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ANDREW B. T. SMITH & PAUL E. SKELLEY



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A review of the Aphodiinae (Coleoptera: Scarabaeidae) of southern South America

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Abstract

The 27 Aphodiinae (Coleoptera: Scarabaeidae) species that occur in southern South America are reviewed. This study region consists of the southern parts of Argentina and Chile including the Central Chilean, Patagonian, and Subantarctic biogeographical provinces. Keys, illustrations, and distributional records with maps for all species are presented. Seventeen species are native to southern South America, nine species are introduced, and the status of one species could not be determined due to a lack of study material. Nine of the 17 native species are endemic to southern South America, and the relationship between these endemic species and similar Australian groups is discussed. A number of classification and nomenclatural changes are made. *Paranimbus* Schmidt and *Pseudopodotenus* Dellacasa are considered to subgenera of *Podotenus* Schmidt. As a result, the following new combinations are created: *Podotenus (Paranimbus) longitarsis* (Harold), *Podotenus (Paranimbus) penai* (Petrovitz), *Podotenus (Paranimbus) peruanus* (Erichson), *Podotenus (Paranimbus) zoiyai* (Dellacasa), and *Podotenus (Pseudopodotenus) fulviventris* (Fairmaire and Germain). *Ataenius chilensis* (Solier) is removed from synonymy with *Ataenius gracilis* (Melsheimer) and is considered a valid species. *Ataenius modestus* Schmidt is synonymized under *Ataenius chilensis* (Solier). *Psammobius indefensus* Schmidt is transferred to the genus *Leiopsammodius* and *Leiopsammodius chilensis* Rakovic is placed in synonymy with this name. Lectotypes are designated for the following names: *Aphodius chilensis* Solier (now *Ataenius chilensis*), *Aphodius reflexus* Schmidt (now *Orodaliscoides reflexus*), *Ataenius modestus* (now a synonym of *Ataenius chilensis*), and *Psammobius indefensus* Schmidt (now *Leiopsammodius indefensus*). A neotype is designated for *Aphodius angustus* Philippi and Philippi, a synonym of *Pleurophorus caesus* (Panzer). Records considered to be erroneous for several Aphodiinae species in southern South America are also discussed.

Key words: Argentina, Chile, Aphodiinae, nomenclature, classification

Introduction

Over the past few years, a project has been underway to survey and inventory all of the Scarabaeoidea (Coleoptera) of southern South America. Because of years of neglect, a major taxonomic overhaul is needed for the vast majority of scarab beetle groups from this region of the world. This paper covering the subfamily Aphodiinae is a contribution to the Scarabaeoidea of southern South America project. The purpose of this paper is to record and verify the species of Aphodiinae that occur in southern South America, provide a key and identification guide to these species, provide as complete as possible information on the distribution of these species, and make necessary nomenclatural and classification changes in the context of the worldwide fauna of the subfamily.

Southern South America is defined as Central Chilean, Patagonian, and Subantarctic biogeographical provinces of Argentina and Chile (as defined by Morrone 1996, 2001). This corresponds with Regions IV–XII in Chile and the Argentinean provinces of Mendoza (but only in the Andean section), Neuquén, Río Negro, Chubut, Santa Cruz, and Tierra del Fuego. Southern South America is widely recognized for its distinct biota that differs radically from regions to the north (see for example Darlington 1965, Crisci *et al.* 1991, Linder and Crisp 1995, Morrone *et al.* 1996, Posadas *et al.* 2001). Crisci *et al.* (1991) examined the historical biogeography of southern South America and found the area to be more biologically similar to other southern hemispheric landmasses (Australia, New Zealand, etc.) than to northern South America. This pattern has also been observed in the distributions of scarabaeoid beetles (Smith 2002, Paulsen & Mondaca 2006). The study region is comprised of many different types of habitats, including Valdivian temperate rain forests, high elevation grasslands in the Andes, Patagonian steppe and grasslands, coastal scrub and dunes, Mediterranean-type forests in Central Chile, and subantarctic *Nothofagus* forests.

Aphodiinae is a diverse subfamily of mostly small species (usually between 3–10 mm long). Species are detritivores to saprophages, with adults and larvae occasionally being found in different niches. Being small, they tend to be overlooked by most collectors. In addition, many species are not collected by the more popular collecting techniques. As a result, many taxa remain quite rare in collections and others undoubtedly await

discovery. In general, it appears that much of the native aphodiine fauna of southern South America (especially Chile) shows closer relationships with the Australian fauna than to the tropical American fauna. In addition to their interesting biogeographical relationships, several taxa seem intermediate in characters between presently recognized tribes and may represent relict ancestral clades that have gone extinct elsewhere in the world. There is no doubt that this fauna is important from a phylogenetic perspective and deserves more study.

The Aphodiinae fauna of southern South America is moderately diverse with good representation at the tribal level. The region, however, is not particularly species rich in Aphodiinae relative to other parts of the world. For the tribe Aphodiini, this may be a function of the relative paucity of dung-producing mammals in the region and the general low species richness of the tribe in the Neotropics. In a biogeographical sense, there are three main types of aphodiines in the study region: native, endemic species; native, non-endemic species; and introduced species. The native, endemic species are generally poorly represented in collections and not much is known of their natural history. Most of the endemic species are morphologically distinct from aphodiines in other parts of the world and seem to be most similar to Australian taxa. The native, non-endemic species are generally widespread in the dry interior regions of Argentina and typically extend from the northern provinces of Argentina into Neuquén and Río Negro in the study region. The introduced species arrived in the study region through various scenarios, but these species are widely introduced in various parts of the world in association with human settlement, livestock, and oceanic trade routes.

Material and methods

Specimens

Specimens were borrowed from and deposited in 21 institution and private collections listed below (curators listed in brackets). A total of 1273 specimens from the study are formed the basis of this review.

ABTS	Andrew B. T. Smith Collection, Ottawa, ON, Canada
CMNC	Canadian Museum of Nature, Ottawa, ON, Canada (François Génier, Robert Anderson)
CNCI	Canadian National Collection of Insects, Ottawa, ON, Canada (Patrice Bouchard)
FCOC	Federico C. Ocampo Collection, Lincoln, NE, USA
FMNH	Field Museum of Natural History, Chicago, IL, USA (Alfred Newton)
FSCA	Florida State Collection of Arthropods, Gainesville, FL, USA (Paul Skelley)
HAHC	Henry and Anne Howden Collection, Ottawa, ON, Canada
ISNB	Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium (Alain Drumont)
JMEC	José Mondaca E. Collection, Santiago, Chile
LEMQ	Lyman Entomological Museum, McGill University, Ste. Anne de Bellevue, PQ, Canada (Terry Wheeler, Stéphanie Boucher)
MEUC	Museo Entomológico Luis Peña, Departamento de Sanidad Vegetal de la Universidad de Chile, Santiago, Chile (Roberto González)
MNHN	Muséum National d'Histoire Naturelle, Paris, France (Olivier Montreuil)
MNNC	Museo Nacional de Historia Natural, Santiago, Chile (Mario Elgueta)
MZLU	Museum of Zoology, Lund University, Lund, Sweden (Roy Danielsson)
NHRS	Swedish Museum of Natural History, Stockholm, Sweden (Bert Viklund)
PESC	Paul E. Skelley Collection, Gainesville, FL, USA
SEMC	Snow Entomological Museum, University of Kansas, Lawrence, KS (Steve Ashe)
TMSA	Transvaal Museum of Natural History, Pretoria, South Africa (James Harrison, Ruth Müller)
UCCC	Museo de Zoología, Universidad de Concepción, Concepción, Chile (Jorge Artigas)

UMCE	Universidad Metropolitana de Ciencias de la Education, Santiago, Chile (Jaime Solervicens)
UNSM	University of Nebraska State Museum, Lincoln, NE, USA (Federico Ocampo, Brett Ratcliffe)
USNM	United States National Museum of Natural History, Washington, D.C., USA (David Furth)

Explanation of the format for specific taxa

Subfamily and tribal entries are limited to “type genus,” “diagnosis,” and “remarks” sections. Since none of the taxa at this level are endemic, only basic characters and comments are given. Genus and subgenus entries have the same sections as above (with “type species” instead of “type genus”), but more detail is given in the diagnoses and for the endemic taxa. Species entries include “original combination,” “type locality,” “synonyms,” “type specimens,” “specimens examined,” “distribution,” “temporal data,” “diagnosis,” and “remarks.”

Only specimens examined from the study region are cited in “Specimens examined.” For some of the widespread species, we have seen hundreds of specimens not mentioned here. All specimens from the study region that we examined were databased and these data are available at: www.museum.unl.edu/research/entomology/SSSA.htm. The distribution records of the specimens we examined were used to create the maps (Figs. 85–111). The maps were generated using Weinelt (2006) and were further modified using Adobe Illustrator and Adobe Photoshop.

How to use this review as an identification guide

To identify Aphodiinae specimens from southern South America, the key in this paper should be used as a starting point. Characters should then be compared with the “diagnosis” sections in the genus and species entries and the figures should be examined. The genus diagnosis sections are constructed so the characters listed will distinguish members of that genus from all other genera in the study region. The species diagnosis sections will supplement the genus diagnosis with additional characters that will distinguish between different species in that particular genus. For monotypic genera and genera with only one member in the study region, species diagnoses are not given. In the diagnoses, the length measurements have been rounded to the nearest whole number.

It is very possible that additional Aphodiinae species will be discovered in southern South America. We have tried to anticipate this when constructing the diagnoses sections, key, and figures, so that new taxa can be recognized. However, other papers will need to be consulted to determine the identity of any new taxa and to determine if the species have been previously described. Extra care should be taken with specimens from the northern Argentinean part of the study region (Neuquén and Río Negro in particular). Aphodiinae diversity and species richness increases dramatically just to the north of these provinces and we would not be surprised if more species known from Mendoza were discovered to extend slightly southward into the region defined as southern South America.

Designation of lectotypes and neotypes

Lectotypes are designated for species from southern South America in order to preserve the stability of nomenclature by selecting one specimen as the sole, name-bearing type of the taxon. Many species of scarabs have been described based on mixed series of specimens later considered to represent multiple species. Lectotypes were selected for the following names: *Aphodius reflexus* Schmidt (now *Orodaliscooides reflexus*), *Aphodius chilensis* Solier (now *Ataenius chilensis*), *Ataenius modestus* (now a synonym of *Ataenius chilensis*), and *Psammobius indefensus* Schmidt (now *Leiopsammobius indefensus*).

The rules of zoological nomenclature require that a designation of a neotype “is validly designated when there is an exceptional need and only when that need is stated expressly” (Article 75.3). One neotype is designated in this work for *Aphodius angustus* Philippi and Philippi, a name described using Chilean specimens, in order to preserve the stability of nomenclature by selecting one specimen as the sole, name-bearing type of the

taxon when the original name-bearing type specimen(s) was lost or destroyed. The neotype specimen serves to tie the published name to an actual specimen and as a reference standard for the taxon. Other qualifying conditions for designating valid neotypes in section 75.3 of the code are satisfied under the species treatment for *Pleurophorus caesus* (Panzer). We consider that a neotype is necessary in this case due to the history of taxonomic confusion of species and names in this genus. Until revisionary work is done on long-neglected groups such as Neotropical Aphodiinae, the taxonomy and classification are ‘complex zoological problems’ and there is doubt surrounding the identities of all species and names.

Checklist of the Aphodiinae of Southern South America

The 27 species listed below were all determined to occur in the study region. Each species is categorized as native, endemic; native, non-endemic; or introduced. The occurrence of *Oxyataenius morosus* (Harold) and the status of this species could not be verified because it is only known from one 19th century specimen. We have provisionally included this species on the list because it is reportedly from “Chili” and we have no evidence to the contrary.

Tribe Aegialiini Laporte, 1840

Aegialia argentina Martínez, Pereira, and Vulcano, 1970. Native, non-endemic.
Amerisaprus valdivia Stebnicka and Skelley, 2004. Native, endemic.
Argeremazus neuquen Stebnicka and Dellacasa, 2004. Native, endemic.

Tribe Proctophanini Stebnicka and Howden, 1995

Australaphodius frenchi (Blackburn, 1892). Introduced.

Tribe Aphodiini Leach, 1815

Acanthaphodius bruchi Schmidt, 1909. Native, endemic.
Aphodius (Calamosternus) granarius (Linnaeus, 1767). Introduced.
Aphodius (Labarrus) pseudolividus Balthasar, 1941. Introduced.
Orodaliscoides reflexus (Schmidt, 1910). Native, endemic.
Orodaliscoides rugosiceps (Harold, 1859). Native, endemic.
Podotenus (Pseudopodotenus) fulviventris (Fairmaire and Germain, 1860). Native, endemic.
Symphodon anomalus (Harold, 1874). Native, endemic.

Tribe Eupariini Schmidt, 1910

Ataenius chilensis (Solier, 1851). Native, endemic.
Ataenius gracilis (Melsheimer, 1846). Introduced.
Ataenius opatroides (Blanchard, 1847). Native, non-endemic.
Ataenius picinus Harold, 1868. Introduced.
Ataenius platensis (Blanchard, 1847). Native, non-endemic.
Ataenius strigicaudus Bates, 1887. Introduced.
Bruchaphodius ovalipennis (Harold, 1871). Native, non-endemic.
Bruchaphodius shannoni (Bruch, 1938). Native, non-endemic.
Oxyataenius morosus (Harold, 1869). Status uncertain.
Parataenius simulator (Harold, 1868). Native, non-endemic.

Tribe Psammodiini Schmidt, 1910

Leiopsammodius indefensus (Schmidt, 1909). Native, endemic.

Leiopsammodius placidus (Schmidt, 1911). Native, non-endemic.
Odontopsammodius cruentus (Harold, 1868). Native, non-endemic.
Platytomus micros (Bates, 1887). Introduced.
Pleurophorus caesus (Panzer, 1796). Introduced.
Tesarius caelatus (LeConte, 1857). Introduced.

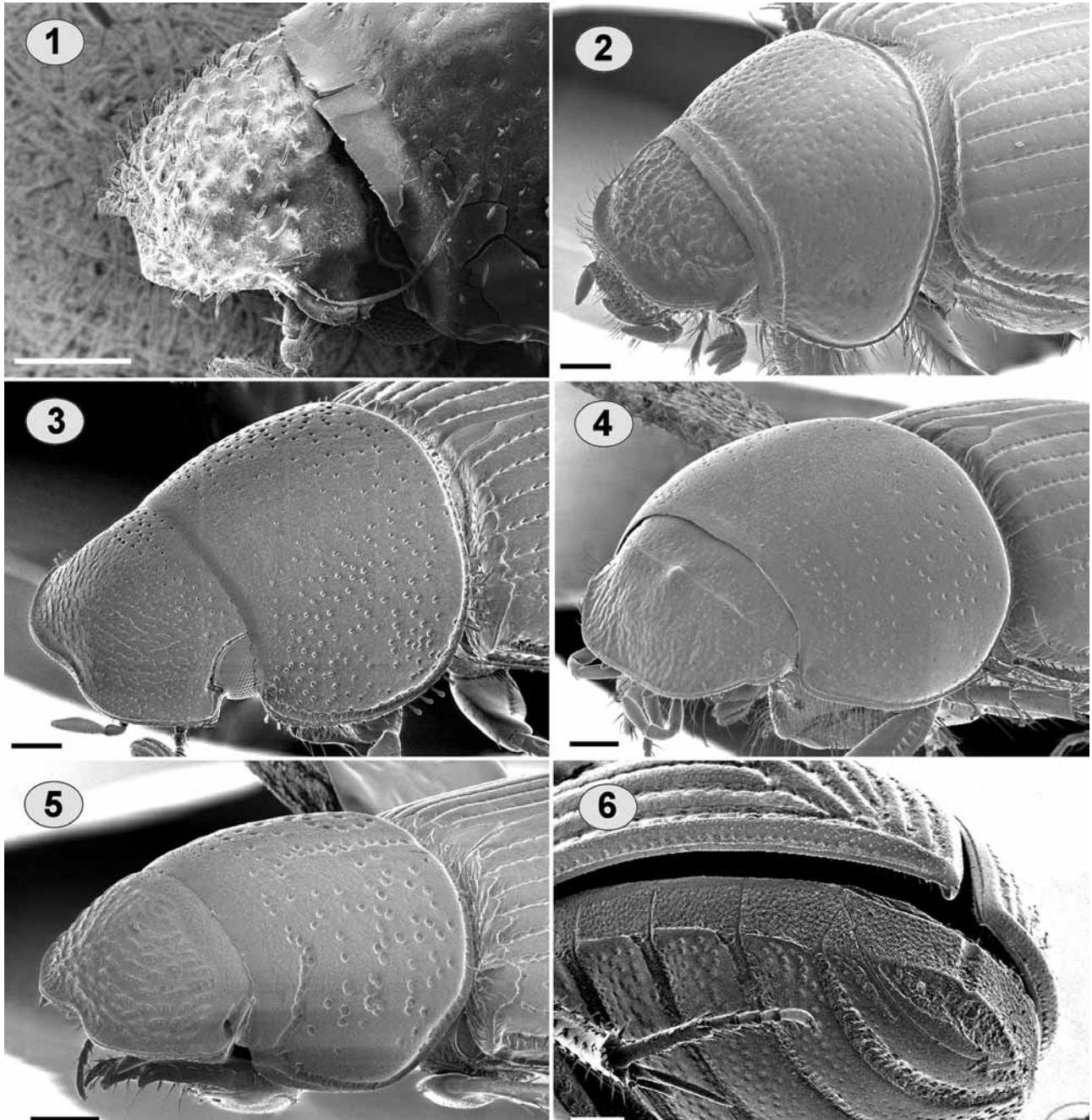


PLATE 1. Fig. 1. *Argeremazus neuquen*, head; Fig. 2. *Aegialia argentina* head to elytral base; Fig. 3. *Ataenius platen-sis* head to elytral base; Fig. 4. *Aphodius granarius* head to elytral base; Fig. 5. *Pleurophorus caesus* head to elytral base. Fig. 6. *Ataenius picinus* apex of abdomen and elytra. Scale line = 0.2 mm.

Key to species of Aphodiinae of southern South America

1. Head strongly convex, clypeal surface rugosely punctate and distinctly setose (Fig. 1)
 *Argeremazus neuquen* Stebnicka and Dellacasa
- Head flat to weakly convex; clypeal surface variable, smooth to tuberculate, finely to coarsely punctate, sometimes weakly setose, but never convex and distinctly setose (Figs. 2–5) 2
2. Labrum and mandibles not visible in antero-dorsal view, hidden beneath expanded clypeus (Figs. 3–5).. 3
- Labrum and mandibles visible in antero-dorsal view (Fig. 2) [*Aegialiini*] 7

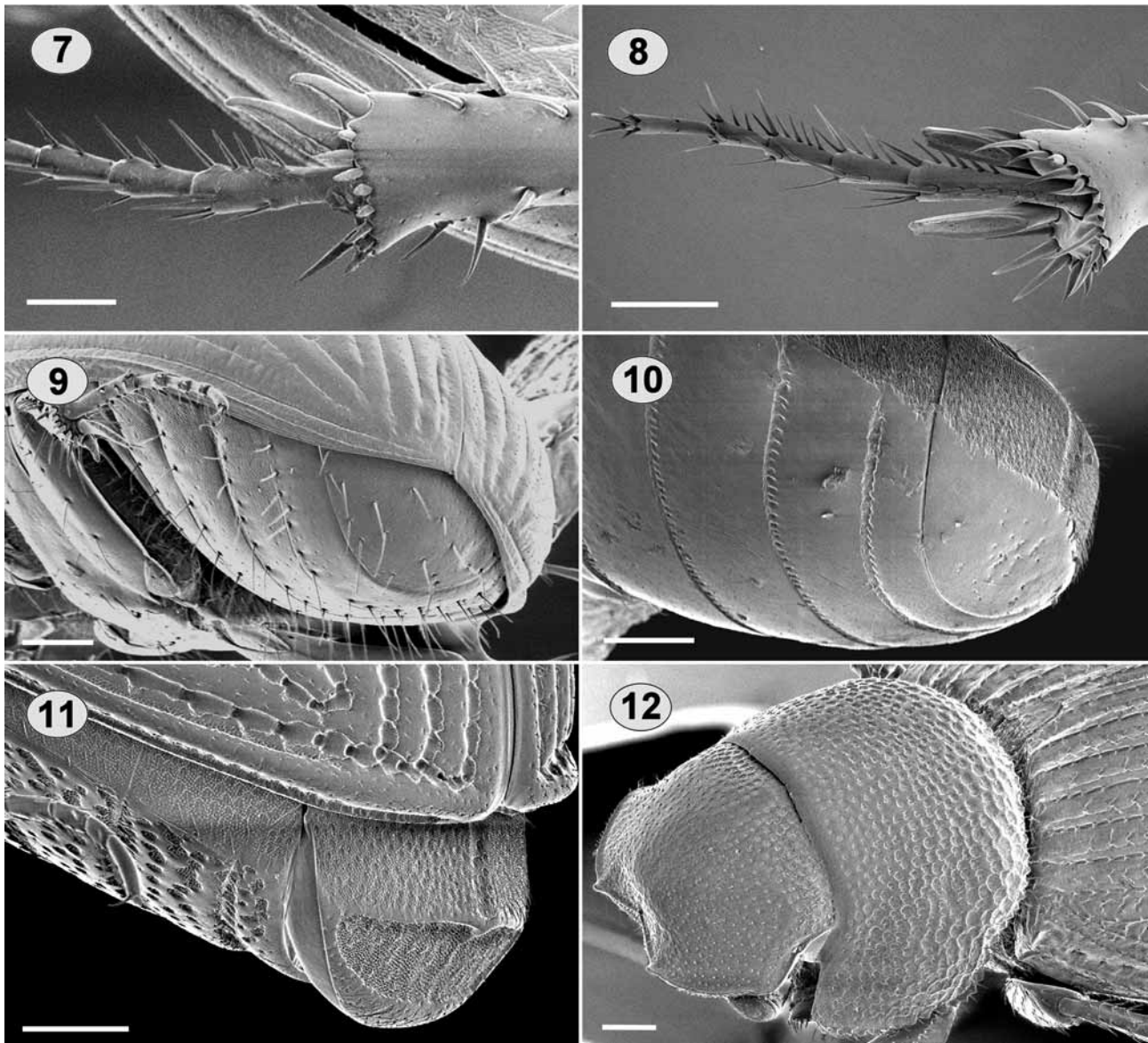


PLATE 2. Fig.7. *Aidophus infuscatopennis* metatibial apex, ventral view; Fig. 8. *Aphodius rubeolus* metatibial apex, ventral view; Fig. 9. *Aidophus parvus* apex of abdomen and elytra; Fig. 10. *Ataeniopsis haroldi* pygidium; Fig. 11. *Ataenius platensis* pygidium; Fig. 12. *Bruchaphodius shannoni* head to elytral base. Scale line = 0.2 mm.

3. Elytral intervals margined at base (most visible toward the sides) (Figs. 3, 5, 12, 13, 15, 19–21, etc.); pygidium with basal longitudinal groove (Figs. 6, 11), usually eroded in apical half (Fig. 10); elytra with internal swelling along sutural margin that fits into the pygidial groove (Fig. 6) 4
- Elytral intervals not margined at base (Figs. 2, 4), smoothly rounded (Figs. 35, 36, 39, etc.); pygidium entirely smooth (Fig. 9), unmodified, never eroded in apical half; elytral apex at suture not enlarged, sharply edged (Fig. 9) 5

4. Clypeus smooth, with transverse wrinkles or transverse ridges (Figs. 3, 12–15, 19–21); pronotum without grooves or rows of punctures; metafemur never greatly swollen, not larger than profemur [Eupariini] 8
 - Clypeus granulate or tuberculate, never with transverse ridges (Figs. 5, 28, 29, 31–33); pronotum usually with rows of punctures; metafemur usually enlarged (not in *Pleurophorus*), larger than profemur (Fig. 30) [Psammodiini]..... 18
5. Metatibia with apical spurs not separated by metatarsus (Fig. 7)..... 6
 - Metatibia with apical spurs separated by metatarsus (Fig. 8) [Aphodiini] 23
6. Body robust, moderately elongate, dark brown without markings, resembling a small *A. granarius* (Fig. 51) [Proctophanini]..... *Australaphodius frenchi* (Blackburn)
 - Body not robust, distinctly elongate and parallel-sided, yellow brown with darker markings (Figs. 49–50) [Didactyliini]..... *Aidophus* spp. [see Erroneous Records section]

AEGIALIINI

7. Body elongate, black (Fig. 47); metatibia with apical spurs not separated by tarsus *Amerisaprus valdivia* Stebnicka and Skelley
 - Body robust, reddish-brown (Fig. 46); metatibia with apical spurs separated by tarsus..... *Aegialia argentina* Martínez, Pereira, and Vulcano

EUPARIINI

8. Clypeal apex distinctly dentate (Fig. 12); body robust, dark red-brown 9
 - Clypeal apex evenly rounded at sides, or weakly angulate, never dentate (Figs. 13–15); body usually elongate and black or red..... 10
9. Elytral intervals flattened with 2 rows of distinct setae (Fig. 75)..... *Bruchaphodius ovalipennis* (Harold)
 - Elytral intervals with distinct median ridge, lacking setae (Figs. 12, 76)..... *Bruchaphodius shannoni* (Bruch)
10. Clypeal surface with distinct, strongly developed, transverse ridges (Figs. 13, 16); mesotibia strongly expanded at apex; metafemur swollen, nearly as large as profemur 11
 - Clypeal surface variable, punctate, granulate, or with transverse wrinkles, never with distinct ridges (Figs. 14–15); mesotibia not strongly expanded at apex; metafemur not or weakly swollen, smaller than profemur..... 12
11. Coarse pronotal punctures restricted to postero-lateral third and base, very much larger than other punctures, rapidly decreasing in size anteriorly at middle (Fig. 13); punctures of elytral intervals fine and widely spaced (Fig. 17)..... *Parataenius simulator* (Harold)
 - Coarse pronotal punctures evenly distributed across surface, not as notably different from smaller punctures (Fig. 16); punctures of elytral intervals dense and restricted to central part of interval (Fig. 18) *Parataenius derbesis* (Solier) [see Erroneous Records section]
12. Body distinctly setose and densely, coarsely punctate *Oxyataenius morosus* (Harold)
 - Body neither distinctly hairy nor densely, coarsely punctate 13
13. Clypeal surface coarsely and densely punctate, punctures elongate (Fig. 14) *Ataenius gracilis* (Melsheimer)
 - Clypeal surface variable, but punctures never elongate (Figs. 15, 19–21)..... 14
14. Clypeal surface weakly granulate on apical half (Fig. 15)..... *Ataenius chilensis* (Solier)
 - Clypeal surface punctate, smooth or weakly wrinkled (Figs. 19–21) 15
15. Head smooth, apparently without punctures (Fig. 19); pronotum apparently lacking fine punctures, coarse punctures present laterally (Fig. 19); pronotum and elytra dull *Ataenius opatroides* (Blanchard)
 - Head with distinct punctuation and often with transverse wrinkles (Figs. 3, 20–21); pronotum distinctly punctate throughout with dense fine punctures, coarse punctures also present laterally (Figs. 3, 20–21); pronotum and elytra shiny 16

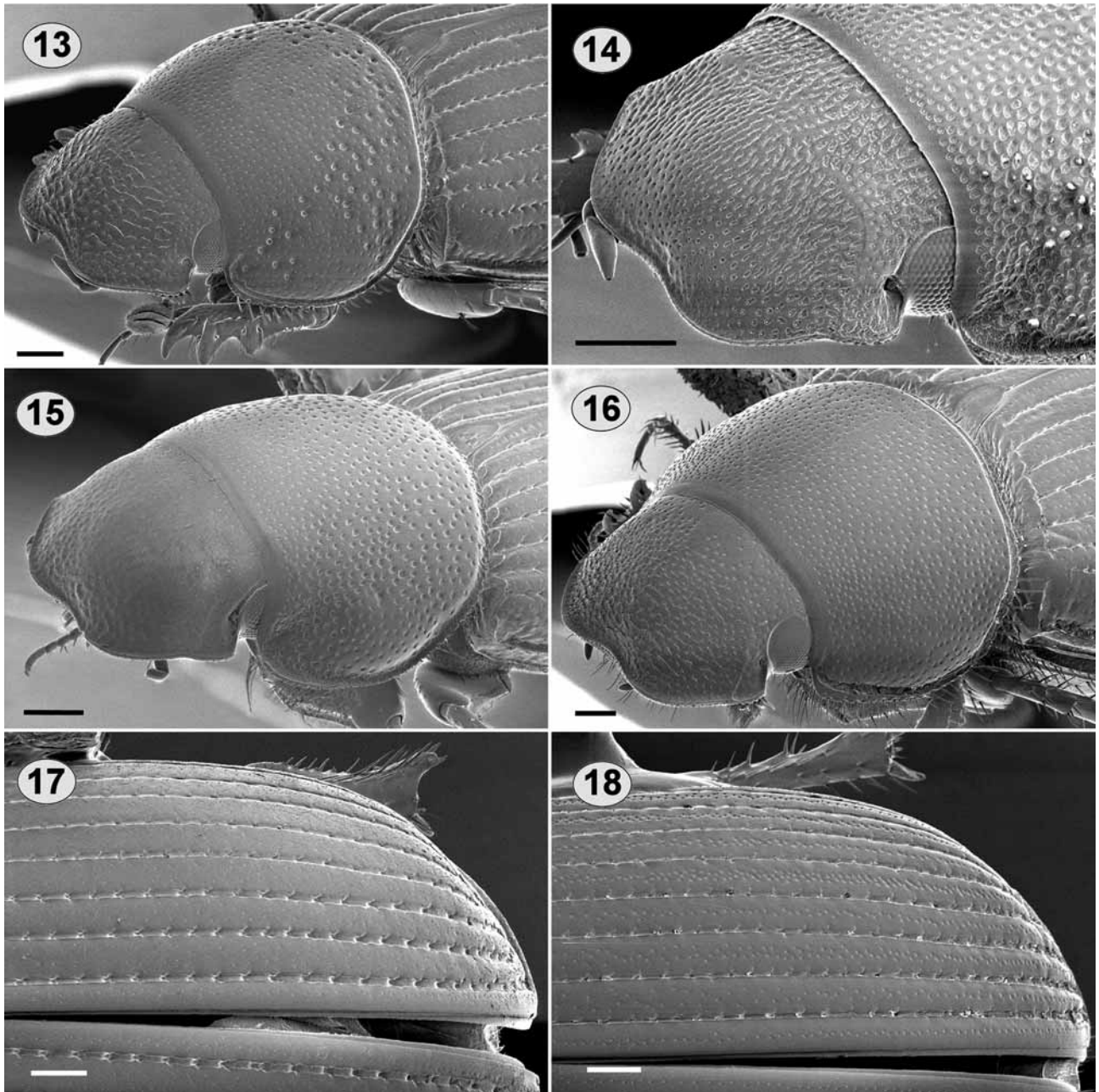


PLATE 3. Fig. 13. *Parataenius simulator* head to elytral base; Fig. 14. *Ataenius gracilis* head; Fig. 15. *Ataenius chilensis* head; Fig. 16. *Parataenius derbesis* head to elytral base; Fig. 17. *Parataenius simulator* elytral base; Fig. 18. *Parataenius derbesis* elytral base. Scale line = 0.2 mm.

16. Elytral interval 9 (penultimate lateral interval) weakly punctate (Fig. 22), but not different from those of disc; pronotum with marginal setae near posterior angle spatulate (Fig. 3), flattened and widest near apex; meso and metatibial accessory spine near base of apical spurs short, at most as long as 4–6 apical spinules *Ataenius platensis* (Blanchard)
- Elytral interval 9 (penultimate lateral interval) with puncture pattern differing from those of disc (Figs. 23–24); pronotum with marginal setae near posterior angle not notably spatulate, possibly flattened, but not widest near apex; meso and metatibial accessory spine near base of apical spurs longer than 4 apical spinules (Fig. 25) 17

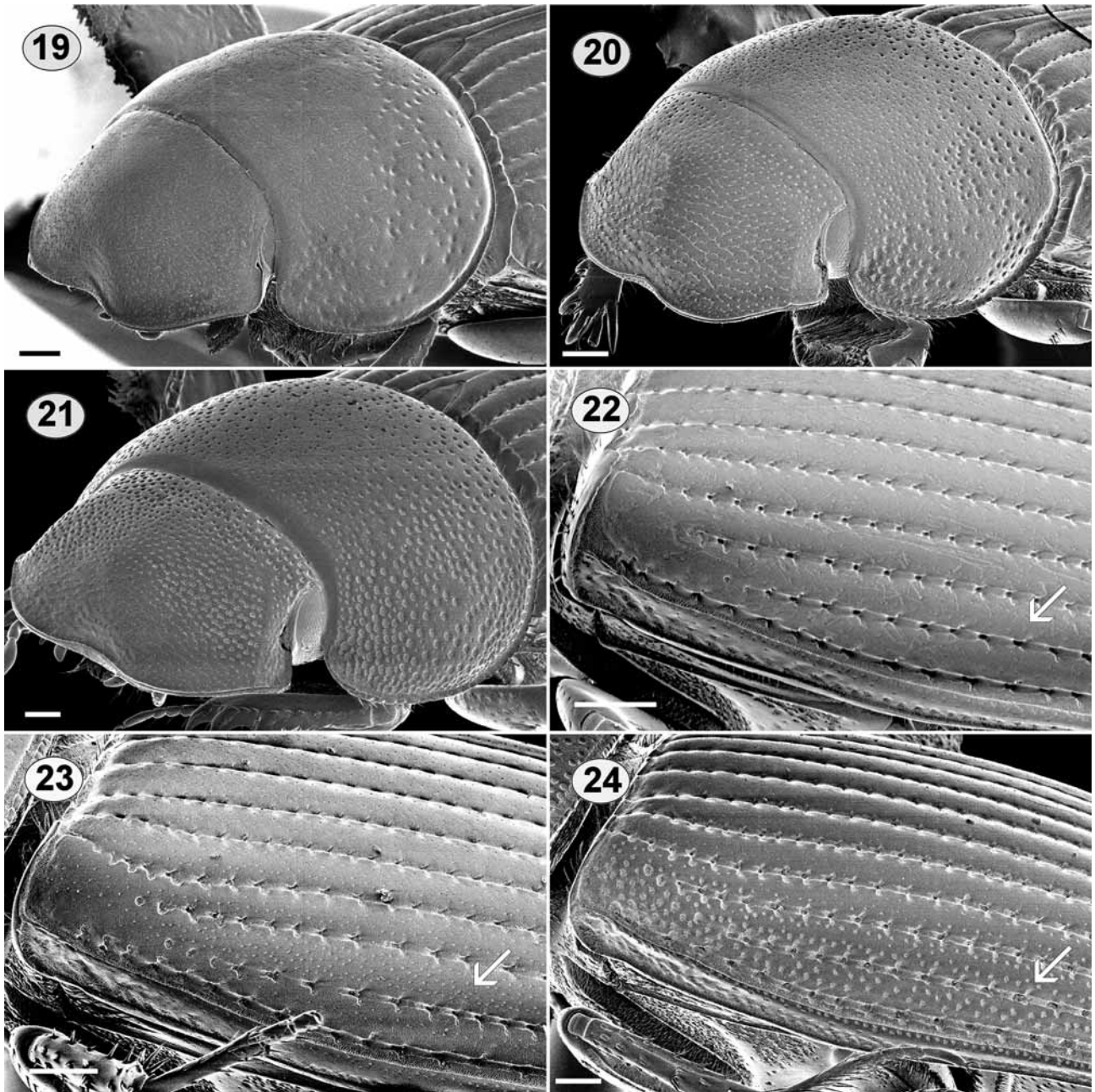


PLATE 4. Fig. 19. *Ataenius opatroides* head to elytral base; Fig. 20. *Ataenius picinus* head to elytral base; Fig. 21. *Ataenius strigicaudus* head to elytral base; Fig. 22. *Ataenius platensis* lateral elytron; Fig. 23. *Ataenius picinus* lateral elytron; Fig. 24. *Ataenius strigicaudus* lateral elytron. Scale line = 0.2 mm.

- 17. Elytral interval 9 with fine, dense punctures covering entire surface (Fig. 23); metasternum lacking coarse punctures medially (Fig. 26).....*Ataenius picinus* Harold
- Elytral interval 9 with 2 rows of coarse punctures (Fig. 24); metasternum with group of coarse punctures near base of mesofemur (Fig. 27).....*Ataenius strigicaudus* Bates

PSAMMODIINI

- 18. Body elongate, cylindrical, parallel-sided for majority of length (Fig. 82); metafemur parallel-sided, not swollen..... *Pleurophorus caesus* (Panzer)
- Body more robust, not elongate (Figs. 78–81, 83); metafemur swollen, at most weakly parallel-sided .. 19
- 19. Clypeal apex distinctly bidentate (Figs. 28, 80)..... *Odontopsammodius cruentus* (Harold)
- Clypeal apex at most angulate, usually evenly sinuate (Figs. 29, 31–32)..... 20

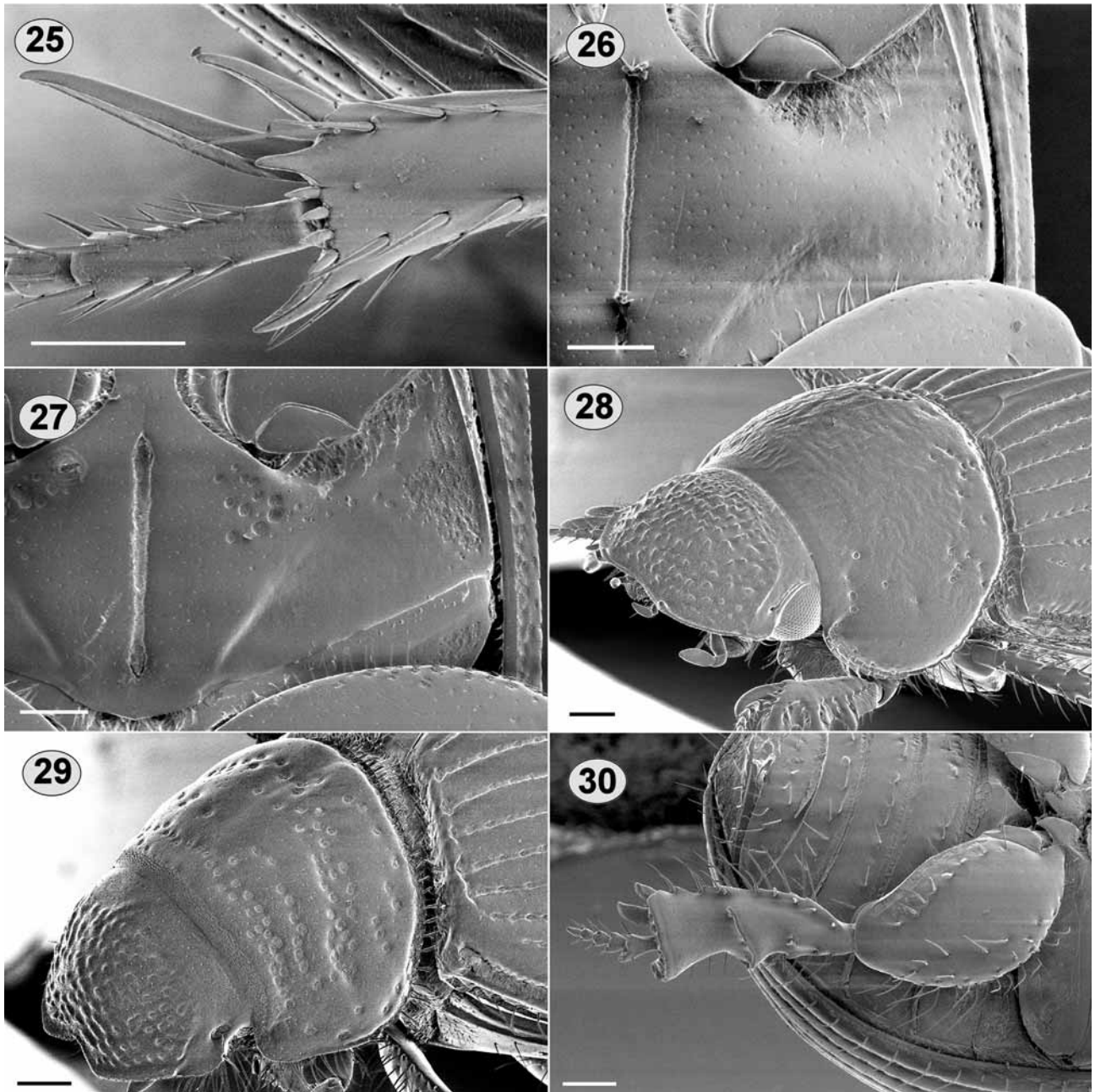


PLATE 5. Fig. 25. *Ataenius picinus* apex of metatibia; Fig. 26. *Ataenius picinus* metasternum; Fig. 27. *Ataenius strigicaudus* metasternum; Fig. 28. *Odontopsammodius cruentus* head to elytral base; Fig. 29. *Tesarius caelatus* head to elytral base; Fig. 30. *Tesarius caelatus* metafemur and tibia. Scale line = 0.2 mm.

20. Metatibia with complete transverse ridge near middle (Fig. 30); eyes reduced (Fig. 29); flightless
 *Tesarius caelatus* (LeConte)
- Metatibia lacking complete transverse ridge, possibly with transverse row of teeth; eyes normally developed (Figs. 31–32); flightless or not..... 21
21. Elytra lacking setae on lateral margin; base of head roughly punctate, lacking grooves (Figs. 32–33); pronotum grooves weak..... 22
- Elytra with distinct, long setae on lateral margin (Fig. 78); base of head with angled grooves (Figs. 31, 78); pronotum with one longitudinal groove on midline and 2 transverse grooves on each side (Figs. 31, 78)..... *Leiopsammodius indefensus* (Schmidt)

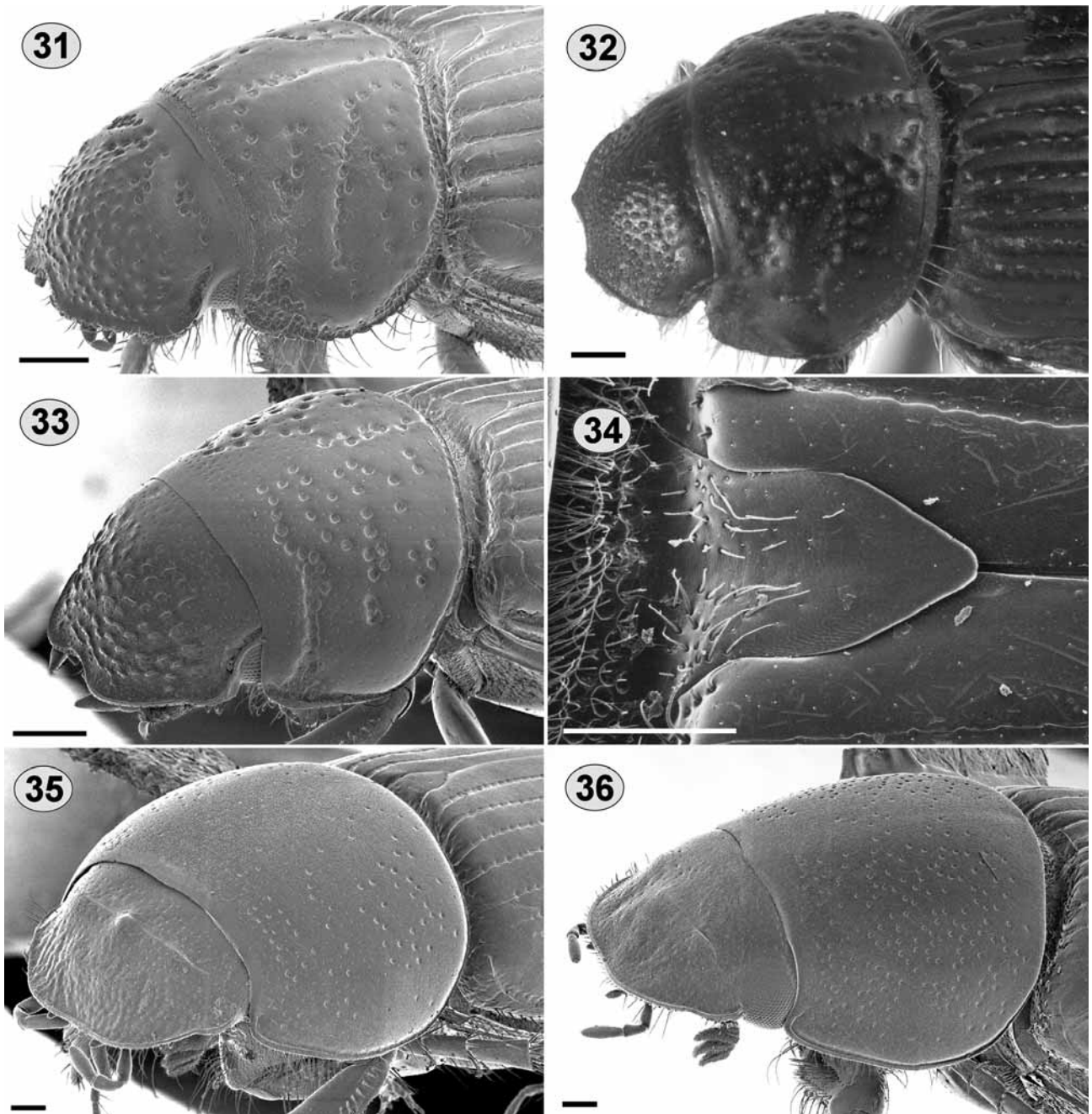


PLATE 6. Fig. 31. *Leiosammodium indefensus* head to elytral base; Fig. 32. *Leiosammodium placidus* (holotype) head to elytral base; Fig. 33. *Platytomus micros* head to elytral base; Fig. 34. *Aphodius granarius* scutellum; Fig. 35. *Aphodius granarius* head to elytral base; Fig. 36. *Aphodius pseudolividus* head to elytral base. Scale line = 0.2 mm.

- 22. Body more elongate, elytra parallel-sided (Fig. 81); clypeus rounded on each side of central emargination; pronotal lateral margin lacking fringe of setae (Fig. 33) *Platytomus micros* (Bates)
- Body more globose, elytra not parallel-sided (Fig. 79); clypeus angulate on each side of central emargination; pronotal lateral margin with distinct fringe of setae (Fig. 32)...*Leiosammodium placidus* (Schmidt)

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- 23. Scutellum narrowed at base, pentagonal (Fig. 34); head with tubercles on frontal suture (Figs. 35–36).....24
- Scutellum broadly triangular, not narrowed at base; head lacking tubercles on frontal suture (Figs. 39, 58–62, 66–68)..... 25

24. Pronotum with distinct, complete basal margin (Figs. 35, 55–56); body black
 *Aphodius (Calamosternus) granarius* (Linnaeus)
- Pronotum lacking basal margin (Fig. 36); body bicolored (Fig. 57)
 *Aphodius (Labarrus) pseudolividus* Balthasar
25. Small, less than 5 mm; protibia with apical most tooth projecting forward (Fig. 37); elytra with distinct color pattern (Fig. 61); male metafemur with distinct medial peg (Fig. 38)
 *Acanthaphodius bruchi* Schmidt
- Larger, greater than 6 mm; protibia with apical most tooth projecting laterally (Figs. 40–42, 63–65); elytra unicolorous, or with paler apex only; male metafemur lacking peg..... 26
26. Body stout, head convex, clypeal margin strongly reflexed (Figs. 58–60); elytra evenly rounded apically, without apical umbone (Fig. 43)..... 27
- Body and head flattened (Figs. 39, 62, 66–68); elytra with apical umbone (Figs. 44–45)..... 28
27. Protibia with teeth equally separated (Fig. 40); Argentina..... *Orodaliscoides reflexus* (Schmidt)
- Protibia with apical 2 teeth (1+2) closer than next pair (2+3) (Fig. 41); Chile
 *Orodaliscoides rugosiceps* (Harold)
28. Protibial apex modified, bluntly expanded, apical teeth not large (Fig. 42); body dark tan to light brown, abdomen not orange..... *Symphodon anomalus* (Harold)
- Protibial apex not modified, not bluntly expanded, apical teeth normally developed (Figs. 63–64); body black with orange abdomen..... *Podotenus (Pseudopodotenus) fulviventris* (Fairmaire and Germain)

Subfamily Aphodiinae Leach, 1815

Type genus: *Aphodius* Illiger in Kugelann and Illiger, 1798: 15.

Diagnosis: Small, length mostly less than 15 mm, body more or less elongate. Head nearly always with clypeus covering mouthparts, sometimes exposing tips of mandibles. Mandible usually reduced and membranous, rarely sclerotized. Antenna with 9 segments, club pubescent and 3-segmented. Elytral base bordered or not. Pygidium smooth, without transverse ridge or longitudinal groove at base, often exposed. Femur smooth or with grooves on anterior or posterior margin. Mesocoxae contiguous or nearly so. Metatibia variable, but usually dilated at apex, usually with 2 apical spurs. Elytra nearly or entirely covering pygidium. Abdomen with 6 visible sternites, segments connate or not. Tarsi with distinct claws, rarely with claws reduced.

Tribe Aegialiini Laporte, 1840

Type genus: *Aegialia* Latreille, 1807: 96.

Diagnosis: This tribe is easily recognized by having well developed mandibles that are visible in anterior view because of a small, concave clypeus.

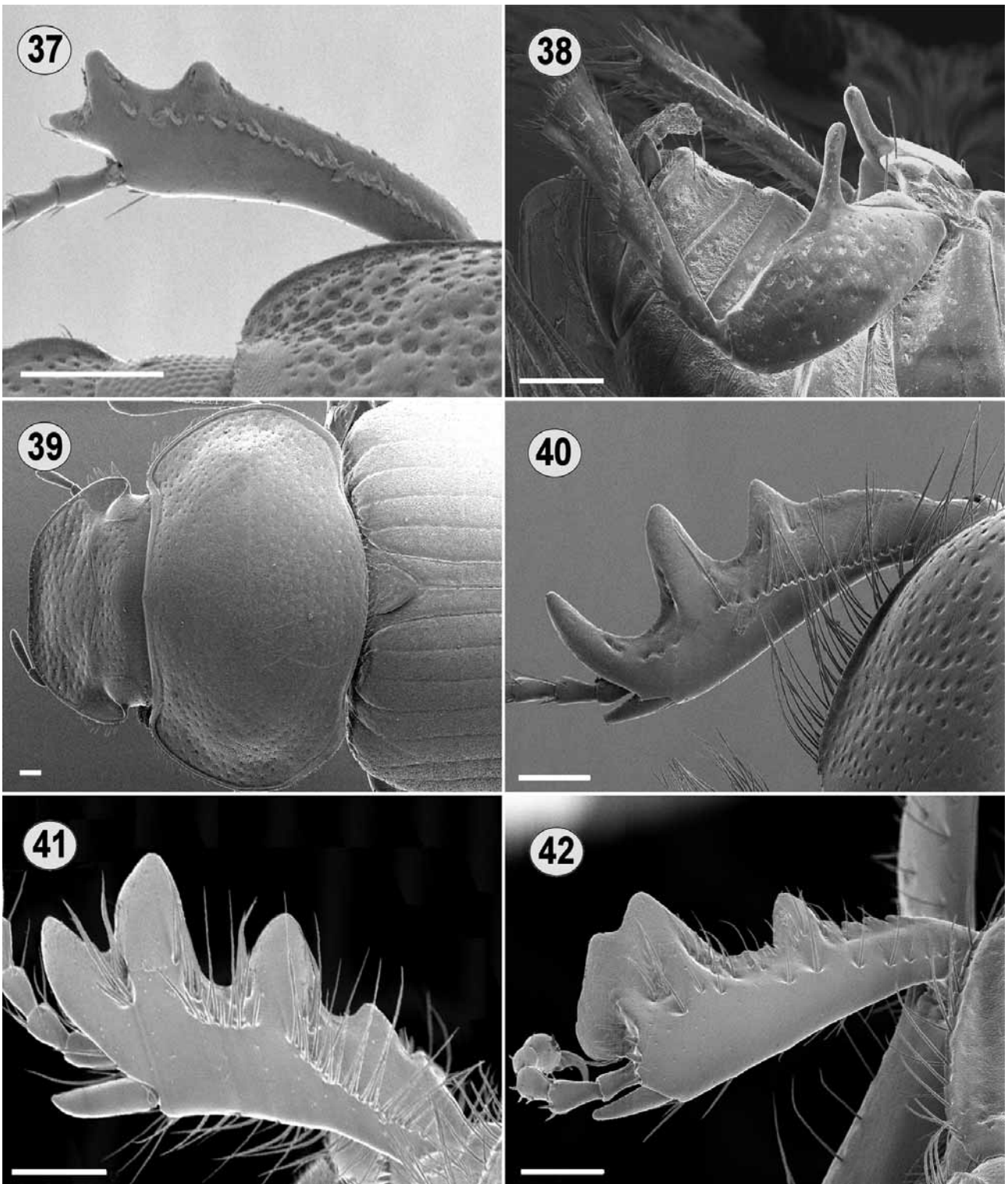


PLATE 7. Fig. 37. *Acanthaphodius bruchi* protibia; Fig. 38. *Acanthaphodius bruchi* metafemur male; Fig. 39. *Podotenus* (*Pseudopodotenus*) *fulviventris* head to elytral base; Fig. 40. *Orodaliscoides reflexus* protibia; Fig. 41. *Orodaliscoides rugosiceps* protibia; Fig. 42. *Symphodon anomalus* protibia. Scale line = 0.2 mm.