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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 *Orodaliscoides 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.

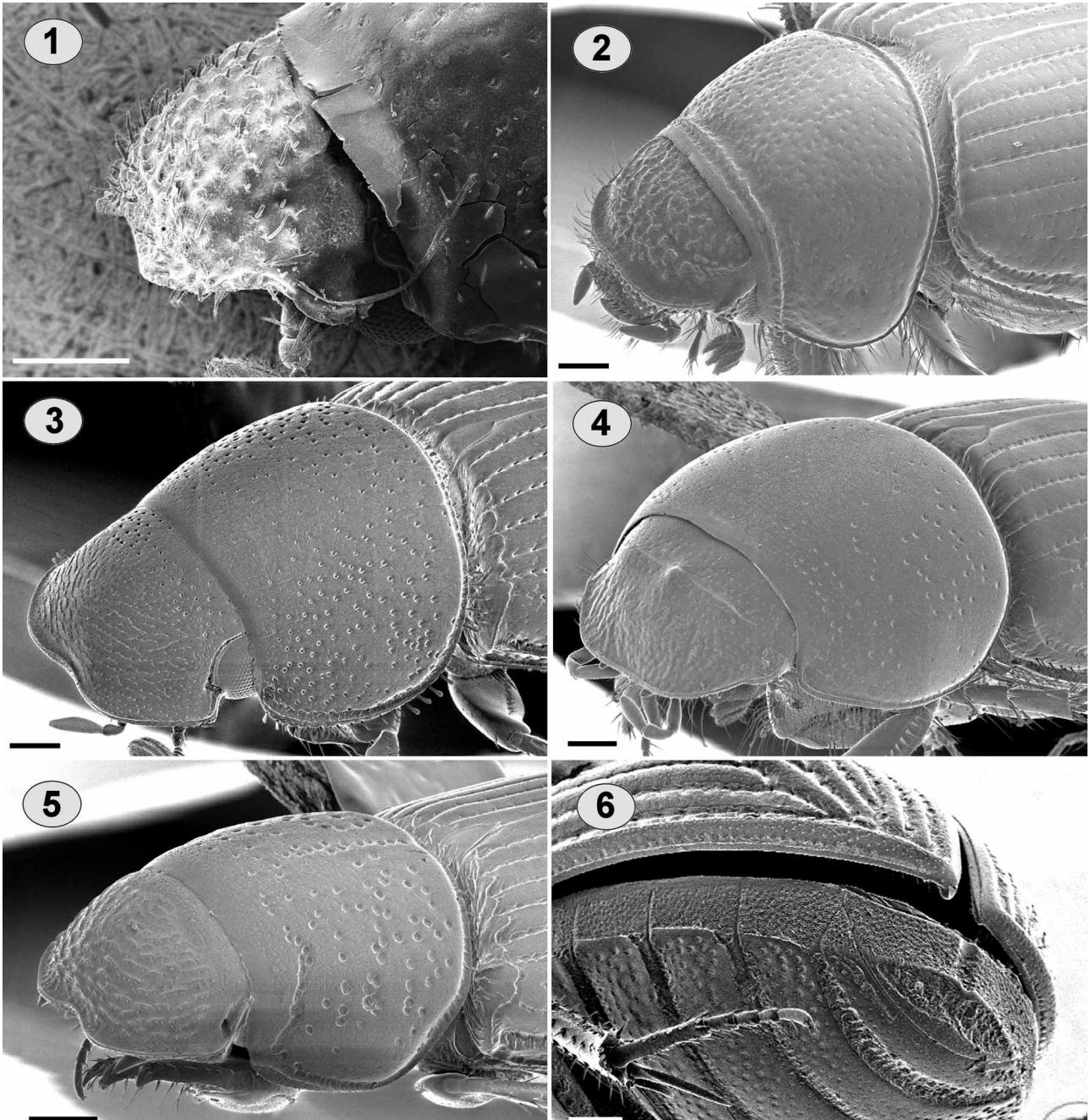


PLATE 1. Fig. 1. *Argeremazus neuquen*, head; Fig. 2. *Aegialia argentina* head to elytral base; Fig. 3. *Ataenius platen-sis* head to elytral base; Fig. 4. *Aphodius granarius* head to elytral base; Fig. 5. *Pleurophorus caesus* head to elytral base. Fig. 6. *Ataenius picinus* apex of abdomen and elytra.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

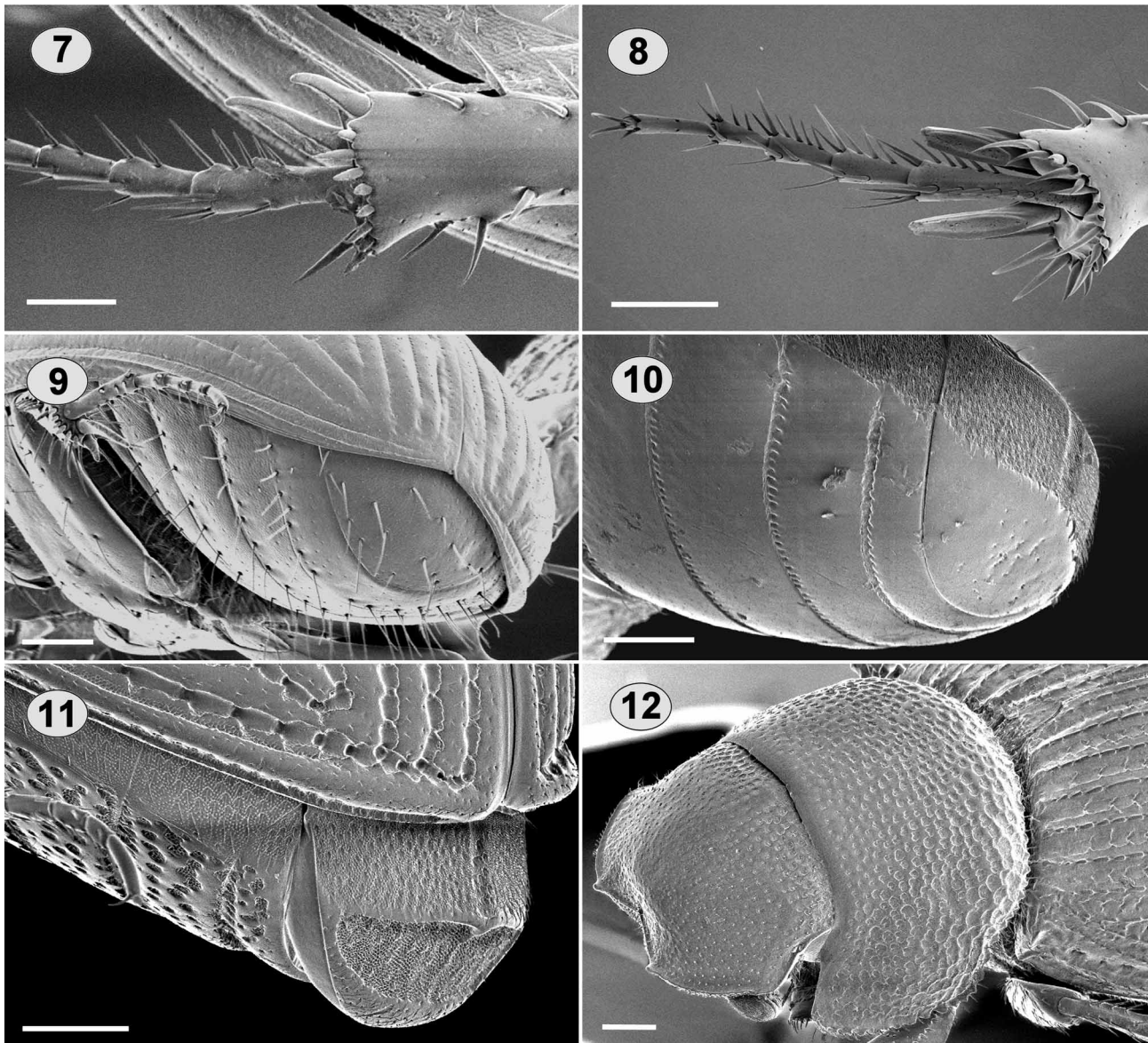


PLATE 2. Fig.7. *Aidophus infuscatopennis* metatibial apex, ventral view; Fig. 8. *Aphodius rubeolus* metatibial apex, ventral view; Fig. 9. *Aidophus parvus* apex of abdomen and elytra; Fig. 10. *Ataeniopsis haroldi* pygidium; Fig. 11. *Ataenius platensis* pygidium; Fig. 12. *Bruchaphodius shannoni* 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 punctation 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

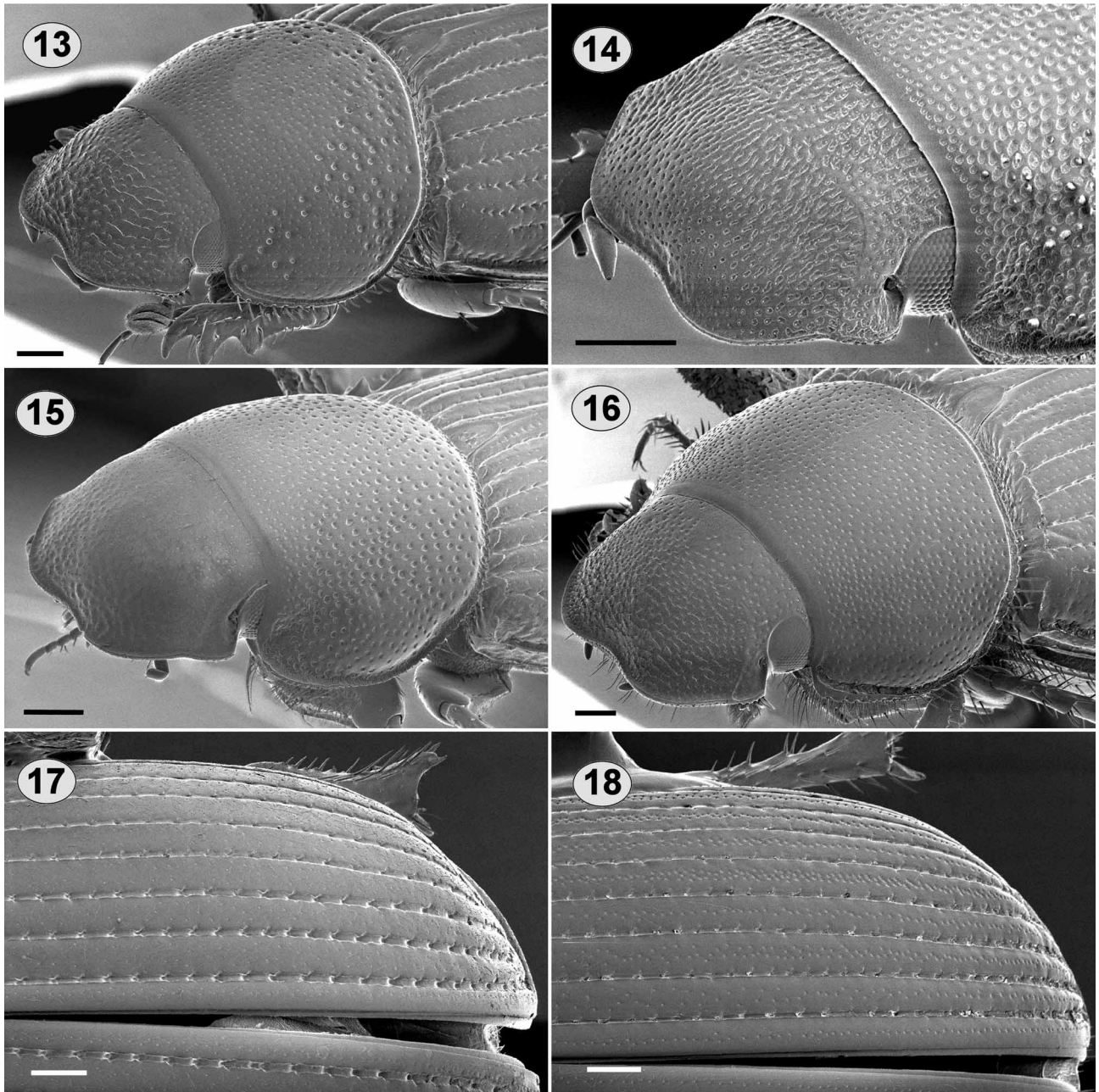


PLATE 3. Fig. 13. *Parataenius simulator* head to elytral base; Fig. 14. *Ataenius gracilis* head; Fig. 15. *Ataenius chilensis* head; Fig. 16. *Parataenius derbasis* head to elytral base; Fig. 17. *Parataenius simulator* elytral base; Fig. 18. *Parataenius derbasis* elytral base. Scale line = 0.2 mm.

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

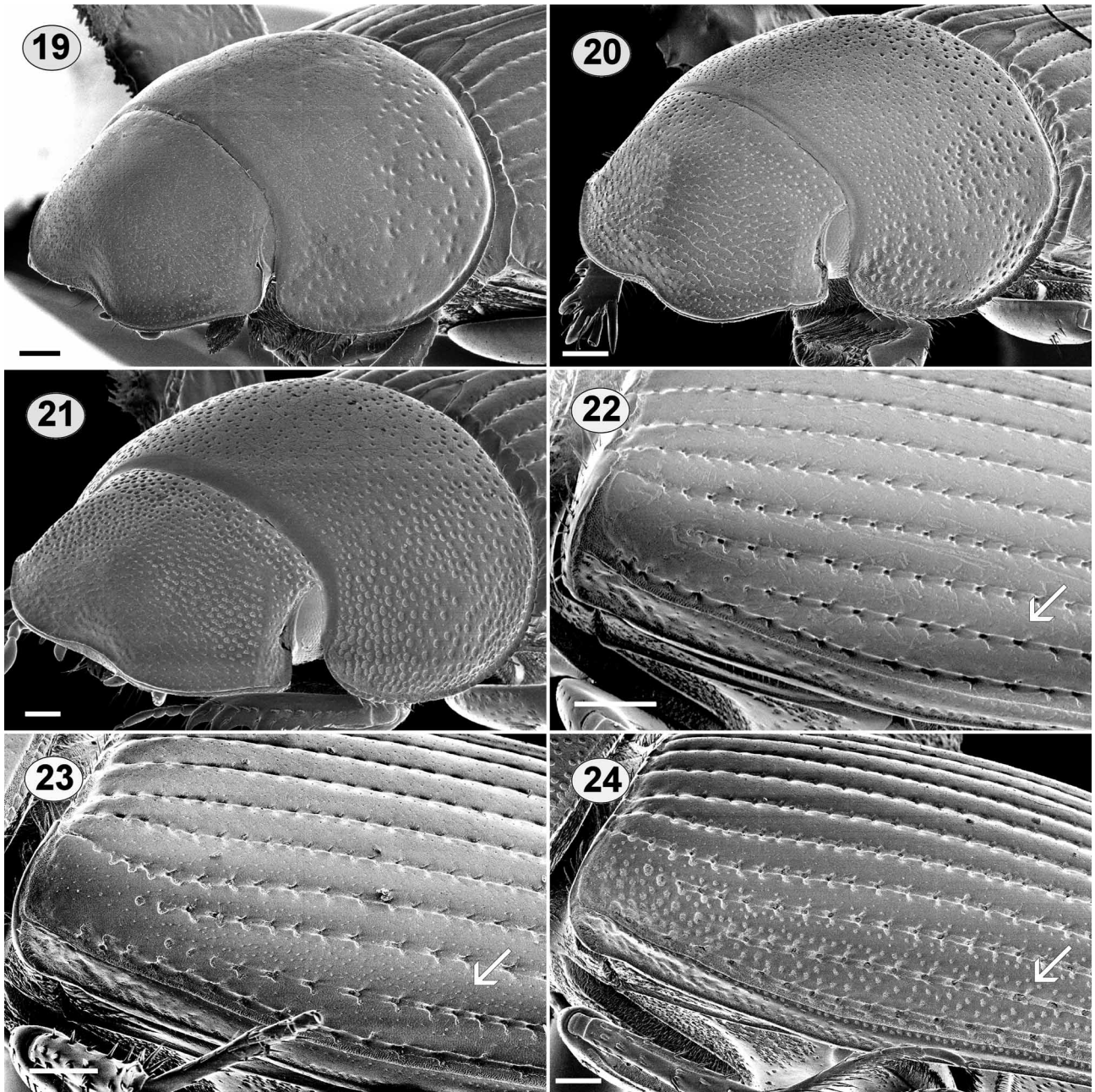


PLATE 4. Fig. 19. *Ataenius opatroides* head to elytral base; Fig. 20. *Ataenius picinus* head to elytral base; Fig. 21. *Ataenius strigicaudus* head to elytral base; Fig. 22. *Ataenius platensis* lateral elytron; Fig. 23. *Ataenius picinus* lateral elytron; Fig. 24. *Ataenius strigicaudus* lateral elytron.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

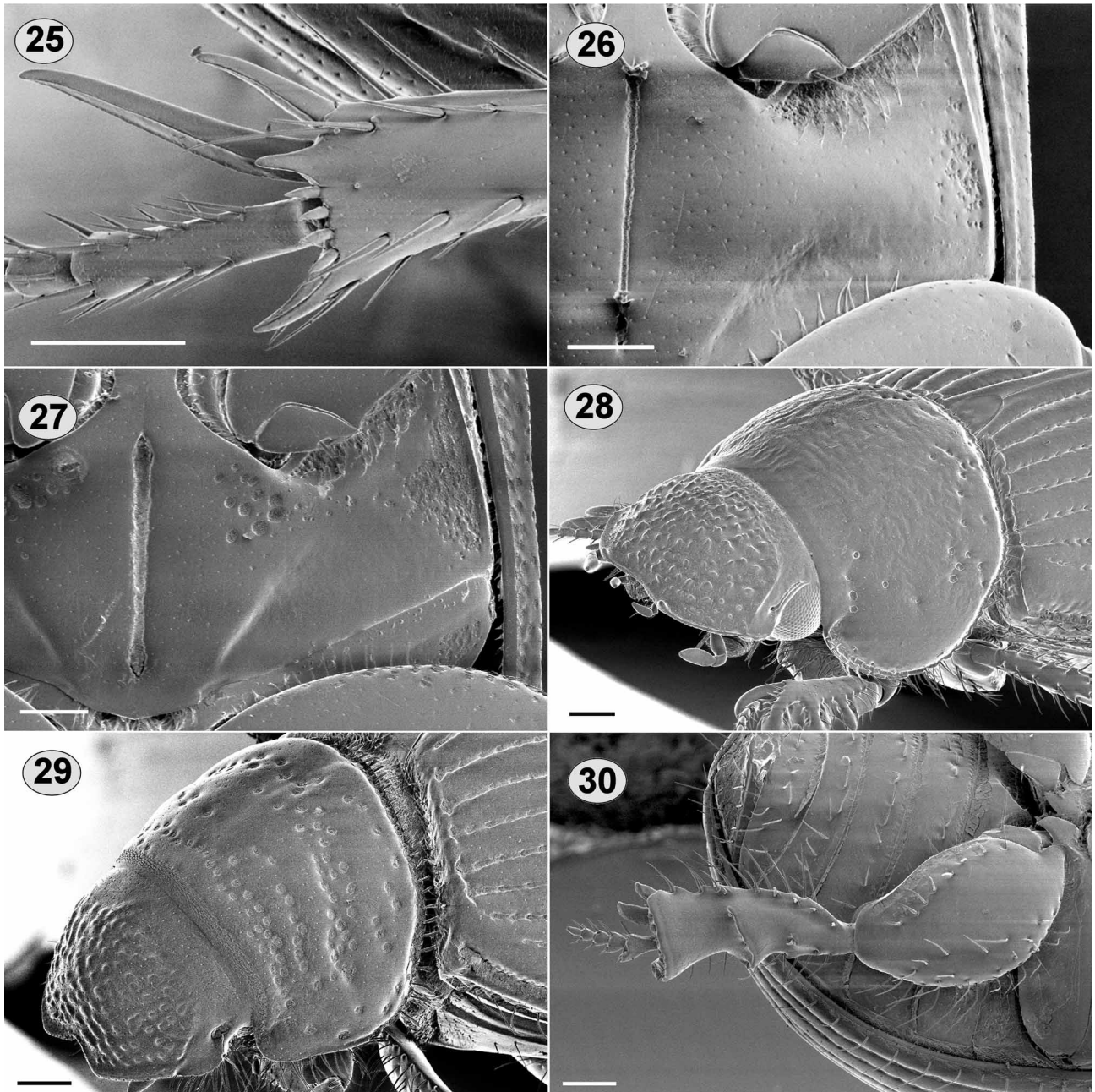


PLATE 5. Fig. 25. *Ataenius picinus* apex of metatibia; Fig. 26. *Ataenius picinus* metasternum; Fig. 27. *Ataenius strigicaudus* metasternum; Fig. 28. *Odontopsammodius cruentus* head to elytral base; Fig. 29. *Tesarius caelatus* head to elytral base; Fig. 30. *Tesarius caelatus* metafemur and tibia.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

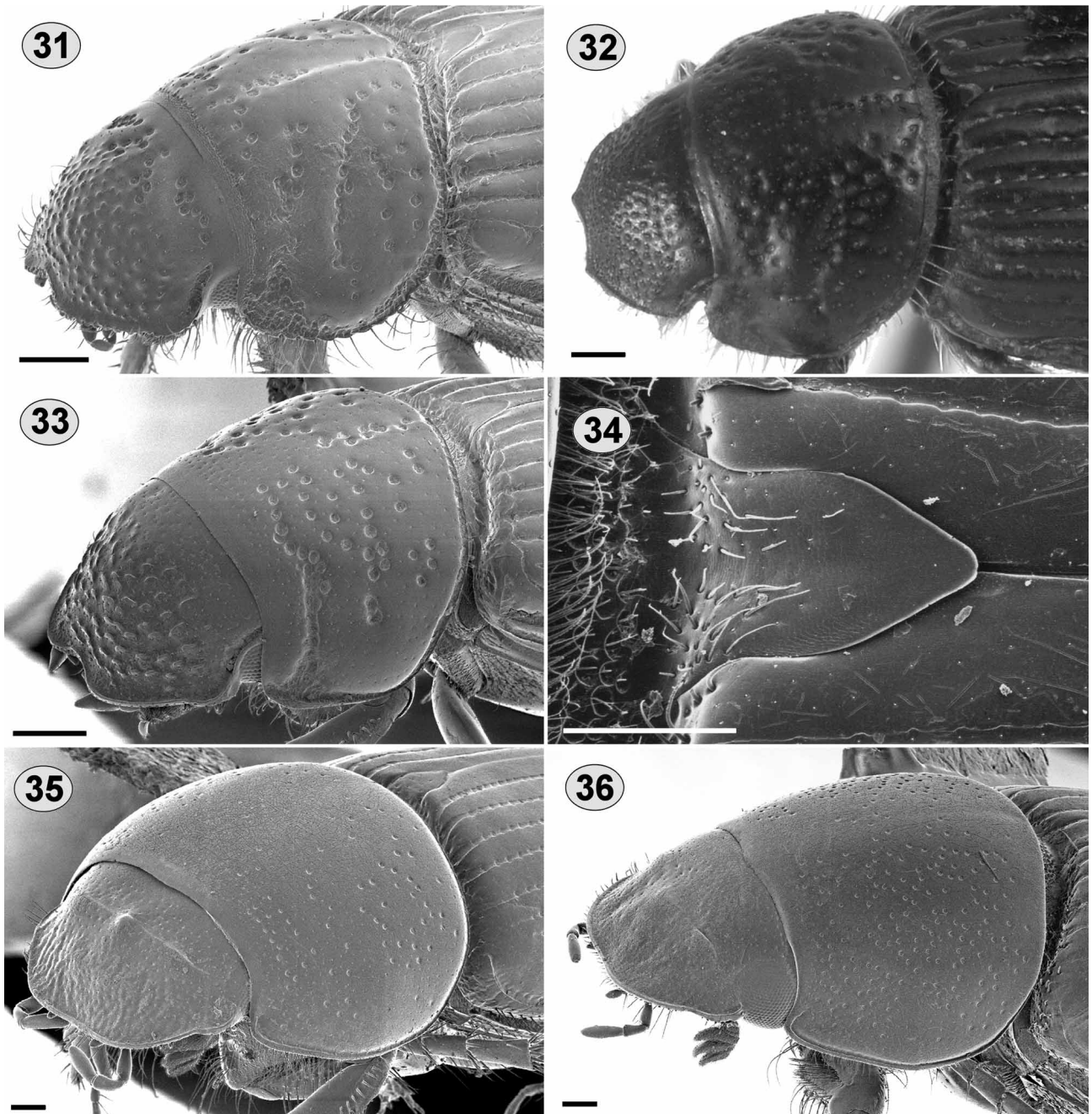


PLATE 6. Fig. 31. *Leiosammodium indefensus* head to elytral base; Fig. 32. *Leiosammodium placidus* (holotype) head to elytral base; Fig. 33. *Platytomus micros* head to elytral base; Fig. 34. *Aphodius granarius* scutellum; Fig. 35. *Aphodius granarius* head to elytral base; Fig. 36. *Aphodius pseudolividus*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

APHODIINI

- 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) pseudolivoides* 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.

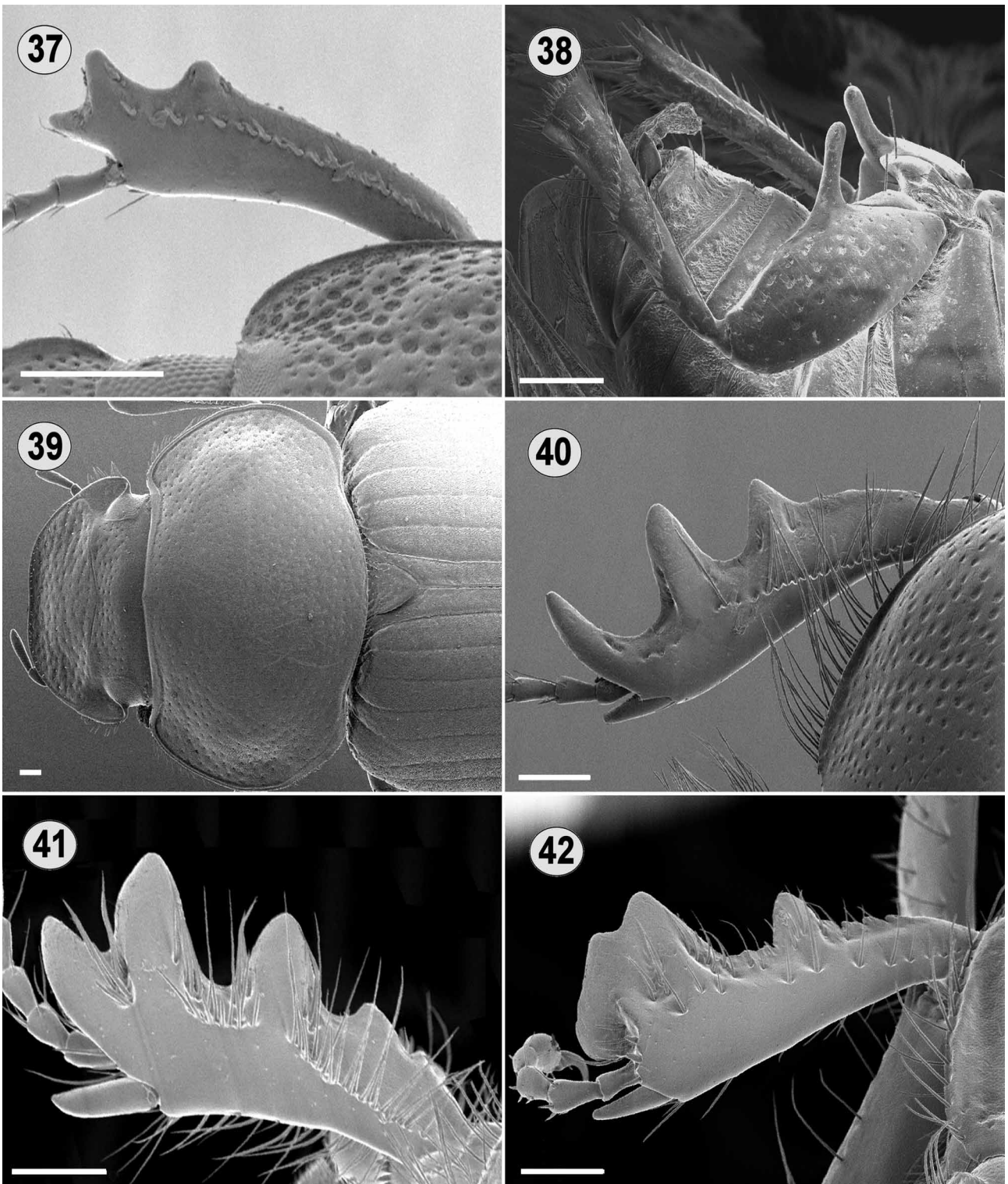


PLATE 7. Fig. 37. *Acanthaphodius bruchi* protibia; Fig. 38. *Acanthaphodius bruchi* metafemur male; Fig. 39. *Podotenus* (*Pseudopodotenus*) *fulviventris* head to elytral base; Fig. 40. *Orodaliscoides reflexus* protibia; Fig. 41. *Orodaliscoides rugosiceps* protibia; Fig. 42. *Symphodon anomalus*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

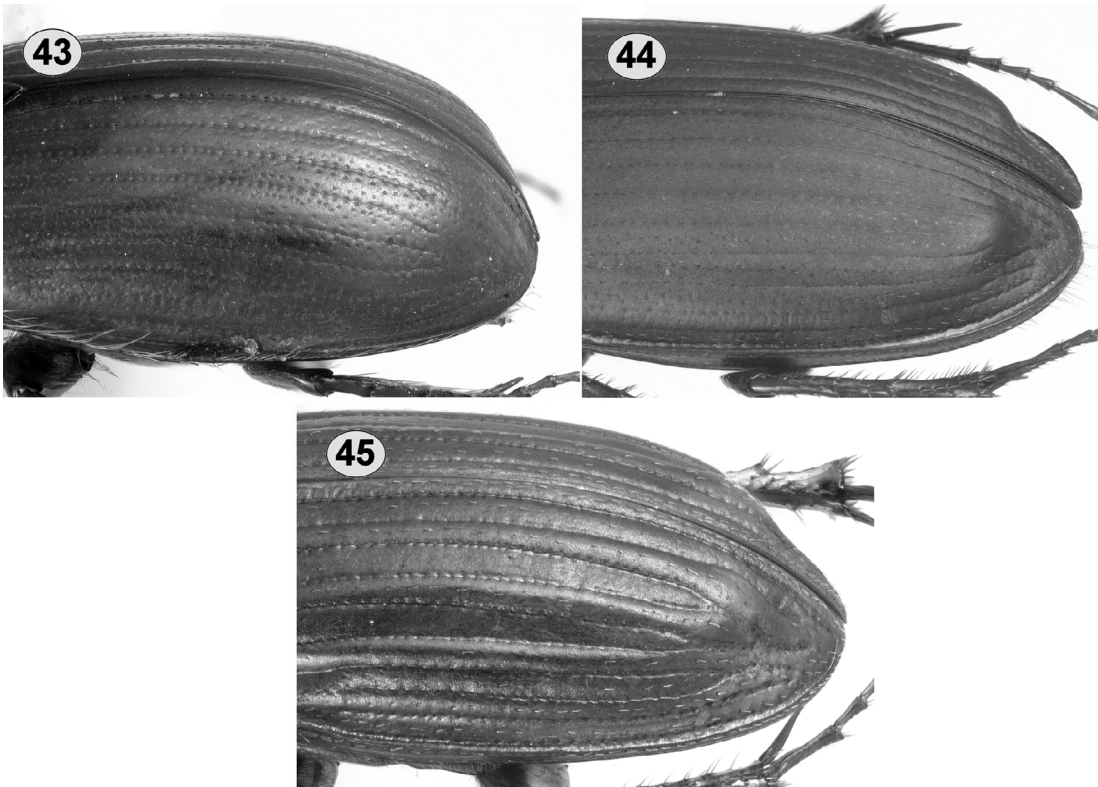


PLATE 8. Fig. 43. *Orodaliscoides reflexus* lateral apex of elytron; Fig. 44. *Podotenus fulviventris* lateral apex of elytron; Fig. 45. *Symphodon anomalus* lateral apex of elytron. Scale line = 0.2 mm.

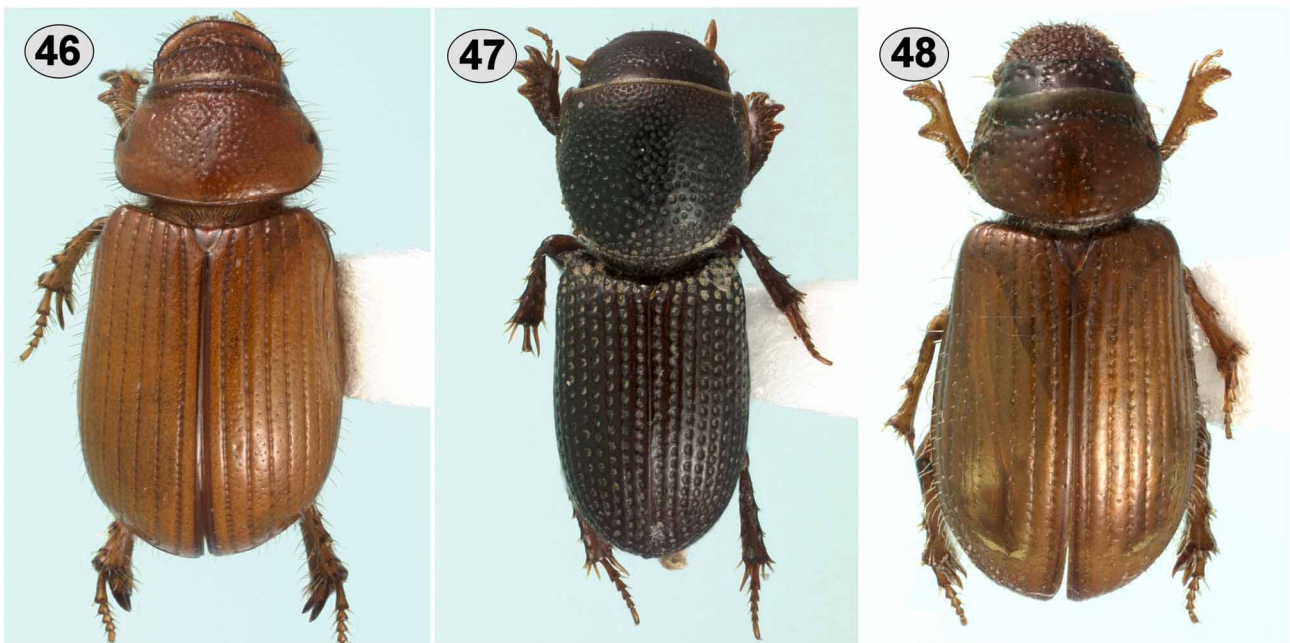


PLATE 9. Fig. 46. *Aegialia argentina* habitus; Fig. 47. *Amerisaprus valdivia* habitus; Fig. 48. *Argeremazus neuquen* habitus.

Remarks: This diverse group was most recently revised for the world (Stebnicka 1977), and North America (Gordon and Cartwright 1988). Keys to New World genera can be found in Stebnicka *et al.* (2004). All members appear to be detritivores, but details of their habits remain unknown. Three species of this tribe are known from southern South America; two are endemic.

Genus *Aegialia* Latreille, 1807

Aegialia Latreille, 1807: 96.

Type species: *Aphodius globosus* Illiger, 1798 by monotypy.

Diagnosis: Body usually globose. Clypeal surface rugose, not distinctly setose. Labrum and mandibles visible in antero-dorsal view (Fig. 2). Metafemur and metatibia broadened for burrowing. Metatibia with apical spurs separated by tarsus. Elytral striae distinct, elytral surface lacking setae.

Remarks: Primarily a holarctic subgenus, with one species known from South America. Many North American species are associated with sand dunes or riverine sand bars.

Aegialia argentina Martínez, Pereira, and Vulcano, 1970

(Figs. 2, 46)

Original combination: *Aegialia argentina* Martínez, Pereira, and Vulcano, 1970: 336.

Type locality: “Río Negro, San Antonio Oeste, Playa Las Grutas.”

Specimens examined: 7 specimens were examined from CMNC, FMNH.

Distribution: ARGENTINA (7). Río Negro (7): San Antonio Oeste (Las Grutas).

Outside the study area, this species has been recorded from Catamarca and La Rioja, Argentina (Martínez *et al.* 1970).

Temporal data: January (7).

Diagnosis: Length 4 mm. *Aegialia argentina* is the only member of the genus with two protibial teeth, and the only member of the genus presently known from South America.

Remarks: Unlike its northern relatives, *A. argentina* has been collected at lights. Further sifting of sand dunes in the interior of South America may yield more specimens and possibly more species of this group.

Genus *Amerisaprus* Stebnicka and Skelley, 2004

Amerisaprus Stebnicka and Skelley, 2004: 79 (in Stebnicka *et al.* 2004).

Type species: *Amerisaprus valdivia* Stebnicka and Skelley, 2004, by original designation.

Diagnosis: Body elongate. Mandibles exposed. Clypeus densely punctate, not rugose or setose. Metatibia with apical spurs not separated by tarsus. Flight wings lacking.

Remarks: This genus is monotypic and endemic to the study region. *Amerisaprus* appears most closely related to the genus *Saprus* Blackburn in Australia. It is likely that further collecting by sifting and use of the Berlese funnel will yield more records for this rare genus.

Amerisaprus valdivia Stebnicka and Skelley, 2004

(Fig. 47)

Original combination: *Amerisaprus valdivia* Stebnicka and Skelley, 2004: 79 (in Stebnicka *et al.* 2004).

Type locality: “Chile, Valdivia Prov., 34 km WNW La Unión.”

Specimens examined: 4 specimens were examined from MNNC, PESC.

Distribution: CHILE (4). X Región de Los Lagos (4): La Unión (34 km WNW), Parque Oncol (Sendero Tepual).

Temporal data: February (3), December (1).

Diagnosis: Length 3 mm. See genus diagnosis above.

Remarks: Being flightless, it is not surprising that this genus and species remained undiscovered for so long. It is considered to be a detritivore, but details of the natural history are unknown.

Genus *Argeremazus* Stebnicka and Dellacasa, 2004

Argeremazus Stebnicka and Dellacasa, 2004: 75 (in Stebnicka *et al.* 2004).

Type species: *Argeremazus neuquen* Stebnicka and Dellacasa, 2004 by original designation.

Diagnosis: Body robust, psammodiform. Head strongly convex; covered with distinct, erect setae. Metatibial spurs adjacent, not separated by metatarsus.

Remarks: This genus is monotypic and endemic to the study region. *Argeremazus* presents an unusual combination of characters; emphasis of different combinations indicating different tribal relationships. This taxon needs to be included in a more detailed analysis of higher Aphodiinae to help resolve its true relationships. For now, we leave it in the Aegialiini, pending further study.

***Argeremazus neuquen* Stebnicka and Dellacasa, 2004**

(Figs. 1, 48)

Original combination: *Argeremazus neuquen* Stebnicka and Dellacasa, 2004: 76 (in Stebnicka *et al.* 2004).

Type locality: “Argentina, Neuquen, Covunco.”

Specimens examined: 3 specimens were examined from CMNC, HAHC.

Distribution: ARGENTINA (3). Neuquén (3): Covunco.

Temporal data: February (2), December (1).

Diagnosis: Length 3 mm. The psammodiform body (Fig. 48) and distinctly setose head (Fig. 1) readily distinguish this species.

Remarks: Nothing is known about the habits of *A. neuquen*. Although there is no indication on the labels how they were collected, the localities of capture were in or near sand dune systems. Sifting sand, or use of barrier pitfalls at the appropriate time of year, may help yield additional specimens.

Tribe Proctophanini Stebnicka and Howden, 1995

Type genus: *Proctophanes* Harold, 1861: 111.

Diagnosis: Proctophanini are similar to Aphodiini in having an unmodified pygidium but differ in having metatibial spurs adjacent, not separated by the mesotarsus; in their general body shape, being more robust; and in having a metatibia with an oblique, transverse median carina.

Remarks: Proctophanini are somewhat intermediate between the Eupariini and Aphodiini. Members of Proctophanini are primarily Australian and African, with *Australaphodius frenchi* (see below) being widely introduced in the southern hemisphere.

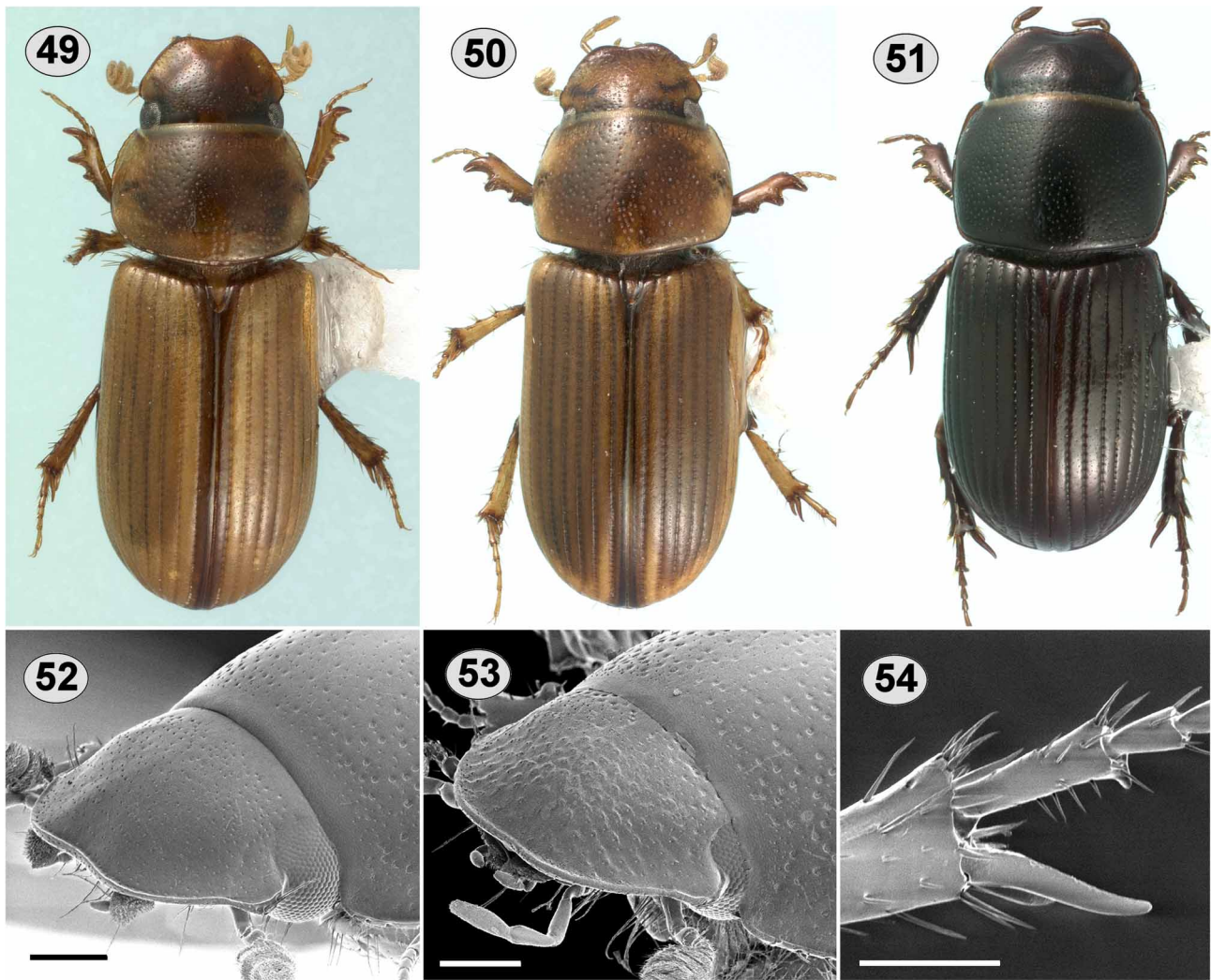


PLATE 10. Fig. 49. *Aidophus flaveolus* habitus; Fig. 50. *Aidophus infuscatopennis* habitus; Fig. 51. *Australaphodius frenchi* habitus; Fig. 52. *Aidophus flaveolus* head anterior-lateral; Fig. 53. *Aidophus infuscatopennis* head anterior-lateral; Fig. 54. *Australaphodius frenchi* male basal metatarsal segment. Scale line = 0.2 mm

Genus *Australaphodius* Balthasar, 1942

Aphodius (*Australaphodius*) Balthasar, 1942: 203.

Type species: *Aphodius melbournicus* Balthasar, 1942, by monotypy.

Synonym: *Phaeaphodius* Reitter, 1892: 67; type species: *Aphodius solskyi* Harold, 1871 by original designation.

Diagnosis: Color dark brown to black, without markings (Fig. 51). Labrum and mandibles not visible in antero-dorsal view, hidden beneath expanded clypeus. Head lacking tubercles. Elytral intervals not margined at base. Pygidium entirely smooth, unmodified. Metatibia with apical spurs not separated by tarsus. Male *A. frenchi* are unique in the study region for having a tooth on the inner apex of the basal metatarsomere (Fig. 54). This species is similar in general appearance to *Aphodius granarius*, being small, robust and black, but differing in adjacent placement of metatibial spurs and scutellum being triangular.

Remarks: This genus is primarily African, with one species being introduced in various regions (Dellacasa *et al.* 2002b).

***Australaphodius frenchi* (Blackburn, 1892)**

(Figs. 51, 54)

Original combination: *Aphodius frenchi* Blackburn, 1892: 35.

Type locality: “S. Australia and Victoria.”

Synonyms: *Aphodius ambiguus* Boheman, 1858: 51; type locality: “Promontorium Bonae Spei” South Africa.

Aphodius brevitarsis Péringuey, 1901: 388; type locality: “Cape Colony (Cape Town)” South Africa.

Aphodius tarsalis Schmidt, 1907: 201; type locality: “Cape Colony (Cape Town)” South Africa.

Aphodius melbournicus Balthasar, 1942: 203; type locality: “Süd-Australien.”

Aphodius catulus Balthasar, 1946: 54; type locality: “Africa austr., Caffraria, sine indicatione loci.”

Specimens examined: 53 specimens were examined from ABTS, CNCI, FMNH, JMEC, LEMQ, MEUC, MNNC, PESC, TMSA, UCCC, UMCE.

Distribution: CHILE (53). IV Región de Coquimbo (3): La Campana, La Herradura; V Región de Valparaíso (7): Concón, Viña del Mar; Región Metropolitana (11): Costa Santiago, El Convento, Rangué, Santiago; VII Región del Maule (4): Iloca; VIII Región del Bío-Bío (23): Chillán, Concepción (Escuadron), Concepción (Quebrada Honda, near Linrquén), Hualpén, Río Biobío, Villa Alegre (Curanilahué), Villa San Pedro; IX Región de la Araucanía (5): El Molco, Ercilla, Vilcún (Palihue).

Outside the study area, this species has been recorded from the Nearctic, Australia, New Zealand, and South Africa. (Dellacasa *et al.* 2002b).

Temporal data: February (1), March (1), May (2), July (2), August (11), September (11), October (5), November (18).

Diagnosis: Length 3–5 mm. See the genus diagnosis above.

Remarks: Apparently this species originated in Africa and has spread to several parts of the world (Stebnicka and Howden 1995), being first recorded in Chile by Stebnicka (2001). Based on label data we observed, this species has been present in Chile since at least 1940. Dellacasa *et al.* (2002b) also recorded this species from X Región de Los Lagos “Antillanca” in Chile based on a material from TMSA. However, we examined specimens and collecting records from TMSA and determined that this record is erroneous. The only Aphodiinae collected in Antillanca by Endrody-Younga on 29-X-1990 were *Aphodius granarius*.

Tribe Aphodiini Leach, 1815

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

Diagnosis: Head with clypeus covering mouthparts. Elytral base lacking marginal bead. Pygidium smooth, unmodified. Metatibial spurs separated by articulation of basal tarsal segment, metatibia usually with oblique, transverse carina.

Remarks: This tribe is worldwide in distribution and highly diverse, with nearly 2,500 species. However, the South American fauna is surprisingly depauperate compared to other continents, with only about 40 species known (at least 5 of which are introduced). Dellacasa *et al.* (2001) published a treatise covering the world taxa at the generic level, including a key to genera based on type species. In this work, the authors raised all subgenera of *Aphodius* to the generic rank, a controversial action poorly accepted by the taxonomic community. For example, the new *Catalogue of Palaearctic Coleoptera* (Löbl and Smetana 2006) reverts to a broad definition of *Aphodius* with numerous subgenera. However, the majority of the American fauna is distinct from the Palaearctic fauna and many deserve full generic status. In light of the fact that no phylogenetic hypothesis exists, we present a moderate approach to this issue, following the recent Palaearctic catalog regarding the introduced species, while continuing to recognize native taxa at a generic level.

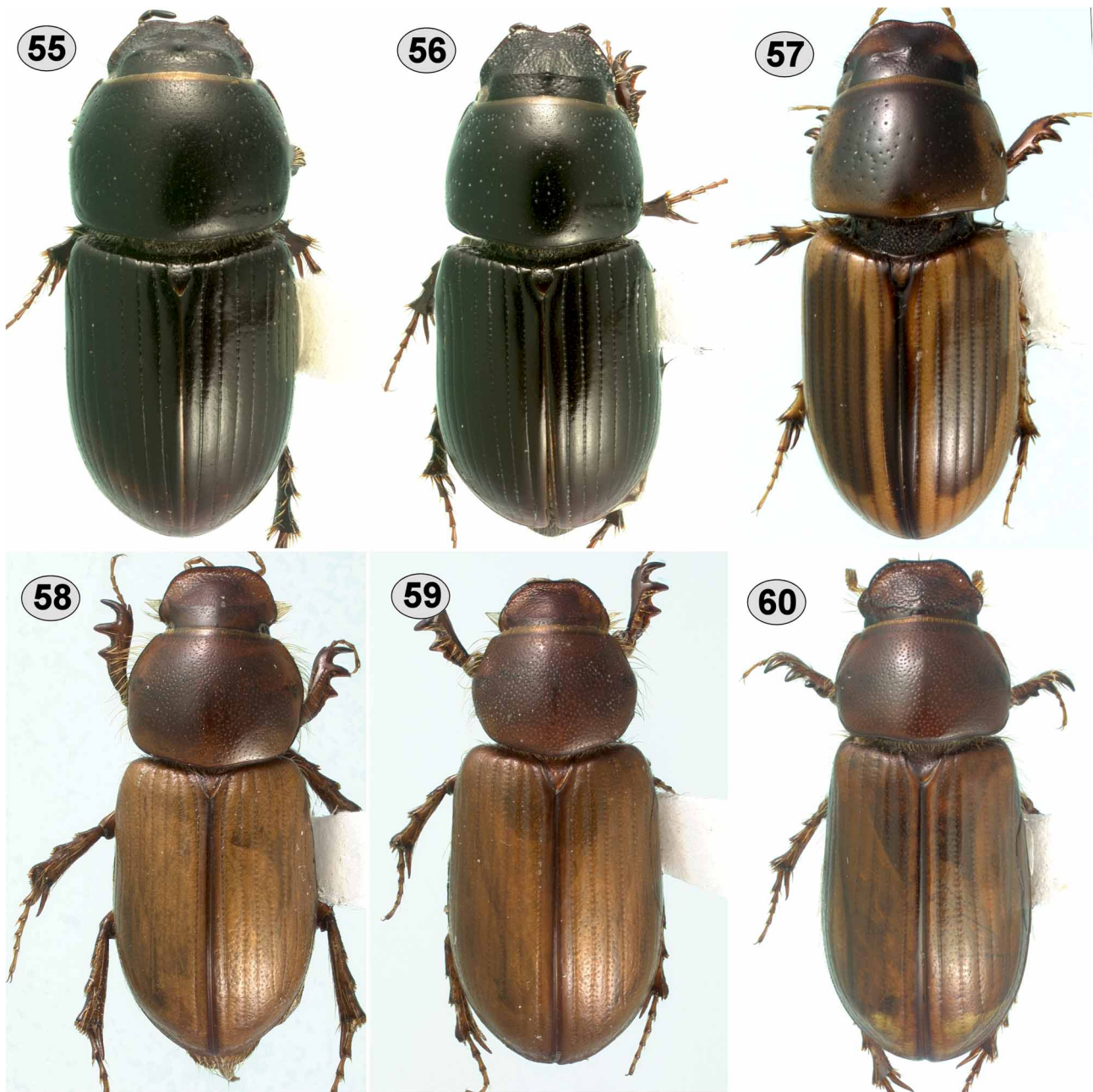


PLATE 11. Fig. 55. *Aphodius granarius* male habitus; Fig. 56. *Aphodius granarius* female habitus; Fig. 57. *Aphodius pseudolividus* habitus; Fig. 58. *Orodaliscoides reflexus* male habitus; Fig. 59. *Orodaliscoides reflexus* female habitus; Fig. 60. *Orodaliscoides rugosiceps* habitus.

The endemic Aphodiini for southern South America have been thoroughly described and illustrated by Dellacasa (1990, 1992) and Dellacasa and Gordon (1997), and are closely related to Australian Aphodiini. Stebnicka and Howden (1994, 1995) thoroughly revised the Australian Aphodiini. While recognizing many endemic Australian taxa, characters used by Stebnicka and Howden to distinguish genera imply closer relationships between the Australian and southern South American faunas than that indicated by Dellacasa (1990, 1992). For southern South America, we choose to recognize some truly endemic genera (*Acanthaphodius*, *Orodaliscoides*, *Symphodon*), while consolidating those showing closer relationships with Australian taxa as subgenera within the genus *Podotenus* (*Podotenus* + *Paramimbus* + *Pseudopodotenus*).

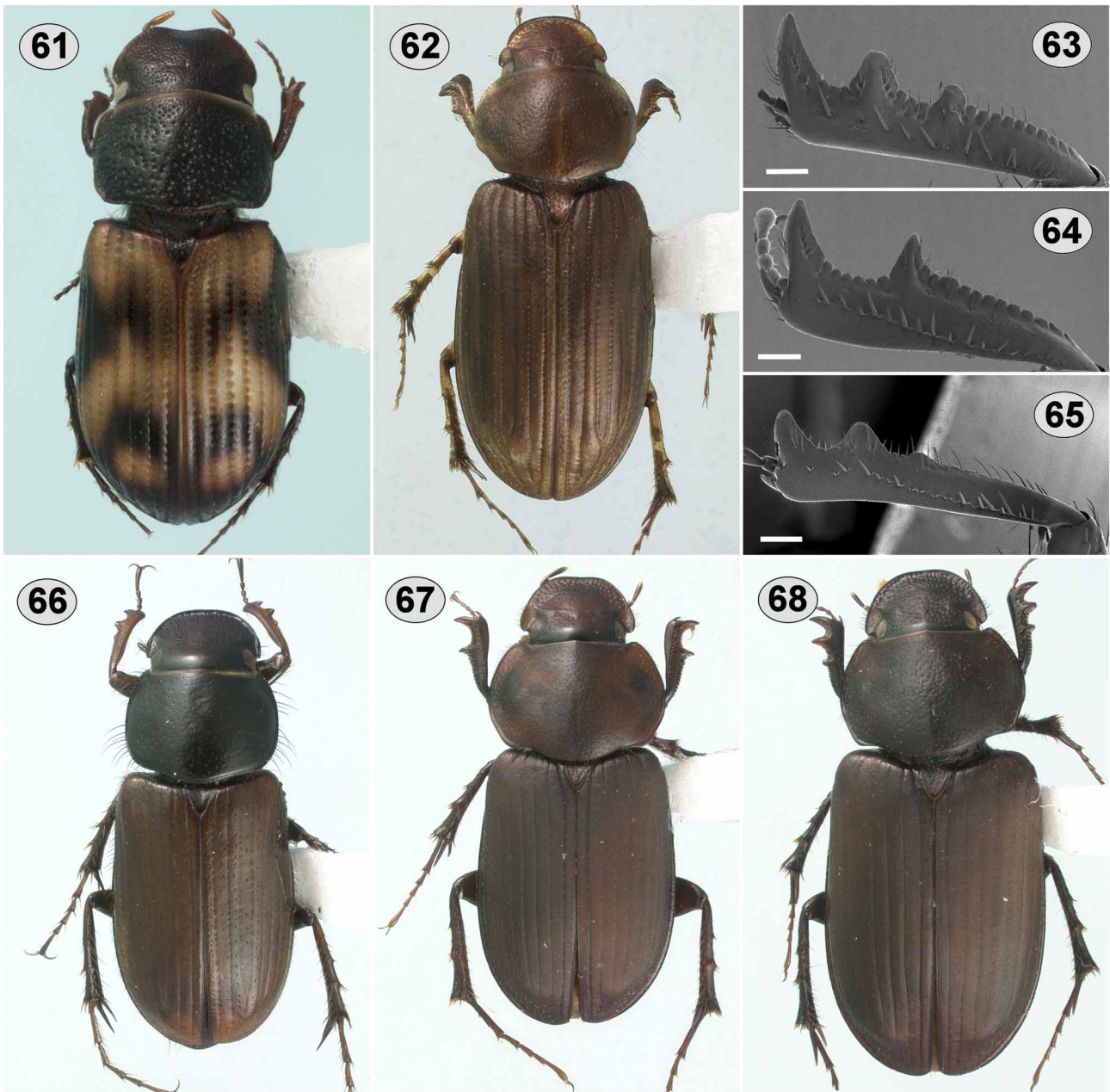


PLATE 12. Fig. 61. *Acanthaphodius bruchi* habitus; Fig. 62. *Symphodon anomalus* habitus; Fig. 63. *Podotenus fulviventris* female protibia; Fig. 64. *Podotenus fulviventris* male protibia; Fig. 65. *Podotenus (Paranimbus)* sp. male protibia; Fig. 66. *Podotenus (Paranimbus)* sp. male habitus; Fig. 67. *Podotenus fulviventris* male habitus; Fig. 68. *Podotenus fulviventris* female habitus. Scale line = 0.2 mm.

Genus *Acanthaphodius* Schmidt, 1909

Acanthaphodius Schmidt, 1909b: 67.

Type species: *Acanthaphodius bruchi* Schmidt, 1909 by monotypy.

Diagnosis: Size small, length 3–4 mm. Color with distinct light orange and dark brown color pattern (Fig. 61). Head lacking tubercles. Apical protibial tooth anteriorly pointing (Fig. 37). Metatibia with apical spurs separated by metatarsus. Males have a large, finger-like projection on the back margin of each metafe-mur (Fig. 38).

Remarks: A full description and illustrations of *Acanthaphodius* and the single included species are present in Dellacasa and Gordon (1997) and Dellacasa *et al.* (2001).

***Acanthaphodius bruchi* Schmidt, 1909**

(Figs. 37–38, 61)

Original combination: *Acanthaphodius bruchi* Schmidt, 1909b: 67.

Type locality: “Rio Negro.”

Type specimens: Lectotype male at the Museo Argentino de Ciencias Naturales, Buenos Aires (not examined). Lectotype designation by Dellacasa and Gordon (1997).

Specimens examined: 11 specimens were examined from ABTS, CMNC, FMNH, HAHC, PESC, SEMC.

Distribution: CHILE (11). V Región de Valparaíso (1): Olmué (Parque Nacional La Campana); VII Región del Maule (1): San Clemente (66.5 km E); IX Región de la Araucanía (2): Flor del Lago (15 km NE Villarrica), Lago Caburga (21 km NE Pucón); X Región de Los Lagos (7): Frutillar Bajo (Universidad de Chile Forest Reserve), La Unión (34 km WNW), Parque Nacional Puyehue (Lago Puyehue, 2 km W Termas de Puyehue), Parque Nacional Puyehue (Anticura).

Dellacasa and Stebnicka (2001a) also recorded this species from Neuquén and Río Negro in Argentina.

Temporal data: November (2), December (3).

Diagnosis: Length 3–4 mm. See genus diagnosis above.

Remarks: This distinctive species is rarely collected. The natural history is unknown, with most specimens being randomly collected in various traps. The male metafemoral peg is unique among aphodiines, and the female has only recently been described (Dellacasa and Stebnicka 2001a).

Genus *Aphodius* Illiger, 1798

Aphodius Illiger, 1798: 15.

Type species: *Scarabaeus fimetarius* Linnaeus, 1758 by subsequent designation (Latreille 1810).

Remarks: The genus *Aphodius* is a large and taxonomically difficult group that is currently in the process of being re-classified into dozens of genera. We found two species representing two subgenera of *Aphodius* as occurring in southern South America. Both of these species are introduced to southern South America and native to Europe and Africa.

Subgenus *Aphodius* (*Calamosternus*) Motschulsky, 1859

Calamosternus Motschulsky, 1859: 156.

Type species: *Scarabaeus granarius* Linnaeus, 1767 by monotypy.

Synonyms: *Megalismus* Mulsant and Rey, 1870: 209; type species: *Aphodius stercorarius* Mulsant and Rey, 1870 by subsequent designation (Dellacasa 1988).

Pseudesymsus d’Orbigny, 1896: 218; type species: *Aphodius lucidus* Klug, 1845 by monotypy.

Diagnosis: Color uniformly black (Figs. 55–56). Body robust. Head trituberculate. Pentagonal scutellum usually depressed below the surface of the elytra. Metatibia with apical spurs separated by metatarsus.

Remarks: Full description and illustrations of *Calamosternus* and its type species is present in Dellacasa *et al.* (2001).

***Aphodius (Calamosternus) granarius* (Linnaeus, 1767)**

(Figs. 34–35, 55–56)

Original combination: *Scarabaeus granarius* Linnaeus, 1767: 547; type locality: “Europa.”

Synonyms: *Scarabaeus quadrituberculatus* Fabricius, 1798: 23; type locality: “America.”

Aphodius niger Creutzer, 1799: 20; type locality: Wien.

Aphodius carbonarius Sturm, 1805: 128; type locality: Deutschland.

Aphodius haemorrhous Stephens, 1830: 196; type locality: “Suffolk, and within the metropolitan district” (Britain).

Aphodius lucens Stephens, 1830: 196; type locality: “within the metropolitan district, and in Norfolk” (Britain).

Aphodius emarginatus Stephens, 1830: 198; type locality: “near London.”

Aphodius melanopus Stephens, 1830: 198; type locality: “throughout the metropolitan district; also in Suffolk and Norfolk” (Britain).

Aphodius elongatus Ménétries, 1832: 182; type locality: “Bakou.”

Aphodius retusus Walth, 1835: 67; type locality: Spain.

Aphodius suturalis Faldermann, 1835: 259; type locality: “Persico-Armeniaca.”

Aphodius concolor Mulsant, 1842: 199; type locality: “France.”

Aphodius cribratus Mulsant, 1842: 199; type locality: “France.”

Aphodius moestus Mulsant, 1842: 199; type locality: “France.”

Aphodius parcepunctatus Mulsant, 1842: 199; type locality: “France.”

Aphodius rugosulus Mulsant, 1842: 199; type locality: “France.”

Aphodius aterrimus Melsheimer, 1846: 136; type locality: “Maryland” (United States).

Aphodius adelaidae Hope, 1847: 284; type locality: “New Holland.”

Aphodius metallicus Haldeman, 1848: 105; type locality: “Maryland.”

Aphodius spretus Haldeman, 1848: 106; type locality: “Middle States” (U.S.A.).

Aphodius hypocrita Mulsant and Rey, 1870: 449 (Mulsant and Rey 1870b); type locality: “France.”

Aphodius vagus Marseul, 1878: 56; type locality: Batna, Algeria.

Aphodius basilaris Dalla Torre, 1879: 107; type locality: Linz, Austria.

Aphodius thoracicus Dalla Torre, 1879: 107; type locality: “Oberösterreich” (Austria).

Aphodius apicalis Ragusa, 1883: 290; type locality: Caronie, Sicilia, Italy.

Aphodius inutilis Horn, 1887: 50; type locality: “San Francisco, Cal., and in Oregon.”

Aphodius brunnescens Reitter, 1892: 51; type locality: “Araxes und Syrien.”

Aphodius fuscus Bouskell, 1901: 19; type locality: Dover, Great Britain.

Aphodius ragusanus Reitter, 1906: 718 (Heyden *et al.* 1906); type locality: Sicily.

Aphodius nama Kolbe, 1908: 126; type locality: South Africa.

Aphodius signatus Schmidt, 1916: 99; type locality: “Oberösterreich” (Austria).

Aphodius pirinensis Balthasar, 1946: 62; type locality: “Bulgaria (Macedonia), Montes Pirin.”

Aphodius tilgranicus Nakane, 1966: 232; type locality: Afghanistan.

Specimens examined: 107 specimens were examined from ABTS, CMNC, CNCI, HAHC, JMEC, LEMQ, MEUC, MNNC, TMSA, UCCC, UMCE.

Distribution: ARGENTINA (6): Neuquén (1): Embalse Ezequiel Ramos Mexia; Río Negro (2): Bariloche, Coronel Gómez; Chubut (3): El Turbio, Pico Salamanca.

CHILE (101). IV Región de Coquimbo (1): Corral de Julio; V Región de Valparaíso (20): Cuesta El Melón, Portillo; Región Metropolitana (21): Alhué (Alto Cantillana), Cerro El Roble, Maipú (La Rinconada), Lagunillas, Ñuñoa, Rangué, Santiago, Santiago (El Canelo); VI Región de O’Higgins (3): R. N. Río Cipreses; VIII Región del Bío-Bío (1): Las Trancas; IX Región de la Araucanía (2): El Molco, Ercilla; X Región de Los

Lagos (50): Antillanca, Isla Teja, La Unión (36 km W), Maullín junction (5 km N), Osorno (15 km S), Terao (5 km NW), Valdivia; No Data (3).

Schmidt (1931) also recorded this species from Isla Juan Fernández.

Outside the study area, this cosmopolitan species has been recorded from the Palaearctic; Africa; Asia; Australia; New Zealand; North America; Buenos Aires, Argentina; and III Región de Atacama, Chile (Stebnicka and Howden 1995, Stebnicka 2001, Löbl and Smetana 2006).

Temporal data: February (1), May (1), August (1), September (13), October (56), November (28), December (1).

Diagnosis: Length 4–6 mm. See subgenus diagnosis above. A highly variable species as indicated by the large synonymy. Males have broad pronotum and smoother clypeus; females have narrower pronotum and rugose clypeus (Figs. 55–56).

Remarks: *Aphodius granarius* is a widespread, introduced species throughout the world, although it appears to become readily established in more temperate regions. It is common wherever cows and other European farm animals are found. Harold (1868) first reported this species in Chile.

Subgenus *Aphodius* (*Labarrus*) Mulsant and Rey, 1870

Aphodius (*Labarrus*) Mulsant and Rey, 1870: 516.

Type species: *Scarabaeus lividus* Olivier, 1789 by monotypy.

Synonym: *Aphodius* (*Pseudocalamosternus*) Balthasar, 1936: 1; type species: *Aphodius* (*Pseudocalamosternus*) *rigidus* Balthasar, 1936 by monotypy.

Diagnosis: Body robust. Pale brown and black color pattern is similar only to members of *Aidophus* in South America (Figs. 49–50, 57). Head with tubercles on frontal suture (Fig. 36). Pronotum lacking basal marginal line (Fig. 36). Scutellum pentagonal. Metatibia with apical spurs separated by metatarsus.

Remarks: A full description and illustrations of *Labarrus* and its type species are present in Dellacasa *et al.* (2001). Members of the genus *Aidophus* in South America have similar color pattern to *Aphodius* (*Labarrus*) species. *Aidophus* are easily distinguished by lacking the frontal tubercles (Figs. 52–53), having a triangular scutellum, and in having the metatibial spurs adjacent (Fig. 7).

Aphodius (*Labarrus*) *pseudolividus* Balthasar, 1941

(Figs. 36, 57)

Original combination: *Aphodius pseudolividus* Balthasar, 1941: 148.

Type locality: “America meridionale, di diverse località, specialmente dei dintorni di Buenos Aires, Fran Chaco, Paraguay.”

Specimens examined: 160 specimens were examined from ABTS, CMNC, CNCI, HAHC, JMEC, LEMQ, MEUC, MNNC, TMSA, UMCE.

Distribution: ARGENTINA (8): Neuquén (4): Embalse Ezequiel Ramos Mexia, Neuquén, Piedra del Aguila, Senillosa; Río Negro (4): Colonia Josefa, Dto. Gral Roca, Julian Romero.

CHILE (152). IV Región de Coquimbo (12): Divisadero (Punitaqui), La Herradura, Talanquén; V Región de Valparaíso (77): Bosque Mataveri (Isla de Pascua), Cuesta El Melón, Hanga Roa (Isla de Pascua), Portillo; Región Metropolitana (27): Bellavista (Florida), Cerro Manquehue, Chacabuco (Colina), La Florida, Lago Rapel, Paliocabe, Río Clarillo, Santiago (Lagunillas), Talagante; VI Región de O’Higgins (7): Colchagua (Lolol), Coltauco, Machalí, Nancagua; VII Región del Maule (8): Altos de Vilches, Cauquenes (15 km E), Cordillera Parral (Fundo Malcho), Curicó, Río Teno, Talca (Tonlema); VIII Región del Bío-Bío (14): Con-

cepción, Cordillera Chillán (Recinto), Florida, Puente Marchant, Río Renaico; IX Región de la Araucanía (3): Angol, Cherquenco, Ercilla; X Región de Los Lagos (4): Maullín junction (5 km N), Santo Domingo.

Dellacasa *et al.* (2002a) recorded a few more localities from within the provinces and regions listed above.

Outside the study area, this species has been recorded from Australia; New Zealand; Oceania; central and southern Africa; the Nearctic; Mexico; Central America; the West Indies; Venezuela; Brazil; Ecuador; Peru; Bolivia; Paraguay; Uruguay; Argentina: Catamarca, Tucumán, Misiones, Salta, Santiago del Estero, Córdoba, Entre Ríos, La Rioja, La Pampa, Buenos Aires, Mendoza; and Chile: I Región de Tarapacá, III Región de Atacama (Dellacasa *et al.* 2002a).

Temporal data: January (10), February (14), March (26), April (1), May (1), June (1), July (1), August (1), September (1), October (8), November (78), December (6).

Diagnosis: Length 4–6 mm. See subgenus diagnosis above.

Remarks: *Aphodius pseudolividus* is part of a worldwide complex of species often lumped under *Aphodius lividus* (Olivier). While species of the *A. lividus*-complex show a number of distinguishing features, they can be subtle. Dellacasa *et al.* (2002a) presented a key to the three species of the *A. lividus*-complex occurring in the New World. At present all specimens studied from southern South America are *A. pseudolividus*, a widespread species in the New World.

Aphodius pseudolividus can be the most commonly collected species in an area, adults being found in a wide variety of dung. They are frequently attracted to lights, accounting for their large numbers in collections. Based on our observations of label data, this species has occurred in Chile since at least 1949. Gutiérrez (1950) first reported *Aphodius pseudolividus* from Isla de Pascua (as *Aphodius lividus*).

Genus *Orodaliscoides* Schmidt, 1913

Aphodius (Orodaliscoides) Schmidt, 1913: 145.

Type species: *Aphodius rugosiceps* Harold, 1859 by subsequent designation (Dellacasa 1988).

Diagnosis: Body reddish brown. Head lacking tubercles on frontal suture. Head and pronotum not flattened as in *Podotenus*. Protibia with three distinct teeth in both sexes (Figs. 40–41). Pronotum broader in males than females (Figs. 58–59). There is a lot of variation in the pronotal shape between males and females, and between members of the same sex within a series. Females tend to have the base of the pronotum somewhat constricted, males the base often has a notable posterior angle. Elytron lacking apical umbone (Fig. 43). Pygidium entirely smooth, unmodified. Metatibia with apical spurs separated by metatarsus.

Remarks: This genus is endemic to the study region and contains two species. A full description and illustrations of *Orodaliscoides* and its type species are present in Dellacasa and Gordon (1997) and Dellacasa *et al.* (2001). *Orodaliscoides* shares many characters with *Symphodon*, *Podotenus*, and a few other Australian genera, but has a less flattened body shape, thicker clypeal margin, elytral intervals not alternately modified, both sexes with three protibial teeth (Fig. 40), and males with broader pronotum than females (Figs 58–59). *Orodaliscoides* appears more closely related to *Acrossidius* Schmidt in Australia than to other South American taxa. A thorough phylogenetic analysis of the Australian and South American genera is needed to gain a better understanding of their relationships.

Specimens of *Orodaliscoides* are rare in collections but seem to be attracted to light. The natural history of the species in this genus is unknown.

***Orodaliscoides reflexus* (Schmidt, 1910)**

(Figs. 40, 43, 58–59)

Original combination: *Aphodius reflexus* Schmidt, 1910: 357.

Type locality: “Argentina.”

Type specimens: *Aphodius reflexus* lectotype at NHRS examined. Lectotype labeled: “Valparaiso” (handwritten), “TYPUS” (typeface on red paper), “REP. ARGENTINA / PROV / Chubut / M. RICHTER” (typeface and handwritten), “reflexus m.” (handwritten), “LECTOTYPE / *Aphodius reflexus* Schmidt / des. P. E. Skelley-06” (typeface on red paper), “Southern Neotropical Scarabs / database # AS2604956 / *Orodaliscoides reflexus* / (Schmidt, 1910) / DET: P.E.SKELLEY 2006” (typeface). **Lectotype here designated.** A lectotype is designated to stabilize the nomenclature of this species. At least one additional paralectotype specimen was reportedly deposited in the J. Richter collection in Buenos Aires (Schmidt 1910). The current location of this specimen and the existence of other paralectotypes are unknown.

Specimens examined: 62 specimens were examined from ABTS, HAHC, LEMQ, NHRS, PESC, TMSA.

Distribution: ARGENTINA (62): Neuquén (40): General Roca, Lago Blanco, Piedra del Aguila, Sa. Vaca Muerta; Río Negro (11): Coronel Gómez; Chubut (10): Comodoro Rivadavia (S), Golfo San Jose (Peninsula Valdes); No Data (1).

Temporal data: January (1), November (23), December (37).

Diagnosis: Length 5–7 mm. Similar to *O. rugosiceps* except from Argentina; clypeus usually evenly rounded (clypeus rarely parallel-sided) (Figs. 58–59); gena weakly prominent; pronotum anterior angle not prominent (not explanate), pronotum posterior angle usually not evident, pronotal lateral margin fringed with extremely long setae; all protibial teeth equidistant (Fig. 40), protibia usually broad and stout.

Remarks: The protibial tooth placement character is the best to use in distinguishing *O. reflexus* from Argentina and *O. rugosiceps* from Chile. However, several individuals from Argentina show considerable variation in characters listed above. They varied as much from typical specimens as they did from each other and were initially considered new species. Characters that varied included the clypeus (often parallel-sided), pronotal (some notably constricted at base), and protibial shape and placement of teeth. Some were intermediate between character states of *O. reflexus* and *O. rugosiceps*, while others (like an elongated protibia) appeared distinct. However, these specimens were collected as part of series of normal specimens. Thus, it is premature to describe them as new until more data is available. For now, we consider them unusual specimens of *O. reflexus*.

***Orodaliscoides rugosiceps* (Harold, 1859)**

(Figs. 41, 60)

Original combination: *Aphodius rugosiceps* Harold, 1859: 213.

Type locality: “Chili.”

Type specimens: Lectotype and five paralectotypes at MNHN examined. Lectotype labeled: “Chili” (handwritten), “Ex-Musaeo E.Harold” (typeface), “Aphodius / rugosiceps / Harold, 1859 / Lectotypus ♂ / des. Dellacasa & / Gordon 1997” (handwritten on red paper), “Southern Neotropical Scarabs / database # AS2599013 / *Aphodius rugosiceps* Harold, / 1859 / DET: P.E.SKELLEY 2005” (typeface). One paralectotype labeled: “Ex-Musaeo E.Harold” (typeface), “rugosiceps / Harold / type” (handwritten), “LECTOTYPE / Aphodius / rugosiceps / Harold / Gordon 1971” (red typeface and bland handwritten), “APHODIUS RUGOSICEPS HAROLD PARALECTOTYPE A.B.T.SMITH” (typeface on yellow paper), “Southern Neotropical Scarabs / database # AS2599016 / *Aphodius rugosiceps* Harold, / 1859 / DET: P.E.SKELLEY 2005” (typeface). One paralectotype labeled: “Ex-Musaeo E.Harold” (typeface), “APHODIUS RUGOSICEPS

HAROLD PARALECTOTYPE A.B.T.SMITH" (typeface on yellow paper), "Southern Neotropical Scarabs / database # AS2599014 / *Aphodius rugosiceps* Harold, / 1859 / DET: P.E.SKELLEY 2005" (typeface). Three paralectotypes with the same labels as the preceding except with database # AS2599017, AS2599018, and AS2599019. Lectotype designation by Dellacasa and Gordon (1997). Although two different specimens listed above had lectotype labels, it is clear that the first one listed is the lectotype validly designated by Dellacasa and Gordon (1997) because it bears the label "Aphodius / rugosiceps / Harold, 1859 / Lectotypus ♂ / des. Dellacasa & / Gordon 1997." The specimen labeled "LECTOTYPE / Aphodius / rugosiceps / Harold / Gordon 1971" was never validly designated and, as a result of the Dellacasa and Gordon (1997) designation, is now a paralectotype.

Specimens examined: 44 specimens were examined from ABTS, FMNH, HAHC, JMEC, MNHN, MNNC, PESCA, UCCC, UMCE.

Distribution: CHILE (44). V Región de Valparaíso (12): Cerro Campanita, Palmas de Ocoa, Parque Nacional La Campana (Sector Granizo, Cajón La Opositora), Quillota, Río Blanco, Río Blanco (Los Andes); Región Metropolitana (19): Chacabuco (Caleu), Guardia Vieja, Quilicura, Santiago, Tiltil (Caleu); VII Región del Maule (3): Cauquenes, El Maule, Río Maule; No Data (10).

Temporal data: January (1), February (1), November (6), December (24).

Diagnosis: Length 5–7 mm. Similar to *O. reflexus* except from Chile; clypeal margin evenly rounded (not parallel-sided) (Fig. 60); gena weakly prominent; pronotal anterior angle more prominent (weakly explanate), pronotal posterior angle usually evident, pronotal lateral margin fringed with long setae; apical protibial teeth (1+2) closer than next two teeth (2+3) (Fig. 41), protibia broad and stout.

Remarks: Specimens studied varied some in a few characters, but were less variable than that seen in some members of *O. reflexus*. See remarks for the preceding species. Dellacasa and Gordon (1997) incorrectly stated that this species occurs in Peru.

Genus *Podotenus* Schmidt, 1913

Aphodius (Podotenus) Schmidt, 1913: 137

Podotenus Schmidt: Stebnicka and Howden, 1994: 18.

Type species: *Aphodius insignior* Blackburn, 1904: 156 by subsequent designation (Dellacasa 1988).

Synonym: *Trogaphodius* Balthasar 1965: 311; type species: *Trogaphodius tuberculatus* Balthasar, 1965: 311 by monotypy.

Diagnosis: Head nearly flat and semicircular, without tubercles (Figs. 66–68). Pronotum flattened, pronotal posterior angle usually not evident, base broadly rounded to distinctly constricted and lobed (Figs. 66–68). Elytral intervals not margined at base, smoothly rounded; alternating elytral intervals raised, widened, or with broad, flattened tubercles; elytra usually with notable apical umbone (Fig. 44). Pygidium entirely smooth, unmodified. Metatibia with apical spurs separated by metatarsus. Sexual dimorphism occurring on the protibia: males with tibia elongate usually bearing 2 teeth, often a weak third tooth (Figs. 64–65); females with tibia not elongated, bearing 3 teeth (Fig. 63).

Remarks: The nominate subgenus is endemic to Australia and was revised by Stebnicka and Howden (1994). As mentioned above, there is a lot of work needed to better understand the relationship between the Australian and New World members of *Podotenus* and related genera. Along with *Pseudopodotenus* Dellacasa (discussed below), the only other American subgenus that we consider to be a member of *Podotenus* is *Paranimbus* Schmidt. Upon careful examination of various species of the New World genera *Paranimbus* and *Pseudopodotenus*, it became obvious that there was much character overlap between these three genera. We have studied several new species of this group from Andean countries that alter our understanding of the American members. Thus, we follow the broader concept of *Podotenus* as outlined by Stebnicka and Howden

(1994, 1995) and here reduce both *Paranimbus* Schmidt and *Pseudopodotenus* Dellacasa to subgenera of *Podotenus* (**new status**). New combinations resulting here but not discussed further include: *Podotenus* (*Paranimbus*) *longitarsis* (Harold, 1860), *Podotenus* (*Paranimbus*) *penai* (Petrovitz, 1970), *Podotenus* (*Paranimbus*) *peruanus* (Erichson, 1834), and *Podotenus* (*Paranimbus*) *zoiai* (Dellacasa, 1990). Members of *Podotenus* (*Paranimbus*) occur in Andean countries (Colombia to Chile), but outside of the area covered in this study. Dellacasa (1990) published a key to the species of *Podotenus* (*Paranimbus*) and Stebnicka and Howden (1994) published a key to known species of *Podotenus* (*Podotenus*). *Podotenus* (*Pseudopodotenus*) was described and discussed in Dellacasa (1992).

Subgenus *Podotenus* (*Pseudopodotenus*) Dellacasa, 1992 new status

Aphodius (*Pseudopodotenus*) Dellacasa, 1992: 152.

Type species: *Aphodius fulviventris* Fairmaire and Germain, 1860 by original designation.

Diagnosis: This subgenus is recognized by the prominent pronotal posterior angle (Figs. 39, 67–68) and by the male lacking a third protibial tooth (Fig. 64).

Remarks: This subgenus is monotypic and endemic to the study region. In the Neotropics, *Pseudopodotenus* is the only *Podotenus* relative that has notable posterior pronotal angles and males with three protibial teeth. However, some members of Australian *Podotenus* share these characters. More detailed analysis is needed before *Pseudopodotenus* can be considered a distinct genus.

***Podotenus* (*Pseudopodotenus*) *fulviventris* (Fairmaire and Germain, 1860) new combination**

(Figs. 39, 44, 63–64, 67–68)

Original combination: *Aphodius fulviventris* Fairmaire and Germain, 1860: 268.

Type locality: “Chili.”

Type specimens: Lectotype and two paralectotypes at MNHN examined. Lectotype labeled: “1319” (handwritten), “MUSEUM PARIS / Collection Léon Fairmaire / 1906” (typeface on light green paper), “Aphodius / fulviventris / Fairm. / Chili” (handwritten), “LECTOTYPE / Aphodius / fulviventris / Fairmaire / Gordon 1970” (red typeface and black handwritten), “Aphodius / fulviventris Fairm. / v. / G. Dellacasa 1989” (handwritten and typeface), “Southern Neotropical Scarabs / database # AS2598745 / *Podotenus fulviventris* / (Fairmaire / & Germain, 1860) / DET: A.B.T.Smith 2005” (typeface). One paralectotype labeled: “MUSEUM PARIS / Collection Léon Fairmaire / 1906” (typeface on light green paper), “PARALECTOTYPE” (typeface on red paper), “Aphodius fulviventris Fairmaire” (handwritten), “Southern Neotropical Scarabs / database # AS2598746 / *Podotenus fulviventris* / (Fairmaire / & Germain, 1860) / DET: A.B.T.Smith 2005” (typeface). One paralectotype with the same labels as the preceding except with database # AS2598747. Lectotype designation by Dellacasa (1992).

Specimens examined: 143 specimens were examined from ABTS, CMNC, CNCI, HAHC, FMNH, FSCA, JMEC, LEMQ, MEUC, MNHN, MNNC, PESC, TMSA.

Distribution: ARGENTINA (13): Neuquén (12): Huahum, Lolog (7 km N San Martín de los Andes), Pucará, San Martín de los Andes; Río Negro (1): Villa La Angostura (near Laguna Verde).

CHILE (130). VII Región del Maule (5): Cordillera Parral (Fundo Malcho), Cordillera Parral (Las Cruces), Reserva Nacional Altos del Lircay (near Piedras Tacitas Centro de Visitantes); VIII Región del Bío-Bío (9): Cordillera Chillán, Cordillera Ñuble, Las Trancas; IX Región de la Araucanía (91): Caramávida (W Cordillera Nahuelbuta), Cerros de Nahuelbuta, Cordillera de Las Raíces (Lonquimay), Cunco, Lago Caburga

(21 km NE Pucón), Malalcahuello (12 km E), Manzanar, Manzanar (20 km E), Parque Nacional Nahuelbuta (Los Portones entrance), Parque Nacional Nahuelbuta (near Guarderia Coimallin), Parque Nacional Nahuelbuta (Pichinahuel), Parque Nacional Tolhuaca (N of Curacautín), Parque Nacional Villarrica (10 km S Pucón), Salto de la Princesa (25 km E Curacautín), Termas Río Blanco, Tinquilco (E Lago Tinquilco), Villa Portales (7 km W), Villa Portales (15 km W), Volcán Llaima (N), Volcán Lonquimay, Volcán Villarrica; X Región de Los Lagos (20): Chihuío, Lagos (36 km W La Unión), Panquipulli, Parque Nacional Puyehue (Antillanca road), Reserva Nacional Mocho-Choshuenco, Valdivia; No Data (5).

Temporal data: January (16), October (15), November (31), December (74).

Diagnosis: Length 8–11 mm. This large species is recognized by being entirely black dorsally (Figs. 67–68), but having an orange abdomen.

Remarks: Adults of this species are commonly collected in cow and human dung. Their larval and adult natural history before cattle were introduced remain unknown.

Genus *Symphodon* Schmidt, 1913

Aphodius (*Symphodon*) Schmidt, 1913: 128; Dellacasa, 1992: 154.

Type species: *Aphodius anomalus* Harold, 1874 by monotypy.

Diagnosis: Superficially, resembles *Orodelisoides*. Head without tubercles. Elytral intervals not margined at base, smoothly rounded; with preapical umbone (Fig. 45). Pygidium entirely smooth, unmodified. Protibial teeth broadened with apical two widely fused (Fig. 42). Metatibia with apical spurs separated by metatarsus.

Remarks: This genus is monotypic and endemic to the study region. A full description of *Symphodon* and its type species can be found in Dellacasa (1992) and Dellacasa *et al.* (2001). In many characters and general gestalt, *Symphodon* appears closely related to *Orodelisoides*; in some characters it appears closer to *Podotenus*. Males are unknown for *S. anomalus* and male characters are needed to better understand relationships within the Australian-New World complex of Aphodiini. For now, we consider *Symphodon* a distinct genus.

Symphodon anomalus (Harold, 1874)

(Figs. 42, 45, 62)

Original combination: *Aphodius anomalus* Harold, 1874: 185.

Type locality: “Chili.”

Type specimens: Lectotype male at the Museum für Naturkunde der Humboldt-Universität, Berlin (not examined). Lectotype designation by Dellacasa (1992).

Specimens examined: 15 specimens were examined from ABTS, FMNH, HAHC, JMEC, MNNC, PES, USNM.

Distribution: CHILE (15). V Región de Valparaíso (3): Olmué (Parque Nacional La Campana); VIII Región del Bío-Bío (12): Cordillera Chillán, Piedras Comadres (Cordillera Chillán), Puente Marchant (Cordillera Chillán), Las Trancas.

Temporal data: January (7), December (8).

Diagnosis: Length 6–7 mm. See genus diagnosis above.

Remarks: A rarely collected species whose habits are unknown.

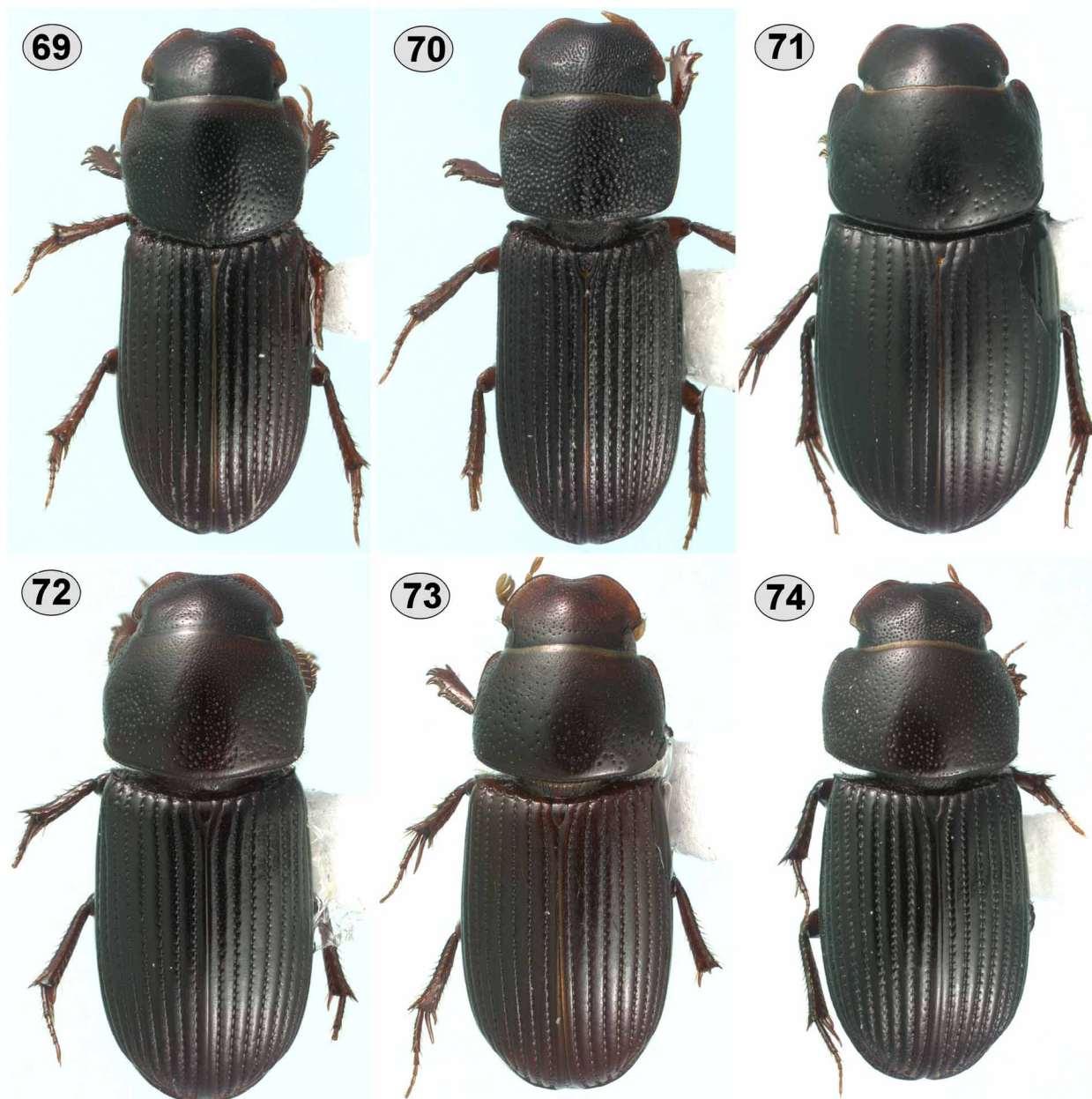


PLATE 13. Fig. 69. *Ataenius chilensis* habitus; Fig. 70. *Ataenius gracilis* habitus; Fig. 71. *Ataenius opatroides* habitus; Fig. 72. *Ataenius picinus* habitus; Fig. 73. *Ataenius platensis* habitus; Fig. 74. *Ataenius strigicaudus* habitus.

Tribe Eupariini Schmidt, 1910

Type genus: *Euparia* LePeletier and Serville, 1828: 357.

Diagnosis: Head usually lacking prominent granules (Figs. 12–13). Elytra with distinct basal margin (Figs. 3, 5). Pygidium with longitudinal groove at base and usually with apical eroded area (Figs. 6, 10–11). Pronotum usually lacking groves or rows of punctures. Metafemur usually not notably swollen.

Remarks: Eupariini have a worldwide distribution, but are primarily tropical. The tribe is most prominent in the New World tropics, with around 300 species presently known in South America. Recent revisionary work by Z. T. Stebnicka on the New World fauna is greatly increasing our understanding of the group, and her relevant papers are cited where appropriate.

The widespread genus *Ataeniopsis* is similar to various eupariines in southern South America. One species, *Ataeniopsis haroldi* (Steinheil), occurs just north of the study area in Argentina, and its presence in the

study area is expected. *Ataeniopsis* is most readily distinguished from other New World eupariines by being elongate, parallel-sided, black and glossy, having angulate clypeus, and (most notably) in lacking the eroded apical half of the pygidium (Fig. 10).

In general, the Eupariini appear to be detritivores, at least in the larval stages. Adults of some species are commonly collected in dung; others are attracted to light. Details of the natural history for most species remain unknown.

Genus *Ataenius* Harold, 1867

Ataenius Harold, 1867: 82.

Type species: *Ataenius scutellaris* Harold, 1867 by subsequent designation (Chapin 1940).

Synonyms: *Aphodius* Motschulsky, 1862: 55; type species: *Aphodius castanicolor* Motschulsky, 1858 by subsequent designation (Dellacasa *et al.* 2001).

Hexalus Mulsant and Rey, 1870: 200; type species: *Hexalus simplicipes* Mulsant and Rey, 1870 by monotypy.

Pseudammoecius Schmidt, 1913: 160; type species: *Aphodius australasiae* Boheman, 1858 by monotypy.

Placopterus Chalumeau, 1983: 144; type species: *Ataenius tuberculatus* Schmidt 1911 by monotypy.

Diagnosis: Within the Eupariini, *Ataenius* is highly variable and best defined by characters it lacks. It is the central core of taxa from which other genera have been recognized. Members are solid black to reddish brown, head usually with weak transverse wrinkles, clypeus dentate or not, tibia usually only moderately widened at apex, and pygidium with apical half eroded.

Remarks: This highly diverse genus contains nearly 200 species in the New World. Stebnicka is actively revising New World members of *Ataenius* and has several papers yet to finish before the fauna is completely covered. Several members of the southern South America fauna have been included in these revisions, while others remain to be revised.

Ataenius chilensis (Solier, 1851) new combination

(Figs. 15, 69)

Original combination: *Aphodius chilensis* Solier, 1851: 72.

Type locality: “Coquimbo y Santiago.”

Synonym: *Ataenius modestus* Schmidt, 1912: 199; type locality: “Chile.” **New synonymy.**

Type specimens: *Aphodius chilensis* lectotype at MNHN examined. Lectotype labeled: “Coquimbo / & / Santiago” (handwritten), “MUSEUM PARIS / CHILI / GAY 15-43” (typeface), “15 / 43” (handwritten on underside of round green label), “Aphodius / chilensis Sol / Coquimbo et / Santiago” (handwritten), “APHODIUS / CHILENSIS / SOLIER / LECTOTYPE SKELLEY / & SMITH” (handwritten and typeface on red label), “Southern Neotropical Scarabs / database # AS2599069 / *Ataenius chilensis* (Solier, 1851) / DET: A.B.T.SMITH 2005” (typeface). **Lectotype here designated.** A lectotype is designated to stabilize the nomenclature of this species since the name has been misapplied for over a century. The location and existence of paralectotypes is unknown.

Ataenius modestus lectotype at NHRS examined. Lectotype labeled: “TYPUS” (typeface on red label), “Chili. / Germain” (typeface), “At. modestus / Type m.” (handwritten), “215 / 64” (typeface and handwritten on red label), “22 / 79” (typeface and handwritten on red label), “Lectotype, At / modestus Sch. / Des. F. Chalumeau 80” (handwritten and typeface), “LECTOTYPE” (typeface on red label), “LECTOTYPE / *Atae-*

nus / *modestus* Schmidt / des. P. Skelley-06” (red label), “Southern Neotropical Scarabs / database # AS2607011 / *Ataenius chilensis* (Solier, 1851) / DET: P.E.SKELLEY 2006” (typeface). **Lectotype here designated.** One paralectotype at NHRS labeled: “Chili. / Germain” (typeface), “PARALECTOTYPE / *Ataenius* / *modestus* Schmidt / des. P. Skelley-06” (yellow label), “Southern Neotropical Scarabs / database # AS2607012 / *Ataenius chilensis* (Solier, 1851) / DET: P.E.SKELLEY 2006” (typeface). Two additional paralectotypes at NHRS labeled as the preceding but with database numbers “-AS2607013” and “AS2607014.” A lectotype is designated to stabilize the nomenclature of this species since the name has been just discovered to be a junior synonym. The location and existence of additional paralectotypes is unknown.

Specimens examined: 36 specimens were examined from FCOC, FMNH, HAHC, MNHN, MNNC, PESC, SEMC, UCCC.

Distribution: ARGENTINA (1): Neuquén (1): Parque Nacional Lanín (S of Lago Huechulafque).

CHILE (35). IV Región de Coquimbo (2): Puente Mostazal (Río Grande, W of Carén); V Región de Valparaíso (6): Algarrobo, Quillota, Valparaíso; Región Metropolitana (5): Santiago, Santiago (San Bernardo); VIII Región del Bío-Bío (13): Laguna del Laja (Los Barros), Los Angeles, Los Barros; No Data (9).

Temporal data: January (15), April (1), July (1), October (3), November (2).

Diagnosis: Length 3 mm. Body solid black, relatively shiny (Fig. 69). Cypeus with distinct, but weak granulations, without elongate punctures (Fig. 15).

Remarks: *Ataenius chilensis* is the only *Ataenius* found to be endemic to the region, and it is rarely collected. Previously the species was considered to be a synonym of *A. gracilis*. Upon studying the lectotype of *A. chilensis*, located in MNHN, it was discovered that this synonymy was in error. Comparison of this lectotype with the lectotype of *A. modestus* Schmidt, showed they were conspecific. *Ataenius chilensis* is reinstated as a valid species and *A. modestus* is here synonymized under *A. chilensis*.

Ataenius gracilis (Melsheimer, 1846)

(Figs. 14, 70)

Original combination: *Oxyomus gracilis* Melsheimer, 1846: 137.

Type locality: “Pennsylvania.”

Specimens examined: 1 specimen was examined from MZLU.

Distribution: CHILE (1). X Región de Los Lagos (1): Estero Pichi Pilluca.

Outside the study region this species is known from the Nearctic Realm, the Azores, and Japan (Stebnicka 2006). We also examined specimens in the HAHC from Mexico, Guatemala, El Salvador, Honduras, Costa Rica, Panama, Cuba, Jamaica, Dominica, Virgin Islands, Trinidad, Venezuela, Colombia, Ecuador, Brazil, Bolivia.

Temporal data: October (1).

Diagnosis: Length 3–4 mm. Body black, elongate and parallel-sided (Fig. 70), flattened and notably dulled. Head with longitudinally elongated punctures (Fig. 14). Meso- and metafemur with complete posterior marginal lines.

Remarks: *Ataenius gracilis* is widespread throughout the New World, and is introduced to several other countries. It may be a detritivore, but has been collected in cow dung. Adults are frequently collected at lights, thus it is one of the most commonly collected species. Gutiérrez (1947) reported this species from V Región de Valparaíso, Región Metropolitana, and X Región de Los Lagos, Chile. We confirmed that these records were based on misidentifications using specimens from the Gutiérrez collection (UCCC). The specimens Gutiérrez identified as *A. gracilis* are actually *A. chilensis*. The one specimen we did examine is the same specimen reported by Landin (1955) from Chile. Some doubt remains as to whether this species is actually established in the study region.

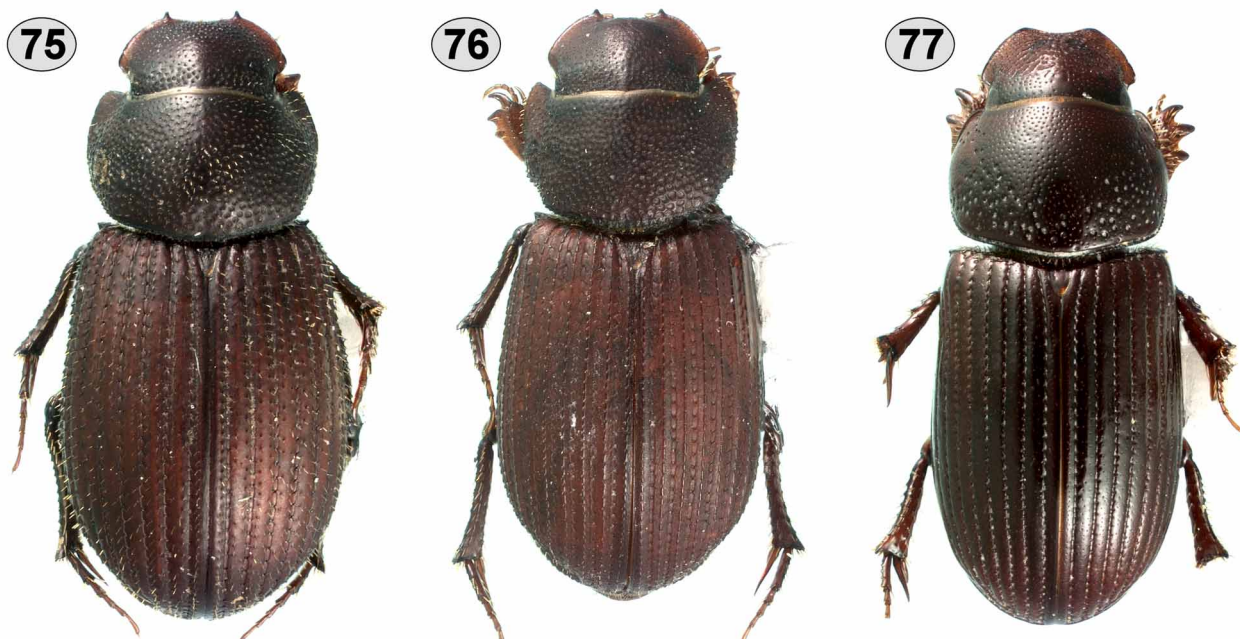


PLATE 14. Fig. 75. *Bruchaphodius ovalipennis* habitus; Fig. 76. *Bruchaphodius shannoni* habitus; Fig. 77. *Parataenius simulator* habitus.

Ataenius opatroides (Blanchard, 1847)

(Figs. 19, 71)

Original combination: *Oxyomus opatroides* Blanchard, 1847: 185.

Type locality: “dans les endroits sablonneux à Montevideo et à Maldonado, près de la mer.”

Specimens examined: 102 specimens were examined from ABTS, CNCI, FMNH, HAHC, JMEC, LEMQ, MEUC, MNHN, PESQ, UCCC, UMCE.

Distribution: CHILE (102). V Región de Valparaíso (32): Algarrobo, Cuesta El Melón, Llo-Lleo Playa, Reñaca Alto, Viña del Mar; Región Metropolitana (22): Apoquindo, Cajón del Maipo, Guayacán, El Convento, Los Patos (Putendo), Maipú, Santiago; VIII Región del Bío-Bío (11): Las Trancas, Recinto (Cordillera Chillán); IX Región de la Araucanía (21): El Molco, Pucón, Temuco, Victoria (4 km W), Victoria (15 km W), Vilcún (Palihue); X Región de Los Lagos (16): Pucatrihue (Costa Osorno), Santo Domingo, Valdivia.

Stebnicka (2004) also recorded this species from VI Región de O'Higgins and VII Región del Maule.

Outside the study region, this species has been recorded from Uruguay and Argentina (Buenos Aires and Córdoba) (Stebnicka 2004).

Temporal data: January (24), February (5), April (1), May (20), June (2), July (3), August (1), September (14), October (13), November (8), December (4).

Diagnosis: Length 5 mm. Body black, dulled, wide, but weakly flattened. Head and pronotum with extremely indistinct, fine punctures (Figs. 19, 71). Pronotum with coarse punctures evident mainly laterally and toward the base.

Remarks: Stebnicka (2004) includes *A. opatroides* in the *Ataenius strigicaudus* group. *Ataenius opatroides* is endemic to South America but is primarily found north of the region considered here. It, like most species of *Ataenius*, is occasionally attracted to light, but its habits are unknown.

***Ataenius picinus* Harold, 1868**

(Figs. 6, 20, 23, 25–26, 72)

Original combination: *Ataenius picinus* Harold, 1868a: 281.

Type locality: “Chili.”

Synonyms: *Ataenius duplopunctatus* Lea, 1923: 6; type locality: “Western Australia: Parkerville.”

Ataenius saluator Fall, 1930: 99; type locality: “Pensacola, Florida.”

Ataenius queirosii Paulian, 1934: 219; type locality: “Vaté, Nouvelles-Hébrides.”

Ataenius darlingtoni Hinton, 1937: 179; type locality: “Porto Rico: Caratanga, Lagoon.”

Ataenius boucomontii Paulian, 1937: 41; type locality: “Australie: Sydney.”

Ataenius alegus Balthasar, 1947: 50; type locality: “Brasilia, Porto Alegre.”

Saprosites rugosus Richards, 1959: 41; type locality: “Mt. Roskill, Auckland” (New Zealand).

Ataenius paracognatus Balthasar, 1961: 123; type locality: “Bolivien, El Beni.”

Type specimens: *Ataenius picinus* lectotype at MNHN examined. Labeled: 1) “Chili / *Ataenius* / *picinus* / *mihi*” (handwritten), “Ex-Musaeo E.Harold” (typeface), “MUSÉUM PARIS / 1962 / COLL R. OBERTHUR” (typeface), “LECTOTYPE / *Ataenius* / *picinus* Harold / Cartwright ‘70” (red typeface and black handwritten), “Southern Neotropical Scarabs / database # AS2598816 / *Ataenius picinus* Harold, 1868 / DET: A.B.T.SMITH 2005” (typeface). Lectotype designated by Cartwright (1973).

Specimens examined: 26 specimens were examined from ABTS, FMNH, MNHN, MNNC, UCCC, UNSM.

Distribution: CHILE (26). VII Región del Maule (25): Linares, Talca (vicinity), Talca (20 km S); No Data (1).

Stebnicka (2004) also recorded this species from IX Región de la Araucanía and X Región de Los Lagos.

Outside the study region, this species has been recorded from Oceania; Australia; New Zealand; Nearctic; Central America; West Indies; Bolivia; Brazil; Paraguay; Uruguay; Argentina (Corrientes, Entre Ríos, Formosa, Jujuy, Misiones, Santiago de Estero) (Stebnicka 2004). We also examined specimens in the HAHC from Ecuador; Peru; Argentina (Buenos Aires, Chaco, Córdoba, La Rioja, Salta, Tucumán).

Temporal data: January (3), November (5), December (17).

Diagnosis: Length 5–6 mm. It is most easily recognized by having only 4 spinules comprising the apical metatibial fringe (Fig. 25), in lacking a set of punctures on the disc of the metasternum (Fig. 26), and in having the ninth elytral interval being finely, densely punctured (Fig. 23), where the punctures appear randomly spaced.

Remarks: Stebnicka (2004) included *A. picinus* in the *Ataenius strigicaudus* group. *Ataenius picinus* is a variable and widespread species, partially explaining its numerous synonyms. We can only assume it was somehow spread by humans, possibly in ships ballast or with the transportation of livestock. It is frequently attracted lights and is relatively common in collections.

***Ataenius platensis* (Blanchard, 1847)**

(Figs. 3, 11, 22, 73)

Original combination: *Oxyomus platensis* Blanchard, 1847: 185.

Type locality: “Montevideo et Corrientes.”

Synonyms: *Ataenius integer* Harold, 1868b: 86; type locality: “Brasilia.”

Ataenius anticus Fall, 1930: 105; type locality: “Hope, Arkansas.”

Ataenius granchaocensis Balthasar, 1947: 49; type locality: “Paraguay (Gran Chaco).”

Ataenius histrionicus Balthasar, 1947: 49; type locality: “Paraguay, prov. Alto Parana.”

Ataenius heyrovskyi Balthasar, 1960: 5; type locality: "Brasilien, Rio Madeira."

Ataenius degallieri Chalumeau, 1990: 340; type locality: "Brasil (Para)"

Specimens examined: 9 specimens were examined from ABTS, FMNH, UMCE.

Distribution: CHILE (9). IV Región de Coquimbo (9): Combarbalá, Paihuano (10 km S).

Stebnicka (2005) also recorded this species from "Chillan, Ñuble Río Pinto."

Outside the study region, this species has been recorded from the Nearctic; Mexico; Central America; the West Indies; Venezuela; Colombia; Ecuador; Brazil; Peru; Bolivia; Paraguay; Uruguay; and Argentina: Misiones, Santiago del Estero, Formosa, San Luis, Entre Ríos, Jujuy, Salta, Buenos Aires (Stebnicka 2005). Additionally, Blanchard (1847) reported this species from Corrientes, Argentina and Bruch (1911) reported it from Chaco, Mendoza, and Catamarca in Argentina. We also examined specimens in the HAHC from Argentina: Córdoba, La Rioja.

Temporal data: January (4), November (5).

Diagnosis: Length 3–5 mm. Clypeus with transverse wrinkles (Fig. 3), not distinctly punctate or granulate. Head with poorly defined band of punctures at base. Pronotum distinctly punctate throughout with dense fine punctures, coarse punctures also present laterally; lateral pronotal setae spatulate. Pronotum and elytra shiny. Elytral interval 9 (penultimate lateral interval) weakly punctured, but not different from those of disc (Fig. 22).

Remarks: *Ataenius platensis* was recently discussed by Stebnicka (2005) and is part of a difficult complex of species (most of which are now considered synonyms). It is a widespread species occurring from the United States to Argentina. Adults are attracted to lights and the species is often extremely abundant in collections. There seems to be a connection between human activities and the abundance of this species. Adults are occasionally collected in cow dung, but that may not be the preferred larval food.

Ataenius strigicaudus Bates, 1887

(Figs. 21, 24, 27, 74)

Original combination: *Ataenius strigicaudus* Bates, 1887: 96 (emended from *Ataenius strigicauda* to match the masculine gender of the genus).

Type locality: "Mexico, Cordova, Tuxtla, Jalapa; Guatemala, Paso Antonio; Nicaragua, Chontales; Panama. - South Brazil; Amazons; Antilles, St. Thomas."

Synonym: *Ataenius aspericollis* Petrovitz, 1973: 178; type locality: "Brasilien, Acre, Feijó... und Paraná, Foz de Iguassu."

Specimens examined: 23 specimens were examined from JMEC, MNNC, UCCC.

Distribution: CHILE (23). V Región de Valparaíso (6): Viña del Mar; Región Metropolitana (17): Colina, Colina (Las Tortolas), Colina (Ruta 5, N km 16.5), Las Condes, Las Condes (Quinchamali), Maipú (Jardin), Parque Metropolitano (Zoo), Parque Quinta Normal, Santiago, Talagante.

Stebnicka (2004) also recorded this species from VIII Región del Bío-Bío.

Outside the study region, this species has been recorded from México; Central America; the West Indies; Colombia; Ecuador; Peru; Bolivia; Brazil; Paraguay; Argentina (Misiones and La Rioja) (Stebnicka 2004). We also examined specimens in the HAHC from French Guiana, Bolivia, and Argentina (Chaco).

Temporal data: January (6), September (1), November (11), December (5).

Diagnosis: Length 4–6 mm. Readily recognized by having 4 spinules present on the apical meso- and metatibial fringe (as in Fig. 25), having a cluster of coarse punctures on each side of the metasternal disc near the base of the mesofemur (Fig. 27), and having the ninth elytral interval coarsely punctured (Fig. 24), with the punctures distributed evenly in 2 longitudinal lines.

Remarks: Stebnicka (2004) included *A. strigicaudus* in the *Ataenius strigicaudus* group. It is a common

and widespread species from Mexico to Argentina. Adults are frequently collected at light. Based on label data we observed, this species has been present in Chile since at least 1959.

Genus *Bruchaphodius* Martínez, 1952

Bruchaphodius Martínez, 1952: 99.

Type species: *Euparia bruchi* Schmidt, 1922, by original designation.

Diagnosis: Body robust, dull and setose, dark brown color (Figs. 75–76). Clypeal teeth distinct. Elytral intervals margined at base. Pygidium with basal longitudinal groove; elytra with internal swelling along sutural margin that fits into the pygidial groove.

Remarks: *Bruchaphodius* is endemic to South America and contains three species (Martínez, 1952), two of which occur in the study region. While most adult specimens have been collected at light, some have been collected in rodent burrows (*Ctenomys* sp.), others with ants (*Acromyrmex* sp.). The true habits of the beetles are unknown and these apparent inquiline associations need confirmation, but they may be mound or niche specialists, instead of being inquilines with a specific host.

Bruchaphodius ovalipennis (Harold, 1871)

(Fig. 75)

Original combination: *Euparia ovalipennis* Harold, 1871: 116.

Type locality: “Cordova Argentinae.”

Specimens examined: 1 specimen was examined from HAHC.

Distribution: ARGENTINA (1): Río Negro (1): Fray L. Beltrán.

Outside the study region, this species has been recorded from Paraguay and Argentina (Santiago del Estero, Córdoba, Mendoza) (Bruch 1911, Martínez 1952). We also examined specimens in the HAHC from Argentina: Formosa, Salta, San Luis

Temporal data: January (1).

Diagnosis: Length 4–5 mm. The flattened, setose elytral intervals (Fig. 75) distinguish this species from others in the genus.

Remarks: Martínez (1952) reports *B. ovalipennis* to have been collected in association with ants (*Acromyrmex* sp.). Most known specimens have been collected at light.

Bruchaphodius shannoni (Bruch, 1938)

(Figs. 12, 76)

Original combination: *Euparia shannoni* Bruch, 1938: 160.

Type locality: “Famabalasto, valle de Santa María (Catamarca).”

Specimens examined: 3 specimens were examined from ABTS, HAHC, PESC.

Distribution: ARGENTINA (3): Neuquén (3): Lago Blanco.

Outside the study region, this species has been recorded from Catamarca, Argentina (Bruch 1938). We also examined specimens in the HAHC from Argentina: Córdoba, La Rioja.

Temporal data: November (3).

Diagnosis: Length 4–5 mm. The nearly costate elytral intervals, lacking setae (Figs. 12, 76) distinguish this species from others in the genus.

Remarks: Martínez (1952) reports *B. shannoni* to be associated with rodent burrows (*Ctenomys* sp.).

Genus *Oxyataenius* Dellacasa and Stebnicka, 2001

Oxyataenius Dellacasa and Stebnicka, 2001b: 30.

Type species: *Oxyomus morosus* Harold, 1869 by original designation.

Diagnosis: The body densely setose and coarsely punctured dorsally. Elytral intervals margined at base. Pygidium with basal longitudinal groove. Elytra with internal swelling along sutural margin that fits into the pygidial groove.

Remarks: We were unable to study the single known specimen of this genus.

Oxyataenius morosus (Harold, 1869)

Original combination: *Oxyomus morosus* Harold, 1869b: 100.

Type locality: "Chili."

Type specimens: Lectotype female reportedly at the MNHN (not examined). Lectotype designation by Dellacasa and Stebnicka (2001b).

Specimens examined: The lectotype female is the only known specimen of this species. The lectotype is reportedly at MNHN although it was not found by one of us (ABTS) during a visit to that collection in March 2005.

Diagnosis: Length 5 mm. See genus diagnosis above.

Remarks: Since we have not studied the lectotype of this species, our knowledge is based on the account given in Dellacasa and Stebnicka (2001b). This reportedly Chilean species is known only from the lectotype female. It is possible that the only known specimen of this species was mislabeled and it may not occur in the region covered here. It seems that *O. morosus* could be easily confused with various species of the *Ataenius imbricatus* group, or other *Ataenius*. Any specimen suspected to be this species needs close examination to confirm its identity.

Genus *Parataenius* Balthasar, 1961

Parataenius Balthasar, 1961: 121.

Type species: *Parataenius mirabilis* Balthasar, 1961 by original designation.

Synonym: *Brancoataenius* Paulian, 1979: 66; type species: *Brancoataenius lusitanicus* Paulian, 1979 by original designation.

Diagnosis: Body shiny, somewhat robust, some slightly psammodiform (Fig. 77). Clypeus with strong transverse wrinkles or rugulae (Figs. 13, 16). Elytral intervals margined at base. Pygidium with basal longitudinal groove. Elytra with internal swelling along sutural margin that fits into the pygidial groove. Mesotibia broadly dilated at apex. Metafemur of some species enlarged.

Remarks: This genus occurs primarily in South America and it in need of a revision. According Z. T. Stebnicka (personal communication) there are several described and undescribed species. However, only one species is known to occur in the study region. A number of species occur just to the north of the study region in Mendoza, Argentina. It is possible that other species of *Parataenius* will be discovered further south.

***Parataenius simulator* (Harold, 1868)**

(Figs. 13, 17, 77)

Original combination: *Ataenius simulator* Harold, 1868b: 85.

Type locality: “Mendoza.”

Synonyms: *Psammodyus schwarzi* Linell, 1896: 721; type locality: “Jacksonville, Florida.”

Parataenius granuliceps Petrovitz, 1971: 102; type locality: “N. S. W., Sidney.”

Ataenius lusitanicus Paulian, 1979: 66; type locality: “Portugal, Fos de Neiva, Minho.”

Type specimens: *Ataenius simulator* lectotype at MNHN examined. Labeled: “*Ataenius / simulator / Harold*” (handwritten), “Ex-Musaeo E.Harold” (typeface), “LECTOTYPE / *Ataenius / simulator Harold / Cartwright* ‘70” (red typeface and black handwritten), “Southern Neotropical Scarabs / database # AS2598922 / *Parataenius simulator* (Harold, / 1868) / DET: P.E.SKELLEY 2005” (typeface). Lectotype designated by Cartwright (1973).

Specimens examined: 74 specimens were examined from ABTS, CNCI, FMNH, HAHC, MEUC, PESC, UCCC.

Distribution: ARGENTINA (30): Neuquén (25): Chos Malal, Piedra del Aguila, Plaza Huincul, Punta Sierra, Sa. Vaca Muerta, Senillosa; Río Negro (5): Julian Romero, La Marque.

CHILE (44). Región Metropolitana (2): Cuesta Chacabuco; VII Región del Maule (23): Cordillera Parral (Hacienda San Manuel), Linares (Barros), Talca (20 km S), Talca (vicinity); VIII Región del Bío-Bío (17): Chillán, Chillán (8 km E), Concepción, Cordillera Chillán (Recinto), Rafael, San Carlos (Río Ñuble); X Región de Los Lagos (2): Los Pellines.

Outside the study area, this species has been recorded from the Nearctic; the Palaearctic; Australia; Bolivia; Brazil; Uruguay; Argentina (San Luis, La Rioja, Mendoza) (Bruch 1911, Chalumeau 1992). We also examined specimens in the HAHC from Venezuela; Argentina: Buenos Aires, Chaco, Córdoba, Corrientes, Entre Ríos, La Rioja, Salta, Santa Fe, Santiago del Estero, Tucumán

Temporal data: January (23), February (5), April (2), August (1), October (15), November (6), December (18).

Diagnosis: Length 4–5 mm. Along with the characters mentioned in the generic diagnosis, *P. simulator* can also be recognized by the pronotal puncture pattern (Figs. 13, 77), where coarse punctures are restricted to the lateral and posterior portions of the disc. The elytra are normally punctured with fine, widely spaced punctures (Fig. 17).

Remarks: *Parataenius simulator* has been found nearly worldwide and is the most widely distributed species of the genus in the New World. Adults are commonly collected at lights, and it is suspected of being a detritivore. Its true habits are unknown, but its psammodyiform body and distribution suggests an association with sandy soils.

Parataenius derbesis is another species in this genus that may eventually be discovered in the study region on the Argentinean side. It is readily distinguished from *Parataenius simulator* by having the pronotal punctures more evenly distributed (not as in Fig. 13), and the elytra interval punctures are dense and restricted a central area (Fig. 18).

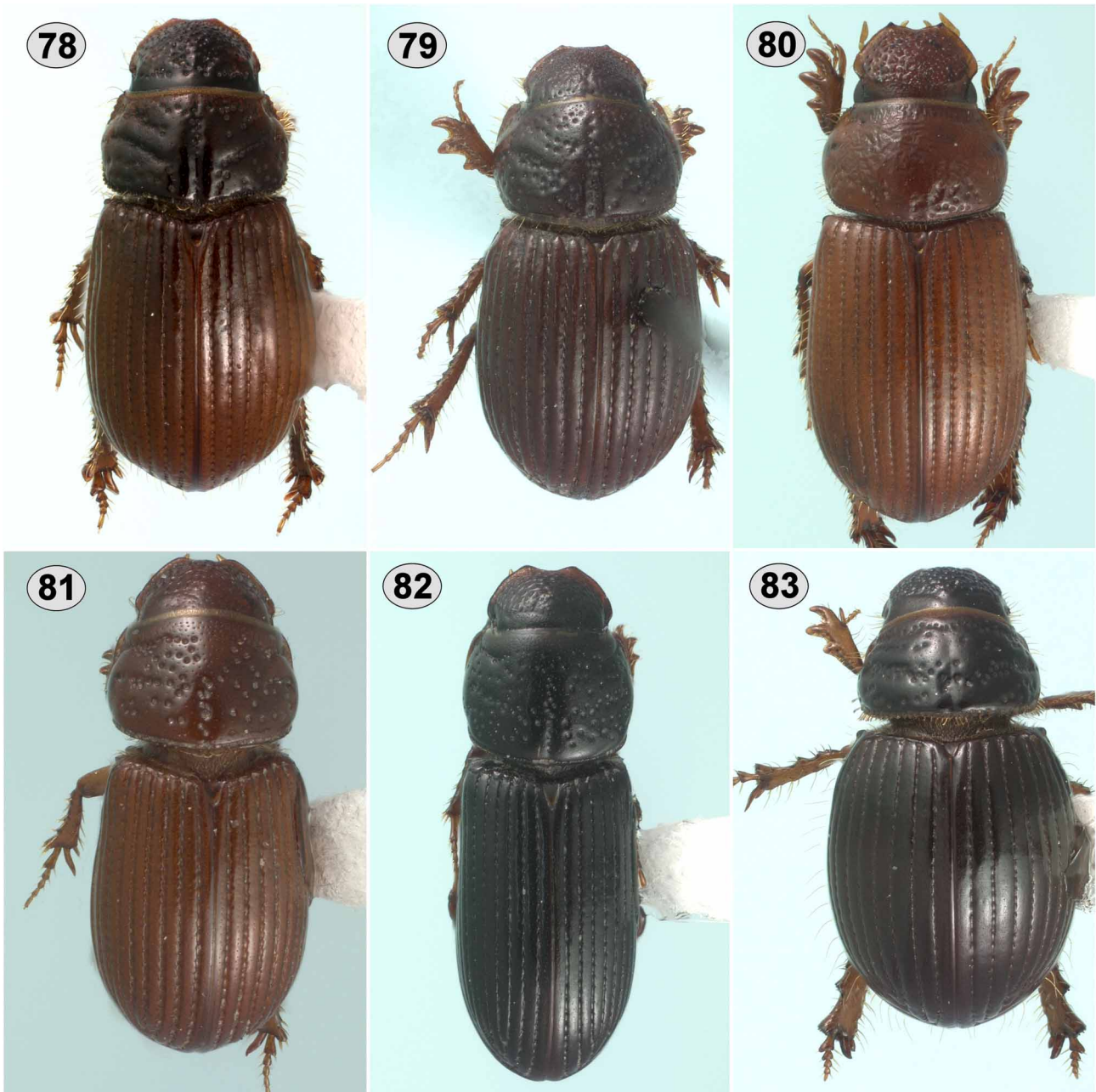


PLATE 15. Fig. 78. *Leiopsammodius indefensus* habitus; Fig. 79. *Leiopsammodius placidus* habitus (holotype); Fig. 80. *Odontopsammodius cruentus* habitus; Fig. 81. *Platytomus micros* habitus; Fig. 82. *Pleurophorus caesus* habitus; Fig. 83. *Tesarius caelatus* habitus

Tribe Psammodiini Mulsant, 1842

Type genus: *Psammodius* Fallén, 1807: 37.

Diagnosis: Body usually robust. Head distinctly granulate. Pronotum usually with distinct transverse ridges, grooves or rows of punctures. Legs often shortened and broad, tarsi often shortened.

Remarks: Psammodiini is a group of genera primarily adapted for life in sand and primarily recognized by the presence of pronotal ridges. A full complement of pronotal sculpturing consists of five ridges and five grooves. These are variously reduced in some genera, absent in only a few. Almost all genera have the anterior groove near the pronotal angle. Included taxa appear to be detritivores, and some can be locally abundant.

Genus *Leiopsammodius* Rakovic, 1981

Leiopsammodius Rakovic, 1981b: 16.

Type species: *Psammodius laevicollis* Klug, 1845 by original designation.

Diagnosis: Body usually robust. Head weakly to distinctly granulate (Figs. 31–32). Clypeus not dentate. Eyes normally developed, not reduced. Elytral intervals margined at base. Metafemur robust. Metatibia dilated apically. Pronotum with a reduced number of ridges, usually two (Fig. 78–79).

Remarks: *Leiopsammodius* is found nearly worldwide and has about 40 species. Rakovic (1990) reviewed the New World taxa, and most species were also discussed by Cartwright (1955) as *Psammodius*. Adults of few species are frequently collected at lights, but their habits are unknown. All species appear to be associated with sandy soils.

Leiopsammodius indefensus (Schmidt, 1909) new combination

(Figs. 31, 78)

Original combination: *Psammobius indefensus* Schmidt, 1909a: 60.

Type locality: “Valparaiso.”

Synonym: *Leiopsammodius chilensis* Rakovic, 1990: 5; type locality: “Chile.” **New Synonymy.**

Type specimens: *Psammobius indefensus* lectotype at NHRS examined. Lectotype labeled: “Valparaiso” (handwritten), “TYPUS” (typeface on red paper), “109” (typeface on red paper), “Psammodius / indefensus Schm.” (handwritten), “LECTOTYPE *Psammobius indefensus* Schmidt / des. P. E. Skelley-06” (typeface on red paper), “Southern Neotropical Scarabs / database # AS2604954 / *Leiopsammodius indefensus* (Schmidt, 1909) / DET: P.E.SKELLEY 2006” (typeface). **Lectotype here designated.** A lectotype is designated to stabilize the nomenclature of this species since this name has been a source of confusion. Schmidt (1909a) was ambiguous about how many specimens were used for the original description, therefore a lectotype designation is warranted. The location and existence of paralectotypes is unknown.

The holotype of *Leiopsammodius chilensis* at ISNB examined. Holotype labeled: “Coll. R. I. Sc. N. B. / ex coll / Brown / ex coll. Candèze” (typeface and handwritten on purple paper), “Chili / B.” (handwritten and glued on to the previous purple label), “Holotypus” (typeface on red paper), “Leiopsammo- / dius / chilensis sp. n. / doc. RAKOVIC det.” (handwritten and typeface), “Southern Neotropical Scarabs / database # AS2598997 / *Leiopsammodius indefensus* (Schmidt, 1909) / DET: P.E.SKELLEY 2006” (typeface).

Specimens examined: 203 specimens were examined from HAHC, ISNB, JMEC, MNNC, NHRS, PESC, UCCC, UMCE.

Distribution: CHILE (203). V Región de Valparaíso (17): Algarrobo, Quillota, Valparaíso; Región Metropolitana (5): Caleu (Lo Marin), El Carmen, Río Clarillo; VIII Región del Bío-Bío (1): Paso Hondo (Quilpué); X Región de Los Lagos (175): Carelmapu, Chepu dunes (Isla Grande de Chiloé), Cucao (Parque Nacional Chiloé, Isla Grande de Chiloé), Maullín, Pangal, Quellón, Reserva Costera Valdiviana (Chaihuin Sector), Reserva Costera Valdiviana (Colún Sector); No Data (5).

Temporal data: January (173), February (13), July (4), August (4), September (1), October (1), December (1).

Diagnosis: Length 3 mm. Body black, weakly robust. Head with distinct basal grooves (Fig. 31). Pronotum and elytra with distinct marginal fringe of setae (Fig. 78).

Remarks: Gordon and Pittino (1992) discussed the generic placement of both names for this species; *Leiopsammodius chilensis* and *Leiopsammodius indefensus* (as *Psammodius indefensus*). Although their comments indicate they did not see specimens of either, they did consider the two closely related and provisionally

accepted them as distinct, pending further study. We have studied the types for both *Leiopsammodius indefensus* (Schmidt) and *Leiopsammodius chilensis* Rakovic. The subtle character differences mentioned by Rakovic (1990) for *L. chilensis* are present to their full extent as variation within recently collected series of specimens. Thus, they are considered conspecific and are here synonymized. The generic placement of this species is problematic because the defining characters are somewhat intermediate between *Leiopsammodius* and *Psammodius*. Although *L. indefensus* has ridges on the head like the Holarctic genus *Psammodius*, this species has a reduced number pronotal ridges. We feel it cannot be a member of *Psammodius* and tentatively considered it member of *Leiopsammodius*, pending further analyses.

Adults are rare in collections, probably because they are not attracted to light and their habitats are poorly sampled. In January 2006, one of us (ABTS) did field work in Chile and specifically targeted areas where *Leiopsammodius* might occur (for example see Fig. 84). Specimens were readily collected at several localities with beach and sand dune systems (Carelmapu, Chepu, Cucao, Maullín, Pangal, Reserva Costera Valdiviana). Specimens were collected primarily by sifting sand and placing the remaining debris in buckets of water to reveal the floating beetles. This species seems to be more abundant buried near dune plants but were also observed on the surface of the sand. Since this species was easily found in good numbers at every coastal dune area sampled, we hypothesis that it is an extremely abundant and common species in sandy areas throughout the central third of Chile.

***Leiopsammodius placidus* (Schmidt, 1911)**

(Figs. 32, 79)

Original combination: *Psammobius placidus* Schmidt, 1911: 38.

Type locality: "Argentina."

Type specimens: Holotype at NHRS examined. Holotype labeled: "TYPUS" (typeface on red paper), "Rep. ARGENTINA / ~~Prov. Buenos Aires~~ / 2. 11 1905 / C. Bruch" (typeface and handwritten), "111" (typeface on red paper), "HOLOTYPE / *Psammobius placidus* Schmidt / det. P. E. Skelley-06" (typeface on red paper), "Southern Neotropical Scarabs / database # AS2604955 / *Leiopsammodius placidus* (Schmidt, 1911) / DET: P.E.SKELLEY 2006" (typeface). The original description of this species was based on a single specimen based on Schmidt's (1911) statement "Type in meiner Sammlung" (which refers to a single specimen). Therefore, this specimen must be considered the holotype.

Specimens examined: 2 specimens were examined from HAHC, NHRS.

Distribution: ARGENTINA (1). Neuquén (1): Aguado del Florencio; No Data (1).

Temporal data: December (1).

Diagnosis: Length 4 mm. Body black, globose. Pronotum with distinct fringe of setae (Fig. 32). Elytra lacking marginal fringe of setae (Fig. 79). Head lacking grooves at base.

Remarks: *Leiopsammodius placidus* is a rare species in collections, but given our knowledge of related species habits, it is probably locally abundant.

Genus *Odontopsammodius* Gordon and Pittino, 1992

Odontopsammodius Gordon and Pittino, 1992: 265.

Type species: *Psammodius cruentus* Harold, 1868 by original designation.

Diagnosis: Head distinctly granulate. Clypeus distinctly dentate (Fig. 28). Pronotum usually with distinct transverse ridges, grooves or rows of punctures. Elytral intervals margined at base. Legs often shortened and broad, tarsi often shortened.

Remarks: Species of *Odontopsammadius* tend to be rare in collections, with the exception of *O. cruentus*, which is readily attracted to lights. It is the only species of the genus known from the study region.

***Odontopsammadius cruentus* (Harold, 1868)**

(Figs. 28, 80)

Original combination: *Psammadius cruentus* Harold, 1868a: 282.

Type locality: “chilensischen.”

Synonym: *Psammobius shermani* Cartwright, 1946: 89; type locality: “Sullivans Island, South Carolina.”

Specimens examined: 5 specimens were examined from ABTS, HAHC, TMSA.

Distribution: ARGENTINA (4). Río Negro (3): San Antonio Oeste (Las Grutas); Chubut (1): San José (Península Valdes).

CHILE (1). V Región de Valparaíso (1): Quillota.

This species was also recorded from “Chile: Santiago” by Gutiérrez (1947).

Outside the study area, this species has been recorded from the Nearctic; Bolivia; Paraguay; Argentina (Buenos Aires, Córdoba, La Rioja, Mendoza, Misiones, Salta, San Juan, San Luis, Santiago del Estero, Tucumán) (Bruch 1911, Cartwright 1955). We also examined specimens in the HAHC from Argentina: Formosa, Jujuy.

Temporal data: January (3), November (1), December (1).

Diagnosis: Length 3–5 mm. Body robust, nearly globose, reddish-brown (Fig. 80). Pronotum with coarse punctures deep and restricted to postero-lateral area of the disc where they form a weak groove (Fig. 28).

Remarks: Adults are commonly collected at lights in southern South America but are rarely attracted to lights in North America. The habits of this species are unknown. Although there are three Chilean records of *O. cruentus* (including the type locality, a record from Santiago [Gutiérrez 1947] and the record above from Quillota), it is doubtful that this species has truly been established in this country. The erroneous type locality originated from the same paper (Harold 1868a) and same batch of specimens (from the Kraatz collection) as the erroneous record of *Aidophus flaveolus* in Chile (see an account of this species in the Erroneous Records section). Cartwright (1955) considered this a dubious record and we agree. The other two records originated from specimens from the Gutiérrez Collection and might have been mislabeled (a fairly common problem with this collection).

Genus *Platytomus* Mulsant, 1842

Platytomus Mulsant, 1842: 310.

Type species: *Platytomus sabulosus* Mulsant, 1842 by monotypy.

Diagnosis: Body small, weakly parallel-sided, nearly cylindrical (Fig. 81). Clypeus distinctly granulate, not dentate (Fig. 33). Eyes normally developed. Elytral intervals margined at base. Metafemur weakly swollen. Metatarsus usually shortened.

Remarks: *Platytomus* is widespread in the northern hemisphere. Members are among the smallest scarabs in the New World. Some species are readily attracted to light. Other species remain rare in collections, but have been collected by sifting leaf litter. Until Pittino and Mariani (1986) raised *Platytomus* to the generic rank, members of this genus were considered to belong in *Pleurophorus*. Cartwright (1948, as *Pleurophorus*) presents the most recent key to species. The genus is in need of revision.

***Platytomus micros* (Bates, 1887)**

(Figs. 33, 81)

Original combination: *Psammodyus micros* Bates, 1887: 103.

Type locality: “Guatemala, Capetillo, Dueñas.”

Synonyms: *Pleurophorus batesi* Arrow, 1903: 514; type locality: “Mexico, Presidio.; Guatemala, Dueñas, Paraiso.”

Diastictus californicus Petrovitz 1963: 645; type locality: “Californien, S. Barbara.”

Specimens examined: 1 specimen was examined from MNNC.

Distribution: CHILE (1). V Región de Valparaíso (1): Cerro Terevaka (Isla de Pascua).

Outside the study area, this species has been recorded from the Nearctic and Central America (Cartwright 1948).

Temporal data: May (1).

Diagnosis: Length 3 mm. Body small, reddish brown (Fig. 81). Head with frontal lobes bearing setae (Fig. 33). Metatarsus with basal segment shorter than superior tibial spur, and notably widened apically. Pronotum and elytra lacking lateral setal fringe. Pygidium with eroded area complete.

Remarks: *Platytomus micros* is a widespread species, primarily in North and Central America. The species is frequently attracted to light and can be common in collections. There is enough regional variation to imply that cryptic species may be involved. The identity of the population from Easter Island is tenuous, and a full revision of the genus is needed to resolve the question. For now, we consider it *P. micros*, pending further study.

Platytomus micros is similar to another widespread species, *Platytomus longulus* (Cartwright), which occurs from the southern United States to Argentina and can be very abundant at light. *Platytomus longulus* can be distinguished from *P. micros* by having the basal segment of the metatarsus little widened, pygidium with eroded area divided longitudinally at middle, and the frontal lobes on the head anterior to the eyes lacking setae. To date, no specimens of *P. longulus* have been seen from the study region, but its occurrence is expected.

Genus *Pleurophorus* Mulsant, 1842

Pleurophorus Mulsant, 1842: 312.

Type species: *Scarabaeus caesus* Panzer, 1796 by monotypy.

Diagnosis: Body elongate, cylindrical (Fig. 82). Head distinctly granulate. Pronotum with weakly defined rows of large punctures (Fig. 5). Elytral intervals margined at base, elytral stria strongly impressed. Metatibia not swollen.

Remarks: *Pleurophorus* (*sensu stricto*) is an Old World genus, with one species being widely introduced.

***Pleurophorus caesus* (Panzer, 1796)**

(Figs. 5, 82)

Original combination: *Scarabaeus caesus* Panzer, 1796: 2.

Type locality: “Viennae.”

Synonyms: *Aphodius angustus* Philippi and Philippi, 1864: 316; type locality: “Chilenischen.”

Ataenius rugiceps Dury, 1902: 153; type locality: “Cincinnati O.”

Type specimens: *Pleurophorus caesus* type series not examined. *Aphodius angustus* neotype at MNNC labeled: “CHILE: Chacabuco / Colina / 10 November 2003 / J. Mondaca E.” (typeface), “APHODIUS / ANGUSTUS / PHILIPPI & PHILIPPI / NEOTYPE ♂ / A.B.T.SMITH / P.E.SKELLEY” (handwritten and

typeface on red paper), “Southern Neotropical Scarabs / database # AS2599050 / *Pleurophorus caesus* (Panzer, / 1796) / DET: P.E.SKELLEY 2005” (typeface). The location of the type series from Philippi and Philippi’s original type series is unknown. The type series was presumably deposited in the MNNC along with the type series of other species described in the same paper. For example, the type series of the *Brachysternus* Guérin-Méneville and *Aulacopalpus* Guérin-Méneville species described by Philippi and Philippi (1864) were all recently located in the MNNC (Jameson and Smith 2002, Smith 2002). However, no type specimens of *Aphodius angustus* could be found in the MNNC after numerous searches, nor were any located in the other collections from which we borrowed material. We can only conclude that the type series has been lost. The only type locality information given was that the type series was collected in Chile, so a specimen from Chile was selected as the neotype. **Neotype here designated.** See Methods and Materials section for a statement of taxonomic purpose.

Specimens examined: 47 specimens were examined from ABTS, FMNH, JMEC, MEUC, MNNC, PES, TMSA, UCDS, UMCE, UNSM.

Distribution: CHILE (47). IV Región de Coquimbo (2): Camino La Serena (Ovalle); V Región de Valparaíso (1): Villa Alemana; Región Metropolitana (30): Apoquindo, Colina, Colina (Ruta 5 N, km 16.5), Curacaví (Lingues de Miraflores), El Ingenio, Las Condes (Quinchamali), Rinconada (Maipú), Santiago, Santiago (El Canelo), Santiago (Ñuñoa), Santiago (Renca); VI Región de O’Higgins (3): Pelequén, San Vicente de Tagua; VII Región del Maule (6): Linares, Reserva Nacional Los Ruiles (Cauquenes), Talca (20 km S), Tonlemo; VIII Región del Bío-Bío (1): Río Biobío; No Data (4).

This species was also recorded from Isla Juan Fernández, Chile by Schmidt (1931).

Outside the study area, this species has been recorded from the Nearctic and Neotropics; the Palaearctic; Africa (Löbl and Smetana 2006).

Temporal data: January (1), February (2), March (1), May (1), July (2), September (2), October (4), November (28), December (2).

Diagnosis: Length 3 mm. See the diagnosis under the genus above. The elongate, parallel-sided body (Fig. 82) is unlike anything else from the study region.

Remarks: *Pleurophorus caesus* has been introduced in to many part of the world and is considered cosmopolitan. In the New World, it occurs from Canada to Chile. This species was first reported in Chile by Philippi and Philippi (1864, as *Aphodius angustus*).

The authorship of this species is often credited to Creutzer, but it was Panzer (1796) who first described the species and used the name (even though Panzer credited Creutzer with the name in his original description). Panzer’s description was his own so he should be the cited author of this name under Article 50.1 of the rules of zoological nomenclature.

Genus *Tesarius* Rakovic, 1981

Tesarius Rakovic, 1981a: 27.

Type species: *Phycochus sulcipennis* Lea, 1904, by monotypy.

Diagnosis: Body globose (Fig. 83). Clypeus granulate. Eyes greatly reduced (Fig. 29). Flight wings lacking. Elytral intervals margined at base. Metatibia with strong, complete median transverse carina (Fig. 30).

Remarks: The most recent review of *Tesarius* was by Rakovic (1984). Except for *T. sulcipennis*, which occurs in Australia (Tasmania) and New Zealand (Chathams) (Stebnicka 2001), all other described species are native to western North America. This distribution seems unusual, and it is felt the genus needs further work after more specimens have been collected in Australia. Being flightless and probably blind, they are not attracted to light and must be sifted out of the sand dunes they inhabit. They can be locally abundant.



FIGURE 84. Dunes at Chaihuin, Chile where both *Leiopsammodius indefensus* and *Tesarius caelatus* were readily collected.

***Tesarius caelatus* (LeConte, 1857)**

(Figs. 29–30, 83)

Original combination: *Aegialia caelata* LeConte, 1857: 42.

Type locality: “San Francisco.”

Specimens examined: 106 specimens were examined from ABTS, FMNH, HAHC, JMEC.

Distribution: CHILE (106). V Región de Valparaíso (1): San Sebastián; Región Metropolitana (1): El Tabo; VI Región de O’Higgins (35): Pichilemu; X Región de Los Lagos (69): Carelmapu, Pangal, Reserva Costera Valdiviana (Chaihuin Sector), Reserva Costera Valdiviana (Colún Sector).

Outside the study area, this species has been recorded from the Nearctic and the Palaearctic (Skelley 2001).

Temporal data: January (69), February (1), May (1), October (35).

Diagnosis: Length 3–4 mm. See genus diagnosis above.

Remarks: *Tesarius caelatus* is native to the western coast of North America, where it can be abundant in ocean-side sand dunes. Populations in Chile are indistinguishable from those in North America. *Tesarius caelatus* appears to have been recently established in Chile and Great Britain (Johnson 1975, Skelley 2001), quite possibly having been transported in ship ballasts. Based on our observations of label data, this species has occurred in Chile since at least 1961.

In January 2006, one of us (ABTS) did field work in Chile and specifically targeted areas where psammo-

diines might occur. Specimens were readily collected in several localities with beach sand and sand dune systems (as discussed in the remarks section for *Leiopsammodius indefensus*). *Leiopsammodius indefensus* and *Tesarius caelatus* were collected using identical collecting techniques and found in the same areas with one notable exception: *Tesarius caelatus* was not found anywhere on Isla Grande de Chiloé. We hypothesize that because this introduced species is flightless, it has not had the opportunity to colonize islands such as Isla Grande de Chiloé. Nonetheless, this species ranges extensively across the middle third of mainland Chile.

Erroneous records

A number of dubious records of Aphodiinae species in southern South America have been reported in the literature over the years. We can only speculate how these errors were made, but misidentified specimens and specimens with erroneous data labels probably account for most of the errors. It is also possible that some introduced species were present in limited areas but failed to become permanently established. Here are some of the more noteworthy examples:

***Aidophus flaveolus* (Harold, 1868)** (Figs. 49, 52) – We consider the type locality “Chili” and the record from VII Región del Bío-Bío, Chile (Gutiérrez 1949) to be erroneous. The erroneous record of the type locality originated from the same paper (Harold 1868a) and same batch of specimens (from the Kraatz collection) as the erroneous record of *Odontopsammodius cruentus* in Chile (see the Remarks section of the account for this species). *Aidophus flaveolus* only occurs in northern and central Argentina south to the province of Mendoza (Dellacasa *et al.* 2002b). We included this genus in the key because the range may extend south into the Argentine parts of the study region. We suggest that the type locality of this species be emended to the area encompassed by the known range of this species (northern and central Argentina). *Aidophus infuscatopennis* is another species in this genus that has also questionably been reported in the study area. See the following account to distinguish these two species.

***Aidophus infuscatopennis* (Schmidt, 1909)** (Figs. 7, 50, 53) – Landin (1955) reported one specimen from “Chile: Near “Frigorífico Rio Seco, N of Punta Arenas.” This specimen seems to have disappeared from the MZLU collection and we saw no Aphodiinae specimens whatsoever from the XII Región de Magallanes. This species only occurs in Paraguay and northern and central Argentina south to the province of Mendoza (Dellacasa *et al.* 2002b).

Aidophus species are similar in appearance to *Aphodius* (*Labarrus*) *pseudolividus*. They are distinguished by the head lacking tubercles, triangular scutellum, and metatibial spurs being adjacent. Compared to each other, *A. flaveolus* has a smooth clypeus (Figs. 49, 52) with a normal margin), while *A. infuscatopennis* has the clypeus weakly rugose with an upturned margin (Figs. 50, 53).

***Aphodius* (*Acrossus*) *rufipes* (Linnaeus, 1758)** – This species was reported from Chubut, Argentina by Bruch (1911). Although *Aphodius rufipes* has been cited on numerous occasions as occurring in the Neotropics, it appears that there are no sustained populations. This large species is known only from the Palaearctic and the Nearctic Realms.

***Podotenus* (*Podotenus*) *gracilipes* (Harold, 1868)** – We consider the type locality “Chili” to be erroneous. This species was known only from the holotype until Stebnicka and Howden (1994) reported a second specimen from Western Australia. Since the other 29 species of this subgenus are all endemic to Australia, and since *Podotenus gracilipes* has never been collected from South America, it seems clear that the holotype was mislabeled. We suggest that the type locality of this species be emended to the area encompassed by the

known range of this species (Western Australia). *Podotenus gracilipes* is readily distinguished from Neotropical *Podotenus* by having the elytra distinctly, densely setose, with alternating intervals weakly tuberculate.

***Parataenius derbesis* (Solier, 1851)** (Figs. 16, 18) – This species was originally described from “la provincia de Santiago” (Solier 1851), has been reported from “Punta-Arena” (Fairmaire 1884) “Chile: Santiago, Colchagua” (Gutiérrez 1947), “Estero Pichi Pilluco, E of Puerto Montt” (Landin 1955), and Chalumeau (1992) recently designated a neotype from “Chili” (deposited in ISNB). However, we have not seen any specimens of this species from the study area and consider these records to be dubious. The original type material and the neotype are both 19th century specimens with unreliable label data and we were able to confirm that Gutiérrez records were based on misidentified *Ataenius chilensis* specimens (from specimens in HAHC). The Fairmaire (1884) record from “Punta-Arena” was as the type locality for *Ataenius crenatulus* Fairmaire, 1884 (now considered to be a synonym of *Parataenius derbesis*). We were unable to locate any type material for *Ataenius crenatulus* in the MNHN. Since this locality is over 1,800 km south of the known distribution of this species we consider it to be dubious. The Landin (1955) record may have been based on a misidentified a specimen of *Parataenius simulator* (but we were unable to locate this specimen in the MZLU). We suggest that the type locality of both *Parataenius derbesis* and the synonym *Ataenius crenatulus* be emended to the area encompassed by the known range of this species (Uruguay and the northern half of Argentina south to the province of Mendoza).

Parataenius derbesis is easily distinguished from other native eupariines by having evenly distributed pronotal punctures (Fig. 16) and elytral interval punctures dense and restricted to the central portion of the interval (Fig. 18).

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Fig. 85 - *Aegialia argentina*

FIGURE 85. *Aegialia argentina* distributional records from southern South America.

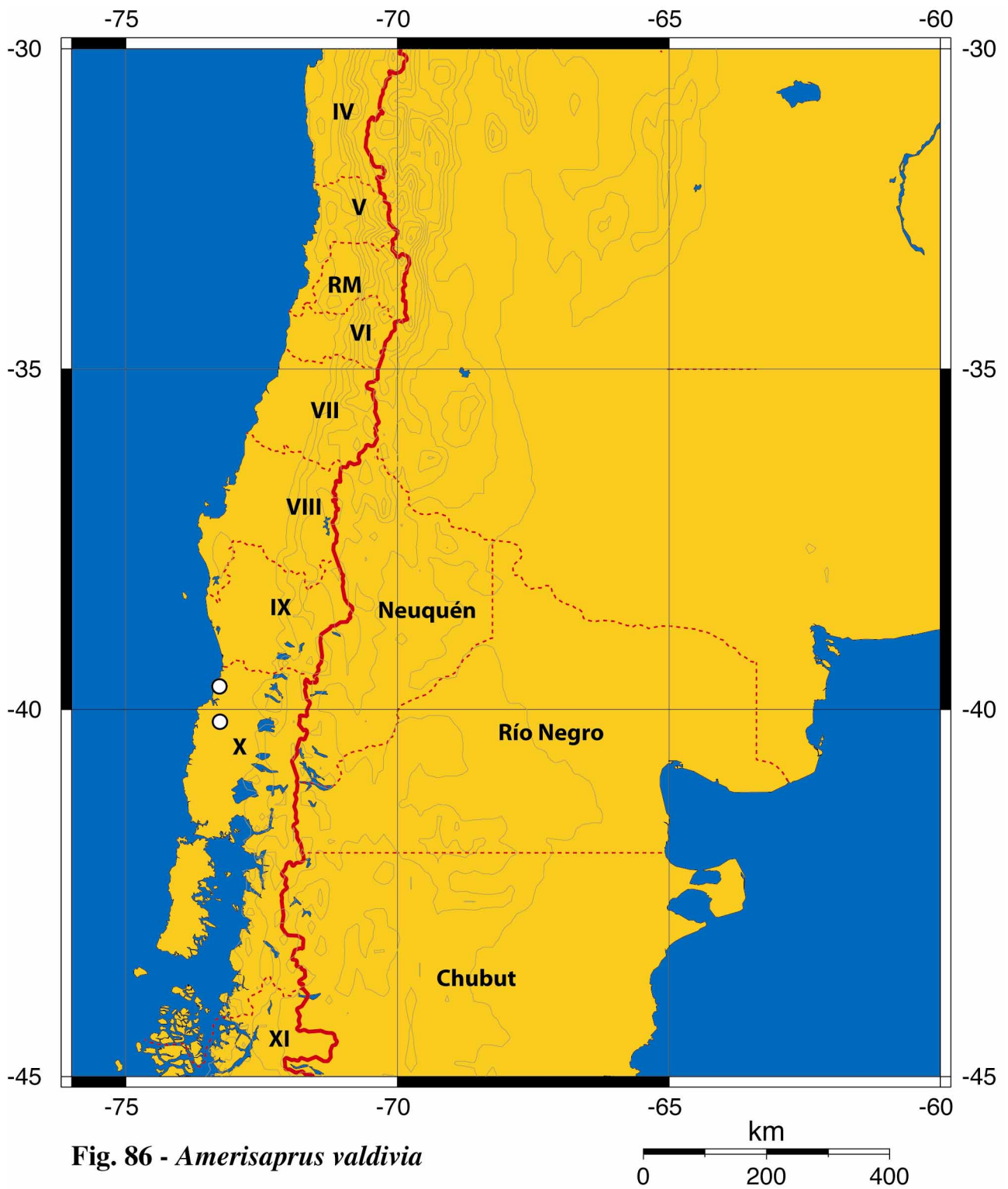


FIGURE 86. *Amerisaprus valdivia* distributional records.



FIGURE 87. *Argeremazus neuquen* distributional records.

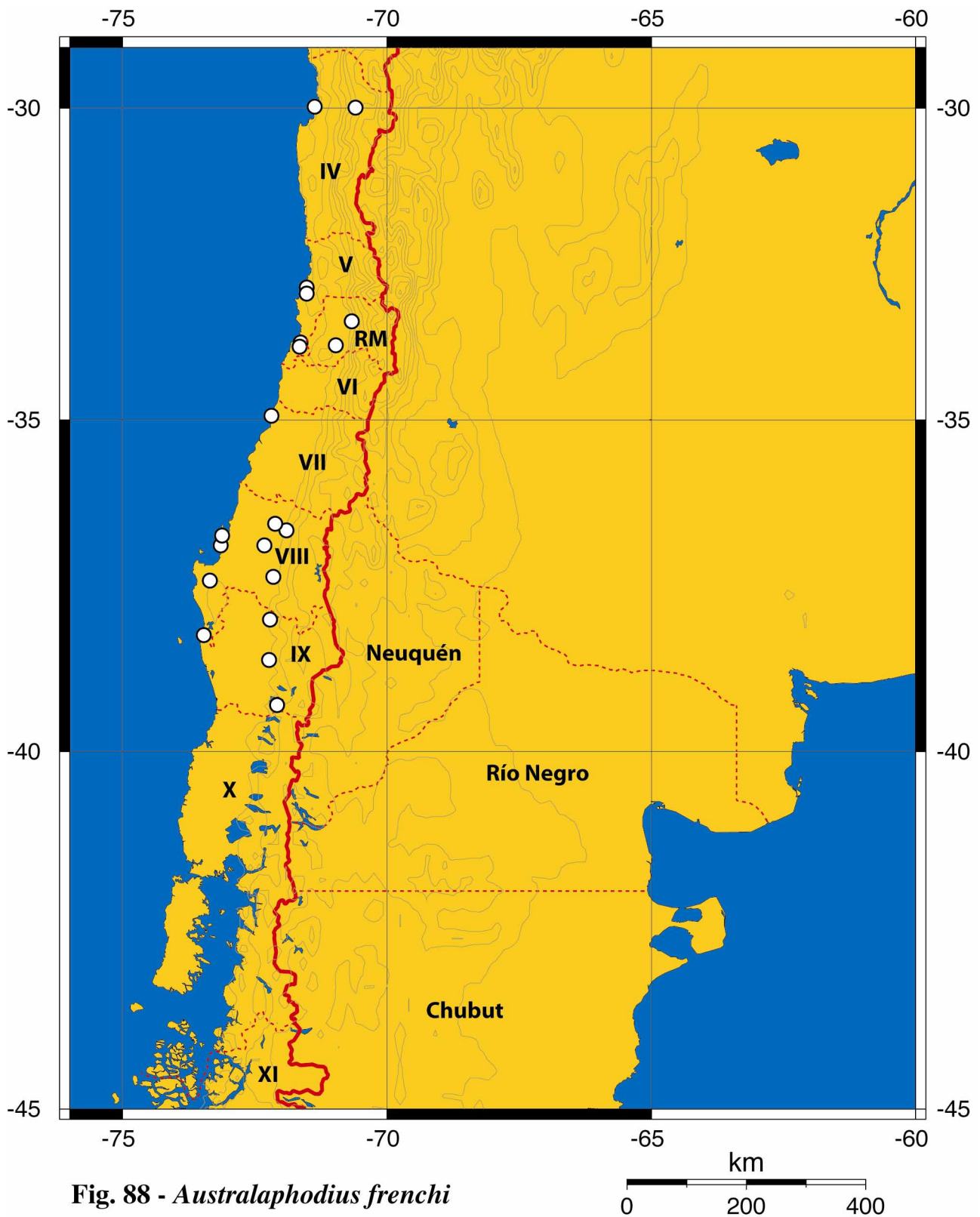


Fig. 88 - *Australaphodius frenchi*

FIGURE 88. *Australaphodius frenchi* distributional records from southern South America.

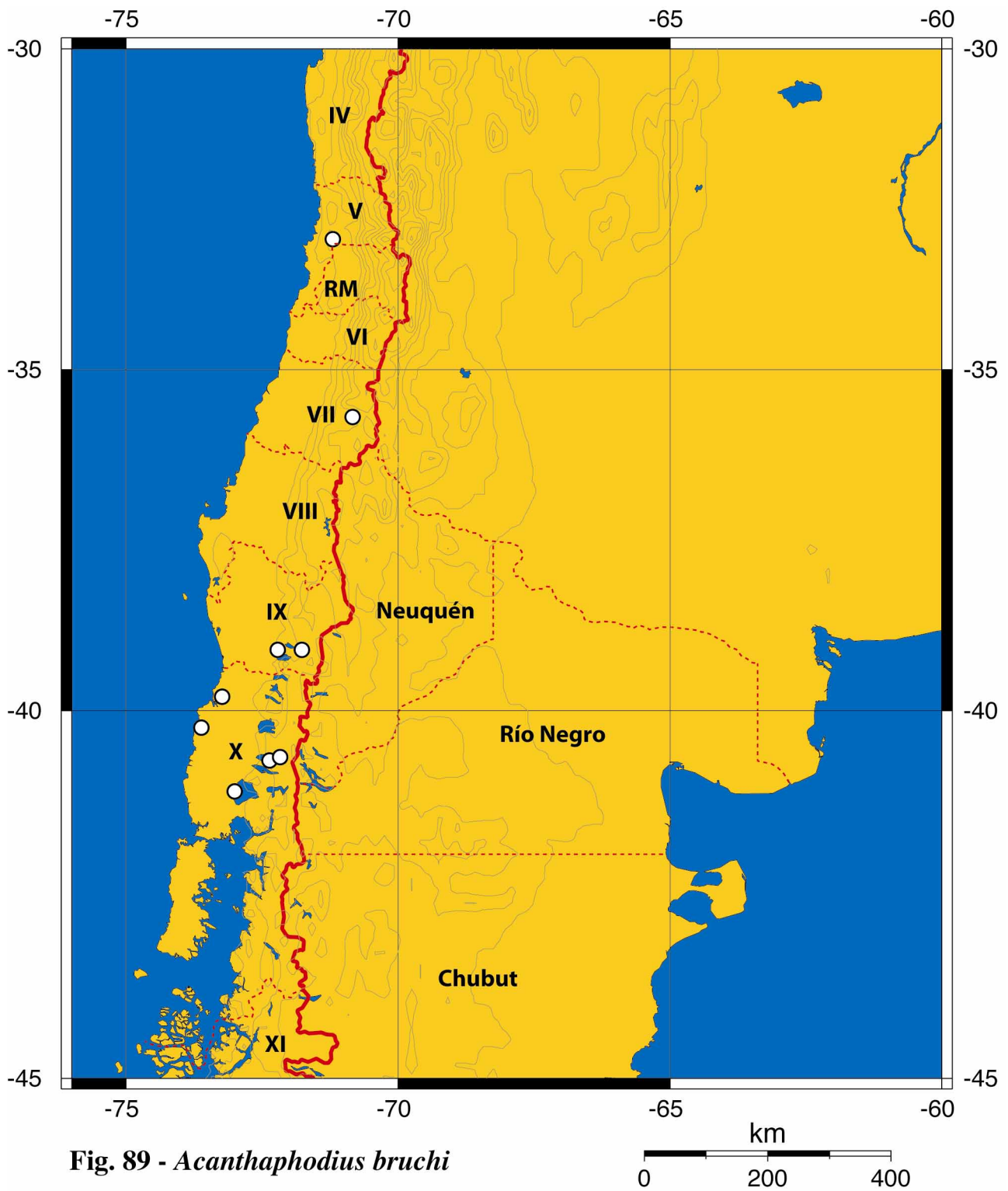


Fig. 89 - *Acanthaphodius bruchi*

FIGURE 89. *Acanthaphodius bruchi* distributional records.

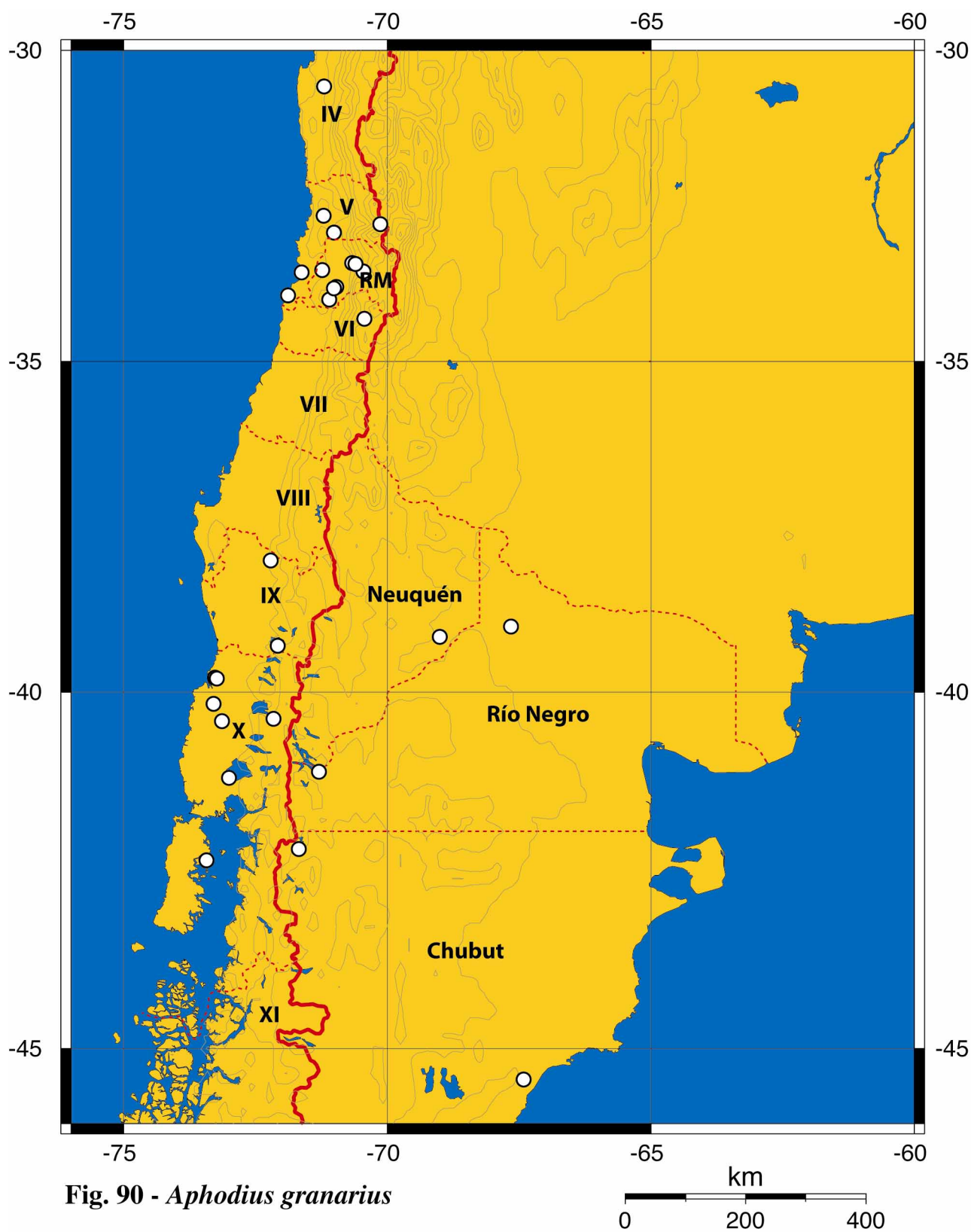


Fig. 90 - *Aphodius granarius*

FIGURE 90. *Aphodius granarius* distributional records from southern South America.

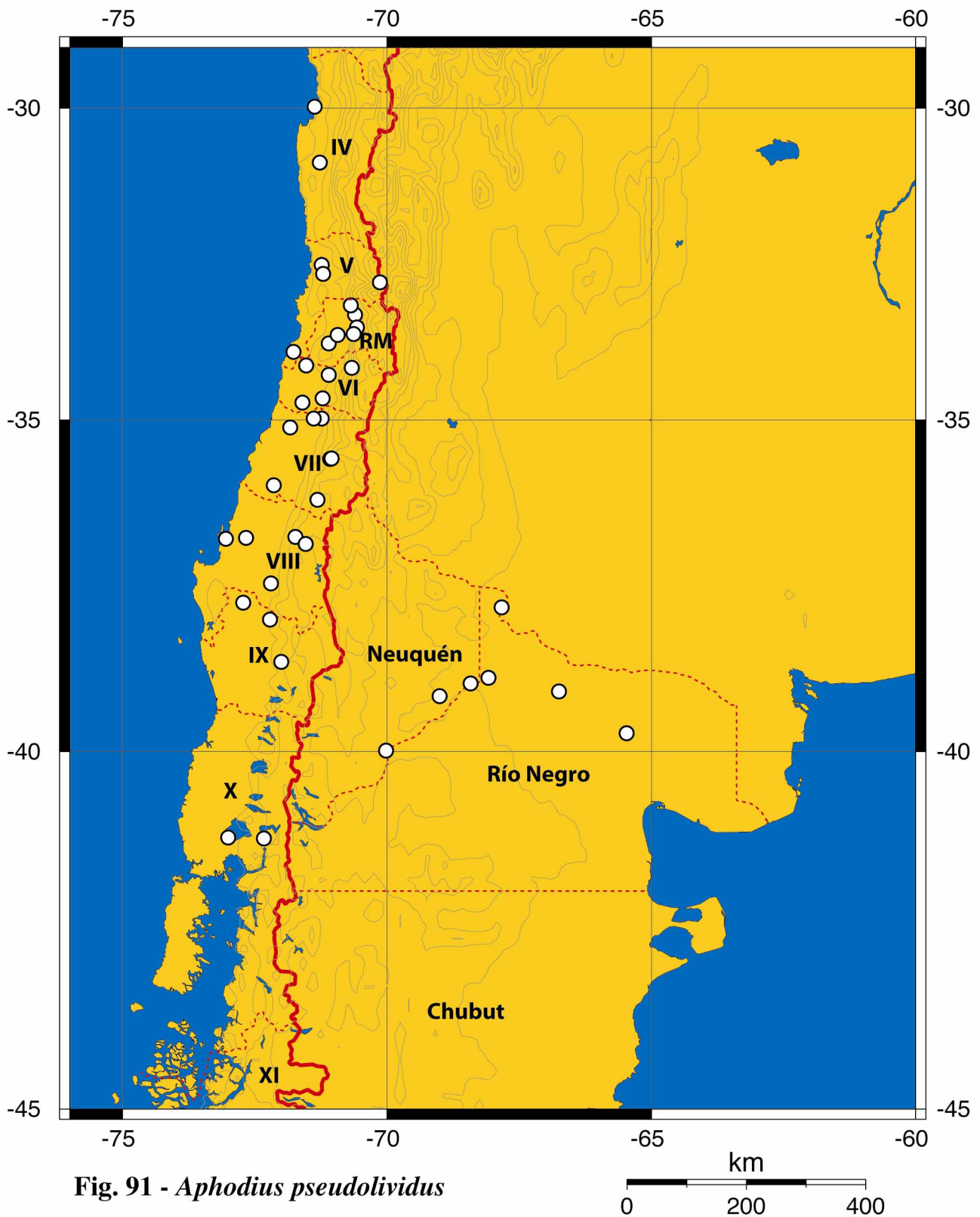


Fig. 91 - *Aphodius pseudolividus*

FIGURE 91. *Aphodius pseudolividus* distributional records from southern South America.

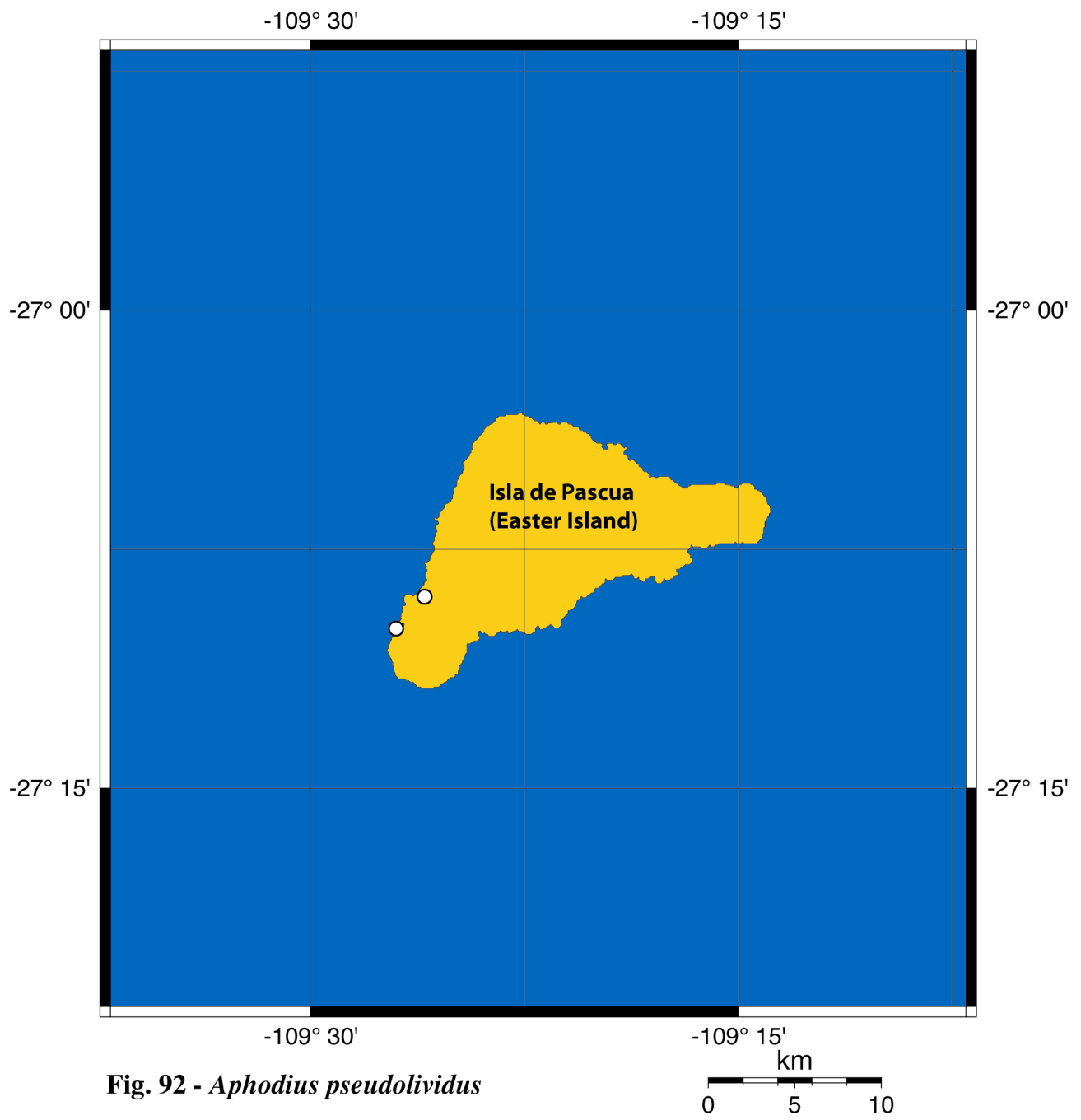


Fig. 92 - *Aphodius pseudolividus*

FIGURE 92. *Aphodius pseudolividus* distributional records from Isla de Pascua.

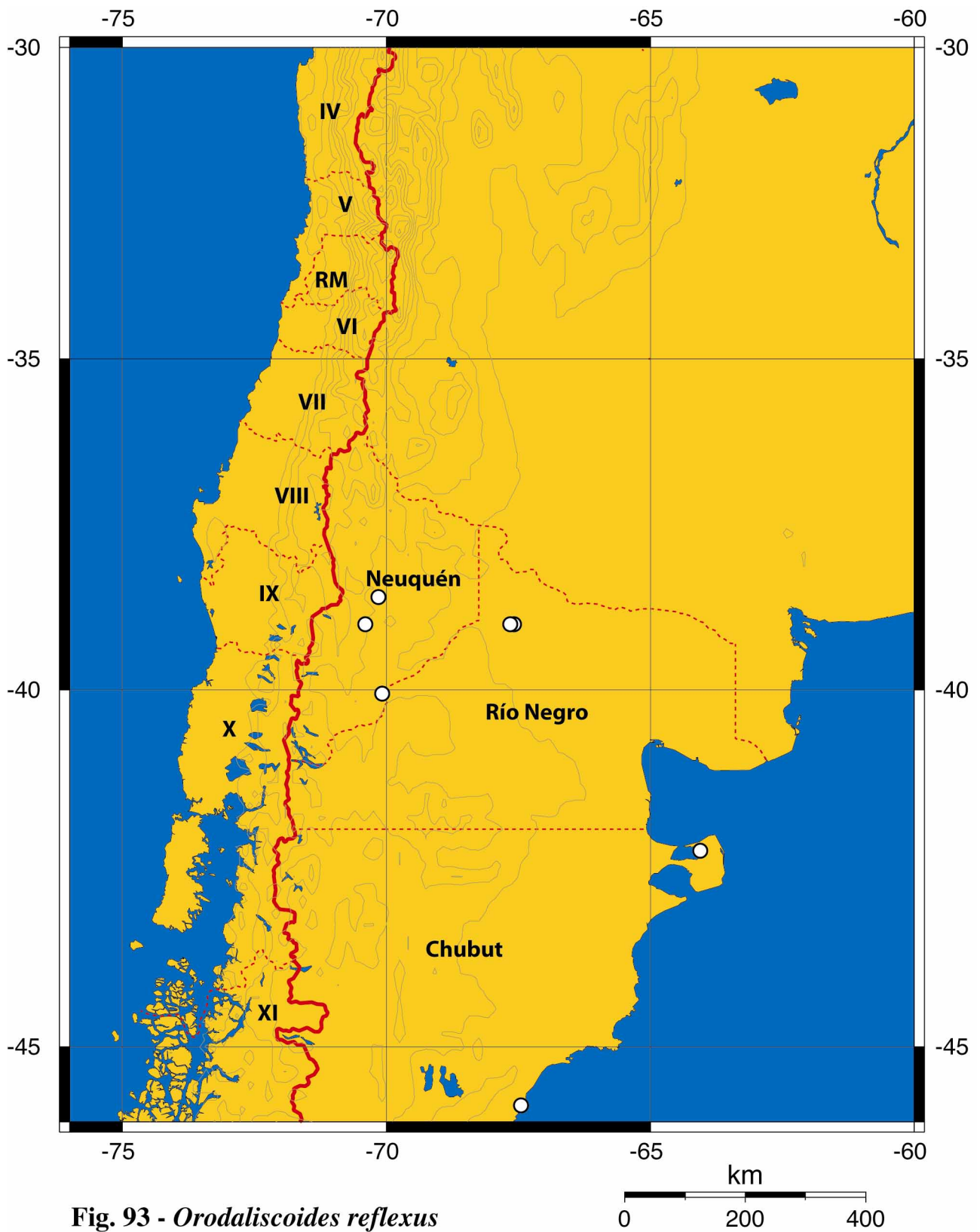


Fig. 93 - *Orodaliscoides reflexus*

FIGURE 93. *Orodaliscoides reflexus* distributional records.



FIGURE 94. *Orodaliscoides rugosiceps* distributional records.

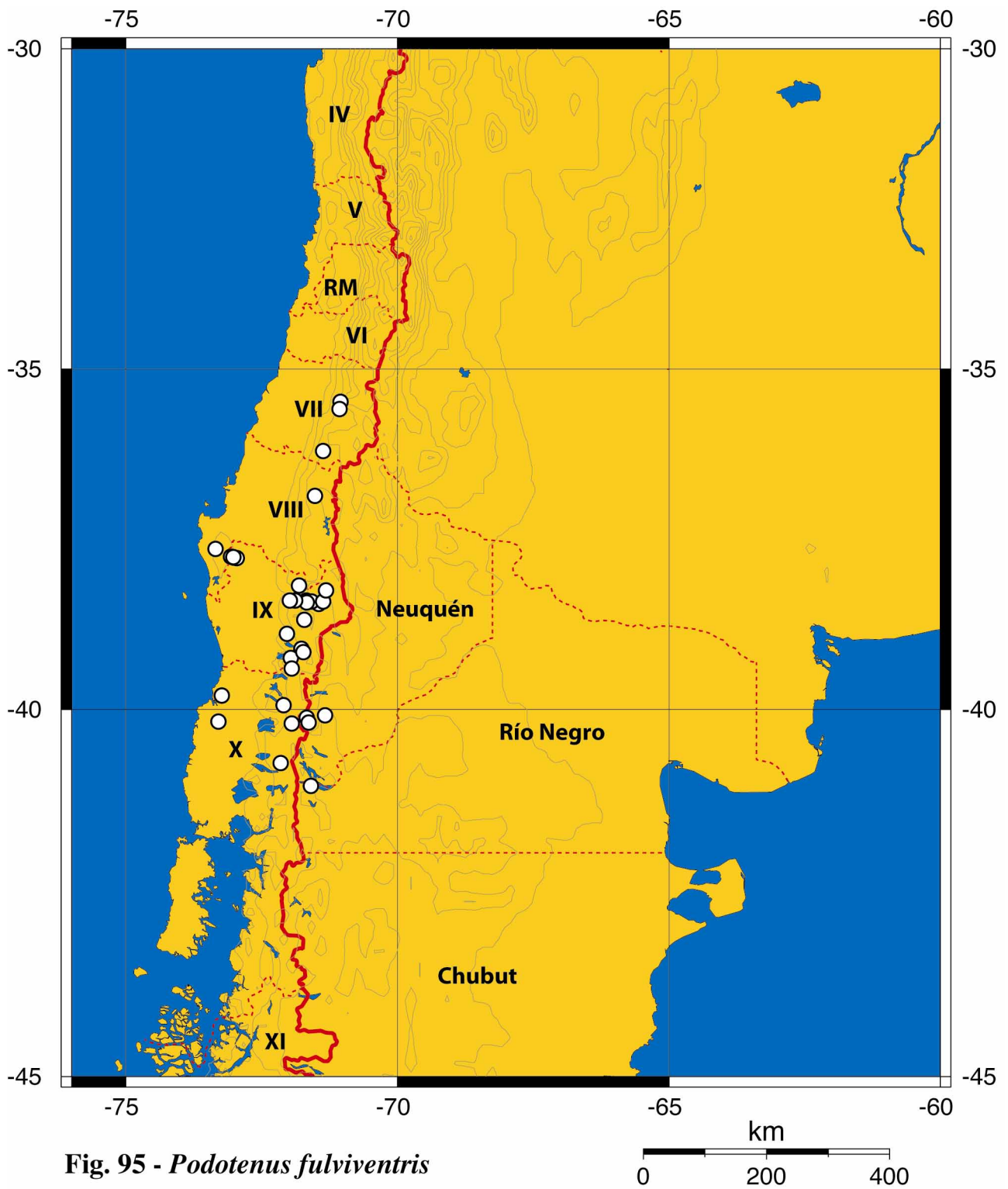


Fig. 95 - *Podotenus fulviventris*

FIGURE 95. *Podotenus fulviventris* distributional records.



FIGURE 96. *Symphodon anomalus* distributional records.



Fig. 97 - *Ataenius chilensis*

FIGURE 97. *Ataenius chilensis* distributional records.



Fig. 98 - *Ataenius gracilis*

FIGURE 98. *Ataenius gracilis* distributional records from southern South America.

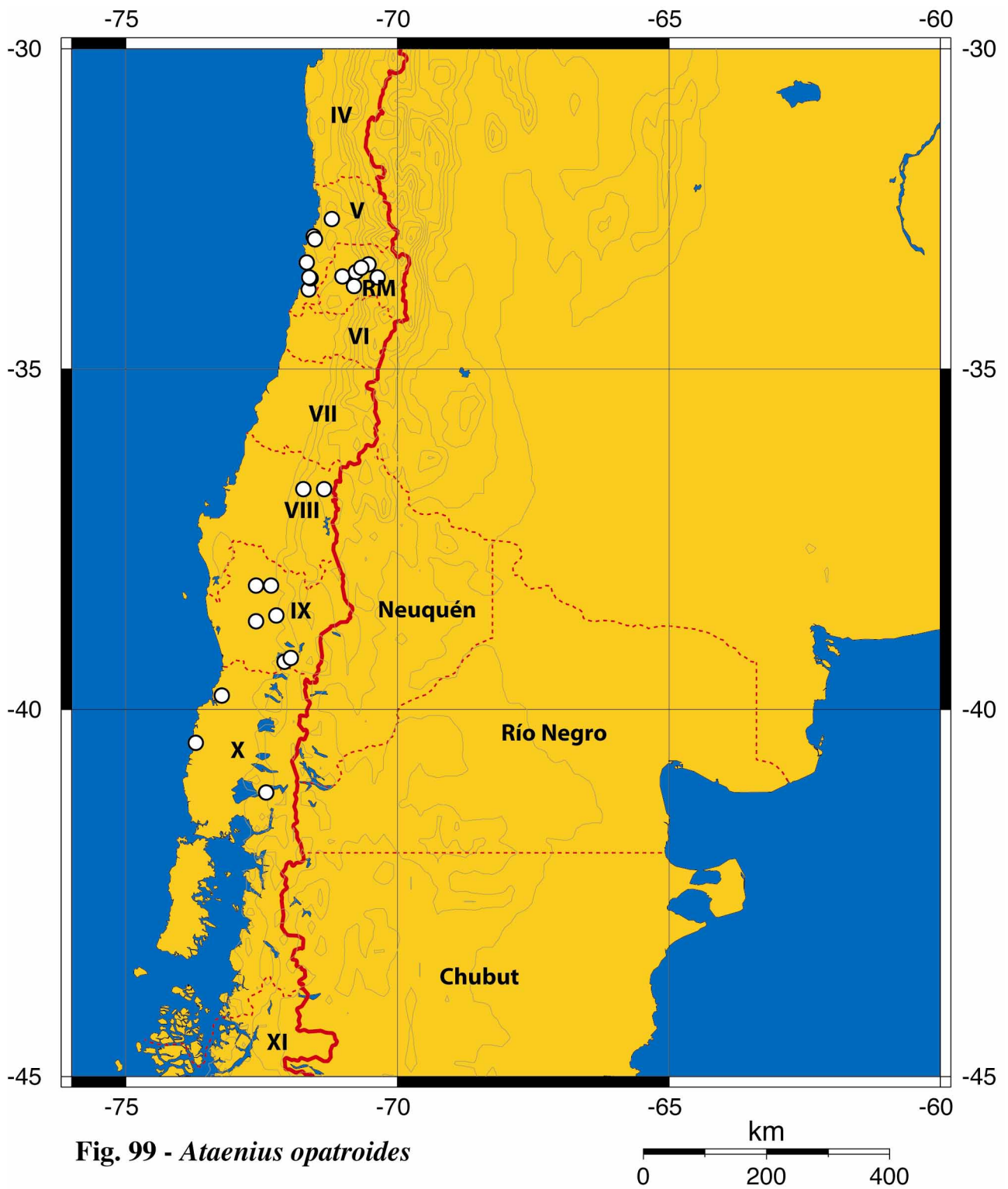


Fig. 99 - *Ataenius opatroides*

FIGURE 99. *Ataenius opatroides* distributional records from southern South America.



Fig. 100 - *Ataenius picinus*

FIGURE 100. *Ataenius picinus* distributional records from southern South America.

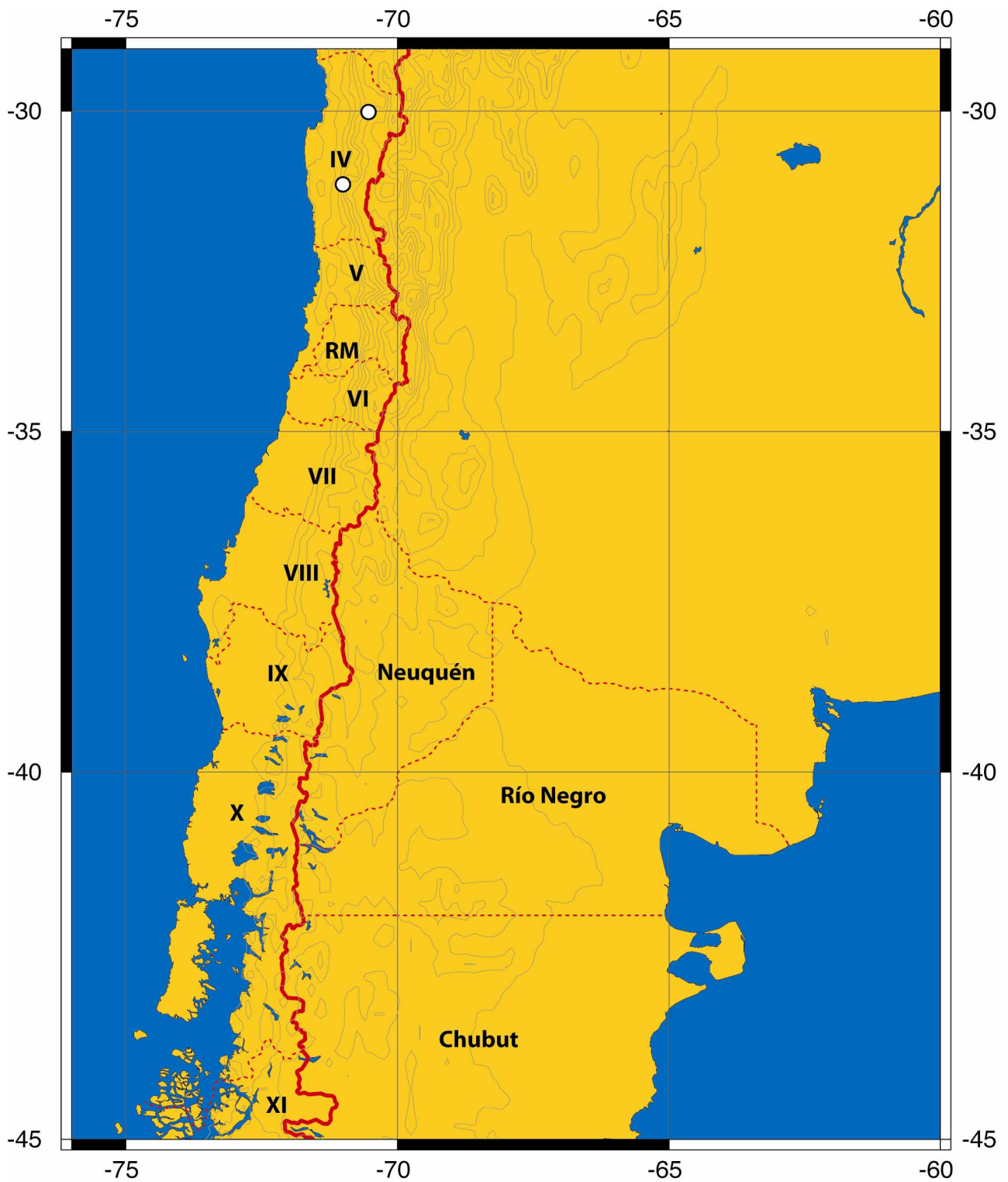


Fig. 101 - *Ataenius platensis*

FIGURE 101. *Ataenius platensis* distributional records from southern South America.



FIGURE 102. *Ataenius strigicaudus* distributional records from southern South America.



Fig. 103 - *Bruchaphodius ovalipennis*

FIGURE 103. *Bruchaphodius ovalipennis* distributional records from southern South America.

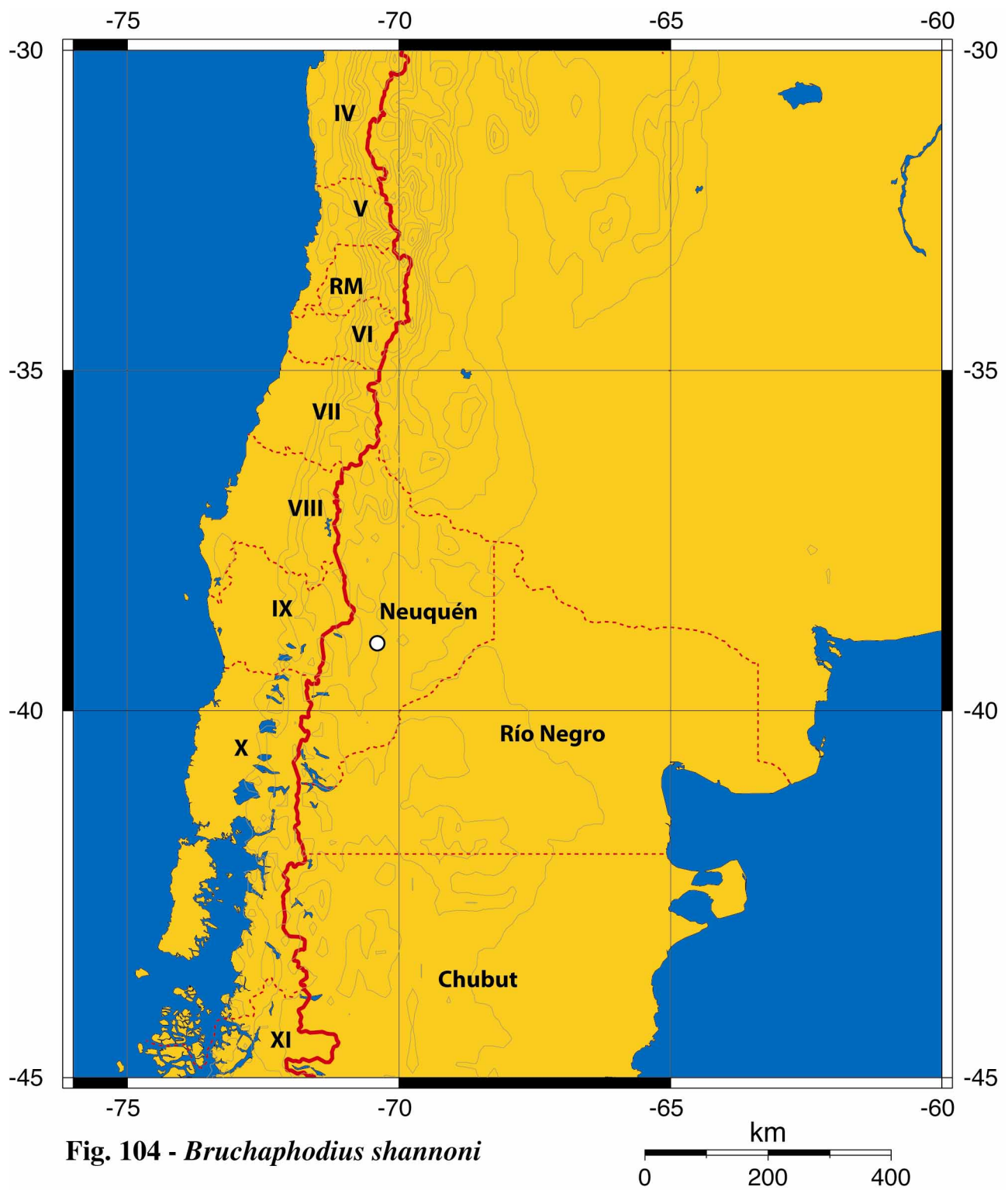


Fig. 104 - *Bruchaphodius shannoni*

FIGURE 104. *Bruchaphodius shannoni* distributional records from southern South America.

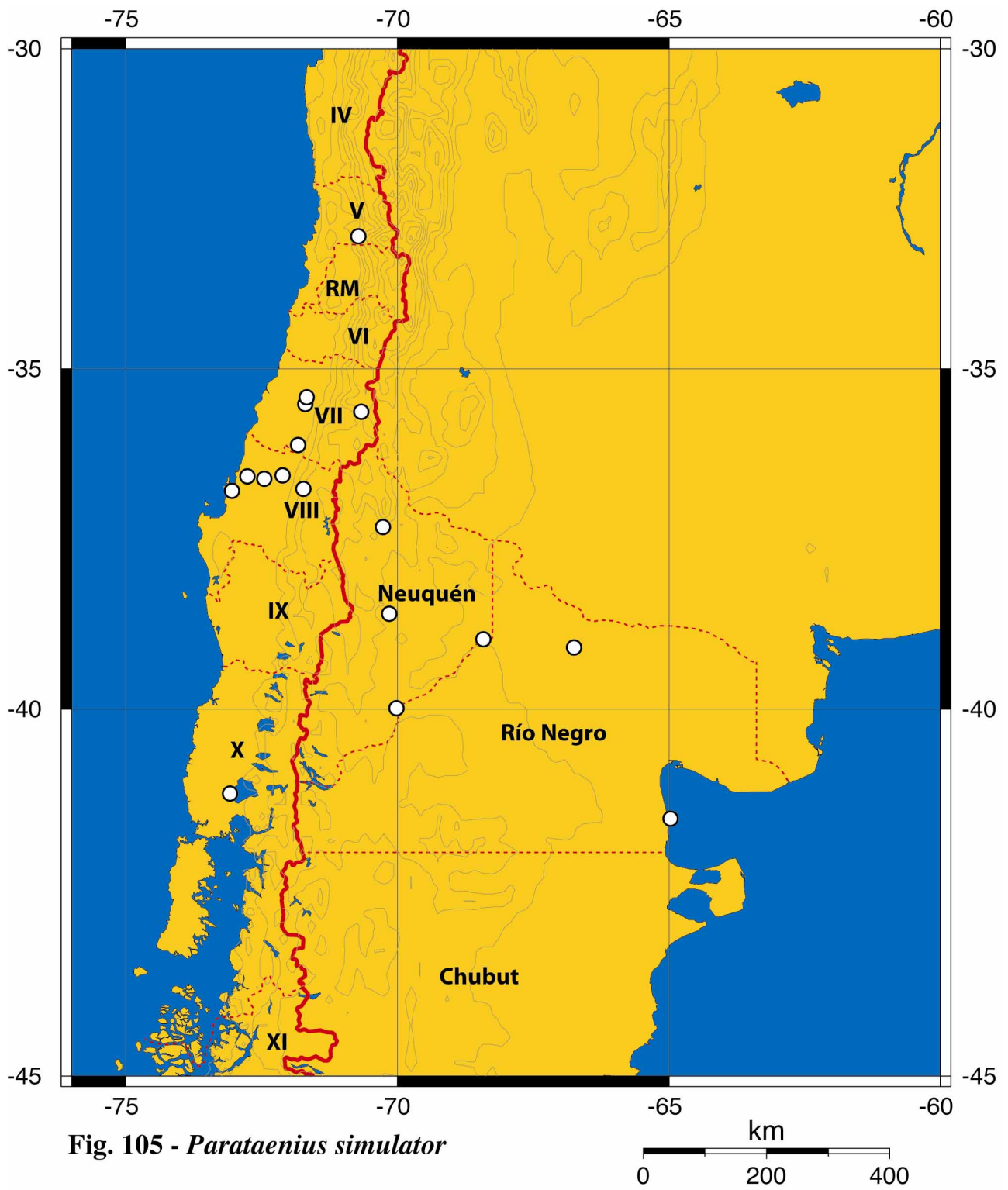


Fig. 105 - *Parataenius simulator*

FIGURE 105. *Parataenius simulator* distributional records from southern South America.

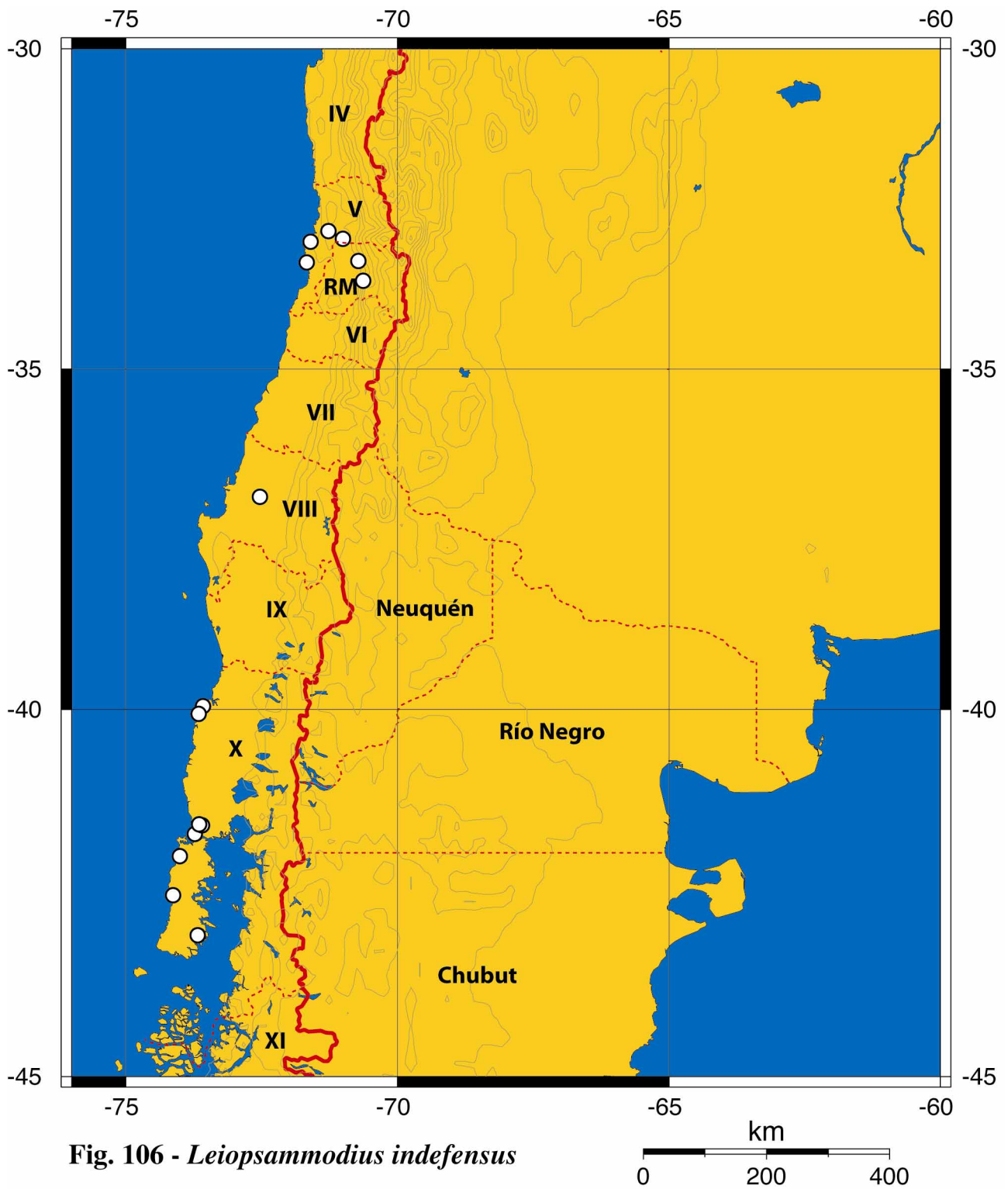


Fig. 106 - *Leiopsammodius indefensus*

FIGURE 106. *Leiopsammodius indefensus* distributional records.



Fig. 107 - *Leiopsammodius placidus*

FIGURE 107. *Leiopsammodius placidus* distributional records from southern South America.



Fig. 108 - *Odontosammodius cruentus*

FIGURE 108. *Odontosammodius cruentus* distributional records from southern South America.

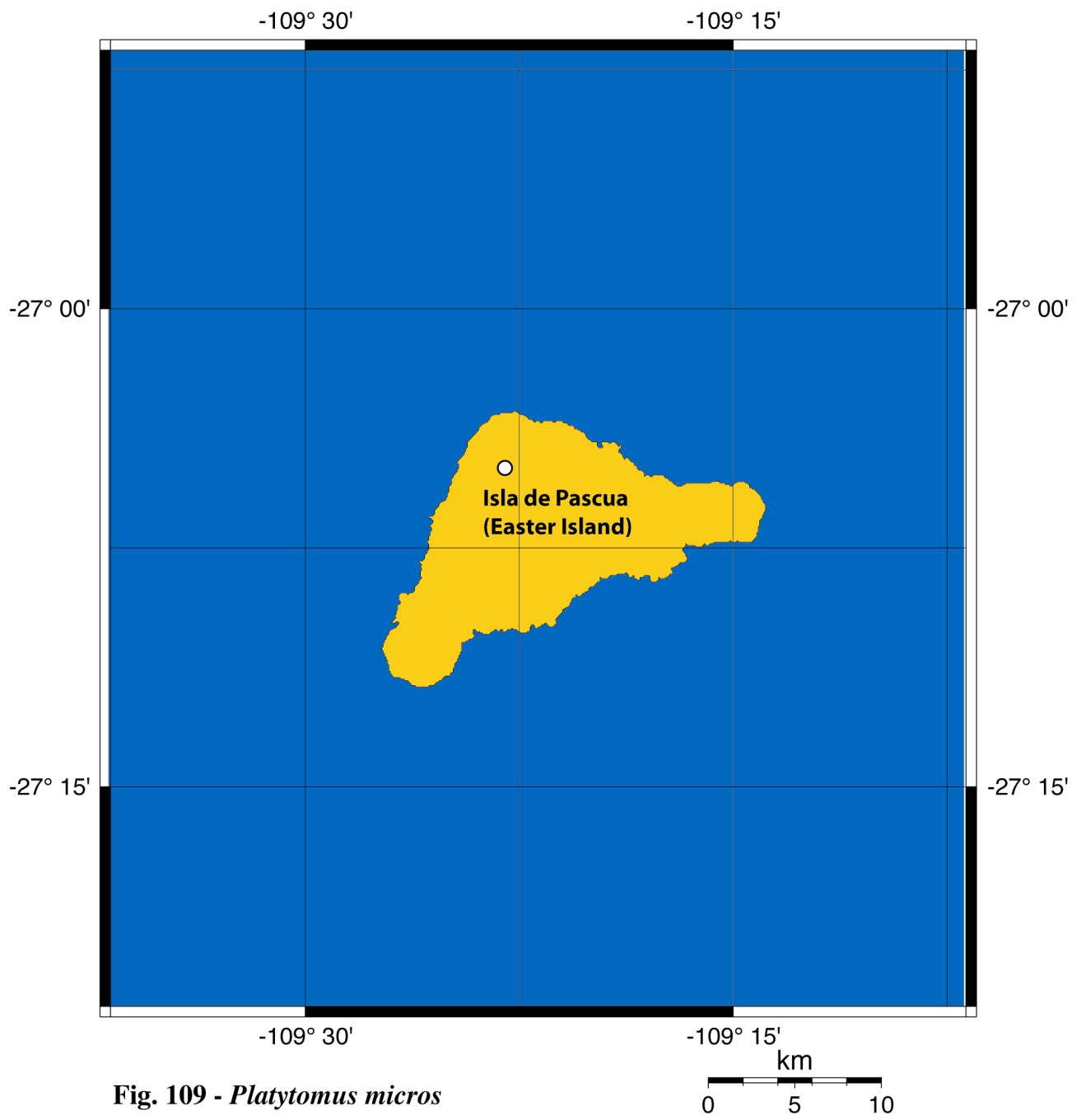


Fig. 109 - *Platytomus micros*

FIGURE 109. *Platytomus micros* distributional records from Isla de Pascua.



Fig. 110 - *Pleurophorus caesus*

FIGURE 110. *Pleurophorus caesus* distributional records from southern South America.



Fig. 111 - *Tesarius caelatus*

FIGURE 111. *Tesarius caelatus* distributional records from southern South America.