PROCEEDINGS OF THE UNITED STATES NATIONAL MUSEUM

issued *by the*

SMITHSONIAN INSTITUTION
U. S. NATIONAL MUSEUM

Vol. 85 Washington: 1937 No. 3028

SYNOPSIS OF THE BEETLES OF THE CHILEAN GENUS PHYTHOLAEMA (SCARABAEIDAE: MELOLONTHINAE)

By Lawrence W. Saylor

The described species of the peculiar genus *Phytholaema*, which have more the general facies of rutelinids than of melolonthids, are known only from Chilean regions. The literature is somewhat scattered and much of it is entirely inaccessible to the average student; thus it is felt that the present synopsis will be of use. The genitalia have not been figured before, and as they possess good specific differences they are made use of herein.

Of the published data, probably the most complete is that of Germain, in which he discusses the relationships of the three species and also figures the mouth parts and antennae of *P. mutabilis*. The characters of the mouth parts are not used in the scarabs quite so generally as was formerly the custom, because it has been found that they are not entirely without variation, and though they often show good tribal, generic, or specific characters, such is not invariably the case.

Arrow in 1903 published notes on the relationships of this genus and *Modialis* Fairmaire and Germain, both from Chile, with two genera from Australia and New Zealand; these all have a superficial rutelinid appearance in the prominent front coxae, in the distinct and emarginate labrum, and in the ligula fused with the mentum.

The genus is of some economic importance, and *P. herrmanni*, at least, may at times do considerable damage to agricultural crops.

According to the habits of this species, as described by M. J. Rivera, the group must be somewhat similar to our American genus *Pleocoma* LeConte in that the larvae of the former show up in the ground in December, pass into the pupal stage around August, and emerge as adults during the latter part of September or early in October. The adult males emerge a few minutes after sunset and fly low over the ground until coming upon a female either beside or in the mouth of her burrow, whereupon the two copulate and retire immediately into her quarters; those males that do not meet with mates within half an hour or so after the flight begins retire into the first hole they find and remain there until the following day at the same hour. The evening flight is announced by a sudden loud humming from the wings of many males, and half an hour later the insects as suddenly disappear. The adults take no food, but soon after reproduction occurs they die upon the surface of the ground.

After fertilization the females fly to rich pasture lands, if such are available, and lay their eggs in the soil. Wheat lands and irrigated fields are especially favorable to the insects; in places where the soil is quite dry the larvae live at a depth of 20 centimeters or so, but in moister soil they live nearer the surface, descending to 30 or 40 centimeters below the soil, however, when the time comes to pupate. The damage the species does depends upon the consistency of the soil, not 1 percent of the insects reaching the surface in somewhat solid soil, but in moderately loose soil 15 to 20 percent of the adults may get through.

The author is indebted to Dr. E. A. Chapin, of the United States National Museum, for many courtesies in the preparation of these notes, and also to Miss Phoebe Knappen, of the Biological Survey.

The following generic diagnosis has been made as complete as possible so that the individual specific differences may be noted in as short a space as is feasible.

Genus PHYTHOLAEMA Blanchard

Phytholaema Blanchard, Catalogue de la collection entomologique, vol. 1, p. 218, 1850.

Phytoloema F. Philippi, Anal. Univ. Chile, 1861, p. 735.—Van den Branden, Ann. Soc. Ent. Belgique, vol. 27, p. cxviii, 1883.—Germain, Anal. Univ. Chile, vol. 108, p. 987, 1901.—Arrow, Ann. Mag. Nat. Hist., ser. 7, vol. 11, p. 305, 1903.—Rivera, Rev. Chilena Hist. Nat., vol. 8, p. 241, 1904.

Phytolaema Lacordaire, Genera des coléoptères . . ., vol. 3, p. 226, 1856.—Junk, Coleopterorum catalogus . . ., pt. 47, p. 91, 1912.

Areoda Solier, *in* Gay's Historia fisica y politica de Chile . . ., Zoology, vol. 5, p. 92, 1851.—Redtenbacher, Reise der österreichischen Fregatte *Novara* . . ., Zoology, vol. 2, Coleoptera, p. 65, 1868.

Robust-oval, strongly shining above. Ligula fused with mentum; labrum small, strongly transverse, bilobately emarginate, well hidden under the overhanging clypeus and separated from the latter by a distinct suture; labium flattened, with faint to moderate median longitudinal groove. Antennae 8-segmented, club 4-segmented in male and 3-segmented in female, with the fifth segment in females of varying length; fourth male antennal segment strongly enlarged and at least three times as long as the third segment. Head with front flattened or slightly convex, clypeal suture evident; clypeus elongate, sides at times nearly parallel, usually slightly convergent anteriorly; apex of clypeus markedly reflexed; eyes usually moderate in size. Thorax strongly transverse, roundly dilated at sides; basal angles distinct but obtuse, front angles rectangular; basal margin arcuate, not margined, lateral margins entire, ciliate; front margin with membranous border. Elytra very slightly longer than broad (about one-fourth longer than broad at most), without membranous border, margin ciliate. Pygidium transverse, visible or not from above; surface slightly convex or flattened, finely moderately densely punctured, with short suberect whitish pile over the entire surface and a varying number of long erect hairs scattered over the discal area; sides at base somewhat concave; center of disk often with several small tubercles. Anterior coxae prominent subtransverse; tibiae distinctly bidentate and with an inner spur (broken off in majority of specimens). Middle and hind femora and tibiae slender and graceful, the latter without transverse ridges; middle tibiae in male with one small apical spur, female with two; hind tibiae in female with two spurs, in male with none. All tarsi with a small subbasal tooth of varying length and prominence. First segment of hind tarsi almost equal in length to the next two combined. Coxae contiguous, metasternum very slightly produced between the middle coxae (especially noticeable in *P. mutabilis*). Abdomen with six visible free segments, densely finely punctured at center, with whitish pile; first four segments subequal in length, fifth as long as or longer than segments 2 to 4 combined, with membranous apical margin; sixth segment one-half the length of fifth in the male, a little longer in the female; abdomen scarcely at all modified as to armature or sexual differentiation. Propygidium and penultimate ventral abdominal segments closely connate, spiracle on the suture but the latter almost obliterated.

KEY TO THE SPECIES OF PHYTHOLAEMA

1. Thoracic disk distinctly bicolored, much paler at center of disk, and the latter very sparsely punctured, hair usually white; elytra strongly punctured but not rugose ..... mutabilis
   Thoracic disk unicolorous or nearly so, center of disk sparsely to densely punctured, hair usually brownish; elytra strongly punctured, subrugose to rugose 2
2. Middle tarsi noticeably shorter than tibiae; elytral striae other than sutural hardly evident; thoracic disk sparsely punctured and sparsely pubescent at center; color piceocastaneous, clypeus and under surface lighter ..... flavipes
   Middle tarsi equal to or longer than tibiae; elytral striae quite obvious; thoracic disk densely punctured and densely hairy at center; color variable 3
3. Color entirely pale testaceous, thorax slightly rufotestaceous; tarsal claws with basal tooth hardly obvious or weakly developed ..... herrmanni pallida
   Color rufo- to piceocastaneous; tarsal claws with a strong basal tooth ..... herrmanni

PHYTHOLAEMA MUTABILIS Blanchard

FIGURE 1, *a–c*

Phytholaema mutabilis BLANCHARD, Catalogue de la collection entomologique, vol. 1, p. 218, 1850.

Areoda mutabilis SOLIER, *in* Gay's Historia fisica y politica de Chile . . ., Zoology, vol. 5, p. 93, 1851.

Phytoloema mutabilis GERMAIN, Anal. Univ. Chile, vol. 108, p. 1000, 1901.

Testaceous to rufotestaceous; thorax bicolored, rufocastaneous at sides, testaceous at center; head except clypeus with greenish luster; clypeus, legs, and elytra testaceous. Clypeus with short erect hair, apex very strongly reflexed, sides nearly parallel. Antennae with fifth male segment three-fourths the length of the sixth, and fifth female segment one-fourth the length of the sixth or less. Thorax very finely sparsely punctured, subglabrous at center of disk, otherwise with long whitish hairs. Scutellum entirely impunctate. Elytra subglabrous, moderately coarsely punctured, not rugose, without any raised striae. Metasternum usually nude. Middle tarsi noticeably shorter and hind tarsi a little shorter than their respective tibiae. Length, 12 to 14 mm; width, 6.5 to 7.8 mm.

Specimens examined: 6 males and 7 females, from "Santiago" and from "Chile."

A very distinct species by the characteristic coloring, the bicolored thorax, and the genitalia of the male. The male and female antennae differ in length from those of the same sex of *herrmanni* as noted in the diagnoses.

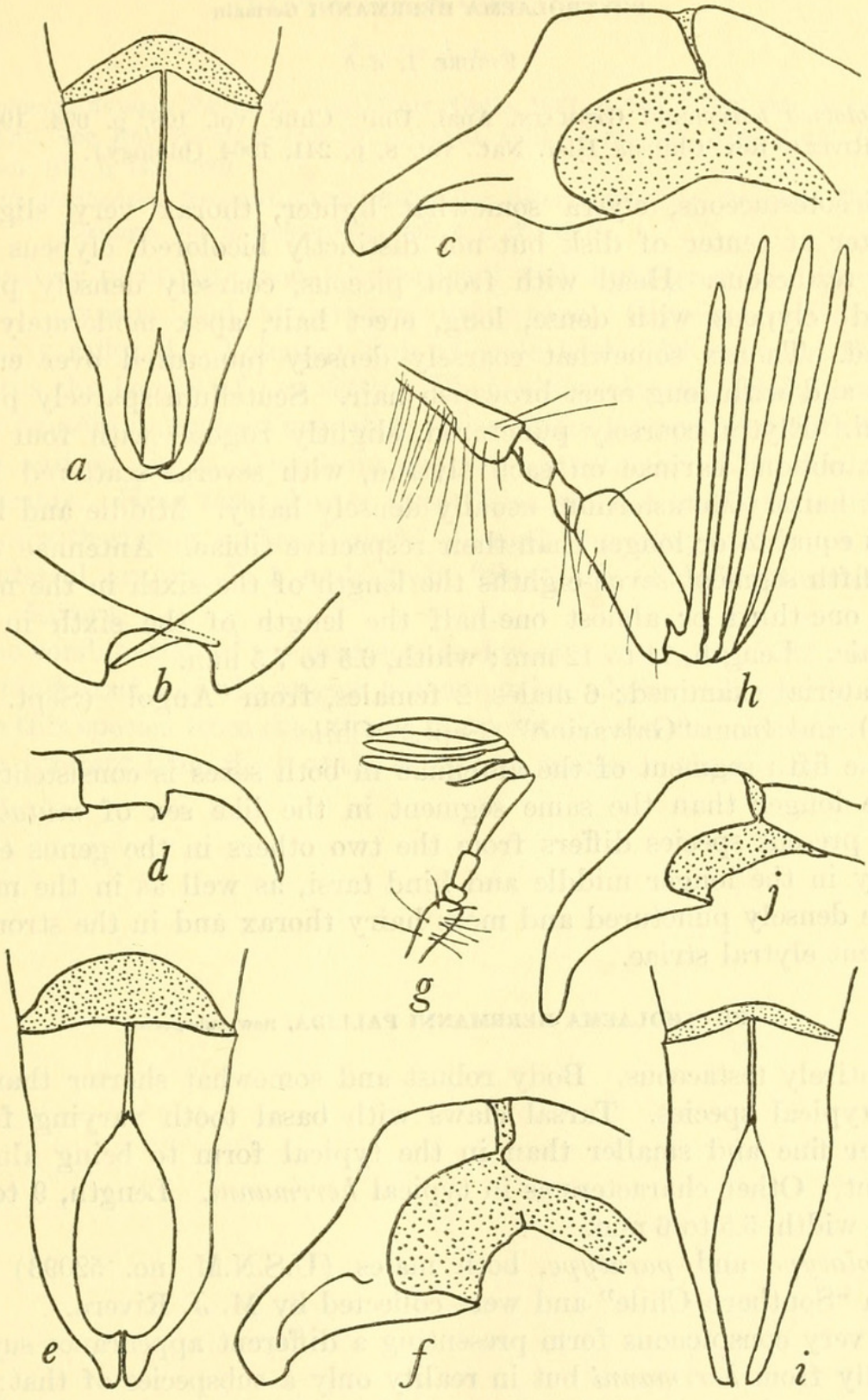

FIGURE 1.—Species of *Phytholaema*

a–c, P. mutabilis: ***a,*** En face view of male genitalia; ***b,*** enlarged en face–ventral view of male genitalia; ***c,*** lateral view of male genitalia.

d–h, P. herrmanni: ***d,*** Hind tarsal claw; ***e,*** en face view of male genitalia; ***f,*** lateral view of male genitalia; ***g,*** female antenna; ***h,*** male antenna.

i, j, P. flavipes: ***i,*** En face view of male genitalia; ***j,*** lateral view of male genitalia.

PHYTHOLAEMA HERRMANNI Germain

FIGURE 1, *d–h*

Phytoloema herrmanni GERMAIN, Anal. Univ. Chile, vol. 108, p. 994, 1901.—RIVERA, Rev. Chilena Hist. Nat., vol. 8, p. 241, 1904 (biology).

Piceotestaceous, elytra somewhat lighter, thorax very slightly lighter at center of disk but not distinctly bicolored, clypeus and legs testaceous. Head with front piceous, coarsely densely punctured; clypeus with dense, long, erect hair, apex moderately reflexed. Thorax somewhat coarsely densely punctured over entire disk and with long erect brownish hair. Scutellum sparcely punctured. Elytra coarsely punctured, slightly rugose, with four distinct oblique carinae on each elytron, with several scattered long erect hairs. Metasternum usually densely hairy. Middle and hind tarsi equal to or longer than their respective tibiae. Antennae with the fifth segment seven-eighths the length of the sixth in the male, and one-third or almost one-half the length of the sixth in the female. Length, 11 to 12 mm; width, 6.5 to 7.5 mm.

Material examined: 6 males, 2 females, from "Angol" (Sept. and Oct.) and from "Galvarino" (Sept.), Chile.

The fifth segment of the antennae in both sexes is consistently a little longer than the same segment in the like sex of *mutabilis*. The present species differs from the two others in the genus especially in the longer middle and hind tarsi, as well as in the much more densely punctured and more hairy thorax and in the strongly evident elytral striae.

PHYTHOLAEMA HERRMANNI PALLIDA, new subspecies

Entirely testaceous. Body robust and somewhat shorter than in the typical species. Tarsal claws with basal tooth varying from rather fine and smaller than in the typical form to being almost absent. Other characters as in typical *herrmanni*. Length, 9 to 10 mm; width, 5.5 to 6 mm.

Holotype and *paratype*, both males (U.S.N.M. no. 52093) are from "Southern Chile" and were collected by M. J. Rivera.

A very conspicuous form presenting a different appearance superficially from *herrmanni* but in reality only a subspecies of that; all the major characters except the color, size, and tarsal claw formation are as in the typical form. The male genitalia are also identical with those of *herrmanni*.

PHYTHOLAEMA FLAVIPES Philippi

FIGURE 1, *i*, *j*

Phytoloema flavipes PHILIPPI, Anal. Univ. Chile, 1861, p. 735.—VAN DEN BRANDEN, Ann. Soc. Ent. Belgique, vol. 27, p. cxviii, 1883.—GERMAIN, Anal. Univ. Chile, vol. 108, p. 996, 1901.

Areoda elaphocera REDTENBACHER, Reise der österreichischen Fregatte *Novara* . . . , Zoology, vol. 2, Coleoptera, vol. 2, p. 65, 1868.

Entirely piceocastaneous above; head with light greenish luster on front; clypeus and underparts testaceous. Clypeus moderately strongly reflexed. Antennal club of male with fifth segment three-fourths the length of the sixth. Thorax unicolorous, finely moderately densely punctured over disk, more coarsely punctured with long erect hair at sides. Scutellum sparsely punctured. Elytra rugose, nonstriate. Hind tarsi shorter than tibiae, middle tarsi distinctly so. Claws with strong subbasal tooth. Length, 9.5 mm; width, 5.5 mm.

Material examined: 1 male from "Southern Chile", collected by M. J. Rivera.

The combination of the unicolorous dorsal surface, the short middle and hind tarsi, and the rugose but nonstriate elytra will readily separate this species from the others; the genitalia are also slenderer and quite different from those of the other two species in the genus.

U. S. GOVERNMENT PRINTING OFFICE: 1937