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A REVIEW OF THE TRIBE MENDIZABALIINI COBOS WITH THE ADDITION OF NEW TAXA (COLEOPTERA: BUPRESTIDAE)

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ABSTRACT

Mendizabaliini is transferred to Buprestinae. *Philandia* is transferred to Mendizabaliini. In the present definition, *Mendizabalia* includes: *M. g. germaini*, *M. g. cyaneoviridis*, ssp. nov. and *M. penai*, sp. nov.

RESUMEN

La tribu Mendizabaliini es transferida a Buprestinae y el género *Philandia* a la tribu Mendizabaliini. *Mendizabalia* queda integrado por las especies: *M. g. germaini*, *M. g. cyaneoviridis*, ssp. nov. y *M. penai*, sp. nov.

INTRODUCTION

The serendipitous collection of two specimens of *Mendizabalia germaini* (Kerremans) during a recent visit to Chile by one os us (CLB, January 1989) has led to a reevaluation of the taxa considered in this paper.

A paper by Toyama (1987) has reduced the large buprestid subfamily Chalcophorinae to a synonym of the nominate Buprestinae without further commenting on the placement and respective level of the former chalcophorine tribes. Simply by virtue of Toyama's proposed synonymy, the six tribes used by Cobos (1975) (Chalcophorini Kerremans, Chrysochroini Kerremans, Vadonaxiini Descarpentries, Paraleptodemini Cobos, Psilopterini Lacordaire and Mendizabaliini Cobos) and one added later by Levey (1978) (Epistomentini) are transferred to Buprestinae and we will consider them to be distinct at the tribal level from other tribes of Buprestinae.

The more recent work of Holynski (1988) presumes the need to reduce a number of tribal level taxa to subtribal level, but then only elucidates on those taxa classified under a new concept of Anthaxiini Laporte & Gory. Since the higher taxa of Buprestidae are most probably still dynamic, we prefer not propose any change of status ans will leave the Mendizabaliini as a tribe to await a more thorough study of the component taxa of the reconstituted Buprestinae.

DISCUSSION

The currently listed authorship of several taxa studied herein is spurious and requires some explanation. The joint work of Germain and Kerremans (1906) presented the descriptions of several new taxa of buprestids from Chile, which have not been uniformly considered in later works (e.g. Obenberger 1934, 1935, 1936; Cobos 1957, 1974) in which some of the taxa are credited to both authors while others are simply attributed to Kerremans. This problem apparently began with the fact that Germain sent a collection of Chilean buprestids to Kerremans which included the taxa recognized by Germain as undescribed and which he provisionally described and labelled with proposed names. Kerremans, being a world authority on Buprestidae, recognized that some of Germain's names would be homonyms and thus changed these epithets to

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remove this possibility. However, these names listed as manuscript names of Germain (e.g. p. 392, *Philandia araucana* P. Germain *mss.*, nov. sp.) are not the same as *nomina nuda* as they were not published without descriptions. It occurs to us that if Germain was given credit as the senior author of the paper and since no statement within the introduction attributing all new taxa to Kerremans exists, that Germain and Kerremans should be the authors for all taxa described in this paper. This leaves one especially awkward case with *Agrilus germaini*, but we believe that Germain should be given the credit due. The authorship of *Philandia* and *P. araucana* should also be changed.

Specimen measurements are taken as follows: maximum length, from front of head to apex of elytra; width, across pronotal base; pronotal proportion, length along midline vs. width of widest portion. Label data are presented verbatim with (h) and (p) used respectively for handwritten and printed notations. The slash mark (/) is used to separate data from separate, sequential labels. The following abbreviations are used to refer to the collections from which material was borrowed or is deposited: MNHN = Colección Nacional de Insectos, Museo Nacional de Historia Natural, Santiago; LPGC = L.E. Peña G. collection; CLBC = C.L. Bellamy research collection.

Tribe Mendizabaliini Cobos

Mendizabaliini Cobos, 1968:17; 1975:90; Bellamy 1985:413.

Type-genus: *Mendizabalia* Cobos (from original designation).

Rediagnosis. Elongate; convex; frontovertex projecting between widely separated, small eyes; eyes well separated from pronotal margin; antennal cavities widely separated; frontoclypeus not constricted between antennae, distal margin broadly concave; anteclypeus visible; labrum bilobed; antennae pectinate-flebellate in males, strongly serrate in females; 1st antennomere greatly enlarged and swollen distaly; pronotum with lateral carinae extending only part way from posterior margin; elytral lateral margins entire; sternal cavity "open" (Figs. 8, 9) with process not fitting within a well defined meso-, metasternal cavity; wing venation (Figs. 10, 11) with radial cell (R) open at base; radial sector vein short; radiomedial crossvein connecting between base of R and median vein (M); 1stA either free or fused at base to $2dA_1$; $2dA_1$ and $2dA_2$ fused at basal 1/3 of $2dA_2$; $2dA_2$ contiguous with M; wedge cell present, closed; 4thA present, elongate.

Remarks. This tribe, as defined by Cobos (1968) solely for *M. germaini*, requires the addition of *Philandia*, a relationship overlooked by Cobos (1974). A superficial comparison of *Mendizabalia* and *Philandia* might convince many coleopterists that these two are not closely related, but a more detailed examination of the overall ventral morphology (Figs. 3, 4), antennae (Figs. 5-7), sternal cavity formation (Figs. 8, 9) and wing venation (Figs. 10, 11) convinces us of a much closer relationship. *Philandia* is briefly discussed below.

It really is not too surprising that in such an area of high endemicity that two obviously relictual taxa are more closely related to each other than to more distantly distributed taxa. The natural affinities and proper placement of Mendizabaliini await demonstration in relation to the other tribes and subtribes of the currently dynamic Buprestinae.

KEY TO THE GENERA OF MENDIZABALIINI, *SENSU NOVO*

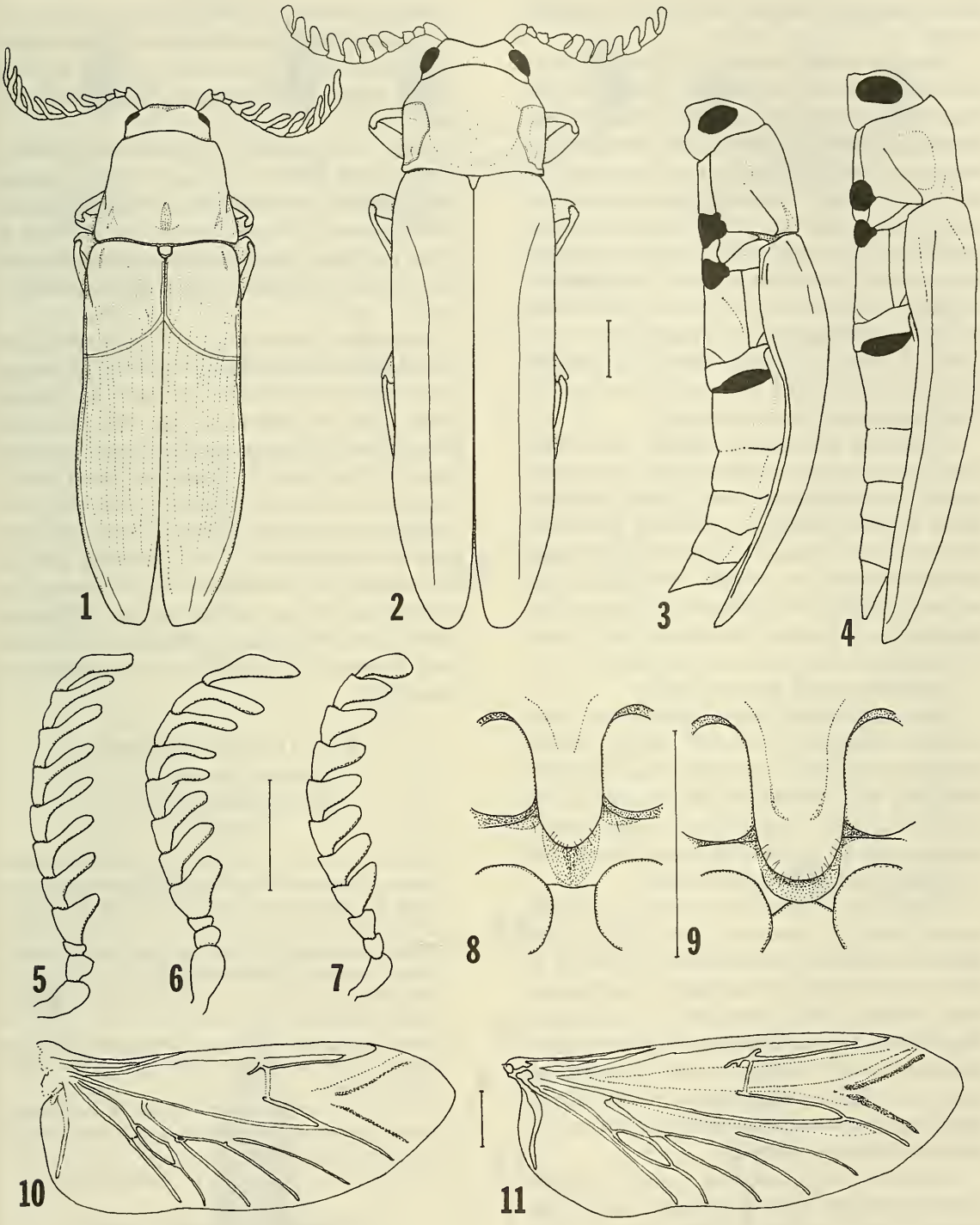
1. Body somewhat convex in lateral view (Fig. 3); antennal ramae very slender (Figs. 5, 6); pronotum with same color as head and elytral base, flattened and entire (Fig. 1); elytra longitudinally costate, surface striatopunctate ..... *Mendizabalia* Cobos
— Body nearly straight in lateral view (Fig. 4); antennal ramae very swollen (Fig. 7); head and pronotum differently colored than elytra; pronotum gibbous with large lateral excavations (Fig. 2); elytra without costae, surface strongly shagreened ..... *Philandia* Germain & Kerremans

Genus *Mendizabalia* Cobos

Mendizabalia Cobos, 1957:233; 1968:17; Bellamy 1985:413.

Type-species: *Agrilus germaini* Germain & Kerremans (by original designation)

Redescription. Small, length less than 12 mm; elongate, ovoid, convex in lateral view; dorsal surface glabrous, ventral surface and



Figuras. 1, 3, 5, 8, 10, *Mendizabalia germaini*. Fig. 6, *M. penai*. Figs. 2, 4, 7, 9, 11, *Philandia valdivianus*. Figs. 1, 2, dorsal habitus: Figs. 3, 4, lateral aspect; Figs. 5-7, antenae, dorsal aspect; Figs. 8, 9, sternal cavity, ventral aspect; Figs. 10, 11, wing venation, ventral aspect (scale lines = 1 mm).

legs sparesely covered with fine, semi-erect setae.

Head with depression on frontovertex; eyes small, widely separated, inner margins slightly converging dorsally; frontoclypeus depressed medially between and ventral to antennal cavities; distal margin of frontoclypeus broadly, shallowly arcuate; anteclypeus partially visible; labrum feebly bilobed distally; maxillary palpi with third palpomere longer than second, rounded distally; mentum rectangular; submentum trapezoidal; antennae, of males flabellate from antennomere 4, of females serrate; sensory pores and sensilla broadly distributed over entire surface of flabellate/serrate antennomeres.

Pronotum trapezoidal, slightly wider than long, widest at base; anterior margin arcuate; posterior margin biarcuate; lateral margins more or less straight, narrowing gradually from rounded, subacute posterolateral angles to anterior margin, carinate from basal angle to past middle; disc flattened, with narrow, longitudinal, medial, depressed line which terminates at deep premarginal fovea.

Scutellum small, subcordiform.

Elytra narrower than pronotum at base; humeri moderately elevated, oblique, lateral margins more or less straight along basal 1/2, widening and broadly arcuate on apical 1/2, widest at about apical 1/3; narrowing to subtruncate apices; epipleuron extends from base to apicolateral angle; disc costate.

Thoracic sternites: prosternum with anterior margin concave; disc slightly depressed medially; process slightly convex in lateral view, depressed medially, rounded apically; sternal cavity essentially open, being a depression on the disc of mesosternum; metepimeron mostly visible beyond epipleuron, only just slightly hidden posterolaterally by basolateral abdominal projection; metacoxal plate moderately dilated.

Abdomen with sternites 1 and 2 slightly longer together than 3, 4 and 5; suture between 1 and 2 indicated along entire width; sutures between all sternites nearly straight; margin of sternite 5 narrowing laterally to rounded apex; pygidium not visible dorsally beyond elytral apex.

Wing (Fig. 10): with radial cell narrow, elongate, slightly open basally; radiomedial crossvein connects from near basal angle to near apex of shortened medial vein; anal veins all present; 1stA vein not connected at base; wedge cell closed, elongate; 4thA vein elongate.

Legs: femora elongate, subfusiform; tibiae longer than femora, narrow, with two short apical spines; tarsi with first tarsomere laterally compressed, length subequal to 2, 3 and 4 taken together; first four tarsomeres with ventral pulvilli; tarsomere 5 strongly appendiculate.

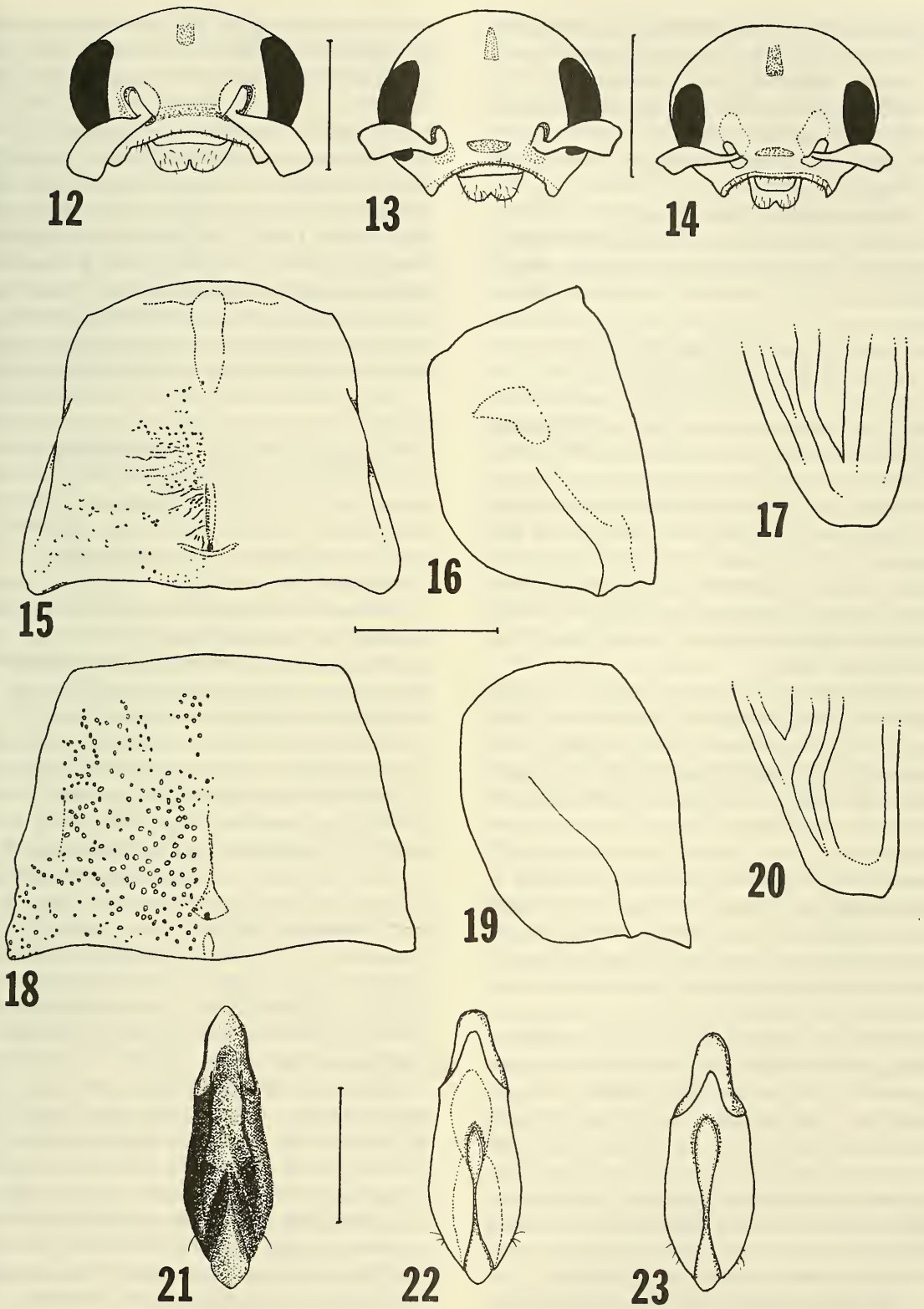
Remarks. The species of *Mendizabalia* are very distinctive buprestids and are easily separable from all other taxa of both the chilean fauna and the genera of the more broadly reconstituted Buprestinae. It is a taxon which should offer much evidence for those studying the phylogeny of the family in looking for evolutionary trends, direction and character state transformation. The following species and subspecies descriptions are shortened for brevity and do not reflect generic character states. The species and subspecies of *Mendizabalia* may be separated as in the following short key.

KEY TO THE SPECIES AND SUBSPECIES OF *MENDIZABALIA* COBOS

1. Pronotum densely punctate (Fig. 18); head more elliptical in frontal view (Fig. 12); elytral apices with costae as in Fig. 20; male genitalia with single apicolateral sensory seta (Fig. 21) ..... *M. penai*, n.sp.
— Pronotum sparsely, shallowly punctate (Fig. 15); head more round in frontal view (Figs. 13, 14); elytral apices with costae as in Fig. 17; male genitalia with three apicolateral setae (Figs. 22, 23) 2
2. Dorsal integument bicolorous: head, pronotoum and basal 1/3 of elytra iridescent blue, apical 2/3 of elytra iridescent red ..... *M.g. germaini* (Germain & Kerremans)
— Dorsal integument unicolorous, iridescent bluish green to greenish blue ..... *M. g. cyaneaviridis*, ssp. nov.

1. *Mendizabalia germaini germaini* (Germain & Kerremans) (Figs. 1, 3, 5, 8, 10, 13, 15 - 17, 22)

Agrilus germaini Germain & Kerremans, 1906:393; Germain & Kerremans 1907:27; Obenberger 1936:1184; Olave 1940:124; Blackwelder 1944:326.



Figuras. 12, 18 - 21, *Mendizabalia penai*. Figs. 13, 15 - 17, 22, *M. germaini*. Figs. 14, 23, *M. germaini cyaneoviridis*. Figs. 12-14, head, frontal aspect; Figs. 15, 18, pronotum, dorsal aspect; Figs. 16, 19, pronotum, lateral aspect; Figs. 17, 20, left elytron apex, dorsal aspect; Figs. 21-23, male genitalia, dorsal aspect (scale lines = 1 mm).

Agrilus bicolor Germain (*in litt*) *in:* Germain & Kerremans 1906:393; Germain & Kerremans 1907:27; Germain 1911:73; Obenberger 1936:1184; Olave 1940:124; Blackwelder 1944:326.

Mendizabalia germaini, Cobos, 1957:235; 1968:17.

Redescription. Male. Size: 9.1 × 2.5 mm; elongate, ovoid, convex in lateral view, head, pronotum and small area around humeri dark iridescent blue; antennae mat black; disc of pronotum with some greenish blue reflection; area around humeral blue spots bluish green, a narrow golden sutural band extends to before basal 1/3 then diverges towards lateral margins; entire surface of apical 2/3 beyond golden band a deep iridescent red with golden punctures in striae; underside more or less uniformly violet with bluish reflections laterally and along abdominal sutures; head and pronotum moderately shallowly punctate; elytra with punctate striae between longitudinal costae; dorsal surface glabrous, ventral surface and legs sparsely covered with fine, semi-erect setae.

Head (Fig. 13): nearly round in frontal view; with depression on frontovertex; eyes small, widely separated, inner margins slightly converging dorsally; frontoclypeus depressed between antennal cavities medially, this depression with more coarse punctures and moderately dense pile of semi-erect setae; a transverse depression extends across disc of frontoclypeus dorsal to broadly, shallowly arcuate distal margin; antennae (fig. 5) with antennomere 1 swollen, subgeniculate; 2 small, globose; 3 smaller than 2, wider than long, 4 - 11 flabellate.

Pronotum (Figs. 15, 16): 1.23 × wide as long, widest at base; anterior margin arcuate; posterior margin biarcuate; lateral margins more or less straight, narrowing gradually from rounded, subacute posterolateral angles to anterior margin, carinate from basal angle to about middle, disc flattened, with narrow, longitudinal, medial, depressed line which terminates at deep premarginal fovea; scutellum small, subcordiform, golden.

Elytra narrower than pronotum at base; humeri moderately elevated, oblique; lateral margins more or less straight along basal 1/2, widening and broadly arcuate on apical 1/2, widest at about apical 1/3; narrowing to subtruncate apices; epipleuron extends from base to apicolateral angle; disc costate with configuration of costae at apex as in Fig. 17.

Underside: prosternum with anterior margin concave; disc slightly depressed medially; process slightly convex in lateral view, depressed medially, rounded apically; abdominal sternites 1 and 2 slightly longer together than 3, 4 and 5; suture between 1 and 2 indicated along entire width; sutures between all sternites nearly straight; margin of sternite 5 narrowing laterally to rounded apex; pygidium not visible dorsally beyond elytral apex.

Legs: femora elongate, subfusiform, tibiae longer than femora, narrow, with two short apical spines; tarsi with first tarsomere laterally compressed, lenght subequal to 2, 3 and 4 taken together; first four tarsomeres with ventral pulvilli; tarsomere 5 strongly appendiculate, claws with tips widely separated.

Genitalia: as in Fig. 22.

Redescribed from one of two males (CLBC) collected as recorded below.

Female. Differs from the male essentially only in the shape and configuration of the antennomeres which are serrate.

Variation. Males (n = 3), 8.6 - 9.1 × 2.4 - 2.5 mm; females (n = 3), 8.7 - 9.6 × 2.4 - 2.8 mm.

Material examined. Holotype, female (MNHN): Pemehue, Ene-1896 (p); 1 male (MNHN # 2124): no locality data, but with an orange 'Holotipo' (p) label and a label in Kerremans hand "germaini kerremans Type" (h); 1 female (LPGC): Valdivia, XII.1962, G. Monsalve (h); 1 female (LPGC): Valdivia, 6.XII.76, leg: Krahmer (h); 2 males (CLBC): CHILE, Valdivia Prov, 3 km W Las Lajas, W. La Unión 650 m, 10/11.I.1989, CL Bellamy (p)/beating *Nothofagus* sp (p).

Remarks. Cobos (1957) described *Mendizabalia* based on a single female specimen of *M. g. germaini* and illustrated the ovipositor. According to the description of Germain & Kerremans (1906), the specimen they described as *Agrilus germaini* was also female and yet the specimen clearly labelled as the holotype from MNHN, along the typical label of Kerremans, is a male. The specimen from Pemehue is a female and we believe this is more probably the holotype, with the labels perhaps having been switched between these two specimens.

However, we will not change the labels back, simply add a label to the female indicating that this is the specimen which we believe is the holotype.

This taxon may be separated from *M. penai*, sp. nov., as indicated in the preceeding key and differs in the shape of the head; the configurations of the antennomeres; the shape, lateral carinae and punctation of the pronotum; the configuration of the apical elytral costae and, most noticeably, by the beautiful dorsal coloration. It can be separated from the new subspecies, *M. g. gyaneoviridis*, as discussed following the diagnostic description below.

2. *Mendizabalia germaini cyaneoviridis* ssp. nov. (Figs. 14, 23)

This subspecies differs from the nominate form as follows: *Diagnosis.* Holotype, male. Size: 7.7 × .3 mm; entire dorsal surface iridescent bluish green; discal portion of elytral base to along suture before basal 1/3 a more intense green; head and pronotum moderately shallowly punctate; elytra with punctate striae between longitudinal costae; dorsal surface glabrous, ventral surface and legs sparsely covered with fine, semi-erect setae; pronotum 1.29 × wide as long; scutellum dark green.

Genitalia: as in Fig. 23, mounted on a card beneath the specimen.

Female. Differs mainly by having antennomeres 4 - 11 serrate with these antennomeres wider than long.

Variation. Male paratype, 8.2 × 2.4 mm; female paratype, 7.7 × 2.2 mm.

Material examined. Holotype, male (MNHN ex LPGC): Las Trances, Ñuble, II.83, leg. J. Escobar; 2 paratypes: 1 male (CLBC), 1 female (LPGC): same data as holotype, except I-II.1989 and no collector name.

Remarks. This subspecies is named for the different dorsal coloration and may be separated from the nominate subspecies most obviously by the more or less unicolorous dorsal surface as well as slight differences in dorsal punctation and vestiture. In addition, *cyaneoviridis* can be distinguished by differences in the antennae with the flabellate antennomeres of the males more slender and the serrate antennomeres of the female wider and the lateral portions narrowed and prolonged. This might well be a transitional state between the more normal serrate condition of the female of *g. germaini* and the male state. The genitalia of these two subspecies are essentially identical, as would be expected with the discussed differences having probably diverged with their current geographic separation (Fig. 24).

3. *Mendizabalia penai*, sp. nov. (Figs. 6, 12, 18 - 21)

Description. Holotype, male. Size: 9.2 × 2.6 mm; elongate, ovoid, convex in lateral view; head and pronotum mat black, pronotum with brunneous cast especially on posterior 1/2 and along posterior margin; antennae brunneus; elytra with basal 1/3 and crests of longitudinal costae deep subnitid blue, then intercostal surface of apical 2/3 beyond narrow golden-green band a dark roseocupreous with golden punctures in striae; underside black brunneus cast or bluish or violet reflections laterally and along abdominal sutures; head, pronotum and thoracic sternites rugose; elytra with punctate striae between longitudinal costae; dorsal surface glabrous, ventral surface and legs sparsely covered with fine, semi-erect setae.

Head (Fig. 12): elyptical in frontal view; with depression on frontovertex; eyes small, widely separated, inner margins slightly converging dorsally; frontoclypeus depressed between antenal cavities medially; a transverse depression extends across disc of frontoclypeus dorsal to broadly, shallowly arcuate distal margin; antennae (Fig. 6) with antennomere 1 swollen, subgeniculate; 2 small, globose; 3 smaller than 2, wider than long, 4 - 11 flabellate.

Pronotum (Figs. 18, 19): 1.34 × wide as long, widest at base; anterior margin arcuate; posterior margin biarcuate; lateral margins more or less straight, narrowing gradually from rounded, subacute posterolateral angles to anterior margin, carinate from basal angle to beyond midpoint; disc flattened, with narrow, longitudinal, medial, depressed line which terminates at deep premarginal fovea;

scutellum small, subcordiform, black with brunneus cast.

Elytra narrower than pronotum at base; humeri moderately elevated, oblique; lateral margins more or less straight along basal 1/2, widening and broadly arcuate on apical 1/2, widest at about apical 1/3; narrowing to subtruncate apices; epipleuron extends from base to apicolateral angle; disc costate with configuration of costae at apex as in Fig. 20.

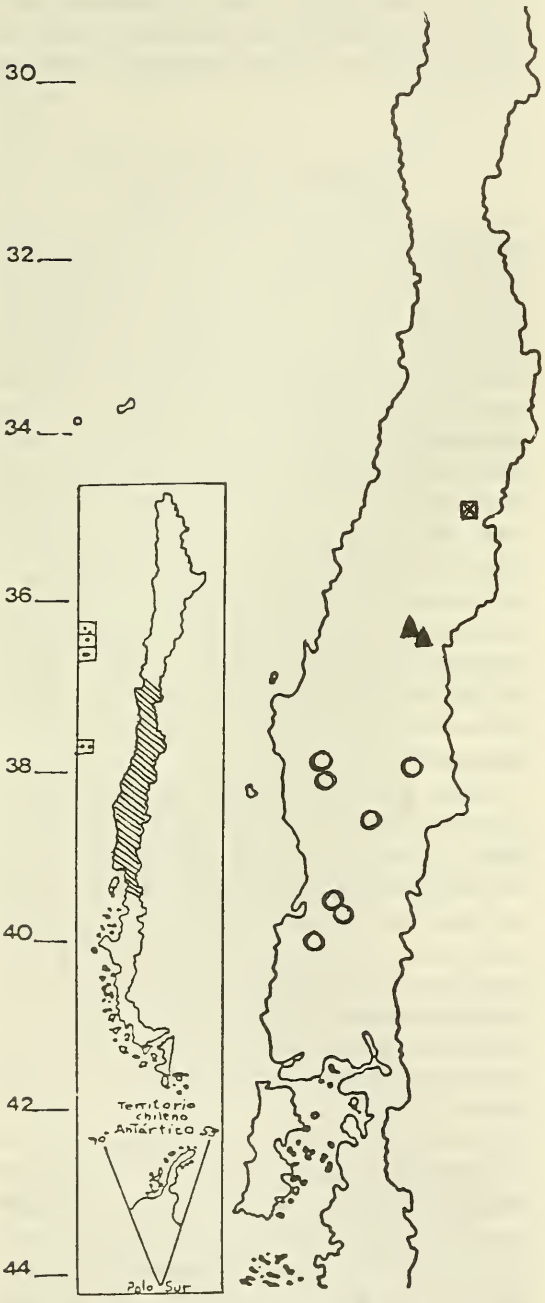


Figura. 24; Distribution of *Mendizabalia* spp. ○ *M. germaini germaini* (Germain & Kerremans); ▲ *M. germaini cyaneoviridis*, ssp. nov. and and □ *M. penai*, sp. nov.

Underside: prosternum with anterior margin concave; disc slightly depressed medially; process slightly convex in lateral view, depressed medially, rounded apically; abdominal sternites 1 and 2 slightly longer together than 3, and 5; suture between 1 and 2 indicated along entire width; sutures between all sternites nearly straight; margin of sternite 5 narrowing laterally to rounded apex; pygidium not visible dorsally beyond elytral apex.

Legs: femora elongate, subfusiform; tibiae longer than femora, narrow, with two short apical spines; tarsi with first tarsomere laterally compressed, leght subequal to 2, 3 and 4 taken together; first four tarsomeres with ventral pulvilli; tarsomere 5 strongly appendiculate, claws with tips widely separated.

Genitalia: as in Fig. 21, mounted on a point beneath the specimen.

Material examined. Holotype, male (MNHN ex LPGC): El Coigual, Cord. Curicó, 21, 23 Enero-1964, Coll: L.E. Peña (p).

Remarks. This new species is named for Luis E. Peña to recognize his contributions to the study of chilean Buprestidae and to thank him for bringing the authors together for the first time.

This unique specimen was the one studied by Cobos (1968) and thought by him to represent the male of *M. germaini*. It differs in the aspects of coloration; the shape of the head, punctation, especially of the pronotum; the narrower elytral costae and the configuration of the costae at the apices. It also comes from the most northerly locality yet know for *Mendizabalia*. The figure of the male genitalia (Fig. 21) is a copy of that given by Cobos (1968).

Genus *Philandia* Germain & Kerremans

Philandia Germain & Kerremans, 1906:391; Germain & Kerremans 1907:23; Germain 1911:73; Obenberger 1935:787; Blackwelder 1944:322; Cobos 1974:106; Bellamy 1985:419; Moore 1985:116.

Type-species: *Philandia araucana* Germain & Kerremans (by monotypy).

Remarks. Cobos (1974) studied the female

holotype of *P. araucana* and discussed in detail the morphology in relationship to the Australian genus *Nascio* Laporte & Gory concluded that the proper placement for *Philandia* was within the Buprestini until such time as the male genitalia and/or larvae could be studied. In a recent revision of *Nascioides* Kerremans, Williams (1987) did not discuss any relationship with *Philandia*. We have not been able to study any larval material and the male genitalia as illustrated by Moore (1985) shows a similar structure in the basal apodemes and degree of fusion of the parameres. However, while the presence of sensory setae on the parameres was not clearly illustrated by Moore; the setae are indeed present and in a reducted number similar to *Mendizabalia*. These genitalic sensory setae are a character state used by Cobos (e.g. 1980) to separate the putative primitive/derived factions of the entire family with the presence of these setae placing *Philandia* on the more derived side.

The two species of *Philandia* were diagnosed, redescribed and separated in a key by Moore (1985) and the reader is referred to that work for additional comments on these taxa. For comparative purposes, *P. valdiviana* (Phil. & Phil.) is illustrated in Figs. 2, 4, 7, 9 & 11.

The very different gross appearance of the two species of *Philandia* in comparison to the species of *Mendizabalia* is apparently due to the Batesian mimetic convergent complex of diverse beetle taxa modelled on a lampyrid of the genus *Pyractonema* McDermott, as mentioned by Moore (1985).

Two males of *P. valdivianus* were collected along with the lampyrid model and mimics belonging to the families Alleculidae, Cerambycidae, Elateridae and Oedemeridae at: Chile, Malleco Prov, Parc Nacional Nahuelbuta 1100 m, 5-8.I.89, CLBellamy (p)/beating foliage *Nothofagus antarctica* (p).

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