

tures and with short erect hair; at times an irregular area adjoining middle of clypeal suture impunctate. Antennae 10-segmented, rufous; club small and somewhat ovate, equal to segments 3-7 combined. Thorax with sides slightly dilated, ciliate, nearly straight, and practically entire; front angles rectangular, hind angles sharp but obtuse; disc with fine sparse punctures on disc separated by twice or more times their diameters and closer at sides and base, with very short erect hairs, and some longer hairs. Scutellum punctate. Elytra with traces of two discal striae other than sutural; disc finely punctured, the punctures separated by twice their diameters or slightly more, and with many minute and some short hairs on disc, and a few hairs longer yet at base. Pygidium polished, slightly convex; disc rugosely, very densely and finely punctate, with short erect hairs and some few longer hairs; apex narrowly subtruncate, reflexed and ciliate. Abdomen flattened, and longitudinally impressed at middle, the disc finely and very densely punctate and with minute hairs; 5th sternite flat, with a dense patch of transverse granules at middle, apex at each side of middle transversely impressed; 6th half the length of 5th, the apex faintly carinate and narrowly interrupted at middle; disc of 6th longitudinally sulcate and finely, sparsely punctate, with short erect hairs. First segment hind tarsus shorter than second; spurs free. Claw with basal tooth median in position, a little longer than, and a little broader at base than, the apical tooth, and also somewhat inclined basally; claw base obtusely dilated. Genitalia bilaterally symmetrical, of complete ring-shaped type; in enface view each lateral lobe is prolonged into a long, very narrow, slightly curved process, and the median underpiece is divided into two short and very sharp teeth which are not contiguous. Front tarsi faintly spurred at inner apex.

Female. — Antennal club a little shorter. Pygidium much more narrowed apically and very narrowly and sharply reflexed. Abdomen convex, hardly impressed at middle; 5th densely and finely punctate and faintly longitudinally impressed at apical third; 6th sternite shorter than 5th, slightly convex and punctate. Otherwise similar to male. Length 18-21 mm.

The Holotype male and Allotype female in the Saylor Collection are from «Paine, Columbia, August, M. Apolinaria Collector.» Paratypes in the Saylor Collection and in M. Apolinaria's Collection are from the same locality,

Ten new *Phyllophaga* beetles from Panama and South America

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Phyllophaga (Phyllophaga) apolinaria. n. sp.

Male. — Elongate oval; color rufous to rufopiceous, the thorax often rufous and the elytra varying from rufocastaneous to rufopiceous; above slightly shining, the elytra pruinose, and dorsal surface entirely haired. Clypeus flat, moderately long, the apex entire, subtruncate, and hardly reflexed; disc with fine, somewhat dense punctures and minute erect hair. Front with fine, moderately dense, noncontiguous punc-

as well as «Muzo, July», «Fusago, October», «Jasagusuga, July», and «Rio Chili».

The species is near *P. rufipes* Moser but the antennal club shorter and the thorax is hairy. From *P. transversicollis* Moser this new species may be separated by the pruinose surface, different thoracic puncturation and length of antennal club.

Phyllophaga (Phyllophaga) aguadita, n. sp.

Male. — Elongate, subparallel; color piceous and faintly shining; above entirely and densely hairy. Clypeus with apex widely reflexed and only very faintly sinuate, the angles widely rounded; disc very densely and closely punctate, with hair. Front with small, nearly contiguous punctures and very short erect hair. Antennae 10-segmented, rufous; stem short, club long and a third longer than funicle but a faint bit shorter than the entire stem. Thorax, scutellum, elytra, and pygidium with extremely dense, almost contiguous, very fine punctures, and with very short, suberect hairs of one length only. Thorax faintly dilated at sides behind the middle, the margin ciliate, straight and crenulate; angles subrounded and obtuse. Elytra faintly rugose, with several indistinct discal costae. Pygidium convex, apex narrowly rounded and reflexed. Abdomen flattened, middle longitudinally impressed, disc subpolished, punctured as thorax but a little less densely so; 5th sternite faintly and roundly extended at middle apical margin; disc with very dense transverse granules; 6th half the length of the 5th segment, the base much thickened, the apex subcarinate and interrupted at middle; disc of 6th narrowly, and distinctly, transversely sulcate in apical half, the surface polished, and finely, setigerously punctate. First two segments hind tarsus subequal; spurs free. Claw with basal tooth median in position and a little shorter and broader than apical; claw base obtusely dilated and separated from basal tooth by a moderately-wide emargination. Entire disc of hind femur very closely and finely punctate. Genitalia somewhat similar to that of *P. tenuipilis* Bates but with a bidentate median underpiece. Length 20 mm.

The unique male Holotype in the Saylor Collection is from «Aguadita, Columbia, June, Apolinar-Maria Collector.»

This species is near *P. caviceps* Moser but is much more densely punctured. From *P. tenuipilis* Bates, which it superficially resembles,

P. aguadita differs in the male genitalia and in the non-inclined basal tooth of the claw.

Phyllophaga (Phyllophaga) erota, n. sp.

Male. — Elongate, subparallel; color rufocastaneous, strongly shining; above glabrous except for a few short hairs on front, and very sparse, extremely minute hairs on the elytral disc. Clypeus moderately long and flat, apex widely truncate, slightly reflexed and entire; sides nearly parallel, angles narrowly rounded; disc with somewhat-coarse, sparse punctures. Front with slightly coarse, not dense punctures, area along the non-impressed and very fine clypeal suture very sparsely punctate. Antenna 10-segmented, rufous; club rufotestaceous, elongate, almost as long as entire stem. Thorax with sides slightly dilated, ciliate, crenulate, straight before and behind the dilation, front and hind angles obtusely angulate; base with complete marginal line; disc with rather sparse, small punctures, these separated by two to four times their diameters and somewhat irregularly placed. Scutellum punctate. Elytra subrugose, punctured like thorax but a little more densely so; costae other than the sutural weakly indicated. Pygidium polished, slightly convex; disc with small, sparse punctures and a few very short erect hairs, the apical portion smooth; apex broadly rounded, ciliate and slightly reflexed. Abdomen polished, middle very widely and very shallowly impressed, with fine punctures and a little procumbent hair; 5th sternite plane, and with a few dense punctures and short erect hairs in apical half; 6th sternite half the length of 5th, the basal half distinctly, transversely convex, and the apical half distinctly, and narrowly, transversely sulcate, the disc sparsely setigerously punctate, and the apex ciliate. First segment hind tarsus slightly shorter than the second to nearly subequal in length; spurs free. Genitalia bilaterally symmetrical; in enface view each lateral lobe consists of a long narrow pendulent piece, each of which is widely separated from the other by practically its own length, and both are also subparallel to each other. Claw short and robust, the basal claw median in position and of same length and size as the apical tooth; claw base obtusely dilated. Length 19-21 mm.

The Holotype and paratypes, both males in the Saylor Collection, are from «Ecuador.»

The species is close to *P. rufipes* Moser but the antennal club is longer, the general size is smaller and the abdomen is different in shape.

Phyllophaga (Phyllophaga) jumberea, n. sp.

Male. — Elongate, slightly wider behind, color castaneous and subshining; above griseopilose. Clypeus long and flat, apex entire and subtruncate, the angles broadly rounded and but slightly reflexed; disc with fine dense punctures. Front very densely, subrugosely, somewhat coarsely punctate, with very short erect hair. Antenna 10-segmented, rufous; club one-fifth longer than funicle. Thorax, elytra, and pygidium with very small, dense, almost contiguous punctures and short procumbent pile; base of elytra and middle apical thoracic area with a few longer hairs. Thorax with sides evenly arcuate, not at all dilated, entire, and subciliate; angles obtusely subrounded. Elytron with one vaguely indicated, oblique, discal stria which is considerably widened from the middle to the apex; sutural stria moderately indicated. Pygidium slightly convex; apex reflexed, broadly truncate and ciliate. Abdomen flattened, middle slightly and longitudinally impressed, disc punctured and setose like elytra but the punctures even finer still; 5th sternite flat and with apical margin faintly angulately extended and slightly elevated at a median spot; disc with dense, though rather small, granules and some erect hair; 6th sternite half the length of 5th, the disc transversely impressed, and finely punctate, with erect hairs; apical margin of 6th carinate, ciliate, and narrowly interrupted at the middle. First segment hind tarsus slightly shorter than second; spurs free and graceful. Claw short and robust, the basal tooth median in position, and slightly wider and shorter than the apical tooth; claw base obtusely dilated. Length 21 mm.

The unique male Holotype in the Saylor Collection is from «Peru, Jumber.»

The species is near *P. ferruginea* Moser but in that species the thoracic sides are distinctly dilated and not at all arcuate.

Phyllophaga (Phyllophaga) morganella, n. sp.

Male. — Oblong-oval; color testaceous and shining, the head and thorax rufous; above completely haired. Clypeus semirounded, the apex entire, and slightly reflexed; disc with fine, very dense, nearly contiguous punctures. Front convex

and very densely, finely punctate, the punctures not quite touching and with short erect hair. Antenna 10-segmented, rufous; club testaceous and ovate, equal to segments 3-7 or a little longer. Thorax with sides dilated, nearly straight, ciliate and subparallel behind; front angles rectangular and produced, hind angles sharp but obtuse; disc with fine dense punctures separated by one and one-half to two times their diameters, somewhat closer at sides and base and all with very short erect hairs and some few longer ones; disc frequently with a small longitudinally impunctate area. Scutellum punctate. Elytron with traces of two weak discal striae besides the sutural, or ecostate; disc finely and densely punctate like thorax, and with very short erect hairs and a few longer hairs near base. Pygidium polished, slightly convex; disc finely and very closely punctate, with very short erect pile, the punctures near apex and at sides nearly contiguous; apex widely rounded and reflexed. Abdomen polished, faintly longitudinally impressed, the disc finely and somewhat densely punctate and with minute hairs; 5th flat and with a large and dense patch of transverse granules at middle; 6th half the length of 5th, the base thickened, and the apex carinate and narrowly interrupted at middle; disc of 6th flattened, with a small triangular, raised smooth (or rugose) area, starting at middle base and running nearly to the apical margin, each side of the area slightly granulate; the remainder of the disc is finely and sparsely punctured. First segment hind tarsus shorter than second; spurs free. Claw with basal tooth median in position, slightly longer than, but of same size as, the apical tooth, and also somewhat inclined basally; claw base hardly and very obtusely dilated. Mentum convex. Labrum flat and but very faintly foveate at middle. Genitalia bilaterally symmetrical and of complete ring-shaped type.

Female. — Antennal club smaller. Elytra with some very long hairs. Pygidium strongly narrowed apically and somewhat gibbose just before apex. Abdomen convex, the 5th and 6th sternites finely and very densely punctate, otherwise as in male. Length 16-18 mm.

The Holotype male is from «Madden Dam, Canal Zone, July, 1936, Morgan M. Saylor Collector,» and is named after my father, the collector. The Allotype female and additional male paratypes are from «Poterillos, Panama, 1936, Vincent Brown Collector.» All types are in the Saylor Collection.

The species is near *P. bicolor* Moser from Ecuador but the dorsal puncturation is different.

Phyllophaga (Phyllophaga) brownella. n. sp.

Male. — Elongate-oval; color dull piceocastaneous; above entirely griseopilose. Clypeus transversely semicircular with apex slightly reflexed and entire; disc coarsely and densely punctate, with short erect hairs. Front convex, with rugose, coarse, contiguous punctures and long erect hairs; vertex smooth. Antenna 10-segmented, rufous; club slightly longer than funicle. Thorax with sides slightly dilated and ciliate; lateral margins straight and entire in front of, and crenate and slightly sinuate behind, the dilation; front angles produced and subacute, hind angles strongly angulate but obtuse; disc coarsely, extremely dense and entirely punctate, the punctures slightly separated right at middle and at each dilation, and contiguous at sides and base, with somewhat longish erect hair. Scutellum, elytra, and pygidium with very dense, nearly contiguous, fine punctures, and short semi-erect hairs; pygidium and base elytra with a few longer hairs. Elytra with two very weak costae other than sutural. Pygidium convex, apex broadly subrounded and reflexed. Abdomen polished, somewhat convex; disc finely and very sparsely punctate; 5th sternite slightly declivous behind and faintly transversely impressed at apex, the disc with rather dense transverse granules; 6th a little shorter than 5th, the basal margin thickened, the apical margin carinate, ciliate and narrowly interrupted at middle; disc of 6th smooth, very finely and sparsely punctate, with erect hairs. First segment hind tarsus a little shorter than second; spurs free. Claw short and broad, the basal tooth median in position, faintly longer than the apical tooth and somewhat inclined basally; claw base hardly dilated, and separated from basal tooth by a very weak and shallow notch. Mentum flat. Entire disc of the posterior and middle femora finely and densely, setigerously punctate. Genitalia simple, bilaterally symmetrical, of complete ring-shaped type; in enface view the lateral angles are rounded externally and joined below into a broad median, underpiece slightly longer than wide, but not bidentate. Length 19 mm.

The unique male Holotype in the Saylor Collection is from «Poterillos, Panama, 1936, Vincent Brown Collector.»

The species does not appear to be very close to any of the described forms.

Phyllophaga (Phytalus) zeteki, n. sp.

Male. — Oblong-ovate; color piceocastaneous to nearly piceous, rather dull and subpruinose; above very densely griseopilose. Clypeus semicircular, apex reflexed, entire; disc with slightly coarse, and very dense but not contiguous, punctures and very fine and short hair. Front with very dense, somewhat coarse, contiguous punctures, with short erect hair. Antenna 10-segmented, rufous; club testaceous, small, but subequal to funicle. Thorax and elytra with very fine, extremely dense, regularly-placed punctures, and short, procumbent, griseous pile, and a very little longer pile at elytral base. Thorax with sides dilated; entire or subcrenulate, ciliate and very nearly straight; front angles bluntly subrectangular, hind angles obtusely angulate; base not margined. Pygidium subconvex, pruinose, very densely and very finely punctate, with short suberect hairs and a very few slightly longer hairs; apex narrow and truncate, and slightly reflexed. Abdomen flattened, punctured as elytra; 5th sternite at middle gradually though markedly raised from basal third to apex, the disc of this raised area densely and granulate punctate, with very short procumbent hairs; 6th sternite shorter than 5th, markedly, transversely sulcate, and the base and apex very strongly carinate; disc of 6th sternite smooth and very sparsely punctate, the apical margin ciliate. First segment middle tarsus longer than second; first segment hind tarsus shorter than second, and the spurs free. Claw finely and very narrowly cleft, the upper tooth fine and narrow; lower tooth noticeably longer than upper tooth and two and one-half to nearly 3 times wider through the middle than it; claw base obtusely dilated. Genitalia as in the *morgani* group but a little different from all described species therein.

Female. — Antennal club a very little shorter, elytra with fairly numerous longer and much more robust hairs along base and sutural margin; pygidium with the longer hairs more obvious and denser, and apex a little narrower; abdomen with 5th sternite noticeably transversely impressed in apical third, and 6th sternite subconvex and densely punctate; claw much more widely cleft, and the lower tooth a little narrower

and more reflexed towards the base; otherwise similar to male. Length 19-20 mm.

The Holotype male and Allotype female (U. S. N. M. 55299), in the United States National Museum, are from «Barro Colorado Island, Canal Zone, Panama, May 23, 1940, I. Zetek.» A male paratype with the same data is in the Saylor Collection.

This species belongs with *P. morgani* Saylor, *P. ohausi* Moser and *P. insulana* Moser. *P. zetekii* differs from *P. ohausi* from Ecuador in the shorter antennal club, pygidial puncturation, different abdominal structure, and male genitalia; it can be separated from *P. morgani* from Panama by the slightly different genitalia, more robust form, and noticeably broader basal claw tooth.

Phyllophaga (Phyllophaga) calculisternis, n. sp.

Male. — Oblong-oval; color rufotestaceous and shining, elytra and abdomen testaceous, head and thorax rufous; dorsal surface completely haired. Clypeus short, transverse, and strongly reflexed. apex truncate and entire, the angles very narrowly rounded, the sides straight; disc coarsely and densely punctate, with minute erect hair. Front grossly and rugosely punctate, with moderately long erect hair. Antenna 10-segmented, rufotestaceous, the club testaceous; club a very little longer than the funicle. Thorax with lateral margins very obtusely dilated, straight, ciliate and entire, the sides subparallel behind; front angles rectangular and slightly produced, hind angles obtusely angulate; disc, other than a small median smooth area, densely punctate, the punctures somewhat coarse and separated on disc by twice their diameters and much closer at sides, center base, and center apex; all discal punctures with short erect pile, the fore margin ciliate. Scutellum punctured as elytra. Elytra without striae other than the well-marked sutural striae; disc densely, regularly and finely punctate, the punctures with short, erect, flavous pile, and a very few longer hairs near scutellum. Pygidium convex, regularly punctate, the punctures separated by once to twice their diameters, somewhat close along basal margin, and all with short erect, or with minute erect, hairs; apex strongly reflexed, thickened, subtruncate, and ciliate. Abdomen very widely, deeply, and longitudinally concave from beginning of 2nd sternite to the apex of the 6th sternite; the posterior third of the 5th sternite is prolonged at the middle into a long, bluntly

rounded lobe into and over the 6th sternite, the disc of the 5th covered with an extremely dense and large patch of overlapping shingle-like, suberect granules, these granules all pointing apically; 5th sternite greatly narrowed at middle due to intrusion of the median lobe of preceding sternite, the basal margin carinate and set with dense and coarse erect bristles each side of the middle; 6th sternite slightly prolonged apically in a rounded short, and very transverse (obtusely) lobe which fits over the reflexed base of the pygidium; sides of the 6th sternite flattened and punctate. First segment hind tarsus shorter than second; spurs free and one twice the length of the other. Segments 1-4 of front tarsus with a long spur directed inwardly from the front inner apex of each segment, the spur of the second segment the longest. Tarsal claws long, the basal tooth situated slightly basal of the middle and much shorter and more triangular than apical tooth; lower margin of basal tooth faintly crenulate, claw base faintly dilated; claws of the hind legs a little shorter than others but of same proportions. Segments 1-4 of middle tarsi also with short inner spines at apex, but only those of segments 2 and 3 really noticeable. Genitalia bilaterally symmetrical and of complete ring-shaped type; in enface view the lateral angles are acute, well separated and the points convergent towards the center-base; the small central projection consists of two rounded and very blunt, hardly-divided teeth.

Female. — Antennal club a little shorter than funicle; pygidial apex less reflexed; abdomen convex, only very faintly longitudinally impressed, the 5th and 6th sternites densely setigerously punctate and plane; inner spurs of front tarsal segments much smaller, those of mid tarsi not noticeable; otherwise similar to male. Length 14-16 mm.

The Holotype male and Allotype female are in the United States National Museum (n. 55300) and are from «Barro Colorado Island, Canal Zone, Panama, collected by J. Zetek on May 8 to 18, 1940.» Paratypes with the same data as above, and other from Barro Colorado Island, March 4, 1937, S. W. Frost collector, are in the Saylor collection and in the collections of Mr. C. A. Thomas and Mr. S. W. Frost, and the United States National Museum.

This species does not appear to closely resemble any of the described forms known to me and the very odd male abdominal structure,

in which it approaches *P. calculiventris* Saylor and *P. obsoletus* Blanchard, should readily place the species.

Phyllophaga (Phyllophaga) cristobala, n. sp.

Male. — Oblong-elongate, rufo-piceo-castaneous in color and slightly shining above; dorsal surface entirely covered with hair. Clypeus short wide, and very transverse, apex subtruncate and a little reflexed, but very faintly sinuate, the angles broadly rounded; disc with dense and moderately coarse punctures, each with a very short erect hair. Front densely, unequally punctate, most of the punctures rather coarse, and all with moderately long erect hairs. Antenna 10-segmented, unicolorous rufotestaceous; club slightly shorter than funicle. Thorax with sides straight, roundly dilated, coarsely crenate and ciliate; front and hind angles obtuse and subrounded; disc regularly and completely punctate, the umbilicate punctures small and separated from each other by once or more their diameters and each with a short erect hair; front center apex with several longer erect hairs. Scutellum griseo-pilose, as elytra. Elytra very densely and finely punctate, the punctures with short, whitish, suberect hairs; striae, other than sutural, weakly indicated. Pygidium convex, polished, subgibbose just before apex; disc extremely densely punctate, the punctures nearly contiguous, small, and with short erect hairs, and some longer hairs in apical half; apical fourth of disc rugose and sparsely punctate; apex rounded, distinctly reflexed and ciliate. Abdomen polished, convex, center slightly punctured; 5th sternite very faintly gibbose at middle base and declivous apically, the surface coarsely and densely punctate especially in the median area; 6th sternite three-fifths the length of preceding, widely, transversely concave, surface sparsely punctate and with erect hairs, the base and apex subcarinate and entire. First segment hind tarsus a little shorter than second, the spurs free. Claw short, the basal tooth median, a little longer than apical tooth, and slightly inclined towards the base; base very obtusely dilated. Genitalia bilaterally symmetrical and of the complete ring-shaped type; in enface view the lateral angles are very widely separated, a little extended, and acute, with a broad median underpart which is faintly bidentate and a little extended. Length 17-18 mm.

The Holotype and Paratypes, both males, are from «Madden Dam, Canal Zone, Panama, collected May 18-1936, by

Morgan M. Saylor» and remain in the Saylor Collection. Two additional paratypes, also collected by my father, are from «Cristobal, Canal Zone, May, 1936.» The species is not closely related to any other known to me.

Phyllophaga (Phyllophaga) poterillosa, n. sp.

Male. — Oblong-ovate, subparallel; color castaneous, shining; dorsal surface entirely covered with whitish hairs of various lengths. Clypeus very flat and moderately long, the apex not at all reflexed and slightly sinuate; angles broadly rounded; disc with very sparse and quite large punctures, each bearing a long erect hair. Front very grossely and sparsely punctate, the punctures dense and each with a very long erect hair. Antenna 10-segmented, unicolorous rufous; club short but about a fifth longer than the funicle. Thorax with sides roundly dilated and faintly sinuate, and both coarsely crenate and ciliate, front angles rectangular or subacute, hind angles sharp and subrectangular; disc, other than an irregular, elongate, central impunctate area, rather coarsely and moderately densely punctured, the punctures with very long hairs, those at center separated by two or more times their diameters, and by once or less their diameters at sides. Scutellum entirely impunctate, or with 3-4 small punctures at middle. Elytra with sutural, sublateral and two discal striae well defined and smooth; disc regularly punctate, the punctures sparse and separated by once to twice their diameters and each with a short suberect whitish hair; basal part elytra near suture with sparse, long and erect hairs; lateral margin finely ciliate. Pygidium convex, polished, the surface with short erect hairs, those near the rounded apex a little longer; punctures extremely dense, umbilicate, and nearly contiguous in basal third, the center disc with punctures a little larger and somewhat less dense, the apical third more rugose and still more sparsely punctate. Abdomen faintly convex, smooth and highly polished at middle; 5th sternite gradually declivous behind and very densely umbilicately punctate over its entire width, the punctures with short erect hair and noticeably denser at the center; 6th sternite three-fifths the length of preceding, and evenly, transversely concave over nearly its entire width; disc coarsely punctured, and with long erect hairs, basal margin carinate and entire. First hind tarsal segment slightly shorter than second, spurs free. Claws short, basal tooth sharp

and submedian, of same size and length as the apical tooth; base hardly dilated. Genitalia bilaterally symmetrical, of ring-shaped type, the side angles acute in en-face view, far apart and somewhat extended, with a small sub-bidentate process beneath and at the middle. Length 14-15 mm.

The Holotype and two Paratypes, all males, remain in the Saylor Collection: they are from «Poterillos, Panama», and were collected for me in 1936 by Mr. Vincent Brown. The species does not appear to be very closely related to any others known to me.