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Systematic redefinition of the New World Didactyliini
(Coleoptera: Scarabaeidae: Aphodiinae) with descriptions
of two new species of *Aidophus* Balthasar

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Abstract. As now understood, the New World Didactyliini (Coleoptera: Scarabaeidae: Aphodiinae) consists of eleven species of *Aidophus* Balthasar, two of which are new, and the introduced *Australaphodius frenchi* (Blackburn). Keys, descriptions and figures are provided to distinguish all included species.

Introduction

Members of the tribe Didactyliini can be distinguished from the Aphodiini by the following characters: abdominal sternites often strongly fused; hind tibia often with only vestigial transverse carinae and two apical spurs closely attached such that the first tarsal segment can not be articulated between them.

Dellacasa G. *et al* (2001) determined that most American taxa previously assigned to the genus *Didactylia* d'Orbigny, 1896, belong in *Aidophus* Balthasar, 1963. The purpose of this work is to redefine the systematic position and clear up some nomenclatural questions involved with these taxa through a thorough study of the types. We conclude that *Aphodius* (*Aidophus*) *paraguayanus* Balthasar,

1963, is a junior synonym of *Aphodius infuscatopennis* Schmidt A., 1909; *Aphodius* (*Orodaliscoides*) *pellax* Balthasar, 1960, belongs in the genus *Aidophus*. *Aidophus flechtmanni* Stebnicka and M. Dellacasa, n. sp., from Mato Grosso (Brazil) and *Aidophus skelleyi* Harpootlian and Gordon, n. sp., from Florida (U.S.A.) are herein described.

Lectotypes of *Aphodius flaveolus* Harold, 1867, *Aphodius infuscatopennis* Schmidt A., 1909, *Aphodius kansanus* Wickham, 1905, *Aphodius knausii* Fall, 1905, *Didactylia kolbei* Schmidt A., 1911, *Aphodius notatus* Harold, 1859, *Aphodius panamensis* Harold, 1859 and *Aphodius parvus* Horn, 1887 are herein designated.

We have examined about 1400 specimens preserved in the following collections:

AMNH: American Museum of Natural History, New York, NY, U.S.A.
 BCP: Balthasar Collection, National Museum, Prague, Czech Republic
 BMNH: The Natural History Museum [formerly British Museum Natural History], London, Great Britain
 CFC: Carlos C. Flechtman Collection, University of Brasilia, Brazil
 CMN: Canadian Museum of Nature, Ottawa, ON, Canada
 CUAC: Clemson University Arthropod Collection, Clemson, SC, U.S.A.
 CUIC: Cornell University, Ithaca, NY, U.S.A.
 DCG: Dellacasa Collection, Genoa, Italy
 FMLT: Fundacion Muguel Lillo, Tucuman, Argentina
 FMNH: Field Museum of Natural History, Chicago, IL, U.S.A.
 FSCA: Florida State Collection of Arthropods, Gainesville, FL, U.S.A.
 HAHC: Henry and Anne Howden Collection, Ottawa, ON, Canada
 ISEA: Institute of Systematics and Evolution of Animals PAS, Krakow, Poland
 KSU: Kansas State University, Manhattan, KS, U.S.A.
 MCSNG: Museo Civico di Storia Naturale "G. Doria", Genoa, Italy
 MCZ: Museum of Comparative Zoology, Harvard University, Cambridge, MA, U.S.A.
 MHNG: Museum d'Histoire Naturelle, Geneva, Switzerland
 MNHN: Museum National d'Histoire Naturelle, Paris, France
 MZUSP: Museu de Zoologia. Universidade de Sao Paulo, Sao Paulo, Brazil
 NRS: Naturhistoriska Riksmuseet, Stockholm, Sweden
 PESC: Paul E. Skelley Collection, Gainesville, FL, U.S.A.
 PJHC: Phillip J. Harpootlian Collection, Simpsonville, SC, U.S.A.
 PURC: Entomology Research Collection, Purdue University, West Lafayette, IN, U.S.A.
 RDG: Robert D. Gordon Collection, Willow City, ND, U.S.A.
 SMTD: Staatliches Museum fur Tierkunde, Dresden, Germany
 TAMU: Texas A and M University, College Station, TX, U.S.A.

TMP: Transvaal Museum, Pretoria, South Africa
 USNM: National Museum of Natural History [formerly United States National Museum], Smithsonian Institution, Washington, D.C., U.S.A.
 ZMHB: Zoologisches Museum der Humboldt Universitat, Berlin, Germany
 ZSM: Zoologische Staatssammlung, Munich, Germany

Key to American genera of Didactyliini

1. Hind tibia with vestigial transverse carinae on outer face; dorsal surface of fore tibia impunctate; middle and hind tibia with short, uneven apical spinules; first segment of hind tarsi without apical spinules in either sex. Brown, yellowish brown or testaceous; epistoma and pronotal disc usually darkened; elytral disc dark or yellowish, often with more or less distinct brownish spots. Length 3.0-5.0 mm. Nearctic and Neotropical region, Mexican Transition Zone *Aidophus* Balthasar
- 1'. Hind tibia with distinct transverse carinae on outer face; dorsal surface of fore tibia with sparse coarse punctures; middle and hind tibia with long, alternately uneven apical spinules; first segment of hind tarsi, in males, with two apical spinules (fig. 1). Blackish brown, elytra sometimes reddish brown. Length 3.0-4.0 mm. Southern Nearctic, Neotropical, Australian and Southern Afrotropical region *Australaphodius* Balthasar

Genus *Australaphodius* Balthasar

Aphodius (*Australaphodius*) Balthasar, 1942: 203; Cassis and Weir, 1992: 87
Aphodius (*Phaeaphodius*); Schmidt A., 1922: 208; Cassis and Weir, 1992: 90 (in part)
Australaphodius; Bordat, 1990: 314; Stebnicka and Howden, 1995: 763; Dellacasa G., Bordat and Dellacasa M., 2001: 306

Type species: *Aphodius melbournicus* Balthasar, 1942 (junior synonym of *Aphodius frenchi* Blackburn, 1892) (monotypy)

Redescription: Small (length 3.0-4.0 mm), elongate, convex, shiny, glabrous. Blackish brown, elytra sometimes reddish brown. Head narrowed apically; epistoma gibbous, punctate, with or without apical transverse carina; clypeus emarginate, sides rounded, finely margined, border glabrous; genae

obtusely rounded, setose, many protruding beyond eyes; latter small; clypeal suture distinct, sometimes tuberculate medially. Pronotum transverse, widest medially, simply punctate; sides feebly curved, thickly margined; hind angles rounded; base margined. Scutellum small, narrowly triangular. Elytra rather broad, not denticulate at umbone, striato-punctate; first stria as wide as second apically; lateral striae joining one another preapically. Fore tibia distally tridentate and proximally not serrulate at outer border; dorsal surface with sparse coarse punctures. Middle and hind tibiae with strong transverse carinae on outer face; long, alternately unequal apical spinules. Abdominal sternites fused, sutural borders distinct medially. Pygidium with sparse, straight setae. Sexual dimorphism expressed in males by fore tibia with apical spur sinuate before apex and abruptly deflexed; first segment of middle tarsi with inferior apical spinule at inner border; first segment of hind tarsi with two small inferior apical spinules at inner border. Females with apical spur of fore tibia straight; first segment of middle tarsi without apical spinule. Aedeagus with tegmen feebly convex and parallel sided; parameres straight, acute apically and swollen basally. Epipharynx (fig. 48) transverse; anterior border sinuate on each side; epitorma widely triangular; corypha with several apical spinules; pedia with a row of stout chaetae parallel to chaetopariae; latter more elongate; nesium broad.

Distribution: Southern Afrotropical, Australian, Neotropical and Nearctic region.

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

(Figs. 1, 5, 48-50)

Aphodius ambiguus Boheman, 1858: 51 (not *Aphodius bimaculatus* "variety" *ambiguus* Mulsant, 1842: 202)

Aphodius frenchi Blackburn, 1892: 35

Aphodius brevitarsis Peringuey, 1901: 388 (not *Aphodius brevitarsis* Reitter, 1894: 186); Schmidt A., 1922: 212 (synonym of *A. frenchi*)

Aphodius tarsalis Schmidt A., 1907: 201 (*nomen novum* for *A. brevitarsis* Peringuey, 1901)

Aphodius (Phaeaphodius) frenchi; Schmidt A., 1922: 211; Cassis and Weir, 1992: 90

Aphodius (Australaphodius) melbournicus Balthasar, 1942: 203; Bordat, 1990: 315; Cassis and Weir, 1992: 87

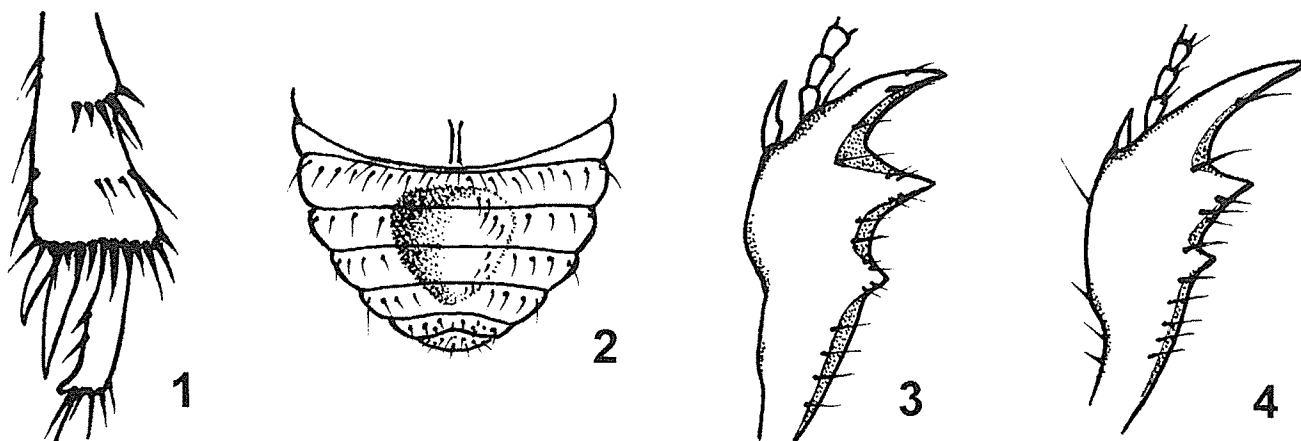
Aphodius catulus Balthasar, 1946: 54; Bordat, 1990: 315 (doubtful synonym of *A. frenchi*)

Australaphodius frenchi; Bordat, 1990: 315; Stebnicka and Howden, 1995: 763; Dellacasa G., Bordat and Dellacasa M., 2001: 307

Type locality: S. Australia (Restricted)

Type depository: The Natural History Museum, London (BMNH) (Bordat, pers. comm.) [Subsequent lectotype/paralectotypes, designated by Stebnicka and Howden (1995), in The South Australian Museum, Adelaide]. Two syntypes of *A. melbournicus* are in the Balthasar Collection, Prague (BCP).

Redescription: Length 3.0-4.0 mm, elongate, convex, shiny, glabrous. Black, lateral borders of pronotum and sometimes elytra reddish brown. Head with epistoma gibbous, apically with a more or less distinct transverse carina, simply and finely punctate.



Figures 1-4. 1. *Australaphodius frenchi*: right hind tibia and first segment of tarsus of male (dorsal view); 2. *Aidophus kolbei*: abdomen of male (ventral view); 3. *Aidophus notatus*: right fore tibia of male (dorsal view); 4. *Aidophus skelleys*: right fore tibia of male (dorsal view).

tate; punctation nearly evenly scattered throughout; clypeus distinctly emarginate, sides widely rounded, suture feebly raised, bigibbous medially, more coarsely punctate; genae obtusely angulose, protruding beyond eyes. Pronotum moderately transverse, simply punctate; punctation like that on head but somewhat finer apically and laterally; latter feebly rounded and thickly margined; border with sparse, long setae, denser near apical angles; hind angles obtusely rounded; base distinctly margined. Scutellum small, narrowly triangular, smooth, basally depressed. Elytra not denticulate at umbone, epipleural fold distinct, deeply striate; striae distinctly crenulate; intervals feebly convex, finely and sparsely punctate. Abdominal sternites glabrous, more densely punctate laterally than medially; apical sternite with four or six large setigerous punctures. Pygidium finely punctate with some sparse, long and straight setae. Male: fore tibia with apical spur abruptly bent downward; first segment of middle tarsi with one inferior apical spinule at inner border; first segment of hind tarsi with two inferior apical spinules at inner border (fig. 1); hind tibia with superior apical spur as long as first tarsal segment; latter as long as following three combined. Female: fore tibia with apical spur nearly straight; first segment of middle and hind tarsi without apical spinules; hind tibia with superior apical spur longer than first tarsal segment; latter only slightly longer than following two combined.

Distribution: South Africa, Australia, Tasmania, New Zealand (Stebnicka, 2001), U.S.A. (California), Chile

Material examined: CHILE: ARAUCANIA: Er-cilla, 38.05 S - 72.21 W, 22.X.1990, leg. S. Endrody-Younga, 135 exx. (TMP); BIO-BIO: Concepcion, 15.VIII.1962, leg. Carvejol, 2exx. (DCG); LOS LA-GOS: Antillanca, m 700, 40.39 S - 72.16 W, *Nothofagus-Podocarp.* forest, 29.X.1990, leg. S. Endrody-Younga, 125 exx. (TMP); VALPARAÍSO: Concon-Sur, 15.VIII.1970, leg. M. Pino, 17 exx. (DCG); Paso Hondo-Quilpue, 12.IX.1981, leg. E. Arredondo, 4 exx. (DCG); U.S.A.: CALIFORNIA: San Francisco Co., San Francisco, 19.II.1957, leg. McNally J. H., 7 exx. (RDG); San Mateo Co., Daly City, Palo-Mar-stables, 31.III.1981, leg. Gross D. F., 1 ex. (RDG).

Remarks: Probably a generalist surface dung feeder, at least in California. Most of the Palo-Mar-stables specimens (Dan Gross *pers. comm.*) were found in 2-3 day old horse dung deposited in herba-

ceous vegetation, commonly *Ryphanus sativus* Linn. All specimens were collected from October to April.

In the United States, this species is thus far known only from one area in California. How this species arrived is a matter of conjecture, but it may have been transported from the Australian region by military traffic during or immediately after World War II.

Genus *Aidophus* Balthasar

Aphodius (*Aidophus*) Balthasar, 1963: 278 (Aphodiini)
Aidophus; Dellacasa G., Bordat and Dellacasa M., 2001:
305 (Didactyliini)

Type species: *Aphodius paraguayanus* Balthasar, 1963 (original designation) (junior synonym of *Aphodius infuscatopennis* Schmidt A., 1909)

Redescription: Small (length 3.0-5.0 mm), elongate subcylindrical, convex to stout, oval; more or less shiny, glabrous. Pale yellowish brown; epistoma, pronotal and elytral disc darkened; elytra infrequently with several elongate brownish spots. Head with epistoma feebly gibbous, punctate, apically more or less distinctly granulose; clypeus distinctly to feebly emarginate, sides rounded, margined, border glabrous; genae rounded, with sparse, long setae, protruding beyond eyes or not; latter rather large; apical suture obsolete; apices usually more coarsely punctate than epistoma. Pronotum transverse, more or less densely and unevenly punctate; sides rounded, thinly margined, with long sparse apical setae; hind angles rounded; base thinly margined. Scutellum small, rather narrow, with sides parallel toward base. Elytra elongate, nearly parallel sided, not denticulate at umbone, distinctly striate; striae superficially punctate, lateral ones joining apically; intervals nearly flat. Fore tibia distally more or less strongly tridentate and proximally not serrulate at outer border; dorsal surface smooth. Middle tibia with feeble transverse carinae on outer face. Hind tibia with faint transverse carinae on outer face; long, unevenly unequal apical spinules. Tarsi rather slender, sometimes longer than tibia. Pygidium with sparse, long and straight discal setae. Abdominal sternites fused. Sexual dimorphism in males expressed by fore tibia with apical spur flattened and truncate or hooked apically or lanceolate; punctation of epistoma and pronotal disc sparser; sometimes abdomen with wide median foveola. Aedeagus

with parameres short, apically curved. Epipharynx broadly transverse; anterior border deeply sinuate medially; epitorma nearly faint; corypha usually without setae; pedia pubescent with intermixed weak and strong spines more or less serially arranged; chaetopariae slender and dense.

Distribution: Nearctic and Neotropical region, Mexican Transition Zone.

Remarks: *Aidophus* is most closely related to the Afrotropical and Southern Palearctic genus *Didactylia* d'Orbigny, but differs by the following features: head smaller; clypeal and pronotal border finer, fore tibia, in males, not truncate apically; dimorphic characters otherwise expressed. *Aidophus* now includes two Nearctic species distributed in Canada and U.S.A. and nine species from Central and South America. Several apparently new species from Argentina and Brazil, represented only by female specimens, remain undescribed.

Key to American species of *Aidophus*

(*Aidophus cabrali* (Petrovitz) is not included in the key as it is only known from the female holotype. This taxon resembles *A. impressus* (Petrovitz) with which it shares the shape of eighth and tenth elytral intervals, at least in the female, but the epipharynx is different.)

1. Shape stout, oblong (figs. 6-8); Canada to Guyana; pronotum and elytra often with distinct dark markings 2
- 1'. Shape elongate, subcylindrical (figs. 18-21, 40-43); [? Mexico], Panama to Chile and Argentina; pronotum and elytra without distinct markings 4
- 2(1). Base of pronotum distinctly bisinuate; fore tibia, in males, angulately widened at inner border (fig. 3); abdomen distinctly foveolate medially in males. Head reddish brown, distally paler; pronotum yellowish with two reddish brown discal spots; elytra pale yellowish with several reddish brown spots (fig. 6). [? U.S.A. (Arizona)], Mexico, Panama, Colombia, Venezuela, Guyana *A. notatus* (Harold)
- 2'. Base of pronotum evenly rounded; fore tibia not angulately widened at inner border in either sex (fig. 4); abdomen slightly foveolate or not in males. Color various, pronotum and elytra with or without brownish maculation. U.S.A. and Canada 3
- 3(2'). Hind tibia with superior apical spur shorter than first tarsal segment; latter as long as following

two combined; clypeus slightly narrowed apically with curved sides, genae rounded; head and pronotum shiny, densely punctate; genae and lateral borders of pronotum with sparse, moderately long setae; fore tibia with apical tooth not large; abdomen, in males, slightly foveolate medially. Pale yellowish, testaceous to darker brown; head with epistoma reddish brown; pronotum often darkened on disc, frequently with paired lateral brownish spots; elytra with suture reddish brown, sometimes with shadowy brownish maculation especially before preapical declivity (fig. 7). Length 3.0-4.0 mm. Canada (Ontario), U.S.A. (east coast from New Jersey to Florida, Mississippi, Wisconsin and Indiana near Lake Michigan, Nebraska, Texas, Kansas, Oklahoma, New Mexico) *A. parvus* (Horn)

- 3'. Hind tibia with superior apical spur longer than first tarsal segment; latter shorter than following two combined; clypeus distinctly narrowed apically with straight sides, genae obtusely angulate; head and pronotum rather dull, strongly microreticulate, unevenly punctate; genae and lateral borders of pronotum with dense, long setae; fore tibia with apical tooth large, basal one reduced (fig. 4); abdomen, in males, not foveolate. Entirely pale yellowish, sometimes translucent (fig. 8). Length 2.5-3.0 mm. U.S.A. (Florida) *A. skelleyi* Harpootlian and Gordon, n. sp.
- 4(1'). Clypeus distinctly emarginate; epistoma subrugosely punctate, at least toward clypeus; elytral striae rather distinctly punctate, feebly crenulate; abdomen not foveolate in either sex. Pale reddish brown; head and pronotal disc darker; elytra with cloudy elongate discal spot brownish (fig. 18). Length 3.0-4.0 mm. Peru, Brazil, Bolivia, Paraguay, Uruguay, Argentina *A. infuscatopennis* (A. Schmidt)
- 4'. Clypeus subtruncate to slightly emarginate; epistoma simply punctate; elytral striae indistinctly punctate, not crenulate; abdomen with foveola or not in males. Color and length various. Panama southward 5
- 5(4'). Hind angles of pronotum subtruncate or obtuse; genae obtusely rounded; abdomen in males with more or less deep foveola (fig. 2) 6
- 5'. Hind angles of pronotum widely rounded; genae angulate; abdomen in males not foveolate 8
- 6(5). Elytral intervals flat; hind angles of pronotum subtruncate; males with apical spur of fore tibia lanceolate. Head, pronotal and elytral disc dark brownish (fig. 21). Length 3.0-3.5 mm. Bolivia *A. kolbei* (A. Schmidt)
- 6'. Elytral intervals feebly convex at least on preapical declivity; hind angles of pronotum obtuse; males

- with apical spur of fore tibia hooked apically. Color various. Length 3.5-4.5 mm. Panama to Brazil 7
- 7(6'). Pronotum densely, unevenly punctate, disc lacking coarse punctures; elytral intervals flat, feebly convex preapically, finely and sparsely punctate. Dorsum brownish; lateral borders of pronotum, elytral base, second interval, apex and lateral borders yellowish (fig. 20). Length 3.5-4.0 mm. Panama, [? Venezuela]
..... *A. panamensis* (Harold)
- 7'. Pronotum densely, evenly punctate, disc with coarse punctures; elytral intervals feebly convex, more convex preapically, more distinctly and densely punctate. Dark brownish; pronotum with lateral borders faintly paler. Length 4.0-4.5 mm. Brazil (Mato Grosso do Sul)
..... *A. flechtmanni* Stebnicka and M. Dellacasa, n. sp.
- 8(5'). Elytral intervals eight and ten strongly convex on preapical declivity; fore tibia with apical spur, in males, somewhat outwardly curved and evenly acuminate apically; dorsum strongly alutaceous, dull; shape oblong oval. Yellowish brown, head and pronotal disc darkened. Length 3.2 mm. Brazil (Parnagua)
..... *A. impressus* (Petrovitz)
- 8'. Elytral intervals eight and ten nearly flat on preapical declivity; fore tibia with apical spur, in males, not as above; dorsal surface alutaceous, shiny; shape subcylindrical, elytra more or less strongly elongate. Color various. Length 3.5-5.0 mm. Bolivia, [? Mexico], Argentina, Chile 9
- 9(8'). Elytra three times longer than pronotum, intervals impunctate, faintly alutaceous, shiny; fore tibia with apical spur, in males, slightly outwardly sinuate and apically acuminate. Dorsum pale yellowish brown; distal part of head, sides and base of pronotum yellowish; elytron with sutural interval and elongate cloudy discal spot brownish. Length 4.5-5.0 mm. Bolivia
..... *A. pallax* (Balthasar)
- 9'. Elytra two and half times longer than pronotum, intervals finely, unevenly punctate, alutaceous, subshiny; fore tibia with apical spur, in males, obliquely truncate apically. Dorsum testaceous; basal part of head, pronotal disc and sutural interval reddish brown (fig. 19). Length 3.5-4.5 mm. [? Mexico], Argentina, Chile
..... *A. flaveolus* (Harold)

***Aidophus cabrali* (Petrovitz, 1973) comb. nov.**
(figs. 41, 44)

Didactylia cabrali Petrovitz, 1973: 148; Dellacasa M., 1988: 296

Type locality: Mamanguape, Parahyba, Bras. [Brazil]

Type depository: Museum d'Histoire naturelle, Geneva (MHNG)

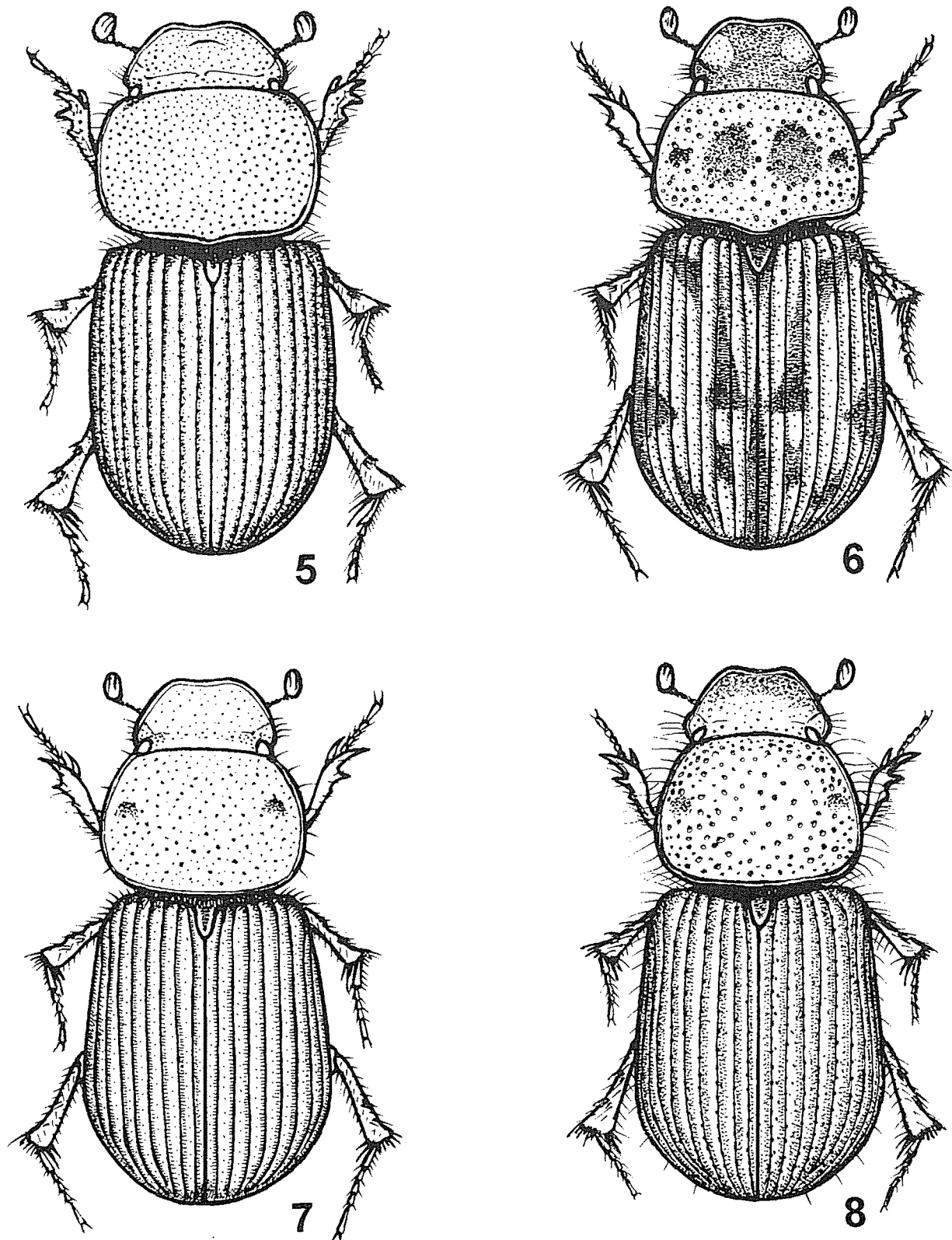
Redescription of female: Length 3.2 mm, oblong oval, rather shiny, glabrous. Yellowish brown, head and pronotal disc darkened; lateral borders of pronotum and legs yellowish; antennal club testaceous. Head converging apically, epistoma gibbous, disc finely punctate, punctation subrugose distally; genae obtusely rounded, with short setae protruding barely beyond eyes; clypeus more distinctly and coarsely punctate than epistoma. Pronotum subquadrate, moderately convex; densely unevenly punctate, coarse punctures coarser on sides; lateral borders widely rounded, fringed with rather short and scarce setae; hind angles obtuse; base feebly bisinuate, rather thickly margined. Scutellum somewhat depressed, triangularly elongate, shiny, impunctate. Elytra slightly oval, finely striate; striae distinctly impressed, faintly punctate, not crenulate; intervals feebly convex, finely microreticulate and with sparse and extremely fine punctures; the lateral ones strongly convex preapically. Fore tibia with apical spur rather short, outwardly incurvate and apically acuminate, Hind tibia with superior apical spur as long as first tarsal segment; latter shorter than following three combined.

Distribution: This species, based on a single female holotype, is only known from the type locality.

Remarks: At first sight, one can suppose that *A. cabrali* could be the female of *A. impressus*. These two taxa have in common, beside color and general features, the lateral intervals strongly convex preapically, recalling, at least, those of *Plagiognus* Mulsant. They differ as follows: the epipharynx of *A. cabrali* has one central spinule protruding beyond the anterior border of the corypha, *A. impressus* has two; the pronotal punctation is finer and sparser; the proportions of posterior tibia and tarsi differ as well.

***Aidophus flaveolus* (Harold, 1867) comb. nov.**
(figs. 19, 28-30)

Aphodius flaveolus Harold, 1867: 280
Didactylia flaveola; Schmidt A., 1911: 38; Blackwelder 1944: 213; Dellacasa M. 1988: 129



Figures 5-8. Habitus of 5. *Australophodius frenchi* (male, length 4.0 mm; Chile, Valparaiso, Paso Hondo, Quilpui); 6. *Aidophus notatus* (male, length 3.5 mm; Mexico, Veracruz, Tecolutla); 7. *Aidophus parvus* (male, length 3.0 mm; U.S.A., Florida, Levy Co., 3.8 mi SW Archer); 8. *Aidophus skellei* (male, length 2.5 mm; U.S.A., Florida, Alachua Co., 2.5 mi SW Archer on Rt. 24).

Type locality: Chili [Chile]

Type depository: Museum national d'Histoire naturelle, Paris (MNHN)

Redescription: Length 3.5-4.5 mm, elongate, subcylindrical, moderately convex, subshiny, glabrous. Testaceous; head posteriorly, pronotal disc and sutural interval reddish brown; legs reddish, antennal club yellowish. Head with epistoma feebly convex, finely and sparsely punctate; clypeus subtruncate apically, sides rounded, thinly margined; genae subacute, long setae protruding beyond eyes; frontal suture obsolete; front finely and sparsely punctate. Pronotum transverse, feebly convex, densely, rather sparsely and unevenly punctate; coarse punctures lacking on disc; sides widely arcuate, thinly margined, border with long setae; hind angles broadly rounded; base evenly curved, thinly margined. Scutellum elongate, narrow, subparallel sided, feebly concave, more or less distinctly microreticulate, impunctate. Elytra elongate, subparallel sided, moderately convex; striae fine, rather deep, feebly and almost indistinctly punctate, not crenulate; intervals distinctly microreticulate, moderately convex, finely and sparsely punctate. Hind tibia with superior apical spur slightly shorter than first tarsal segment; latter as long as following three combined. Male: fore tibia with apical spur curved abruptly downward, obliquely truncate apically; pronotum without coarse punctures on disc. Female: fore tibia with apical spur straight and apically acuminate; pronotum with few coarse punctures on disc.

Distribution: ?Mexico (In the collection of the Dresden Museum (SMTD) are five specimens labelled "Yucatan, Centralamerika, Coll. C. Felsche, Kauf 20, 1918". This collecting record needs to be confirmed.), Argentina, Chile

Type material:

1 female, **lectotype** herein designated (MNHN), bearing the following labels:

- white, handwritten: Chili
- white, handwritten: *flaveolus*/ Harold
- white, printed: ex Musaeo Harold
- red, printed: *Aphodius flaveolus* Harold, 1867/ lectotypus/ Dellacasa M. des. 2001

1 male, **paralectotype** herein designated (SMTD), bearing the following labels:

- white, handwritten: Chili

- white, handwritten: *flaveolus*/ Nov.

- green, printed: Coll. C. Felsche/ Kauf 20, 1918

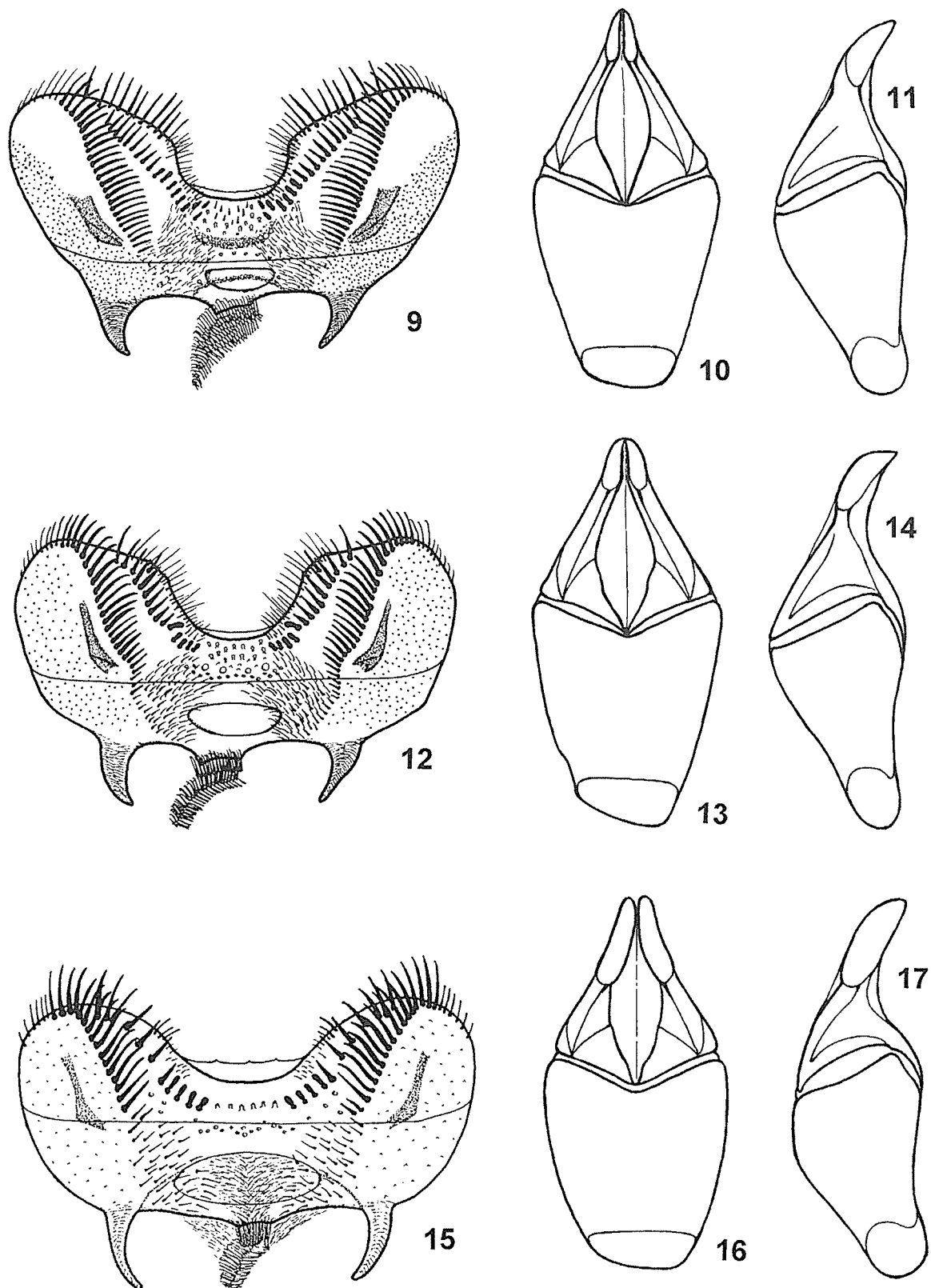
- red, printed: *Aphodius flaveolus* Harold, 1867/ paralectotypus/ Dellacasa M. des. 2001

Material examined: Argentina: BUENOS AIRES: Bs. As. [Buenos Aires], San Fernando, XII.1959, Daguerre J. leg., 2 exx. (USNM); CHACO: Resistencia, 18[88], Balzan leg., 1 ex. (MCS-NG); CATAMARCA: Alpacinche, 09/10.II.1993, Pena L. E. leg., 180 exx. (DCG); Belen, 24.I.1991, Pena L. E. leg., 77 exx. (DCG); Hualfin, 10.II.1993, Pena L. E. leg., 4 exx. (DCG); Los Nacimientos, 28/29.XI.1983, Pena L. E. leg., 5 exx. (DCG); Punta Balasto, 24.I.1995, Pena L. E. leg., 137 exx. (DCG); *ibidem*, 12.II.1993, Pena L. E. leg., 71 exx. (DCG); CORDOBA: 6 Km E of Chepes, 09.XII.1978, Woodruff R., Runna Cles and Cordo leg., 4 exx. (FSCA); Villafane, I.1947, Martinez A. leg., 5 exx. (HAHC); ENTRE RÍOS: Liebig, 20.XII.1986, Martinez A. leg., 12 exx. (DCG); *ibidem*, I.1987, Martinez A. leg., 1 ex. (DCG); LA RIOJA: nr. Chepes, 09.I.1980, Stange L. A. and Woodruff R. leg., 1 ex. (FSCA); Dique, Los Sauces, 10.XII.1978, Woodruff R., Runna Cles and Cordo leg., 1 ex. (FSCA); Illisca, 08.I.1980, Woodruff R. and Stange L. A. leg., 4 exx. (DCG, USNM); Mascasin, XI.1962, Walz leg., 8 exx. (USNM); Potquia, Amigo, III.1941, Martinez A. leg., 1 ex. (CMN); San Antonio, rt. 29, N of Chepes, 10.XII.1978, Woodruff R., Cordo and Runna Cles leg., 1 ex. (FSCA); Vanegasta, 22.II.1989, Zunino M., Barbero E. and Luzzatto M. leg., 10 exx. (DCG); MENDOZA: Mendoza, 1 ex. (ZMHB); *ibidem*, Coll. Felsche, Kauf 20, 1918, 7 exx. (SMTD); San Rafael, 17.XII.1983, Peña L. E. leg., 1 ex. (DCG); 40Km N San Rafael, 1600 m, 06.XII.1993, Pena L. E. leg., 6 exx. (DCG); SALTA: Curtiembres, 15.II.1993, Pena L. E. leg., 1 ex. (DCG); R. de la Frontera, XII.1959, Daguerre J. leg., 10 exx. (USNM); Tenono, XII.1959, Daguerre J. leg., 2 exx. (USNM); TUCUMAN: Tucuman, Coll. Felsche, Kauf 20, 1918, 1 ex. (SMTD); **Chile:** CHILE, 8 exx. (ISEA, ZMHB).

Aidophus flechtmani Stebnicka and
Dellacasa M., *sp. nov.*
(figs. 31-33, 42)

Type locality: Selvíria (MS BR) [Mato Grosso do Sul, Brazil]

Type depository: Museu de Zoologia, Universidade de Sao Paulo, Sao Paulo (MZUSP)



Figures 9-17. Epipharynx and aedeagus (dorsal and lateral view) of: 9-11. *Aidophus notatus*; 12-14. *Aidophus parvus*; 15-17. *Aidophus skelleyi*.

Description: Length 4.0-4.5 mm, elongate, subcylindrical, convex, shiny, glabrous. Dark brownish, pronotum with sides faintly paler; antennal club testaceous. Head with epistoma gibbous, finely and sparsely punctate; clypeus faintly emarginate, sides rounded, rather thickly margined; genae obtusely rounded with long setae feebly protruding beyond eyes; front evenly punctate, somewhat scattered laterally. Pronotum subquadrate, convex, densely and evenly punctate, slightly sparser on disc; sides feebly rounded, thickly margined, border with sparse, long setae; hind angles obtusely rounded; base bisinuate, distinctly margined. Scutellum narrow, elongate, subparallel sided, feebly concave medially, superficially microreticulate, smooth. Elytra elongate, subcylindrical, rather deeply striate; striae fine, confused punctures, not crenulate; intervals feebly convex on disc, more strongly preapically, superficially microreticulate near striae, finely and sparsely but distinctly punctate. Hind tibia with superior apical spur shorter than first tarsal segment; latter as long as following three combined. Male: fore tibia with apical spur stout, abruptly downward bent, hooked apically; pronotum less densely and coarsely punctate; abdomen with feeble median foveola. Female: fore tibia with apical spur slender, nearly straight and apically acuminate; pronotum more coarsely and densely punctate; abdomen without median foveola.

Distribution: This species is known only from the type locality.

Etymology: Named in honor of Dr. Carlos F. Flechtmann, University of Brasilia, Brazil.

Type material:

Holotype male: BR-MS [Brazil – Mato Grosso do Sul], Selviria, UNESP Farm, 25.XI.1999, Flechtmann C. A. H. leg., black light trap – *Brachiararia decumbens* pasture (MZUSP); Allotype female: *ibidem*, 24.XI.1999, *idem* (MZUSP); Paratypes: 1 male, *ibidem*, 25.XI.1999, *idem* (DCG); 1 female, *ibidem*, 25.XI.1998, *idem* (DCG); 1 male 3 females, *ibidem*, 23.IX.1997, *idem* (ISEA); 1 male 1 female, *ibidem*, 21.XI.1998, *idem* (MZUSP); 2 females, *ibidem*, 14.III.1996, *idem*, (MZUSP); 2 females, *ibidem*, 28.XI.1998, *idem*, (MZUSP).

Aidophus impressus (Petrovitz, 1970)
comb. nov.
 (figs. 40, 45-47)

Didactylia impressa Petrovitz, 1970: 230; Dellacasa M., 1988: 207

Type locality: Parnagua, Bras. [Brazil]

Type depository: Museum d'Histoire Naturelle, Geneva (MHNG)

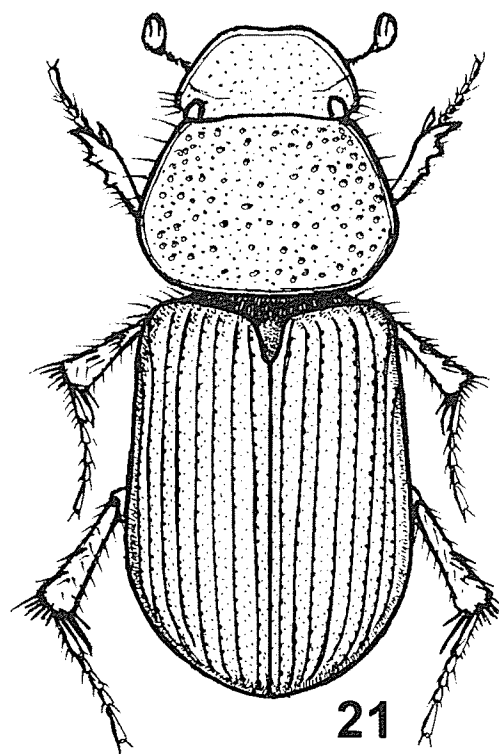
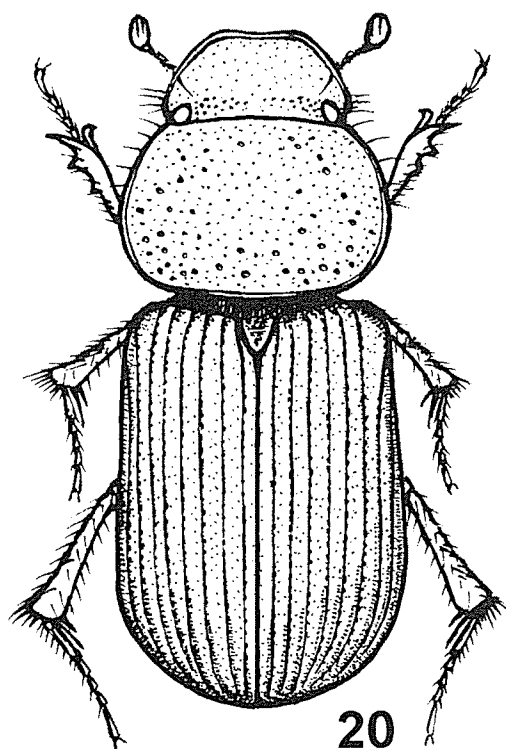
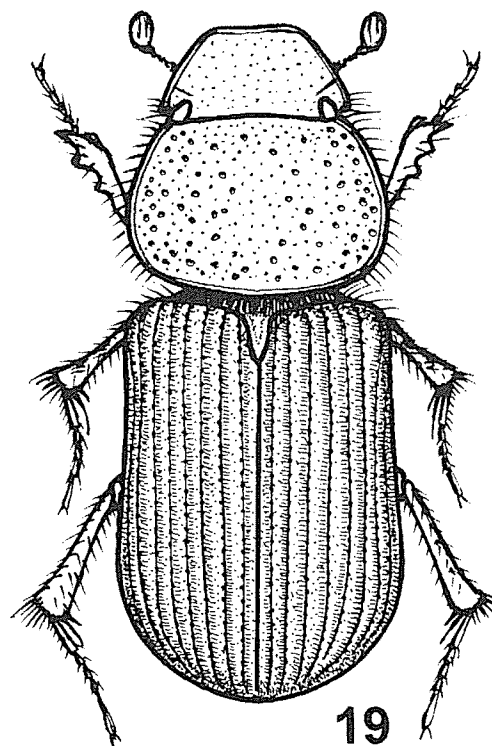
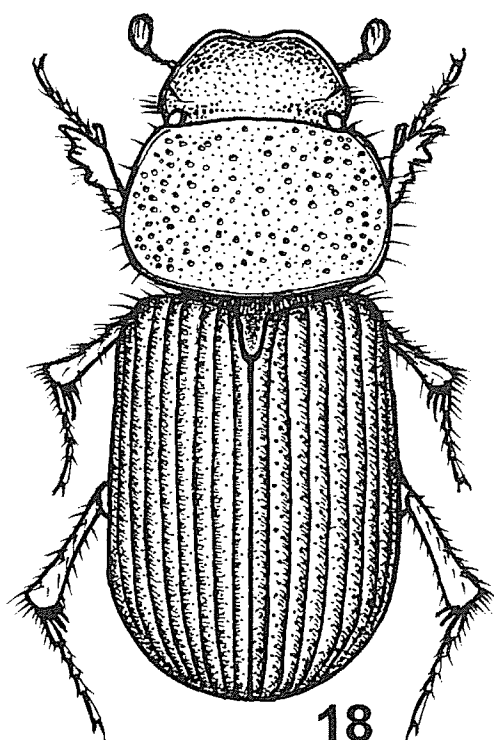
Redescription: Length 3.8-4.2 mm, oblong oval, moderately shiny, glabrous. Yellowish brown; sides of pronotum and second elytral interval yellowish; legs pale brownish; antennal club yellowish. Head with epistoma gibbous, finely punctate; clypeus shallowly emarginate, sides rounded, latter near straight, distinctly margined, border slightly upturned apically; genae obtusely angulate, long setae protruding barely beyond eyes; front a bit more coarsely punctate than epistoma. Pronotum transverse, moderately convex, dense uneven fine punctures; lateral borders evenly arcuate, thinly margined, border fringed with few long setae; hind angles widely rounded; base bisinuate, thinly but distinctly margined. Scutellum somewhat depressed, triangularly elongate, superficially microreticulate, rather shiny, impunctate. Elytra finely striate, striae with extremely fine punctures, not crenulate; intervals feebly convex, microreticulate, microreticulation stronger near striae, with extremely minute, nearly imperceptible punctation, the lateral ones strongly convex preapically. Fore tibia with apical spur elongate and evenly conical in both sexes as well as abdomen not foveolate. Male: head broader; epistoma finely punctate; pronotum lacking coarse punctures on disc, denser laterally; tarsi longer; hind tibia with superior apical spur somewhat shorter than first tarsal segment; latter a bit longer than following three combined. Female: head narrower apically; epistoma more distinctly punctate; coarse punctures of pronotum present on disc; hind tibia with superior apical spur significantly shorter than first tarsal segment; latter shorter than following three combined.

Distribution: This species is only known from the type locality.

Type material:

1 male (Holotype), 2 females (Paratypes): Parnagua, Bras. [Piaui] (MHNG).

Remarks: This species is most closely allied to and is similar in general appearance to *A. pella*.



Figures 18-21. Habitus of: 18. *Aidophus infuscatopennis* (male, length 4.0 mm; Brazil, Mato Grosso, Corumba); 19. *Aidophus flaveolus* (male, length 4.5 mm; Argentina, Mendoza, San Rafael); 20. *Aidophus panamensis* (male, length 3.5 mm; Panama, David); 21. *Aidophus kolbei* (male, length 3.5 mm; Bolivia, Santa Cruz, Viru Viru Airport).

Aidophus infuscatopennis* (Schmidt A., 1909)*comb. nov.**

(figs. 18, 22-24)

Aphodius infuscatopennis Schmidt A., 1909: 12*Didactylia infuscatopennis*; Schmidt A., 1911: 38; Blackwelder 1944: 213; Dellacasa M., 1988: 144*Aphodius (Aidophus) paraguayanus* Balthasar, 1963: 279 (**new synonymy**)*Aidophus paraguayanus*; Dellacasa G., Bordat and Dellacasa M., 2001: 305**Type locality:** Rio Grande do Sul (Brazil)**Type depository:** Naturhistoriska Riksmuseet, Stockholm (NRS)

Redescription: Length 3.0-4.0 mm, elongate, subcylindrical, moderately convex, subshiny, glabrous. Pale yellowish brown; head and pronotal disc darker, latter with two lateral rounded brownish spots; elytra reddish brown with suture and a wide and elongate discal brownish cloudy spot; legs testaceous; antennal club yellowish. Head with epistoma feebly gibbous; clypeus distinctly emarginate, sides widely rounded; genae rounded, feebly more protruding than eyes; genal sutures finely impressed; front more distinctly punctate than epistoma. Pronotum transverse, densely punctate, coarse punctures unevenly scattered; sides moderately rounded, thinly margined, border with sparse long setae; hind angles obtusely rounded; base faintly bisinuate and thinly margined. Scutellum elongate, narrow, subparallel sided, distinctly concave medially, microreticulate, scattered fine punctures. Elytra elongate, subparallel sided, deeply striate; striae superficially punctate, subcrenulate; intervals feebly convex, sparsely and unevenly punctate. Hind tibia with superior apical spur shorter than first tarsal segment; latter somewhat longer than following two combined. Male: head with epistoma finely and sparsely punctate on disc, punctuation subrugose toward clypeal border; pronotum less transverse and more sparsely punctate; fore tibia with apical spur stout, flattened and obtusely truncate apically. Female: head with epistoma rugosely punctate; pronotum more convex and densely punctate, fore tibia with apical spur more slender and evenly acuminate toward apex.

Distribution: Peru, Brazil, Bolivia, Paraguay, Uruguay, Argentina**Type material:**1 male, **lectotype** herein designated (NRS), bearing the following labels:

- white, handwritten: Rio Grande/ do Sul

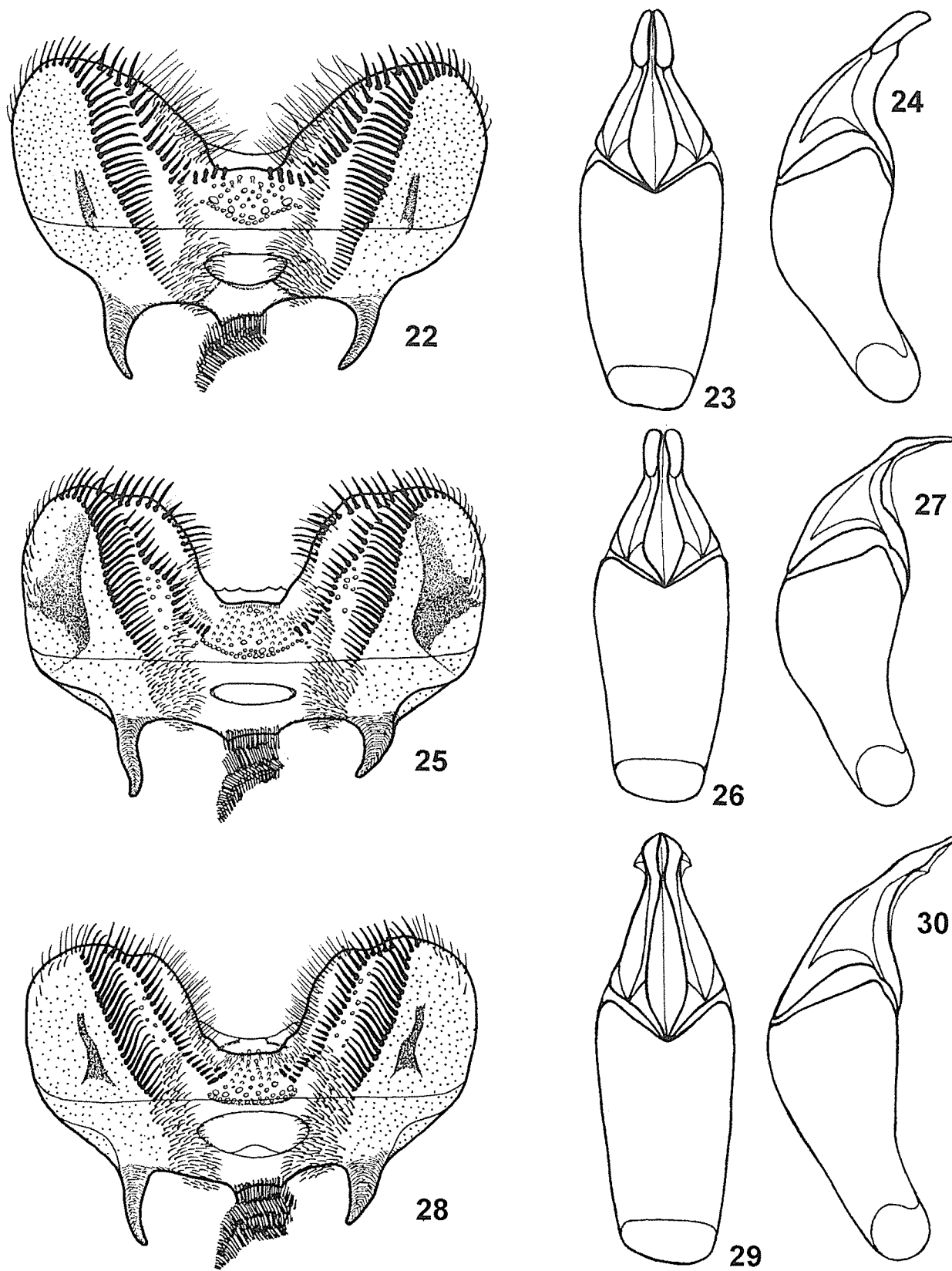
- red, printed: *Aphodius infuscatopennis* Schmidt A., 1909/ lectotypus/ M. Dellacasa des., 20012 females, **paralectotypes** herein designated (NRS), bearing the following labels:

- white, handwritten: Rio Grande/ do Sul

- red, printed: *Aphodius infuscatopennis* Schmidt A., 1909/ paralectotypus/ M. Dellacasa des., 2001**Material examined: Argentina: CATAMARCA:**

Prov. Catamarca, 20.II.1908, Bruch C. leg., 1 ex. (NRS); S. di Ancasti, IX.1961, Kohler P. leg., 2 exx. (USNM); CHACO: Chaco Nat. Parc, Pres. Roque, 13.XII.1983, Saenz-Pena L. E. leg., 1 ex. (DCG); CORDOBA: Balnearia, 25.II.2000, Ugarte Pena A. leg., 6 exx. (DCG); Cordoba, 1 ex. (NRS); Obispo Trejo, XI.1962, Kohler P. leg., 12 exx. (USNM); ENTRE RIOS: Prov. Entre Rios, Richter M. leg., 1 ex. (NRS); Pronunciamiento, IV.1987, Martinez A. leg., 4 exx. (DCG); FORMOSA: Desmonte, XII.1950, Daguerre J. leg., 4 exx. (USNM); MENDOZA: Mendoza, 3 exx. (NRS); MISIONES: Misiones, Richter M. leg., 1 ex. (NRS); SALTA: General Ballivian, 1927-8, Harrington G. L. leg., 2 exx. (USNM); J. v. Gonzalez, I.1959, Dor P. leg., 2 exx. (USNM); SANTIAGO DEL ESTERO: Cap., XI.1961, Kohler P. leg., 2 exx. (USNM); Cap. Aeropuerto, 04.II.1961, Kohler P. leg., 2 exx. (USNM); **Bolivia:** CHUQUISACA: Tiguipa, IV.1922, Harrington G. L. leg., 2 exx. (USNM); SANTA CRUZ: Santa Cruz de la Sierra (Las Palmas), 23.I.1980, Stange L. A. leg., 1 ex. (FSCA); **Brazil:** MATO GROSSO: Corumba, 4 exx. (NRS); *ibidem*, 5 exx. (DCG); **Paraguay:** BOQUERON: Lama Plata, XI.1992, Pena L. E. leg., 23 exx. (DCG); GUAIRA: Villarrica, 1 ex. (NRS); *ibidem*, Novemb. 1933, Koller leg., 1 ex. (**paratype** male of *A. paraguayanus* Balthasar, 1963) (BCP); Villarrica, 25 Km E Independencia, 28.I.1991, Endrodi-Younga S. leg., 1 ex. (TMP); **Peru:** LAMBAYEQUE: Lambayeque, 100 m, 26.V.1972, Bordon C. leg., 1 ex. (DCG); **Uruguay:** FLORIDA: Mataral, m 2000, XII.1984, Pena L. E. leg., 2 exx. (DCG); MONTEVIDEO: Montevideo, ex coll. Sivori, 8 exx. (MCSNG).

Remarks: The species may easily be recognized by the sculpturing of the head, deeply emarginate clypeus, and color design.



Figures 22-30. Epipharynx and aedeagus (dorsal and lateral view) of: 22-24. *Aidophus infuscatopennis*; 25-27. *Aidophus panamensis*; 28-30. *Aidophus flaveolus*.

Aidophus kolbei* (Schmidt A., 1911)*comb. nov.**

(figs. 21, 37-39)

Didactylia kolbei Schmidt A., 1911: 36; Blackwelder 1944: 213; Dellacasa M., 1988: 149**Type locality:** Prov. Sara, Bolivia**Type depository:** Naturhistoriska Riksmuseet, Stockholm (NRS)

Redescription: Length 3.0-3.5 mm, elongate, sub-cylindrical, moderately convex, shiny, glabrous. Yellowish brown; epistoma, pronotal and elytral disc darkened; legs yellowish; antennal club yellowish brown. Head with epistoma feebly convex, superficially microreticulate, finely, rather sparsely and subevenly punctate; clypeus subtruncate apically, sides widely rounded, thinly margined, border slightly upturned apically; genae obtusely rounded with long setae, distinctly protruding past eyes; genal sutures distinct and somewhat raised; frontal suture obsolete; front more coarsely punctate than epistoma. Pronotum transverse, feebly convex, densely unevenly and rather sparsely punctate; coarse punctures denser on sides; latter widely rounded, thinly margined, long, sparse setae apically; hind angles obtusely rounded; base slightly bisinuate, thinly margined. Scutellum elongate, narrow, somewhat concave, distinctly microreticulate, impunctate. Elytra elongate, subparallel sided, deeply striate, striae faint basally, superficially punctate, not crenulate; intervals nearly flat, microreticulate, sparsely unevenly and finely punctate. Superior apical spur of hind tibia nearly as long as first tarsal segment; latter as long as following three combined. Male: head more transverse, epistoma less convex, angulate genae distinctly protruding beyond eyes; pronotum less densely punctate, coarse punctures lacking on disc; fore tibia with apical spur lanceolate and abruptly curved downward; abdomen with large median foveola. Female: head less transverse, with epistoma more convex and genae obtusely rounded, faintly more protruding than eyes; pronotum more densely punctate, with few coarse punctures on disc; abdomen without median foveola; fore tibia with apical spur slender and straight.

Distribution: Bolivia, Uruguay**Type material:**1 male, **lectotype herein designated** (NRS), bearing the following labels:

- green, printed: Boliv[ia]. Prov. Sara/ 6-700 m. 9.06-3./ J. Steinbach S. V.
- white, handwritten: D. Kolbei/ Type m.
- red, printed: TYPUS
- red, printed: *Didactylia kolbei* Schmidt A., 1911/ lectotypus/ M. Dellacasa des., 2001

1 female, **paralectotype herein designated** (NRS), bearing the following labels:

- green, printed: Boliv[ia]. Prov. Sara/ 6-700 m. 9.06-3./ J. Steinbach S. V.
- white, handwritten: D. Kolbei/ Type m.
- white, printed: female
- red, printed: TYPUS
- red, printed: *Didactylia kolbei* Schmidt A., 1911/ paralectotypus/ M. Dellacasa des., 2001

1 male, **paralectotype herein designated** (ZMHB), bearing the following labels:

- green, printed: Boliv[ia]. Prov. Sara/ 6-700 m. 9.06-3 07/ J. Steinbach S. V.
- red, printed: Type
- white, printed: 87661
- white, printed: A. Schmidt/ det.
- white, handwritten: *Didactylia/ kolbei* n. sp. Schmidt
- red, printed: *Didactylia kolbei* Schmidt A., 1911/ paralectotypus/ M. Dellacasa des., 2001

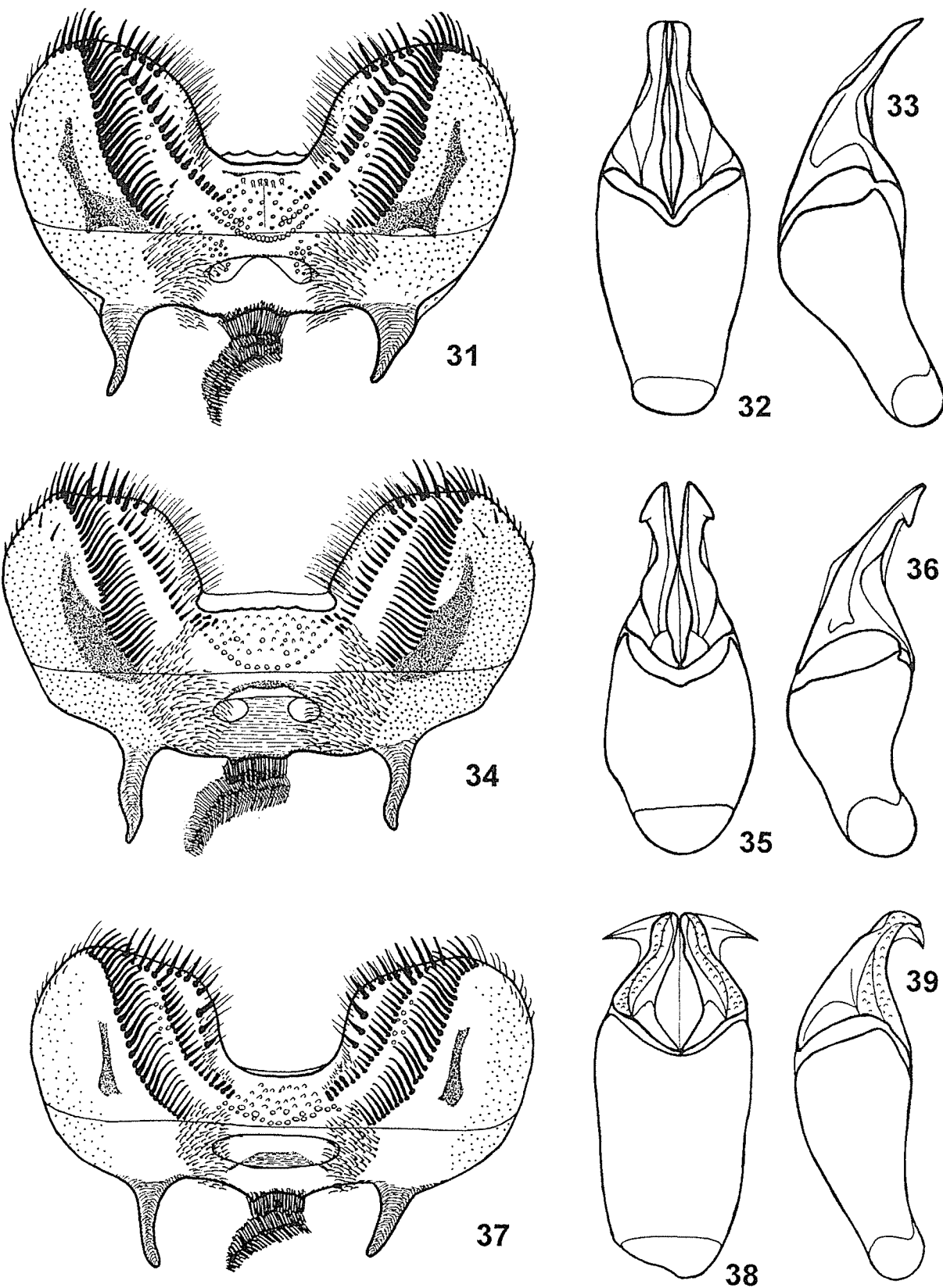
3 males 3 females, **paralectotypes herein designated** (ZMHB), bearing the following labels:

- green, printed: Boliv[ia]. Prov. Sara/ 6-700 m. 9.06-3 07/ J. Steinbach S. V.
- red, printed: Type
- white, handwritten: 87661
- white, printed: A. Schmidt/ det.
- red, printed: *Didactylia kolbei* Schmidt A., 1911/ paralectotypus/ M. Dellacasa des., 2001

1 male, **paralectotype herein designated** (ZMHB), bearing the following labels:

- green, printed: Boliv[ia]. Prov. Sara/ 6-700 m. 9.06-3 07/ J. Steinbach S. V.
- white, handwritten: *Didactylia/ kolbei* Schmidt
- red, printed: *Didactylia kolbei* Schmidt A., 1911/ paralectotypus/ M. Dellacasa des., 2001

2 males 10 females, **paralectotypes herein designated** (ZMHB), bearing the following labels:



Figures 31-39. Epipharynx and aedeagus (dorsal and lateral view) of: 31-33. *Aidophus flechtmanni*; 34-36. *Aidophus pellax*; 37-39. *Aidophus kolbei*.

- green, printed: Boliv[ia]. Prov. Sara/6-700 m. 9.06-3 07/ J. Steinbach S. V.

- red, printed: *Didactylia kolbei* Schmidt A., 1911/ paralectotypus/ M. Dellacasa des., 2001

Material examined: Bolivia: SANTA CRUZ: 3.7 Km SSE Buena Vista, Hotel Flora and Fauna, m 430, 14/19.X.2000, Thomas M. C. leg., 1 ex. (FSCA); Prov. Sara, 3 exx. (NRS); *ibidem*, J. Steinbach S. V. leg., 1 ex. (ZMHB); Viru Viru Airport, 16/17.XI.1997, Tognon G. leg., 46 exx. (DCG); 5 Km ESE Warnes, Hotel Rio Selva, 20.X.2000, Thomas M. C. leg., 12 exx. (FSCA); **Uruguay:** MONTEVIDEO: Montevideo, 1 ex. (MCSNG)

***Aidophus notatus* (Harold, 1859) comb. nov.**
(figs. 3, 6, 9-11)

Aphodius notatus Harold, 1859: 211; Fall, 1905: 130
Didactylia notata; Schmidt A., 1911: 38; Blackwelder 1944: 213; Dellacasa M., 1988: 170

Type locality: "Columbien" [Colombia]

Type depository: Zoologisches Museum der Humboldt Universität, Berlin (ZMHB)

Redescription: Length 3.0-3.5 mm, shortly oblong, convex, strongly shiny, glabrous. Head reddish brown, distally paler; pronotum yellowish with two discal reddish brown spots and a punctiform brown spot at middle of each side; elytra pale yellowish with several reddish brown spots variously arranged and more or less widened; legs reddish; antennal club yellowish. Head with epistoma convex, sparse, evenly distributed fine punctures; clypeus distinctly emarginate, sides obtusely rounded, thinly margined; genae broadly rounded, long setae not protruding beyond eyes; genal sutures distinct, somewhat raised; frontal suture obsolete; front finely and sparsely punctate. Pronotum transverse, convex, densely, subevenly and sparsely punctate; sides feebly rounded, thinly margined, border with long setae; hind angles subtruncate; base bisinuate, distinctly margined. Scutellum triangular, feebly concave, microreticulate, impunctate. Elytra oblong oval, convex; striae rather deep, feebly punctate, not crenulate; intervals moderately convex, with a single subeven series of fine medial punctures. Hind tibia with superior apical spur somewhat shorter than first tarsal segment; latter as long as following three combined. Male: fore tibia

angulately widened at inner border; pronotum less convex and more transverse; abdomen foveolate medially. Female: fore tibia not angulately widened at inner border; pronotum more convex and less transverse; abdomen without median foveola.

Distribution: ? U.S.A. (Arizona [In the collection of Dresden Museum there is a female specimen with green printed label "Arizona" without additional data. This collecting record needs to be confirmed.]), Mexico, Panama, Colombia, Venezuela, Guyana

Type material:

1 male, **lectotype herein designated** (ZMHB), bearing the following labels:

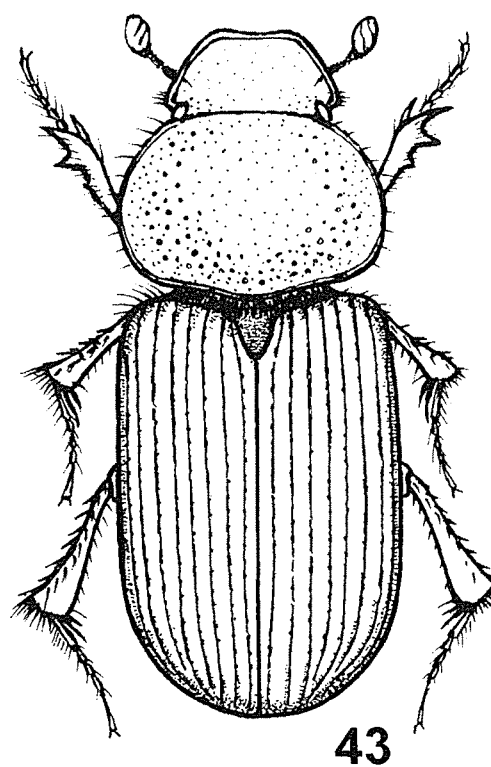
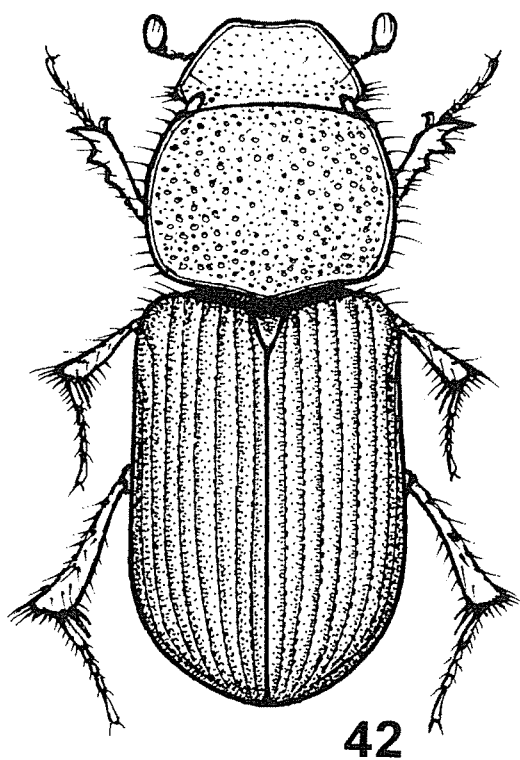
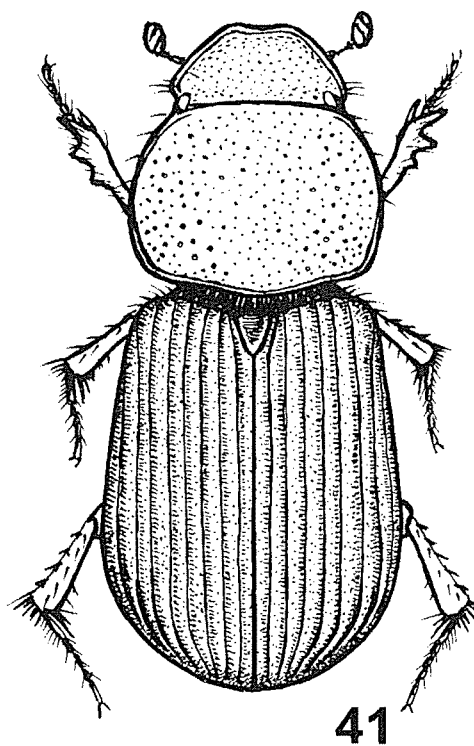
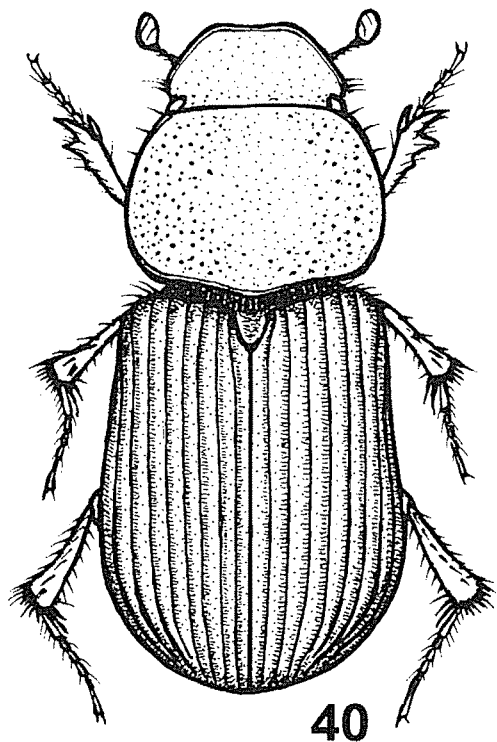
- green, handwritten: *notatus*/ N./ Columb. Moritz;
- green, handwritten: *notatus*/ Harold/ Columbia;
- white, printed: 25937
- red, printed: *Aphodius notatus* Harold, 1859/ lectotypus/ Dellacasa M. des. 2001

2 males 1 female, **paralectotypes herein designated** (ZMHB), bearing the following labels:

- green, handwritten: Columbia/ Moritz/ Nr. 25937
- red, printed: *Aphodius notatus* Harold, 1859/ paralectotypus/ Dellacasa M. des. 2001

Material examined: Colombia: Columb.[ia], Market leg., 2 exx. (SMTD); ANTIOQUIA: Medellín, 600 ft, 1 ex. (MHNG); **Guyana:** BERBICE: Georgetown, 07.I.1983, leg. Williams G. L., 1 ex. (ISEA); **Mexico:** CAMPECHE: Ciud. de Carmen, 20', 04.VI.1964, Willaham L. A. leg., 3 exx. (DCG); Km 743 2', 18.VI.1964, Willaham L. A. leg., 2 exx. (DCG); MEXICO: Bosencheve, 19.V.1979, Zunino M. leg., 1 ex. (DCG); TABASCO: Frontera, 23.VI.1969, Bright and Campbell leg., 2 exx. (DCG); Lagoa Mecoacan, 04.VI.1979, Zunino M. leg., 2 exx. (DCG); Puerto Ceiba, 06.VI.1979, Zunino M. leg., 7 exx. (DCG); VERACRUZ: Mocambo, 15 Km S Veracruz, 11.VII.1981, Steiner W. Z. leg., 1 ex. (ISEA); Pureza F.C.I., 09.VI.1936, J. Camelo G. leg., 6 exx. (DCG); 3 mi S Tecolutla, 26.VI.1962, Campbell J. M. leg., 2 exx. (DCG); 5 mi S Tecolutla, 25.VI.1962, Mockford and Campbell leg., 4 exx. (DCG); **Panama:** PANAMA: Corazal, C. Z., 26.IV.1911, Busck A. leg., 5 exx. (DCG); **Venezuela:** SUCRE: Cumana, 4 exx. (SMTD); *ibidem*, ex Musaeo Harold, 2 exx. (MNHN).

Remarks: *Aidophus notatus* is widely distributed from Mexico (maybe Arizona) to Colombia, Venezuela and Guyana and appears abundant in woodland



Figures 40-43. Habitus of: 40. *Aidophus impressus* (male, length 3.2 mm; Brazil, Parnagua); 41. *Aidophus cabrali* (female, length 3.2 mm; Brazil, Parahyba); 42. *Aidophus flechtmanni* (male, length 4.0 mm; Brazil, Mato Grosso do Sul, Selviria, UNESP Farm); 43. *Aidophus pallax* (male, length 5.0 mm; Bolivia, Cochabamba).

areas. This seems to be a vicariant species of the Nearctic *A. parvus* and differs from it by having head and pronotum somewhat wider, elytral striae deeper, posterior tarsal segments longer, markings on pronotum and elytra more strongly defined, and the male protibia is distinctly angulate at the inner border.

***Aidophus panamensis* (Harold, 1859)**

comb. nov.

(figs. 20, 25-27)

Aphodius panamensis Harold, 1859: 212; Bates, 1887: 88

Didactylia panamensis; Schmidt A., 1911: 38; Blackwelder 1944: 213; Dellacasa M., 1988: 176

Type locality: Panama

Type depository: Museum National d'Histoire Naturelle, Paris (MNHN)

Redescription: Length 3.5-4.0 mm, subcylindrical, moderately convex, shiny, glabrous. Brownish, pronotum with yellowish sides; elytra with base, second interval, apex and lateral border yellowish; legs yellowish brown; antennal club piceous. Head with epistoma gibbous, finely, evenly and sparsely punctate; clypeus faintly emarginate, sides rounded, thinly margined; genae obtusely rounded, with long setae protruding faintly beyond eyes; front rather coarsely and unevenly punctate laterally. Pronotum transverse, feebly convex, densely sparsely punctate; coarse punctures lacking on disc; sides feebly rounded, thinly margined, border with sparse long setae; hind angles obtusely rounded; base faintly bisinuate, distinctly margined. Scutellum elongate, parallel, feebly depressed, microreticulate, scattered median punctures. Elytra elongate, subparallel sided, rather deeply striate; striae fine, superficially punctate, not crenulate; intervals flat, feebly convex preapically, superficially microreticulate, sparsely and finely punctate. Hind tibia with superior apical spur somewhat shorter than first tarsal segment; latter as long as following three combined. Male: fore tibia with apical spur stout and hooked apically; pronotum more transverse, less convex and more sparsely punctate; abdomen with feeble median foveola. Female: fore tibia with apical spur slender, straight and evenly acuminate apically; pronotum less transverse, more convex

and more coarsely and densely punctate; abdomen without median foveola.

Distribution: Panama, ? Venezuela (There is a female specimen in the Dresden Museum collection labelled "Valencia, Moritz, Centralamerika, Coll. C. Felsche, Kauf 20, 1918". This record needs to be confirmed.)

Type material:

1 female, **lectotype herein designated** (MNHN), bearing the following labels:

- white, handwritten: Panama
- white, handwritten: *panamensis*/ Har.
- white, printed: ex Musaeo Harold
- red, printed: *Aphodius panamensis* Harold, 1859/ lectotypus/ Dellacasa M. des. 2001

Material examined: **Panama:** CHIRIQUI: Bugaba, Champion leg., 3 exx. (MNHN); David, Champion leg., 18 exx. (MNHN); *ibidem*, Champion leg., 4 exx. (ZMHB); *ibidem*, Champion leg., Coll. C. Felsche, Kauf 20, 1918, 4 exx. (SMTD); **Panama:** CORAZAL, C.Z., 26.IV.1911, Busck A. leg., 12 exx. (DCG); LOS SANTOS, La Playa, 1.5 Km N Pedasi, 21.VI.1973, Ervin and Havel leg., 2 exx. (ISEA, USNM)

***Aidophus parvus* (Horn, 1887)**

(figs. 7, 12-14)

Aphodius parvus Horn, 1887: 42; Schmidt A., 1922: 358 (subgenere incerto)

Aphodius kansanus Wickham, 1905: 169; Schmidt A., 1922: 359 (synonym of *Didactylia notata*) (**new synonymy**)

Aphodius knausii Fall, 1905: 130 (**new synonymy**)

Aphodius knausi; Schmidt A., 1922: 358 (synonym of *Didactylia notata*)

Aphodius wolcottii Blatchley, 1910: 932; Brown W. J., 1929: 91 (synonym of *Didactylia knausi*); Blatchley, 1930: 36 (synonym of *A. knausi*, lectotype designation) (**new synonymy**)

Didactylia parca; Brown W. J., 1929: 91

Didactylia knausi; Brown W. J., 1929: 91

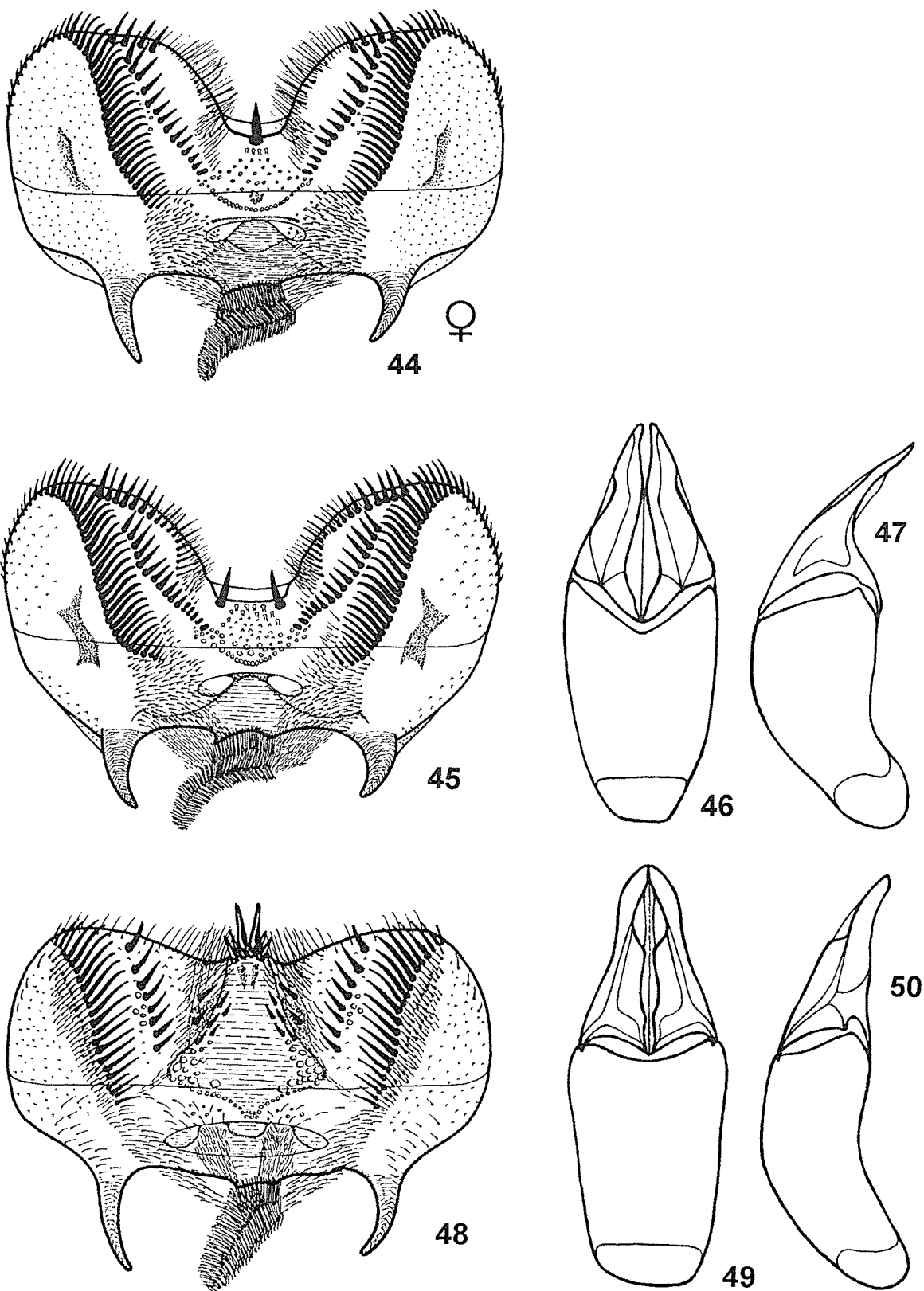
Aphodius (Didactylia) parvus; Fall, 1932: 184

Aphodius (Didactylia) knausi; Fall, 1932: 184

Aidophus parvus; Harpootlian, 2001: 35 (new combination)

Type locality: Florida (U.S.A.)

Type depository: Museum of Comparative Zoology, Cambridge (MCZ)



Figures 44-50. Epipharynx and aedeagus (dorsal and lateral view) of: 44. *Aidophus cabrali*; 45-47. *Aidophus impressus*; 48-50. *Australaphodius frenchi*.

Redescription: Length 3.0-4.0 mm, shortly oblong, moderately convex, subshiny, glabrous. Pale yellowish testaceous; head with epistoma reddish brown; pronotum darkened on disc with a lateral brownish spot at middle of each side; elytra with suture reddish brown, shadowy brownish before preapical declivity; legs testaceous; antennal club yellowish. Head with epistoma feebly gibbous, alutaceous, finely punctate; clypeus subtruncate apically, sides rounded, distinctly margined, border narrowly upturned; genae obtusely rounded, with long setae not protruding beyond eyes; frontal suture obsolete; front apically sparsely and finely punctate, posteriorly smooth. Pronotum transverse, feebly convex, alutaceous, finely, sparsely and somewhat unevenly punctate; sides slightly arcuate, margined, border with moderately long setae; hind angles widely rounded; base evenly rounded, thinly margined. Scutellum elongate, narrow, subparallel sided, concave, microreticulate medially, impunctate. Elytra slightly broadened backward, moderately convex, rather deeply striate; striae obsoletely punctate; intervals convex, alutaceous, with a single subeven series of extremely fine medial punctures. Fore tibia not angulately widened at inner border in both sexes. Hind tibia with superior apical spur nearly as long as first tarsal segment; latter as long as following three combined. Male: head more transverse, more finely and sparsely punctate; elytral intervals more shiny; third tooth of fore tibia small and the apical spur sublanceolate and outwardly curved; abdomen slightly foveolate medially. Female: head narrowed apically, more densely and distinctly punctate; elytral intervals less shiny; third tooth of fore tibia more strong and the apical spur slender and straight; abdomen without median foveola.

Distribution: Canada (Ontario), U.S.A. (east coast from New Jersey to Florida, Mississippi, Wisconsin and Indiana near Lake Michigan, Nebraska, Texas, Kansas, Oklahoma, New Mexico)

Type material:

1 ex. **lectotype** of *Aphodius parvus*, **herein designated** (MCZ): "Florida, lectotype male 34433 [type 3590], LeConte/Horn Coll., desig. Gordon 1988 (*in litteris*)"

1 ex. **lectotype** of *Aphodius knausii*, **herein designated** (MCZ): "Kansas, Clark Co., Englewood, 25.VI.1902, W. Knaus, lectotype 24756, H. C. Fall Coll., desig. Gordon 1988 (*in litteris*)"

1 ex. **lectotype** of *Aphodius kansanus*, **herein designated** (USNM): "Kansas, Clark Co., Englewood, 25.VI.1902, W. Knaus, lectotype 50218, desig. Harpootlian and Gordon 2000; 7 exx. **paralectotypes herein designated** (USNM): same data."

1 ex. **lectotype** of *Aphodius wolcottii*, (PURC): "67 413, Scarab, Pine, Ind., VIII-23-05, Purdue, Blatchley Collection" desig. Blatchley 1930

Material examined: **Canada:** ONTARIO: Lambton Co., Pinery Prov Pk., S of Grand Bend on Shore Lk. Huron, 25.VII.1971, leg. Frania H. and Wajner L., 1 ex. (USNM); **U.S.A.:** FLORIDA: Alachua Co., 28.V.1958, leg. Woodruff R. E., 2 exx. (FMNH); Alachua Co., Gainesville, 18.VI.1958, leg. Woodruff R. E., 5 exx. (AMNH, FMNH); Alachua Co., 2.5 mi SW Archer, 12/19.VI.1988, Skelley P. leg., 3 exx. (DCG); Dade Co., Miami, 07.VII.1956, leg. Paulson D. R., 1 ex. (HAHC); *ibidem*, 08.VIII.1966, leg. Dozier B. K., 3 exx. (USNM); Highlands Co., Archbold Bio. Station, 05.VII.1987, Matthews D. L. leg., 1 ex. (DCG); Highlands Co., Archbold Biol. Stat., 8 mi S Lake Placid, 26.V.1997, Skelley P. leg., 3 exx. (DCG); Hillsborough Co., Tampa, McDill Fld., 22.V.1943, leg. Malkin B., 1 ex. (USNM); Lake Co., 6 mi ENE Eustis, 22.V.1985, Almand J. D. leg., 3 exx. (ISEA); Lee Co., Korishan SP, 08.VI.1968, leg. Wood and Davidson, 2 exx. (RDG); Lee Co., Lehigh Acres, 17/19.IV.1982, leg. Downie N. M., 2 exx. (FMNH); Leon Co., 17 mi N Tallahassee, Tall Timbers Research Station, 01/12.VI.1967, leg. Baker W., 12 exx. (USNM); Levy Co., 3.8 mi SW Archer, 07.VI.1987, Skelley P. leg., 3 exx. (DCG); *ibidem*, 28.VII.1987, Skelley P. leg., 2 exx. (DCG); Levy Co., 4.0 mi SW Archer, 27.V.1992, Skelley P. leg., 1 ex. (DCG); *ibidem*, 15.VI.1996, Skelley P. leg., 4 exx. (ISEA); Manatee Co., Bradenton, 10.VII.1972, leg. Druckenbrod M., 17 exx. (USNM); Marion Co., Bellview, 13.V.1969, leg. Bright D., 1 ex. (CMN); Old Town, VI.1967, Lenczy leg., 5 exx. (ISEA); Orange Co., 4 mi E Apopka, 04.VI.1952, leg. Kissinger D. G., 29 exx. (USNM); Palm Beach Co., Boynton Beach, 12.VI.1968, leg. Wood and Davidson, 1 ex. (RDG); **GEORGIA:** Camden Co., Little Cumberland Isl., 29.VII.1975, leg. Steiner W. E., 4 exx. (USNM); Chatham Co., Savannah, 04.VII.1957, leg. Howden H., 1 ex. (HAHC); Chatham Co., Tybee Island, VI.1926, 1 ex. (USNM); *ibidem*, VI.1927, 1 ex. (CNM); Glynn Co., St. Simons Island, 1 ex. (USNM); **INDIANA:** Lake Co., Chicago, 03.IV.1921, 2 exx. (FMNH); *ibidem*, 19.VII.1913, leg. Liljeblad E., 7 exx. (FMNH); Lake Co., Miller, 1 ex. (AMNH); *ibidem*, VII.1919,

leg. Liljeblad E., 1 ex. (USNM); *ibidem*, 19.VII.1913, leg. Liljeblad E., 10 exx. (FMNH); *ibidem*, 05.VIII.1913, leg. Selinger, 1 ex. (FMNH); *ibidem*, VIII.1916, leg. Knaus W., 6 exx. (KSU); *ibidem*, 02.VIII.1910, 4 exx. (USNM); Lake Co., Pine, 1 ex. (lectotype of *A. wolcottii*, PURC); Porter Co., Beverly Shores, 06.VII.1966, leg. White C., 8 exx. (USNM); Porter Co., Dunes State Park, 02.VII.1966, leg. Downie N. M., 9 exx. (USNM); KANSAS: Clark Co., VI.1904, 1 ex. (CNM); Clark Co., Englewood, 02.VI.1902, leg. Knaus W., 1 ex. (KSU); *ibidem*, 24.VI.1902, leg. Knaus W., 1 ex. (USNM); Reno Co., Medora, VII.1923, leg. Knaus W., 4 exx. (KSU); *ibidem*, 04.VII.1916, leg. Knaus W., 1 ex. (USNM); *ibidem*, 07.VII.1953, leg. Evans and Yoshimoto, 3 exx. (CUIC); *ibidem*, 16.VII.1926, leg. Knaus W., 8 exx. (AMNH); *ibidem*, leg. Knaus W., 1 ex. (HAHC); MARYLAND: Worcester Co., Assateague Isl., 15.VII.1969, leg. Tyson W. H., 1 ex. (USNM); MISSISSIPPI: Harrison Co., Biloxi, Keesler Fld., 25/30.VIII.1943, leg. Young F. N., 2 exx. (USNM); Harrison Co., Gulfport, VIII.1938, 1 ex. (USNM); NEBRASKA: Thomas Co., Halsey, 29/31.VII.1973, Howden H. and Howden A. leg., 4 exx. (HAHC, ISEA); NEW JERSEY: Cape May Co., Anglesea, VII.1911, 1 ex. (CNM); *ibidem*, VII.1917, 2 exx. (USNM); NEW MEXICO: Chaves Co., Mescalero sands rec. area, 07.VII.1998, leg. Riley E. G., 12 exx. (TAMU); NORTH CAROLINA: Dare Co., Buxton, 25.VI.1976, leg. Steiner W. E., 2 exx. (USNM); Dare Co., Kill Devil Hills, 21.VI.1955, leg. Krombein K. V., 1 ex. (USNM); New Hannover Co., Carolina Beach, 21.VI.1990, leg. Genier F., 12 exx. (CNM); OKLAHOMA: Marshall Co., Lk. Texoma, 17.VI.1968, leg. Sutter W. R., 1 ex. (RDG); Marshall Co., Univ. of Oklahoma on Lake Texoma, 05.VI.1972, leg. Sutter W. R., 1 ex. (USNM); Marshall Co., Willis, UOBS, 01.VII.1969, leg. Sutter W. R., 2 exx. (USNM); SOUTH CAROLINA: Beaufort Co., Beaufort, 20.VI.1903, leg. Sherman F. S., 1 ex. (USNM); Beaufort Co., Hilton Head, 23.VII.1965, leg. Howden H., 3 exx. (HAHC); Beaufort Co., Hunting Island, 20.VII.2001, leg. Harpootlian P. J., 4 exx. (CUAC); Charleston Co., Sullivans Island, 27.VI.1945, leg. Cartwright O.-L., 1 ex. (USNM); Georgetown Co., Litchfield Bch., 29.VI.1969, leg. Field W. D., 30 exx. (USNM); TEXAS: Anderson Co., Engling Wildlife magt. area, 15.VI.1990, leg. Riley E. G., 5 exx. (TAMU); *ibidem*, 16.VI.1993, leg. Riley E. G., 10 exx. (CUIC); Austin Co., Stephen SP near Sealy, 14/16.VI.1956, leg. Evans and Matthews, 1 ex. (CUIC); Freestone Co., nr Buffalo, Old Spring Seat Church, 16.V.1995, Howden H. and Howden A. leg., 5 exx.

(HAHC, ISEA); Leon Co., Freestone, Burleson, 2 exx. (TAMU); Smith Co., Tyler, 12.VI.1953, leg. Bennett S. E., 20 exx. (FMNH, HAHC); Tarrant Co., Ft. Worth, 14.VI.1941, leg. Bradley J. C., 1 ex. (CUIC); WISCONSIN: Grant Co., 15.VII.1954, leg. Shenefelt S. D., 1 ex. (FSCA).

Remarks: Probably a detritus feeder, collecting records indicate that it is restricted to sand dune regions. Frequently collected at UV light.

Two species have usually been listed from the United States, *A. knausi* from Indiana and Kansas, and *A. parvus* from either the east coast of the U.S. or since Fall (1932) as a Florida endemic (Harpootlian, 2001). These have been distinguished from each other by geography, color and number of lateral pronotal setae. Fall (1932) had this largely correct when he suggested that the east coast populations were only a variety of the western ones, usually called *A. knausi*, but for some inexplicable reason he considered the Florida populations distinct. Examination of the types and numerous additional specimens does not confirm this decision.

Aidophus pallax* (Balthasar, 1960) *comb. nov.
(figs. 34-36, 43)

Aphodius (*Orodaliscoides*) *pallax* Balthasar, 1960: 1;
Dellacasa M., 1988: 246

Type locality: Cochabamba, 2500 m, Bolivia

Type depository: Zoologische Staatssammlung, Munich (ZSM)

Redescription: Length 4.5-5.0 mm, strongly elongate, subcylindrical, shiny, glabrous. Pale yellowish brown; head distally, antennal club, sides and base of pronotum as well as base, second interval and apex of elytra yellowish; legs testaceous. Head with epistoma feebly gibbous; clypeus feebly emarginate, sides widely rounded, latter slightly arcuate, distinctly margined, border faintly reflexed apically; genae angulate, long setae protruding beyond eyes; front more distinctly and coarsely punctate than epistoma. Pronotum transverse, moderately convex, sparse fine and coarse punctures, coarse punctures denser laterally but lacking along lateral borders; latter arcuately rounded, thinly margined, border subcrenulate toward anterior angles and fringed with rather long pale setae; hind angles

widely rounded; base bisinuate, thinly margined. Scutellum triangularly elongate, nearly flat, superficially microreticulate, impunctate. Elytra parallel sided, near three times longer than pronotum, finely striate; striae deeply impressed, nearly inconspicuously punctate; intervals nearly flat on disc, feebly convex on preapical declivity, the first one somewhat narrowed toward apex, faintly microreticulate, shiny, impunctate. Fore tibia with apical spur acuminate and slightly outwardly sinuate in both sexes. Abdomen not foveolate. Male: head wider; epistoma finely, sparsely near imperceptibly punctate, front sparsely but more distinctly punctate than epistoma; pronotum more transverse and less convex, more sparsely punctate and with lateral borders more widely rounded; meso- and metatarsi more slender and elongate, as long as tibia; hind tibia with superior apical spur feebly shorter than first tarsal segment; latter as long as following three combined; metasternal plate nearly flat, with few sparse punctures apically and with a lateral belt of setigerous punctures. Female: head narrower apically, subrugosely punctured distally; front punctures denser and coarser; pronotum subquadrate and more convex, with denser, coarser punctation; meso- and metatarsi shorter; hind tibia with superior apical spur as long as first tarsal segment; latter a bit longer than following two combined; metasternal plate distinctly convex, apically impunctate.

Distribution: The species is thus far known only from the type locality

Material examined: **Bolivia:** Cochabamba: Cochabamba, 2500 m, 15.XI.1953, Forster W. leg., 4 exx. (paratypes 2 males 1 female, BCP; 1 male, USNM)

Remarks: This species is most closely related to *A. impressus* but can be easily distinguished by its larger size, much more elongate elytra, color pattern of pronotum and elytra and by aedeagal morphology.

Aidophus skellei Harpootlian and Gordon,
sp. nov.
(figs. 8, 15-17)

Type locality: 2.5 mi SW Archer on Rt. 24, Alachua Co., FL, U.S.A.

Type depository: Florida State Collection of Arthropods, Gainesville, FL, U.S.A. (FSCA)

Description: Length 2.5-3.1 mm, shortly oblong, convex, moderately shiny, glabrous. Entirely pale yellowish, almost translucent; pronotum with a slightly brownish small spot on each side. Head slightly narrowed apically, with epistoma gibbous and somewhat unevenly, sparsely punctate on disc; punctation apically confusedly subrugose; clypeus faintly emarginate, sides rounded, thinly margined, border feebly upturned apically; genae obtusely rounded, somewhat auriculate, long setae protruding faintly beyond eyes; frontal suture nearly obsolete; front sparsely subevenly punctate. Pronotum feebly transverse, convex, distinctly microreticulate, with large, rather sparse uneven and superficial punctures denser toward anterior angles; sides feebly rounded, thinly margined, border with many exceptionally long, pale setae; base evenly rounded, distinctly margined. Scutellum triangularly elongate, somewhat concave, microreticulate, faintly punctate. Elytra oblong oval, slightly widened backward, moderately convex, rather deeply striate; striae fine, faintly punctate, not crenulate; intervals moderately convex, distinctly microreticulate, unevenly, sparsely and finely punctate. Fore tibia with first tooth large; the basal one reduced. Hind tibia with vestigial transverse carinae on outer face. Hind tibia with superior apical spur as long as first tarsal segment; latter as long as following two combined. Metasternal plate strongly microreticulate, feebly longitudinally grooved medially with large, sparse and superficial punctures, the lateral ones elongately setigerous. Male: head more transverse; pronotum less densely punctate on disc; elytra narrower basally; fore tibia wider. Female: head more narrowed apically; pronotum more densely punctate on disc; elytra more widened basally; fore tibia slender.

Distribution: U.S.A. (Florida endemic)

Etymology: Named in honor of its discoverer Dr. Paul E. Skelley, Florida State Collection of Arthropods, Gainesville, FL, U.S.A.

Type material: Holotype: male, Florida, Alachua Co., 2.5 mi SW Archer, 06.V.1988, leg. Skelley P. (FSCA). Paratypes: Florida, Alachua Co., 2.5 mi. SW Archer on Rt. 24, 02/08.V.1988, Skelley P. E. leg., pan trap (3 ex. DCG; 1 ex. ISEA; 7 exx. PESC, 3 exx. FSCA, 1 ex. PJHC), 2.5 mi. SW. Archer 02/08.V.1988. Skelley P.E. leg., window trap in old pasture (1 ex. DCG; 1 ex. USNM), 2.5 mi. SW. Archer 8/15.V.1988. Skelley P.E. leg., pan trap in old pasture of sandhill

(1 ex USNM), 2.5 mi. SW. Archer on Rt.24, 15/21.V.1988. Skelley P.E. leg., window trap in old pasture of sandhill (7 exx. PESC, HAHC); Levy Co. 4.0 mi. SW Archer on Rt. 24, 10/19.V.2000. Skelley P.E. leg. barrier pitfall trap (1 ex. FSCA), 4.0 mi. SW Archer on Rt. 24, 25.03/60.VI.1999, Skelley P.E. leg. barrier pitfall trap (1 ex. PESC)

Remarks: Unlike the closely related *A. parvus*, this species is apparently not attracted to UV light. All specimens were collected in flight intercept traps, pan traps or by sifting sand around vegetation.

CATALOG

Genus *Aidophus* Balthasar, 1963
(Nearctic and Neotropical Region, Mexican Transition Zone)

cabrali (Petrovitz, 1973) Brazil (Parahyba)

flaveolus (Harold, 1867) ? Mexico, Argentina, Chile

flechtmanni Stebnicka and Dellacasa M., *sp. nov.*
Brazil (Mato Grosso do Sul)

impressus (Petrovitz, 1970) Brazil (Parnagua)

infuscatopennis (Schmidt A., 1909) Peru, Brazil, Bolivia, Paraguay, Uruguay, Argentina
paraguayanus (Balthasar, 1963)

kolbei (Schmidt A., 1911) Bolivia, Uruguay

notatus (Harold, 1859) ? U.S.A. (Arizona), Mexico, Panama, Colombia, Venezuela, Guyana

panamensis (Harold, 1859) Panama, ?Venezuela

parvus (Horn, 1887) Canada (Ontario), U.S.A. (east coast from New Jersey to Florida, Mississippi, Wisconsin and Indiana near Lake Michigan, Nebraska, Texas, Kansas, Oklahoma, New Mexico)

kansanus (Wickham, 1905)

knausii (Fall, 1905)

knausi (Fall, 1905) [Schmidt A., 1922, emended name]

wolcottii (Blatchley, 1910)

pellax (Balthasar, 1960) Bolivia

skelleyi Harpootlian and Gordon, *sp. nov.* U.S.A. (Florida)

Genus *Australaphodius* Balthasar, 1942
(Afrotropical, Australian, Nearctic and Neotropical Region)

frenchi (Blackburn, 1892) South Africa, Australia, Tasmania, New Zealand, U.S.A. (California), Chile

ambiguus (Boheman, 1858)

brevitarsis (Peringuey, 1901)

? *catulus* (Balthasar, 1946)

melbournicus (Balthasar, 1942)

tarsalis (Schmidt A., 1907)

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