

## Short studies in American Scarabaeidae (III)

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*Phyllophaga gigantissima* n. sp.

Holotype male. — Large, robust, dark castaneous, almost glabrous above, shining. Head broad, front not densely, variolately punctured, with a small group of hairs above each eye; clypeal suture almost straight, not impressed; clypeus flat, apex emarginate, not reflexed, angles broadly rounded, disc moderately densely punctured, smooth at middle. Antennae ten-jointed, club oval, much shorter than funicle. Thorax convex, sides crenulate, ciliate, front angles rectangular, hind angles obtusely angulate, basal margin entire; disc very sparsely shallowly punctured, with a few very minute scattered hairs. Elytra almost four times longer than prothorax, greatly widened behind, humeral angles tumid; disc very densely rugosely punctured, with a few very minute scattered hairs. Pygidium flattened, highly polished, very sparsely punctured, with very short white pile near margins; apex rounded reflexed. Abdomen convex, sparsely setigerously punctured at middle, abdominal sutures effaced at center; sixth segment one-half the length of fifth, slightly elevated, densely setigerously punctured, the hairs short and suberect. Hind tibial spurs slender, elongate, cleft unequally at apex. Hind and middle tibiae with three small tuberosities instead of the usual transverse carina, two on the outside and one on the inside, much as in *nitidula* Lec. Claws with a moderately long median tooth, the latter about the same length as the basal dilation but much more acute.

Paratype male. — One individual with the clypeus less punctate at center, and with the group of hairs above the eye obsolete.

Length 28 mm. Width 15.5 mm.

Type (U. S. N. M.) and paratype (author's collection) are both from Sinaloa, Mexico, a bequest of W. Robinson in 1929 to the U. S. N. M. The third small tooth of the claws, oval antennal club, lack of male abdominal sexual characters, and the obsolete transverse tibial carinae, all mark out for this species a subgenus different from all others I have seen.

*Phyllophaga vandykei*, n. sp.

Holotype male. Elongate, subparallel, dark castaneous, moderately shining, thorax glabrous and elytra subglabrous. Head with front moderately densely variolately punctured, with a few short erect hairs; clypeal suture not impressed; clypeus sparsely punctured at middle, denser at sides, apex slightly emarginate, reflexed, angles broadly rounded. Antennae ten-jointed, club one-third longer than funicle. Thorax convex, lateral margins crenulate, ciliate, front angles obtusely rounded, hind angles rectangular, basal margin obsolete at middle, disc not densely more or less umbilicately punctured. Elytra less than three times longer than thorax, densely punctured, with a few scattered minute hairs. Pygidium polished, convex, sparsely variolately punctate, the punctures with very short hair; apical margin thickened, subtruncate. Abdomen highly polished, widely shallowly longitudinally concave at center, very sparsely setigerously punctured in the concavity, a small elevated ridge each side of the middle on the third and fourth segments; sixth segment longer than fifth and very slightly concave at middle, almost flat, setigerously punctured on each side of the concavity; apical third of apical segment impunctate at center, apical margin faintly arcuate. Hind tibial spurs spiniform, one three-fourths the length of the other. Hind tarsal claws lacking in my specimen; front claws with a small basal tooth, basal dilation obtusely rounded; outer middle claws deformed, the median tooth very wide: directed slightly outwards and one-half the length of the apical tooth.

The unique type from Panama city, Panama, remains in the author's collection. It is probably most closely related to *P. atra* (Moser) from which it differs amply in the male abdominal and antennal characters.

*Phyllophaga calculiventris*, n. sp.

Holotype male. — Elongate-oval, entire upper surface covered with rather dense suberect testaceous hair of moderate length, elytra dull, thorax shining, color dark castaneous. Head with front very coarsely closely confluent punctate; clypeal suture faintly biarcuate, not impressed; clypeus almost semicircular, densely punctured, apex subtruncate,

reflexed. Antennae ten-jointed, club one-third longer than funicle. Thorax densely punctured, a small central longitudinal area impunctate, sides subcrenulate, ciliate, angles obtuse, basal margin obsolete. Elytra more than three times longer than thorax, densely punctured, especially on sutural costae. Pygidium convex, coarsely sparsely setigerously punctate, the hairs erect and short, apex rounded. Abdomen densely setigerously punctured at middle, the hairs short; fifth segment with a dense patch of horizontally placed spiny scales, arranged more or less shingle-like; sixth segment one-half the length of the fifth, transversely impressed, a small patch of granules at center, surface densely punctured with long fine hair, apex transversely carinate and ciliate, the carina interrupted at middle. Hind tibial spurs spiniform, one three-fourths the length of the other. Claws with small broad acute tooth at base, basal dilation very obtuse. First four tarsal segments of front tarsi with a broad spine-like projection on the inner side. Length 15.5 mm. Width 8 mm.

The unique type, bearing data «Venedio, Sinaloa, Mexico, Kusche Coll., June 12, 1915,» is in the U. S. N. M.

This species is quite closely related to *P. spinularis* (Moser) from which it differs in the median tarsal claw tooth being basal and not median, and in the abdominal characters.

Again I wish to thank the following for allowing me to examine the above material: Dr. E. A. Chapin of the U. S. N. M. and Dr. E. C. Van Dyke and Mr. Van Duzee of the Calif. Academy of Sciences.

*Listrochelus terminalis*, n. sp.

Holotype male. — Elongate, subparallel, dark castaneous, faintly shining, glabrous above except for a few scattered minute hairs on the clytra. Head with front flat, shallowly sparsely not coarsely punctured; frontal carina very acute, entire, very prominent; clypeal suture distinctly biarcuate, not impressed; clypeus long, angles broadly rounded, apex subtruncate, surface slightly concave each side of middle, densely finely punctured; antennae ten-jointed, club testaceous, subequal to funicle; max. palpi broadly shallowly impressed. Thorax convex, base strongly entirely margined, front margin greatly thickened at middle; sides crenulate in anterior half,

ciliate, hind angles obtusely angulate, front angles very obtuse; disc rather regularly, moderately densely, very finely shallowly punctured. Elytra not three times as long as thorax, surface including sutural costae rather densely coarsely punctured, subrugose; apices slightly sinuate, inner sutural angles rectangular. Pygidium very convex, sparsely punctured, with a few short scattered hairs; apex slightly emarginate. Abdomen broadly very shallowly concave at center, sparsely setigerously punctured; fifth segment with a little denser hair, suddenly declivous at apex; sixth segment prolonged into a long, wide cariniform process, the latter thickened at base, gradually narrowed to apex, reaching far beyond the apex of the pygidium, the front side polished and impunctate, hind part densely setigerously punctured, with very long yellowish hair near and at apex, the latter broadly rounded and one-fourth as wide as at base. All claws pectinate along a double margin, the pectination very uneven and interrupted, usually larger near the apex of the claws; outer front claw with one of the pectinations near the middle larger. Hind tarsi shorter than the tibiae, moderately densely pilose beneath. Hind tibial spurs unequal, spiniform, one three-fourths the length of the other. Metasternum very densely pilose. Long. 13.5 mm. Width. 6.0 mm.

Unique type, from San Blas, near Tepic, Mexico, June, 24, 1932. (H. E. Hinton, Coll.), in the author's collection.

This species is approached by no other in the type of abdominal armature; to describe this more completely, when viewed from behind, the process extends beyond the apex of the pygidium for a distance equal to two-thirds that of the pygidium; viewed from the side, the process extends at an angle of forty-five degrees towards the front of the insect, and from base to apex is about as long as the length of segments three, four and five joined together.

*Listrochelus monstrosus*, n. sp.

Holotype male — Dark rufo-castaneous, elongate, faintly pruinose, antennal club testaceous. Head three-fifths the width of the thorax, eyes very large; transverse frontal ridge very distinct, dissecting the middle of the eyes, front moderately densely shallowly punctured, vertex behind transverse carina impunctate except near sides; clypeus long, sparse-

ly punctured, surface slightly excavated each side of middle, angles broadly rounded, apex reflexed, slightly emarginate at middle; clypeal suture evident, not impressed, strongly bi-arcuate; sides of head between the base of clypeus and end of transverse frontal carina deeply emarginate. Antennae ten-jointed, club subequal to funicle. Thorax convex, sides obtusely angulate, crenulate, front margin very sinuate, especially near the obtuse front angles, hind angles obtuse but evident and strongly margined; basal margin strong; disc densely regularly punctate, rather finely punctured, a denser group of punctures forming a longitudinal median group in apical half. Elytra not quite three times longer than thorax, densely finely rather regularly punctured, first pair of striae prominent on disc but obsolete at base and apex, the punctures with a few scattered short hairs. Pygidium very convex, smoothly polished, finely very sparsely punctured, glabrous, apex reflexed, faintly emarginate. Abdomen sparsely punctured, second, third and fourth segments each with a high narrow longitudinal cariniform process, the apex of each an acutely rounded tooth, the teeth of the second and third segments perpendicular to the abdomen, that of the fourth projecting backwards; the middle of the first segment acutely angulate but not toothed; fifth segment greatly narrowed at middle, with a high acute transverse carina running under the backwards-projecting tooth of the fourth segment; sixth segment flattened and about as wide as the preceding three segments together, a long acute tooth projecting backwards at an angle of forty-five degrees from the middle, the sides of the tooth and along each side of the base fimbriate, from base of tooth to basal margin of the segment glabrous, otherwise with rather sparse short yellowish hair. Claws pectinate along a double margin throughout. Underside of four anterior tarsi with densely pubescent soles, the hind tarsal soles sparser and more elongate, the apex of the basal joint prolonged into a spine and densely fimbriate. Hind tibiae fimbriate on the inner side. Posterior spurs long and slender, one three-fourths the length of the other.

Female allotype. — Very conspicuously pruinose; head much more densely punctured, front flat, clypeus much longer, transverse frontal carina higher and more distinct; thorax a little more coarsely punctate; club of antennae equal to joints three to seven together; abdomen highly polished

at middle, greatly convex, with a few fine setigerous punctures, pruinose at sides; fifth and sixth segments equal, each almost equal to width of the third and fourth segments together, the fifth declivious behind, the sixth declivious at base, convex, polished, sparsely setigerously punctured; pygidium broadly strongly longitudinally concave in basal two-thirds, sides sparsely finely punctured, with a few scattered short hairs. Anterior and middle claws strongly toothed at center, the latter serrate along a single margin before and behind the tooth, the former apparently with a double row of teeth near the apex; posterior claws serrate along a double margin, the outer claw with a stronger tooth at middle, the inner without such a tooth; tarsi without dense pubescent soles, only moderately pilose. Otherwise similar to male. Long 16.5 mm. Width 7.5-8.0 mm.

Both specimens, from Los Mochis, Sinaloa, Mexico, collected by Mr. C. T. Dødds on June 30, 1932 (Van Dyke collection) remain in the collection of the California Academy of Sciences.

This species differs from most others in the genus in many characters. The pubescent soles are somewhat suggestive of the genus *Chlaenobia*, but other *Listrochelus* have such characters, and the radically different type of claws, transverse frontal ridge, etc., easily separate it from the former. The male sexual characters are the most remarkable and aberrant in the genus.

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