young South, Box 951606, Los Angeles, California 90095-1606, USA (henryh@biology.lifesci.ucla.edu)

CMNC . . . . . Canadian Museum of Nature, Insect Collection, Post Office Box 3443, Station D, Ottawa, Ontario, Canada K1P 6P4 (Robert S. Anderson, randerson@mus-natur-ca, Francois Genier, fgenier@mus-natur.ca)

CMNH . . . . . Carnegie Museum of Natural History, Invertebrate Zoology, 4400 Forbes Avenue, Pittsburgh, Pennsylvania 15213, USA (Robert L. Davidson, davidson@clpgh.org)

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EMEC . . . . . Essig Museum of Entomology, University of California, College of Agriculture, Division of Entomology and Parasitology, California Insect Survey, Berkeley, California 94720, USA (Cheryl Barr, cbarr@nature.berkeley.edu)

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

FSCA . . . . . Florida State Collection of Arthropods, Division of Plant Industry, Florida Department of Agriculture, P. O. Box 147100, Gainsville, Florida 32614-7100, USA (Mike Thomas, thomasm@doacs.state.fl.us; Paul E. Skelley, afn07376@afn.org)

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LACM . . . . . Natural History Museum of Los Angeles County, Entomology Section, 900 Exposition Boulevard, Los Angeles, California 90007, USA (Brian P. Harris, bharris@nhm.org)

MCNZ . . . . . Fundacão Zoobotãnica 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, USA (Philip D. Perkins, perkins@oeb.harvard.edu)

MEMU . . . . . Mississippi State University, Mississippi Entomological Museum. Post Office Box 9775, Mississippi State, Mississippi 39762, USA (Terry Schaefer, tschaefer @entomology.msstate.edu)

MLPA . . . . . Universidad Nacional de la Plata, Facultad de Ciencias Naturales Y Museo, Division Entomologia, 1900 Paseo del Bosque, La Plata, Argentina

MNHN . . . . . Museum d'Histoire Naturelle, Entomologie, 45 bis, Rue de Buffon, Paris, France (Azadeh Taghavian, tagavian@mnhn.fr)

MZSP . . . . . Museu de Zoologia Universidade de Sao Paulo, Caixa Postal 42.694 01064-970, Sao Paulo, Brazil (Cleide Costa, cleico@usp.br)

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RFMC . . . . . Roy F. Morris II Collection, 2635 Ewelll Road, Lakeland, Florida 33811, USA (catchbugs@aol.com).

RGCG . . . . . Roland Gerstmeier Collection, Technische Universitat Munchen, Angewandte Zoologie, Alte Akademie 16, D-85350 Freising, Germany (Roland Gerstmeier, r.gerstmeier@wzw.tum.de)

RHTC . . . . . Robert H. Turnbow, Jr. Collection, Directorate of Engineering and Logistics, Fort Rucker, Alabama 36362-5000, USA (turnbowr@rucker.army.mil)

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Methods

This study is based on 408 adult specimens and three larvae. Methods of dissection, illustration, and measurements were similar to those I described in my revision of *Perilypus* Spinola, 1841 (Ekis 1977). Values for the ratio of eye width to width of vertex were obtained with an ocular micrometer at the top of the head. Also, in the descriptions of taxa ratio measurements involving the pronotum and elytra, the higher number is listed first to match the descriptive term with the measurement. For example, a pronotal "width: length" ratio of 80:62 and the descriptive term " transverse" means that the value 80 represents the transverse or "width" and the 62 refers to the pronotal anterior to posterior measurement, the length measured at the midline from the pronotal anterior margin to the pronotal posterior margin.

Orismology stems from Ekis (1977) and Nichols (1989). Definitions associated with trichobothria source from Schuh (1975) and the coinage of new specific epithets were performed with the aid of Brown (1956). The SEM (scanning electron microscope) photographs were produced on a Scanning Electron Microscope-S-3500N, in the SEM laboratory of Kansas State University, Manhattan, Kansas.

Characteristic of revisionary works is the inevitable specimen(s) that cannot be credibly assigned to a species category on the basis of morphological characteristics alone. I have chosen to discuss such issues and specimens in a section entitled "Notes" located at the end of the relevant species descriptions.

All primary and secondary type specimens of nominal species were examined with the exception of the primary type of *Enoplium laticornis* (Mawdsley 1993: 163). Several collectors provided specimens preserved in Pampel's fixative (Ekis & Gupta 1971: 52) for study of the alimentary canal and internal reproductive organs. Only two of four cryptonephridial malpighian tubules are indicated in the illustrations of the alimentary canal. The figures of the female and male reproductive organs show only one of two ovaries, one of two testes, and one of two pairs of accessory glands, respectively. Several specimens were disarticulated for detailed study of the exoskeleton. Beneath each primary type specimen, I attached a protective support card, and describe, sequentially, the identity of items pinned with the primary type. As the funicular antennomeres are sometimes densely setose, with limits of individual funicular

antennomeres often cryptic, the antenna of specimens was often treated in warm KOH, which establishes a hypertonic condition for the antennomeres. This causes the intra-antennomeral membranes to swell and expand when the treated antenna is resubmerged in water; the swelling of the membrane is a function of hypotonic osmosis. With the antennal membrane joints expanded, the proximal and distal limits of each antennomere are easily observed making a clear illustration of the entire antenna possible. The abdomen of all males and some females were severed from the thorax, subjected to warm KOH, and dissected. Aedeagi and ovipositors were examined, described, and illustrated, and then placed in a plastic genital vial affixed to the appropriate specimen. Several specimens, preserved in Pampel's fixative were disarticulated for detailed study of the exoskeleton and of the internal organs.

Assessment of species-level discontinuities. The modern systematic literature abounds with ideas that veer from the definition of the biological species. Some of these efforts attempt to alleviate issues to accommodate philosophies that focus on operational methods instead of evolutionary based processes in systematic research. Understandably, some efforts seek to establish a method suitable for systematic work involving life forms that do not involve sexual reproduction, or, perhaps, evolve a method to complement or accentuate modern techniques.

However, I deal with a small portion of the reality of beetle diversity in which sexual reproduction is a way of life and I believe that the great diversity that exists in the Coleoptera is the direct result of evolutionary process consistent with the biological species as defined by MAYR (1969: 19; *"groups of actually or potentially interbreeding natural populations which are reproductively isolated from other such groups"*). If, and when, the opportunity arises, I am always delighted to perform hybridization experiments to test my species status hypothesis, as I was able to do with my work with *Perilypus* (EKIS 1977: 4). In the meantime, I will continue to agonize for hours about what manner of anatomical, ethological, geographical, or ecological variation is likely to indicate reproductive isolation among the population of checkered beetle samples under study. Eventually the search, which sometimes involves aspects of internal anatomy or electron microscopy, provides a reason to be optimistic about species-level hypotheses resulting from countless hours of dissections, microscopy, and fieldwork.

Lastly, I look forward to the day when I can implement modern technology, such as DNA analysis to augment, or modify, what I have previously learned about my animals. I wholeheartedly concur with LÖBL & LESCHEN (2005: 286), *"The trend appears to be away from organismal biology and towards molecular biology"*. But, I am also convinced that as long as there are people with intense interest for the natural world, and with an almost inborn drive to sample its diversity, there will always be a nucleus of dedicated field biologists and taxonomists to keep alive the fire of broad-based insect systematics. Trends and fund-generating fads usually do not last, but the drive for understanding the evolution of Earth's diversity has been forever branded into the character of evolutionary biologists that no techniques inconsistent with the cannons of evolutionary biology can subdue. For this, we owe much to people like Charles Darwin, Alfred Russel Wallace, Ernst Mayr, and Willi Hennig.

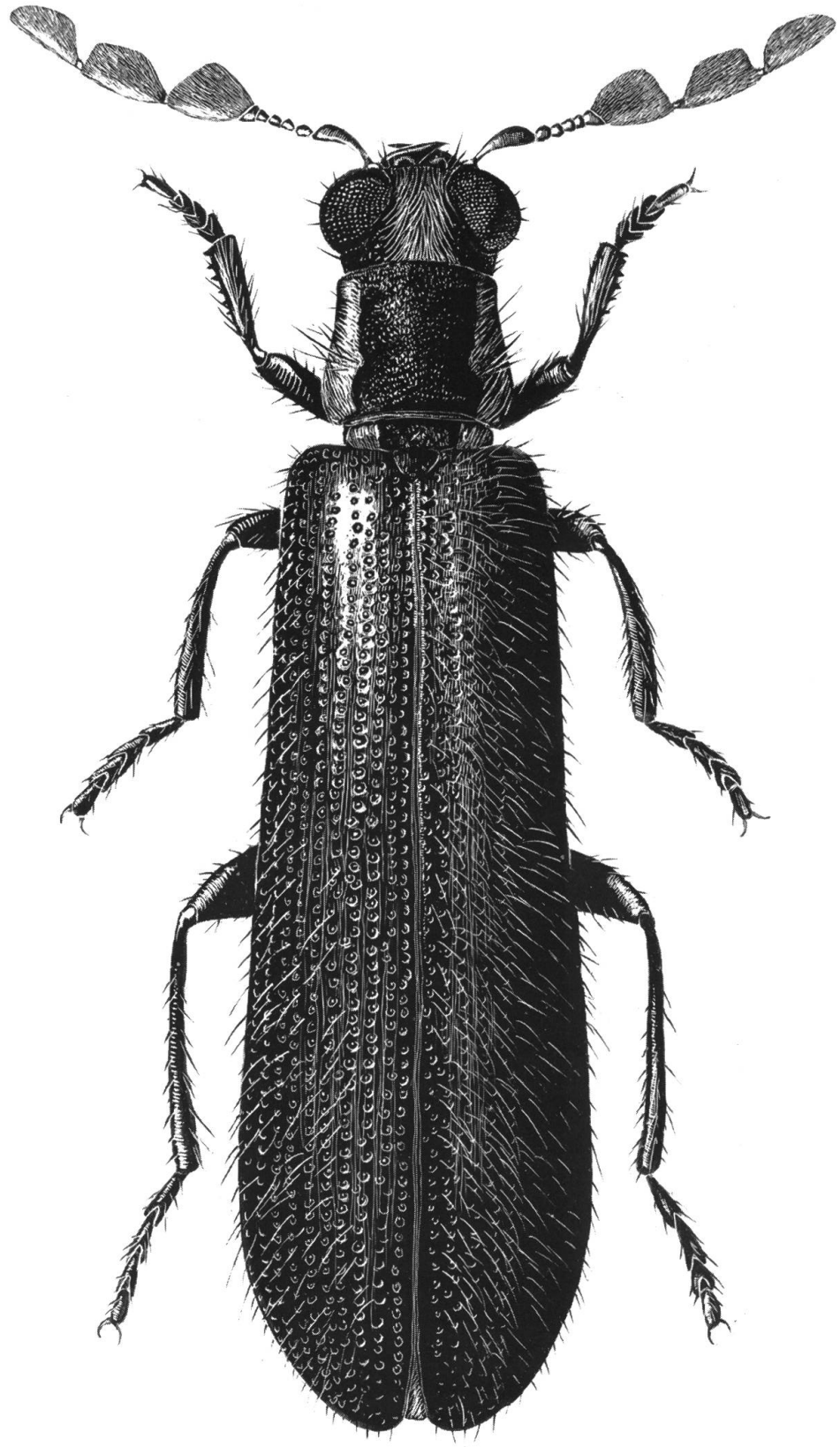
Phylogenetic methods. The sister group relationships of *Pyticeroides* and those of the major lineages within the genus have been postulated in accordance with guidelines established by HENNIG (1965, 1966). However, I am in agreement with the logic of TUOMIKOSKY (1967: 138) who advocates the use of apotypic and plesiotypic rather than apomorphic and plesiomorphic on the grounds that, *"Because phylogenetic work is not confined to the use of morphological characters, more general terms such as plesiotypic and apotypic would perhaps be preferable,..."*.

Explanations, clarifications, and enhancements of the Hennigian approach to evolutionary biology have been contributed by many authors many of whom are cited in WILEY (1981), NELSON & PLATNICK (1981), and SCHUH (2000). In a recent work (OPITZ 2004: 9), I briefly provided my interpretations of the population biology considerations inherent in the method associated with the establishment of sister group relationships at the level of the species.

The taxa within *Pyticeroides* form an anatomically coherent group. Some of the characters and character states seemingly useful for establishment of monophyletic species groups blend into each other once subjected to the scrutiny of length/width measurements and out-group comparisons. The derivativeness or primitiveness of the character states used to establish the suprageneric and infrageneric sister group relationships are based on comparisons of the majority of the known species within the subfamily Epiphloeinae and those of a variety of genera of the subfamily Korynetinae (*sensu* KOLIBÁČ 2003: 41). These taxa served as the out-groups in my assessments of character polarity. Some of the genera involved in the out-group analysis are *Ichnea* Laporte, 1836 *Madoniella* Pic, 1935, *Epiphlaeus* Spinola, 1841, *Amboakis* Opitz, 2006, *Parvochaetus* Opitz, 2006, *Ellipotoma* Spinola, 1844, and *Plocamocera* Spinola, 1844.

The "out-group rule" has been variously addressed and defined by LUNDBERG (1972: "related group"), ROSS (1974: 152: "ex group"), ERWIN (1975: 3), EKIS (1977: 117: "...taxa of at least the next highest category"), WATROUS & WHEELER (1975: 5), ARNOLD (1981), WHEELER (1981: 301), FARRIS (1982: 328), MADDISON et al. (1984: 83), COLLESS (1985: 364), NIXON & CARPENTER (1993: 414), and a variety of contributions listed in these works. In my estimation, this pivotal step in phylogenetic analysis has been most succinctly defined by WILEY (1981: 139), *"Given two characters (states) that are homologous and found within a single monophyletic group, the character (state) that is also found in the sister group is the plesiomorphic character (state) whereas character (state) found only within the monophyletic group is the apomorphic character (state)"* (parentheses mine). MADDISON et al. (1984: 83) pointed out that there are difficulties in applying the out-group rule when character states vary in the out-group. I do not find this a stumbling block, however, in that character states that are outrageously variable are not likely to be useful for phylogenetic interpretation and may be dismissed from further consideration in the analysis.

Moreover, high variability of a character state in the out-group may actually be useful if those states form a comprehensible homologous transformation series in which polarity decisions involving the extremes do not pose a problem. If so, one simply extends the out-group comparison to the next higher putatively related taxon level; or to whatever closely related taxon level is necessary. From the practicing taxonomic point



Habitus of *Pyticeroides laticornis* (Say)

of view, too much character state variation in clerids has not been the problem. In reality, much of the difficulty in systematic entomological research has more to do with the lack of evolutionarily useful species-level character state variations than with abundance of such variations.

Genus *Pyticeroides* Kuwert, 1894

Taxonomic history. The name *Pyticeroides* was first published in a key of the genera of "Die Enopliien" by KUWERT (1894: 7). The association of this genus with enopliine genera was continued in the works of LOHDE (1900: 103), SCHENKLING (1903: 112), and GAHAN (1910: 73). Then, in 1927 CHAPIN (1927: 8) aligned *Pyticeroides* with Epiphloeinae, a taxonomic association supported by the presence of two pair of trichobothrial organs on the pronotum and the absence of the oval lateral lamellae from the metendosternite (OPITZ 2006: Fig. 13). BLACKWELDER (1945: 388) unfortunately did not follow Chapin's lead and listed *Pyticeroides arrogans* Kuwert, 1894, *Pyticeroides manni* Chapin, 1927, and other epiphloeines under the subfamily Phyllobaeninae.

WOLCOTT & CHAPIN (1918: 108) established the genus *Neichnea* Wolcott et Chapin, 1918 to accommodate *Enoplium laticorn* Say, 1835 noting that, *"As it has been impossible to assign this species to any characterized genus, the above characterization has been drawn up to accommodate it"*. I have ascertained that *E. laticornis* Say (1835: 164) is unquestionably a congener of *P. arrogans* Kuwert (1894: 7), which is the type species of *Pyticeroides* (OPITZ 1997: 59). Additional literature dealing with the synonymic *Neichnea* Wolcott & Chapin (1918), or with *P. laticornis* (Say) involve, MELSHEIMER (1853: 83; *Ichnea*), Laporte de Castelnau, 1836), Klug (1842: 394; *Enoplium* Latreille, 1802), HALDEMAN & LECONTE (1853: 83; *Ichnea*), ULKE (1902: 23; *Ichnea*), LECONTE (1849: 23; *Ichnea*), WICKHAM (1895: 248, 252; *Ichnea*), WICKHAM & WOLCOTT (1912: 66; *Ellipotom*), SMITH (1900: 265; 1909: 303; *Ichnea*), DURY (1902: 149; *Ichnea*), WOLCOTT (1910: 858, 859; *Ellipotoma*; 1911: 123; *Ellipotoma*; 1947: 84; *Neichnea*), BLATCHLEY (1910: 859; *Ellipotoma*), CHAPIN (1917: 31; *Ellipotoma*), BÖVING & CHAMPLAIN (1920: 611, 637; larvae; *Neichnea*), LENG (1920: 14; *Neichnea*), BLACKMAN & STAGE (1924: 45; *Neichnea*), BRADLEY (1930: 107; *Neichnea*), BÖVING & CRAIGHEAD (1931: 276; larva; *Neichnea*), BALDUF (1935: 109–111; *Neichnea*), SAY (1835: 164; *Enoplium*), HOFFMAN (1940: 56; 1942: 7; *Neichnea*), WOLCOTT (1947: 84; *Neichnea*), CORPORAAL (1950: 252; *Neichnea*, 253; *Pyticeroides*), CRAIGHEAD (1950: 203; *Neichnea*), BEAL & MASSEY, 1945: 76, 79, 87; *Neichnea*), BLACKWELDER & BLACKWELDER (1948: 14), POOLE & GENTILI (1996: 185; *Neichnea*), and OPITZ (1997: 59, 80, 81; *Pyticeroides*).

Heretofore, five nominal species of *Pyticeroides* were known: *Ellipotoma trilineata* Chevrolat (1874), *Apolopha chiriquiana* Gorham (1883), *Enoplium laticorne Say* (1935), *Pyticeroides arrogans* Kuwert (1894), and *Pyticeroides manni* Chapin (1927). In the course of this study 27 new species were discovered. The monotypic genus *Diapromeces* was described by OPITZ (1997: 58) based on *D. aclydis* Opitz (1997). With this contribution I hope to bring taxonomic organization to a little known group of

clerids, provide the appropriate diagnostic information, summarize the information about natural history, present postulates of evolution, and, in general, add to the existing knowledge of Epiphloeinae.

Natural History. Most of the information about the way of life of these beetles comes from early studies by entomologists interested in insect plant associations in forest ecosystems. For example, BEAL & MASSEY (1945: 76) informs us that a variety of checkered beetles, including *Pyticeroides laticornis*, may be reared from hickory branches in association with the weevil *Chramesus hicoriae* Leconte. It is also known that females of this checkered beetle species deposits eggs on black cherry trees infested with the common peach tree bark beetle *Phthorophloeus liminaris* (Harris). Lastly, *P. laticornis* have been reared from southern cypress in association with the weevil *Phloeosinus taxodii* Blackman.

In his comprehensive treatise of insect predatory relationships in forest ecosystems CRAIGHEAD (1950: 197) notes that, *"Certain species, typically illustrated by Neichnea laticornis (Say), are predators within the egg tunnels of scolytids, where they feed on the eggs, young larvae, and parent adults. They remain during their entire life in the egg galleries of their hosts, where they mature and finally pupate"*. In that same publication Craighead indicates that *Pyticeroides laticornis "...is an important predator on several species of scolytids occurring in twigs and branches, chiefly those of Phloeosinus, Scolytus, and Phloeophthorus. The clerid egg is laid in the entrance hole of the bark beetle, ..."*.

The most telling information about the way of life of the tropical contingency of pyticeroidean beetles comes from a label associated with a specimen of *P. chiriquianum*, from western Panamá. The collector of that specimen, Mr. Champion, notes that, *"this and allied species run about on small black powdery fungoid growths, on bark of fallen trees; usually on the shade"*. It is likely that these pyticeroideans were foraging for small fungivorous live prey. The mouthpart construction and anatomical composition of the alimentary canal leaves little doubt that these beetles are highly predatory. The association with fungal growth may be fortuitous as many specimens with natural history labels indicate that these insects are most often taken from dead wood in which one would expect to find an abundance of lignicolous insects. *Pyticeroides* specimens have been collected by various methods from *Juniperus*, *Carya*, *Cupressus*, peach, hickory, mulberry, red cedar, hackberry, elm, cyprus, and have been associated with lignicolous beetles such as *Phloeosinus* Chapuis, *Chramesus* LeConte, *Scolytus* Geoffroy, and *Phloeotribus* Latreille on which they undoubtedly feed. SMITH (1900: 265) collected *P. laticornis* adults by rearing them from hickory infested by *Scolytus quadrispinosus* Say and BALDUF (1935: 109) reports adults of the same species in the galleries of Scolytidae in which these beetles consume dead eggs, young larvae, and dead adults. According to HOFFMAN (1942: 7) adults have been observed eating *Scolytus multistriatus* (Marsh.) and BAKER (1972: 154) reports that *P. laticornis* clerids feed on various species of bark beetles present in the Middle Atlantic States of the USA. According to specimen label records, Frode Ødegaard obtained one Panamanian specimen on *Brosimum utile* and Henry Hespenheide collected two from felled trees of *Guarea glabra*.

As to temporal information, it appears that these pyticeroidean beetles can be captured throughout the year in tropical and subtropical environments. Most South American specimens were collected during the later months, those from Central America mostly during the middle months, and those from North America mostly from February to October (specimens obtained during the winter months were probably reared from wood boles). Reported collecting techniques involve beating, sticky traps, Malaise traps, and black light. Their known elevation range extends from 30 m to 1829 m.

Pyticeroides species are very similar anatomically and from all indications they also seem to have a common natural history that involves predation on lignicolous insects. Therefore, a paraphrased version of the natural history of the North American *Neichnea* (= *Pyticeroides*) *laticornis*, as provided by BÖVING & CHAMPLAIN (1920: 637), may serve to exemplify generalities of natural history of the genus. Böving and Champlain present a very detailed discourse about *P. laticornis* predator-pray relationships, phenology, life cycle, and larval life habits.

Neichnea (= *Pyticeroides*) *laticornis* is one of the principal predators of the smaller Scolytidae (or Curculionoidea) in the east, preying on *Phloeosinus* in *Juniperus virginiana* and *Taxodium distichum, Chramesus hicoriae,* and sometimes *Scolytus quadrispinosus* in hickory, *Phloeotribus* in *Morus*, *Cercis canadensis*, *Celtis* and many other Scolytids in various trees.

The adults, active from June to August, are diurnal and run over or rest on infested twigs or foliage. Eggs are laid in or at the entrance gallery of the host. The larvae live in the primary egg gallery of the scolytids. They eat the dead parent adults, eggs and first instar larvae of their host. Only a single larva of the clerid occurs in the primary egg gallery of the scolytid.

The clerid larva when mature remains in the primary egg gallery where it over winters. It probably obtains some moisture, etc., in the gallery, but does not follow the host larvae into their mines, nor does it wander from the gallery.

Prepupal larvae and first pupae are found in spring (May 26, at Westbury, Long Island, New York). Adults emerge in June. In localities where two generations of the host occur it is very probable that there will be two generations of the predator.

The pupae, in the primary egg gallery of the host, are without protective covering or whitish exudation.

Pyticeroides Kuwert, 1894

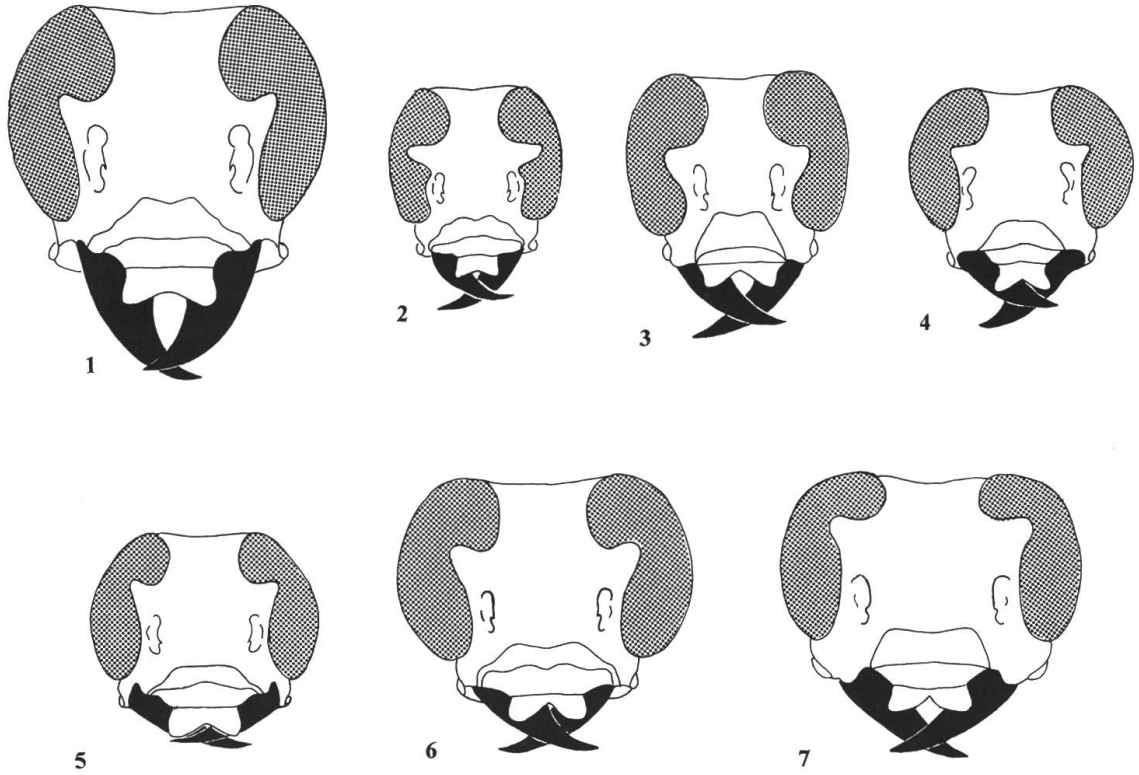
Pyticeroides Kuwert, 1894: 7.

KUWERT 1894: 7, 9; LOHDE 1900: 103; SCHENKLING 1903: 112; GAHAN 1910: 73; CHAPIN 1927: 8; BLACKWELDER 1945: 388; CORPORAAL 1942: 141; 1950: 253; WINKLER 1961: 59.

Type species: *Pyticeroides arrogans* Kuwert, 1894 (by monotypy).

Neichnea Wolcott & Chapin, 1918: 108 (junior synonym as established by OPITZ 1997: 59). BRADLEY 1930: 107.

Diagnosis. The antenna of all *Pyticeroides* specimens consists of nine antennomeres, which is the most conspicuous apotypic characteristic of the genus (Fig. 18) within subfamily Epiphloeinae. Other epiphloeines known to me have 8, 10, or 11

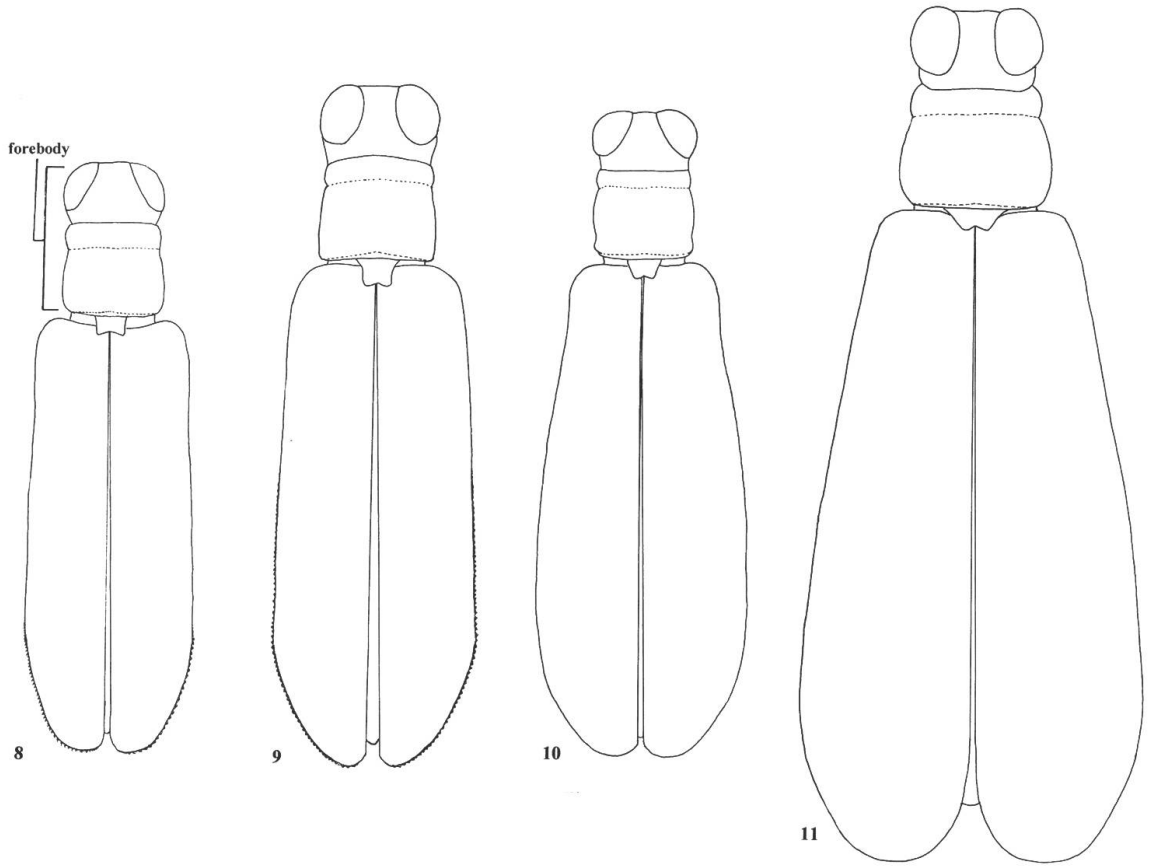


Figs. 1–7. Heads: 1, *Pyticeroides enormis*; 2, *P. inexilis*; 3, *P. manni*; 4, *P. jubaris*; 5, *P. chiriquianum*; 6, *P. ichnopsis*; 7, *P. arrogans*.

antennomeres. Among other diagnostic features for *Pyticeroides* specimens include various other details of the antenna, head, shape, and contour of the pronotum, and arrangement of the elytral punctations.

The scape (antennomere 1) and basal antennomere of the antennal club (antennomere 8) are each longer than the length of the funicular antennomeres combined (Fig. 52). Antennomeres 3–6 are compacted together and expanded laterally. Also, the antennal club (antennomeres 7–9) involves about three-fourths of the entire length of the antenna. The extensive, but somewhat variable, bulging of the eyes gives the cranium a triagonal appearance (Fig. 15). The triagonal shape of the head is accentuated by conspicuous constriction of the epicranium behind very convex eyes. There is a small indentation near the posterior margin of the eye (Fig. 45). With very few exceptions, the cranium behind the eyes has a well-developed black postocular streak (Fig. 54).

The pronotum is usually wider than long (transverse) (Figs 13, 14) and rarely quadrate (Fig. 12). When transverse, I have defined the shape of the pronotum as either

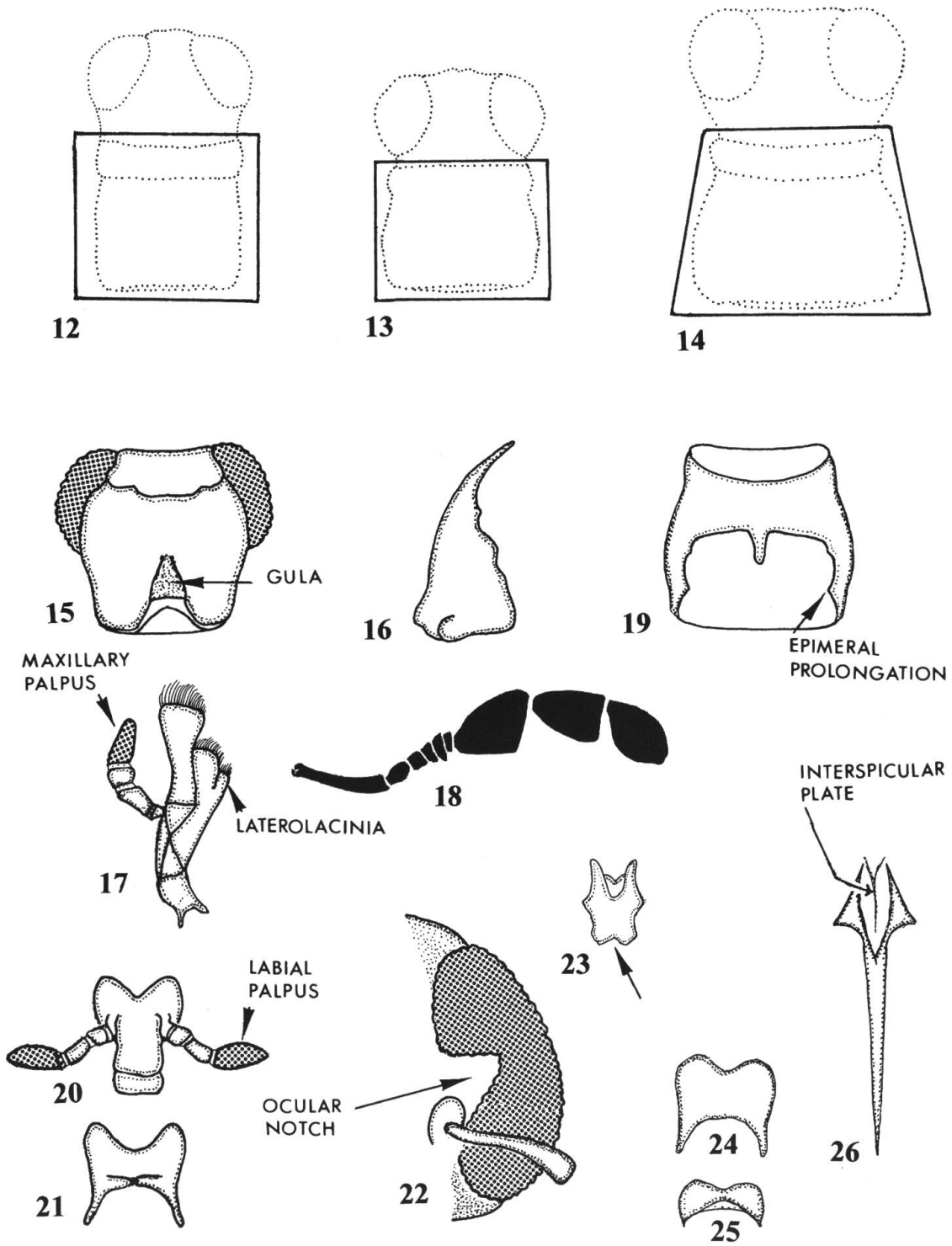


Figs 8–11. Body form outlines: 8, *Pyticeroides inexilis*; 9, *P. manni*; 10, *P. roseicollis*; 11, *P. ichnopsis*.

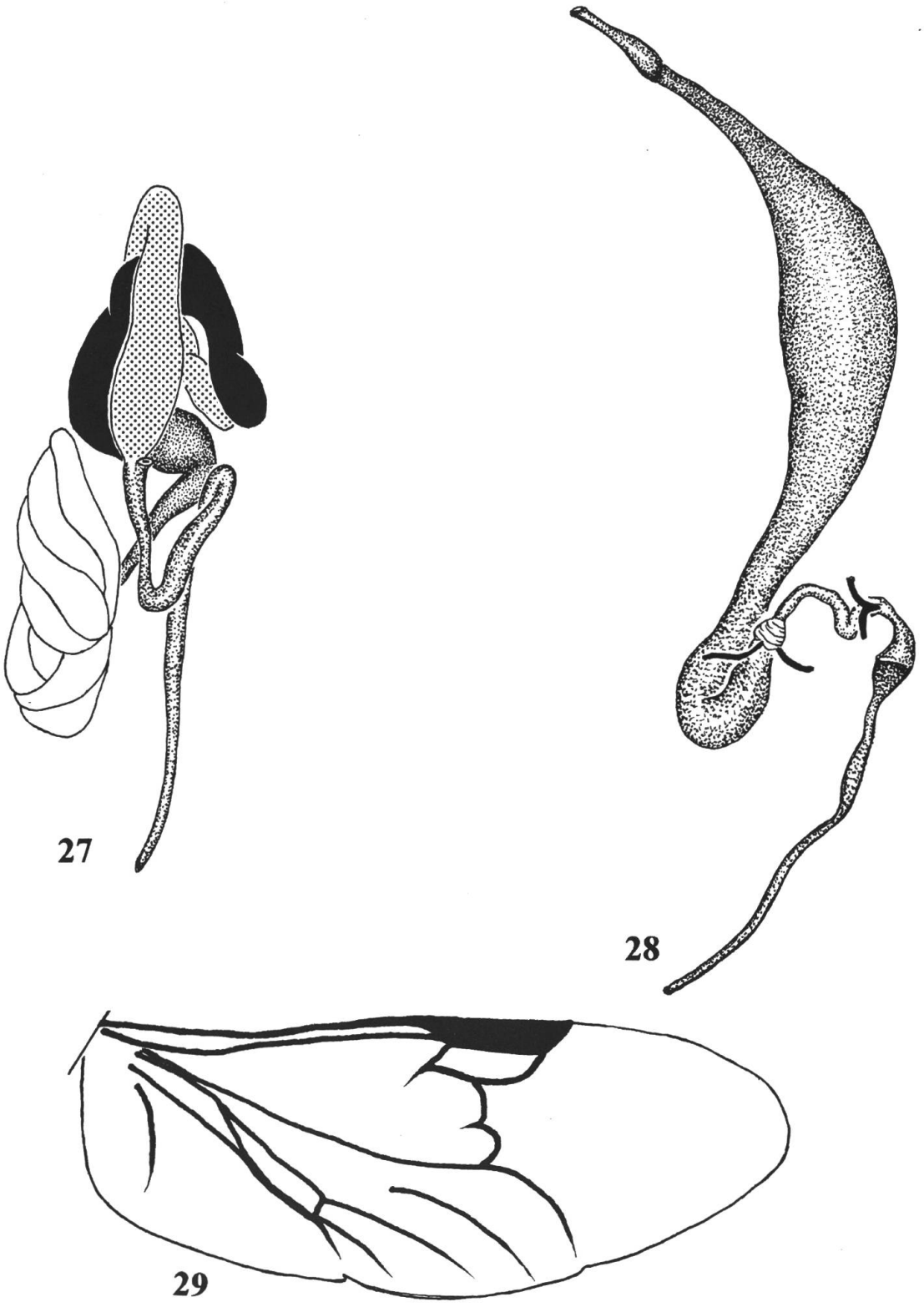
transverse-quadrate (Fig. 13) or transverse-trapezoidal (Fig. 14). The pronotal disc is characterized by broad paralateral vertical indentations to the left and to the anterior of the discal trichobothrium (Fig. 49).

The elytra are long rectangulate (frontispiece), or short rectangulate (Fig. 9). They gradually widen posteriorly towards the elytral apex (Figs 1, 10, 11). The disc is macrosculptured by large to small punctations that are organized into 10 (Fig. 48) or 11 seriate rows (Fig. 51) that are best seen at about elytral middle. The rows give way to a random arrangement of punctations near the elytral apex. Also, in many species there are a variety of punctations near the sutural margin that are misaligned. That is, their position is between rows or almost confluent with the punctations that are aligned in a row.

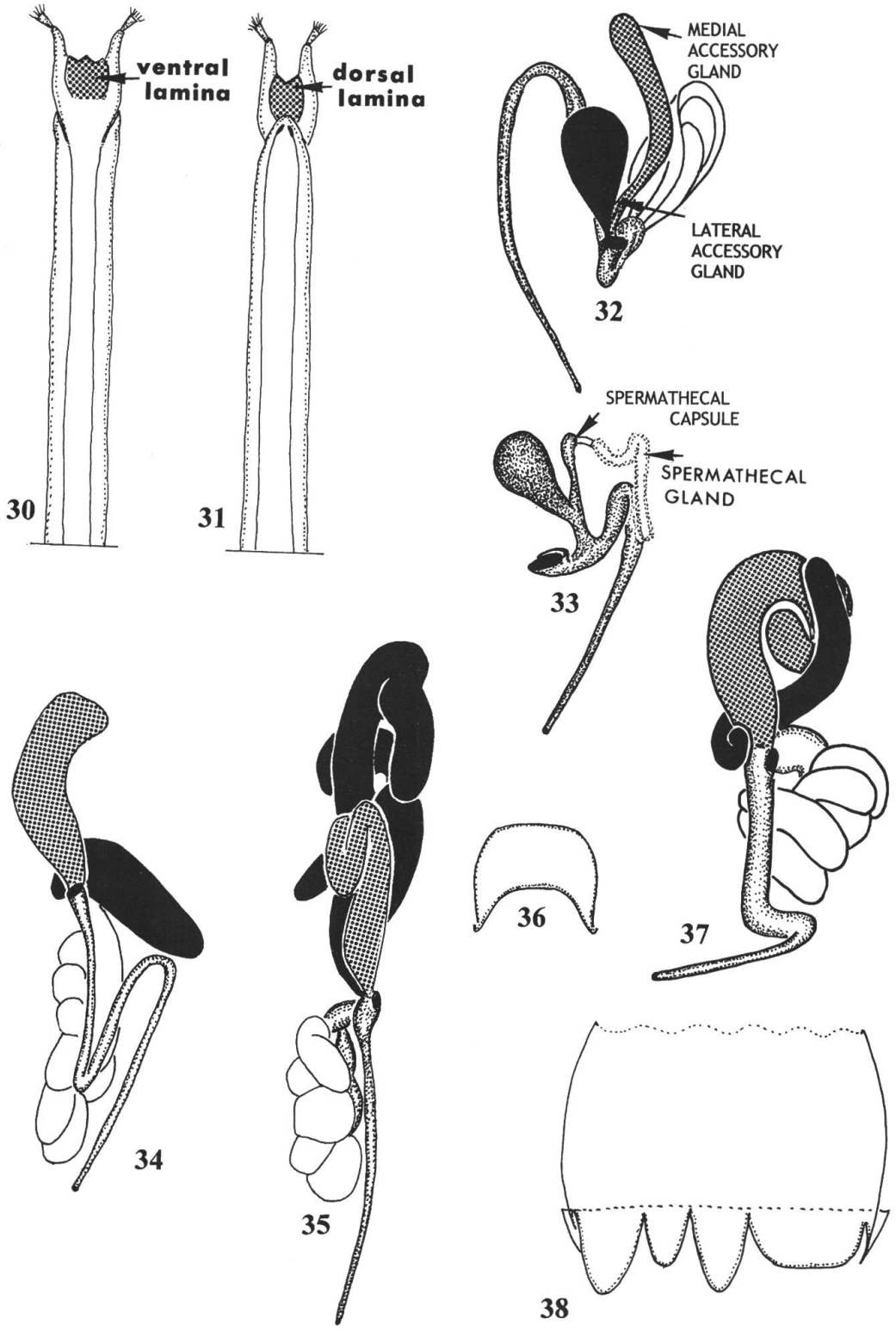
Description. Size: Length 4.0–7.8 mm; width 1.0–2.4 mm. Form: Narrow long-rectangulate (frontispiece), broad short-rectangulate (Fig. 9), or broad long-rectangulate (Fig. 11); elytra gradually widened to posterior fourth.



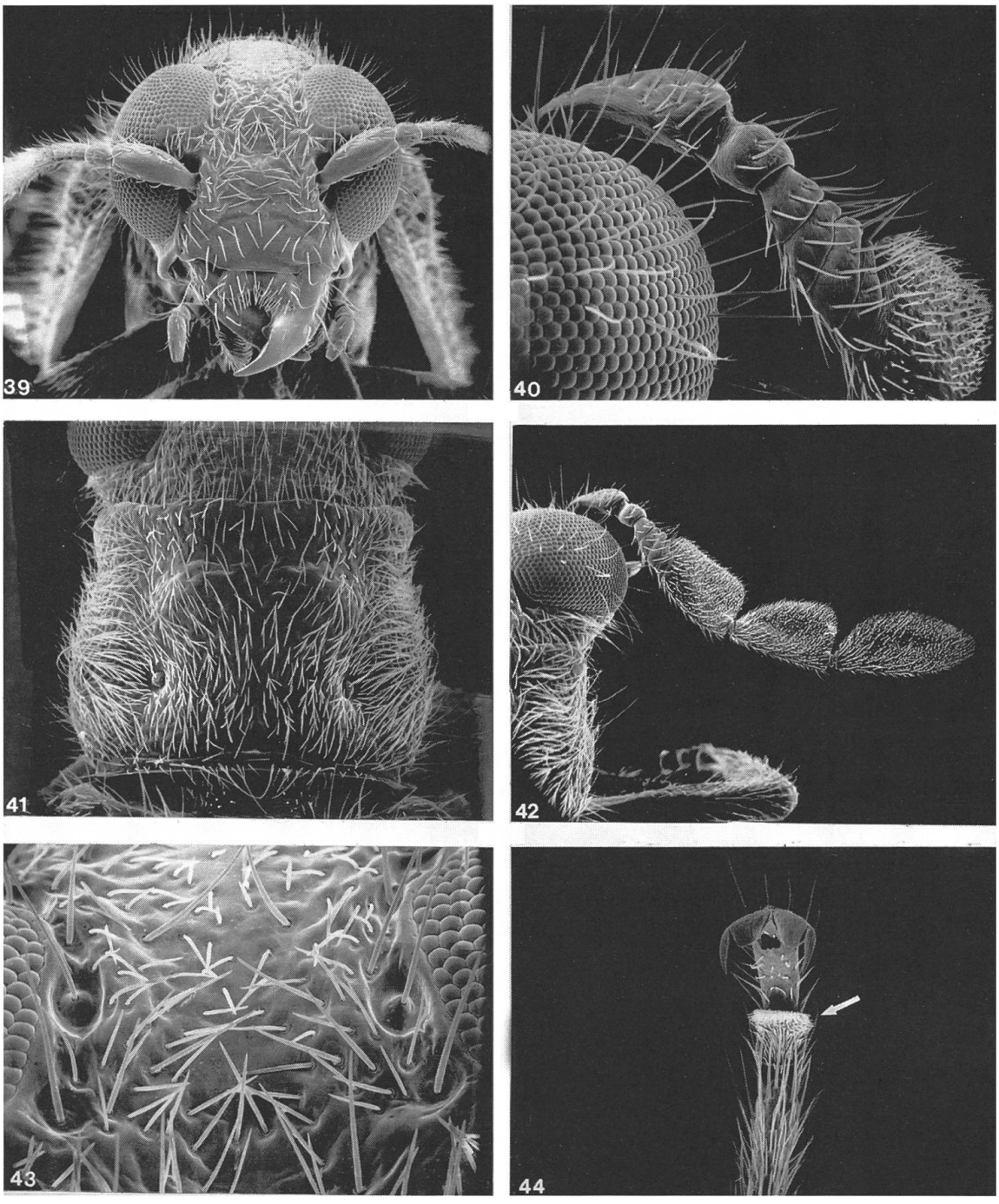
Figs 12–26. Approximate pronotal forms and anatomical structures. 12–14, Approximate pronotal forms in *Pyticeroides*: 12, Quadrate; 13, Transverse-quadrate; 14, Transverse-trapezoidal; 15–26, Anatomical structures; 15–26, *Pyticeroides manni*: 15, Head (ventral view); 16, Mandible; 17, Maxilla; 18, Antenna; 19, Pronotum (ventral view); 20, Labium; 21, Labrum; 22, Eye (frontal view); 23, Mesoscutellum (dorsal view); 24, Pygidium; 25, Sixth visible abdominal sternum; 26, Spicular fork.



Figs 27–29. *Pyticeroides laticornis* anatomical structures: 27, Male internal reproductive organs; 28, Alimentary canal; 29, Metathoracic wing.



Figs 30–38. Anatomical structures. 30–33, *Pyticeroides manni*: 30, Ovipositor (ventral view); 31, Ovipositor (dorsal view); 32, Male reproductive organs; 33, Female reproductive organs; 34, *P. vichadium* internal reproductive organs (male); 35, *P. chiriquianum* internal reproductive organs (male); 36, *P. notialis* pygidium (male); 37, *P. fustus* internal reproductive organs (male); 38, *P. manni* proventriculus (internal view).



Figs 39–44. *Pyticeroides laticornis* anatomical structures: 39, Head; 40, Antenna; 41, Pronotum; 42, Antenna; 43, Frons; 44, Metatarsus.

Integument: Antenna unicolorous or bicolorous, if unicolorous light or dark brown, if bicolorous scape flavotestaceous, other antennomeres light or dark brown; cranium and thorax usually bicolorous, light or dark brown, rarely unicolorous, when unicolorous testaceous or yellow; cranium almost always with dark streaks behind eyes; pronotum usually bicolorous, with broad piceous vitta (Fig. 63) at disc and with sides usually flavotestaceous, rarely reddish; pronotum rarely unicolorous, flavotestaceous or pink; elytra various shades of brown or piceous, rarely with pale streak along sutural margin or along epipleural fold; legs, pterothorax, and abdomen usually piceous, rarely testaceous. Vestiture: Cranial vertex, and lateral regions of pronotum sometimes vested with decumbent gold-yellow setae; other flavotestaceous regions of integument vested with light setae; elytra vested with dark vertical setae and decumbent, very fine pale setae that often become most abundant along sutural margin; legs densely setose.

Head (Figs 1–7, 39): Cranium narrowed behind eyes, finely punctuated, frons usually narrowly concave, with prominent setae along ocular margin (Fig. 43); eyes very prominently bulged, finely faceted and deeply incised along frontal margin; antenna (Fig. 39) inserted at lower angle of eye incision (= ocular notch, Fig. 22), comprised of nine antennomeres, scape longer than length of funicular antennomeres (3–6) combined, antennomeres 3 to 6 variously expanded laterally, antennomere 6 small and least expanded, antennomere 7 to 9 in form of large club about three-fourths length of antenna; labrum (Figs 21, 46) deeply incised, medial tormal processes horizontal and contiguous; mandible (Fig. 16) falciform, dentes slightly developed, mandibular penicillus considerably reduced; maxilla (Fig. 17) distinctly developed, maxillary palpomere 4 tapered distally, laterolacinia present; labium (Fig. 20) distinctly developed, palpomere 3 tapered distally; gula (Fig. 15) triagonal; cranium notably indented near posterior margin of the eye (Fig. 45).

Thorax: Pronotum usually transverse-quadrate (Fig. 13) or transverse-trapezoidal (Fig. 14), rarely quadrate (Fig. 12), disc coarsely punctate, broadly depressed, disc paralaterally depressed, lower sides of pronotum with lateral trichobothrium (Fig. 50), side margins subparallel (fig.12) or very (fig.14) or not very (Fig. 13) convex; anterior transverse depression moderately impressed, pronotal arch narrow-rectangular and well distinct (Fig. 62), posterior transverse depression not prominent, pronotal collar very narrow (Fig. 62), discal and lateral trichobothria (Figs 49, 50) prominent, bothria not domed, pronotal epimeral prolongations (Fig. 19) only slightly extended towards the middle; elytra gradually broadened to distal three-fourths, then gradually rounded to apex, from five to six times longer than broad; elytral length to width ratio from 3.6 to 7.2; elytral disc somewhat convex in some species; lateral margin bulged in some species; elytral punctations more round near sutural margin, punctations appear quadrate away from sutural margin due to light defluxion on elevated interstitial spaces, interstitial spaces relatively smooth near sutural margin, then become very or not very elevated away from sutural margin, arenose or not; punctations seriate, arranged into 10, sometimes misaligned rows near sutural margin appear to form 11th row, rows less clear near sutural margin especially in species where punctations are not completely rowed (Fig. 48) near sutural margin, punctations always diffuse in distal fourth; elytral punctations wider than width of interstitial spaces (= punctations large), as wide as

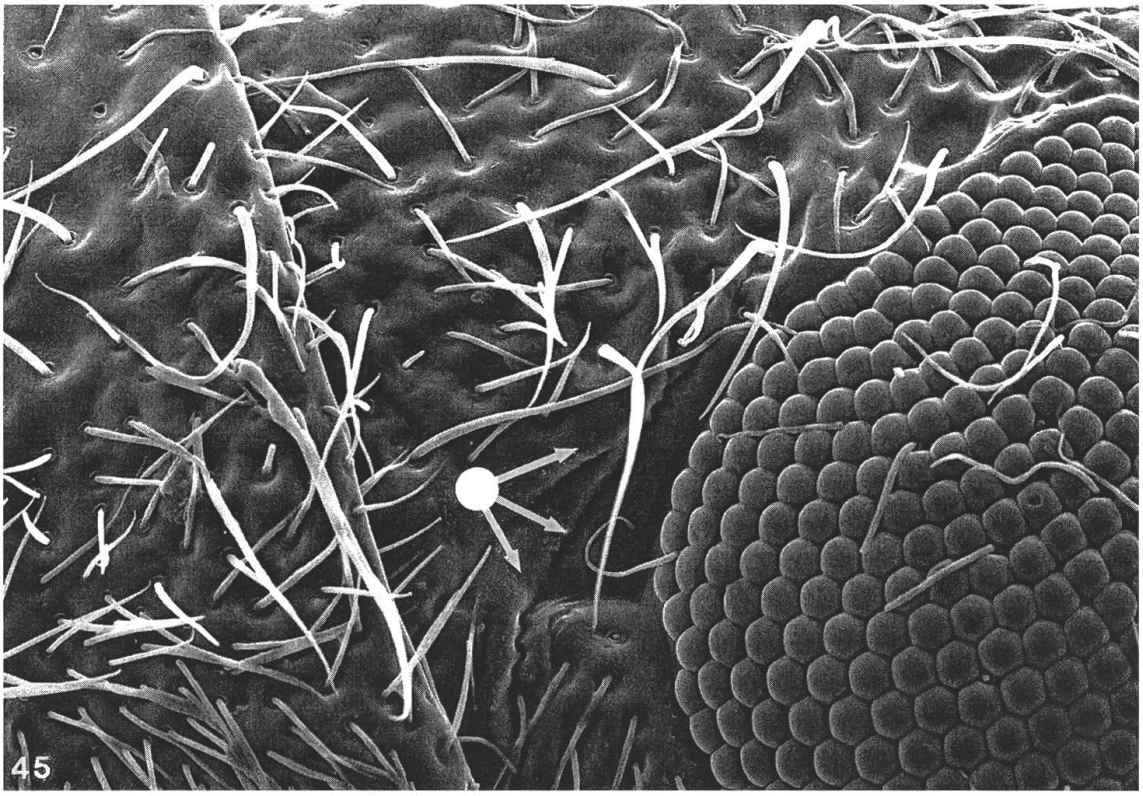
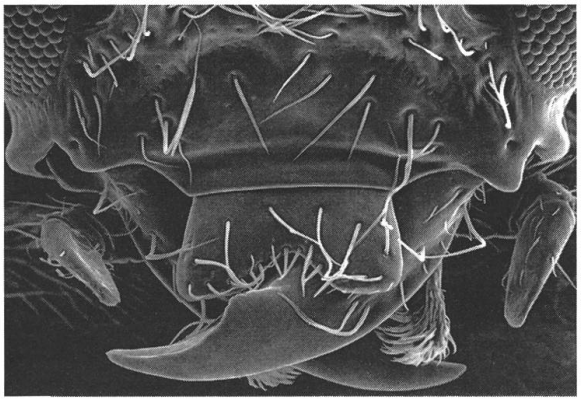


Fig. 45. *Pyticeroides laticornis* postocular region of cranium.

interstitial spaces, or narrower than width of interstitial spaces (= punctations small); mesoscutellum (Fig. 23) incised; protibial anterior margin with four to nine spines; tibial spur formula 0–1–1; tarsal pulvillus formula 3–3–1 (Fig. 44); metathoracic wing as in figure 29; metendosternite without lateral lamina.

Abdomen: Six visible sterna; pygidial posterior margin evenly convex in females (Fig. 36), incised in some males (Fig. 24); sixth visible sternum posterior margin broadly emarginated in males (Fig. 25) and narrowly emarginated in females. Male genitalia: Aedeagus narrow-long (Fig. 108) or broad-short (Fig.118); spicular fork apodeme entire for most of its length, and interspicular plate slender and bifid distally (Fig. 26); parameres usually reduced. Female genitalia: Ovipositor of moderate length; dorsal lamina (Fig. 31) bilobed; ventral lamina (Fig. 30) trilobed. Alimentary canal (Fig. 28): Proventriculus moderately developed; ventriculus swollen at middle, tapered at extremities, with poorly developed papillae; stomodaeal valve (Fig. 38) with four primary lobes, dorsal and ventral lobes short, dorsal lobe very broad; four cryptonephridial malpighian tubules. Male mesodermal internal reproductive organs (Fig. 32): Two pairs of accessory glands; testis comprised of 12 follicles. Female



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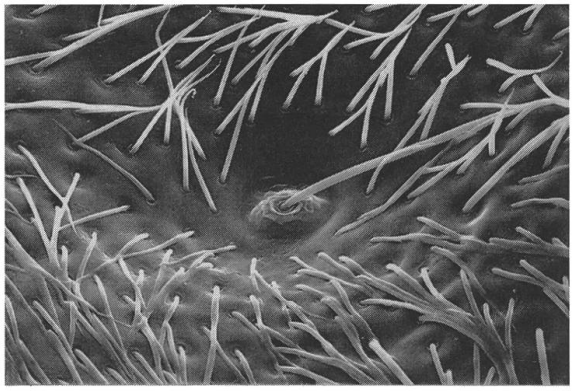

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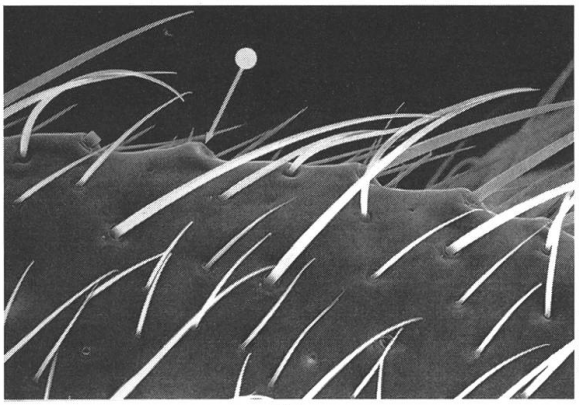

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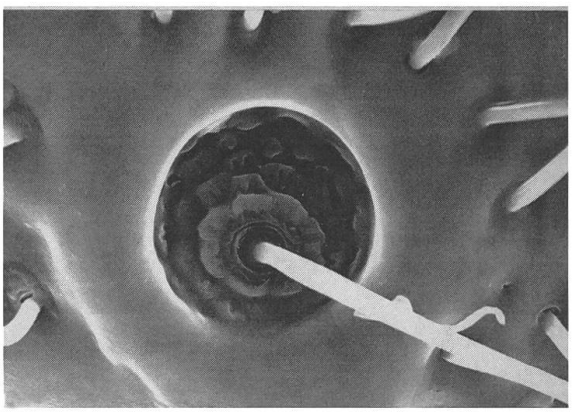

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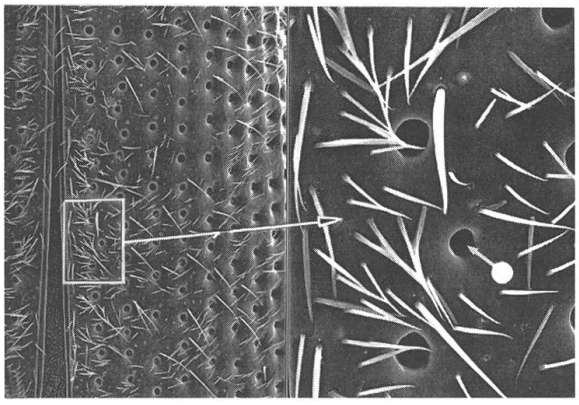

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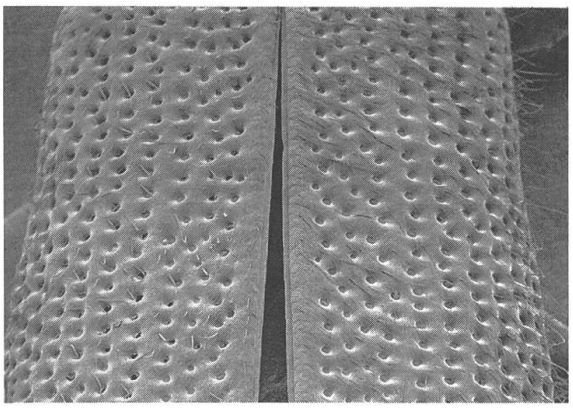

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Figs 46–51. *Pyticeroides* anatomical structures: 46, *P. laticornis* mouthparts; 47–48, *P. manni*; 47, Lateral elytral margin showing serrations; 48, Elytral disc showing misaligned punctation near sutural margin. *P. laticornis* anatomical structures: 49–50, Pronotal trichobothria: 49, dorsal; 50, ventral; 51, Elytral disc.

mesodermal internal reproductive organs (Fig. 33): Spermathecal capsule not visibly sclerotized; spermathecal gland attached to subapex of spermathecal capsule; bursa copulatrix saccular.

Distribution. The members of this genus range from Eastern Canada, east of the Rocky Mountains of the United States of America, and south to Argentina.

Key to species groups and species of *Pyticeroides*

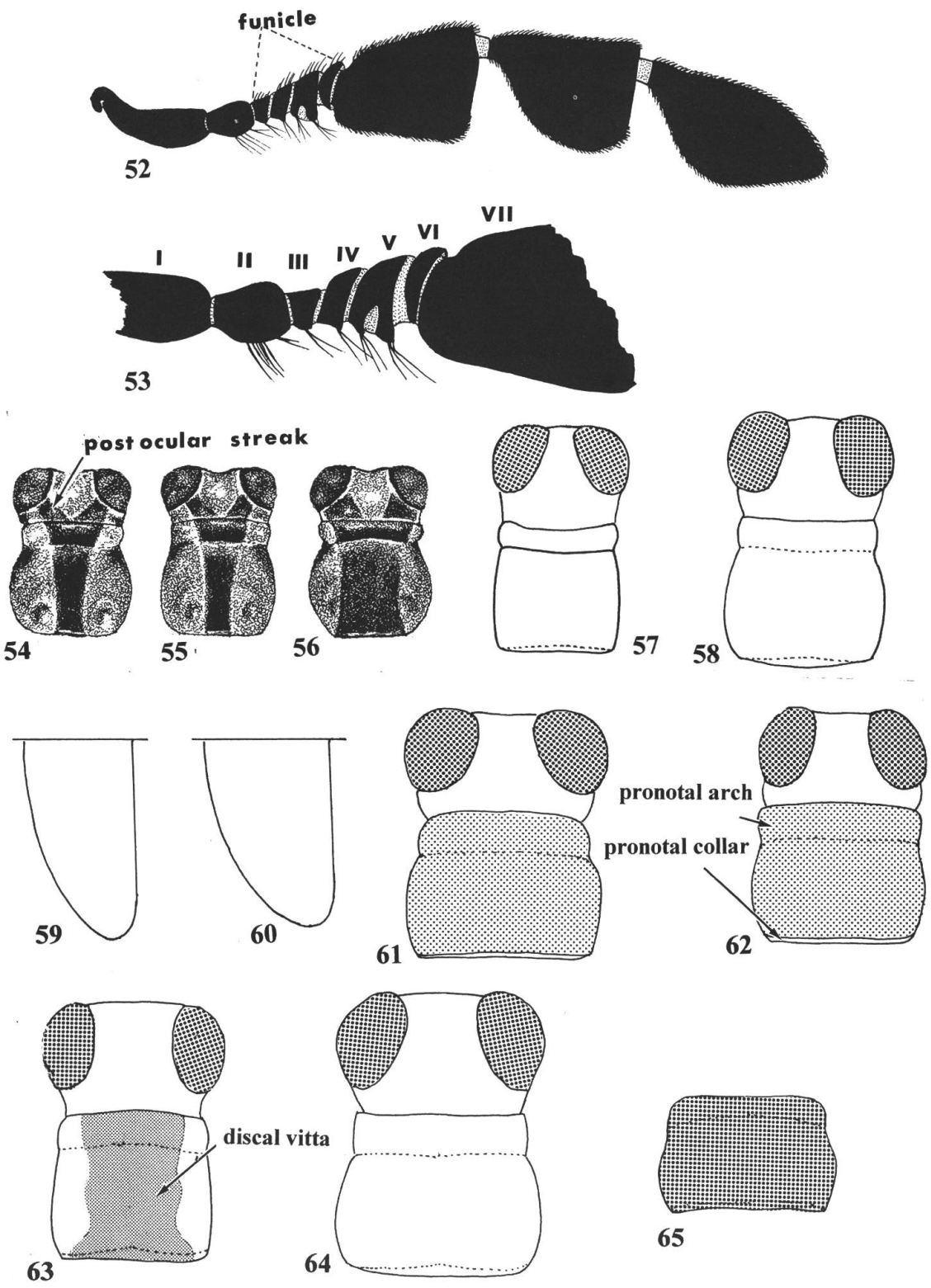
Making available user-friendly taxonomic keys is a vital function in the contributions of systematists. The identification of named species is often an important first step in the process of an inventory of a particular group of known species or in the process of discovering new species, or new taxa in general. Stewards of collections use taxonomic keys to prepare loans to specialists, and hobbyists delight in their ability to identify newfound specimens. Lastly, the names in taxonomic keys are essential for diverse communication across professions when the efficient recognition of a species name is of importance among applied disciplines.

Making keys at the species level requires painstaking work. Often, the systematist agonizes over long periods of time to find characteristics that are useful for keys, but which seem elusive or difficult to pin down, despite the confidence one attains when spending hours with thoughts such as, *"I know that these specimens represent two different species but I cannot define simply diagnostic characteristic to distinguish them."* Such thoughts may be considered trite at first, but they communicate a conscious frustration when one tries to come to grips with the intricacies associated with the biological concept of the species. Decisions about species status, involving non cross-breeding experimentation, is by far the most difficult task of the systematist in attempts to apply the biological species concept to recently evolved congeners. I have had such concerns with several of the species of *Pyticeroides* and many of the subfamily Epiphloeinae.

The following key to species groups and species has several difficult couplets on which I elaborate here for their efficient use.

Couplet 1' – By transverse-quadrate I mean that the width of the anterior margin of the pronotum is approximately the same as the width of the pronotal posterior margin. When the anterior margin of the pronotum is narrower than the width of the pronotal posterior margin, I designate that pronotal shape as being transverse-trapezoidal (compare Figs 13, 14). Despite the use of the term quadrate, it is important to note that the pronotal sides are usually variously rounded. Only in the *inexilis* species group are the pronotal sides subparallel.

Couplet 2(1) – The shape of the basal antennomeres of the antennal club (antennomere 7) is considered rectangular when anterior margin and posterior margins are more-or-less parallel (Fig. 73). This antennomere is considered triangular when their anterior and posterior margins taper to a narrow base (Fig. 78).



Figs 52–65. *Pyticeroides* anatomical structures: 52–53, *P. enormis* antennae. 54–58, Forebodies: 54, *P. rifkindi*. 55, *P. tessares*; 56, *P. laticornis*; 57, *P. similis*; 58, *P. manni*. 59–60, Posterior third of elytral disc: 59, *P. similis*; 60, *P. manni*. 61–64, Forebodies: 61, *P. eurides*; 62, *P. strictus*; 63, *P. quadratus*; 64, *P. arrogans*. 65, Pronotum of *P. plautus*.

Couplet 4 (1') – To filter through this couplet in the manner intended it is important to correctly interpret the actual size of the elytral punctations. Elytral punctations are considered large if their diameter is at least as wide as the diameter of the interstitial spaces (the spaces between the punctations). But, be aware that in the more derived species of the genus, for example in *P. arrogans*, the punctations are small and more numerous, thus occupying more of the surface area of the elytral disc. Because of this, the interstitial spaces seem smaller than the actual width of the punctations, but in these species with proportionally more smaller elytral punctations, the interstitial spaces are highly arenose, which is not the case among the species of the *jubaris* and *manni* groups. Moreover, note that in specimens with black or piceous elytral color and whose elytra exhibit small punctations, the interstitial spaces, that is, the portion that is slightly depressed towards the puncture, may reflect light to an extent that small punctations, which are always smaller than the interstitial spaces, may seem larger than their actual size.

Couplet 4' – This couplet involves the arrangement of elytral punctations throughout most of the elytral disc. At about the distal fifth of the elytral disc, especially proximal to the elytral apex, the punctations lose their row organization. Only a few punctations are misaligned near the sutural margin in members of the *manni* group and only rarely are there any misaligned punctations in this region. In the *arrogans* group, however, the number of misaligned punctations near the sutural margin are so numerous that one gets the impression of the presence of an eleventh row of punctations.

6 (4') – The scape is long in most of the members of this genus and it is somewhat clubbed. In some species the scape may seem narrow-triangular. However, the scape is stout, short triangular in members of *P. ichnopsis* sp.nov.

10 (7') – The count of rows of elytral punctations should be made at about the middle of the elytral disc.

Key

1	Pronotum quadrate (Fig. 12); fore body slender (Fig. 8); eyes not strongly bulgy, width across eyes greater than width of pronotum. ... . 2.
1'	Pronotum transverse-quadrate (Fig. 9) or transverse-trapezoidal (Figs 11, 14); fore body not particularly slender; eyes very bulgy, width across eyes not wider than width of pronotum (Fig. 9). ..... 4.
2(1)	First antennomere of antennal club rectangular (Fig. 71) (Brazil: Paraná: Sao Paulo). ..... ***P. inexilis* sp.nov.**
2'	First antennomere of antennal club somewhat triangular (Figs 67, 75). ..... 3.
3(2')	Antennomeres seven and eight as long as wide (Fig. 75) (Brazil: Pará). ..... ***P. iscus* sp.nov.**

3' Antennomeres seven and eight longer than wide (Fig. 67) (Bolivia: Cochabamba). ..... ***P. petilus* sp.nov.**

4(1') All punctations at the basal three-fourths of the elytra large, punctations near sutural margin clearly arranged into rows and wider than the width of the interstitial spaces, latter not gritty, punctations arranged into ten straight rows, almost always without misaligned punctations near the sutural margin, pronotal disc always with a vertical vitta. ..... 5.

4' Punctations at the basal two-thirds of the elytra not particularly large, when arranged into ten rows only one or two punctations are misaligned near the sutural margin, when many punctations are misaligned near sutural margin an eleventh row is discernible, punctations near sutural margin small and narrower than width of interstitial spaces, latter not gritty, or slightly or very gritty; pronotal disc with or without vertical vitta. ..... 6.

5(4) Distal margin of antennomere 7 and 8 concave, last antennomere oval (Fig. 85) (Brazil: Espiritu Santo). ..... ***P. decurialis* sp.nov.**

5' Distal margin of antennomere 7 and 8 plane, last antennomere more rotund (Fig. 74) (Brazil: São Paulo). ..... ***P. jubaris* sp.nov.**

6(4') Scape triangular, funicular antennomeres very expanded (Fig. 87) (Brazil: Bahia) ..... ***P. ichnopsis* sp.nov.**

6' Scape not triangular, more clavate, funicular antennomeres not very expanded (Fig. 90). ..... 7.

7(6') Pronotal disc reddish at sides, with a dark vertical line at the center (*notialis* group). ..... 8.

7' Pronotal disc not reddish at sides, sides yellow or flavotestaceous, pronotal disc with or without centrally located dark vertical line. .... 10.

8(7) Epipleural fold pale-yellow, elytral disc dark-brown (Argentina: Misiones: Tucuman). ..... ***P. notialis* sp.nov.**

8' Epipleural fold light-brown or dark-brown, elytral disc light-brown or dark-brown. ..... 9.

9(8') Antennomeres of antennal club particularly elongate, each antennomere much longer than wide (Fig. 73) (Costa Rica: San José). ..... ***P. rifkindi* sp.nov.**

9' Antennomeres of antennal club only slightly elongate, antennomere seven subquadrate (Fig. 88) (Honduras: Olancho). .... ***P. tessares* sp.nov.**

10(7') Elytral punctations arranged into ten rows at line across middle of elytra, a few punctations misaligned near the sutural margin. ..... 11.

10' Elytral punctations arranged into eleven rows at line across middle of elytra, many punctations misaligned near the sutural margin. .... 25.

11(10) Pronotal disc without vertical vitta, almost all dark or all light. ... 12.

11' Pronotal disc with dark vertical vitta. ..... 16.

12(11) Width across vertex more than width across eye (17:14); pronotum dark-brown (Brazil: Paraná). ..... ***P. caligneus*** **sp.nov.**

12' Width across vertex less than width across eye. ..... 13.

13(12') Funicular antennomeres expanded considerably (Fig. 81); epipleural fold highly visible from dorsal view; pronotal disc pink or yellow (Costa Rica: Guanacaste; Panamá: Panamá). ... ***P. roseicollis*** **sp.nov.**

13' Funicular antennomeres minimally expanded (Fig. 18); epipleural fold minimally visible in dorsal view. ..... 14.

14(13') Pronotal side margins convex (Fig. 58) (Bolivia: Cochabamba: Beni. Brazil: Mato Grosso). ..... ***P. manni*** **Chapin**

14' Pronotal side margins subparallel (Fig. 57). ..... 15.

15(14') Elytral sutural margin yellow; protibial anterior margin with 4 spines (Colombia: Magdalena). ..... ***P. acaris*** **sp.nov.**

15' Elytral sutural margin not yellow; protibial anterior margin with 6 spines (Brazil: Rondonia). ..... ***P. similis*** **sp.nov.**

16(11') Sutural margin yellow (Costa Rica: Puntarenas. Panamá: Chiriquí: Canal Zone. Colombia: Magdalena). ..... ***P. chiriquianum*** **Gorham**

16' Sutural margin not yellow, dark or reddish brown. ..... 17.

17(16') Fifth antennomere wider than base of antennomere seven (Fig. 93) (Venezuela: Aragua). ..... ***P. stenotes*** **sp.nov.**

17' Fifth antennomere not wider than base of antennomere seven. ... 18.

18(17') Antennomere seven triangular (Fig. 84). ..... 19.

18' Antennomere seven rectangular (Fig. 86). ..... 24.

19(18) Pronotum very transverse, width more than 10× length (Fig. 65). .... 20.

19' Pronotum moderately transverse, width 7× length (Fig. 62). ..... 22.

20(19) Eyes not very convex (Fig. 62); elytra length/width ratio 5.2 (Bolivia: Cochabamba). ..... ***P. strictus*** **sp.nov.**

20' Eyes very convex (Fig. 61); elytra length/width ratio less than 5.2. ... . 21.

21(20') Distal margin of antennomere 7 diagonal (Fig. 77) (Colombia: Vichada). ..... ***P. vichada*** **sp.nov.**

21' Distal margin of antennomere 7 vertical (Fig. 72) (Mato Grosso). ... . ***P. eurides*** **sp.nov.**

22(19') Specimens from Central America (Nicaragua: Granada). .... ***P. maesi*** **sp.nov.**

22' Specimens from South America. ..... 23.

23(22') Last antennomere subglobose (Fig. 78); elytra profusely vested with minute grey setae (Brazil: São Paulo). ..... ***P. cinericius*** **sp.nov.**

23' Last antennomere oval (Fig. 83); elytra with few minute gray setae (Ecuador: Napo). ..... ***P. hansoni*** **sp.nov.**

24(18') Antennomere eight rectangulate, much longer than wide (35:20) (Brazil: Mato Grosso: Goias). ..... ***P. fustis*** **sp.nov.**

24' Antennomere eight subquadrate, not much longer than wide (Fig. 80) (Brazil: Paraná: Nova Teutonia). ..... ***P. luteolus*** **sp.nov.**

25(10') Antennomeres 7 and 8 distinctly rectangular (Fig. 98). ..... 26.

25' Antennomeres 7 and 8 more quadrate or triangular (Figs 92, 95). ... . 27.

26(25) Pronotum about as wide as width of head, pronotum strongly trapezoidal (Fig. 64) (Perú: Amazonas). ..... ***P. arrogans*** **Chevrolat**

26' Pronotum narrower than width of head, pronotum not strongly trapezoidal, nearly subquadrate (Fig. 63) (Brazil: Goias). .... ***P. quadratus*** **sp.nov.**

27(25') Prosternum darkened, dark brown to black. ..... 28.

27' Prosternum not darkened, yellow. ..... 29.

28(27) Body venter including legs light brown; scape robust (México: Chiapas). ..... ***P. inconscriptus*** **sp.nov.**

28' Body venter including legs dark brown to black; scape slender (México: Chiapas). ..... ***P. caecoatus*** **sp.nov.**

29(27') Elytral punctations very small, not arranged into distinct rows, punctations narrower or nearly as wide as interstitial spaces (México: Oaxaca). ..... ***P. plautus*** **sp.nov.**

29' Elytral punctations not very small, most arranged into distinct rows, punctations wider than width of interstitial spaces. ..... 30.

30(29') Elytral punctations near sutural margin much smaller than other discal punctations; last antennomere very tapered near apex (Fig. 70) (Bolivia: Cochabamba). ..... ***P. enormis*** **sp.nov.**

30' Elytral punctations near sutural margin the same size as other discal punctations; last antennomere not very tapered near apex. ..... 31.

31(30') Tarsi yellow (México: Jalapa). ..... ***P. trilineata*** **(Chevrolat)**

31' Tarsi dark or light brown (USA: East of Rockies; Canada: Ontario). ..... ***P. laticornis* (Say)**

Description of *Pyticeroides* species

enormis group

This monotypic group is particularly interesting because the structure of antennomere 5 suggests an evolutionary intermediate condition. Antennomere 5 is split along its anterior margin (Fig. 53) suggesting an intermediate step towards the complete fusion of two previously independent antennomeres. If this observation is correct, then the antenna of *Pyticeroides enormis* represents a reduction/transitional stage from an antenna comprised of 10 antennomeres to one that contains 9 antennomeres. The extensive similarity of the holotype to other species of *Pyticeroides* suggests that the split in antennomere 5 represents a consolidation and not a division. All other known pyticeroideans have 9 complete antennomeres. This species group occurs in Bolivia.

***Pyticeroides enormis* sp.nov.** Figs 52, 53, 70; map 3

Type material. Holotype: Female. Bolivia: Cochabamba: Germain (MNHN). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, light brown, Fairmaire collection label, green, machine printed, MNHN repository label, white, machine printed; holotype label, red, machine printed).
Paratype: None.

Description. Size: Length 7.8 mm; width 2.4 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks faintly visible; pronotal sides broadly flavotestaceous, discal piceous vitta broad; elytra brown; legs piceous.

Head: Width equal to pronotal width (80:80); ratio of eye width to width of vertex (30:22); antenna (Figs 52, 53, 70); antennomere 5 bifid (Fig. 53).

Thorax: Pronotum transverse-trapezoidal (80:62), side margins convex behind anterior transverse depression; elytral punctations disorganized near sutural margin; interstitial spaces slightly arenose; elytral epipleural margin serrulate in posterior half; elytra about 5× longer than length of pronotum; elytral length to width ratio 4.9; anterior margin of protibia with 6 spines.

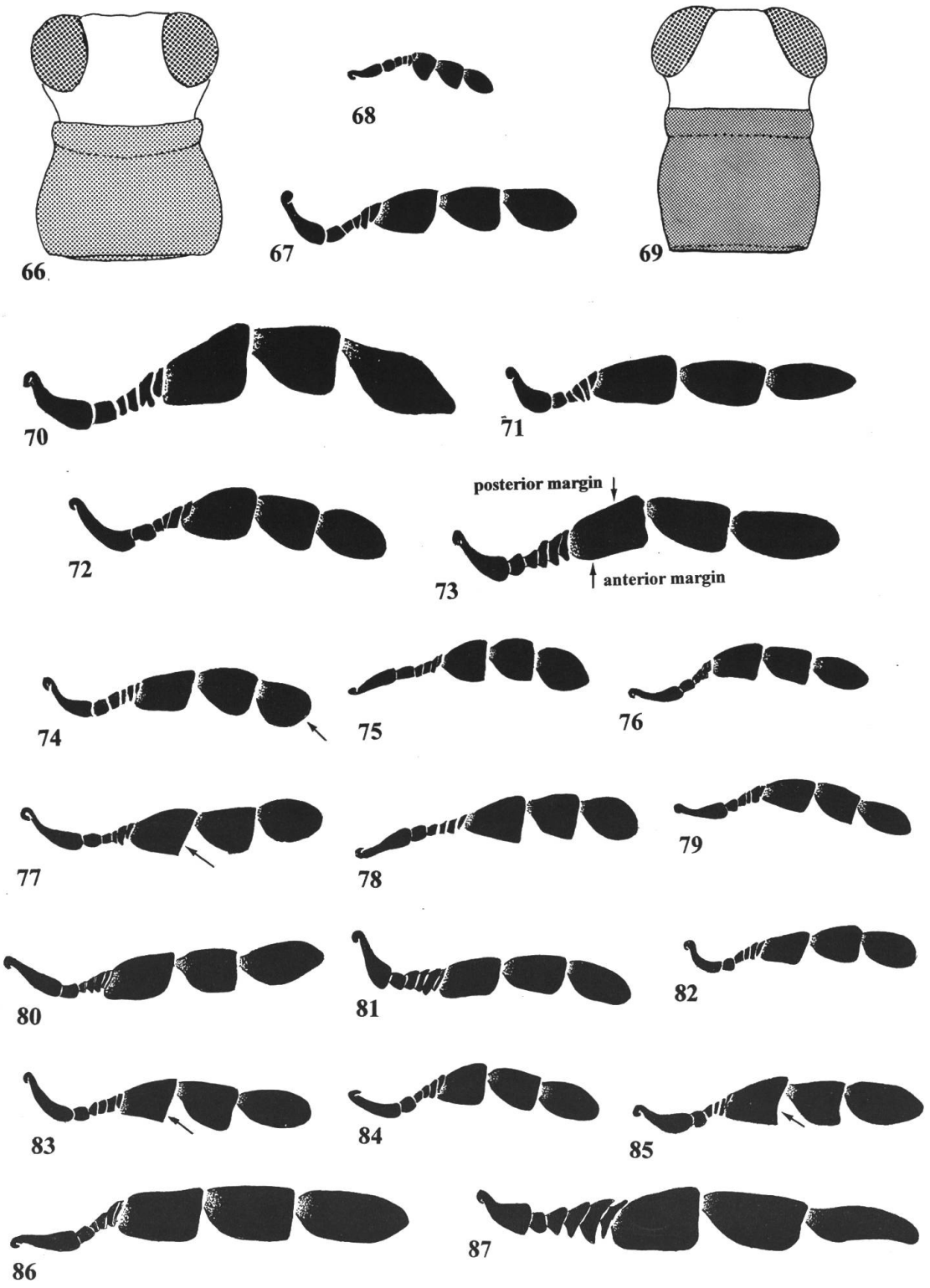
Variation: One specimen examined.

Natural history. The type locality, Cochabamba, is located in highlands of the Bolivian Andes.

Distribution (map 3). Known only from the type locality.

Derivatio nominis. The trivial name *enormis* (= huge) is a Latin adjectival. I refer to the exceptionally large size of the holotype specimen.

Differential diagnosis. The available specimen is larger than any other known South American *Pyticeroides* (7.8 mm). Also, elytral punctations are very small, most are narrower than width of the interstitial spaces.



Figs 66–87. *Pyticeroides* anatomical structures: 66, *P. laticornis* forebody; 67, *P. petilus* antenna; 68, *P. acaris* antenna; 69, *P. trilineatum* forebody. 70–87, Antennae: 70, *P. enormis*; 71, *P. inexilis*; 72, *P. eurides*; 73, *P. leptus*; 74, *P. jubaris*; 75, *P. iscus*; 76, *P. caligneus*; 77, *P. vichadium*; 78, *P. cinericius*; 79, *P. chiriquianum*; 80, *P. luteolus*; 81, *P. roseicollis*; 82, *P. similis*; 84, *P. strictus*; 85, *P. decurialis*; 86, *P. fustis*; 87, *P. ichnopsis*.

inexilis group

The three species that comprise this species group have the pronotum quadrate (Fig. 12) (it seems oblong), the eyes are minimally bulgy (Fig. 2), and the forebody (head and pronotum, Fig. 8) is comparatively slender. In all other members of *Pyticeroides*, the pronotum is transverse (Fig. 13), the eyes vary from slightly bulgy (Fig. 3) to very bulgy (Fig. 6), and the forebody is wider. The geographic range of this species group extends from the highlands of Bolivia to the southeastern forests of Brazil.

Pyticeroides inexilis sp.nov. Figs 2, 71; map 4

Type material. Holotype: Male. Brazil: São Paulo: Faz. d' Alho Itu, SP, I-1959, U.R. Martins (MZSP). (Specimen point mounted, antenna and ♂ symbol affixed to card, white, machine printed; locality label, white, outlined, machine printed, MZSP repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: One specimen. Brazil: Paraná: Palmas, TO, SŞ. do Lageado, Fazenda Cču, XI-1992, Exp. MCN-MZSP (WOPC, 1).

Description. Size: Length 5.0–5.1mm; width 1.1–1.2 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks prominent; pronotal sides narrow testaceous, discal piceous line broad; elytra piceous; legs light brown.

Head (Fig. 2): Slightly wider than width of pronotum (48:45), ratio of eye width to width of vertex (15:13); eyes not very bulged: antenna (Fig. 71), antennomere 7 distinctly rectangulate.

Thorax: Pronotum quadrate (45:45); side margins subparallel; elytral punctations somewhat subseriate near sutural margin, interstitial spaces smooth, shiny; elytral epipleural margin serrulated in posterior half; elytra 6× longer than pronotum; elytra length to width ration 5.0; anterior margin of protibia with 5 spines.

Abdomen: Male pygidium not emarginate; aedeagus lost.

Variation: The pronotum of the paratype is nearly completely piceous; only the anterior angles are slightly flavotestaceous.

Natural history. Of the two available specimens, one was collected in November, the other in January.

Distribution. (map 4). Known only from southeastern Brazil.

Derivatio nominis. The specific epithet is a Latin compound name formed from the prefix *-in* (= very) and the adjectival *exilis* (= slender). I refer to the slender body form of these beetles.

Differential diagnosis. Specimens of *P. inexilis* sp.nov. differ from specimens of *P. petilus* sp.nov., the only other species in this species group, by the distinctly more rectangular form of antennomere 7 (Fig. 71). In *P. petilus* sp.nov. antennomere 7 is more triangular (Fig. 67). Also, in specimens of *P. inexilis* sp.nov. elytral punctuations are not serially arranged near the posterior two-thirds of the sutural margin. In specimens of *P. petilus* sp.nov. punctuations near the sutural margin are serially arranged throughout the entire length of the sutural margin.

***Pyticeroides petilus* sp.nov.** Figs 67; map 4

Type material. Holotype: Female. Bolivia: Cochabamba: Germain (MNHN). (Specimen card mounted, antenna and ♀ symbol affixed to mount card, white, machine printed; mount card, white, lined; locality label, light brown, machine printed; Fairmaire repository label, green outlined, machine printed; MNHN repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: None.

Description. Size: Length 5.5 mm; width 1.5 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks prominent; pronotal sides narrowly flavotestaceous, central piceous streak wide; elytra predominantly piceous, sutural margin faintly flavotestaceous; legs bicolorous, pro-mesofemora predominantly flavous, anterior and posterior margins piceous, metafemora, tibiae, and tarsi piceous.

Forebody: Narrow-rectangulate.

Head: Wider than pronotum (52:49); vertex considerably narrower than width of eye (12:19); antenna (Fig. 67), antennomere 7 nearly triagonal.

Thorax: Pronotum quadrate (47:47); side margins sub parallel; elytral punctations arranged into 10 rows, punctations seriate near sutural margin, interstitial spaces smooth, shiny; elytral epipleural margin serrulated in posterior half; elytra 6× longer than pronotum; elytral length to width ratio 7.2; anterior margin of protibia with 5 spines.

Abdomen: Posterior margin of pygidium arcuate.

Variation: One specimen studied.

Natural history. Collected from the eastern slopes of the Bolivian Andes.

Distribution (map 4). Known only from the type locality.

Derivatio nominis. The specific epithet is a Latin adjectival meaning slender. I refer to the slender form of the body.

Differential diagnosis. Most conveniently distinguishable from the members of *P. inexilis* sp.nov. by the seriate arrangement of elytral punctations aside the entire length of the sutural margin. In *P. inexilis* sp.nov. punctuations are unordered near the posterior two-thirds of the sutural margin.

***Pyticeroides iscus* sp.nov.** Figs 75, 102; map 4

Type material. Holotype: Male. Brazil: Pará: Tucurui, I–1979, M. Alvarenga (MCNZ). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed; repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus).
Paratypes: None.

Description. Size: Length 4.00 mm; width 1.1 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks confluent; pronotum mostly flavotestaceous, disc faintly infuscate; piceous discal line reduced to wide dark macula anterior to transverse anterior depression; elytra dark brown, sutural margin yellow; legs mostly yellow, profemur and protibia infuscated.

Head: As wide as pronotum (44:44); ratio of eye width to width of vertex (16:10); antenna (Fig. 75).

Thorax: Pronotum quadrate (44:44), side margins subparallel; elytral punctations round, arranged into 10 clearly defined rows, punctations seriate near sutural margin, interstitial spaces smooth, shiny; elytral epipleural margin serrulated in posterior half; elytra 5 times longer than pronotum; elytral length to width ratio 5.1; anterior margin of protibia with 5spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts widened at their extremities (Fig. 102).

Variation: Not observed.

Natural history. The available specimen was collected in January.

Distribution (map 4). Known only from the type locality.

Derivatio nominis. The specific epithet is a Latin masculine diminutive meaning small. I refer to the small size of these beetles.

Differential diagnosis. The available specimen is smaller (about 4.00 mm) than the members of the other two species in the *inexilis* group. However, only in *P. iscus* sp.nov. specimens are antennomeres 7 and 8 as long as wide. In specimens of the other aforementioned species these antennomeres are longer than wide

jubaris group

This group is comprised of two species whose members are recognized by the extraordinarily large punctations on the elytral disc that are almost always larger than the interstitial spaces. The punctations are aligned into 10 straight rows for the greater portion of the elytral disc. Male pygidia are emarginated. The known specimens were collected in Southern Brazil.

Pyticeroides jubaris sp.nov. Figs 4, 74, 108: map 4

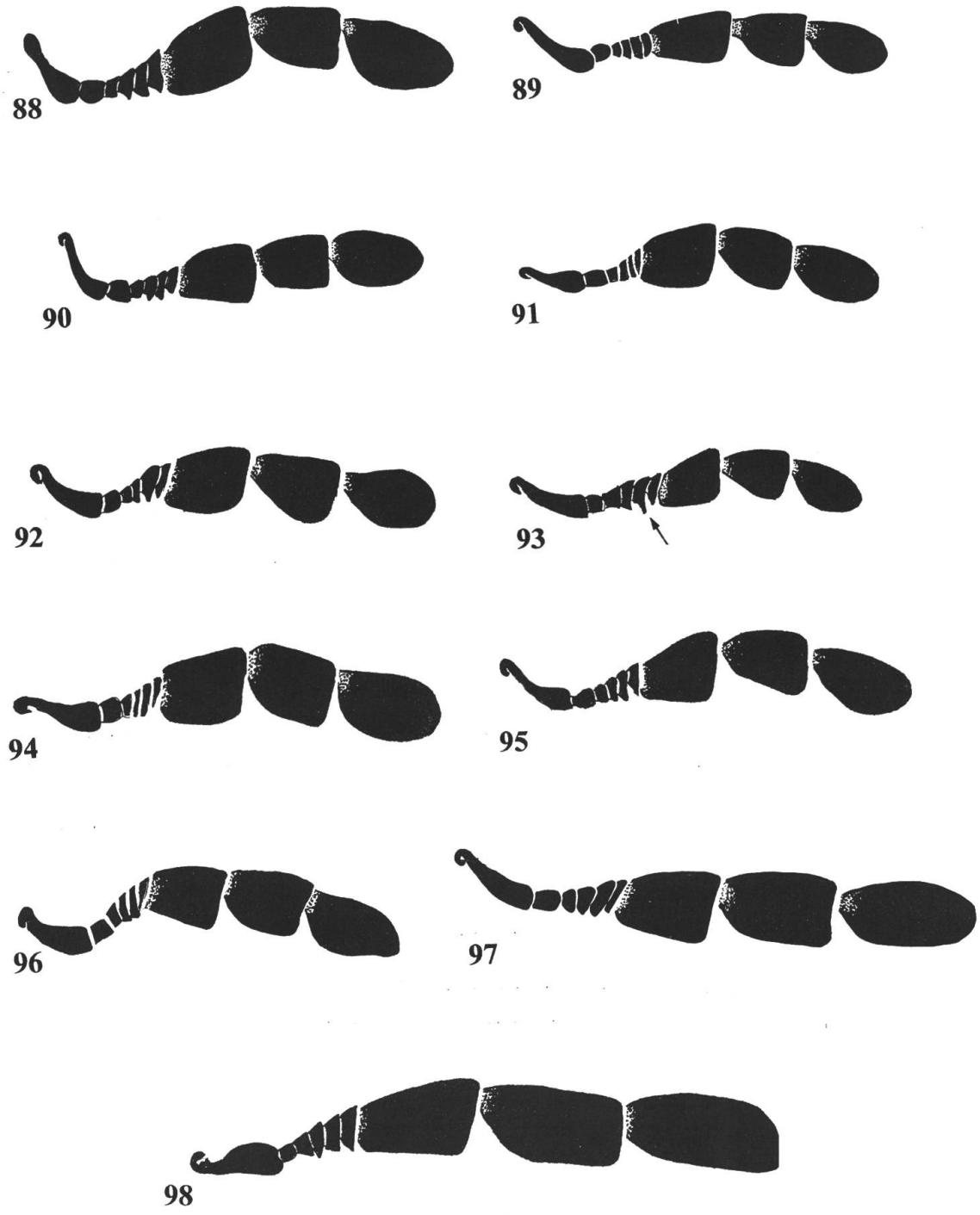
Type material. Holotype: Male. Brazil: São Paulo: Rio Caraguata, 21°48' B 52°27' L, 400 m, III-1953, Fritz Plaumann (FMNH). (Specimen point mounted, with ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label white with blue lines, machine and hand printed; FMNH repository label, white, machine printed; holotype label, red, machine printed; plastic vial with aedeagus).
Paratypes: None.

Description. Size: Length 5.0 mm; width 1.8 mm.

Integument: Cranium predominantly flavotestaceous, postocular streak faintly visible; scape, pedicel, and antennal article 4 to 6 flavotestaceous; antennal club brown; pronotal sides narrowly flavotestaceous, dark discal vertical line wide, brown; elytra brown; legs yellow, profemur faintly infuscate.

Head (Fig. 4): Width about equal to width of pronotum (59:58); ratio of eye width to width of vertex (21:14); antennomeres of funicle slightly explanate.

Thorax: Pronotum transverse-quadrate (57:45), side margins feebly convex; elytra nearly 5 times longer than length of pronotum, disc with 10 clearly defined rows of punctations, punctations round, very large, and seriate near sutural margin, interstitial spaces smooth, shiny; elytral epipleural margin serrulate in posterior half; elytra 5× longer than pronotum; elytral length to width ratio 4.6; protibial anterior margin with 6 spines.



Figs 88–98. *Pyticeroides* antennae: 88, *P. tessares;* 89, *P. maesi;* 90, *P. notialis*; 91, *P. plautus*; 92, *P. caecoatus*; 93, *P. stenotes*; 94, *P. inconscriptus;* 95, *P. laticornis;* 96, *P. trilineatum*; 97, *P. quadratus;* 98, *P. arrogans.*

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts broadened distally (Fig. 108).

Variation: Not observed.

Natural history. The holotype, the only available specimen, was collected in March, at 400 m.

Distribution (map 4). Known only from the type locality.

Derivatio nominis. The specific epithet *jubaris* (= light) is a Latin adjective. I refer to the shiny bright appearance of this beetle.

Differential diagnosis. These beetles are superficially very similar to those of *P. decurialis* sp.nov. However, in *P. jubaris* sp.nov., specimens the distal margins of antennomeres 7 and 8 are linear and antennomere 9 is more rotund (Fig. 74). These margins are concave and antennomere 9 is more oblong (Fig. 85) in specimens of *P. decurialis* sp.nov.

Pyticeroides decurialis sp.nov. Figs 85, 110; map 3

Type material. Holotype: Male. Brazil: Espiritu Santo: Linhares, IV-1972, M. Alvarenga (MCNZ). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine and hand printed; MCNZ repository label; white, machine printed; holotype label, red, machine printed; plastic vial with aedeagus, pygidium, and 8th abdominal sternum).
Paratypes: None.

Description. Size: Length 5.1 mm; width 1.8 mm.

Integument: Cranium predominantly flavotestaceous, piceous postocular streaks prominent; pronotal sides narrow flavotestaceous, piceous discal vertical line broad; elytra dark brown, femora progressively more flavotestaceous from prothorax to metathorax, tibiae brown, tarsi yellow.

Head: Wider than width of pronotum (58:53); ratio of eye width to width of vertex (20:16); antennomere 7 and 8 with concave distal margin, antennomere 9 ovate.

Thorax: Pronotum transverse-quadrate (53:43), side margins moderately convex (Fig. 58); elytra 6× longer than length of pronotum, disc with 10 clearly defined rows of punctations, latter very large, round, and seriate near sutural margin, interstitial spaces smooth, shinny; elytral epipleural margin serrulate in posterior half; elytral length to width ratio 6.2; right protibial anterior margins with 4 spines, left protibial anterior margin with 5 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts slightly expanded distally (Fig. 110).

Variation: Not observed.

Natural history. The only available specimen was collected from the type locality in April.

Distribution (map 3). Known only from the type locality.

Derivatio nominis. The trivial name *decurialis* is a Latin name meaning "division of ten". I refer to the 10 rows of elytral punctations.

Differential diagnosis. These beetles closely resemble those of *P. jubaris* sp.nov. from which they differ by having antennomere 9 rotund (compare Figs 74, 85).

manni group

This is the largest group of the genus. It contains 10 species. In these specimens, elytral punctations are aligned into ten straight rows, but unlike in the previous group, the punctations tend to be smaller or at most as large as the interstitial spaces, and there are always several punctations that are misaligned near the sutural margin (Fig. 48). All the known males of this group have an emarginate pygidium. The combined distribution of these species extends from Colombia to Brazil.

Pyticeroides manni Chapin, 1927

Figs 3, 9, 15, 16–25, 32, 33, 38, 47, 48, 58, 60, 100; map 4

Pyticeroides manni Chapin, 1927: 8.

BLACKWELDER 1945: 388; CORPORAAL 1950: 252.

Type material. Holotype. Bolivia: Beni: Cavinas, Rio Beni, II, 1921–1922, W. M. Mann (USNM). (Specimen point mounted; support card, white; locality label, white, machine and hand printed; Mulford Expedition label, white, machine printed; identification label, white, machine and hand printed; holotype label, red, machine and hand printed).
Paratypes: Fifteen paratype specimens from the same locality as the holotype (FMNH, 1; USNM, 14).

Other material examined. In addition to the type-series I examined 104 specimens from Bolivia: Cochabamba and Brazil: Diamantino: Rondonia: 62 km SE Ariquenes. Specimens are deposited in the following institutions: AMNH, BMNH, CASC, CMNC, CMNH, CNCI, DEIC, EMUS, FMNH, FSCA, INSB, JNRC, JSBC, LACM, MCNZ, MCZC, MNHN, MZSP, NHMB, OSUC, SEMC, USNM, RGCG, WFBC, WOPC, and ZALF.

Description. Size: Length 4.0–6.0 mm; width 1.6–2.0 mm.

Integument: Forebody, mesothorax and metathorax, legs, abdomen flavotestaceous, antenna, labrum, terminal segments of palpi castaneous.

Head (Fig. 3): Width equal to pronotal width (57:57); ratio of eye width to width of vertex (21:14); antenna (Fig. 18).

Thorax: Pronotum transverse-quadrate (57:47), side margins slightly convex; elytral punctations round, arranged in 10 rows, a few misaligned punctations near sutural margin (Fig. 48), interstitial spaces smooth, shiny; elytral epipleural margin serrulate in distal half (Fig. 47); elytra (Fig. 9) nearly 6× longer than length of pronotum; length to width ratio of elytra 4.8; protibial anterior margin with 7 spines.

Abdomen: Male pygidium emarginate (Fig. 24); aedeagal phallobasic apodeme and phallic struts expanded distally (Fig. 100).

Variation: The lighter regions of the specimens from Diamantino, Brazil, tend to be more light-castaneous than the more yellowish specimens from Rio Beni Bolivia.

Natural history. The available specimens were collected in February, September, November, and December.

Distribution (map 4). Known only from northern Bolivia and western Brazil.

Differential diagnosis. The cranium, prothorax, and legs are unicolorous flavotestaceous in the members of this species. The superficially similar specimens of *P. similis* sp.nov. have the profemur infuscate and the distal region of the elytra has the epipleural margin more narrowly rounded (compare Figs 59, 60).

Pyticeroides acaris sp.nov. Figs 68; map 4

Type material. Holotype: Female. Colombia: Magdalena: PNN, Tayrona Palangana, 11ş20' N 74ş2' W, 30 m, Malaise, 21.iii–6.iv.2001, R. Henriquez leg. M. 1484 (IAVH). (Specimen point mounted, ♀ symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed, IAVH repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: None.

Description. Size: Length 3.8 mm; width 1.1 mm.

Integument: Cranium predominantly flavotestaceous, with piceous postocular streaks; pronotum predominantly flavotestaceous, pronotal discal vitta obscure, pronotal arch and pronotal anterior angles brown; elytra brown, with flavotestaceous sutural margin; legs yellow.

Head: As wide as pronotum (19:19); ratio of eye width to width of vertex (7:5); antenna (Fig. 68).

Thorax: Pronotum transverse-quadrate (19:15), side margins subparallel; elytral punctations arranged into 10 rows; interstitial spaces smooth, shiny; elytral epipleural margin serrulate at distal half; elytra about 5× longer than pronotum; length to width ratio of elytra 5.5; anterior margin of protibia with 4 spines.

Variation: One specimen examined.

Natural history. The available specimen was collected in a Malaise trap near the end of March and at 30 m.

Distribution (map 4). Known only from central Colombia.

Derivatio nominis. The trivial name stems from the Greek *acaris* (= tiny). I refer to the small size of these beetles.

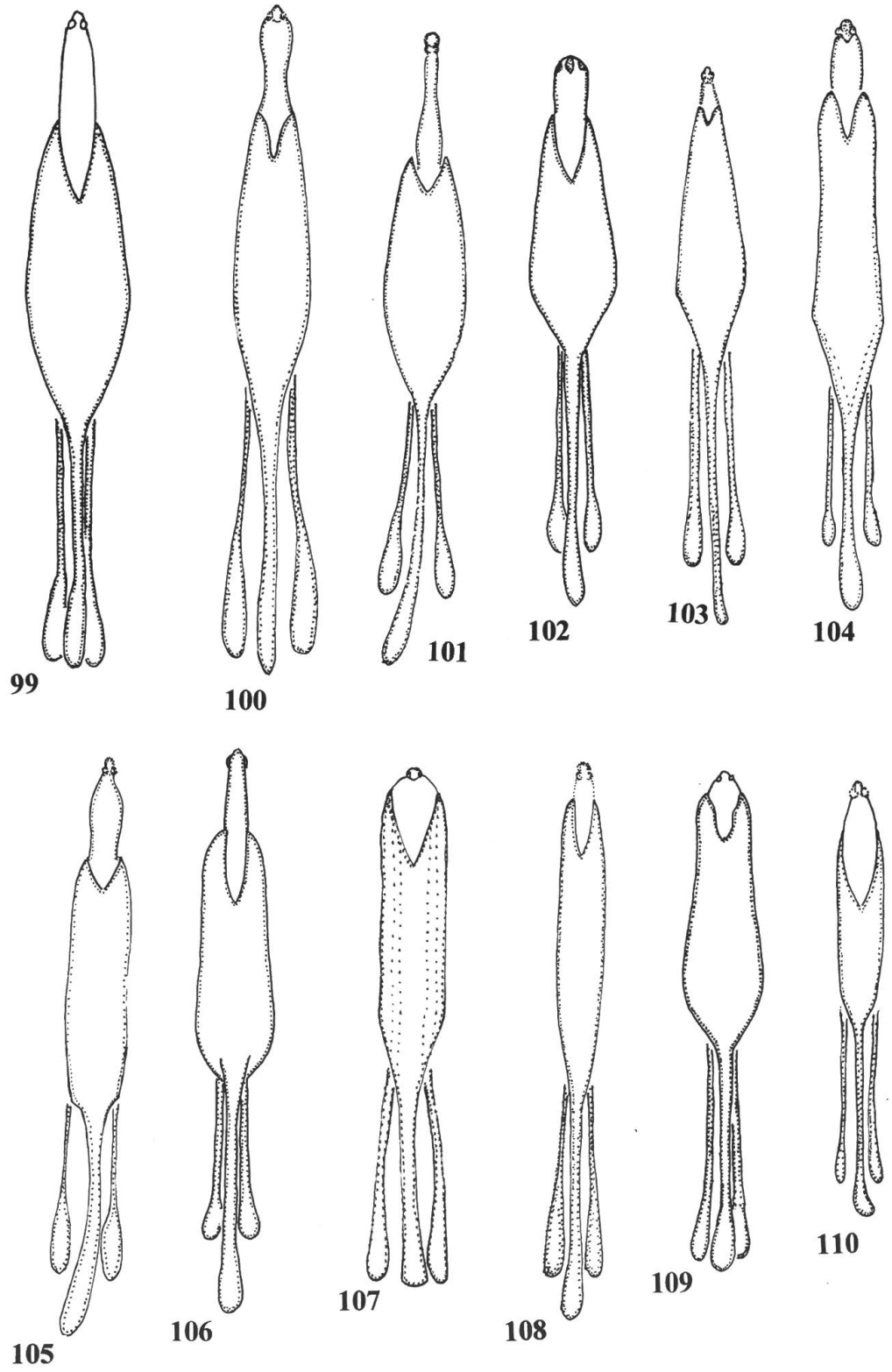
Differential diagnosis. Small size (3.8 mm), 4 spines on the anterior margin of the protibia, and flavotestaceous sutural margin will distinguish these beetles from superficially similar beetles of *P. similis* sp.nov.

Pyticeroides similis sp.nov. Figs 7, 57, 59, 82, 99; map 3

Type material. Holotype: Male. Brazil: Rondonia, 62 km SE Ariquemes, 5–16 Nov. 1996, W. J. Hanson (MCNZ). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed: MCNZ repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus).
Paratypes: None.

Description. Size: Length 4.5 mm; width 1.2 mm.

Integument: Cranium, pronotum, legs flavotestaceous, profemur infuscated; elytra piceous.



Figs 99–110. *Pyticeroides* aedeagi: 99, *P. similis*; 100, *P. manni*; 101, *P. caligulus*; 102, *P. iscus*; 103, *P. cinericius*; 104, *P. luteolus*; 105, *P. hansoni*; 106, *P. strictus*; 107, *P. eurides*; 108, *P. jubaris*; 109, *P. vichadium*; 110, *P. decurialis*.

Head: Wider than pronotum (57:45); ratio of eye width to width of vertex (20:12); antenna (Fig. 82).

Thorax: Pronotum transverse-quadrate (47:43), side margins subparallel; elytral punctations arranged in 10 rows, all punctations near sutural margin at elytral four-fifths aligned in straight rows; interstitial spaces smooth, shiny; elytral epipleural margin serrulate in distal half; elytra about 5.6× longer than pronotum; length to width ratio of elytra 5.0; anterior margin of protibia with 6 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts widened at their extremities (Fig. 99).

Variation: One specimen examined.

Natural history. The available specimen was collected in November.

Distribution (map 3). Known only from the eastern portion of central Brazil.

Derivatio nominis. The specific epithet is taken from the Latin *similis* (= like). I refer to the superficial similarity between the holotype and members of *P. manni*.

Differential diagnosis. Distinguishable from superficially similar specimens of *P. manni* by the more parallel side margins of the pronotum (compare Figs 57, 58) Also, in members of *P. similis* sp.nov. the convexity of the posterior curvature of the elytral margin is more evenly rounded (compare Figs 59, 60).

Pyticeroides caligneus sp.nov. Figs 76, 101; map 4

Type material. Holotype: Male. Brazil: Paraná: Rondon, 30-X-1952, 500 m, Fritz Plaumann (FMNH). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine and hand printed; FMNH repository label, white, machine printed; plastic vial with aedeagus and abdomen; holotype label, red, machine printed.

Paratypes: Eighteen paratypes with same label data as the holotype except: 18-X-1952 (FMNH, 1), 24-X-1952 (FMNH, 1), 28-X-1952 (FMNH, 1), 7-X1-1952 (FMNH, 2), 10-XI-1952 (FMNH, 2), 13-XI-1952 (FMNH, 1), 21-XI-1952 (WOPC, 1), 23-XI-1952 (WOPC, 2), 25-XI-1952 (WOPC, 1), 29-XI-1952 (FMNH, 1), 30-XI-1952 (FMNH, 1), 4-XII-1952 (WOPC, 1), 6-XII-1952 (FMNH, 1), 17-XII-1952 (FMNH, 1), 29-XII-1952 (WOPC, 1).

Description. Size: Length 4–4.8 mm; width 1.2–1.8 mm.

Integument: Cranium predominantly flavotestaceous, brown postocular streaks prominent; pronotal and elytra dark brown; femora predominantly flavotestaceous, faintly infuscated, tibiae brown, tarsi yellow.

Head: Substantially wider than width of pronotum (51:43); eye narrower than vertex (14:17); antenna (Fig. 76).

Thorax: Pronotum transverse-quadrate (58:48), side margins moderately convex; elytral punctations small, round and arranged in 10 rows, interstitial spaces smooth, shiny; elytral epipleural margin serrulate in distal half; elytra nearly 6× longer than length of pronotum, elytral length to width ratio 5.4; protibial anterior margin with 5 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts expanded distally (Fig. 101).

Variation: In some specimens, the lateral aspects of the pronotum are faintly pale.

Natural history. The available specimens were collected from the type locality during October, November, and December, at 500 m.

Distribution (map 4). Known only from the type locality.

Derivatio nominis. From the Latin *caligo* (= dark). I refer to the dark coloration of the pronotum.

Differential diagnosis. Among the known species of the *manni* species group only *P. caligneus* sp.nov. specimens have the prothorax entirely dark brown. Also, in these beetles the vertex is as wide as the width of the eye.

Pyticeroides eurides sp.nov. Figs 61, 72, 107; map 3

Type material. Holotype: Male. Brazil: Mato Grosso: Diamantino, Fazenda Rio Arinos, VII-1983, Eurides Furtado (MCNZ). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine and hand printed; MCNZ repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus).
Paratypes: None.

Description. Size: Length 5.5 mm; width 1.7 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks well developed; pronotum flavotestaceous at sides; piceous discal vitta broad; elytra piceous; legs tibiae and femora piceous, tarsi yellow.

Head: Wider than width pronotum (70:65); ratio of eye width to width of vertex (22:16); antenna (Fig. 72).

Thorax: Pronotum transverse-trapezoidal (44:44), side margins convex behind anterior transverse depression; elytral punctations arranged into 10 rows; interstitial spaces smooth, shiny; elytral epipleural margin serrulate in distal half; elytra about 6× longer than pronotum; length to width ratio of elytra 4.9; anterior margin of protibia with s6 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts widened at their extremities (Fig. 107).

Variation: One specimen examined.

Natural history. The holotype specimen was collected from the type locality in August.

Distribution (map 3). Known only from the type locality.

Derivatio nominis. The specific epithet is a surname patronym. I dedicate this species to Eurides Furtado who had the vision for making available material towards the progression of Brazilian insect systematics.

Differential diagnosis. Distinguishable from the superficially similar specimens of *P. strictus* sp.nov. by the more transverse character of the pronotum (compare Figs 61,62). Also, these beetles resemble those of *P. vichada* sp.nov. from which *P. eurides* sp.nov., specimens are distinguished by the diagonal orientation of the distal margin of their antennomere 7. In *P. vichada* sp.nov. the distal margin is clearly diagonal (Fig. 77).

***Pyticeroides strictus* sp.nov.** Figs 62, 84, 106; map 3

Type material. Holotype: Male. Bolivia: Cochabamba, Germain (MNHN). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, brown, machine printed, MNHN repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus).
Paratypes: Ten specimens. Bolivia: Cochabamba: Germain (MNHN, 5; WOPC, 5).

Description. Size: Length 5.0–5.1 mm; width 1.0–1.1 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks well developed; pronotum flavotestaceous at sides; piceous discal vitta wide; elytra brown; legs with profemora and mesofemora piceous, metafemora piceous on dorsum and distal region, flavotestaceous in remainder; tibiae and tarsi yellow.

Head: Width as wide as pronotum (55:55); ratio of eye width to width of vertex (22:15); antenna (Fig. 84).

Thorax: Pronotum transverse-quadrate (55:47), side margins moderately convex behind anterior transverse depression; elytral punctations round, arranged in 10 rows; interstitial spaces smooth; elytral epipleural margin serrulate in distal half; elytra about 6× longer than pronotum; length to width ratio of elytra 5.2; anterior margin of protibia with 6 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts widened at their extremities (Fig. 106).

Variation: One specimen examined.

Natural history. No information available.

Distribution (map 3). Known only from the type locality.

Derivatio nominis. The specific epithet *strictus* (= straight) is a Latin adjective. I refer to the nearly parallel body form of these beetles.

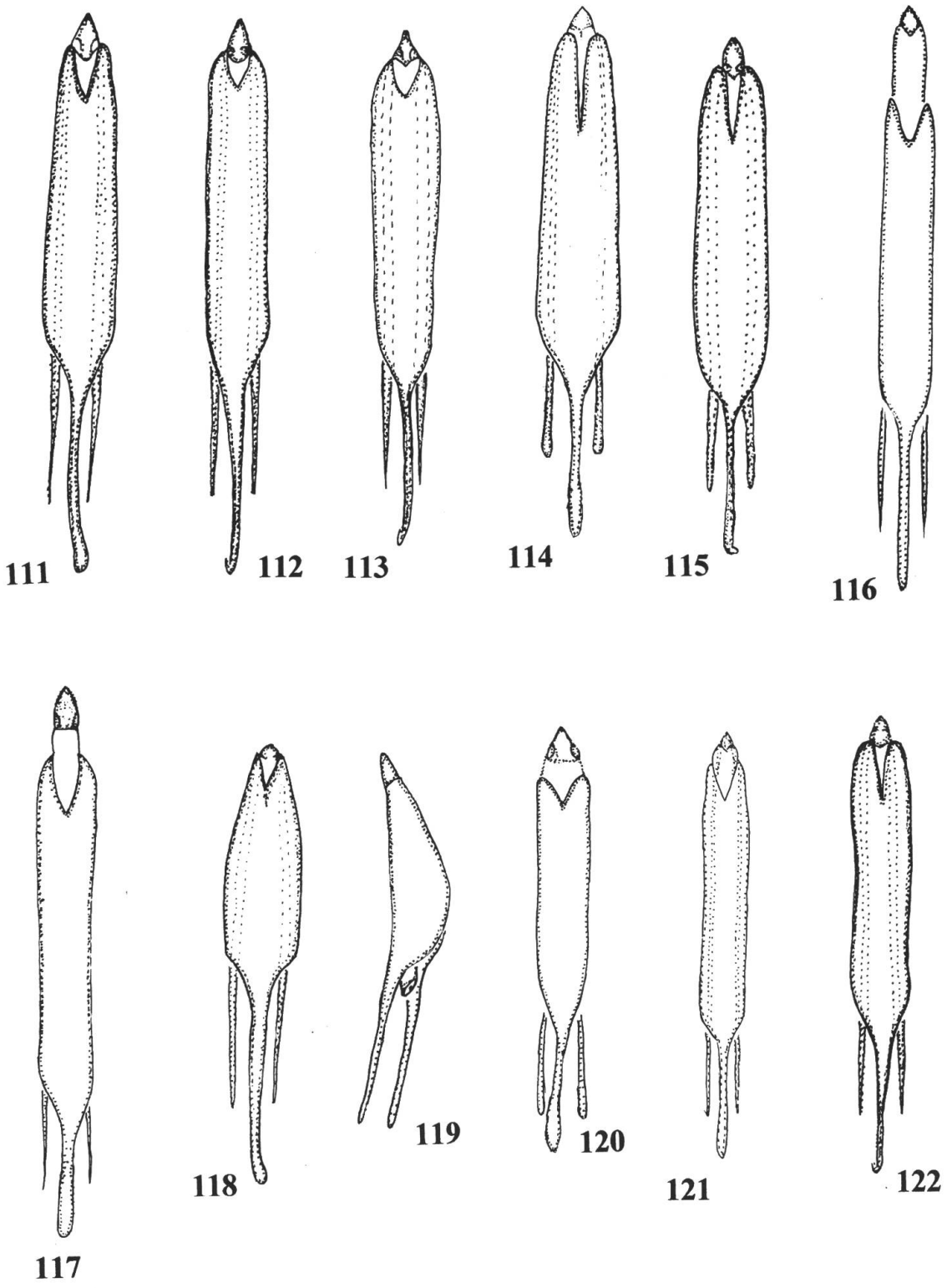
Differential diagnosis. The eyes are less bulged and the pronotum is less transverse than in the superficially similar specimens of *P. eurides* sp.nov. (compare Figs 61 and 62).

***Pyticeroides vichadium* sp.nov.** Figs 34, 77, 109; map 3

Type material. Holotype: Male. Colombia: Vichada: PNN Tuparro Cerro Tomas, 5ş 21' N 67ş51'W, 140 m, Malaise, 22.v–3.vi.2001, I. Gill Leg., M. 1789 (IAVH). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; mount card with two mesothoracic legs and one metathoracic leg, card white; locality label, white, machine and hand printed; IAVH repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus; the holotype is without the right elytron).
Paratypes: None.

Description. Size: Length 5.5 mm; width 1.5 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks prominent; pronotum bicolorous, disc flavotestaceous at sides, with broad black discal vitta; elytra black; legs bicolorous, profemur, protibia, and mesofemur piceous, protarsus yellow, mesotibia and metatibia predominantly yellow, infuscated at extremities, mesotarsus and metatarsus bicolorous, predominantly yellow, tarsomeres 3 and 5 infuscated.



Figs 111–122. *Pyticeroides* aedeagi: 111, *P. plautus*; 112, *P. rifkindi*; 113, *P. caecoatus*; 114, *P. chiriquianum*; 115, *P. fustis*; 116, *P. laticornis*; 117, *P. inconscriptus*; 118, *P. notialis* (ventral view); 119, *P. notialis* (lateral view); 120, *P. roseicollis*; 121, *P. trilineatum*; 122, *P. tessares*.

Head: Wider than pronotum (60:58); ratio of eye width to width of vertex (25:15); antenna (Fig. 77).

Thorax: Pronotum transverse-quadrate (57: 45), side margins moderately convex; elytral punctations arranged into 10 rows, all punctations aligned into straight rows near sutural margin at elytral basal four-fifths; interstitial spaces smooth, shiny; elytra about 5× longer than pronotum; length to width ratio of elytra 4.6; anterior margin of protibia with five spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts widened at their extremities (Fig. 109). Male internal reproductive organs (Fig. 34): With two pairs of short accessory glands; 12 testicular follicles.

Variation: One specimen studied.

Natural history. The holotype was collected in a Malaise trap, approximately at the end of May, at 140 m.

Distribution (map 3). Known only from Cerro Tomás, in Colombia.

Derivatio nominis. The trivial name refers to the type locality.

Differential diagnosis. These checkered beetles resemble those of *P. eurides* sp.nov., from which they may be distinguished by the vertical orientation of the distal margin of antennomere 7 (compare Figs 72, 77).

Pyticeroides cinericius sp.nov. Figs 78, 103; map 4

Type material. Holotype: Male. Brazil: Mato Grosso: Rio Caraguata, 21°48' 52°27', VI-1953, 400 m (Fritz Plaumann) (FMNH). (Specimen point mounted, with ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label white with blue lines and black frame, machine and hand printed; FMNH repository label, white, machine printed; holotype label, red, machine printed: plastic vial with aedeagus and abdomen).

Paratypes: Ten paratypes from the same locality as the holotype, two with the same locality label data as the holotype (FMNH, 2); collected during V-1953 (FMNH, 3; WOPC, 2); collected on 1-IV-1953 (FMNH, 1); collected on 4-IV-1953 (WOPC, 1); collection date not noted (NHMB, 1).

Description. Size: Length 5.0–6.0 mm; width 1.6–1.9 mm.

Integument: Cranium predominantly flavotestaceous, brown postocular streaks confluent with infuscated vertex; pronotal side margins narrow flavotestaceous, brown discal vitta broad; elytra brown, with middle half somewhat lighter, profusely vested with short light setae; legs predominantly flavous, profemur and protibia faintly infuscated.

Head: Substantially wider than width of pronotum (60:48); ratio of eye width to width of vertex (20:16); antenna (Fig. 78).

Thorax: Pronotum transverse-quadrate (50:40); punctations arranged in 10 rows; interstitial spaces faintly arenose; elytral epipleural margin serrulate in distal half; elytra 5× longer than length of pronotum; elytral length to width ratio 5.0; protibial anterior margins with 5 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme slightly expanded distally, phallic struts very expanded distally (Fig. 103).

Variation: In some specimens the vertex, tibiae, and femora are infuscated. The paleness of the elytral disc varies in expression.

Natural history. The available specimens were collected in May, at 400 m.

Distribution (map 4). Known only from the type locality.

Derivatio nominis. From the Latin adjectival *cinericius* (= like ashes, gray). I refer to the gray appearance of the fine elytral pubescence.

Differential diagnosis. The members of this species have the elytra profusely vested with fine grey setae, the elytral punctations are very small, not wider than the interstitial spaces, and antennomere 7 is particularly triagonal (Fig. 78). The subglobose condition of the last antennomere distinguishes the members of this species from the similar members of *P. hansoni* sp.nov. whose last antennomere is more oval.

***Pyticeroides hansoni* sp.nov.** Figs 83, 105; map 3

Type material. Holotype: Male. Ecuador: Napo: Yasuni Research Station, 19–30 October 1998, W. J. Hanson (QCAZ). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine printed; coordinates label, white, machine printed; QCAZ repository label, white, machine printed; holotype label, red, machine printed; plastic vial with abdomen and aedeagus).
Paratypes: None.

Description. Size: Length 5.1 mm; width 1.5 mm.

Integument: Cranium predominantly dark castaneous, piceous postocular streaks well defined; pronotal sides narrowly testaceous, piceous discal vitta broad; elytra piceous; profemora and mesofemora piceous, metafemora flavotestaceous in anterior and posterior facies, piceous on margins; tibiae brown; tarsi yellow.

Head: Notably wider than pronotum (59:52); ratio of eye width to width of vertex (20:14); antenna (Fig. 83).

Thorax: Pronotum transverse-quadrate (52:48), side margins feebly convex behind anterior transverse depression; elytral punctations arranged in 10 rows, interstitial spaces arenose; elytral epipleural margin serrulate in distal half; elytra 5× times longer than pronotum; elytral length to width ratio 5.1; protibial anterior margin with 6 spines.

Abdomen: Male pygidium emarginate; aedeagal phallic apodeme and phallic struts expanded distally (Fig. 105).

Variation: Not studied.

Natural history. The type specimen was collected during October.

Distribution (map 3). Known only from the type locality.

Derivatio nominis. The patronym is dedicated to Wilford J. Hanson in recognition of his vast experience in the collection of insects, and more important, for his unfailing professionalism in making his material available for study.

Differential diagnosis. The distal margin of antennomere 7 is oriented diagonally in the members of this species and in those of superficially similar specimens of *P. vichadium* sp.nov. (see Figs 77, 83). From members of *P. vichadium*, specimens *P. hansoni* specimens are distinguished by the less transverse character of the pronotum. In *P.*

hansoni, specimens this ratio is about 52 units wide and about 48 units long. In *P. vichadium* sp.nov. specimens the pronotal ratio is about 57 units wide and about 45 units long. The body length of these two holotypes is about the same.

***Pyticeroides luteolus* sp.nov.** Figs 26, 80, 104; map 3

Type material. Holotype: Male. Brazil: Nova Teutonia: 27°11' B 52°23' L, X-1965, 300–500 m, Fritz Plaumann (FMNH). (Specimen point mounted, ♂ symbol affixed to paper point, white machine printed; mount card, white; locality label, white, machine and hand printed; FMNH repository label, white, machine printed; holotype label, red, machine printed; plastic vial with aedeagus).

Paratypes: Thirty-three specimens. Twenty-three specimens with the same label data as the holotype except day of collection not noted (WOPC, 1), day not noted-I-1957 (IZAV, 1), day not noted-I-1957 (WOPC, 1), 7-VII-1965 (WOPC, 2); day not noted-I-year not noted (WOPC, 2), 10-IX-year not noted (FMNH, 1), 12-IX-year not noted (FMNH, 1), 13-IX-year not noted (WOPC, 1), 15-IX-year not noted (FMNH, 3; WOPC, 2), 17-IX-year not noted (IZAV, 1), day not noted-X-year not noted (WOPC, 1), 5-X-year not noted (WOPC, 2), 27-X-1941 (AMNH, 1), 31-X-1941 (NHMB, 1), 32-VIII-1941 (AMNH, 1), day not noted-XI-1966 (FMNH, 1), day not noted-XI-1972 (WOPC, 1), 3-XI-1944 (AMNH, 1), 10-XI-1941 (WOPC, 1), 7-XII-1965 (WOPC, 1). Brazil: Paraná: Rondon, 24°30' Lat 54°07' Long, 500 m, Fritz Plaumann, 28-X-1952 (FMNH, 1), 9-XI-1952 (FMNH, 1), 30-XI-1952 (WOPC, 1), 6-XII-1952 (FMNH, 1), XI-1972 (WFBC, 1); XII-20-1952 (WOPC, 1).

Description. Size: Length 5.0–1.6 mm; width 6.0–1.8 mm.

Integument: Cranium predominantly flavotestaceous, castaneous postocular streaks well defined; pronotum narrow flavotestaceous at sides, discal castaneous vitta very broad; elytra castaneous; profemur castaneous, mesofemora and metafemora flavotestaceous in basal half, castaneous in remainder; tibiae and tarsi castaneous.

Head: Width equal to pronotal width (63:63); ratio of eye width to width of vertex (25:18); antenna (Fig. 80).

Thorax: Pronotum transverse-quadrate (57:47); side margins boldly convex behind anterior transverse depression; elytral punctations arranged in 10 rows, interstitial spaces faintly arenose, shiny; elytral epipleural margin serrulate in distal half; elytra about 6× longer than pronotum; elytral length to width ratio 7.9; anterior margin of protibia with 5 spines.

Abdomen: Male pygidium emarginate; aedeagal phallobasic apodeme and phallic struts expanded distally (Fig. 104).

Variation: In some specimens, the tarsi are yellow. Also, the darkened regions of the integument varies from brown to piceous.

Natural history. Specimens were collected from September through December, at altitudes ranging from 400 to 500 m.

Distribution (map 3). Known from the southeastern environs of Brazil.

Derivatio nominis. The trivial name *luteolus* (= yellowish) is a Latin adjective. I refer to the yellow color of the tarsi characteristic in most of the available specimens.

Differential diagnosis. Within the *manni* group *P. luteolus* sp.nov. specimens are distinguished from superficially similar specimens of *P. hansoni* sp.nov. by the more convex character of the side margins of the pronotum, which makes the pronotum more transverse. In *P. luteolus* sp.nov. specimens the pronotum is about 58 units wide and about 48 units long whereas in *P. hansoni* sp.nov., specimens the pronotal dimensions are about 52 units wide and about 48 units long.

chiriquianum group

These beetles have the eyes much more protruded than in the individuals of the previous group. As in the previous group the elytral punctations are arranged in 10 rows with disorganized punctations occurring near the sutural margin. In several of the species, the epipleural fold is notably convex and visible in the elytral dorsal view. The lateral aspects of the pronotum is red in three of the species. This wide-ranging group extends from Honduras to Argentina.

Pyticeroides chiriquianum (Gorham, 1883) Figs 5, 35, 79, 114; map 2

Apolopha chiriquiana Gorham (1883: 182).

GORHAM 1886: 345; GAHAN, 1910: 74; BLACKWELDER 1945: 388 (*Ellipotoma*); CORPORAAL 1950: 252 (*Ellipotoma*).

Type material. Lectotype (here designated). Panama: Chiriqui, Volcan de Chiriqui, 2–3000 ft., Champion (BMNH). (Specimen point mounted, ♂ symbol affixed to paper point, machine printed; mount card; spheroid syntype label; spheroid type label; locality label, mounted on support card; identification label; Biologia label; rectangular type label; lectotype label; species identification label; plastic vial with aedeagus).
Paralectotypes: Five specimens. Three specimens from the same locality as the lectotype (BMNH, 3). Panamá: Chiriquí: Bugaba (BMNH, 2).

Other material examined. In addition to the type series I examined 26 specimens. Costa Rica: Guanacaste: SW side Volcán Cacao, 1000–1400 m, Malaise Trap., GNP Biodiversity Survey; 3 km SE Rio Naranjo, 20-XI-1999, F.D. Parker: Puntarenas: 4 km N Tarcoles, 21–28-XII-1979, E. Giesbert. Panamá: Chiriquí: Volcan de Chiriqui; Tolé; Hartmann's Finca, Mv + bi, 5-VII-1997, R. Turnbow; Finca Suiza, 1 km SE Hornito, 28-V–2-VI-1994, F. Andrews & A. Gilbert; Bugaba; Colón: Fort Sherman, 9ş17' N 79ş59' W, 16-X-2001, on *Brosimum utile*, Fröde Řdegaard: Canal Zone: Barro Colorado Island, 9°10' 79°50'W, 17-VIII-1974, H. A. Hespenheide, at felled *Guarea glabra*. Colombia: Bolivar: Los Colorados La Suiris, 9ş54' N 75ş7' W, 8–10-2000, Malaise, E. Deulufeut: Magdalena: Sierra de Perija, Finca San Jose, 8 km SE Socorpa Mission, 27–31-VII-1968, B. Malkin. Ecuador: Guayas: Guayaquil, 18-II-1981, 50 m, H. F. Howden. Specimens are deposited in BMNH, CDAE, CHAH, CMNC, EMUS, INBC, MNHN, NHMB, NINA, RHTC, UKIC, and WOPC.

Description. Size: Length 3.8–5.5 mm; width 1.2–2.0 mm.

Integument: Cranium flavotestaceous postocular streaks prominent; pronotal sides broadly flavotestaceous; legs progressively more flavotestaceous from prothorax to metathorax.

Head: Wider than width of pronotum (60:50); ratio of eye width to width of vertex (20:16); antenna (Fig. 79).

Thorax: Pronotum transverse-trapezoidal (50:40), side margins moderately convex; punctations round, arranged into 10 rows, a few punctations misaligned near sutural margin, interstitial spaces faintly arenose and shiny; elytra about 5× longer than pronotum; elytral length to width ratio 5.0; protibial anterior margin with five spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded (Fig. 114). Male internal reproductive organs (Fig. 35): Two pairs of accessory glands; medial pair about half the length of lateral glands; testes comprised of six testicular follicles.

Variation: Length and intensity of the pale line on the epipleural and sutural margins and the extent of expression of brown markings on the legs vary.

Natural history. Specimens were collected from northern Costa Rica during November and December, from Panamá from June through August, from Colombia during June, and from Ecuador during February. G. C. Champion captured these beetles in western Panamá from altitudes ranging from 243 to 914 m. From Tolé, Champion collected specimens on fallen trees, in a forest clearing. One of his specimen labels reads, *"this and allied species run about on small black powdery fungoid growths, on the bark of fallen trees; usually on the shade"*. Frode Ŕdegaard collected one specimen on *Brosimum utile* from Central Panamá, during October while F. Andrews and A. Gilbert captured one in a malaise trap. Malkin captured another during July, at 1450–1500 m, by *"beating dry foliage in forest"*, from northern Colombia. E. Deulufeut collected one specimen from Colombia during November, in a Malaise trap, at 126 m. Henry A. Hespenheide, collected a specimen on felled *Guarea glabra.*

Distribution (map 2). This species ranges from northwestern Costa Rica across through northern Colombia and south to eastern Ecuador.

Differential diagnosis. Within the *chiriquianum* group, only in the members of this species are the sutural and epipleural margins flavotestaceous.

Pyticeroides roseicollis sp.nov. Figs 10, 81, 120; map 2

Type material. Holotype: Male. Costa Rica: Guanacaste: 3 km SE R. Naranjo, 15–20 Oct. 1992 F. D. Parker (INBC). (Specimen point mounted, ♂symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine printed; INBC repository label; holotype label, red, machine printed; plastic vial with aedeagus).
Paratypes: One specimen. Panamá: Panamá: Cerro Campana, 800 m, 31-III-1987, J. R. McDonald (MEMU, 1).

Description. Size: Length 4.5–5.2 mm., width 1.5–2.0 mm.

Integument: Cranium bicolorous, frons testaceous at middle and piceous near ocular notch, epicranium testaceous at vertex and piceous in remainder, piceous postocular streak blends with piceous regions of epicranium; elytra dark brown; tibiae and tarsi piceous, femur predominantly testaceous.

Head: Width equal to width of pronotum (55:55); vertex width half width of eye (10:20); funicular antennomeres notably expanded (Fig. 81).

Thorax: Pronotum transverse-quadrate (55:45), side margins subparallel; elytral punctations arranged in 10 rows, interstitial spaces faintly arenose and shiny, elytra somewhat convex, epipleural margins convex (Fig. 10), nearly 6× longer than pronotum, elytral length to width ratio 6.1; protibia anterior margin with 7 spines.

Abdomen: Male pygidium not emarginate; phallobasic apodeme and phallic struts expanded distally (Fig. 120).

Variation: The Panamanian paratype specimen lacks the roseate tint on the pronotum and the cranium is more piceous.

Natural history. One of the available specimens was collected in October, in Costa Rica, the other during March at 800 m, in Panama.

Distribution (map 2). Known only from the type locality and central Panama.

Derivatio nominis. The specific epithet stems from the Latin *roseus* (=rose-colored) and the Latin *collum* (= neck). I refer to the roseate pronotum of the holotype specimen.

Differential diagnosis. Only in specimens of this species is the prothorax pink or yellow.

***Pyticeroides maesi* sp.nov.** Fig. 89; map 2

Type material. Holotype: Female. Nicaragua: Granada: Volcan Mombacho, Finca San Joaquin, 2-VI-1998, malaise trap in organic coffee, J. M. Maes (SEAN). (Specimen point mounted, ♀ affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed, SEAN repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: Two specimens from the same locality as the holotype (SEAN, 1: WOPC, 1).

Description. Size: Length 4.5– 4.7 mm; width 1.0–1.2 mm.

Integument: Cranium flavotestaceous, piceous postocular streaks well defined; pronotum flavotestaceous at sides, disc with broad piceous vitta; elytra piceous; legs prothoracic legs completely piceous, mesofemur and metafemur yellow, tibiae and tarsi of mesotibiae and metatibiae piceous.

Head: Slightly wider than wider pronotum (53:50); ratio of eye width to width of vertex (20:17); antenna (Fig. 89).

Thorax: Pronotum transverse-trapezoidal (50:40), side margins convex behind anterior transverse depression; elytral punctations arranged in 10 rows, a few punctations disorganized near sutural margin; interstitial spaces smooth, shiny; elytra about 6× longer than pronotum; length to width ratio of elytra 5.5; anterior margin of protibia with 5 spines.

Variation: The available specimens do not vary appreciably.

Natural history. The available specimens were collected in a Malaise trap in a field of organic coffee.

Distribution (map 2). Known only from the type locality.

Derivatio nominis. The species name is a patronymic dedicative in honor of Jean-Michel Maes, who has been very instrumental in the progress of Nicaraguan systematic entomology.

Differential diagnosis. This is the only known species of *Pyticeroides* to occur in Nicaragua.

Notes. I have examined a single male specimen from Guanacaste, Costa Rica that has the elytra entirely piceous. At first I thought that this individual was a variant from the typical coloration of specimens of *P. chiriquianum* that involves a flavotestaceous line along the sutural and epipleural margins. However, the aedeagus of the male from Guanacaste is proportionally shorter and the phallic apex is more lobate; not the kind of intraspecific variation typical in the genus. Moreover, recently I received additional males of *P. chiriquianum* with typical elytral coloration from Guanacaste and Colombia. The aedeagus of these specimens agrees with the aedeagal form of the type series of *P.*

chiriquianum from Panamá. For these reasons, I have determined that the dark male is not conspecific with the above mentioned light vittate males.

I have also examined three female specimens of *P. maesi* sp.nov., from Nicaragua that cannot be distinguished from the male in question from Guanacaste. Male specimens from Volcán Mombacho will have to be examined to determine if the male from Guanacaste, with the concolorous elytra, is conspecific with the females from Nicaragua.

***Pyticeroides fustis* sp.nov.** Figs 37, 86, 115; map 3

Type material. Holotype: Male. Brazil: Mato Grosso: Sinop, Coordenadas, X-74, 350 m, M. Alvarenga (MCNZ). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white, hand printed; MCNZ repository label; white, machine printed; holotype label, red, machine printed; plastic vial with aedeagus).
Paratypes: Four specimens. Brazil: Mato Grosso: Sinop, Coordenadas, day not noted-X-1974 (WOPC, 2); Sinop, Espiritu Santo, day not noted-X-1974, M. Alvarenga (WOPC, 1); RS/RGS, Exp., 12ş49'S 51ş46', 8-XII-1968W, R. A. Beaver (NCNZ, 1).

Description. Size: Length 5.0–5.3 mm; width 1.8–2.0 mm.

Integument: Cranium predominantly flavotestaceous, piceous postocular streaks well defined; pronotal sides narrow flavotestaceous, piceous discal vitta broad; elytra brown; femora and tibiae progressively less brown from prothorax to metathorax, tarsi yellow.

Head: Wider than pronotum (75:72); ratio of eye width to width of vertex (26:21); antennal club particularly elongate (Fig. 86).

Thorax: Pronotum transverse-trapezoidal (72:50), side margins very convex behind anterior transverse depression; elytral punctations arranged in 10 rows, a few punctations disorganized near sutural margin; interstitial spaces faintly arenose, shiny; elytra nearly 6× longer then length of pronotum; elytral length to width ratio 5.4; protibial anterior margin with 5 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 115). Male internal reproductive organs: Two pairs of accessory glands (Fig. 37); testis comprised of 12 follicles.

Variation: In one specimen the right protibial anterior margin has only four spines.

Natural history. The known specimens were collected in October, at 300 m.

Distribution (map 3). Known from the highlands of central Brazil and along its middle Atlantic coast.

Derivatio nominis. The trivial name *fustis* (= club) is a Latin noun. It is used herein to call attention to the extraordinary length of the antennal club.

Differential diagnosis. The distinctly expanded antennal club, and particularly the rectangular shape of antennomere 8, will easily distinguish the members of this species from congeners within the *chiriquianum* group.

Pyticeroides tessares sp.nov. Figs 55, 88, 122; map 1

Type material. Holotype: Female. Honduras: Olancho: La Muralla, 24-V-1995, R. Morris (FSCA). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed; FSCA repository label, white, machine printed; holotype label, red, machine printed). Paratypes: Nine specimens. Two from the same locality as the holotype (RFMC; 1, WOPC, 1). Honduras: Olancho: Parque Nacional La Muralla, 24–27-V-1995, J. Huether (JNRC, 1); PN La Muralla, 30-VI–VII-1995, F.T. Hovore (JNRC, 1); Parq. Nac. La Muralla, 14 km N La Union, 25–26-IV-1995, R. D. Cave (RDCC, 1); Yoro: PN Pico Pijol, 3-VI-2003, R. Turnbow (RHTC, 1); same data except 4-VI-2003 (WOPC, 1); Ocotillo, 30-VII-1993, R. D. Cave (WOPC, 1). Guatemala: Izabal: 25 km SE Morales, 854 m, 21-IV-1996, E. Giesbert and J. Monzon (FSCA, 1).

Description. Size: Length 3.8–5.5 mm; width 1.2–1.8 mm.

Integument: Cranium predominantly reddish, piceous postocular streaks prominent; pronotal sides broadly reddish, piceous vertical discal line narrow; elytra and legs piceous.

Head: Wider than pronotum (60:42), ratio of eye width to width of vertex (20:17); antennomeres of club notably blocky (Fig. 88).

Thorax: Pronotum transverse-quadrate (55:42), side margins moderately convex; elytra about six times longer than pronotum; elytral punctations arranged into 10 rows, several punctations near sutural margin misaligned, not seriate, interstitial spaces arenose; elytra about 6× longer than pronotum; elytral length to width ratio 6.4; anterior margin of protibia with five spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 122).

Variation: In one specimen the mesofemur shows some paleness.

Natural history. The available specimens were collected during May and late June.

Distribution (map 1). Known only from central Honduras.

Derivatio nominis. The Greek trivial name *tessares* means four. I dedicate this species to four troubadour collectors of beetles who have been very helpful in providing their material for my research: Jeffrey P. Huether, Roy F. Morris II, James E. Wappes, and Robert. H. Turnbow, Jr.

Differential diagnosis. Specimens of this species are superficially very similar to those of *P. rifkindi* sp.nov. However, in *P. tessares* sp.nov. specimens, the antennomeres of the antennal club are blockier which makes the antennal club proportionally shorter (compare Figs 88, 73). Also, there is a general resemblance among specimens of *P. tessares*, *P. rifkindi* spp.nov., and *P. laticornis*. But, in *P. laticornis* specimens, the pronotal discal vitta is considerably broader (compare Figs 54–56).

Pyticeroides notialis sp.nov. Figs 10, 36, 90, 118, 119; map 3

Type material. Holotype: Male. Argentina: Tucumán: Las Tipas, 28-III-92, Di Iorio, O. leg (MLPA). (Specimen point mounted, gender label affixed to paper point, lined at base, white, machine printed; support card, white, lined at base; locality label, white, hand printed; natural history label; red, hand printed; MLPA repository label; holotype label, red, machine printed).

Paratypes: Twelve specimens, four from the same locality as the holotype, except 24-III-1992 (ORDA, 1; WOPC, 1), 28-III-1992 (ORDA, 1; WOPC, 1); Dpto, Burruyacu, Chikas, X-1976, R. Golbach (IMLA, 1);

Horco Molle, XII-1968 (IMLA, 2); Horco Molle, 2–9-X-1969, C. Porter (WOPC, 2); Argentina: Salta: 4 km S Campo Quijano, 9-II-1982, H. H. Howden (CMNC, 1); El Rey Nat. Park, Rio La Salva, 5–10-XII-1987, Malaise, 900 m, open stream side, in forest, S. & J. Peck (WOPC, 1); *idem*, Aguas Negras Trail, 11–15-XII-1987, Malaise, *Prosopis* forest, S. & J. Peck (NHMB, 1); Santiago del Estero: Los Tigres, 11–16-I-1970, R. Golback (IMLA, 1); Missiones: Puerto Rico, 5–13-XI-1970, C. Porter, L. Stange, malaise (WOPC, 1).

Description. Size: Length 4.5–6.2 mm; width 1.4–2.0 mm.

Integument: Vertex, gena, lateral area of frons piceous, remainder of cranium castaneous, postocular streaks prominent, broadly joined at base; pronotal sides broadly reddish, discal line narrow, piceous; elytral disc dark brown, epipleural fold yellow; femora, tibiae piceous, tarsi castaneous.

Head: Width equal to pronotal width (75:75), ratio of eye width to width of vertex (28:20); antenna (Fig. 90).

Thorax: Pronotum boldly transverse-trapezoidal (25:18), side margins only slightly arcuate at middle, increasingly arcuate to base; elytra five times longer than length of pronotum, punctations subquadrate and subseriate throughout elytral disc, interstitial spaces arenose and very elevated; elytra about 6× longer than pronotum; elytral length to width ratio 5.6; protibial anterior margin with six spines.

Abdomen: Male pygidium not emarginate (Fig. 36); aedeagal phallobasic apodeme and phallic struts not expanded distally (fig.118); phallic plates very broad (Fig. 119).

Natural history. Oswaldo R. Di Iorio reports emergence of specimens from dry branches of *Celtis tala*. Other specimens have been collected from October through February, some within a Malaise trap.

Distribution (map 3). Known only from Argentina.

Derivatio nominis. The trivial name stems from the Greek *notos* (= south) and the Greek suffic *-alis* (= pertaining to); emphasize that this is the southernmost distributed known species of the genus.

Differential diagnosis. In specimens of this species the pronotal sides adjacent to the discal vitta are reddish, the genae are broadly piceous, the elytral punctations are subseriate especially near the sutural margin, and the epipleural margin is yellow. Moreover, this is the only *Pyticeroides* species known from Argentina.

***Pyticeroides rifkindi* sp.nov.** Figs 54, 73; map 2

Type material. Holotype: Male. Costa Rica: San José: Cerro de Escazu, 3800', Matinilla, May 24, 1995; beating slash (J. Rifkind, H. Lezama) (LACM). (Specimen point mounted, ♂ symbol affixed to support card; support card, white; locality label, white, outlined, collectors label, white, outlined, machine printed; holotype label, red, machine printed; plastic vial with aedeagus, spicular fork, and last visible abdominal segment). Paratypes: Four specimens; one from the same locality as the holotype (JNRC, 1). Costa Rica: San Jose: San Isidro de Coronado, 22-X-1933 (WOPC, 1; USNM, 1), X-12-33, C. H. Ballou (WOPC, 1).

Description. Size: Length 5.5–6.5 mm; width 1.5–2.0 mm.

Integument: Cranium and pronotal sides reddish, postocular streaks prominent, vertical pronotal discal line piceous (Fig. 54), not extended to trichobothria; elytra brown; profemur brown, mesofemur and metafemur flavotestaceous in anterior and posterior facies, margins brown.

Head: Width equal to width of pronotum (62:62); ratio of eye width to width of vertex (10:10); antennomeres conspicuously elongate (Fig. 73).

Thorax: Pronotum transverse-trapezoidal (60:45), side margins boldly convex in posterior two-thirds; elytral punctations arranged in 10 rows, some punctations near sutural margin misaligned, not seriate, interstitial spaces arenose; elytral about 7× longer than pronotum; elytral length to width ratio 3.6; protibial anterior margin with 6 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally, phallic apex triagonal (Fig. 112).

Variation: One female specimen has 7 spines on the anterior margin of the protibia.

Natural history. Specimens were collected in May and October; the holotype was captured by beating slash at 1159 m.

Distribution (map 2). Known only from the Province of San José, in Costa Rica.

Derivatio nominis. The specific epithet is a dedicative surname patronym. I dedicate this species to my good friend and colleague Jacques Rifkind (Research Associate of the Los Angeles County Museum of Natural History). He is a fine example of how one's passion for the Cleridae can motivate self-teaching towards excellence in taxonomy.

Differential diagnosis. Distinguishable from the superficially similar beetles of *P. tessares* sp.nov., by the proportionally more elongate antennomeres (compare Figs 73, 88). In *P. rifkindi* sp.nov., specimens the length-width ratio of antennomere 8 is 9:6 whereas in *P. tessares* sp.nov. beetles, the length to width proportion is 6:6.

Pyticeroides stenotes sp.nov. Fig. 93; map 3

Type material. Holotype: Female. Venezuela: Aragua: El Limon, 450 m, 11-V-1993 (IZAV). (Specimen point mounted, antenna and ♀symbol affixed to paper point, white, machine printed; mount card, white; locality label, white, machine printed, collector label, white, machine printed; ownership label, green, machine printed; IZAV repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: None.

Description. Size: Length 5.6 mm; width 1.8 mm.

Integument: Cranium flavous, piceous streaks behind the eye; pronotum very broadly flavotestaceous at sides, discal vitta broad; elytra piceous; femora progressively more flavous from prothorax to metathorax; tibiae and tarsi piceous.

Head: Width subequal to pronotal width (53:50); vertex considerably narrower than width of eye (5:20); antennomere five broadly expanded (Fig. 93).

Thorax: Pronotum feebly transverse-quadrate (50:45), side margins subparallel; punctations arranged into 10 rows, a few punctations misaligned in the posterior half of the sutural margin; interstitial spaces faintly arenose; elytra about 5× longer than pronotum, elytral length width ratio 5.9: anterior margin of protibia with six spines.

Variation: Not observed

Natural history. The type specimen was collected in May.

Distribution (map 3). Known only from the type-locality.

Derivatio nominis. The trivial name stems from the Greek adjective *stenos* (= narrow). I refer to the narrow vertex.

Differential diagnosis. The narrowness of the vertex, being considerably less than the width of the eye, and the extraordinary anterior projection of antennomere 5 (Fig. 93) distinguishes the members of this species from congeners of the *chiriquianum* group.

ichnopsis group

The beetles of this monotypic group are easily recognized by the triangular shape of the scape (Fig. 87), extensively expanded funicular antennomeres, and subcarinate condition of the elytral disc. The sole species of this group is known from the highlands of Bahia, in central Brazil.

***Pyticeroides ichnopsis* sp.nov.** Figs 6, 11, 87; map 5

Type material. Holotype: Female. Brazil: Bahia: Salobro, 6.7.1885, E. Gounelle (MNHN). (Specimen point mounted, antenna and ♀ symbol affixed to paper point, white, machine printed; mount card, white; locality label, beige, outlined, machine printed; MNHN repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: None.

Description. Size: Length 6.5 mm; width 2.5 mm.

Integument: Cranium bicolorous, frons broadly piceous, gena infuscated, vertex flavotestaceous, postocular streaks faintly indicated; pronotum narrow yellow at sides, piceous discal vitta broad, prosternum and narrow strip of pronotal lower sides castaneous; elytra castaneous, humeral angle and epipleural fold yellow to elytral posterior third; legs predominantly castaneous, femora flavotestaceous in basal half, dark brown in remainder.

Head (Fig. 6): As wide as pronotum (75:75); ratio of eye width to width of vertex (26:16); antennal funicular antennomeres particularly explanate (Fig. 87).

Thorax: Pronotum very transverse-trapezoidal (75:60); side margins moderately convex; elytral punctations arranged into 11 rows, punctations subquadrate, those near sutural margin misaligned in some specimens, subseriate, interstitial spaces arenose and elevated throughout disc; elytra about 6× longer than length of pronotum; elytral length to width ratio 5.1; interstitial spaces costate; anterior margin of protibia with 9 spines.

Abdomen: Missing.

Variation: Not observed.

Natural history. The type specimen was collected in July.

Distribution (map 5). Known only from the type locality.

Derivatio nominis. The specific epithet stems from the genus name *Ichnea* and the Greek suffix *-opsis* (= likeness). I refer to the superficial similarity between the members of this species and those of the clerid genus *Ichnea*.

Differential diagnosis. The members of this monotypic group have a stout triangular scape, the funicular antennomeres are very expanded, the humeral angles of the elytra are flavotestaceous, and the interstitial spaces of the elytral disc are costate. The elytral form gives these beetles an oblong-oval appearance (Fig. 11). These features are unique within the genus and, therefore, separate *P. ichnopsis* sp.nov. specimens from congeneres.

arrogans group

In the members of this group, the elytral punctations are greatly disorganized, particularly near the sutural margin. This arrangement of punctations often suggests presence of an eleventh row of punctations with the extra row being composed of punctations near the sutural margin that are misaligned with the ten rows characteristic of the previous groups. The pronotum has become transverse-trapezoidal and the eyes reach their greatest state of bulginess in the members of this group. The group is comprised of 8 species whose combined distribution extends from Canada to Brazil.

Pyticeroides arrogans Kuwert, 1894 Figs 7, 64, 98; map 5

Pyticeroides arrogans Kuwert, 1894: 7.

SCHENKLING 1910:114; BLACKWELDER 1945: 388; CORPORAAL 1950: 253.

Type material. Lectotype: female (here designated). Peru: Amazonas (MNHN). (Specimen point mounted, antenna and gender label affixed to mount card, white, machine printed; locality label, beige, cursive; MNHN repository label, white, machine printed; identity label, beige, cursive; Kuwert collection label, beige, machine printed; type label, red, machine printed; identification label, green, mounted on white card, cursive; lectotype label, red, machine printed; plastic vial with abdomen and ovipositor).

Description. Size: Length 7.0 mm; width 2.0 mm.

Integument: Cranium testaceous, frons infuscated, piceous postocular streaks broad and confluent at base; pronotum narrow flavotestaceous at sides, piceous discal vitta broad; elytra brown; prothoracic legs missing; mesofemora and metafemora flavotestaceous on anterior and posterior fascies, brown at margins; tibiae and tarsi brown.

Head (Fig. 7): Wider than pronotum (79:75); ratio of eye width to width of vertex (27:22); antennomeres 7 to 9 conspicuously elongate (Fig. 98).

Thorax: Pronotum transverse-trapezoidal (75:53), side margins strongly convex behind anterior transverse depression (Fig. 64); elytral punctations small, arranged in 11 rows, various punctations misaligned near sutural margin; interstitial spaces arenose and minimally elevated; elytra about 6× longer than pronotum; elytral length to width ratio 4.6; protibiae missing.

Abdomen: Males unknown.

Variation: Not observed.

Natural history. No information available.

Distribution (map 5). Known only from the Amazonian regions of Peru.

Differential diagnosis. This, the only known South American species of the *arrogans* group, that has the antennal club antennomeres greatly elongated (Fig. 98).

Pyticeroides laticornis (Say, 1835)

Figs 27–29, 39–46, 49, 51, 95, 116, 123–127; map 6

Enoplium laticorne Say, 1835: 164.

Type material. Lectype: here designated. Gender not known. (MCZC). The original specimen label reads "1177. N.C., u". As this is the most widely cited species of *Pyticeroides*, and because of its various generic listings, its past literature is narratively summarized under "References".

Other material examined. One hundred and seventy-six specimens. Canada: Ontario: Kent Co.: Lake Erie, Bothwell, *Carya ovata*, 13-X-1964, Tilbury. United States of America: Alabama: Walker Co., no other information noted: Arkansas: no other information noted: Colorado: Leavenworth Vall, no other informatiuon noted: Connecticut: Lyme Co: Storrs, Mansfield TWP, no other information noted: District of Columbia: DC, no other information noted: Florida: Orange Co.: Orlando, 31-I-1997, ex. Scolytid infested *Xcupressocyparis leylandi*: Aachua Co.: Archer, "Guin" SV, W.S.B Mariana, W.F. Fiske, reared 14-IV-1905: Georgia: Jackson Co.: Hardeman Forest, Aug. 5–8-VIII-1974, R. Turnbow: Clark Co.: Whitehall II For: Jackson Co.: Hardeman Forest, emerged, 19-VIII-1974, from *Juniper virginiana* L., R. Turnbow: Montgomery Co.: Swim Uvala: Upson Co., no other information noted; Mt. Pleasant Rd. S of Yatesville, Thomaston, no other information noted: Illinois: Vermilion Co.: 18 km South Downville, 20-VI-1999, Hauser leg; Bloomington: Union Co.: Wolf Lake (Pine Hills), no other information noted: Indiana: Brown Co.: Bear Wallow, no other information noted: Tippecanoe Co.: McCormick's woods, 11-VI-1989, N. M. Downie; La Fayette: Kansas: Onaga, T. B. A, no other information noted: Kentucky: Christian Co.: day and month not noted-1960, J. M. Campbell: Maryland: Prince Georges Co., College Park, no other information noted: Massachusetts: Plymouth Co., Brockton, no other information noted: Norfolk Co., Brookline, no other information noted: Michigan: Charity Is, V-I-26 1910, A.W. Andrews: Missouri: Wayne Co., Williamsville, 27-VI-1974, E. C. Becker; Barry Co.: Pine Hollow Ridge, .06 kl NUSFS Rd 197, 14-VI-1997, on fallen branch of *Carya* (*glabra* or *texana*); Mississippi: Bolivar Co.: Dahomey N.W. Refuge, no other information noted; Crystal Springs: Oktibbeha Co, no other information noted.: Starkville, no other information noted: Winston Co., no other information noted: 20.8 km S Starkville, no other information noted; Noxubee, N.W. Refuge, no other information noted; Lafayette Co., no other information noted; Oxford, no other information noted: New Jersey: Essex Co., South Orange, no other information noted; Bloomfield, no other information noted: Morris Co., Lincoln Park, no other information noted; Chester, no other information noted: Bergen Co., Ft. Lee, no other information noted: Monmouth Co., Highlands, no other information noted: Sussex Co., Hopatcong, no other information noted; Millburn, no other information noted: Somerset Co.: Somerville, no other information noted: Union Co., Westfield, no other information noted. New York: Iona Island: Erie Co., Buffalo, no other information noted: Nassau Co., Long Island, no other information noted; Westbury: Orange Co., Greenwood Lake, no other information noted; Onodaga Co., no other information noted: Ontario Co., Geneva, no other information noted; West Point; Long Island Aqueduct, no other information noted: North Carolina: Cherokee Co., Murphy, no other information noted: Oklahoma: Latimer Co, no other information noted: Ohio: Allen Co., no other information noted; Cairo, no other information noted; Chillicothe, no other information noted; Scioto Co, no other information noted: Pennsylvania: Delaware Water Gap, no other information noted; Ally Co.: Castle Rock, no other information noted; Darby, no other information noted; Hummerstown; Linglestown, no other information noted: Butler Co., no other information noted; Morain St. Park, no other information noted; State College, no other information noted: Tennessee: Smith Co., Carthage, no other information noted: Knox Co., Knoxville, no other information noted; Chilhowee Mts: Texas; Dallas Co., no other information noted: Gonzales Co.: Caldwell Co., Palmetto St. Pk. nr. Luling, no other information noted: Virginia: Fairfax Co.: Springfield, nop other information noted; Fredricksburg, no other information noted: West Virginia: Kanawha Sta, no other information noted. Specimens are deposited in: AMNH, BMNH, CASC, CMNC, CNCI, EMUS, FMNH, FSCA, INHS, JNRC, LACM, MCZC, NHMB, OSUO, OSUC, PMNH, SEMC, TAMU, TCMC, UCDC, USNM, WFBC, and WOPC.

Description. Size: Length 4.0–6.0 mm; width 1.1–2.0 mm.

Integument: Cranium predominantly flavotestaceous, piceous postocular streaks prominent; pronotum broadly flavotestaceous at sides where gold-yellow or pale setae are matted, central piceous vitta wide; elytra piceous; legs piceous.

Head: Width wider than pronotum (64:60); vertex only slightly narrower than width of eye (19:23); antenna (Fig. 95).

Thorax: Pronotum transverse-trapezoidal (60:45), side margins convex behind anterior transverse depression; elytral punctations arranged in 11 rows, various

punctations misaligned near sutural margin; interstitial spaces arenose; elytron about 6× longer than length of pronotum; elytron length to width ratio 6.4; anterior margin of protibia with 5 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 116). Alimentary canal (Fig. 28): Proventriculus slightly swollen, ventriculus swollen at middle, tapered at extremities, ventricular crypts minute. Internal reproductive organs (Fig. 27): Two pairs of male accessory glands, lateral gland shorter than broader medial gland.

Variation: The most notable variation is the pale color of the recumbent setae on the cranium and lateral aspects of the pronotum. In some specimens these setae are gold-yellow, in others more cream colored.

Natural history. Specimens have been collected from February to October by beating, sticky wire trap, Malaise trap, or with ultraviolet light. They have been recorded from *Juniperus virginiana*, *Cercis canadensis*, *Taxodium distichum*, *Carya glabra*; red cedar and cypress infested with *Phloeosinus*, hickory infested with *Chramesus hicoriae* and *Scolytus quadrispinosus*; mulberry and blackbery infested with *Phloeotribus*; black cherry infested with *Phloeotribus liminaris* (Harris); southern cypress infested with *Phloeosinus taxodii*; and elm with *Scolytus multistriatus* (Marsham). J. Denkacic collected one specimen from scolytid infested ×*Cupressocyparis leylandi*. F. C. Graighead reports that this species is an important predator on scolytids such as those of *Phloeosinus*, *Scolytus*, and *Phloeotribus*. He also reports that, *"The clerid egg is laid in the entrance hole of the bark beetle, and the larva feeds on the adult bark beetle in the gallery, as well as on the eggs and young larvae"*. For additional information about this species see the section on "Natural history".

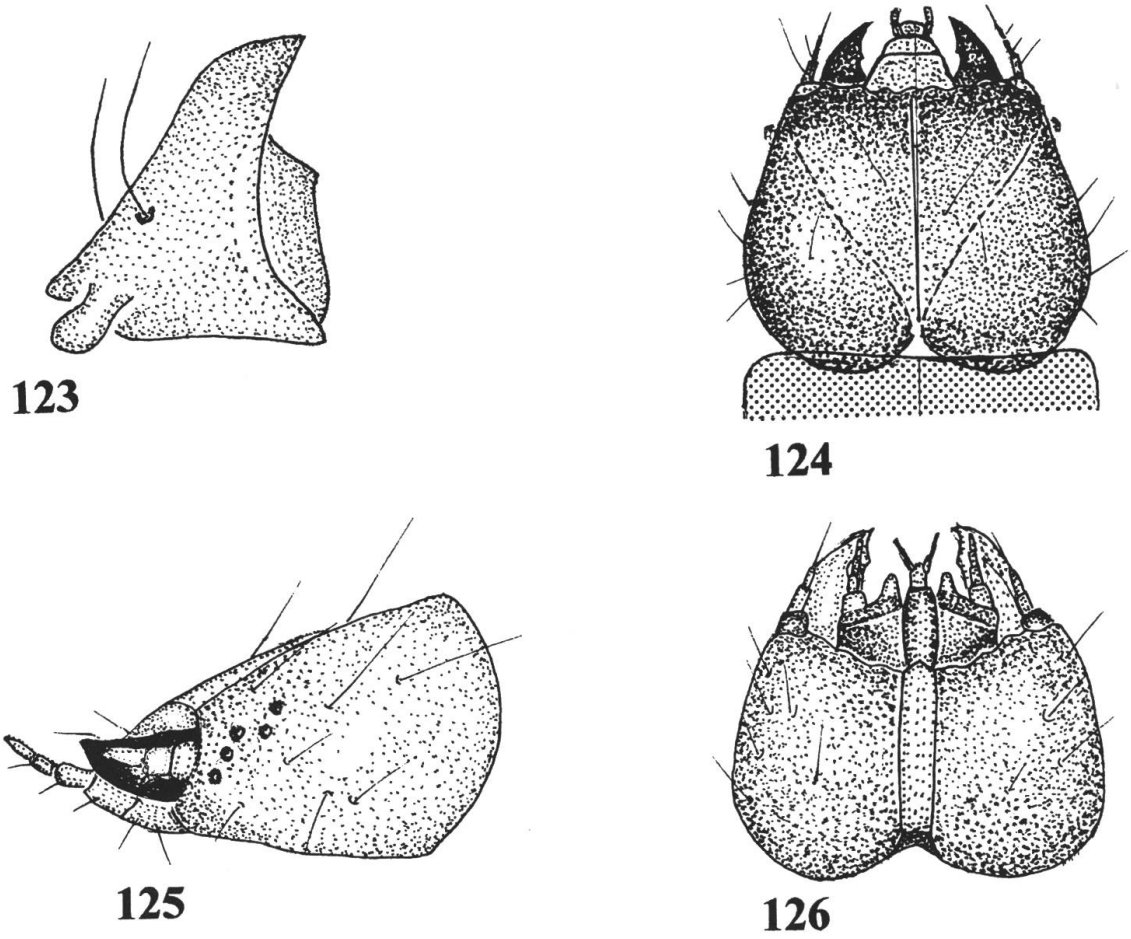
Distribution (map 6). This Nearctic species is found east of the Rocky Mountains, from southeastern Canada to, perhaps, México.

Differential diagnosis. This is the only known species of *Pyticeroides* to occur in the USA and Canada. However, some specimens from Jalisco, México, do not seem to differ significantly from *P. laticornis* (Say) specimens.

Notes. *Pyticeroides laticornis* has not been recorded south of the Rio Grande. However, I have studied two specimens from southwestern México (one from Jalisco and one from Michoacán) that externally cannot be distinguished from *P. laticornis*. The Mexican specimen from Michoacán differs from males of *P. laticornis* in that the phallobase is slightly more slender which could be attributed to geographic variation. Unfortunately, the more northern male from Jalisco has a damaged aedeagus and is unsuitable for comparisons.

***Pyticeroides quadratus* sp.nov.** Figs 63, 97; map 5

Type material. Holotype: Female. Brazil: Goias: Jatai, Donckier (ZALF). (Specimen card mounted, antenna and gender label affixed to mount card, white, machine printed; mount card, white; locality label, beige, cursive; ZALF repository label; S. Schenkling collection label, white, machine printed; repository label, white, machine printed; holotype label, red, machine printed).
Paratypes: None.



Figs 123–126. *Pyticeroides* larval structures: 123, Mandible. 124–126, Head: 124, dorsal view; 125, lateral view; 126, ventral view.

Description. Size: Length 6.0 mm; width 1.8 mm.

Integument: Cranium predominantly testaceous, gena and epicranium infuscated, postocular streaks prominent, broadly conjoined posteriorly; pronotal side minimally testaceous at sides, piceous discal vitta broad and expanded at base; elytra piceous; legs bicolorous, femora and proximal third of tibiae flavotestaceous, remainder of legs piceous.

Head: Wider than width of pronotum (36:33), ratio of eye width to width of vertex (23:22); antenna (Fig. 97).

Thorax: Pronotum transverse-quadrate (33:25); side margins moderately convex behind anterior transverse depression; elytral punctations small, arranged in 11 rows,

various rows misaligned near sutural margin; interstitial spaces arenose; elytral length about 6× longer than pronotum; elytral length to width ratio 6.1; anterior margin of protibia with 4 spines.

Abdomen: Missing.

Variation: One specimen studied.

Natural history. No information available.

Distribution (map 5). Known only from the type locality.

Derivatio nominis. The specific epithet *quadratus* (= four-cornered) is a Latin adjective. I refer to the quadrate form of the pronotum.

Differential diagnosis. Specimens of this species are distinguished from specimens of the closely related specimens of *P. arrogans* by the more quadrate shape of the pronotum (compare Figs 63, 64). In *P. arrogans* beetles, the pronotum is distinctly subtrapezoidal, which is not so in *P. quadratus* sp.nov.

Pyticeroides inconscriptus sp.nov. Figs 94, 117; map 1

Type material. Holotype: Male. México: Chiapas: Parque Nacional, Montebello, 30-VII-1974, C. W. O'Brien (AMNH). (Specimen point mounted, antenna and metathoracic wing affixed to paper point; ♂symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine and hand printed; AMNH repository label; collector label, white, hand printed; holotype label, red, machine printed; plastic vial with aedeagus and last abdominal segment).
Paratypes: None.

Description. Size: Length 7.0 mm; width 2.1 mm.

Integument: Cranium predominantly yellow, postocular streaks prominent, piceous; pronotal sides narrowly yellow, discal vitta very broad, piceous; prosternum piceous; elytra brown; legs light brown.

Head: Width across eyes not as wide as width of pronotum (72:75); ratio of eye width to width of vertex (23:23); antenna (Fig. 94).

Thorax: Pronotum transverse-trapezoidal (75:50), side margins very arcuate behind anterior transverse depression; elytral punctations small, not consistently seriate; interstitial spaces arenose; elytra 7× longer than length of pronotum; elytral length to width ratio 5.8; protibial anterior margin with 6 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 117). .

Variation: Not observed.

Natural history. The holotype was collected in July.

Distribution (map 1). Known only from the type locality.

Derivatio nominis. The species epithet *inconscriptus* (= unarranged) is a Latin adjective. I refer to the disorganized punctation of the elytra

Differential diagnosis. Within the *arrogans* group, these specimens stand out by having the pronotum very transverse-trapezoidal. Also, the prosternum is piceous, the pronotal disc is particularly rugged and coarsely punctate, and the elytral punctations are not arranged in consistent rows.

***Pyticeroides caecoatus* sp.nov.** Figs 92, 113; map 1

Type material. Holotype: Male. México: Chiapas, 2.6–6 km. S. La Trinitaria, 19 Oct. 1988 R. Turnbow (AMNH). (Specimen point mounted, ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white, machine printed; AMNH repository label; holotype label, red, machine printed; plastic vial with aedeagus).
Paratypes: One specimen with the same locality as the holotype (RHTC).

Description. Size: Length 5.0–5.8 mm.; width 1.8–2.0 mm.

Integument: Cranium predominantly flavotestaceous, piceous postocular streaks prominent; pronotal side margins flavotestaceous, piceous discal vitta broad; elytra, legs, and venter piceous.

Head: Width equal to width of pronotum (65:65); ratio of eye width to width of vertex (22:20); antenna (Fig. 92).

Thorax: Pronotum transverse-trapezoidal (65:45), side margins arcuate behind anterior transverse depression; punctations subseriate throughout disc, interstitial spaces arenose; elytra 7× longer than length of pronotum; elytral length to width ratio 5.4; protibial anterior margin with 5 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 113).

Variation: The two available specimens do not show any noteworthy variations.

Natural history. The available specimens were collected from southern Mexico, in October.

Distribution (map 1). Known only from the type locality.

Derivatio nominis. The trivial name (*caecoatus* = darken) is a Latin adjective. I refer to the piceous condition of the gena and prosternum.

Differential diagnosis. In these beetles, unlike in any others of the *arrogans* group, the abdominal venter and legs are entirely piceous and the elytral punctations are entirely subseriate particularly near the sutural margin.

***Pyticeroides plautus* sp.nov.** Figs 65, 91, 111; map 1

Type material. Holotype: Male. México: Oaxaca: Hwy. 131, 75 km S Oaxaca, 6000 ft, V.II.71 (CNCI). (Specimen point mounted, antenna and ♂ symbol affixed to paper point, white, machine printed; support card, white; locality label, white; holotype label, red, machine printed; plastic vial with aedeagus.)
Paratypes: Three specimens with same locality as the holotype (CNCI, 1; WOPC, 2).

Description. Size: Length 6.0–6.5 mm; width 1.8–2.0 mm.

Integument: Cranium predominantly flavotestaceous, piceous postocular streaks slightly indicated; pronotal sides yellow, discal piceous vitta very broad; legs brown.

Head: Width equal to width of pronotum (70:70); vertex as wide as width of eye (20:20); antenna (Fig. 91).

Thorax: Pronotum transverse-trapezoidal (Fig. 65) (70:50), side margins arcuate behind anterior transverse depression; disc with very small round punctations, latter diffusely distributed, not serially arranged, interstitial spaces shiny, not arenose; elytra 6× longer than length of pronotum; elytral length to width ratio 5.6; protibial anterior margin with 6 spines.

Abdomen: Male pygidium not emarginate; aedeagus as in figure 111.

Variation: The light color of the integument probably reflects the teneral conditions of the available specimens.

Natural history. These beetles were collected in May, at 1829 m, on *Cupressus*.

Distribution (map 1). Known only from the type locality.

Derivatio nominis. The trivial name *plautus* is a Latin adjective meaning wide. I refer to the extensively transverse shape of the pronotum.

Differential diagnosis. In specimens of this species the elytral punctations are spheroid, particularly small, and diffusely distributed, which distinguishes them from congeners of the *arrogans* group. They are not arranged in serial rows in any part of the elytral disc. Also, the pronotum is extraordinarily transverse (Fig. 65).

Pyticeroides trilineatum (Chevrolat, 1874) Figs 66, 69, 96, 121; map 1

Ichnea trilineata Chevrolat, 1874: 324.

BLACKWELDER 1945: 388 (*Ellipotoma*); CORPORAAL 1950: 253 (*Ellipotoma*).

Type material. Lectotype. Male (here designated). México: Jalisco (MNHN). (Specimen point mounted, ♂ affixed to paper point, white, machine printed; green identification-locality label on white support card; MNHN repository label, white, machine printed; lectotype label, red, machine printed; identification label, white, machine printed; plastic vial with aedeagus).

Other material examined. In addition to the type specimen I examined five specimens from: México: Veracruz: Cordoba; Jalapa, Carr. Barra Navidad-Pto. Vallarta, Arroyo Careyas, 21-X-1985, T. H. Atkinson. Specimens are deposited in BMNH, EBCC, and WOPC.

Description. Size: Length 6.0–6.8 mm; width 1.3–1.6 mm.

Integument: Cranium predominantly testaceous, piceous postocular streaks prominent; pronotal sides narrowly flavotestaceous, central piceous streak wide; elytra piceous; femora and tibiae piceous, tarsi flavotestaceous.

Head: As wide as width of pronotum (65:65); vertex as wide as width of eye (20:20); antenna (Fig. 96).

Thorax: Pronotum transverse-trapezoidal (65:50), side margins convex behind anterior transverse depression; elytral punctations arranged in 11 rows, various punctations misaligned near sutural margin; interstitial spaces arenose and slightly swollen; elytra 6× longer than length of pronotum; elytral length to width ratio 5.0; protibial anterior margin with 6 spines.

Abdomen: Male pygidium not emarginate; aedeagal phallobasic apodeme and phallic struts not expanded distally (Fig. 121).

Variation: The available specimens did not vary appreciably.

Distribution (map 1). Known only from southeastern Mexico.

Differential diagnosis. Specimens of this species are distinguished from superficially similar specimens of *P. laticornis* by the shape of the pronotum. In *P. laticornis* specimens the pronotum abruptly increases in diameter behind the subapical depression (Fig. 66). In *P. trilineatum* specimens the pronotal width increases gradually behind the anterior transverse depression (Fig. 69).

Immature specimens of *Pyticeroides*

Three larval specimens identified as *Neichnea laticornis*, were made available by the Department of Entomology, Smithsonian Institution. Two of them, collected during July 7–21, 1920, by F. C. Craighead, have an extraordinarily elongate vermiform body. The third larva, taken from *Juniperus virginiana* on November 1, 1915 by A. B. Champlain and identified by W. S. Fisher, has a much shorter, more robust body form. No doubt Champlain and Böving examined these specimens and in view of their extensive knowledge of clerid larvae (BÖVING & CHAMPLAIN 1920) I believe that the above mentioned specimens are correctly identified. The drastic difference in body form among the available larvae suggests that two instars are involved with the more vermiform specimens being in the late-larval stage and the shorter, more robust, specimen representing the prepupal stage. In a later publication CRAIGHEAD (1950: 203) describes the larva of *P. laticornis* as *"elongate"* which is in agreement with the more vermiform larvae examined.

I have chosen to illustrate and describe the vermiform specimens because it is likely that this stage will be the more active and the one more likely to be encountered in the field. The description of *P. laticornis*, in BÖVING & CHAMPLAIN (1920: 611), suggests that the prepupal larva was used.

Diagnosis. The following combination of characteristics separate larval specimens of *Pyticeroides* from other known larvae of Cleridae: Body form long (Fig. 127) or short vermiform; integument predominantly white, minimal coloration on head and mouthparts; head subquadrate, frons angulate posteriorly, coronal suture absent, frontal suture slightly indicated, gula narrow elongate, antennomere 2 very small, five ocelli present, mandible without lacinia mandibulae; last abdominal segment without basal plate or cerci; spiracles annuliform; and body nearly asetose.

Description. Form: Cylindric, very long, and narrow-vermiform in late larval stage (Fig. 127), short, more robust-vermiform in prepupal stage; when in very long-vermiform stage abdomen about eight times longer than length of thorax and head combined; head capsule flattened dorsoventrally; thorax only slightly narrower than abdomen, latter only feebly expanded in middle fourth. Color: Cream white, cranium and mouthparts feebly infuscated.

Size: Length 12.0 mm; width 1.0 mm.

Head (Figs 124–126): Prognathous; head capsule (Fig. 124–126) slightly transverse (28:26); coronal suture absent; frontal suture faintly indicated (Fig. 124); frons faintly concave; hypostomal margin slightly concave; gular sutures subparallel (Fig. 126); gular plate uniformly narrow; five well-developed stemmata arranged in two oblique-parallel rows (Fig. 125), anterior row with three stemma, posterior row with two stemma; antenna composed of three antennomeres and broad membranous base, antennomere one twice length of antennomere 2 or 3; mandible (Fig. 123) falcate, apex unidentate, with two prominent setae on posterior outer surface; retinaculum distinct; lacinia mandibulae absent; maxillary cardo and stipes trapezoidal, stipes notably sclerotized, palpiger feebly sclerotized, palpus with three palpomeres that successively decrease in diameter from basal to apical palpomere; labium with slightly sclerotized mentum and submentum, labial comprised of three palpomeres of equal length.

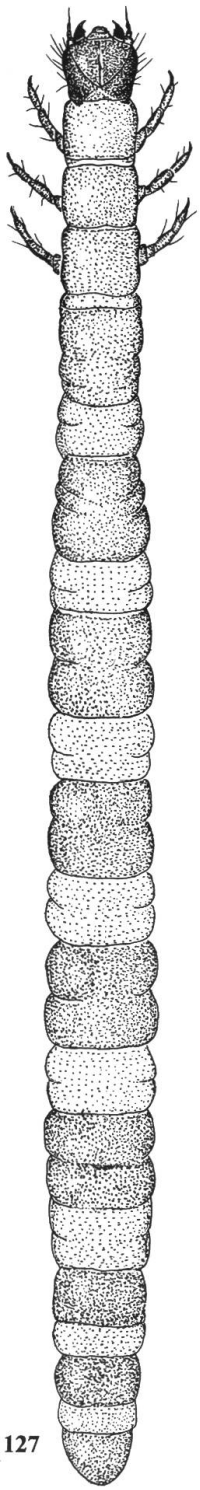


Fig. 127. *Pyticeroides laticornis* larva.

Thorax: Prothorax subquadrate, without notal plate; prosternal plate extended to coxal cavities; legs moderately sclerotized, composed of five short, thick segments tapers to unguiform claws.

Abdomen: Segments without sclerotizations, intersegmental membranes about half length as length of segments; ninth segment subglobose, without basal plate or cerci.

Remarks. SNODGRASS (1935: 107) defines the epicranial suture as, *"an inverted Y with the stem* (= coronal suture) *placed medially on the top of the head, and the arms* (= frontal suture) *diverging downward on the face"* (my insertions). BÖVING & CHAMPLAIN (1920) chose to interpret the absence of the coronal suture as the criterion for negating the presence of a well-developed epicranial suture. I agree with Snodgrass, that that the epicranial suture, *albeit* reduced, is present in most clerid larvae, but only in the thaneroclerine *Thaneroclerus buquet* Lefebvre, 1838 is there a coronal component of said suture. Thus, in my description of *P. laticornis*, I acknowledge the presence of a pair of frontal sutures, and the absence of the coronal component of the epicranial suture. When using Böving and Champlain's "Key to the genera of full grown North American clerid larvae" (BÖVING & CHAMPLAIN 1920: 596), I recommend that couplet number 2 be altered to read, coronal suture present *"...*Thaneroclerus, *and for the alternate choice, coronal suture absent ... 3."*

Genus *Diapromeces* Opitz, 1997

Diapromeces Opitz, 1997: 58.

Type species: *Diapromeces aclydis* Opitz, 1997 (by original designation).

Type locality of the species: Brazil: Santa Catarina: Nova Teutonia.

Diagnosis. These small, rather slender beetles are most conveniently identified by the very narrow form of the forebody (Fig. 128) and by the antenna, which is comprised of eight antennomeres (Fig. 136). Also, the mandibles are clearly falciform (Fig. 131) and the eyes in dorsal (Fig. 128) and frontal aspects (Fig. 140) occupy the major anterior portion of the head.

Description. Size: Length 4.2–7.5 mm; width 0.80–1.6 mm. Form: Narrow long-rectangulate (Fig. 128); elytra gradually widened to posterior fifth.

Integument: Forebody, mesothorax, metathorax dark brown, elytra light brown; legs yellow, infuscated. Vestiture: Integument vested with fine pale setae; pronotal disc with four long trichia

(setal component of trichobothrium) that arise from bothria, two dorsal trichia, two lateral trichia.

Head (Fig. 140): Cranium expanded extensively behind eyes (Fig. 135); frons scabrous, very narrow; eyes finely faceted and deeply incised along frontal margin, eyes occupy most of anterior region of cranium; antenna (Fig. 136) comprised of eight antennomeres; mandible (Fig. 131) falciform, penicillus very reduced; labrum deeply incised, medial tormal process horizontal and contiguous; maxilla (Fig. 134) well developed, terminal palpomere digitiform, tapered distally, laterolacinia present; labium (Fig. 133) relatively large, terminal palpomere digitiform, tapered distally; gula (Fig. 135) long-trapezoidal; cranium indented behind eye.

Thorax: Pronotum narrow oblong, slightly expanded posteriorly, coarsely punctated, side margins slightly sinuous, anterior transverse depression absent, posterior transverse depression deep, pronotal collar very narrow, trichobothria (Fig. 141, dorsal; Fig. 143, lateral) well developed, bothria domed, epimeral prolongation (Fig. 129) only slightly extended towards middle; elytra gradually broadened to distal fifth, then sharply tapered towards apex, about 6× longer than broad, elytra length to width ratio 6.2, epipleuron extended to elytral basal half of elytral outer margin, epipleural fold absent, punctations arranged in 10 rows, binodulate (Fig. 138 b), many punctations misaligned near sutural margin, punctations as wide or narrower than interstitial spaces, outer margin serrulate in distal half; mesoscutellum quadrate (Fig. 130), posterior margin straight, not notched; protibial anterior margin with 5 to 7 spines; tibial spur formula 0–0–1; tarsal pulvillus formula 3–3–1; (Fig. 142); metathoracic wing as in figure 138 a; metendosternite without lateral oval lamina (Fig. 132).

Male genitalia: Aedeagus as in figure 139; spicular fork apodeme entire in distal three-fourths; interspicular plate slender, bifid distally; parameres very reduced.

Distribution (map 30). This monotypic genus is known only from southern Brazil.

Remarks. The generic description adequately describes *D. aclydis*, the only known species of this genus.

Phylogenetic analysis

Evolutionary considerations. The preparation of a synthesis of evolutionary relationship represents a culmination of what one knows about the gestalt of the taxa under study. Such knowledge, acquired after many hours of taxonomic activity, may lead to impressions or interpretations of kinships that approximate more or less the group's actual evolutionary history.

I accept that assembling a group of species on the basis of a uniquely derived characteristic, or complex of characteristics is the most scientifically sound way of expressing their evolutionary proximity. However, such a method, referred to as "Hennigian phylogenetics", has raised the standard of evolutionary analysis to a level that may not always be attainable when one is studying an assemblage of species that has recently evolved, or when one is concerned with a very successful group of species among which extinctions did not produce notable evolutionary gaps. Indeed, the

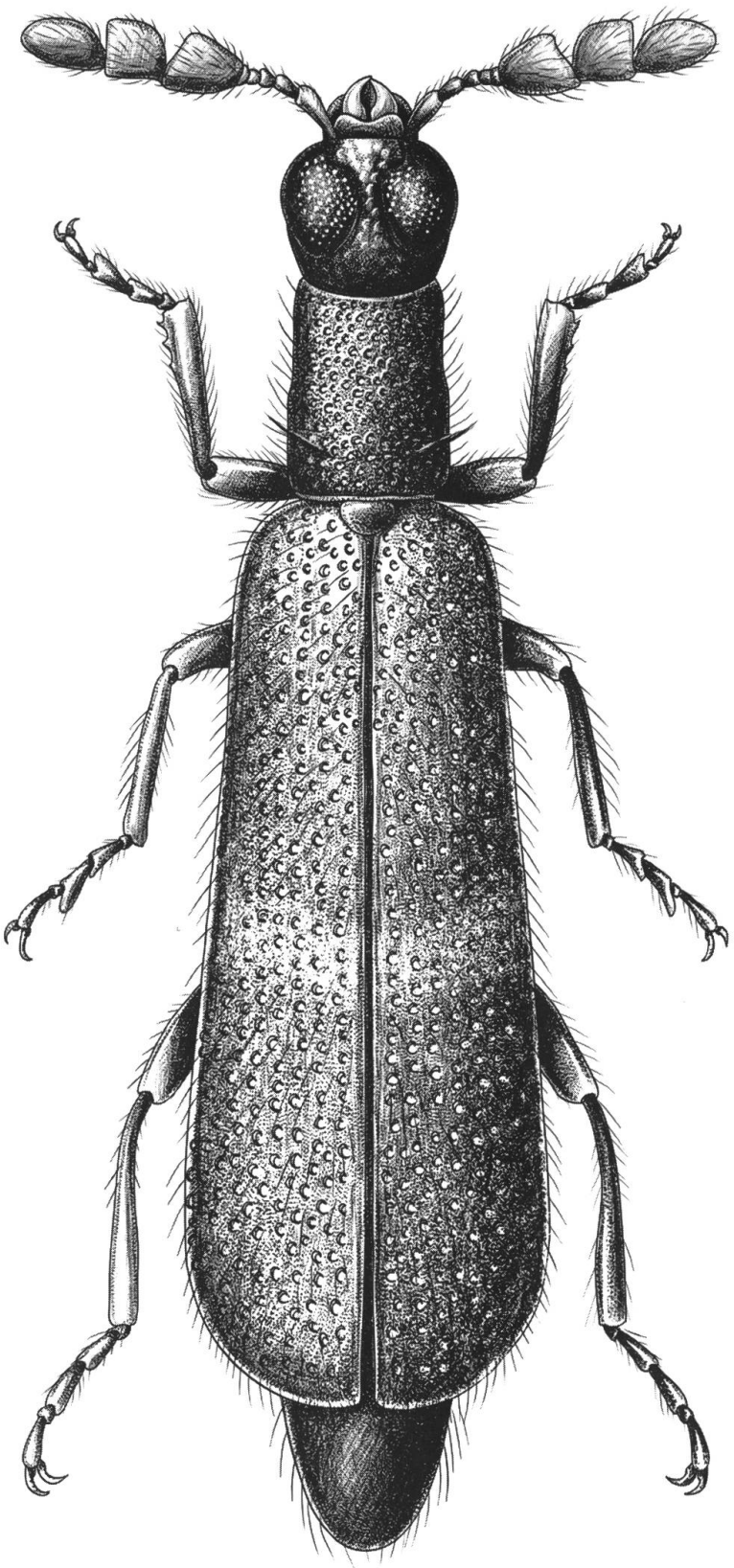
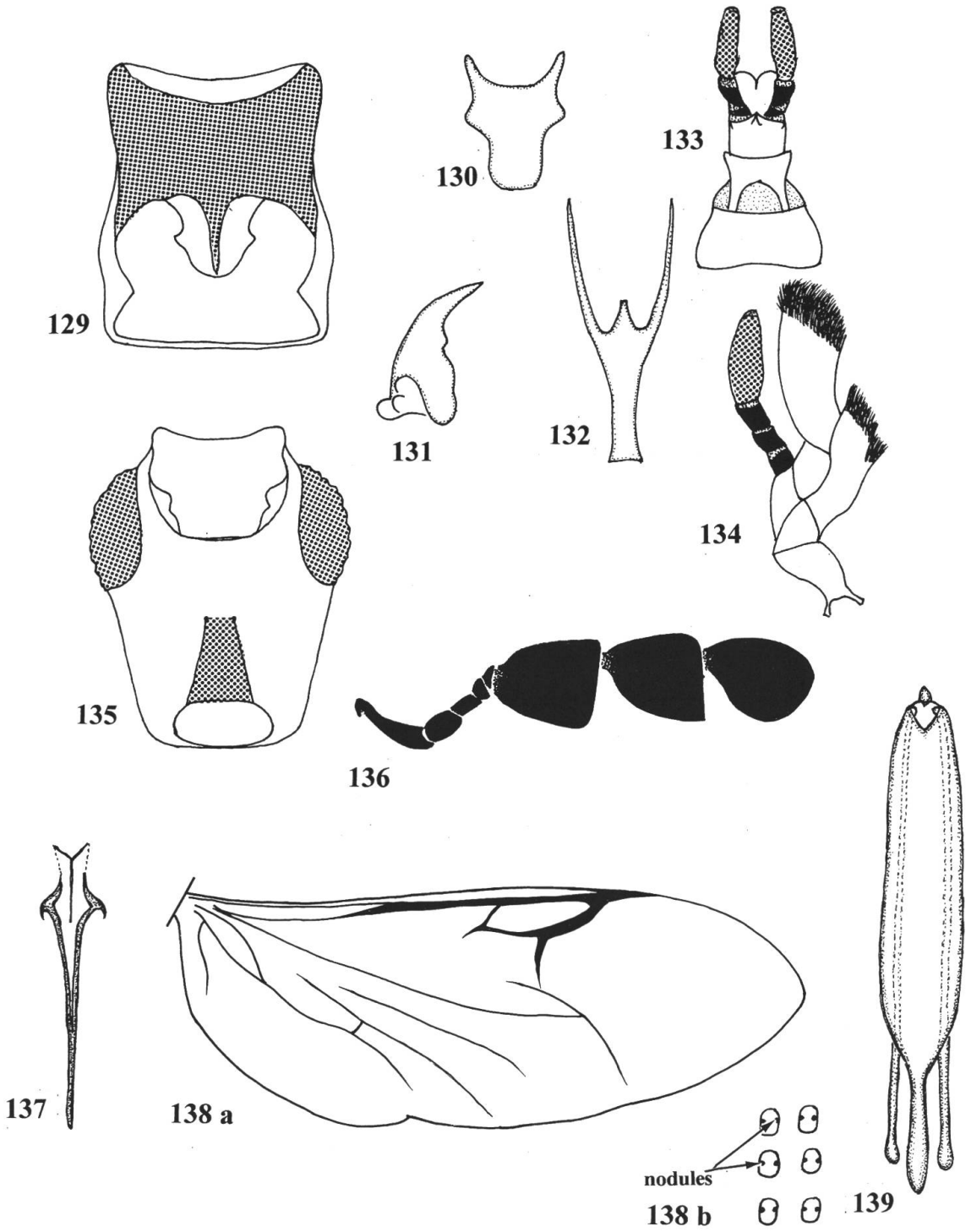
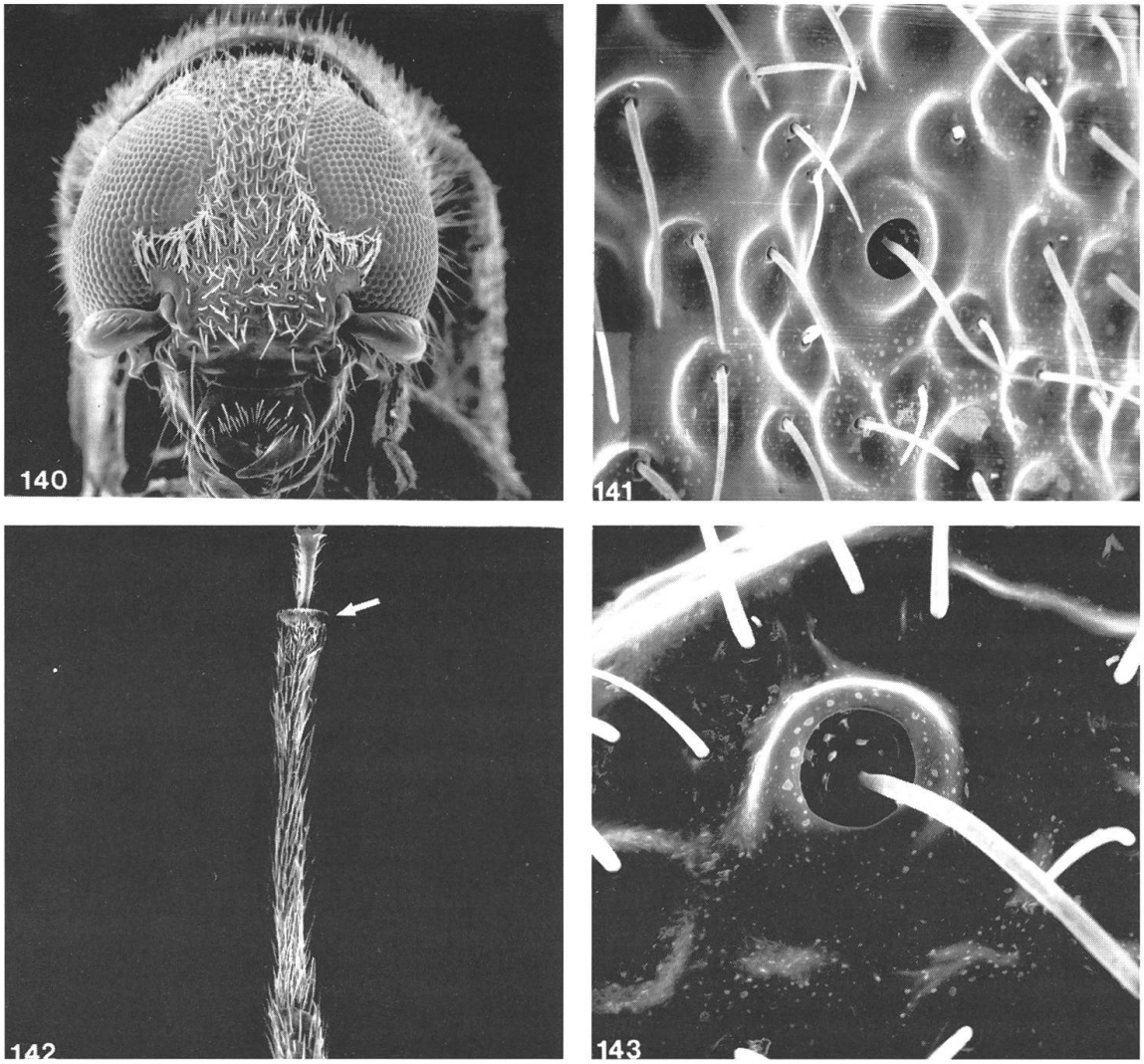


Fig. 128. Habitus of *Diapromeces aclydis*.



Figs 129–139. *Diapromeces aclydis* anatomical structures: 129, Pronotum; 130, Mesoscutellum; 131, Mandible; 132, Metendosternite; 133, Labium; 134, Maxilla; 135, Cranium; 136, Antenna; 137, Spicular fork; 138a, Metathoracic wing; 138b, Elytral punctations; 139, Aedeagus.



Figs 140–143. *Diapromeces aclydis* anatomical structures: 140, Head; 141, Pronotal dorsal trichobothrium; 142, Metatarsus; 143, Pronotal lateral trichobothrium.

recognition of uniquely derived conditions among relatively homogeneous species is usually difficult when low, less inclusive, taxonomic levels are under investigation (ARNOLD 1981: 5). In such groups synapotypies may not be found even after the most thorough examination of what is available of the organisms under study.

To the present, I have attained an impression in my work with the Epiphloeinae that this subfamily of checkered beetles is fairly homogeneous at the species and genus levels, at least morphologically and maybe ecologically. Clear differences in structure are evident among the genera, but the establishment of character state polarity among

these differences on the basis of out-group comparisons is very difficult and many times seemingly impossible to attain.

I believe the problem lies in their intensive evolution towards anatomical and ethological changes that involve mimicry. But despite these difficulties, one attains an idea, a feeling, about relationships that do not involve strict adherence to Hennigian methods, but which if documented might serve as a step toward future refinements. I have wondered whether my experience-based thoughts about a relationship between two taxa more closely approximate the realities of their evolution than what might be indicated by a particular set of phylogenetic methods.

The species within the species groups of *Pyticeroides* are too homogeneous to verify, infer, or postulate character polarity. In my phylogenetic diagrams of species groups, most lineages are supported by synapotypies, but the one that is not (the *manni* group) is aligned with a group that I think represents its sister lineage.

Characters selected for phylogenetic analysis

Forty-eight morphological characters were used to establish a phylogenetic hypothesis involving the species groups of *Pyticeroides*. To establish relationships among the species groups various levels of outgroup comparisons were made. For the most part, outgroup comparisons involved the remaining genera and species of subfamily Epiphloeinae, whereas to avoid difficulties associated with homoplasy, the outgroup may have been narrowed to the species group taxa within *Pyticeroides* and the monotypic *Diapromeces*. The available genera of Cleridae were used to establish the character polarity relevant to the serial arrangement of the elytral punctations.

The arrangement of elytral punctations is an important characteristic to decipher *Pyticeroides* intrageneric phylogeny. Therefore, the out-group for determining the primitive state of that character involved all the available species of the family. Ten rows of elytral punctations is a characteristic widespread in the Cleridae. It is found across subfamily and generic lines and involves all continents in which Cleridae are found.

The character matrix (Tab. 1) generated three possible reconstructed phylogenies for the species groups. Two were done manually (Figs 144, 146), another (Fig. 145) involved analysis of the matrix using the Hennig86 computer program (the command *hennig*, no weighting).

Character states

Character 0 Body form: (0) not lanceolate; (1) lanceolate.

Character 1 Body size: (0) not longer than 7.0 mm; (1) longer than 7.0 mm.

Character 2 Cranium size: (0) relatively large; (1) relatively small.

Character 3 Cranial color: (0) without postocular dark streak; (1) with postocular dark streak.

Character 4 Frons vertical dimension: (0) not very extended vertically; (1) slightly extended vertically.

Character 5 Frons lateral dimension: (0) narrow; (1) wide.

Character 6 Vertex: (0) not very narrow; (1) very narrow.

Character 7 Epicranium: (0) not expanded; (1) moderately expanded.

Character 8 Basal antennomere of antennal club: (0) shorter than combined length of scape, pedicel, and funicle; (1) as long as combined length of scape, pedicel, and funicle.

Character 9 Fifth antennomere: (0) entire; (1) bifid.

Character 10 Antenna: (0) comprised of 11 antennomeres; (1) comprised of less than 11 antennomeres.

Character 11 Scape: (0) not short triagonal; (1) short triagonal.

Character 12 Funicular articles: (0) not exceptionally expanded; (1) exceptionally expanded.

Character 13 Protibial spine number: (0) not 9; (1) 9.

Character 14 Pronotal form: (0) transverse-quadrate; (1) oblong.

Character 15 Pronotal color; (0) without dark discal vitta; (1) with dark discal vitta.

Character 16 Pronotal trichobothrium, dorsal: (0) domed; (1) not domed.

Character 17 Pronotal arch: (0) not uniform in transverse width; (1) uniform in transverse width.

Character 18 Pronotal disc: (0) not paralaterally concave; (1) paralaterally concave.

Character 19 Prosternal region anterior to prosternal intercoxal process: (0) not expanded; (1) moderately expanded.

Character 20 Elytral form: (0) not fluted to posterior; (1) fluted to posterior.

Character 21 Elytral epipleuron: (0) not convex; (1) convex.

Character 22 Elytral epipleural margin: (0) not serrulate; (1) serrulate.

Character 23 Elytral punctations: (0) spheroid, without nodules; (1) oval, with nodules (Fig. 138b).

Character 24 Elytral punctations-organization: (0) 10 rows; (1) arranged in 10.5 rows.

Character 25 Elytral punctations-size: (0) small; (1) large.

Character 26 Elytral punctations-position: (0) not contiguous; (1) contiguous.

Character 27 Elytral interstitial spaces-relief: (0) not elevated; (1) elevated.

Character 28 Elytral interstitial spaces-surface: (0) arenose; (1) smooth.

Character 29 Mesoscutellum: (0) not incised; (1) incised.

Character 30 Pygidium-male: (0) not incised; (1) incised.

Character 31 Phallic apodeme: (0) not expanded; (1) expanded.

Character 32 Spicular fork-apodeme: (0) not bifid in most of its length; (1) bifid in most of its length.

Character 33 Eyes: (0) not bulged; (1) bulged.

Character 34 Epipleural fold: (0) present; (1) absent.

Character 35 Number of metatibial spurs: (0) 1; (1) 0.

Character 36 Antenna: (0) composed of 10 antennomeres; (1) composed of 9.5 antennomeres.

Character 37 Antenna: (0) composed of 9.5 antennomeres; (1) composed of 9 antennomeres.

Character 38 Antenna: (0) composed of 9 antennomeres; (1) composed of 8 antennomeres.

Character 39 Cranium size: (0) moderately reduced; (1) greatly reduced.

Character 40 Frons vertical dimension: (0) slightly extended vertically; (1) considerably extended vertically.

Character 41 Frons vertical dimension: (0) considerably extended vertically; (1) very extended vertically.

Character 42 Epicranium: (0) moderately expanded; (1) greatly expanded.

Character 43 Pronotal form: (0) oblong; (1) quadrate.

Character 44 Pronotal form (0) quadrate; (1) transverse trapezoidal.

Character 45 Prosternal region anterior to prosternal intercoxal process: (0) not expanded; (1) moderately expanded.

Character 46 Prosternal region anterior to prosternal intercoxal process: (0) moderately expanded; (1) extensively expanded.

Character 47 Elytral punctations-organization: (0) 10.5 rows; (1) 11 rows.

Character 48 Elytral epipleural margin: (0) not explanate; (1) explanate.

Characters	**1 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 4 4 4 4 4 4 4 4 4**
Taxa	**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**
Outgroup	0 0 0 0 0 0 0 0 0 0 0 1 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
Diapromeces	1 0 0 0 0 0 1 0 1 0 1 0 0 1 0 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 0 0 1 0 1 1 0 0 1 1 0 1 1 0 0 0 1 0 0
enormis group	0 1 1 1 1 0 0 1 0 1 1 0 0 0 0 1 1 1 1 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 1 0 1 0 0 0 1 0 0 0 0 1 0 0 0
inexilis group	0 0 1 1 0 0 0 1 0 0 1 0 0 0 1 1 1 1 1 1 1 0 0 1 0 0 0 0 0 1 1 0 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 0 0 0
jubaris group	0 0 1 1 1 0 0 1 0 0 1 0 0 0 0 1 1 1 1 1 0 0 1 0 0 1 0 0 1 1 1 1 0 0 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0
chiriquianum group	0 0 0 1 0 1 0 0 0 0 1 0 0 0 0 1 1 1 1 0 1 0 0 0 0 0 0 0 1 0 0 0 1 1 0 0 1 0 0 0 0 0 0 1 0 0 0 0
ichnopsis group	0 0 0 1 0 1 0 0 0 0 1 1 1 0 0 1 1 1 1 0 0 0 0 0 1 0 1 1 0 1 0 0 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 1 1
arrogans group	0 0 0 1 0 1 0 0 0 0 1 0 0 0 0 1 1 1 1 0 0 0 0 0 1 0 1 1 0 1 0 0 0 1 1 0 0 1 0 0 0 0 0 0 1 0 0 1 0

Tab. 1. The character state matrix.

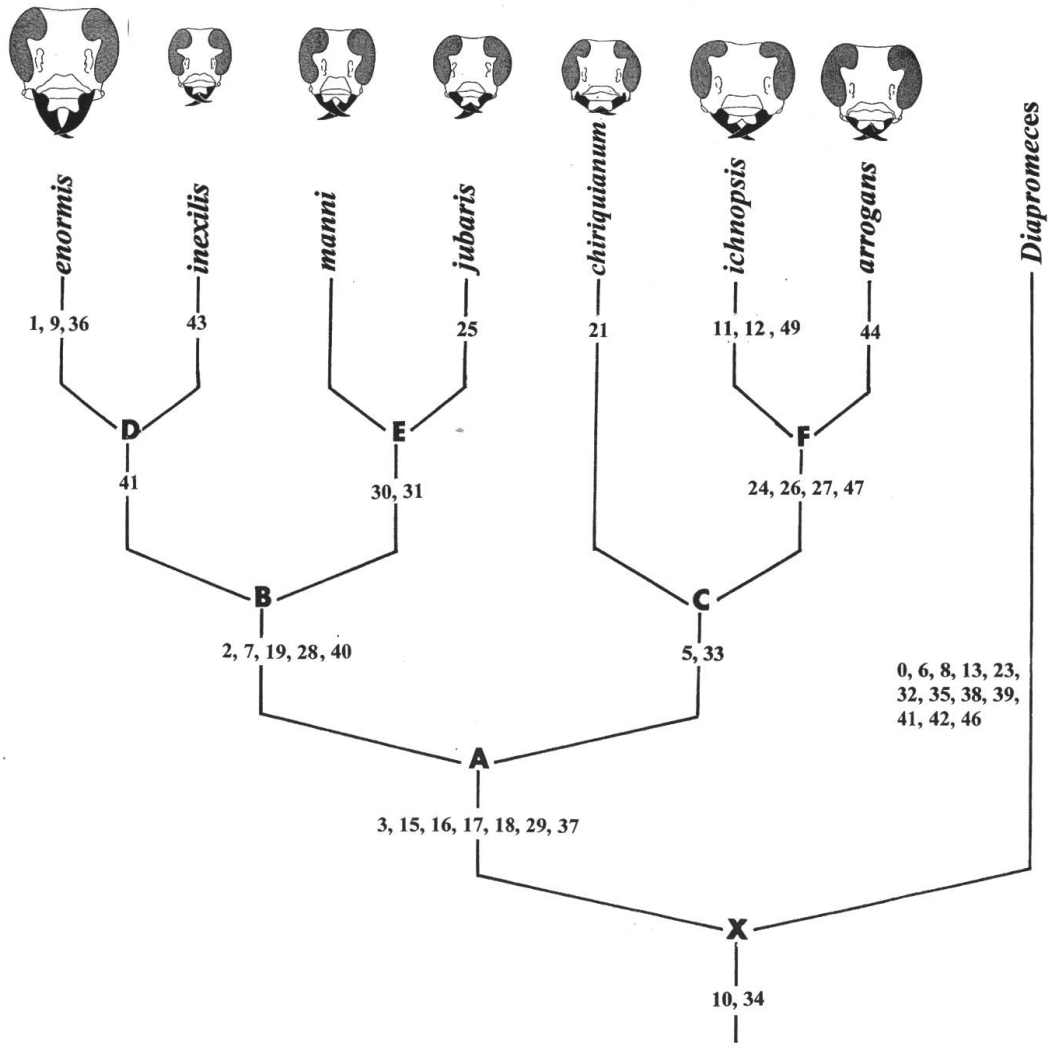


Fig. 144. Reconstructed phylogeny of *Pyticeroides* species groups and *Diapromeces* (prepared manually).

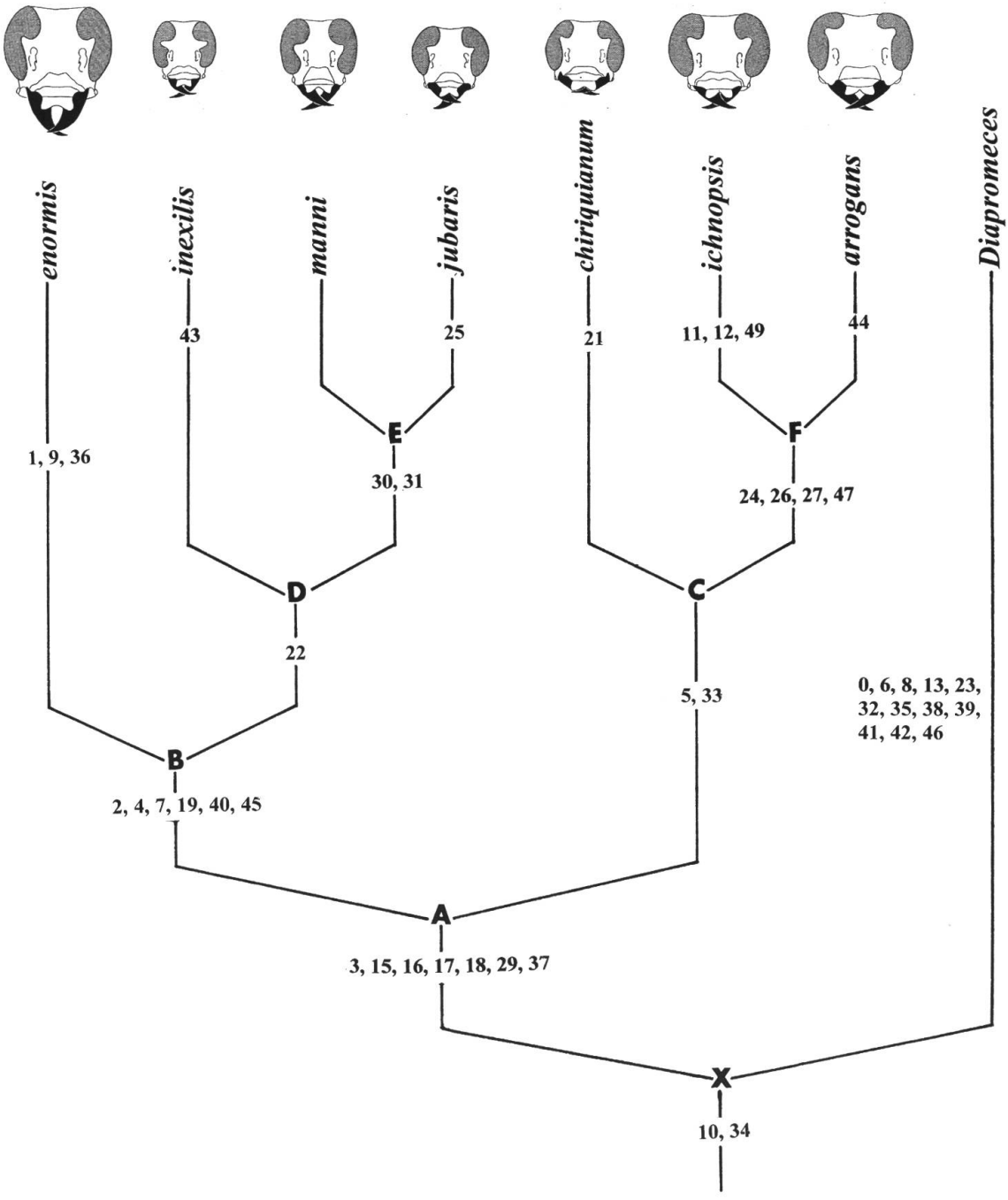


Fig. 145. Reconstructed phylogeny of *Pyticeroides* species groups and *Diapromeces* (prepared manually).

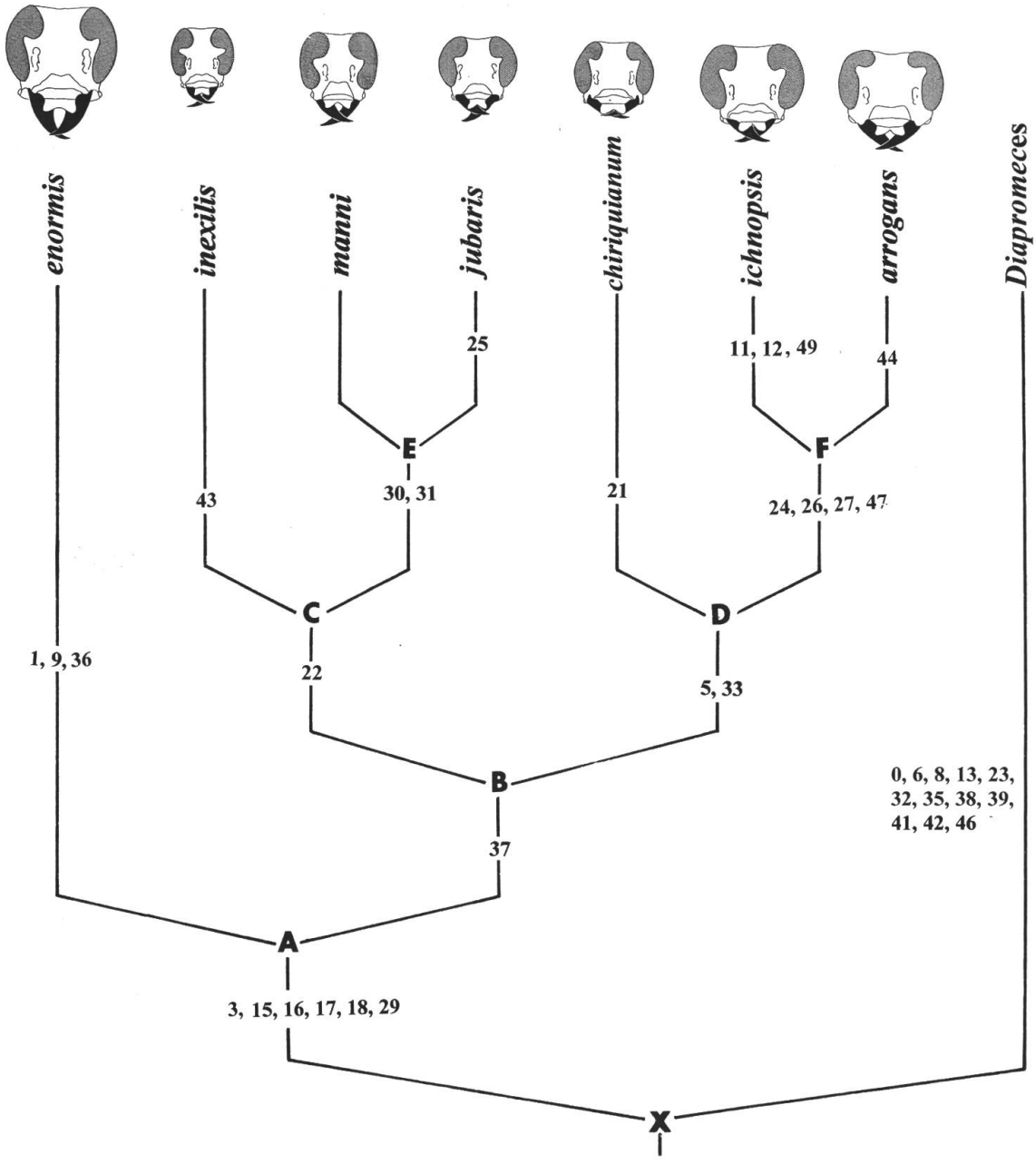


Fig. 146. Reconstructed phylogeny of *Pyticeroides* species groups and *Diapromeces* (prepared with Hennig86).

Phylogenetic interpretations

As in many revisionary studies, characteristics useful toward classifications or relevant to evolutionary interpretations surface during the preparation of illustrations. The realization that antennomere 5 is partially divided in specimens of *P. enormis* sp.nov. prompted a line of thought that eventually promulgated three possible phylogenetic histories of the species groups of *Pyticeroides* and of *Diapromeces*.

At first I interpreted the bifid condition of antennomere 5 in *P. enormis* sp.nov. to represent a developmental anomaly and, in general, I was unsure about the significance of this antennal condition because only one specimen was available of the species in question. Then, quite coincidentally, William Barr requested that I verify an inconsistency in antennomere numbers that he noticed between two specimens of *Ichnea impressicollis* Gorham, 1877; a species currently inappropriately listed under Epiphloeinae. Next, I examined 69 specimens of this species in my collection and found that in 16 of them antennomere 5 or 6 was partially divided.

The issue at hand concerns whether this intraspecific antennomere inconsistency, observed in two species that are members of different subfamilies, reflects a developmental abnormality or whether it reflects genomic change toward reduction or increase of antennomeres. If the latter is correct, then *P. enormis* sp.nov., and *I. impressicollis* have the genetic potential to serve as transitional species toward individuals characterized by less or more antennomeres than have the present members of the species in question. The numerical composition of intrageneric and intraspecific antennomeres is very consistent among other clerid genera known to me.

On the basis of the abovementioned antennomeral uncertainty I present three phylogenetic hypotheses for the *Pyticeroides* groups. The reconstruction expressed by Fig. 144 acknowledges the split antennomere 5 as an autopotypy of *P. enormis* sp.nov. In that diagram, the interpretation of the significance of the split antennomeres is that it does not represent an evolutionary reduction from a distant ancestor that had 10 antennomeres. In contrast, figure 146 does focus on the split condition of antennomere 5 postulating that the character state in question represents evidence of a transitional condition being expressed in a species that may be the most related to the ancestral gene pool of the genus. The antennomeral count in this ancestral gene pool would have been 10.

The hypothesis of phylogeny generated by Hennig86 (Fig. 145) is similar to the manually prepared hypotheses (Figs 144, 146) with differences involving sister group relationships among the *enormis-inexilis-manni-jubaris* taxa. The focus of the Hennig86 program is parsimony. And, it is interesting to note that in the Hennig86 hypothesis the question of the evolutionary branching place, and thus evolutionary significance, of antennomere 5 falls between the two manual reconstructions. The following narrative represents an interpretation of the phylogenetic relationships among the species groups of *Pyticeroides* and of *Diapromeces* (see Fig. 145) as generated by Hennig86.

The ancestral stock of the *Pyticeroides* and *Diapromeces* lines (ancestor X) was characterized by an antenna comprised of 10 antennomeres and absence of the epipleural fold. This ancestor generated two evolutionary gene pools that eventually produced

species with 9 antennomeres and at least one species with 8. Perhaps, the bifurcation of antennomere 5 in *P. enormis* represents a retained allelic mutation phenotypically expressed in some extant populations of that species. The line towards *Diapromeces* evolved a variety of autapomorphies as noted in the three phylogenetic diagrams presented herein. Evidence based on the current distribution of species suggests that the ancestral divergence that produced the two genera under study occurred in South America. Subsequently, two northern expansions occurred that account for the Middle American (*sensu* OPITZ 2005: 280) and North American components of the *chiriquianum* and *arrogans* species groups.

Perhaps the most outstanding synapotypic characteristic of ancestral *Pyticeroides* was the loss of one antennomere. Moreover, such an ancestor would have evolved a postocular pair of streaks, the pronotum developed a broad discal line, pronotal bothria lost their dome, the pronotal arch was restructured to become equal in width throughout its length, the pronotal disc became concave at the sides, and the mesoscutellum became incised. This basic plan of ancestral *Pyticeroides* eventually diverged to produce ancestor B whose basic plan of forebody structure was greatly altered to produce a variety of differences in the cranium and anterior portion of the prothorax (synapotypic characteristics 2, 4, 7, 19, 40, 45). Ancestral *Pyticeroides* also generated the complementary stock leading to ancestor C in which the frons became notably wider and the eyes became very bulged.

Ancestral stock B remained in South America, as did all of the known descendant species. It is at this point in the evolution of the genus that we find a significant change in the composition and characteristics of the antennae. One line from ancestor B produced the monotypic *enormis* species group in which antennomere 5 shows evidence of antennomeral consolidation (in effect, an evolutionary reversal) and body size conspicuously enlarged. In the complementary stock, which led to ancestor D, the epipleural margin of the elytra developed spines giving the margin a serrulate appearance. Subsequent evolution from ancestor D produced the *inexilis* species group in which the pronotum became quadrate while the complementary stock evolved into ancestral stock E. In this ancestor, the pygidium became incised and the phallic apodeme widened at its distal extremity. Subsequent evolution generated the speciose *manni* group and the bispecific group *jubaris* in which the elytral punctations became larger.

To this point of pyticeroidean evolution changes of structure are relatively minor among most of the descendants of ancestral species B. The more significant changes in the extant assemblage of species that stem from ancestor B have occurred among those species known from the highlands of the northern and western Andes where geologic and climatic factors must have been considerable forces for natural selection to effect pyticeroidean structural changes. Consider, for example, the substantial changes in the form of the pronotum in *P. petilus* sp.nov., and the diminution of body size in *P. acaris* sp.nov., both from the Colombian Andes.

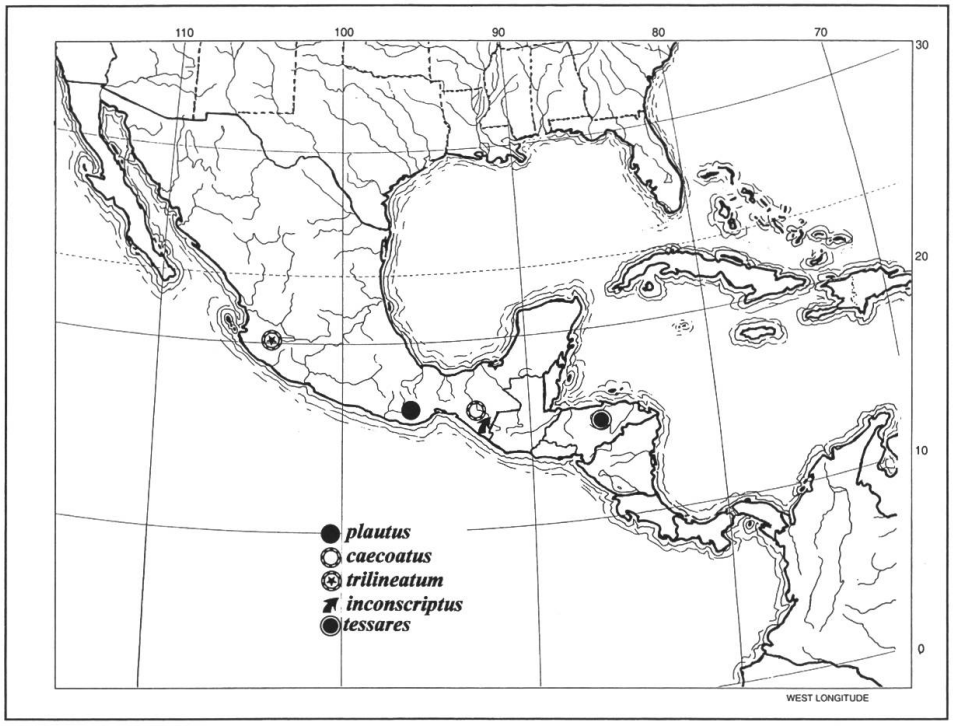
Similar associations among historical vicissitudinous geology, climate, and structural divergences may be considered in the evolutionary progression of species from ancestral species C. The highly unstable geologic history of Insular Central

America (OPITZ 2005: 106, Fig. 285) and Nuclear Central America (*viz*; Fig. 284) produced a diverse fauna highlighted by *P. roseicollis* sp.nov. It is postulated that the more homogeneous assemblage of species of the largely Central American *chiriquianum* group and *arrogans* group diverged less structurally because of the relative stable environmental conditions of Mexo-America (*viz*, 102, Fig. 283) and the subsequent, geologically later, calmer environments of Central America. Conversely, the *ichnopsis* group, represented to date only by *P. ichnopsis* sp.nov., a northern Andes species, evolved considerable nuances of structure of the antenna, pronotum, and elytra.

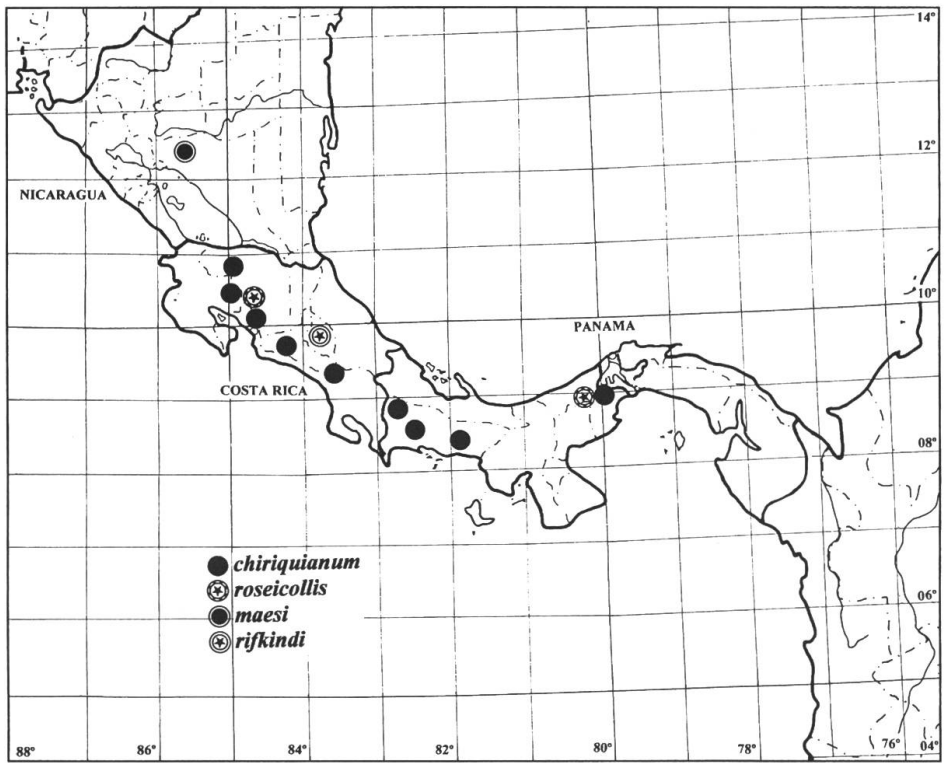
It is hoped this these tentative hypothesis about *Pyticeroides* evolution will stimulate further thoughts about such matters when a more complete knowledge of South American epiphloeine diversity is attained.

Acknowledgments

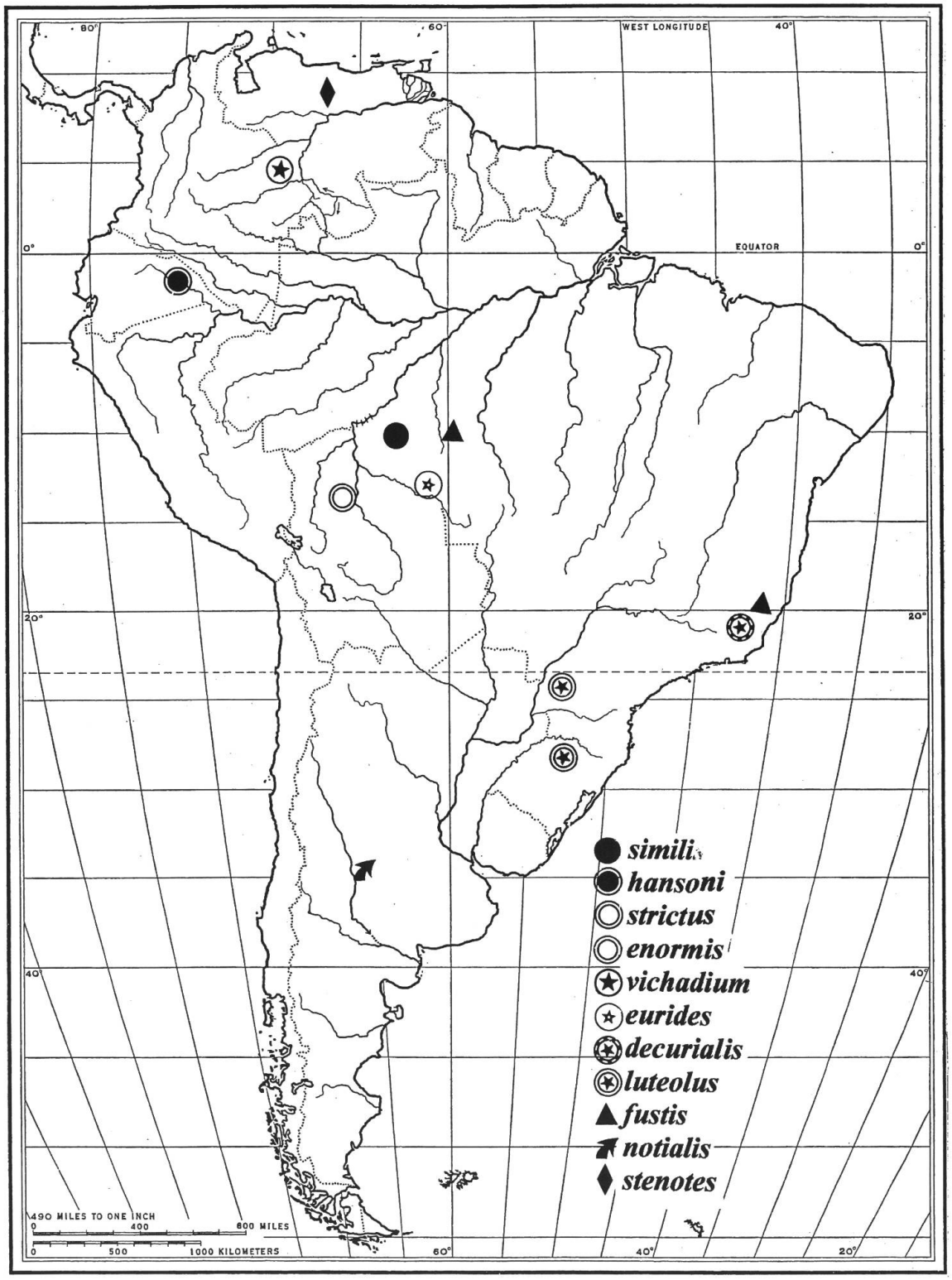
My sincere thanks to George Ball and Jiří Kolibáč for the review of the manuscript, which significantly improved the quality of this contribution. I am also grateful to Jean-Michel Maes for his willingness to provide the Spanish translations. Alison Schroeder prepared the frontispiece with her usual outstanding artistic skills.



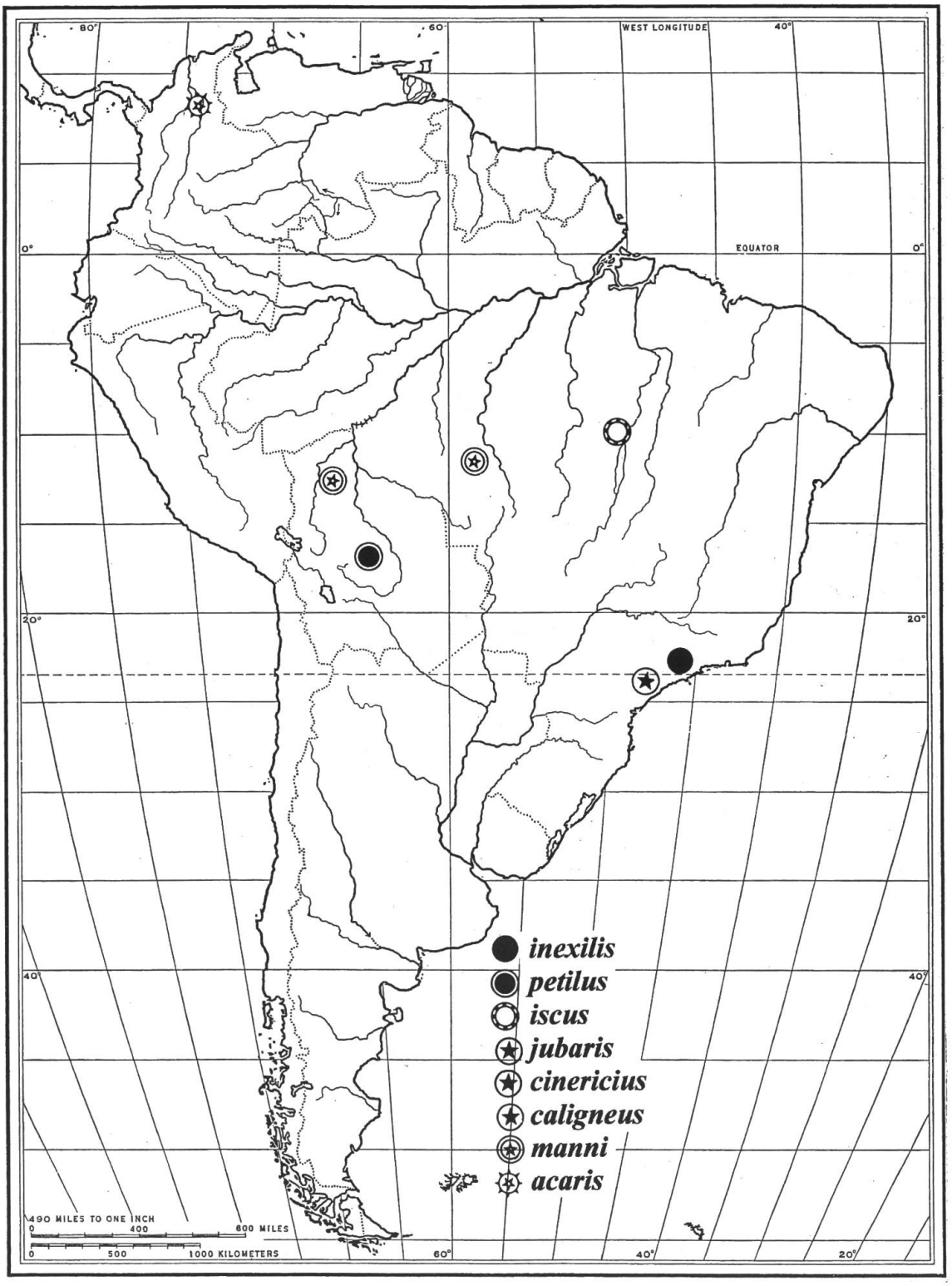
Maps 1. Geographic distribution of *Pyticeroides* species as indicated.



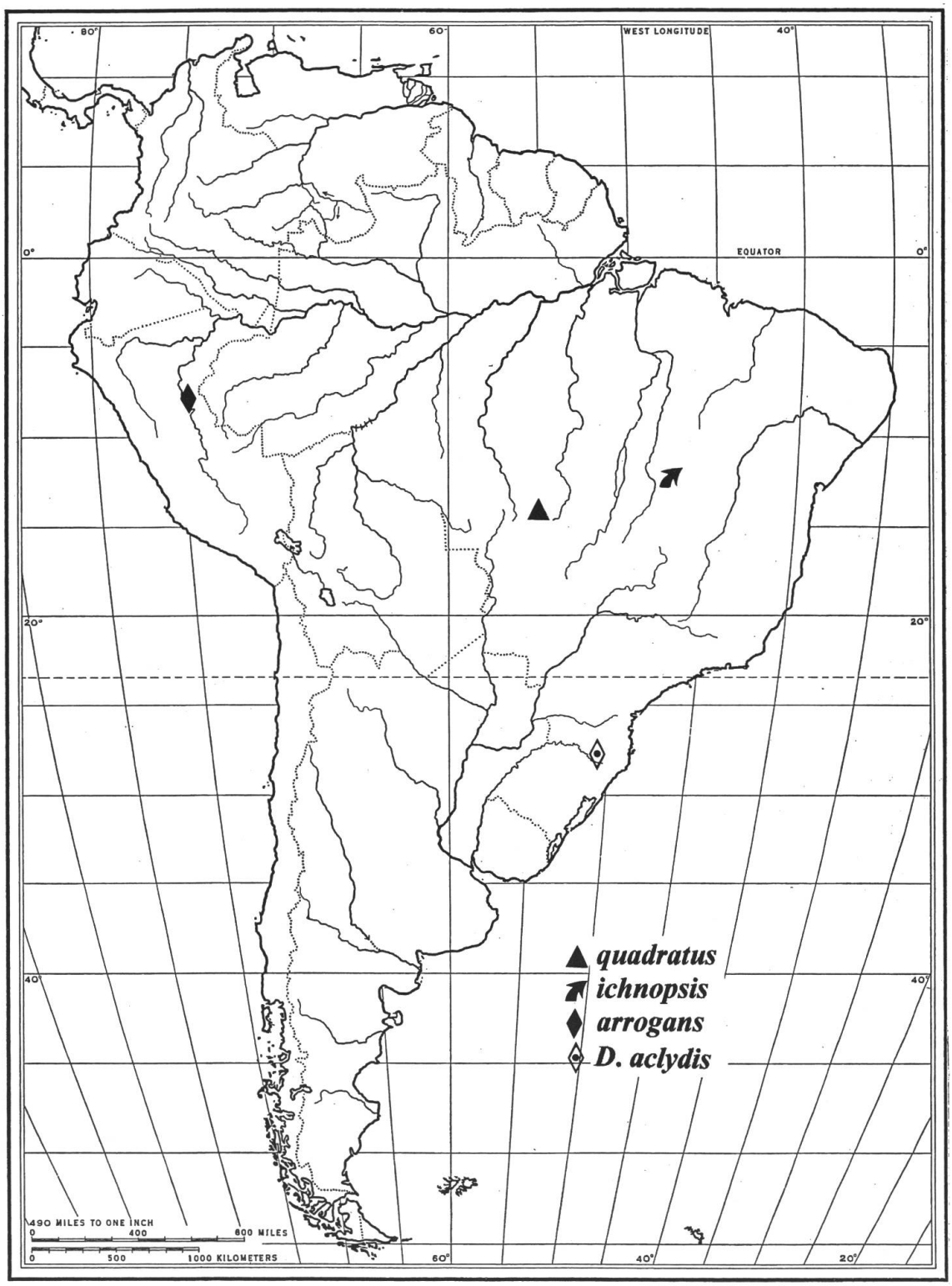
Maps 2. Geographic distribution of *Pyticeroides* species as indicated.



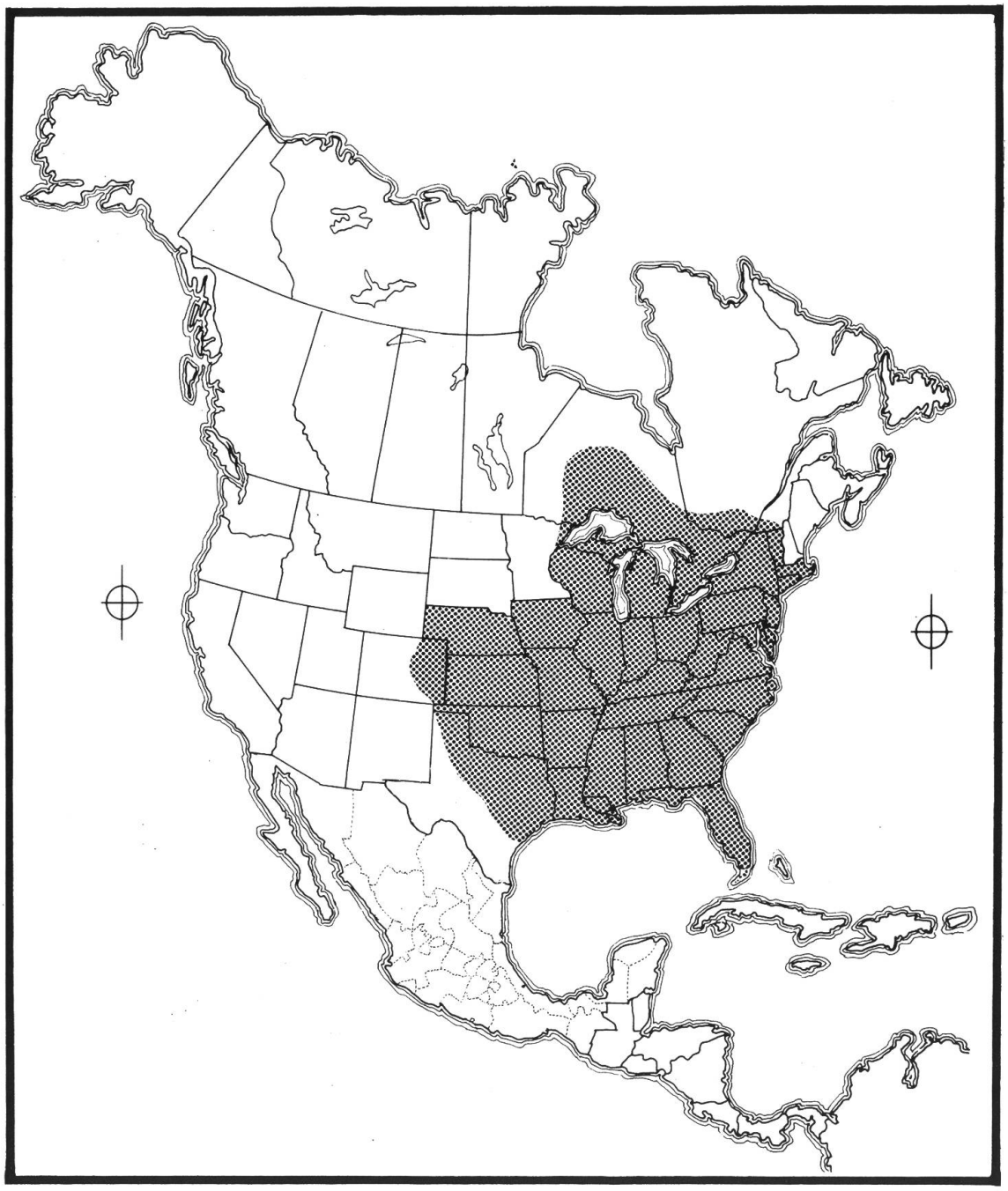
Maps 3. Geographic distribution of *Pyticeroides* species as indicated.



Maps 4. Geographic distribution of *Pyticeroides* species as indicated.



Map 5. Geographic distribution of *Pyticeroides* and *Diapromeces* species as indicated.



Map 6. Geographic distribution of *P. laticornis*.

Resumen

Este documento es parte de una serie de revisiones de los Epiphloeinae y trata de los géneros *Pyticeroides* Kuwert, 1894 y *Diapromeces* Opitz, 1997. *Diapromeces* esta representado por *D. aclydis* Opitz, 1997. Se revisa el género americano *Pyticeroides* que incluye las 32 especies siguientes: *P. inexilis*, especie nueva; *P. petilus*, especie nueva; *P. iscus*, especie nueva; *P. jubaris*, especie nueva; *P. decurialis*, especie nueva; *P. ichnopsis*, especie nueva; *P. notialis*, especie nueva; *P. rifkindi*, especie nueva; *P. tessares*, especie nueva; *P. manni* Chapin, 1927; *P. acaris*, especie nueva; *P. similis*, especie nueva; *P. caligneus*, especie nueva; *P. roseicollis*, especie nueva; *P. chiriquianum* (Gorham, 1883); *P. stenotes*, especie nueva; *P. eurides*, especie nueva; *P. strictus*, especie nueva; *P. vichadium*, especie nueva; *P. maesi*, especie nueva; *P. cinericius*, especie nueva; *P. hansoni*, especie nueva; *P. fustis*, especie nueva; *P. luteolus*, especie nueva; *P. laticornis* (Say, 1835); *P. quadratus*, especie nueva; *P. inconscriptus*, especie nueva; *P. arrogans* Kuwert, 1894; *P. caecoatus*, especie nueva; *P. plautus*, especie nueva; *P. enormis*; especie nueva; y *P. trilineatum* (Chevrolat, 1874). Se designaron neotipo lectotipos para *P. laticornis* y lectotipos para *P. chiriquianum*, *P. arrogans*, y *P. trilineatum*.

Este trabajo incluye una traducción al Español del resumen, grupos de especies y clave; también incluye notas de historia natural, una discusión sobre los grupos de especies, algunas posibles dificultades en los pasos de la clave para identificación de especies, y consideraciones sobre la evolución de los grupos de especies. Este trabajo incluye una ilustración de habitus, 114 dibujos ilustrativos, 6 mapas de distribución, 13 micrografías electrónicas, tres árboles filogénicos, y una tabla con los caracteres importante para una discusión filogénica de los grupos de especies. Para cada especie se da la sinonimia, combinación diagnóstica, descripción, discusión de la variación estructural y cromática, datos sobre historia natural, distribución geográfica, derivación etimológica, localidades, e ilustraciones.

Al observar la anatomía de la boca y el desarrollo de los órganos del canal alimentario estamos bastante seguros de que estos escarabajos son depredadores. Se han hecho muchas capturas de *P. laticornis* sobre troncos de árboles muertos, infestados con huevos, inmaduros y adultos de escarabajos a quienes los adultos y larvas de *P. laticornis* depredan. Estacionalmente, estos escarabajos se colectan durante todo el año en las zonas tropicales y subtropicales, y se encontraron en altitudes de 30 a 1630 metros, con trampa de Malaise, trapas pegajosas, paraguas japonesa, y trampas de luz negra.

Se examinaron tres especimenes de larvas de *P. laticornis*, que se redescriben e ilustran. Se discute la interpretación de la línea sutural del epicranium en las larvas de cléridos para adecuar el concepto de grado de desarrolló de esta línea con el trabajo de SNODGRASS (1935: 107). Se sugiere que la línea sutural del epicranio es bien desarrollada en los cléridos, pero que el componente coronal de la sutura está presente solamente en los miembros de los Thaneroclerinae.

El carácter más definitivo de estos escarabajos en la subfamilia Epiphloeinae es que la antena esta compuesta de nueve artejos. La antena de otros géneros de la subfamilia

tienen ocho, 10, o 11 artejos. Otros caracteres autoapomórficos de *Pyticeroides* incluyen presencia de líneas negras post-oculares, una abolladura en el borde posterior de cada ojo, el arco pronotal estrecho y rectangular, el disco del pronoto tiene una depresión a cada lado y el mesoscutelo presenta una incisión.

Cuarenta y ochos caracteres anatómicos adultos fueron usados para definir la posición evolutiva de los grupos de especies de *Pyticeroides* y el género monotípico *Diapromeces*. Dos filogenias fueron generadas manualmente y una con el programa Hennig86. Se establece una discusión importante sobre el significado de la condición bífida del quinto artejo antenal en *P. enormis* sp.nov. Una sugerencia es que esta apomorfía antenal representa una transición en el artejo, una amalgamación desde la condición ancestral caracterizada por una antena de 10 artejos. Alternativamente, la condición bífida del artejo podría representar una desarrollo anómalo.

Además de la filogenia de los grupos de especies, se presentan comentarios sobre la aparente relación entre la inestabilidad geológica y ambiental como factores de selección natural para las variaciones estructurales más notables en este género. Es notable que las variaciones estructurales son más prominentes entre las especies de distribución montañosas del oriente y el norte de los Andes, y que los grupos más homogéneos del genero se correlacionen muy bien con las áreas más estables a nivel geológico y ambiental.

Grupos de especies de *Pyticeroides*

grupo *enormis*

Este grupo monotípico es particularmente interesante por presentar una estructura del artejo antenal cinco que sugiere una condición evolutiva intermediaria. El artejo antenal cinco está dividido a lo largo de su margen anterior (Fig. 53) sugiriendo un estado intermedio entre la fusión completa de dos artejos antenales. Si esta observación es correcta, la antena de *Pyticeroides enormis* sp.nov. Representa una transición pasando de una antena de 10 artejos a una antena de 9 artejos. La similitud del holotipo con otras especies de *Pyticeroides* sugiere que la división del artejo antenal 5 representa una consolidación y no una división. Todos los demás miembros de Pyticeroides tienen 9 artejos antenales completos. Este grupo esta distribuido en Bolivia.

grupo *inexilis*

Las tres especies que conforman este grupo presentan el pronoto cuadrado (Fig. 12), los ojos son poco prominentes (Fig. 2), y la parte anterior del cuerpo (cabeza y pronoto, Fig. 8) es comparativamente delgada. En todos los demás miembros de *Pyticeroides*, el pronoto es transverso (Fig. 13), los ojos varían desde un poco prominentes (Fig. 3) hasta muy prominentes (Fig. 6), y la parte anterior del cuerpo es más ancha. La distribución geográfica del grupo va desde las montañas de Bolivia hasta los bosques del sureste de Brasil.

grupo *jubaris*

Este grupo incluye dos especies que se pueden reconocer por sus extraordinariamente grandes puntuaciones en el disco elitral que son casi siempre más grandes que el espacio intersticial. Las puntuaciones son alińadas en 10 filas rectas en la mayor parte del disco elitral. El pigidio del macho es emarginado. Los especimenes conocidos provienen del sur de Brasil.

grupo *manni*

Este es el grupo más amplio del género, comprende 10 especies. En estos especimenes, las puntuaciones elitrales son alińadas en 10 filas, pero a diferencia del grupo anterior, las puntuaciones tienden a ser más pequeńas que el espacio intersticial, y siempre ocurren algunas puntuaciones no alińadas cerca del margen sutural. Todos los machos conocidos tienen un pigidio emarginado. La distribución combinada de las especies del grupo se extiende desde Colombia hasta Brasil.

grupo *chiriquiana*

Estos coleópteros tienen los ojos más prominentes que los de los grupos anteriormente mencionados. Como en el grupo anterior, las puntuaciones elitrales son arregladas en 10 filas con puntuaciones non alińadas cerca del margen sutural. En varias especies el pliegue epipleural es notablemente convexo y visible en la vista dorsal del elitro. Tres de las especies no tienen rojo en la vista lateral del pronoto. Este grupo de amplia distribución geográfica se extiende desde Honduras hasta Argentina.

grupo *ichnopsis*

Los especimenes de este grupo monoespecífico se reconocen fácilmente por la forma triangular del escape antenal (Fig. 87), los artejos antenales funiculares ampliamente expandidos, y por el disco elitral subcarinado. La única especie del grupo proviene de las montańas de Bahia, en el centro de Brasil.

grupo *arrogans*

En los miembros de este grupo, las puntuaciones elitrales son muy desorganizadas, particularmente cerca del margen sutural. Este arreglo de las puntuaciones sugiere la presencia de una onceava fila de puntuaciones con la fila adicional compuesta por las puntuaciones desalińadas cercanas al margen sutural, además de las 10 filas características de los demás grupos. El pronoto se torna trapezoidal transverso y los ojos llegan a ser extremadamente saltones, los más prominentes del género. El grupo comprende 8 especies que juntos tienen una distribución geográfica que va desde Canadá hasta Brasil.

Clave de los grupos de especies y de las especies de *Pyticeroides*

1 Pronoto cuadrado; parte anterior del cuerpo delgada (Fig. 8); ojos no fuertemente prominentes, con el espacio entre los ojos mayor que el ancho del pronoto. ..... 2.

1' Pronoto cuadrado-transverso (Fig. 9) o trapecio-transverso (Fig. 11); parte anterior del cuerpo no especialmente delgada; ojos muy prominentes, con el espacio entre los ojos no mayor que el ancho del pronoto (Fig. 9). ..... 4.

2(1) Primer artejo de la maza antenal rectangular (Fig. 71) (Brasil: Paraná: São Paulo). ..... ***P. inexilis* sp.nov.**

2' Primer artejo de la maza antenal más triangular (Fig. 67, 75). ..... 3.

3(2') Artejos antenales 7 y 8 tan largo como ancho (Fig. 75) (Brasil: Pará). ..... ***P. iscus* sp.nov.**

3' Artejos antenales 7 y 8 más largo que ancho (Fig. 67) (Bolivia: Cochabamba). ..... ***P. petilus* sp.nov.**

4(1') Todas las puntuaciones de los tres cuartos básales del elitro muy grandes, puntuaciones cerca del margen sutural claramente arregladas en filas y más anchas que el espacio intersticial que no es nunca arenoso, las puntuaciones son arregladas en 10 filas rectas, casi siempre sin puntos desalińados cerca del margen sutural, disco pronotal con una línea longitudinal. ..... 5.

4' Puntuaciones de los tres cuartos básales del elitro no particularmente grandes, cuando están arregladas en 10 filas solamente una o dos puntuaciones están desalińadas cerca del margen sutural, cuando muchas puntuaciones están desalińadas cerca del margen sutural una onceava fila es perceptible, puntuaciones cerca del margen sutural pequeńas y más estrechas que el espacio intersticial que es a veces levemente arenosos o muy arenoso; disco pronotal sin línea longitudinal. ..... 6.

5(4) Margen distal de los artejos antenales 7 y 8 cóncavos, ultimo artejo antenal ovalado (Fig. 85) (Brasil: Espíritu Santo). .... ***P. decurialis* sp.nov.**

5' Margen distal de los artejos antenales 7 y 8 planos, ultimo artejo antenal más redondo (Fig. 74) (Brazil; Sao Pãulo). .... ***P. jubaris* sp.nov.**

6(4') Escape antenal triangular, artejos antenales funiculares muy expandido (Fig. 87) (Brasil: Bahía). ..... ***P. ichnopsis* sp.nov.**

6' Escape antenal no triangular, más clavado, artejos antenales funiculares no muy expandidos (Fig. 90). ..... 7.

7(6') Disco pronotal rojizo lateralmente, con una raya oscura longitudinal en el centro (*notialis* group). ..... 8.

7' Disco pronotal no rojizo lateralmente, lados usualmente amarillos o flavo-testáceos, disco pronotal con o sin raya longitudinal oscura central. ..... 10.

8(7) Pliegue epipleural amarillo pálido, disco elitral café oscuro (Argentina: Misiones: Tucumán). ..... ***P. notialis*** **sp.nov.**

8' Pliegue epipleural café claro o café oscuro, disco elitral café claro o café oscuro. ..... 9.

9(8') Artejos de la maza antenal particularmente alargados, cada artejo más largo que ancho (Fig. 73) (Costa Rica: San José). .... ***P. rifkindi*** **sp.nov.**

9' Artejos de la maza antenal solo levemente alargados, artejo 7 subcuadrado (Fig. 88) (Honduras: Olancho). ..... ***P. tessares*** **sp.nov.**

10.(7') Puntuaciones elitrales arregladas en 10 filas, algunas puntuaciones desalińadas cerca del margen sutural. ..... 11.

10' Puntuaciones elitrales arregladas en 11 filas, muchas puntuaciones desalińadas cerca del margen sutural. ..... 24.

11(10) Disco pronotal sin raya longitudinal, casi totalmente oscuro o completamente claro. ..... 12.

11' Disco pronotal con una raya longitudinal oscura. ..... 16.

12(11) Ancho a nivel del vertex mayor que el ancho a nivel de los ojos (17:14); pronoto café oscuro (Brasil: Paraná). .... ***P. caligneus*** **sp.nov.**

12' Ancho a nivel del vertex menor que el ancho a nivel de los ojos. .... 13.

13(12') Artejos antenales funiculares considerablemente expandidos (Fig. 81); pliegue epipleural muy visible en vista dorsal; disco pronotal rosado o amarillo (Costa Rica: Guanacaste. Panamá: Panamá). .... ***P. roseicollis*** **sp.nov.**

13' Artejos antenales funiculares minimamente expandidos (Fig. 18); pliegue epipleural minimamente visible en vista dorsal. ..... 14.

14(13') Margen laterales pronotales convexos (Fig. 58) (Bolivia: Cochabamba: Beni. Brazil: Mato Grosso). ..... ***P. manni*** **Chapin**

14' Margen laterales pronotales subparalelos (Fig. 57). ..... 15.

15(14') Margen sutural elitral amarillo; margen protibial anterior con 4 espinas (Colombia: Magdalena). ..... ***P. acaris*** **sp.nov.**

15' Margen sutural elitral no amarillo; margen protibial anterior con 6 espinas (Brasil: Rondonia). ..... ***P. similis* sp.nov.**

16(11') Margen sutural amarillo (Costa Rica: Puntarenas. Panamá: Chiriquí: Canal Zone. Colombia: Magdalena). ... ***P. chiriquianum* (Gorham)**

16' Margen sutural no amarillo, oscuro o café rojizo. ..... 17.

17(16') Quinto artejo antenal más ancho que la base del artejo 7 (Fig. 93) (Venezuela: Aragua). ..... ***P. stenotes* sp.nov.**

17' Quinto artejo antenal no más ancho que la base del artejo 7. ..... 18.

18(17') Artejo antenal 7 triangular (Fig. 84). ..... 19.

18' Artejo antenal 7 rectangular (Fig. 86). ..... 24.

19(18) Pronoto fuertemente transverso (Fig. 65). ..... 20.

19' Pronoto levemente transverso (Fig. 62). ..... 22.

20(19) Ojos no muy convexos (Fig. 62); relación largo/ancho del elitro = 5.2 (Bolivia: Cochabamba). ..... ***P. strictus* sp.nov.**

20' Ojos muy convexos (Fig. 61); relación largo/ancho del elitro = 5.2. ..... 21.

21(20') Margen distal del artejo antenal 7 diagonal (Fig. 77) (Colombia: Vichada). ..... ***P. vichada* sp.nov.**

21' Margen distal del artejo antenal 7 vertical (Fig. 72) (Mato Grosso). ..... ***P. eurides* sp.nov.**

22(19') Ejemplares de Centroamérica (Nicaragua: Granada). .... ***P. maesi* sp.nov.**

22' Ejemplares de América del Sur. ..... 23.

23(22') Ultimo artejo antenal subgloboso (Fig. 78); elitro abundantemente revestida de setas grises cortas (Brazil: São Paulo). .... ***P. cinericius* sp.nov.**

23' Ultimo artejo antenal ovalado (Fig. 83); elitro con solo unas pocas setas grises cortas (Ecuador: Napo). ..... ***P. hansoni* sp.nov.**

24(18') Artejo antenal 8 rectangular, más largo que ancho (35:20) (Brasil: Mato Grosso: Goias). ..... ***P. fustis* sp.nov.**

24' Artejo antenal 8 subcuadrado, no más largo que ancho (Fig. 80) (Brasil: Paraná: Nova Teutonia). ..... ***P. luteolus* sp.nov.**

25(10') Artejos antenales 7 y 8 distintamente rectangulares (Fig. 98). .... 26.

25' Artejos antenales 7 y 8 más cuadrados o triangulares (Fig. 92, 95). ..... 27.

26(25) Pronoto aproximadamente del mismo ancho que la cabeza, pronoto fuertemente trapezoidal (Fig. 64) (Perú: Amazonas). .... ***P. arrogans*** **Chevrolat**

26' Pronoto más estrecho que la cabeza, pronoto no fuertemente trapezoidal, casi subcuadrado (Fig. 63) (Brasil: Goias). .... ***P. quadratus*** **sp.nov.**

27(25') Prosterno oscurecido, café oscuro a negro. ..... 28.

27' Prosterno no oscurecido, amarillo. ..... 29.

28(27) Parte ventral del cuerpo, incluyendo las patas café claro; escape antenal robusto (México: Chiapas). ..... ***P. inconscriptus*** **sp.nov.**

28' Parte ventral del cuerpo, incluyendo las patas café oscuro a negro; escape antenal delgado (México: Chiapas). .... ***P. caecoatus*** **sp.nov.**

29(27') Puntuaciones elitrales muy pequeńas, no arregladas en filas, puntuaciones más pequeńas que el ancho de los espacios intersticiales (México: Oaxaca). ..... ***P. plautus*** **sp.nov.**

29' Puntuaciones elitrales no muy pequeńas, mayormente arregladas en filas distintas, puntuaciones más anchas que los espacios intersticiales. ..... 30.

30(29') Puntuaciones elitrales más pequeńas cerca del margen sutural que otras puntuaciones discales; ultimo artejo antenal fuertemente afilado en su apice (Fig. 70) (Bolivia: Cochabamba). .... ***P. enormis*** **sp.nov.**

30' Puntuaciones elitrales cerca del margen sutural del mismo tamańo que otras puntuaciones discales. ..... 31.

31(30') Tarso amarillo (México: Jalapa). ..... ***P. trilineata*** **(Chevrolat)**

31' Tarso café claro o café oscuro (USA: Este de las Montañas Rocosas. Canadá: Ontario). ..... ***P. laticornis*** **(Say)**

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