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SCARAB BEETLES OF THE GENUS *PSAMMODIUS* IN THE
WESTERN HEMISPHERE

By O. L. CARTWRIGHT

The beetles of the genus *Psammодиус* are placed in the tribe Psammодиина of the subfamily Aphodiinae in the family Scarabaeidae. They are relatively small in size, from 2.5 to 4.6 mm. in length, usually some shade of brown or black in color, rather compact and convex, and oblong to strongly oval in shape. They occur in the sand dunes of the seacoast, the flood-plains of rivers, and other sandy places. The larvae are unknown, but those of the flightless species of the seacoast should be found rather easily at the proper season since the adults frequently occur in abundance among the roots of grasses growing in the sand dunes.

The genus is worldwide in distribution. Schmidt listed a total of 37 species in his monograph of the Aphodiinae, 15 of them from the Western Hemisphere, half the remainder from Europe and Africa, and an equal number from Australia and Asia.

In the present study, 35 species are recognized from the Western Hemisphere. Sixteen species are recorded from the United States. Four of these are also recorded from México, and a fifth also from Argentina. Six additional species occur in México and Central America and 13 more are found only in South America.

Of the 35 American species here recognized, 16 were described from the Western Hemisphere, 3 were described from Europe, and 16 are

new. Two formerly accepted species, *P. aegialioides* Haldeman and *P. shermani* Cartwright, were found to be synonyms of other species and one, *P. ambiguus* Fall, is removed from *Psammodius*. *Psammodius desertus* Van Dyke was removed to the genus *Xeropsammobeus* by Saylor in 1937 (Bull. Southern California Acad. Sci., vol. 36, p. 36); *Psammodius grundeli* Van Dyke was removed to *Pleurophorus* by the writer in 1948 (Trans. Amer. Ent. Soc., vol. 74, p. 138); and *Psammodius schwarzi* Linell was removed to *Ataenius* by Brown in 1928 (Canadian Ent., vol. 60, p. 307).

The genus *Xeropsammobeus*, erected by Saylor for the species *Psammodius desertus* Van Dyke and to which I now add *Psammobius ambiguus* Fall, only superficially resembles *Psammodius*. *Xeropsammobeus* should be placed in the tribe Aphodiina because the head is not strongly bent downward but lies nearly horizontally as in typical *Aphodius*: the clypeus is punctate-rugose, not granulate; the pygidium is simple, not grooved basally; and the tibiae bear strong transverse ridges. It should be noted, however, that in *Xeropsammobeus* the posterior femurs are much wider than the middle femurs and that the middle and hind tibiae are strongly widened to a very noticeably oblique apex. The transverse tibial ridges are also strongly oblique. A paratype of *X. desertus* (Van Dyke) and the holotype of *X. ambiguus* (Fall) were examined in the present study.

I have examined type material (holotype, cotype, or paratype) of all *Psammodius* described from the Western Hemisphere except *cruentus* Harold and *interruptus* Say. Type material of the European species, *P. laevipennis* A. Costa, *basalis* (Mulsant and Rey), and *sulcicollis* (Illiger) were not available, but European specimens were studied. *Aphodius clypeatus* Say, sometimes placed in *Psammodius*, is omitted since it is impossible to place the species by the original description alone.

Measurements in millimeters were made with a Spencer stereoscopic microscope equipped with an ocular micrometer. Width is the greatest width. Length is measured along the midline. Length of the elytra is measured from the apex along the suture to a perpendicular base line touching the anterior margins of the humeri. Where long series of specimens were available, measurements were taken from an average individual to represent the relative lengths.

Specimens of *Psammodius* in the U. S. National Museum collection were so few the present study would have been impracticable without the generous cooperation and loan of specimens from other museum and private collections. I am grateful for having had the opportunity to study this material and thank the following who loaned museum specimens: G. J. Arrow and E. B. Britton, British Museum (Natural History); W. J. Brown, Canadian Department of Agriculture; H. Freude, Zoologische Sammlung des Bayerischen Staats,

Munich; Frederico Lane and Ernest X. Rabello, Departamento de Zoologia, São Paulo; Rene Malaise, Naturhistoriska Riksmuseum, Stockholm; R. H. Beamer, Snow Museum, University of Kansas; M. A. Cazier, American Museum of Natural History; P. J. Darlington, Jr., Museum of Comparative Zoology; Henry Dietrich, Cornell University; L. S. Dillon, Reading Public Museum; Ray T. Everly, Purdue University; T. H. Hubbell, University of Michigan; P. W. Fattig, Emory University; P. D. Hurd, University of California; J. N. Knull, Ohio State University; L. M. Martin, Los Angeles County Museum; James A. G. Rehn, Academy of Natural Sciences of Philadelphia; H. J. Reinhard, Texas A. & M. College; E. S. Ross and Hugh B. Leech, California Academy of Sciences; V. D. Roth, Oregon State College; M. W. Sanderson, Illinois State Natural History Survey; G. E. Wallace, Carnegie Museum; and R. L. Wenzel, Chicago Natural History Museum. My thanks too to all who loaned specimens from their private collections: O. Bryant, C. A. Frost, J. W. Green, Henry Howden, Borys Malkin, Antonio Martínez, A. T. McClay, G. H. Nelson, F. H. Parker, P. O. Ritcher, Mark Robinson, Joe Schuh, and Floyd G. Werner. I am especially indebted to Dr. P. J. Darlington, Jr., for suggestions regarding exact measurements and for rechecking for me the type of *P. blandus* (Fall), and to Dr. E. B. Britton for assistance with locality data for the British Museum specimens. To Antonio Martínez I am greatly indebted and especially grateful for the loan of many fine specimens and for his permission to describe several of the species from South America.

Psammodius Fallén

Psammodius Fallén, *Observationes Entomologicae*, fasc. 3, p. 37, 1807.—Gyllenhal, *Insecta Svecica* . . . , *Coleoptera*, vol. 1, pt. 1, p. 6, 1808.—Curtis, *British entomology*, vol. 6, No. 258, 1829.—Heer, *Fauna coleopterorum helvetica*, vol. 1, fasc. 3, p. 532, 1841.—Chapin, *Proc. U. S. Nat. Mus.*, vol. 89, p. 9, 1940.

Psammobius Heer, *Fauna coleopterorum helvetica*, vol. 1, fasc. 3, p. 531, 1841.—Schmidt, *Coleoptera, Aphodiinae*. *Das Tierreich (Deutsche Zoologische Gesellschaft)*, pt. 45, p. 469, 1922.

GENOTYPE: *Aphodius sulcicollis* Illiger (by subsequent designation of Curtis, 1829). As recorded by Chapin, 1940, this genus, usually credited to Gyllenhal, 1808, was originally proposed by Fallén in the previous year. The species originally included were seven in number: *Scarabaeus arenarius* Paykull, *Aphodius globosus* Illiger, *A. elevatus* Fallén, *A. sabuleti* Fallén, *A. porcatus* Fallén, *A. asper* Fallén, and *A. sulcicollis* Illiger. Curtis, 1829, choosing to preserve the name *Psammodius* free of conflict with *Aegialia* Latreille, 1807, selected the last species, *A. sulcicollis* Illiger, as type. His action was permissible under the International Rules and must be accepted.

A combination of characters separates the species of the genus *Psammodius* from those of closely allied genera. In *Psammodius* the

species always have the front of the head distinctly granulate or verrucose, the granules rarely more than twice as long as wide, the clypeus emarginate, the pronotum usually fimbriate or ciliate at sides and base, the pygidium grooved basally to receive the ventrally dentate apices of the elytra, the hind spurs and tarsus placed in a straight line rather than in the triangular placing as in *Aphodius*, the apical fimbriae of the hind tibiae very short and well inside the margin, the external angle of the posterior tibia only very rarely forming a spine, and the first segment of the hind tarsus subequal to or shorter than the long spur. In addition, the pronotum frequently exhibits alternate transverse swellings and punctate furrows or grooves, the hind femurs are usually heavier and wider than the middle femurs, the middle and hind tibiae are usually noticeably widened apically, the tibiae usually without the oblique ridges found in *Aphodius* but with lengthwise series of setigerous tubercles and sometimes an ante apical carina paralleling the apical margin (species of the Pacific Coast of the United States), and the tarsal segments are nearly always distinctly widened apically and more or less triangular.

Over half of the American species of *Psammodyus* have the maxillary galea provided with heavy chitinous teeth and the median, more heavily chitinized area of the epipharynx not extending to the thin membranous anterior edge, as found in the type of the genus, *Psammodyus sulcicollis* (Illiger). In the remaining species the galea of the maxilla is covered with close parallel rows of mixed fine, hairlike, and heavy hooked setae, giving a brushlike tip, while the epipharynx has the more heavily chitinized area extended beyond the membranous anterior edge by one or two heavy setae or teeth, exactly as in the genus *Ataenius*.

Nearly all species having maxillary teeth also exhibit transverse pronotal furrows, wide hind femurs, short tarsi, and a strongly convex oval habitus. Those without maxillary teeth usually lack the pronotal furrows (the pronotum being more or less evenly punctate), show little disparity in the size of the middle and hind femurs, and usually are more elongate in habitus. Unfortunately several species, notably the new species *formosus*, *fimbriatus*, and *martinezi*, were found to have maxillary teeth combined with external characters of the second group. Because of this and the variation in the development of external characters it seems unwise to attempt a division of the species into subgenera.

It is interesting to note that the species *bidens*, *integer*, *aenictus*, *atopus*, and others all have affinities in the direction of *Ataenius*, while in *Ataenius*, the species *schwarzi* (Linell) and *puncticollis* LeConte show characters similar to this group of *Psammodyus*. *Ataenius* and *Psammodyus* probably should be placed in the same tribe of the Aphodiinae.

Key to the species of *Psammodius* in the Western Hemisphere

1. Pronotum with more or less distinct transverse grooves; clypeus usually deeply acutely notched or triangularly emarginate with each side weakly subdentate, obtusely angulate or rounded 2
 Pronotum without distinct transverse grooves; clypeus usually distinctly dentate each side of a wide shallow emargination 24
2. Occiput with deep oblique grooves arranged in chevron; five thoracic ridges sharply defined, at least first two complete from side to side 3
 Occiput without oblique grooves or with thoracic grooves not sharply defined from side to side 5
3. Last abdominal segment eroded anteriorly; elytral margins not noticeably fimbriate; width of posterior femur as long as middle line of metasternum; posterior tibia about 3 times as long as wide; elytra margined basally 4
 Last abdominal segment smooth anteriorly; elytral margins fimbriate with long hair; elytra not margined basally; posterior femur wider than length of middle line of metasternum; posterior tibia 2½ times as long as wide; Maryland **basalis** (Mulsant and Rey)
4. Pronotum fimbriate with clavate setae, the ends frequently split; Pennsylvania and New Jersey **sulcicollis** (Illiger)
 Pronotum fimbriate with fine, sharply pointed hairs; Maryland, Virginia, Indiana. **laevipennis** A. Costa
5. Elongate punctures covering entire surface of lateral pronotal convexity, tuberculate within anterior angles 6
 Lateral convexity of pronotum smooth 11
6. Elytra dull, noticeably, strongly alutaceous; intervals weakly tectiform, strongly crenate along inner edge; coarse punctures of pronotum close but distinct, arranged in four transverse furrows, the third furrow twice as wide as the others; México **culminatus** Bates
 Elytra shining, sometimes finely alutaceous 7
7. Elytral intervals with a row of distinct punctures near the outer edge and unusually deeply crenate along the inner edge; pronotum confusedly punctate-rugose throughout; México. **saltilloensis**, new species
 Elytral intervals without row of punctures along outer edge 8
8. Fifth transverse pronotal ridge completely broken up into tubercles; pronotum with entire surface roughly punctate-rugose but with four transverse furrows more coarsely punctate and evident; elytral intervals weakly tectiform, the ridges vaguely tuberculate; México, Wyoming to Kansas. **mimeticus** (Fall)
 Fifth transverse pronotal ridge usually quite distinct, sometimes roughly punctate but not completely broken into tubercles 9
9. Middle transverse pronotal ridges punctate-rugose; elytral intervals weakly tectiform, the ridges vaguely tuberculate; with an interrupted transverse occipital row of close, fine to medium punctures starting above each eye; Wyoming to New York to Georgia **interruptus** Say
 Transverse pronotal ridges relatively smooth, very finely punctate; discal intervals of elytra usually smoothly convex; occiput smooth above eyes 10
10. Punctures of median longitudinal line of pronotum usually more or less completely fused and run together, much finer than those of the transverse furrows; color piceous; larger species 2.9 to 3.8 mm.; Texas, México, Honduras **werneri**, new species

- Punctures of median longitudinal line of pronotum about the same size as those of the transverse furrows, the third furrow usually continuous across and extending backward at the middle, merging in a wide triangle with the midline; elytral intervals smoothly convex, their inner edges irregular, not so deeply, sharply, and distinctly crenate as in preceding species, the crenations appearing more as small triangular notches; color ferrugineous; smaller species, 2.8 to 3.4 mm.; México **canoensis**, new species
11. Light brown species with five transverse swellings on pronotum 12
Usually darker colored species, with three or less transverse smooth areas on the pronotum 14
12. Clypeal emargination more or less broadly, evenly rounded at middle; first or apical ridge of pronotum distinctly tuberculate even at middle, transverse furrows weak and poorly developed, punctures indistinct; abdominal segments 3, 4, and 5 apparently connate at middle, terminal segment not distinctly crenate anteriorly; Texas, Arizona, México . . . **blandus** (Fall)
Clypeal emargination angular at middle; first or apical ridge of pronotum indistinctly tuberculate at sides and almost smooth at middle, transverse furrows strong with distinct punctures; abdominal segments not connate, terminal segment distinctly, strongly crenate anteriorly at middle . . . 13
13. Posterior tibia less than three times as long as wide at apex, rather suddenly narrowed from basal quarter to knee, the inner edge curved or arcuate in outline; elytra short and convex, width 1.45 mm., length 1.85 mm.; México **veraecrucis** Bates
Posterior tibia more than three times as long as wide at apex, the inner edge nearly straight, width gradually reduced to knee; elytra longer, width 1.55 mm., length 2.0 mm.; Arizona to Texas, México.
quinqueplicatus Horn
14. Posterior tibia without oblique ridge 15
Posterior tibia with oblique ridge; Pacific Coast of United States . . . 22
15. Species less than 3 mm. in length, width less than half the length; Brazil and Bolivia 16
Species more than 3 mm. in length, or width more than half the length. . 18
16. Midline of metasternum vaguely evident but not deeply impressed, anterior postcoxal line absent at middle, vague near sides, angular depression in front of posterior coxal plates small and weak; pronotal punctures mostly close in deep furrows; Bolivia, Paraguay, Argentina.
bolivianus, new species
Midline and postcoxal line of metasternum deep and distinct 17
17. Width of posterior femur barely one-half the length; apical width of posterior tibia one-third the length of the tibia; Brazil . . . **manaosi**, new species
Width of posterior femur more than half the length; apical width of posterior tibia one-half the length of the tibia; Brazil . . . **santaremi**, new species
18. Elytra fimbriate with moderately long fine hairs 19
Elytra not fimbriate 20
19. Tenth elytral interval very flat to concave, others convex; Chile.
indefensus (Schmidt)
Tenth elytral interval convex, not differing from others; strongly convex, oval; only the anterior transverse groove of pronotum present; Argentina **inflatus**, new species
20. Rufopiceous; midline of metasternum deeply impressed at middle; clypeus weakly dentate; Argentina **placidus** (Schmidt)
Lighter colored; midline of metasternum fine, not or only very weakly impressed; United States 21

34. Coarse pronotal punctures generally distributed; Florida . *armaticeps* (Fall)
 Coarse pronotal punctures grouped in a transverse band behind the middle;
 South Carolina, Georgia, South America *cruentus* Harold

***Psammobius basalis* (Mulsant and Rey)**

Psammobius basalis Mulsant and Rey, in Mulsant, Ann. Soc. Agr. Lyon, ser. 4, vol. 2, p. 636, (1869) 1870.—Schmidt, in Schenkling, Coleopterorum catalogus, pt. 20, p. 83, 1910.—Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 474, 1922.

Oblong oval, broader behind, shining, dark castaneus to piceous. Antennae testaceous. Head convex, closely, coarsely verrucose, occiput smooth behind a diagonal elevated ridge each side of middle arranged in chevron. Clypeus broadly, shallowly, triangularly emarginate, angles each side obtusely rounded, sides weakly arcuate, a slight notch at clypeal suture, genae not prominent, rounded, fimbriate. Pronotum slightly narrower in front, width 1.5 mm., length 1 mm., all angles obtusely rounded, base sinuate, slightly lobed at middle, marginal line fine, entire, sides and base fimbriate with fine, simple hairs, strongly crenate toward anterior angles, base smooth, unbroken, surface divided into five smooth, convex, transverse ridges by four deep furrows, each with a single row of close, shallow, moderately coarse punctures, the first furrow extending almost into the anterior angles, then turning back and out to the sides at middle, the second and fourth relatively short, the third ending at the lateral foveae, posteriorly the median line smooth, lightly impressed, anteriorly indicated by irregularities in both ridges and punctures of the furrows. Elytra as wide as pronotum at base, width 2 mm., length 2.5 mm., sides fimbriate with long, fine, hairlike setae, weakly arcuate and divergent to beyond middle then evenly rounded to apex, base not margined, striae fine, not strongly impressed, intervals almost flat, with a slightly irregular median row of very close, minute punctures, tenth interval not different from the others. Metasternum smooth and shining at middle, setigerously punctate at sides, without anterior postcoxal line. Abdominal segments shining, each with a transverse row of long, fine hairs, terminal segment not eroded or crenate in front. Pygidium shining but somewhat irregularly punctate. Anterior femur margined in front, posterior face setigerously punctate with long hairlike setae. Middle femur half as wide as hind femur, both with strong, wide, alutaceous, entire marginal line, surface with numerous, scattered, hair-bearing punctures. Tibiae without oblique ridges but with rows of tubercles along edges and ventral surface. Spurs and tarsi of middle tibiae much longer and narrower than those of posterior, the long spur longer than the first three tarsal joints combined. Posterior

tibia short and heavy, shorter than femur, apex half as wide as length of tibia, spurs short, somewhat foliaceous, the longer not equal to first three tarsal joints combined. Length 4 mm., width 2 mm.

TYPE: Location unknown to me.

TYPE LOCALITY: Southern France.

SPECIMENS EXAMINED: 12.

DISTRIBUTION: MARYLAND: Chesapeake Beach and Kenwood Beach. "D. C."

SEASON: August 29 to September 17.

REMARKS: This species, probably accidentally introduced from Europe, possibly in ships ballast, is found along Chesapeake Bay under debris and among grass roots in sand along the beaches. It has not been reported previously from the United States. *Psammodius basalis* (Mulsant and Rey) may be separated from the closely allied species, *P. sulcicollis* (Illiger) and *P. laevipennis* A. Costa, by the lack of a basal margin and fimbriate edges of the elytra, the lack of anterior crenation or erosion of the terminal abdominal segment, and the very short metasternum. The earliest date seen for an American specimen was Sept. 16, 1921.

Psammodius sulcicollis (Illiger)

Aphodius sulcicollis Illiger, Mag. Insektenk., vol. 1, p. 20, 1802.

Psammodius sulcicollis Fallén, Observationes entomologicae, fasc. 3, p. 37, 1807.—Gyllenhal, Insecta svecica, vol. 1, p. 9, 1808.

Psammobius sulcicollis Heer, Fauna coleopterum helvetica, vol. 1, fasc. 3, p. 531, 1841.—Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 473, 1922.

Oblong oval, moderately shining, piceous. Antennae pale rufotestaceous. Legs dark castaneous. Head convex, moderately verrucose, occiput with two grooves arranged in chevron separated by an elevated ridge. Clypeus broadly, shallowly, triangularly emarginate, the angles each side rounded, sides nearly straight, genae small, rounded, set off by a deep notch at clypeal suture. Pronotum, slightly narrower in front, width 1.3 mm., length 0.9 mm., all angles obtusely rounded, base margined, distinctly lobed at middle, sides and base fimbriate with club-shaped setae, sides crenate; surface with four coarsely, closely punctate transverse furrows and traces of a fifth basally, separated by smooth ridges, the ridges with scattered, minute punctures, the two basal ridges interrupted by the deep, coarsely punctate median, longitudinal line. Elytra at base as wide as pronotum, width 1.6 mm., length 2.3 mm., sides nearly straight, slightly divergent to posterior fourth; striae wide, moderately deep, punctures coarse, shallow, slightly crenating the intervals, under high magnification each puncture appearing alutaceous with a minute median granule; intervals smooth with a median row of close, minute punctures, convex on disc, the shortened tenth interval flat or very slightly con-

cave, shining but minutely alutaceous; elytra not fimbriate at sides, the base not distinctly margined. Metasternum smooth, shining, slightly depressed at middle, median line fine, impressed, scabrous at extreme sides with a fine, more or less obsolete line extending inward behind the middle coxae. Abdominal segments shining, very minutely alutaceous, especially at sides, weakly convex, very finely margined posteriorly and with a fine, distinctly alutaceous line anteriorly at suture, a few small but distinct granules in a transverse median line at each side. Pygidium apically smooth with a few long setae around the edge. Anterior femurs finely margined in front, posterior surface uneven, alutaceous, a few scattered, setigerous punctures, the setae very short. Middle and posterior femurs with marginal lines alutaceous, visible from behind, surface with scattered, setigerous punctures with short setae anteriorly and over apical half, three or four widely placed, longer hairs along posterior edge; posterior femur about twice as wide as middle femur and subequal in width to length of metasternum. Middle and posterior tibiae without oblique ridges but with longitudinal rows of tubercles along edges. Posterior tibia $2\frac{1}{2}$ times as long as wide at apex. Tarsal joints triangular, spurs narrow, the long spur about equal in length to first two tarsal joints combined. Length 3 to 3.5 mm., width 1.5 to 1.7 mm.

TYPE: Probably in "Naturhist. Museum, Braunschweig" or Zoologische Museum, Berlin.

TYPE LOCALITY: Königsberg, Germany.

SPECIMENS EXAMINED: 21.

DISTRIBUTION: UNITED STATES: New Jersey: Browns Mills, Atsion. Pennsylvania: South Philadelphia.

SEASON: April 28 to June 11.

REMARKS: I have no record of this species having been previously recorded from the Western Hemisphere. The oldest label data from the United States reads "S. Phila. Pa. 4-28-06," the most recent, "Atsion, N. J., VI-11-45, J. W. Green." This species is slightly smaller and darker than *Psammodyus laevipennis* A. Costa and *basalis* (Mulsant and Rey). It is easily recognized by the club-shaped setae around the pronotum.

Psammodyus laevipennis A. Costa

Psammodyus laevipennis A. Costa, Ann. Accad. Asp. Nat. Napoli, vol. 2, p. 18, 1844.

Psammobius laevipennis Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 474, 1922. (See this paper for synonymy.)

Psammodyus aegialioides Haldeman, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 1, p. 107, 1848.—Horn, Trans. Amer. Ent. Soc., vol. 14, p. 94, 1887. (New synonymy.)

Psammobius aegialioides Gemminger and Harold, Catalogus coleopterorum, vol. 4, p. 1068, 1869.—Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 476, 1922.

Oblong oval, slightly broader behind, moderately shining, dark castaneous. Antennae pale rufotestaceous. Head convex, closely, coarsely verrucose, occiput with two deep grooves arranged in chevron separated by an elevated ridge. Clypeus broadly, triangularly emarginate, the angles each side rounded, sides weakly arcuate, a slight notch at clypeal suture, genae small, rounded. Pronotum slightly narrower in front, width 1.55 mm., length 1.0 mm., anterior angles very obtuse, posterior angles widely rounded, base sinuate and slightly lobed at middle, the marginal line distinct, sides and base fimbriate-crenate, fimbriae simple; surface with four deep, transverse, closely, coarsely punctate furrows and a trace of a fifth furrow along the base, the intervals between and the smooth areas at the sides strongly convex, shining, minutely, not closely punctate, the two basal ridges interrupted by the deep, closely, coarsely punctate median line. Elytra at base as wide as pronotum, width 1.8 mm., length 2.8 mm., sides nearly straight, slightly divergent, the striae moderately deep, finely, not closely punctate, punctures not distinctly crenating the slightly convex, smooth intervals, the shortened tenth interval flat and alutaceous, sides of elytra not noticeably fimbriate, base margined. Metasternum smooth, shining, median line deep, without anterior post-coxal line, smoothly rounded into the finely scabrous depressed area behind the middle coxae, a few very shallow, coarse, setigerous punctures at extreme sides. Abdominal segments smooth, each with a row of two or three setigerous punctures at sides, the terminal segment widely, deeply eroded anteriorly. Pygidium terminally scabrous. Anterior femur margined in front, posterior surface with scattered, setigerous punctures. Middle femur with deep, complete, posterior marginal line, numerous setigerous punctures anteriorly and over outer two-thirds. Posterior femur twice as wide as middle femur, posterior marginal line deep, entire, three or four setigerous punctures along posterior margin, a few scattered over outer third. Posterior tibia about three times as long as wide at apex, spurs narrowly foliaceous, bluntly rounded, the longer about equal in length to the first three tarsal joints combined. First tarsal joint elongate triangular. Length 3.3 to 4 mm., width 1.5 to 2.0 mm.

TYPE: *P. laevipennis*: Location unknown to me, but probably in Museo Zoologico della Università di Napoli if still in existence. *P. aegialioides*: Museum of Comparative Zoology, Cambridge, Mass.

TYPE LOCALITY: *P. laevipennis*: Shores of Granatello, region of Naples, Italy. *P. aegialioides*: "Middle States," i. e., Middle Atlantic States.

SPECIMENS EXAMINED: 95.

DISTRIBUTION: UNITED STATES: Virginia: Arlington (Potomac River). Maryland: Chesapeake Beach, Kenwood Beach. New York: State label only. Indiana: Beverly Shores, Tremont, and Dunes State Park.

SEASON: April 28 to September 17.

REMARKS: I have been unable to separate American specimens determined *aegialioides* from the European *laevipennis*. *Psammодиус aegialioides* Haldeman was described in 1848 from "Middle States," which probably meant Maryland or Pennsylvania at that early date. George H. Horn in his "Monograph of the Aphodiini Inhabiting the United States" (Trans. Amer. Ent. Soc., vol. 14, 1887) gave the distribution "from New York southward to Georgia, but seems rare." Early specimens in the Horn and LeConte collections are labeled merely with pink circles indicating "middle states." A single specimen in the Horn collection is labeled "N. Y." I have seen no recent fully labeled specimens to confirm the wide distribution listed by Dr. Horn. The oldest Indiana specimen was collected in 1934.

Psammодиус culminatus Bates

Psammодиус culminatus Bates, Coleoptera, in Godman and Salvin, Biologia Centrali-Americana, vol. 2, pt. 2, p. 103, 1887.

Psammобиус culminatus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 481, 1922.

Oblong oval, very slightly wider behind, comparatively dull, only weakly shining, piceous. Antennae rufotestaceous. Head convex, closely, moderately verrucose; occiput smooth with a few fine punctures above the eye. Clypeus quite deeply, broadly, triangularly emarginate, the limiting angles rounded each side, sides arcuate, weakly reflexed; genae fimbriate, small and broadly rounded. Pronotum slightly narrower in front, width 1.30 mm., length 0.9 mm., anterior angles obtuse, posterior angles broadly rounded, sides and base crenate, fimbriate with moderate, obtuse setae, base margined; surface with very close, coarse punctures arranged in four, more or less distinct transverse furrows, the first, second and fourth one or two punctures wide, the third much wider, three or four punctures wide, the punctures close but separate and distinct except in the anterior angles and in the depressed basal half of the median line where they become confused, surface between the discal furrows uneven with confused, very fine, shallow punctures and alutaceous sculpture, laterally the coarse punctures become elongate and over the convexity beyond the lateral fovea appear as short arcuate lines, basally they run together leaving the intervening surface in rows of tubercles. Elytra as wide as pronotum at base, width 1.5 mm., length 2.0 mm., base margined, humeri strongly dentate, sides weakly arcuate, not fimbriate; striae sharply defined, moderately deep, strial punctures moderate and deep, intervals somewhat carinately convex, strongly alutaceous, with a median row of fine, indistinct, shallow punctures causing slight unevenness over discal intervals to distinct breaks and a vaguely tuberculate appearance of the lateral intervals, each interval weakly crenate on outer edge, strongly crenated along the inner edge by a row

of punctures apparently independent of the strial punctures. Metasternum smooth and shining at middle, median line sharp and distinct, much deeper at each end, the anterior end extending well forward between the middle coxae, anterior postcoxal line with inner end remote from the coxae, strong, extending outward to scabrous area at side, posterior line deep and distinct. Abdominal segments unusually convex, shining but minutely alutaceous, very finely crenate along anterior margin and finely margined along posterior edge, each with a median, transverse row of moderate, setigerous punctures, the setae fine, moderately long, terminal segment with scattered fine punctures, widely crenate anteriorly. Pygidium alutaceous, fringed apically with moderately long setae. Anterior femur with a strong, deep, anterior marginal line. Middle and posterior femurs smooth, shining, with strong, entire, posterior marginal line, and with the usual curving row of three or four setigerous punctures near the knee. Posterior femur one-fifth wider than middle femur. Posterior tibia three times as long as wide at apex, spurs narrow, long spur subequal to first two tarsal joints in length. First tarsal joint elongate-triangular, as long as following two combined. Length 3.3 mm., width 1.5 mm.

TYPE: In British Museum (Natural History).

TYPE LOCALITY: "Mexico, Presidio (Forrer), Jalapa, Mexico City (Höge)."

SPECIMENS EXAMINED.—A cotype from Jalapa, México.

REMARKS: This species is very close to *interruptus* Say and eventually may be found to be identical; however, the single specimen examined is much darker in color, the alutaceous sculpture much more distinct, the coarse punctures of the pronotum more distinctly defined with intervening areas smoother, and the abdominal segments more convex.

Psammodius saltilloensis, new species

Holotype oblong oval, slightly broader behind, moderately shining, ferruginous. Antennae rufotestaceous. Head convex, rather finely verrucose; occiput smooth, a few fine to moderate punctures above each eye. Clypeus moderately, deeply, rather broadly, triangularly emarginate, the limiting angles rounded each side, sides and angles finely reflexed, sides weakly arcuate; genae fimbriate, small, broadly rounded. Pronotum not narrower in front, width 1.4 mm., length 1.0 mm., anterior angles rounded, nearly right-angled, posterior angles distinct, obtusely rounded, sides weakly arcuate, base finely, indistinctly margined, sides and base crenate, fimbriate with moderate, obtuse setae; surface roughly sculptured throughout with close, mixed, fine, medium, and coarse punctures, four transverse and median longitudinal furrows lightly impressed and indistinctly indicated by closer, coarser punctures, convexity beyond lateral fovea with more elongate punctures, anterior angles rather widely, closely, tuberculate-aluta-

ceous. Elytra as wide as pronotum at base, width 1.7 mm., length 2.3 mm., base strongly margined, humeri dentate, sides weakly arcuate, not fimbriate; striae moderate, strial punctures fine and deep; intervals moderately convex, finely alutaceous but shining, crenate along inner margin by a row of deep, moderate punctures, the punctures or crenations as wide as the stria and nearly separated from it, and with a row of fine to moderate, shallow, punctures near the outside margin. Metasternum smooth, shining, minutely punctate at middle, midline deep, the ends slightly deeper, anterior postcoxal line distinct, extending outward to the scabrous area at extreme sides, posterior depressed line in front of posterior coxal plate distinct. Abdominal segments minutely alutaceous, finely crenate along anterior margin, finely margined along the posterior edge, carinately margined at extreme sides, each segment with a transverse, median row of fine setigerous punctures bearing very fine, moderately long hair, terminal segment widely crenate in front. Pygidium scabrous, fringed with moderately long fine hairs. Anterior femur with deep, entire marginal line, posterior face smooth except for a few moderate punctures at elbow. Middle and posterior femurs with deep, almost entire posterior marginal line, otherwise smooth with the usual row of three or four setigerous punctures at the knee. Posterior femur about one-tenth wider than the middle femur. Posterior tibia three times as long as wide at apex, spurs very narrow, long spur subequal in length to first two tarsal joints combined. First tarsal joint elongate-triangular, equal in length to following two together. Length 3.6 mm., width 1.7 mm.

TYPE: USNM 61844.

TYPE LOCALITY: Saltillo, Coahuila, México.

SPECIMENS EXAMINED: The unique holotype only.

REMARKS: This single specimen, bearing Prof. Wickham's label and locality only, is another species in the *interruptus* complex. It is one of the larger species in the group and is easily identified by the punctures along each margin of the elytral intervals.

Psammobius mimeticus (Fall)

Psammobius mimeticus Fall, Journ. New York Ent. Soc., vol. 40, p. 192, 1932.

Oblong oval, moderately shining, rufopiceous. Antennae rufotestaceous. Head convex, closely, moderately verrucose; occiput smooth with a short band of close, fine to moderate punctures above the eye. Clypeus moderately, deeply, angularly emarginate, the limiting angles rounded each side, angles and sides finely reflexed, sides weakly arcuate; genae fimbriate, broadly rounded and inconspicuous. Pronotum narrower in front, width 1.4 mm., length 1.1 mm., anterior angles rounded, approximately right-angled, posterior angles obtuse, sides

and base crenate, fimbriate with obtuse, moderate setae, base finely indistinctly margined; surface rough, uneven, and very finely punctate throughout, with four transverse furrows and ridges more or less distinct, the fifth ridge and basal area completely broken up into flattened tubercles, punctures of the furrows moderate to coarse, confused, frequently leaving intervening fine tubercles; median line distinct over basal half or three-fourths, punctures fine and confused; laterally the coarse punctures over the convexity beyond the fovea become arcuate, elongate, rather close, and frequently run together. Elytra as wide as pronotum at base, width 1.65 mm., length 2.1 mm., base margined, humeri dentate, sides weakly arcuate, not fimbriate; striae deep, strial punctures fine, deep; intervals convex, finely alutaceous but shining, weakly tectiform and vaguely tuberculate, strongly crenate along inner margin by a row of punctures independent of the strial punctures, outer margin weakly crenate. Metasternum smooth and shining at middle, median line sharp and distinct, deeper at each end, the anterior end extending well forward between the coxae, anterior postcoxal line strong and extending out to the scabrous area at extreme side, posterior line in front of posterior coxal plate deep and distinct. Abdominal segments shining but minutely alutaceous, finely crenate in front, the terminal segment much more widely so, very finely margined behind, each with a median, transverse, somewhat eroded line and row of moderate to coarse, setigerous punctures, the moderately long, fine, pointed hair appearing behind a very small tubercle or granule. Pygidium alutaceous, fringed apically with moderately long, fine, pointed hairs. Anterior femur with strong, deep, anterior marginal line. Middle and posterior femurs smooth, shining, with deep posterior marginal line extending two-thirds to three-fourths the distance to trochanter, four or five moderate setigerous punctures in a curving row from middle to knee, a more complete row of similar setigerous punctures bordering the anterior margin. Posterior femur one-fifth wider than middle femur. Posterior tibia three times as long as wide at apex, spurs narrow, long spur equal to length of first two tarsal joints combined. First tarsal joint elongate-triangular, slightly longer than the two following joints together. Length 3 to 3.6 mm., width 1.5 to 1.65 mm.

TYPE: In Fall collection, Museum of Comparative Zoology, Cambridge, Mass.

TYPE LOCALITY: San José del Cabo, in the Cape Region of Baja California.

SPECIMENS EXAMINED: 16.

DISTRIBUTION: UNITED STATES: Wyoming: Fort Laramie. Colorado: Monon (?). Nebraska: West Point. Kansas: Topeka. Arizona: Chiracahua Mountains. MÉXICO: Baja California: San José del Cabo. Coahuila: Saltillo. Tamaulipas: Nuevo Laredo. Colima: Colima.

SEASON: May, June, and November.

REMARKS: This species is another in the difficult group closely related to *interruptus* Say (see remarks following that species).

Psammobius interruptus Say

Psammobius interruptus Say, Boston Journ. Nat. Hist., vol. 1, p. 178, 1835.—

Horn, Trans. Amer. Ent. Soc., vol. 14, p. 95, 1887.

Psammobius interruptus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 482, 1922.

Oblong oval, slightly broader behind, moderately shining, rufopiceous. Antennae rufotestaceous. Head convex, closely, moderately verrucose; occiput very finely punctate each side of an interrupted band of fine to moderate punctures that varies from a few punctures above each eye to an almost complete band two or three deep from side to side. Clypeus quite deeply, triangularly emarginate, the limiting angles rounded each side, sides weakly arcuate, finely reflexed; genae fimbriate, small and broadly rounded. Pronotum, width 1.3 mm., length 0.95 mm., slightly narrower in front, anterior angles rounded, approximately right-angled, posterior angles very broadly rounded, sides and base margined, crenate, fimbriate with moderate, obtuse setae; surface roughly sculptured throughout but usually with four, more or less distinct, transverse furrows, punctures close, coarse, confused in the furrows, the intervening ridges with similar fine to moderate, confused punctures, median line shallowly impressed over basal half and similarly punctate, laterally the punctures become elongate and over the convexity beyond the lateral fovea they appear as short, arcuate lines, basally they run together, causing the intervening surface to appear tuberculate. Elytra as wide at base as pronotum, width 1.5 mm., length 2.1 mm., base margined, humeri dentate, sides weakly arcuate, not fimbriate; striae moderately deep, striae punctures moderate, deep; intervals somewhat carinately convex, the convexity broken by a median row of indistinct punctures, crenate each side, the crenations of the inner margin deeper and apparently caused by punctures independent of those in the striae, alutaceous sculpture variable, from distinct and completely covered to indistinct and very little at edges. Metasternum shining at middle, midline very distinct, deeper at each end and extending well forward between the middle coxae, anterior postcoxal line deep, extending outward to scabrous area at extreme sides, posterior line in front of posterior coxal plate distinct. Abdominal segments finely crenate in front and finely margined along posterior edge, very finely alutaceous but shining, each with a medianly interrupted, transverse row of coarse, shallow, setigerous punctures, the setae fine and moderately long, terminal segment more widely and deeply crenate anteriorly. Pygidium eroded basally, apically smooth and fringed with fine, moderately long setae.

Anterior femur deeply margined in front. Middle and hind femurs with deep, nearly complete posterior marginal line, with the usual posterior, curving row of three or four setigerous punctures from middle to knee. Posterior femur less than one-fifth wider than middle femur. Posterior tibia approximately three times as long as wide at apex, spurs narrow, long spur equal in length to first two tarsal joints combined. First tarsal joint elongate-triangular, equal in length to the following two joints combined. Length 2.8 to 3.4 mm., width 1.2 to 1.5 mm.

TYPE: Presumably destroyed.

TYPE LOCALITY: Indiana, probably New Harmony in Posey County.

SPECIMENS EXAMINED: 206.

DISTRIBUTION: New York: "L. I." (Casey collection). District of Columbia. Maryland. Virginia: Fort Monroe. North Carolina: Moore County, West End, Pinebluff. South Carolina: Clemson, Ridge Spring, Marion. Georgia: Peach County, Barnesville. New Mexico: Albuquerque. Colorado: Monon (?). Wyoming: Fort Laramie. South Dakota: Brookings. Nebraska: West Point. Kansas: Topeka. Iowa.

SEASON: January 13 to June.

REMARKS: The band of fine to moderate punctures across the occiput is often covered by the pronotum in specimens having the head tilted upward.

Psammodius interruptus Say is an early spring species in South Carolina, the greater number of specimens being collected in March and early April. I personally collected 153 specimens, three-fourths of the total examined, crawling on or flying over flood-deposited sand along the Seneca River at Clemson, S. C. Its distribution apparently covers the greater part of the United States, from New York south and west to South Dakota and Wyoming. Since no specimens were available from the type locality, presumably New Harmony, Ind., it is preferable to defer the selection of a neotype until such specimens are obtained.

The group of species closely allied to *interruptus* Say is taxonomically perhaps the most difficult in the genus *Psammodius*. Superficially they appear almost identical and, in fact, a larger number of specimens for study might prove questionable the separation of one or two of them as distinct species. The material at hand, however, is separable into six species as shown in the key to species.

Psammodius weneri, new species

Holotype oblong oval, moderately shining, piceous. Antennae rufotestaceous. Head convex, closely, moderately verrucose, occiput smooth. Clypeus moderately deeply, triangularly emarginate, the limiting angles each side rounded, sides weakly arcuate, sides and

angles finely reflexed; genae fimbriate, obtusely rounded. Pronotum narrower in front, width 1.45 mm., length 1.1 mm., anterior angles rounded, posterior angles broadly rounded, sides and base crenate, fimbriate with moderate, obtuse setae, base finely margined; surface with close, coarse punctures arranged in four transverse furrows, the first or postapical entire, the other three interrupted by the median line, which is very distinctly impressed over the basal half of the pronotum and much more finely punctate, the punctures very close, confused and run together, the first transverse or apical ridge is vaguely tuberculate at middle, more distinctly so toward the anterior angles, the remaining four transverse ridges are comparatively smooth and minutely punctate, laterally over the convexity beyond the fovea the coarse, deep punctures become elongate, arcuate, and frequently run together, just anterior to the basal line the surface is irregularly broken into one or two rows of flattened tubercles. Elytra as wide as pronotum at base, width 1.7 mm., length 2.4 mm., base margined, humeri dentate, sides weakly arcuate, not fimbriate; striae deep, strial punctures fine; intervals convex, weakly tectiform, minutely alutaceous, shining, outside margin slightly crenate, inner margin deeply crenate by a marginal row of punctures independent of the strial punctures. Metasternum smooth, shining, with scattered, very minute punctures, depressed at middle, midline sharp, rather fine and barely noticeably deeper at each end, anterior post-coxal line distinct, extending out to the scabrous area at side, arcuate posterior line in front of the posterior coxal plate deep and distinct. Abdominal segments shining, minutely alutaceous, finely margined posteriorly, finely crenate in front, the terminal segment more deeply so, and each with a transverse median row of fine shallow setigerous punctures bearing moderately long, fine setae. Pygidium scabrous, fringed apically with quite closely placed, rather short setae. Anterior femur with strong deep anterior marginal line. Middle and posterior femurs smooth, shining, with the usual curving row of four or five setigerous punctures over the apical half, posterior marginal line strong and deep, reaching three-fourths or more of the distance to the trochanter. Posterior femur about one-sixth wider than middle femur. Posterior tibia three times as long as wide at apex, spurs narrow, the long spur and first two tarsal joints combined equal in length. First tarsal joint elongate-triangular, equal in length to the following two joints together. Length 3.6 mm., width 1.7 mm.

TYPE: USNM 61845.

TYPE LOCALITY: Tamazunchale, San Luis Potosí, México (Rt. 1. km. 365).

SPECIMENS EXAMINED: Holotype and 84 paratypes.

PARATYPES: UNITED STATES: Texas: 12, Austin, June 29, H. Soltau collection; 7, Bangs, Aug. 23, 1937, Turner; 5, Broun County,

July 13, 1937, Turner; 1, College Station, May 24, 1931, Reinhard; 2, Brownwood, Oct. 5, 1905, Pierce. MÉXICO: San Luis Potosí: 42, Tamazunchale (Rt. 1, km. 365), May 30, 1948, Werner and Nutting; 7, 11 km. east of Ciudad de Valles, May 29, 1948, Werner and Nutting. Tamaulipas: 2, Nuevo Laredo, Nov. 24, 1905, Pratt. México: 1, Temascaltepec, July 1933, Hinton and Usinger. 1, Cuernavaca. Vera Cruz: 1, San Rafael Jicaltepec, June 19, 1896, Bowditch. HONDURAS: 3, 12 km. west of Olanchito, June 20, July 5, 1949, at light, Becker. Paratypes will be placed in the following collections: Naturhistoriska Riksmuseum, British Museum, Canadian Department of Agriculture, California Academy of Sciences, Texas A. and M. College, Museum of Comparative Zoology, Antonio Martínez, and Mark Robinson.

REMARKS: *Psammodius weneri* is the largest of the group of species closely related to *P. interruptus* Say, varying from 3 to 3.8 mm. in length and from 1.5 to 1.8 mm. in width. It is usually smooth above the eyes however; rarely it may have two or three very fine punctures in this area. See remarks following *Psammodius interruptus* Say (p. 429).

Psammodius canoensis, new species

Holotype oblong oval, shining, rufopiceous. Antennae rufotestaceous. Head convex, closely, moderately verrucose; occiput smooth, without punctures above the eyes. Clypeus moderately deeply, triangularly emarginate, the limiting angles each side rounded, sides and angles finely reflexed, sides weakly arcuate, genae fimbriate, broadly rounded, inconspicuous. Pronotum narrower in front, width 1.15 mm., length 0.85 mm., anterior angles rounded, approximately right-angled, posterior angles broadly rounded, sides and base crenate, fimbriate with rather close, very moderate, more or less pointed setae, base finely margined; surface with moderately coarse punctures arranged in four transverse furrows, the third slightly wider and posteriorly merging triangularly with the similarly punctate median longitudinal furrow, the latter deeper over basal half but extending to the apical ridge or margin; five finely punctate, quite smooth, transverse ridges, laterally the coarse punctures over the convexity beyond the lateral fovea become elongate, arcuate, and more or less run together, along the basal margin they leave the intervening surface in one or two irregular rows of tubercles. Elytra as wide as pronotum at base, width 1.4 mm., length 1.95 mm., base margined, humeri dentate, sides weakly arcuate, not fimbriate; striae deep, strial punctures fine, deep; intervals shining, smooth, weakly, evenly convex, inner margin irregularly, not deeply crenate, the crenations appearing as very small triangular notches, outside margin very slightly irregular, not distinctly crenate. Metasternum smooth, shining, depressed at

middle, midline only slightly deeper at each end, anterior postcoxal line deep, extending outward to the scabrous area at side, posterior arcuate line in front of posterior coxal plate somewhat longer than usual, deep and distinct. Abdominal segments shining, minutely alutaceous, finely margined posteriorly, finely crenate in front, the terminal segment more widely so, each with a transverse, median, scabrous line and row of setigerous punctures, the very fine setae emerging behind small tubercles or granules. Pygidium scabrous, fringed apically with moderately long, very fine hairs. Anterior femur with strong, deep anterior marginal line, posterior face with scattered arcuate punctures. Middle and hind femurs with strong, deep posterior marginal line from knee to trochanter, otherwise smooth except for the usual curving row of coarse setigerous punctures over the apical half. Posterior femur about one-fifth wider than the middle femur. Posterior tibia about three times as long as wide at apex, spurs narrow, long spur equal in length to first two tarsal joints combined. First tarsal joint elongate-triangular, equal in length to following two together. Length 3 mm., width 1.4 mm.

TYPE: In collection of California Academy of Sciences.

TYPE LOCALITY: Paso Cano, Río Papaloapam, Vera Cruz, México.

SPECIMENS EXAMINED: Holotype and 22 paratypes.

PARATYPES: MÉXICO: Vera Cruz: 21, Paso Cano, Río Papaloapam, Apr. 19, 1932, Van Dyke collection. COSTA RICA: Guanacaste: 1, Santa Elena, Aug. 20, 1928, Nevermann collection. Paratypes will be placed in U. S. National Museum, Naturhistoriska Riksmuseum, British Museum, and California Academy of Sciences.

REMARKS: The typical series varies from 2.8 to 3.4 mm. in length and from 1.3 to 1.5 mm. in width. See remarks following *P. interruptus* Say (p. 429).

Psammobius blandus (Fall)

Psammobius blandus Fall, Journ. New York Ent. Soc., vol. 40, p. 191, 1932.

Oblong oval, moderately shining, rufotestaceous. Antennae testaceous. Head convex, closely, moderately verrucose; occiput finely, roughly, punctate-rugose. Clypeus broadly, rather shallowly emarginate, the limiting angles each side well defined, sides finely reflexed, weakly arcuate; genae small, rounded. Pronotum convex, width 1.25 mm., length 0.9 mm., anterior angles rounded, sides arcuate, posterior angles very broadly rounding into the arcuate base so that viewed from directly above the pronotum is almost evenly rounded from one anterior angle to the other, sides and base indistinctly margined, rather sparsely fimbriate-crenate, the hairs moderately fine and relatively short; surface finely scabrous throughout, with a

wide, deep median line over basal half and four more or less evident transverse grooves, the first, postapical, deep, entire, from one anterior angle to the other immediately behind the distinctly tuberculate anterior margin, the others interrupted by the midline, the third deeper and more conspicuous than the second and fourth. Elytra convex, width 1.5 mm., length 1.95 mm., about as wide at base as pronotum, humeri rounded, base not margined, sides arcuate, not fimbriate; striae deep, punctures fine and deep; intervals moderately convex, sides crenate, each with a row of very fine punctures between middle and outside edge. Metasternum depressed at middle, smooth, shining, midline scarcely impressed, its length less than the width of the posterior femur, without anterior postcoxal line and only vaguely concave in front of the posterior coxal plate, finely alutaceous at extreme sides. Abdominal segments only moderately shining, the third, fourth, and fifth apparently connate at middle, very minutely alutaceous under high magnification, and with scattered very fine punctures, each segment except the last with a medianly interrupted transverse row of fine, setigerous punctures, the hairs moderately long and fine, the terminal segment and apical margin of the pygidium with complete rows of similar, more closely spaced, long fine hairs. Anterior femur more robust, thicker through than usual, without anterior marginal groove, posterior face smooth and shining in front, finely alutaceous posteriorly. Middle and hind femurs without posterior marginal line, convex, smooth and shining except for a curving row of three or four widely spaced setae over apical half in front of knee, middle femur about three-fourths as wide as posterior femur. Posterior tibia apically slightly less than half as wide as long, spurs slender, the long spur reaching middle of second tarsal joint. First tarsal joint elongate-triangular, equal in length to following two combined. Length 3 mm., width 1.5 mm.

TYPE: In Museum of Comparative Zoology, Cambridge, Mass.

TYPE LOCALITY: El Paso, Texas.

SPECIMENS EXAMINED: 3, including holotype.

DISTRIBUTION: UNITED STATES: Texas: El Paso. Arizona: Globe. MÉXICO: Chihuahua: Ciudad Juarez.

SEASON: November.

REMARKS: In general appearance this species is superficially very much like *quinqueplicatus* Horn; however, the lack of distinct coarse punctures on the pronotum, the very short metasternum, and other differences are seen immediately on close examination. The scabrous surface of the pronotum, even over the area beyond the lateral fovea, shows relationship with *interruptus* Say and allied forms.

Psammobius veraecrucis Bates

Psammobius veraecrucis Bates, in Godman and Salvin, *Biologia Centrali-Americana*, vol. 2, pt. 2, p. 103, 1887.

Psammobius veraecrucis Schmidt, *Coleoptera*, Aphodiinae. *Das Tierreich* (Deutsche Zool. Ges.), pt. 45, p. 477, 1922.

Oval, strongly convex, moderately shining, ferruginous. Antennae testaceous. Head convex, closely moderately verrucose; occiput smooth. Clypeus broadly triangularly emarginate, the limiting angles each side obtusely rounded, sides weakly arcuate; genae inconspicuous, broadly rounded. Pronotum slightly narrower in front, width 1.15 mm., length 0.8 mm., anterior angles right-angled, posterior angles obtusely rounded, sides and base margined, crenate, fimbriate with fine hairlike setae; disc convex, surface with numerous, coarse punctures arranged closely in five transverse furrows, the first and third usually more distinct than the second and fourth, the fifth sometimes indistinctly represented by three or four punctures each side; median line represented by irregularly placed coarse punctures interrupting the smooth intervening ridges; sides smooth laterally beyond the fovea and in the posterior angles. Elytra as wide or very slightly wider than pronotum at base, width 1.45 mm., length 1.80 mm., base margined, humeri finely dentate, sides arcuate, not fimbriate; striae deep, moderate, punctures fine and deep; intervals convex, smooth, sides weakly crenate. Metasternum shining, minutely punctate at middle, midline deeply impressed, anterior post-coxal line and arcuate impressed line in front of posterior coxal plate distinct, a few setigerous punctures and alutaceous sculpture at extreme sides. Abdominal segments very finely crenate in front, minutely alutaceous, each with a medianly interrupted, transverse row of shallow, setigerous punctures bearing long fine hairs. Pygidium scabrous basally, smooth apically and fringed with fine hairs. Anterior femur with strong anterior marginal line, two or three coarse punctures at elbow, posterior face otherwise smooth. Middle and hind femurs with strong posterior marginal line, one or two fine, marginal setae near trochanter, a posterior curving row of five or six setigerous punctures outward from middle to front of knee, and the usual anterior fringe of similar fine hairs, otherwise smooth and shining. Posterior tibia arcuate, apex slightly more than one-third as wide as total length, inner edge more or less angulate near basal fifth, the tibia narrowing from this point to knee; spurs slender, the longer subequal in length to first two tarsal joints combined. First tarsal segment elongate-triangular, not as long as the following three combined. Length 2.7 to 2.8 mm., width 1.3 to 1.4 mm.

TYPE: In British Museum (Natural History).

TYPE LOCALITY: "Mexico, Vera Cruz, Tapachula in Chiapas."

SPECIMENS EXAMINED: 6.

DISTRIBUTION.—MÉXICO: Veracruz: Veracruz. Michoacán: Apatzingán.

SEASON.—August.

REMARKS: This species is very close to *quinqueplicatus* Horn and difficult to separate from it except by size, convexity, and more oval shape.

Psammodius quinqueplicatus Horn

Psammodius quinqueplicatus Horn, Trans. Amer. Ent. Soc., vol. 3, p. 292, 1871; vol. 14, p. 95, 1887.

Psammobius quinqueplicatus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 476, 1922.

Oblong oval, only slightly broader behind, convex, moderately shining, ferruginous. Antennae rufotestaceous. Head convex, closely, moderately coarsely verrucose; occiput smooth. Clypeus broadly, triangularly emarginate, angles each side obtuse, sides weakly arcuate, genae inconspicuous, obtusely rounded. Pronotum not narrower in front, width 1.25 mm., length 0.9 mm., anterior angles obtuse, posterior angles widely rounded, sides and base strongly margined, crenate, fimbriate, base arcuate, very slightly lobed at middle; disc moderately convex, surface with numerous, close, coarse punctures arranged in five transverse furrows, the intervening convex, smooth ridges very finely punctate, the first two entire, the others interrupted by the coarsely punctate basal half of the median line; sides smooth beyond lateral fovea and in posterior angles. Elytra as wide at base as pronotum, width 1.55, length 2.25, base margined, humeri weakly dentate, sides nearly straight, slightly divergent to about apical third, not fimbriate; striae moderately deep, strial punctures deep, intervals moderately convex, their sides crenate and minutely alutaceous. Metasternum shining, minutely punctate, depressed at middle, midline strong and deep, a few coarse, shallow, setigerous punctures at extreme sides, anterior postcoxal line and depression in front of the posterior coxal plate evident but not strongly developed. Abdominal segments finely alutaceous, each with a medianly interrupted, transverse, median row of coarse, shallow, setigerous punctures bearing very fine long hairs. Pygidium scabrous basally, smooth apically, fringed with fine setae. Anterior femur with strong, deep anterior marginal line, posterior face smooth. Middle and hind femurs with strong, deep posterior marginal line three-fourths or more of total length, a row of three or four setigerous punctures at knee, otherwise shining and very minutely alutaceous. Hind femur about one-fifth wider than middle femur. Width of posterior tibia at apex one-fourth to two-fifths of the total length, spurs slender, the longer equal to the first two tarsal joints in length. First tarsal joint elongate-

triangular, not as long as following three together. Length 3 to 3.7 mm., width 1.4 to 1.8 mm.

TYPE: Academy of Natural Sciences of Philadelphia, No. 3620.

TYPE LOCALITY: "Probably Arizona or Texas."

SPECIMENS EXAMINED: 510.

DISTRIBUTION.—UNITED STATES: Arizona: Benson, Geronimo (Gila River, Graham County), Globe, Holbrook, Nogales, Oak Creek, Patagonia, Peach Springs, Phoenix, Robles Ranch (Pima County), Sabino Canyon (Santa Catalina Mountains), Superior, Tucson, Winslow. New Mexico: Albuquerque, Pyramid Peak (Dona Ana County). Texas: El Paso. MÉXICO: México: Temascaltepec, Tejupilco. Nayarit: San Blas. Oaxaca: Salina Cruz.

SEASON: July 6 to September 6.

REMARKS: *Psammodius quinqueplicatus* Horn has five well marked transverse ridges on the pronotum, counting the anterior margin as the first. A sixth is not so wide but is usually distinguishable behind the fifth furrow. The coarse punctures of the furrows are sometimes so close as to run together, the fifth furrow sometimes ill-defined. The tarsi are relatively long in this species, the tibia and tarsus of the middle legs being subequal in length, while the posterior tarsus is three-fifths to four-fifths as long as the posterior tibia.

Psammodius bolivianus, new species

Holotype oblong oval, convex, moderately shining, ferruginous. Antennae rufotestaceous. Head convex, closely, moderately verrucose; occiput smooth, a single, shallow, coarse puncture midway each side, scattered minute punctures posteriorly. Clypeus moderately deeply, triangularly emarginate with limiting angles rounded, edge finely reflexed, sides weakly arcuate; genae small, fimbriate, somewhat angulate. Pronotum slightly narrower in front, width 1.05 mm., length 0.75 mm., anterior angles rounded, posterior angles obtusely rounded, sides and base entire, not crenate, not fimbriate, distinctly margined; surface with close, deep, coarse punctures arranged in three transverse furrows interrupted by the median longitudinal furrow over basal three-fourths, the first much wider toward the midline, the punctures of the third furrow fewer and more widely separated, surface otherwise smooth. Elytra very slightly wider than pronotum at base, width 1.3 mm., length 1.7 mm., base margined, humeri not distinctly dentate, sides arcuate, not fimbriate; striae deep, finely punctate; intervals smoothly convex, margins slightly crenate. Metasternum smooth, shining, with scattered very fine punctures, depressed at middle, midline feeble and very weakly impressed, only a trace of the anterior postcoxal line at extreme side, surface triangularly depressed in front of posterior coxal plate but without a distinct line. Abdomi-

nal segments shining, very minutely alutaceous, laterally with a few fine setigerous punctures bearing very fine, moderately long hairs in a short transverse row, minutely crenate anteriorly and very finely margined posteriorly toward sides, terminal segment more widely crenate in front. Pygidium with a scabrous area each side basally, terminally smooth, fringed with very fine setae. Anterior femur finely margined in front, posterior face smooth. Middle and hind femurs with fine posterior marginal line visible from behind, smooth, shining, each with two setigerous punctures close together slightly beyond the middle near the posterior margin. Posterior femur nearly one-third wider than the middle femur. Posterior tibia about twice as long as wide at apex. Spurs narrow, long spur shorter than first two tarsal joints together. First tarsal joint elongate-triangular, as long as following two joints together. Length 2.8 mm., width 1.3 mm.

TYPE: USNM 61846.

TYPE LOCALITY: Tiguipa, Bolivia.

SPECIMENS EXAMINED: 6; holotype and 5 paratypes as follows: BOLIVIA: 2 (holotype and paratype), Tiguipa, April 1922, Harrington; 1, Lagunillas to Río Grande, September 1-10, 1920, Harrington; ARGENTINA: Tucumán: 2, Puente Rio Salí, Tucumán, November 1950, Martínez; PARAGUAY: Boquerón: 1, "Guarn. Oruro," November 1950, Martínez. Paratypes in collections of A. Martínez and U. S. National Museum.

REMARKS.—The specimens show only slight variation. The smallest paratype is only 2.5 mm. in length. One has a slightly longer, more widely scabrous pygidium, likely a male sexual modification.

Psammодиус manaosi, new species

Holotype oblong oval, convex, moderately shining, ferrugineous. Antennae testaceous. Head convex, closely, moderately verrucose; occiput minutely alutaceous with scattered, shallow, coarse punctures. Clypeus moderately emarginate, the emargination rounded out rather than angulate, limiting angles rounded, margin finely reflexed, sides weakly arcuate; genae fimbriate, small, rounded, set off by a slight sinuation of the margin. Pronotum very slightly narrower in front, width 0.9 mm., length 0.6 mm., anterior angles rounded, posterior angles obtusely rounded, sides and base entire, not crenate, not fimbriate, distinctly margined; surface with close, deep, coarse punctures arranged in three transverse furrows, the first somewhat expanded over the disc anteriorly, the third with fewer punctures more widely spaced in a single irregular row, the second and third interrupted by the similarly punctate, median longitudinal furrow; surface otherwise smooth. Elytra as wide at base as pronotum, width 1.1 mm., length 1.6 mm., base margined, humeri finely dentate, sides arcuate, not fimbriate; striae moderately deep, intervals smoothly

convex, their sides not strongly crenate. Metasternum shining, smooth, with scattered very fine punctures, depressed at middle, midline strong, deeper over posterior two-thirds, anterior postcoxal line fine, strong, extending outward to similar lateral line along extreme edge, posterior arcuate antecoxal line strong, extending to lateral line in extreme posterior angle. Abdominal segments smooth, moderately shining, very finely alutaceous, very finely crenate along anterior margin, finely margined along posterior edge, terminal segment more widely crenate in front. Pygidium scabrous each side basally, fringed apically with eight rather short fine hairs. Anterior femur finely, deeply margined anteriorly, posterior face smooth and shining. Middle and posterior femurs smooth and shining, with fine, strong posterior marginal line visible from the rear, a single marginal setigerous puncture near apical third. Posterior femur one-seventh wider than middle femur. Posterior tibia about three times as long as wide at apex, spurs narrow, long spur shorter than first two tarsal joints together. First tarsal joint elongate-triangular, as long as following two joints together. Length 2.5 mm., width 1.1 mm.

TYPE: In British Museum (Natural History).

TYPE LOCALITY: Manáos, Amazonas, Brazil.

SPECIMENS EXAMINED: The unique holotype only. Specimen collected August 1874 by J. W. H. Trail.

REMARKS: This species is closely related to *P. santaremi* and *P. bolivianus*. It differs from the first-named by the finer striae and less crenate intervals of the elytra, more distinctly margined base of the elytra, and fewer coarse punctures of the pronotum. From the second it differs in the strong deep lines of the metasternum.

Psammodius santaremi, new species

Holotype oblong oval, moderately shining, ferrugineous. Antennae rufotestaceous. Head convex, closely moderately verrucose; occiput with three or four shallow, coarse punctures each side near frontal suture, otherwise very finely punctate. Clypeus moderately deeply, triangularly emarginate, limiting angles each side rounded, margin finely reflexed, sides feebly arcuate; genae rounded, fimbriate. Pronotum slightly narrower in front, width 1 mm., length 0.65 mm., anterior angles rounded, posterior angles obtusely rounded, sides and base entire, not crenate, not fimbriate, distinctly margined; surface with close, deep, coarse punctures arranged in three transverse grooves, the first widely expanded anteriorly over the disc, the second and third interrupted by the similarly punctate median longitudinal line, the second two or three punctures wide, the third a single irregular row of punctures; surface otherwise smooth. Elytra as wide as pronotum

at base, width 1.20 mm., length 1.55 mm., base feebly, not distinctly margined, humeri finely dentate, sides arcuate, not fimbriate; striae wide, deep, punctures moderate and deep; intervals evenly convex, both sides strongly and quite deeply crenate. Metasternum shining, smooth, with scattered minute punctures, midline distinct and moderately deep over posterior two-thirds, the extreme end still deeper, forward third shallow and less well defined, anterior post-coxal line fine but distinct, extending to eroded side line near posterior angle, posterior arcuate antecoxal line strong, deep, and extending outward to extreme edge. Abdominal segments smooth and shining, anterior margin minutely crenate, posterior edge finely margined, laterally with two or three fine setigerous punctures bearing very fine, inconspicuous hairs, terminal segment more widely crenate in front. Pygidium scabrous basally, fringed apically with moderately long, very fine setae. Anterior femur finely margined anteriorly, posterior face smooth. Middle and posterior femurs with fine posterior marginal line visible from behind, smooth and shining otherwise with one or two close setigerous punctures along posterior edge near apical third. Posterior femur nearly one-third wider than middle femur. Posterior tibia about twice as long as wide at apex. Spurs narrow, not much longer than first tarsal joint, the latter elongate-triangular and as long as following two joints together. Length 2.5 mm., width 1.2 mm.

TYPE: In British Museum (Natural History).

TYPE LOCALITY: Santarém, Pará, Brazil.

SPECIMENS EXAMINED: Holotype and two paratypes from Santarém and Allo de Chia (100 miles from Santarém on the Tapajós River), all collected by H. W. Bates.

REMARKS: This species is very close to *P. bolivianus* but the coarse punctures of the pronotum are more numerous, the elytral striae are much coarser and the intervals more noticeably crenate, the midline of the metasternum is distinct, and the anterior and posterior lines of the metasternum are deep and extended.

Psammodius indefensus (Schmidt)

Psammobius indefensus Schmidt, Soc. Ent., vol. 24, p. 60, 1909.

Oblong oval, slightly broader behind, moderately shining, piceous, legs and margins of head and pronotum dark castaneous. Antennae pale rufotestaceous. Head convex, moderately coarsely verrucose; occiput with a group of close, coarse punctures each side behind a short, diagonal, closely punctate groove and intervening smooth, weakly convex ridge. Clypeus broadly, triangularly emarginate, the limiting angles each side obtusely rounded, sides nearly straight to slight notch at clypeal suture, genae small, fimbriate. Pronotum slightly narrower in front, width 1.25 mm., length 0.85 mm., anterior

angles obtusely rounded, posterior angles widely rounded, basal marginal line fine, entire, sides fimbriate-crenate with moderately long simple hairs from anterior angles to the smooth, unbroken basal margin beginning opposite the fifth elytral stria; surface with two deep, coarsely, closely punctate diagonal furrows each side not quite reaching the median line, the anterior from slightly before the middle to the anterior angles, the posterior parallel and extending to the deep lateral fovea, median line deep and closely, coarsely punctate, scattered coarse punctures elsewhere except between the parallel diagonal furrows and laterally beyond the fovea. Elytra not strongly margined at base, width 1.55, length 2.05 mm., humeri weakly dentate, sides fimbriate with moderately long hairs, slightly divergent to well beyond the middle, striae deep, finely punctate, weakly crenating the sides of the moderately convex intervals, short tenth interval flat. Metasternum smooth, shining at middle, the median line ending abruptly and much deeper posteriorly, a diagonal row of three, coarse, shallow, setigerous punctures on each posterior edge of the flattened, diamond-shaped discal area, a few similar punctures at extreme sides, anterior postcoxal line absent. Abdominal segments shining but minutely, obsoletely alutaceous, each with a transverse row of coarse, shallow, setigerous punctures bearing moderately long hairs, each finely crenate along anterior margin, the crenations somewhat wider on the terminal segment. Pygidium scabrous almost to apex. Anterior femurs margined in front, posterior face smooth. Middle and posterior femurs smooth except for a few hair-bearing punctures along the anterior edge, at the knee, and along the weakly impressed posterior marginal line. Posterior femur one-third wider than the middle femur. Middle and posterior tibiae without oblique ridges but with longitudinal rows of tubercles along edges and ventral side. Long spur of middle tibia slender, subequal in length to first three tarsal joints. Posterior tibia $2\frac{1}{4}$ times as long as wide at apex; long spur of hind tibia narrow, blunt tipped, shorter than first three tarsal joints combined. Length 3.3 mm., width 1.55 mm.

TYPE: Schmidt collection, Naturhistoriska Riksmuseum, Stockholm.

TYPE LOCALITY: Valparaíso, Chile.

SPECIMENS EXAMINED: 4; holotype and three in the Martínez collection, collected at Quillota, Chile, December 1939, R. Guterrez.

REMARKS: The rather conspicuous fringe of elytral setae separates this species from *P. placidus* (Schmidt), which it superficially resembles.

Psammodyus inflatus, new species

Holotype broadly oval, strongly convex, moderately shining, dark castaneous. Antennae rufotestaceous. Head convex, closely mod-

erately verrucose, the granules becoming smaller and weaker at middle of occiput which is otherwise smooth. Clypeus moderately deeply, triangularly emarginate, the angles each side broadly rounded, sides arcuate, sides and angles weakly reflexed; genae weak, smooth, broadly rounded with a deep eyelike pit in front of the eye; eyes well developed. Pronotum convex, width 1.70 mm., length 0.9 mm., all angles broadly rounded, sides and base margined, entire, sides fimbriate with long, fine, curving hairs, base broadly, somewhat angularly lobed at middle; surface with intermixed coarse and very fine punctures, the coarse punctures close but irregularly placed over disc, somewhat finer and much sparser laterally, smooth beyond lateral fovea, postapical furrow strongly impressed, interrupted only slightly at middle, other furrows absent. Elytra not quite as wide as pronotum at base, strongly convex, width 2.15 mm., length 2.5 mm., base not margined, humeri rounded, lateral margin fimbriate with rather sparse long, fine hairs, strongly diverging over anterior half then apically, evenly, almost hemispherically, jointly rounded from side to side, striae fine with moderate, deep punctures, separated by slightly more than their diameters, crenating the smooth, shining, very weakly convex intervals, tenth interval not differing from the others. Metasternum smooth, shining, medially flat and slightly depressed posteriorly, very short, not over two-thirds as long as width of posterior femur, deeply arcuately depressed in front of posterior coxal plates. Abdominal segments, except apical, smoothly connate at middle, finely, setigerously punctate at sides with rather long, close, very fine hairs, last two segments setigerously punctate from side to side. Pygidium convex, similarly with long fine hairs. Anterior femurs without marginal line, clothed posteriorly with sparse, long, fine hairs. Middle and hind femurs smooth, shining, with scattered, sparse, long, fine hairs anteriorly and a single fringe row posteriorly, the middle femurs only half as wide as the posterior femurs, the latter only a third longer than wide. Posterior tibia approximately twice as long as apical width, spurs short, foliaceous; first joint of tarsus subequal in length to long spur, and to remaining joints combined, the middle three shorter than wide. Length 3.8 mm., width 2.15 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: Monte Hermoso, District of Cormel Dorrego, Province of Buenos Aires, Argentina, Jan. 1, 1954, A. Martínez.

SPECIMENS EXAMINED: Holotype and one paratype bearing same data as type. Paratype in collection of U. S. National Museum.

REMARKS: The size, brown color, very convex and strongly oval form, and long hair mark this species. I suspect it is flightless.

Psammobius placidus (Schmidt)

Psammobius placidus Schmidt, Stettiner Ent. Zeit., vol. 72, pt. 1, p. 38, 1911.

Oblong oval, moderately shining, dark castaneus. Antennae rufotestaceous. Head convex, verrucose, the tubercles comparatively small, separated by about their diameter, much finer anteriorly at middle, occiput with a few, scattered, coarse punctures. Clypeus finely margined, weakly dentate each side of broad, shallow, triangular emargination, sides arcuate, genae fimbriate. Pronotum not narrower in front, width 1.5 mm., length 1.05 mm., sides and base fimbriate with fine, simple, hairlike setae, finely, not noticeably crenate, basal marginal line distinct, surface, except for lateral, smooth, convex area beyond fovea, with intermixed very fine and very coarse punctures, the latter mostly in the deep median line, in the wide depressed area extending diagonally back each side from the lateral fovea, and in a vaguely parallel group from the anterior angles to the middle. Elytra widest about middle, width 1.80 mm., length 2.20 mm., sides arcuate, evenly rounded to apex, not fimbriate, humeri dentate, base margined; striae deep with deep, moderate punctures, intervals smooth, strongly convex, ninth and tenth not different from others. Metasternum smooth, shining, depressed at middle, median line short, deep, abruptly terminated, anterior postcoxal line distinct, posterior depressed area in front of posterior coxal plate short and indistinct. Abdominal segments smooth, shining, a short, transverse row of very moderate setigerous punctures each side, finely crenate along anterior edge, the crenations wider and deeper on the terminal segment. Pygidium finely alutaceous, a marginal row of moderate setigerous punctures apically. Anterior marginal groove of anterior femurs fine, indistinct, posterior face smooth. Middle and posterior femurs with very short posterior marginal line visible only from rear, smooth except for three or four setae in front and near posterior margin. Posterior femurs only slightly wider than middle femurs. Apex of hind tibia one-third as wide as length of tibia, the tibia noticeably smooth beyond the poorly developed across ridge slightly posterior to middle of tibia, spurs narrow, the longer about equal in length to first two tarsal joints combined, tarsus three-fourths as long as tibia, its joints more elongate than triangular in shape. Length 3.6 mm., width 1.8 mm.

TYPE: In Schmidt collection, Naturhistoriska Riksmuseum, Stockholm.

TYPE LOCALITY: Argentina.

SPECIMENS EXAMINED: Holotype only. Collected "2-11-1905," C. Bruch.

REMARKS: *Psammobius placidus* (Schmidt) superficially resembles *P. indefensus*, but is readily separated from it by the clypeal teeth, the setae continuing all the way across the base of pronotum, the dentate humeri, the lack of marginal setae on the elytra, and the very similar middle and hind legs.

Psammодиус malkini Cartwright

Psammодиус malkini Cartwright, Bull. Brooklyn Ent. Soc., vol. 41, p. 90, 1946.

Oval, moderately shining, rufocastaneous. Antennae pale rufotestaceous. Head convex, closely moderately verrucose, the granules well developed, occiput smooth. Clypeus moderately, triangularly emarginate, the limiting angles rounded, sides weakly arcuate; genae small but distinct, posteriorly angulate. Eyes normal, well developed. Pronotum slightly lobed basally, width 1.2 mm., length 0.8 mm., narrower in front, angles obtusely rounded, sides entire, fimbriate basally with fine, short hairs; surface finely, sparsely punctate throughout, an anterior, postapical, transverse line of closely placed, coarse punctures in a groove from one anterior angle to the other, a similar longitudinal, median groove over basal two-thirds, and another of about same length transversely inward from each side, disc otherwise with scattered coarse punctures. Elytra convex, width 1.5 mm., length 1.90 mm., striae deep, coarsely, crenately punctate, intervals weakly convex, very finely, irregularly punctate. Metasternum smooth, shining, anterior postcoxal line absent, posterior arcuate line obsolete, represented by a weakly impressed area in front of posterior coxal plate, median longitudinal groove fine, scarcely impressed, anteriorly alutaceous and very shallowly, moderately punctate at sides. Abdominal segments sparsely, minutely punctate and very finely alutaceous, apparently not crenate in front. Pygidium smooth, shining, fringed apically with a row of ten long, hairlike setae from moderate punctures. Posterior femur stout, minutely alutaceous, two or three setigerous punctures paralleling posterior edge and a similar row along the anterior margin; middle femur not half as wide as posterior, marginal rows of setae strongly developed. Posterior tibia two-fifths as wide as long, transverse ridges absent; posterior spurs narrowly foliaceous, the longer as long as the first two tarsal joints combined; first tarsal joint elongate-triangular, equal in length to following three together. Length 2.8 to 3.3 mm., width 1.5 to 1.6 mm.

TYPE: USNM 58991.

TYPE LOCALITY: MacDill Field, Tampa, Fla.

SPECIMENS EXAMINED: 21.

DISTRIBUTION: United States: Florida: Tampa, LaBelle, Sanford, Miami.

SEASON: May 5 to August 7.

REMARKS: *Psammодиус malkini* Cartwright is nearest *P. hydropticus* Horn but is not so greatly inflated, the elytral striae are deeper and rather coarsely crenate, the elytral intervals are more convex, the sides of the pronotum are entire, the pronotal punctures are coarser and deeper, and the eyes are well developed. In *hydropticus* the pronotum has the lateral edges crenate and the eyes are vestigial.

Psammobius hydropicus Horn

Psammobius hydropicus Horn, Trans. Amer. Ent. Soc., vol. 14, p. 97, 1887.

Psammobius hydropicus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 483, 1922.

Oval, moderately shining, rufocastaneous. Antennae pale testaceous. Head strongly convex, verrucose, the granules weakly developed; occiput smooth. Clypeus moderately, triangularly emarginate, the limiting angles each side obtuse, rounded, sides weakly arcuate, slightly notched at clypeal suture; genae weak, depressed, inconspicuous. Eyes very small and poorly developed. Pronotum narrower in front, width 1.35 mm., length 0.8 mm., angles obtuse, sides and base weakly crenate and fimbriate with moderately long, fine hairs; surface smooth but uneven, a vague, shallow depression inward near the anterior angles, and scattered, very shallow, coarse, indistinct punctures over disc and base. Elytra almost globular, width 1.7 mm., length 1.9 mm., base not margined, sides not fimbriate; striae moderately wide and deep, finely punctate, the punctures not noticeably crenating the sides of the smooth, weakly convex intervals. Inner wings absent. Metasternum very short, the scarcely impressed midline subequal in length to the width of the posterior femur, smooth and shining at middle, alutaceous at sides with intermixed, shallow setigerous punctures, anterior postcoxal line absent, posterior antecoxal line obsolete, parallel with posterior coxal plate. Abdominal segments finely alutaceous, each with a transverse, anterior row of close, long, very fine hairs. Exposed part of pygidium apically smooth and shining, base with transverse eroded line; groove beneath tips of elytra weakly impressed. Anterior femur not margined in front, clothed posteriorly with long, fine hair, as are the middle and hind femurs along anterior and posterior margins. Posterior femur about twice as wide as middle femur. Middle and hind tibiae arcuate inward, without transverse carinae but with short, longitudinal rows of three or four tubercles. Spurs slender, acute, the longer subequal in length to first three tarsal joints combined. First tarsal joint of posterior tarsus subequal in length to following three, all except the fifth wider apically and with the outer angle more or less produced. Length 2.6 to 3.5 mm., width 1.5 to 2 mm.

TYPE: In Academy of Natural Sciences of Philadelphia.

TYPE LOCALITY: Savannah, Ga.

SPECIMENS EXAMINED: 322.

DISTRIBUTION: UNITED STATES: North Carolina: Wrightsville Beach. South Carolina: Isle of Palms, Folly Beach, Seabrooks Island, Edisto Beach. Georgia: Savannah. Alabama: Baldwin County, Mobile, Daphne. Mississippi: Ocean Springs.

SEASON: June 3 to November 11.

REMARKS: This small degenerate species, wingless and with vestigial eyes, is sometimes very numerous among the roots of grasses on the sand dunes along the seacoast of southeastern United States. It superficially resembles *P. malkini* but is easily separated from it by the crenate margins of the pronotum and the vestigial eyes. The underside is unusually hairy.

Psammодиус оregonensis, new species

Holotype oval, very convex, piceous, shining. Antennae brown. Head convex, rather closely verrucose, occiput smooth. Clypeus moderately deeply and narrowly emarginate, the middle of the emargination rounded and very finely denticulate below the fine marginal bead, limiting angles each side rounded, sides arcuate; genae weak and inconspicuous. Eyes small and only moderately developed. Pronotum not narrowed in front, width 1.35 mm., length 0.9 mm., angles obtusely rounded, sides entire, hind angles and base weakly crenate-fimbriate with club-shaped setae; surface with close, moderately coarse punctures arranged in three or four more or less distinct, transverse, shallow grooves, the first or postapical distinct from side to side, the second less distinct, the third very distinct inwardly from middle of lateral declivities but interrupted at middle by the similarly punctate, rather vague, longitudinal midline, the fourth not impressed but represented by scattered punctures, surface otherwise with scattered minute punctures throughout. Elytra very convex, almost globular, width 1.8 mm., length 2.35 mm., base margined, humeri dentate, sides not fimbriate; striae coarse, deep, coarsely punctate, the punctures moderately close and feebly crenating the sides of the intervals; intervals weakly convex, smooth, shining, with a median, longitudinal row of close minute punctures. Inner wings absent. Metasternum at middle about equal in length to the width of the posterior femur, smooth, depressed at middle, midline impressed, anterior postcoxal line strong, deep, continuous with scabrous area at side, posterior line in front of posterior coxal plate also strong, deep, and extending to the side, well separated from the anterior line. Abdominal segments slightly convex, smooth to minutely alutaceous, finely crenate in front, each with a medianly interrupted, anterior row of well-separated, setigerous punctures, the hairs long and fine. Pygidium eroded basally, fringed apically with long, fine hairs. Anterior femurs anteriorly with a wide, eroded, marginal line. Middle and hind femurs with strong, posterior marginal line and parallel row of very coarse, setigerous punctures, the punctures uniting to form a second, deep, close, eroded line. Middle and hind tibiae with incomplete oblique ridges. Posterior spurs narrow, the longer as long as the first two tarsal joints combined. Tarsal joints triangular, the first elongate, slightly shorter than the following three together. Length 3.5 mm., width 1.8 mm.

TYPE.—USNM 61847.

TYPE LOCALITY: Hauser, Coos County, Oreg.

SPECIMENS EXAMINED.—207

PARATYPES.—UNITED STATES: Washington: 1, Long Beach (Pacific County), July 15, 1936, Van Dyke. Oregon: 148 (including holotype), Hauser, Sept. 6, 1952, Nelson; 11, Hauser, May 20, 1954, Ritcher; 9, Lake Tahkenitch, June 17, 27, 1936; 2, Lincoln County, June 8, 1941, Nunenmacher; 3, Cannon Beach, June 11, 13, 1927, Van Dyke; 3, Waldport, June 4, 1941; 2, Taft, May 1935, Ross; 1, Yamhill County, May 1935; 2, Woods, June 6, 1936, K. M. and D. M. Fender; 1, Gardiner, June 26, 1936; 4, Sunset Beach, June 28, 1938, Gray and Schuh; 3, Newport, Sept. 1908; 2, Winchester Bay, Lane County, Apr. 13, 1947, Malkin and Newell; 4, Hecate Beach, May 20, 1954, Ritcher; 1, Bandon, May 19, 1954, Ritcher. California: 2, Trinidad, June 6, 7, 1925, Martin; 2, Samoa, May 23, Barber; 17, Samoa Beach and dunes, Humboldt County, June 18, 1907, Bradley; 1, San Francisco County, Mar. 22, 1927, Leech; 1, Contra Costa County, Apr. 14, 1927, Leech; 3, "Cal."; 1, "S. Cal." Paratypes are in British Museum (Natural History), Naturhistoriska Riksmuseum, California Academy of Sciences, Canadian Department of Agriculture, American Museum of Natural History, Carnegie Museum, Chicago Natural History Museum, Museum of Comparative Zoology, Cornell University, Illinois Natural History Survey, Ohio State University, Oregon State College, and the private collections of Henry Howden, Antonio Martínez, Gayle Nelson, Mark Robinson, and Joe Schuh.

REMARKS: *Psammodius oregonensis* is usually darker in color than *P. caelatus* and *P. mcclayi*, the two closely related species from the same region. It may be recognized by the strong, complete, anterior marginal groove of the anterior femur and the lack of marginal setae on the elytra.

Psammodius caelatus (LeConte)

Aegialia caelata LeConte, in Rep. Expl. Surv. Railr. to Pacific, vol. 12, pt. 3, No. 1, p. 42, 1857.¹

Psammodius caelatus Horn, Trans. Amer. Ent. Soc., vol. 14, p. 97, 1887.

Psammobius caelatus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 484, 1922.

Oval, very convex, piceous, shining, legs rufopiceous. Antennae pale rufotestaceous. Head convex, rather closely verrucose, occiput smooth. Clypeus broadly, triangularly emarginate, the limiting angles rounded, sides weakly arcuate, clypeal notch scarcely discernible; genae weak and inconspicuous. Eyes very small, poorly developed. Pronotum not narrowed apically, angles obtusely rounded, sides entire, feebly arcuate, base strongly margined, hind angles and

¹The Zoological Report on Insects, originally scheduled for inclusion in volume 9, was published separately in June 1857 and republished in volume 12 in 1860.

base laterally crenate-fimbriate; surface with moderately coarse, close, deep punctures arranged in a postapical groove, in a second groove near the middle of the declivity extending upward nearly to the middle of the disc, sometimes in a single line between these two, and in the basally impressed median line, otherwise with scattered coarse and minute punctures. Elytra very convex, almost globular, width 1.75 mm., length 2.2 mm., base margined, humeri dentate, sides fimbriate with long fine hairs; striae deep and quite coarsely punctate, the punctures scarcely crenating the feebly convex intervals; intervals smooth with a median longitudinal row of close, minute punctures. Inner wings absent. Metasternum smooth, somewhat depressed at middle, the midline finely impressed, not as long as the width of the posterior femur, anterior postcoxal line deep, coarse, merging midway to the side with the similar, anteriorly arcuate line just in front of the posterior coxal plate. Abdominal segments smooth or minutely alutaceous, finely crenate in front, and with an anterior, medianly interrupted row of moderate setigerous punctures, the hairs long and fine. Pygidium basally eroded, alutaceous, apically smooth and shining, fringed with long fine hairs. Anterior femur not margined in front. Posterior femur slightly less than twice as long as wide, nearly twice as wide as middle femur, smooth except for scattered, moderate hair-bearing punctures near anterior margin and a row of the same near the posterior edge. Middle and posterior tibiae with sharply carinate, oblique ridges, the posterior tibia about three times as long as wide apically. Posterior spurs narrow and relatively short, the longer subequal in length to the first two tarsal joints. Tarsal joints triangular, the first elongate, about equal in length to the following three combined. Length 2.8 to 3.6 mm., width 1.6 to 1.9 mm.

TYPE: Museum of Comparative Zoology, Cambridge, Mass.

TYPE LOCALITY: San Francisco, Calif.

SPECIMENS EXAMINED: 333.

DISTRIBUTION: CANADA: British Columbia: Queen Charlotte Islands.

UNITED STATES: California: San Francisco, San Bruno Hills (San Mateo), Caspar, Antioch, Alameda, Carmel, Santa Cruz, Felton. Oregon: Bandon, Newport, Taft, Hauser.

SEASON: September to May 20.

REMARKS: *Psammодиус caelatus* (LeConte), the second species of the genus described from America, is closely allied to two other species occupying overlapping stretches of the Pacific coastline. All three are small, globular species having a transverse ridge or anteapical carina at posterior third, paralleling the apical edge of the middle and posterior tibiae. *Psammодиус oregonensis* differs by not having fimbriate elytral margins. *P. caelatus* may be separated from *P. mcclayi* by the strong, anterior postcoxal line of the metasternum, a line not found in *mcclayi*.

Psammodyus mcclayi, new species

Holotype oval, very convex, rufopiceous, shining. Head convex, rather closely verrucose, occiput smooth. Clypeus finely margined, moderately deeply, angularly emarginate, limiting angles sharply rounded, sides weakly arcuate, genae moderate. Eyes very small and degenerate. Pronotum width 1.3 mm., length 0.8 mm., angles obtusely rounded, sides entire, posterior angles and base weakly crenate and fimbriate, base and sides margined, surface with moderately coarse punctures arranged for the most part in two shallow, transverse grooves, one postapical, the other somewhat arcuately backward from one lateral fovea to the other, with a few scattered punctures on each side laterally, elsewhere with scattered very fine punctures throughout, median line shallow but distinct over basal half. Elytra very convex, almost globular, width 1.8 mm., length 2.1 mm., basally as wide as pronotum, base not margined, humeri not dentate, sides fimbriate with long, fine hair; striae moderate, deep, strial punctures fine, scarcely crenating the sides; intervals convex, smooth, with a barely perceptible median line of minute punctures. Inner wings absent. Metasternum at middle only two-thirds as long as width of posterior femur, smooth, slightly depressed at middle, midline distinct, laterally smooth to finely alutaceous, anterior postcoxal line absent, only a trace of a line or depression in front of posterior coxal plate. Abdominal segments slightly convex, smooth to minutely alutaceous at sides, minutely crenate in front, each with a medianly interrupted, anterior row of well-separated setigerous punctures bearing long fine hairs. Pygidium finely scabrous to extreme edges, fringed with long, fine hairs. Anterior femur without anterior marginal line, smooth posterior face with long, fine hair along margins. Middle femur half as wide as posterior, both with distinct, entire marginal lines and with setigerous punctures bearing long, fine hairs near anterior and posterior edges, otherwise smooth. Middle and hind tibiae with complete oblique ridges. Posterior spurs narrow, the tips oblique and slightly concave, long spur as long as first two tarsal joints combined. Tarsal joints triangular. Length 3.1 mm., width 1.8 mm.

TYPE: USNM 61848.

TYPE LOCALITY: Playa del Rey, Los Angeles County, Calif.

SPECIMENS EXAMINED: 403.

PARATYPES: UNITED STATES: California: 9, state label only; 304, Playa del Rey, Feb. 10, 1934, McClay; 29, San Francisco, Dec. 20, 1919, Feb. 8, 1920, Dietrich; Dec. 20, 1919, Feb. 3, 1920, Martin; Mar. 1, 1908, Blaisdell, February 1933, Ross; 7, Santa Barbara, Jan. 2, 1929; 20, Santa Cruz, Feb. 23, 1929, Van Duzee; Jan. 15, 1938, Tilden; 1, Stinson Beach, Nov. 12, 1931, McCaleb; 2, "Hueneme," Jan. 28, 1932; 1, San Diego, Apr. 26, 1881; 17, Alameda County,

November, December, Koebele; 6, Redondo, April; 2, Port Watsonville, Sept. 26, 1932; 4, Los Angeles County, Albright; 1, Newport, June 14, 1915, Muchmore (under kelp). Paratypes will be placed in all museum and private collections lending material for this study (see acknowledgements, p. 414).

REMARKS: Two specimens of this species were not included in the typical series or listed in the distribution because of very doubtful label data. In one case, a specimen in the Chicago Natural History Museum was labeled "Ariz. 1879. Andreas Bolter Collection." In the other case, two specimens in the same small collection had evidently been remounted and the labels exchanged, placing *oregonensis* in Southern California and *mcclayi* in Oregon.

Psammодиус mcclayi is one of the few species in which the sexes may be determined without dissection. The female is very similar to the male except that the pygidium is widely smooth apically, slightly narrower, and less widely rounded apically. *P. mcclayi* may be separated from the closely allied *P. caelatus* by the lack of the anterior postcoxal line on the metasternum, the complete transverse ridge or carina of the posterior tibia, and the lack of a basal margin of the elytra.

The species is named for Prof. A. T. McClay of the University of California at Davis, Calif. His fine, long series of specimens was collected around the roots of grasses on the sand dunes of the seacoast.

Psammодиус martinezi, new species

Holotype strongly convex, oval, shining, piceous. Antennae rufotestaceous. Head convex, closely moderately verrucose, occiput moderately coarsely punctate above the eyes. Clypeus narrowly, deeply, triangularly emarginate, the limiting angles each side obtusely rounded, sides weakly arcuate, feebly reflexed; genae small, obtusely rounded, set off by a distinct sutural notch, two or three moderately long, fine, curving hairs from underneath. Pronotum convex, width 1.75 mm., length 1.1 mm., anterior angles obtusely rounded, posterior angles broadly rounded, sides and base entire, not fimbriate, distinctly, finely margined, the anterior edge more widely so, base very feebly, broadly sinuate each side, angulate at middle; surface closely, moderately punctate throughout, the punctures separated by approximately their own diameters, gradually less deep and somewhat finer at the extreme sides; median line broadly, vaguely impressed. Elytra convex, as wide at base as pronotum, width 2.1 mm., length 2.6 mm., base only vaguely margined, humeri not dentate, sides arcuate, not fimbriate; striae moderately deep and wide, striae punctures very moderate, deep; intervals feebly, evenly convex, smooth and shining with fine inconspicuous punctures in a very irregular row, sides only very feebly crenate. Metasternum smooth and shining at middle,

scabrous at sides, midline evident but not distinctly impressed, anterior postcoxal line absent, posterior antecoxal area deeply impressed but without a sharp, distinct line. Abdominal segments smooth and shining but with scattered minute punctures and fine alutaceous sculpture at sides, minutely crenate in front, terminal segment with a transverse row of long, very fine hairs. Pygidium minutely alutaceous with marginal row and a few discal setigerous punctures bearing moderately long, fine hairs. Anterior femur without marginal line, posterior face very finely punctate, minutely alutaceous, feebly concave. Middle femur with a widely spaced row of fine setigerous punctures near anterior edge and a row of three or four similar setigerous punctures near posterior margin from middle toward the knee, posterior marginal line absent. Posterior femur three-fourths wider than middle femur, smooth and shining with scattered, very fine punctures and very minute alutaceous sculpture, setigerous punctures and posterior marginal line absent. Posterior tibia twice as long as wide at apex, spurs narrow, the long spur as long as the first two tarsal joints combined. First tarsal joint of posterior tarsus elongate-triangular, almost as long as following three together. Length 3.8 mm., width 2.1 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: Nova Friburgo, State of Rio de Janeiro, Brazil.

SPECIMENS EXAMINED: Holotype and two paratypes bearing same data, Nova Friburgo, State of Rio de Janeiro, Brazil, Oct. 18, 1947, Wittmer Coll., Martínez. Paratypes are in collections of U. S. National Museum and A. Martínez.

REMARKS: *Psammodius martinezi* is one of the few species of *Psammodius* that have no trace of marginal fimbriae on the pronotum. It lacks also the typical transverse ridges and furrows of the pronotum.

Psammodius martinezi is named in honor of Dr. Antonio Martínez, who generously loaned his collection of South American *Psammodius* for study and had already recognized the present species as undescribed.

Psammobius insulcatus (Schmidt)

Psammobius insulcatus Schmidt, Arch. Naturg., abt. A, heft 1, vol. 82, p. 102, 1916.

Oblong oval, moderately shining, dark castaneous. Antennae testaceous. Head moderately convex, coarsely verrucose, occiput smooth. Clypeus dentate each side of broad, shallow emargination, sides slightly arcuate to the rounded genae, genae not fimbriate. Pronotum slightly narrower in front, width 1.80 mm., length 1.15 mm., anterior angles broadly rounded, posterior angles obsolete, very broadly rounded into base, base entire, without marginal line,

sides crenate and fimbriate with moderately long simple setae, surface evenly convex, without furrows except for a short, shallow depression inward from each anterior angle, evenly, quite densely punctate, the moderate punctures separated by one or two diameters and slightly smaller anteriorly and at sides. Elytra margined at base, nearly parallel sided, width 2 mm., length 2.5 mm., not fimbriate; striae deep, punctures moderate, slightly crenating sides of the smooth, flat intervals, ninth and tenth intervals slightly convex, otherwise as on disc. Metasternum smooth at middle, median line deep, abruptly terminated at each end, anterior postcoxal line absent, a few close, shallow, very coarse, alutaceous punctures at extreme sides. Abdominal segments smooth at middle, finely crenate along anterior margin, the crenate area wider along median anterior edge of terminal segment. Pygidium scabrous over apical third except for smooth apex. Anterior femur with fine, indistinct anterior groove, posterior face smooth, three or four setae along posterior margin. Posterior femur one-third wider than middle femur, both with a submarginal row of setae along posterior edge and at knee, a few setae along anterior edge, posterior marginal line very short, only a trace at knee. Posterior tibia without oblique ridges, apex about two-fifths as wide as length of outside edge of tibia, spurs heavy, blunt, the longer about equal to first tarsal joint in length. Length 3.75 mm., width 2 mm.

TYPE: Schmidt collection, Naturhistoriska Riksmuseum, Stockholm.

TYPE LOCALITY: Blumenau, Santa Catarina, Brazil.

SPECIMENS EXAMINED: Holotype only.

REMARKS: The complete lack of basal marginal line on the pronotum will help in identifying this species.

Psammodius bidens Horn

Psammodius bidens Horn, Trans. Amer. Ent. Soc. vol. 3, p. 293, 1871, and vol. 14, p. 92, 1887.—Chapin, Proc. U. S. Nat. Mus., vol. 89, p. 9, 1940.

Psammodius cruentus Schmidt (not Harold, 1867), Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 478, 1922.

Oblong, shining, dark castaneous. Antennae testaceous. Head convex, moderately coarsely verrucose; occiput smooth, sparsely, minutely punctate. Clypeus finely margined, widely, moderately deeply, arcuately emarginate, a strong acute tooth each side of the emargination, sides arcuate to the moderate, rounded genae, genae not fimbriate. Pronotum convex, width 1.5 mm., length 1.1 mm., sides and base crenate, fimbriate with very moderate, simple, hairlike setae, crenations finer, fimbriae shorter across the base, which is finely margined, slightly fimbriate and weakly lobed at middle; anterior angles obtusely rounded; posterior angles evident but very broadly rounded; surface polished, with very fine, sparse punctures throughout, a wide, curving band of moderately coarse punctures from anterior

angles to base, coarse punctures lacking anteriorly and laterally beyond the foveae; no median line, transverse furrows or other depressions except a short, deep, punctate groove in anterior angles. Elytra convex, width 1.7 mm., length 2.3 mm., humeri slightly dentate, sides without fimbriae, arcuate, slightly wider at middle, base margined, striae deep, strial punctures moderate, all intervals convex. Metasternum smooth, shining at middle, median line long, moderately deep, anterior postcoxal line absent, scabrous at extreme sides. Abdominal segments shining but with moderately close, very shallow, fine to moderate punctures throughout, some alutaceous sculpture at extreme sides, finely crenate in front, the crenations of the terminal segment wider and deeper at middle. Apical third of pygidium shining, flat or slightly concave. Anterior marginal groove of profemur obsolete, posterior face smooth, shining. Middle femur about half as wide as the posterior femur, smooth, three or four setae along posterior margin, without distinct posterior femoral line. Posterior tibia with nearly complete oblique ridge at apical fourth, three incipient ridges above, tibia $2\frac{1}{2}$ times as long as wide at apex, spurs narrow, the longer spur slightly longer than the combined length of the first two tarsal joints. Length 3.2 to 4.2 mm., width 1.4 to 2.0 mm.

TYPE: Horn collection, Academy of Natural Sciences of Philadelphia.

TYPE LOCALITY: Southern United States, probably Georgia.

SPECIMENS EXAMINED: 57.

DISTRIBUTION: UNITED STATES: New Jersey: Ocean City. Maryland: Kenwood Beach. Virginia: Virginia Beach. North Carolina: "N. C." South Carolina: Isle of Palms, Seabrook Island, Hunting Island, Folly Beach, Sullivans Island. Georgia: Tybee Island, St. Simon Island, Savannah, St. Catherines Island. Florida: Capron, Crescent City, Miami. Mississippi: Ocean City, Horn Island. PUERTO RICO: Humacao.

SEASON: April 12 to October 12.

REMARKS: *Psammodyus bidens* Horn has been confused with *P. cruentus* Harold; however, it is very distinct and does not resemble that species even superficially. It is found among grass roots growing in the sand along the Atlantic and Gulf Coasts of the United States from New Jersey to Mississippi.

Psammodyus integer Bates

Psammodyus integer Bates, Coleoptera, in Godman and Salvin, *Biologia Centrali-Americana*, vol. 2, pt. 2, p. 104, 1887.

Psammobius integer Schmidt, Coleoptera, Aphodiinae. *Das Tierreich* (Deutsche Zool. Ges.), pt. 45, p. 477, 1922.

Oblong, convex, sides subparallel, moderately shining, dark castaneous. Antennae testaceous. Head moderately convex, verrucose,

more coarsely so anteriorly, the tubercles tending to unite transversely, posteriorly becoming only weakly wrinkled and merging almost imperceptibly with the smooth, minutely punctate occiput. Clypeus with a small, triangular tooth each side of the wide, very shallow emargination, sides slightly arcuate, the nearly right-angled genae not fimbriate. Pronotum convex, width 1.2 mm., length 0.85 mm., anterior angles obtuse, posterior angles broadly rounded, complete, fine marginal line, sides posteriorly and base fimbriate with very short, inconspicuous setae, the setae about as long as the diameter of the coarse punctures of the pronotum, surface without depressions or furrows except for the very small lateral foveae and a slight depression in the anterior angle, closely, evenly punctate throughout, the punctures moderate over basal two-thirds, gradually much finer anteriorly, narrowly along the base, and beyond the lateral foveae. Elytra convex, shining, width 1.2 mm., length 1.85 mm., sides almost parallel, base margined, humerus not noticeably dentate, margins not fimbriate; striae moderately deep, crenate-punctate, the punctures fine and deep; all intervals convex, practically impunctate, shoulders distinctly, closely, finely punctate. Metasternum shining, smooth but with sparse, scattered, minute punctures, depressed at middle, the median line long, deep, abruptly terminated at each end, anterior postcoxal line absent. Abdominal segments shining, sparsely, rather finely, shallowly punctate throughout, the punctures separated by two or three times their diameters, finely crenate along anterior margin, the terminal segment much more widely and deeply so at middle. Pygidium closely finely punctate, alutaceous basally along the transverse carina. Anterior femur with fine anterior marginal groove, posterior face shining, a few moderate punctures and alutaceous lines at opposite edge. Posterior femur only one-tenth wider than middle femur. Middle and posterior femurs smooth and shining, posterior marginal line very short or absent. Posterior tibia not quite three times as long as wide at apex, antepical transverse ridge partly developed, spurs slender, the longer not quite as long as first two tarsal joints combined. Length 3 mm., width 1.2 mm.

TYPE: In *Biologia* collection, British Museum (Natural History).

TYPE LOCALITY: Veracruz, México.

SPECIMENS EXAMINED: 2 cotypes.

REMARKS: This small species is perhaps nearest *P. bidens* Horn, but it is not closely allied to any of the other species of *Psammodius*. It has both the appearance and many of the characters of an *Ataenius*.

Psammodius formosus, new species

Holotype oblong, convex, shining, rufopiceous. Antennae testaceous. Head moderately convex, verrucose, basally at middle with close fine tubercles which rapidly become finer and disappear toward

the sides and the smooth, shining occiput. Clypeus moderately deeply, angularly emarginate at middle, a sharp triangular tooth each side of emargination, sides arcuate, finely reflexed; gena obtuse, shining, with a small deep pit in front of the eye, not fimbriate. Pronotum convex, width 1.3, length 0.8, anterior angles rounded, posterior angles very broadly rounded, sides finely crenate, fimbriate with moderately long, very fine, curving hairs, finely margined; without transverse grooves, surface smooth and shining but with intermixed extremely fine and rather widely, irregularly scattered, moderate punctures over basal two-thirds of discal area, smooth laterally beyond fovea. Elytra convex, margined basally, width 1.6 mm., length 2.0 mm., humeri finely dentate, sides arcuate, fimbriate with extremely short, fine, inconspicuous fimbriae; striae deep, fine punctures crenating the sides of the slightly convex intervals. Metasternum smooth and shining except for a small scabrous area at extreme sides, midline deep, terminating suddenly at each end. Abdominal segments convex, smooth and shining, a few scattered small tubercles outward near sides, finely crenate in front, the terminal segment more widely and deeply so at middle. Pygidium smooth, shining, but surface somewhat uneven. Anterior femur with four or five setae in anterior marginal line, posterior face with scattered setigerous punctures. Middle and hind femurs smooth, shining, with fringe hairs along anterior edge and four or five long hairs along extreme posterior edge, usual curving row near knee represented by only one or two short, fine hairs, posterior marginal line absent; posterior femur about one-third wider than middle femur. Posterior tibia twice as long as its apical width; long spur and first tarsal joint about equal in length, tarsus very slightly longer than apical width of tibia. Length 3.2 mm., width 1.6 mm.

TYPE: USNM 62491.

TYPE LOCALITY: San Blas, Nayarit, México.

SPECIMENS EXAMINED: Holotype and 11 paratypes collected at San Blas, Nayarit, México, Sept. 17-21, 1953, at light, by Borys Malkin. Paratypes are in collections of Borys Malkin and U. S. National Museum.

REMARKS: The typical series shows considerable variation in color, ranging from light castaneous to rufopiceous. The elytra become darker first, followed by the pronotum, with the head last. *Psammodyus formosus* superficially resembles *bidens* but is shorter in length, the elytra are fimbriate with very short inconspicuous hairs, and the head has fine close granules above the front.

Psammodyus chipiririi, new species

Holotype oblong, convex, sides subparallel, shining, piceous with legs, anterior margin of clypeus and pronotum rufopiceous. Anten-

nae testaceous. Head moderately convex, verrucose, posteriorly with a band of close fine punctures above and between the eyes. Clypeus with a small triangular tooth each side of the wide, shallowly emarginate anterior margin, sides weakly arcuate, the nearly right-angled genae not fimbriate. Pronotum convex, width 1.4 mm., length 0.9 mm., anterior angles obtuse, posterior angles broadly rounded, sides and base finely margined, very weakly crenate, fimbriate with short, even spicules, the spicules about as long as distance between punctures of the pronotum; without transverse grooves, surface with evenly placed, very moderate punctures which very gradually become finer anteriorly from basal part of disc and a little sparser laterally where they extend beyond the lateral fovea to the extreme margin and into the anterior angles. Elytra convex, shining, width 1.6 mm., length 2.2 mm., base margined, humeri slightly dentate, sides subparallel, margins not fimbriate; striae deep, fine strial punctures crenating edges of the very weakly convex intervals. Metasternum smooth, shining, slightly depressed at middle, with a deep, sharply defined midline suddenly terminated at each end extending over the middle two-thirds of the total length; anterior postcoxal line finely scabrous, joining a similarly scabrous area at extreme sides. Abdominal segments smooth, shining, with scattered fine punctures from side to side, a few fine short hairs laterally, finely crenate in front, the terminal segment more deeply and widely crenate at middle. Pygidium very finely scabrous. Anterior femur with deep anterior and posterior marginal lines, posterior face with scattered, moderate punctures. Middle and posterior femurs smooth, shining, a few short hairs along anterior edge and a curving, posterior row of four or five short, stiff hairs outward near the knee; posterior femur only one-seventh wider than middle femur, posterior marginal line very fine, extending less than half the length from the knee. Posterior tibia more than twice as long as wide at apex, long spur equaling length of first tarsal joint plus half the second, tarsus subequal to tibia in length. Length 3.5 mm., width 1.6 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: "S. F. del Chipiriri," Province of Chaparé, State of Cochabamba, Bolivia, 400 m., November 1953, A. Martínez.

SPECIMENS EXAMINED: Holotype and 21 paratypes collected at same time and place as type. Paratypes are in collections of A. Martínez and U. S. National Museum.

REMARKS: Superficially this species resembles *fimbriatus* and was collected with that species, however, the pronotal punctures are finer, the elytra slightly more elongate-parallel without the long marginal fimbriae, and the maxillae lack teeth.

Psammодиус аениктус, new species

Holotype elongate-parallel, convex, moderately shining, rufopiceous. Antennae rufotestaceous. Head moderately convex, closely verrucose, with a band of close, fine to moderate punctures above between the eyes, occiput smooth. Clypeus broadly, shallowly emarginate with a small triangular tooth each side of the emargination, sides very weakly arcuate, finely reflexed; genae nearly right angled, not fimbriate. Pronotum convex, sides hidden from directly above, width 1.4 mm., length 1.0 mm., anterior angles rounded, posterior angles broadly rounded, sides and base finely margined, not noticeably fimbriate but the posterior angles and base actually very finely crenate with extremely short, stubby setae, the setae half as long as the distance between them; surface with close, evenly spaced, moderate punctures separated by one to two diameters, the punctures becoming gradually much finer from basal half of disc to anterior and lateral edges, similarly, but more abruptly to base. Elytra elongate, subparallel, not fimbriate, width 1.4 mm., length 2.2 mm., base margined, humeri dentate, striae deep, crenately punctured, intervals smooth, shining, weakly convex, smooth area at shoulders with a few moderate punctures. Metasternum shining, smooth with a few scattered fine punctures at middle, midline long and deep, terminating abruptly, sides scabrous. Abdominal segments shining, with evenly spaced moderate punctures separated by one to two or three diameters, punctures somewhat finer at middle than at sides, very finely margined posteriorly, finely crenate in front, the terminal segment more widely so at middle. Pygidium very finely, closely punctate. Anterior femurs smooth, shining, margined anteriorly and posteriorly, a few more or less indistinct punctures posteriorly. Middle and posterior femurs smooth, shining, a trace of marginal line at knee, without setae; the posterior femurs not noticeably wider than the middle femurs. Posterior tibia two-fifths as wide at apex as total length; spurs slender, the longer equal in length to first tarsal joint plus half the second, entire tarsus one-tenth shorter than tibia. Length 3.6 mm., width 1.4 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: "S. F. del Chipiriri," Province of Chaparé, State of Cochabamba, Bolivia, 400 m., November 1953, A. Martínez.

SPECIMENS EXAMINED: Holotype and two paratypes collected at same time and place as type. Paratypes are in collections of A. Martínez and U. S. National Museum.

REMARKS: The two paratypes are smaller than the holotype, being 3.0 and 3.2 mm. in length by 1.1 and 1.2 mm. in width. Except for its strongly tuberculate head, this species is another of those that seem to have practically all the characters of an *Ataenius*.

Psammodius atopus, new species

Holotype elongate-parallel, convex, moderately shining, rufopiceous. Antennae rufotestaceous. Head moderately convex, closely verrucose, with a band of close, moderate punctures above between the eyes. Clypeus widely, shallowly emarginate with a small, triangular tooth each side of the emargination, sides weakly arcuate, finely reflexed; genae nearly right-angled, not fimbriate. Pronotum convex, width 1.2 mm., length 0.9 mm., anterior angles rounded, posterior angles very broadly rounded, finely margined, not fimbriate; surface with close, very evenly spaced, moderate punctures separated by one diameter, somewhat finer anteriorly and at extreme sides beyond foveae. Elytra elongate, subparallel, not fimbriate, width 1.2 mm., length 1.85 mm., base margined, striae moderately deep, finely crenately punctured, sutural interval with a row of close, very moderate, distinct punctures, other intervals with a row of similar but very slightly smaller, more distant punctures along outside edge, inner edge slightly semituberculate in front of marginal punctures, otherwise finely alutaceous and weakly convex. Metasternum shining at middle, with a few scattered punctures and a deep distinct midline, anterior postcoxal line finely scabrous, extending outward to wide similarly scabrous area at side, deepest part of the triangular depressed area in front of the posterior coxal plates also scabrous and connected to lateral area. Abdominal segments with transverse bands of rather evenly spaced moderate punctures separated by one to two diameters, very finely margined posteriorly, finely crenate in front, more widely and deeply so at extreme sides and at middle of terminal segment. Pygidium finely scabrous. Anterior femur margined, shining and smoother in front, quite closely, roughly punctate posteriorly. Middle and posterior femurs shining, with scattered fine punctures, without setae or fimbriae, the middle femur about as wide as the posterior femur. Posterior tibia three times as long as wide at apex, spurs slender, first tarsal joint shorter than long spur, about equal to length of following three combined, entire tarsus one-ninth shorter than tibia, the joints not especially widened apically. Length 3.0 mm., width 1.2 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: "S. F. del Chipiriri," Province of Chaparé, State of Cochabamba, Bolivia, 400 m., November 1953, A. Martínez.

SPECIMENS EXAMINED: Holotype and one paratype collected at same time and place as type. Paratype is in collection of U. S. National Museum.

REMARKS: This is another species that is very close to *Ataenius* except for the distinctly verrucose head.

Psammodius fimbriatus, new species

Holotype oblong oval, moderately shining, piceous. Antennae rufotestaceous. Head convex, closely strongly verrucose, occipital area with a band of close, fine to moderate punctures above and between the eyes, smooth posteriorly. Clypeus widely, shallowly emarginate, the angles sharply dentate each side, sides weakly arcuate and reflexed; genae very sparsely fimbriate, not prominent, broadly arcuate in outline, smooth, with a small deep pit close in front of the eye. Pronotum convex, width 1.4 mm., length 0.9 mm., all angles broadly rounded, sides and base crenate, fimbriate with moderately long, stiff, tapering, sharply pointed hairs, base weakly lobed medially, sides and base distinctly margined except at middle of base; without transverse grooves, surface with intermixed, close, very fine and moderate punctures, the latter separated by less than their diameters, gradually slightly finer outward from disc and sparser laterally. Elytra as wide as pronotum at base, width 1.75 mm., length 2.15 mm., base finely margined, humeri not distinctly dentate, margins crenate, fimbriate with moderately long, fine bristles, scattered bristles around apical third also, especially on ninth and tenth intervals, sides straight and diverging over basal half then strongly arcuate and curving to apex; striae fine, moderately deep, with fine punctures crenating edges of the flat to very weakly convex intervals, intervals with widely scattered irregularly spaced fine punctures usually near margins. Metasternum somewhat depressed, rather short, only as long as two-thirds the width of posterior femur, smooth and shining at middle, short midline sharp and deep over half the total length at middle, slightly roughened at extreme sides. Abdominal segments shining, with scattered very fine punctures at middle, slightly more numerous at sides and bearing very short fine hairs, terminal segment with an anterior row of about 12 to 14 long fine hairs, segments very finely crenate in front, the last segment more widely so at middle. Pygidium finely scabrous. Anterior femur smooth, shining, a few scattered, very finely setigerous punctures posteriorly and with a distinct anterior marginal line. Middle and hind femurs smooth and shining with moderately close scattered setigerous punctures along margin and a posterior row of the same extending outward to the knee; posterior femur about twice as wide as middle femur. Posterior tibia about twice as long as apical width, spurs short, foliaceous, equal in length to first two tarsal joints combined; basal tarsal joint apically widened. Length 3.5 mm., width 1.75 mm.

TYPE: In collection of A. Martínez, Buenos Aires, Argentina.

TYPE LOCALITY: "S. F. del Chipiriri," Province of Chaparé, State of Cochabamba, Bolivia, 400 m., Nov. 1953, A. Martínez.

SPECIMENS EXAMINED: Holotype and 27 paratypes collected at same time and place as type. Paratypes are in collections of A. Martínez and U. S. National Museum.

REMARKS: Except for the lack of transverse pronotal grooves and a narrowly notched clypeus, *Psammodyus fimbriatus* exhibits all characters of more typical *Psammodyus*, including maxillary teeth. It is one of the species bridging the slight gap between the more typical *Psammodyus* and those having characters of *Ataenius*.

Psammodyus mapirii, new species

Holotype oblong oval, moderately shining, rufopiceous. Antennae testaceous. Head moderately convex, coarsely verrucose, occiput smooth. Clypeus sharply dentate each side of a broad, shallow emargination, sides slightly arcuate to the rounded genae. Pronotal width 1.4 mm., length 0.85 mm., anterior angles broadly rounded, posterior angles very obtusely rounded, marginal line deep and distinct, sides and base fimbriate with fine, sharp hairs, weakly crenate; surface evenly convex, without furrows except for a short, shallow depression inward from each anterior angle, lateral foveae small but evident, coarse punctures very moderate in size, separated by one to three or four diameters, irregularly but generally distributed except at extreme sides, scarcely perceptible, scattered, minute punctures intermixed. Elytra margined at base, humeri weakly dentate, sides very slightly arcuate, fimbriate with short, fine hairs, width 1.60 mm., length 2.15 mm., striae moderately fine and deep, strial punctures fine; intervals smooth, weakly convex, their sides very slightly irregular and very weakly crenate. Metasternum smooth at middle, scabriculate at sides, median line deep, relatively short, abruptly terminated at each end, anterior postcoxal line absent. Abdominal segments smooth, finely crenate along anterior margin, crenations slightly wider at middle of terminal segment, each segment with a medianly interrupted, transverse row of setigerous punctures bearing moderately long, fine hairs. Pygidium finely scabriculate basally at sides. Anterior femur without anterior marginal line. Middle and posterior femurs smooth, without posterior marginal line but with a long line of close, setigerous punctures paralleling the posterior margin over outer two-thirds and curving forward in front of the knee to and along the anterior margin. Posterior femur one-third wider than the middle femur. Posterior tibia twice as long as wide at apex, spurs moderately narrow and foliaceous, the long spur very slightly longer than the first tarsal joint. First joint of posterior tarsus elongate-triangular, as long as following three together. Length 3.4 mm., width 1.6 mm.

TYPE: USNM 61849.

TYPE LOCALITY: Near mouth of Río Mapiri, Río Beni, La Paz, Bolivia.

SPECIMENS EXAMINED: Holotype, collected in September by W. M. Mann, Mulford Biological Exploration, 1921-1922. Paratypes: 1, same data as holotype, U. S. National Museum; 1, Buenavista, Provincia de Ichilo, Santa Cruz, Bolivia, October 1949, A. Martínez, in Martínez collection.

REMARKS: *Psammodius mapirii* may be separated from the other South American species having distinctly fimbriate margins of the elytra by characters given in the key to species. It is closely similar to *fimbriatus*.

Psammodius armaticeps (Fall)

Psammobius armaticeps Fall, Journ. New York Ent. Soc., vol. 40, p. 190, 1932.

Oblong, shining, dark castaneous. Antennae pale rufotestaceous. Head moderately convex, closely, not very coarsely verrucose, occiput smooth. Clypeus with an acute, triangular tooth each side of the wide, shallow median emargination, sides slightly arcuate, genae rounded, fimbriate. Pronotum convex, width 1.45 mm., length 0.90 mm., anterior angles obtuse, posterior angles very broadly rounded, base margined, sinuate and slightly lobed at middle, sides and base crenate and fimbriate with moderately long, simple hairs, shorter across base; surface smooth, shining, minutely punctate laterally beyond foveae, disc with many, irregularly placed punctures, very coarse at middle to less coarse outward in all directions, no middle line, furrows, or other depressions except the usual short depression inward from the anterior angles. Elytra margined at base, humeri weakly dentate, sides fimbriate with moderately long hair, width 1.75 mm., length 2.3 mm.; striae crenate punctate, the punctures moderate and deep; all intervals convex, ninth and tenth not different. Metasternum smooth, shining, median line half total length, deep, abruptly terminated at each end, minutely alutaceous at sides, anterior postcoxal line absent, depressed in front of posterior coxal plate but without a definite line. Abdominal segments smooth and shining at middle, a transverse row of three or four coarse, shallow, setigerous punctures at each side, usually a very small tubercle in front of each hair, segments finely crenate in front, the crenations wider at middle of terminal segment. Pygidium shining, smooth at apex, scabrous basally, a few scattered setigerous punctures. Anterior femur without anterior groove, posterior face smooth, shining. Posterior femur one-third wider than middle femur, smooth, shining, without posterior marginal line, a row of close, coarse, setigerous punctures parallel to but some distance from the posterior edge. Middle and posterior tibiae without transverse ridges but with longitudinal rows of tubercles. Outer edge of posterior tibia twice as long as apical width, spurs sharp, narrowly foliaceous, the longer subequal to the combined length of first two tarsal joints.

Tarsus four-fifths as long as outer side of tibia, the first joint more than twice as long as its apical width and as long as following three joints combined. Length 3.4 to 4 mm., width 1.7 to 2 mm.

TYPE: Fall collection, Museum of Comparative Zoology, Cambridge, Mass.

TYPE LOCALITY: Pensacola, Fla.

SPECIMENS EXAMINED: 56.

DISTRIBUTION: Florida: Pensacola, Tampa. Georgia: St. Simon Island.

SEASON: March 12 to May 22, August and September.

REMARKS: The only major difference between *P. armaticeps* (Fall) and *P. cruentus* Harold seems to be in the size and pattern of the punctures of the pronotum.

Psammодиус cruentus Harold

Psammодиус cruentus Harold, Berliner Ent. Zeit., vol. 11, p. 282, 1867.

Psammобіus cruentus Schmidt, Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 478, 1922.

Psammобіus bidens Schmidt (not Horn, 1871), Coleoptera, Aphodiinae. Das Tierreich (Deutsche Zool. Ges.), pt. 45, p. 478, 1922.

Psammодиус shermani Cartwright, Bull. Brooklyn Ent. Soc., vol. 41, p. 89, 1946. (New synonymy.)

Oblong, shining, dark castaneous. Antennae pale, rufotestaceous. Head moderately convex, closely, not very coarsely verrucose, occiput smooth. Clypeus with an acute triangular tooth each side of the wide, shallow median emargination, sides slightly arcuate, genae rounded, fimbriate. Pronotum convex, width 1.55 mm., length 1 mm., anterior angles obtuse, posterior angles very broadly rounded, base margined, sinuate and slightly lobed at middle, sides and base crenate and fimbriate with moderately long, simple hairs, shorter across base, surface with fine to minute punctures throughout and a curving, somewhat depressed band of few to many, coarse punctures back from the anterior angles, inside the lateral foveae to the base, in a few cases reduced to half a dozen or so large, deep punctures in a median transverse group at base, surface otherwise more or less uneven or wrinkled, especially so just back of the anterior margin. Elytra margined at base, humeri weakly dentate, sides fimbriate with moderately long hair, width 1.85 mm., length 2.5 mm.; striae crenate punctate, the punctures moderate and deep, all intervals convex, the ninth and tenth not different. Metasternum smooth, shining, concave at middle, the median line deep, abruptly terminated at each end, minutely alutaceous at sides, anterior postcoxal line absent, depressed but without line in front of posterior coxal plate. Abdominal segments smooth, shining at middle, slightly roughened at sides, laterally each with a transverse row of setigerous punctures, the punctures frequently close behind a very small tubercle, segments finely crenate in

front, the crenations slightly wider on the terminal segment. Pygidium shining, smooth at apex, scabrous along transverse limiting carina, a few scattered setigerous punctures over disc. Anterior femur without marginal groove, posterior face smooth and shining. Posterior femur one-third wider than middle femur, smooth, shining, no posterior marginal line, a row of close, coarse setigerous punctures parallel to but at some distance from the posterior edge. Middle and posterior tibiae without transverse ridges, with longitudinal rows of tubercles. Outer edge of posterior tibia twice as long as width of apex, spurs sharp, narrowly foliaceous, the longer subequal to combined length of first two tarsal joints. Tarsus four-fifths as long as outer edge of tibia, the first joint more than twice as long as its apical width and subequal to following three joints combined. Length 3.4 to 4.6 mm., width 1.6 to 2.1 mm.

TYPE: Location unknown to me.

TYPE LOCALITY: Harold's description of *Psammодиус cruentus* appeared without locality data in his paper on "Die Chilensischen Aphodiden." The type locality, therefore, would be expected to be in Chile. The fact that the species has been taken over much of northern Argentina and in Bolivia and that at the time Harold wrote his paper part of present day Argentina was claimed by Chile would indicate Argentina may more likely have been the source of his specimens. I have seen no specimens from Chile.

Psammодиус shermani Cartwright was described from Sullivans Island, S. C.

SPECIMENS EXAMINED: 139.

DISTRIBUTION: UNITED STATES: South Carolina: Sullivans Island, Folly Beach, Isle of Palms, Mount Pleasant. Georgia: Tybee Island. ARGENTINA: Salta: General Ballivian, Ruiz de los Llanos, Tartagal, Rosario de la Frontera, Cerro San Bernardo. Tucumán: Tucumán, Tacanas. Santiago del Estero: Campo Gallo, Santiago del Estero (Río Salado). Córdoba: Córdoba, Anisacate, Cerro Uritorco. La Rioja: Patquia, La Cañada. San Juan: Pie de Palo. Mendoza: Mendoza, Moliches. Buenos Aires: Punta Lara. PARAGUAY: Boquerón: "Guarn. Oruro." BOLIVIA: Tigupa, Tatarenda, Villa Montes (Río Pilcomayo).

SEASON: October to April in South America, June 3 to Sept. 10 in North America.

REMARKS: I have been unable to study type specimens of *Psammодиус cruentus* Harold; however, specimens from South America and from museums in London and Munich determined as this species are all identical and agree with the original description. The earliest date I have seen on specimens from North America is that on a specimen collected at Tybee Island, Ga., June 1927, by H. A. Wenzel.