

Revision of the elaterid genus *Podonema* Solier, 1851, from Southern South America (Coleoptera, Elateridae, Pomachiliini)

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Summary. – The redefinition of the Southern South American genus *Podonema* Solier, 1851 (type species: *Podonema impressum* Solier, 1851, by monotypy) is presented with new distributional data. Nine species are included: *Podonema impressum* Solier 1851, *P. aluperam* n. sp., *P. dalcahue* n. sp., *P. kopihue* n. sp., *P. maihue* n. sp., *P. mawida* n. sp., *P. obscuratum* Golbach, 1979, n. stat., *P. palmarensense* n. sp. and *P. wiloi* n. sp.

Résumé. – Révision du genre *Podonema* Solier, 1851, d'Amérique du Sud méridionale (Coleoptera, Elateridae, Pomachiliini). Le genre *Podonema* Solier, 1851, du sud de l'Amérique latine (espèce-type *Podonema impressum* Solier, 1851, par monotypie) est révisé et de nouvelles données sur sa répartition géographique sont apportées. Neuf espèces sont à présent incluses dans le genre : *Podonema impressum* Solier, 1851, *P. aluperam* n. sp., *P. dalcahue* n. sp., *P. kopihue* n. sp., *P. maihue* n. sp., *P. mawida* n. sp., *P. obscuratum* Golbach, 1979, n. stat., *P. palmarensense* n. sp. et *P. wiloi* n. sp.

Resumen. – Revisión del género *Podonema* Solier, 1851, del Sur de America del Sur (Coleoptera, Elateridae, Pomachiliini). Se revisa el género sudamericano *Podonema* Solier, 1851 (especie tipo *Podonema impressum* Solier, 1851, por monotipo) y se presenta nueva información que incluye 9 especies: *Podonema impressum* Solier 1851, *P. aluperam* n. sp., *P. dalcahue* n. sp., *P. kopihue* n. sp., *P. maihue* n. sp., *P. mawida* n. sp., *P. obscuratum* Golbach, 1979, n. stat., *P. palmarensense* n. sp., *P. wiloi* n. sp.

Keywords. – Coleoptera, Elateridae, *Podonema*, South America, Chile, Argentina, revision, taxonomy, new species, identification key.

The genus *Podonema* was described by SOLIER (1851), with only one species, *P. impressum* Solier. I conducted several insect collections in the Chilean temperate rainforests using mainly fogging methodology. From these were found specimens belonging to the genus *Podonema*, with seven new species and one with a new status.

MATERIALS AND METHODS

Materials and methods follow ARIAS (2001a, 2001b, 2004, 2006, 2007, 2008). Specimens and primary types were borrowed from museums and collections below. Terminology is used from DOLIN (1975), KUKALOVÁ-PECK & LAWRENCE (1993), CALDER *et al.* (1993), HAYEK (1990), CALDER (1996) and KUKALOVÁ-PECK & LAWRENCE (2004) for morphological structures.

Conventions. – **EMEC**, Essig Museum of Entomology, Berkeley, California, USA; **ETA**, Elizabeth Arias Bohart, private collection, Berkeley, California, USA; **IMLA**, Fundación e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Argentina (Marta Guzman de Tomé); **ISNB**, Institut royal des Sciences naturelles de Belgique, Brussels, Belgium (Patrick Grootaert); **JBT**, Juan Enrique Barriga Tuñon, private collection, Curicó, Chile; **MNHN**, Muséum national d'Histoire naturelle, Paris, France (Isabelle Bruneau de Miré); **MNNC**, Colección Nacional de Insectos, Museo Nacional de Historia Natural, Santiago, Chile (Mario Elgueta Donoso); **NDSU**, North Dakota State Insect Reference Collection, North Dakota State University, North Dakota, USA (Allan Ashworth); **UCCC**, Museo de Zoología, Universidad de Concepción, Concepción, Chile (Vivian Jeréz and Luis Parra); **USNM**, U.S. National Museum of Natural History, Washington D.C., USA (Gary F. Hevel); **VMDC**, V. Manuel Dieguéz M. private collection, Santiago, Chile.

Type specimens depositories are indicated in descriptions. Measurements were made with a calibrated ocular micrometer as follows: total body length from the frontal margin to elytral apex; elytral width and maximum width of the elytra, when both sides are in focus.

Morphometric indices are indicated as follows: Eyes Index is obtained by subtracting the interocular head (frons) width of head across the eyes and dividing the result by the maximum head width; pronotal index PI is obtained by dividing the length of the pronotum at midline by the width of the pronotum at the base of anterior angles; pronotal elytral index PEI was obtained by dividing the length of the pronotum by the length of the elytra (CALDER, 1996); elytral index EI is obtained by dividing the length of the elytra from edge of humeri to elytral apex, by the width at the wider elytral area. Antennomere proportion AP lists the lengths of antennomeres 2 through 11 (antennomere 1 is difficult to measure because it is curved), as percent of the total antennal length. Length is measured in lateral view; tarsomere proportion TP lists the lengths of tarsomeres 1 through 5, as hundreds of the total tarsus. Length is measured taken from lateral view. Wing vein nomenclature follows that of KUKA-LOVÁ-PECK & LAWRENCE (1993, 2004).

Specimens from which the genitalia were removed were first relaxed overnight in warm water with a few drops of soap added. For examination of the male genitalia, the last abdominal segments were removed and placed in water with a few drops of soap in a Petri dish and left over night. Then, male genitalia were extracted and glued to a card with transparent methocrylate, and placed on the pin under the specimen. BECKER (1991) was followed for female genitalia examination. Female genitalia were placed in a microvial with glycerin and pinned under the specimen.

Scanning electronic microscopic photos were taken by Fred G. Andrews at the California Department of Food and Agriculture, Sacramento.

Podonema Solier, 1851

Podonema Solier, 1851: 19; CANDÈZE, 1860: 8 (treated as synonym of *Deromecus*); BARTLETT-CALVERT, 1898: 809 (synonym of *Deromecus*); FLEUTIAUX, 1907: 188 (revalidation of *Podonema*); BLACKWELDER, 1944: 1407 (synonym of *Deromecus*); GOLBACH, 1979: 405, 1994: 27, 41 (treated as *Podonema*).

Type species: *Podonema impressum* Solier, 1851, by monotypy.

Description. – Body elongate (fig. 1-10); brown, brownish-orange; integument dull or shiny; black spot covering medially the pronotum; length 11.6-14.4 mm, width 2.8-3.4 mm.

Head strongly declined at base, punctate; eyes medium sized, ratio of 2.2-2.9 frontoclypeal region declined; complete frontoclypeal carina across front of frons; clypeus vertical, not intercepted by frontoclypeal carina, crossed by a vertical carina in some species; wider than long, widest at anterior margin, heavily sclerotized, except for base, with groove between labrum and clypeus; antennomere 4 through 11 lighter at apex; antennomere 2 smaller than antennomere 3, antennomere 11 ovate (fig. 15-16, 20), pointed (figs. 17-18, 21-22) or irregular shaped (fig. 19); antennal groove excavate or not; mandibles bidentate, maxillary and labial palps with apical segments securiform.

Prothorax elongate, widest anteriorly or medially, convex anteriorly or medially in dorsal view; punctate; lateral margins entirely carinate; sides sinuate or parallel; pronotum rugulose or punctate, broadly depressed along midline, disk with brown black spot; anterior angles bent ventrally or not, posterior edge with scutellar notch V-shaped, hind angles, robust or slender, uni-carinate, divergent; hypomeron areolate, umbilicate, or punctate; prosternum trapezoidal, convex, longer than wide; prosternal lobe curved, slightly bent; prosternal suture accompanied by a thicker band; prosternal process expanded at base, narrowed posteriorly, with notch at apex; prosternal process after procoxae longer than diameter of procoxal cavity.

Scutellum tongue-shaped, triangular, or U shape, not notched at anterior margin; Elytra striate; punctures bordered by darker coloration in some species; elytral apex variably emarginate with spinose apices; metathoracic wings 11.2 mm long, maximum width 4.2 mm (fig. 12), rp_1 and rp_2 plates well developed, radial cell 5.3 X longer than wide, cross-vein r_3 straight and arising away from r_4 ; r_4 straight and complete; MP_3 joins $MP_4 + CuA_2$, and bifurcate basally, not reaching MP_{1+2} or CuA ; MP_{3+4} with broken basally, with long basal spur, wedge cell present, sclerotization in radial field under ScP present; anal lobe developed.

Legs. Hind legs longer than anterior two pairs; tarsomeres 1 through 4 decreasing in length distally, not lobed, but with setose pads; tarsomere 5 longer than 4, oblique dorsoventrally.

Abdomen. Abdominal tergites not strongly sclerotized; punctate. Female genitalia with bursa 1.1 mm long 0.8 mm wide, vagina without sclerotized internal structures (fig. 14) enlarged apically; two colleterial glands pedunculate at junction with bursa, separate from each other; bursa copulatrix with two sclerotized fan shaped structures with alternating long and short spines, and a small star shaped sclerotized structure dorsally. Aedeagus symmetrical, parameres rounded apically, median lobe attached to parameres.

Distribution. – Chile Regions VII-X and Argentina (Neuquén Province) (fig. 41). Adults have been collected from October through February (spring and summer seasons in the Southern Hemisphere).

Diagnosis. – This study supports that the genus *Podonema* is different from the genus *Deromecus* with which it had been synonymized previously. *Podonema* differs from *Deromecus* because of the following generic characters: body not parallel-sided; elytra strongly narrowed towards apex, posterior pronotal angles divergent; elytral apex excavate, giving the appearance of spines; pronotum convex medially or frontally; elytra with pits; bursa copulatrix with 2 sclerotized structures against each other, and one very small umbrella shape dorsally, bursa as long as wide; wing venation: MP_4+CuA_2 not connected to $CuA_{3+4}+AA_{1+2}$ (fig. 12). The genus *Deromecus* has the following characters: body parallel-sided, softly narrowed towards apex; elytra punctate, elytral apex rounded, bursa with 2 sclerotized structures fan shape with alternate spines smooth, another small elongate sclerotized structure dorsally, longer than wide; wing venation: to MP_4+CuA_2 connected to $CuA_{3+4}+AA_{1+2}$.

KEY TO *PODONEMA* SPECIES

- | | |
|---|------------------------------|
| 1. PEI more than 2.5 | 2 |
| – PEI less than 2.5 | 6 |
| 2. Antennomere 11 reaches the posterior angles of pronotum | 3 |
| – Antennomere 11 does not reach the posterior angles of pronotum | 5 |
| 3. Scutellum tongue shaped | 4 |
| – Scutellum triangular | <i>P. willow</i> n. sp. |
| 4. EI more than 3 | <i>P. obscuratum</i> Golbach |
| – EI less than 3 | <i>P. palmarense</i> n. sp. |
| 5. Antennomere 11 ovate, scutellum U shaped | <i>P. dalcachue</i> n. sp. |
| – Antennomere 11 pointed, scutellum tongue shaped | <i>P. kopihue</i> n. sp. |
| 6. Pronotal parallel-sided | 7 |
| – Pronotal sides sinuate | 8 |
| 7. Posterior angles long, humeri yellow | <i>P. aluperam</i> n. sp. |
| – Posterior angles robust, humeri same coloration as rest of elytra | <i>P. impressum</i> Solier |
| 8. Pronotum strongly convex anteriorly, antennal groove simple | <i>P. mawida</i> n. sp. |
| – Pronotum convex, antennal groove simple | <i>P. maihue</i> n. sp. |

Podonema impressum Solier, 1851 (fig. 1, 15, 24)

Podonema impressum Solier, 1851: 19.

Deromecus impressus; CANDÈZE, 1860: 8.

Deromecus impressum; BARTLETT-CALVERT, 1898: 809; BLACKWELDER, 1944: 1407.

Podonema impressum; FLEUTIAUX, 1907: 188; GOLBACH, 1979: 405; 1994: 27, 41.

Description. – Body red-brown; integument shiny; total body length 12.3 mm; head length 0.5 mm, width 2.9 mm; PEI: 2.5 (fig. 1).

Head red-brown, with a dark spot anteriorly; antennae yellow-red, antennomere 11 not reaching apex of posterior pronotal angles, antennomere 11 shape as fig. 15; AP: 8.9-9.5-10.6-11.2-8.9-9.5-8.9-10-9.5-13.

Prothorax parallel-sided; convex anteriorly; reddish brown; puncticulate and punctate; posterior pronotal angles robust; pronotosternal hypomeron without carina basally (fig. 24); antennal groove excavate; procoxae separated by 1.0 time the procoxal diameter; prosternal process length 0.7 time the procoxal diameter; PI: 1.4.

Scutellum tongue-shaped; dark brown; 1.1 times longer than wide; mesocoxae separated by 0.7 time the mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.3 time mesocoxal diameter. Elytra brown; area surrounding elytral pits same color as elytral integument; EI: 2.9.

Legs dark brown; vestiture light yellowish brown; tarsomere 3 1.6 times the length of tarsomere 4, TP: 33.9-22-11.9-7.3-24.8.

Distribution. – Label information from the holotype lists only “Chile”. This is the only specimen found of *P. impressum*.

Diagnosis. – This species can be recognized by the following characters: red-brown body color; shiny integument; PEI: 2.5, EI: 2.9; parallel-sided and, anteriorly convex pronotum; area surrounding elytral pits same color as elytral integument.

Type material. – Holotype: ♀, “Chile”, in MNHN. Length 12.3 mm. Mounted on a card.

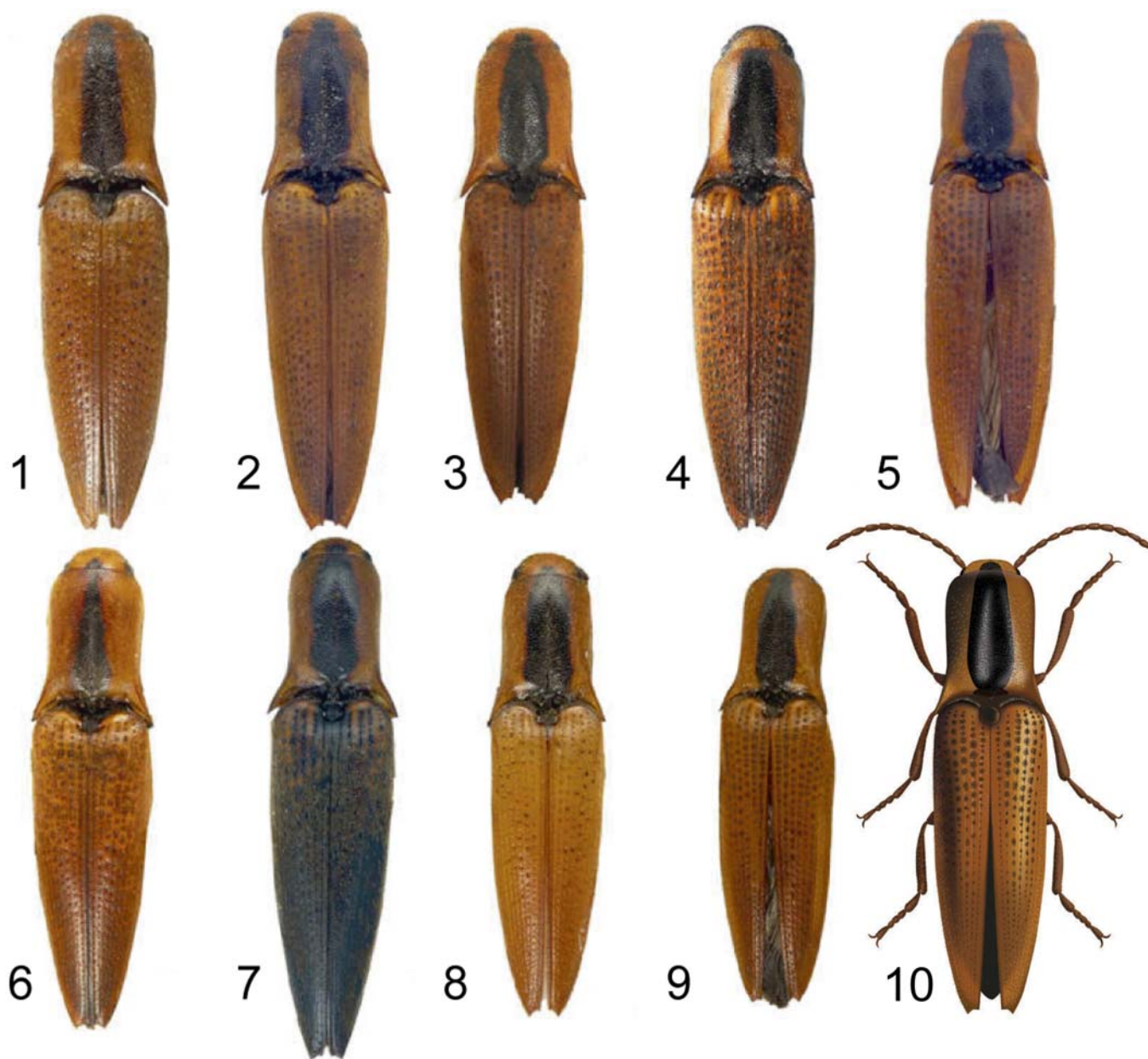


Fig. 1-9. – Types of *Podonema* spp. (except for *P. obscuratum*). – 1, *Podonema impressum* Solier. – 2, *P. aluperam* n. sp. – 3, *P. dalcahue* n. sp. – 4, *P. kopihue* n. sp. – 5, *P. maihue* n. sp. – 6, *P. mawida* n. sp. – 7, *P. obscuratum* Golbach, 1979. – 8, *P. palmarense* n. sp. – 9, *P. wiloi* n. sp. – 10, *P. wiloi* n. sp., illustration by Nancy Virginia Arias.

***Podonema aluperam* n. sp.** (fig. 2, 16, 25, 33, 41)

HOLOTYPE: ♂, "Lastarria, Cautin, Chile, 21.I.75", in collection J. E. Barriga (MNNC).

PARATYPES: 1 ex., *idem* holotype, in collection J. E. Barriga (MNNC); 1 ex., "Lastarria, Cautín, Chile, 24.I.75, J. Plaza", in collection J. E. Barriga (MNNC); 1 ex., "Lastarria, Cautín, Chile, 5.I.75", in EMEC.

Description. Body red-brown; integument semi dull; total body length of holotype 12.3 mm, width of holotype 3.4 mm; head length 0.5 mm, width 1.8 mm; PEI: 2.5 (fig. 2).

Head (fig. 11) brown orange, with a dark spot anteriorly; antennae brown, antennomere 11 ovate as fig. 16, reaching base of posterior pronotal angles; AP: 8.1-10.7-9.7-9.7-10.2-9.7-10.2-10.2-9.7-11.8 (fig. 16).

Prothorax parallel-sided at least 2/3 medially; convex and wider anteriorly; reddish brown; posterior pronotal angles robust (fig. 13c); pronotosternal hypomeron without carina basally (fig. 25); antennal groove excavate; procoxae separated by 1.2 times procoxal diameter; prosternal process length after procoxae 1.6 times procoxal diameter; PI: 1.3.

Scutellum tongue shape; black; 1.6 times longer than wide; mesocoxae separated by 0.7 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.2 time mesocoxal diameter. Elytra brown; humeri light yellow; elytral sides bordering scutellum depressed; EI: 2.8.

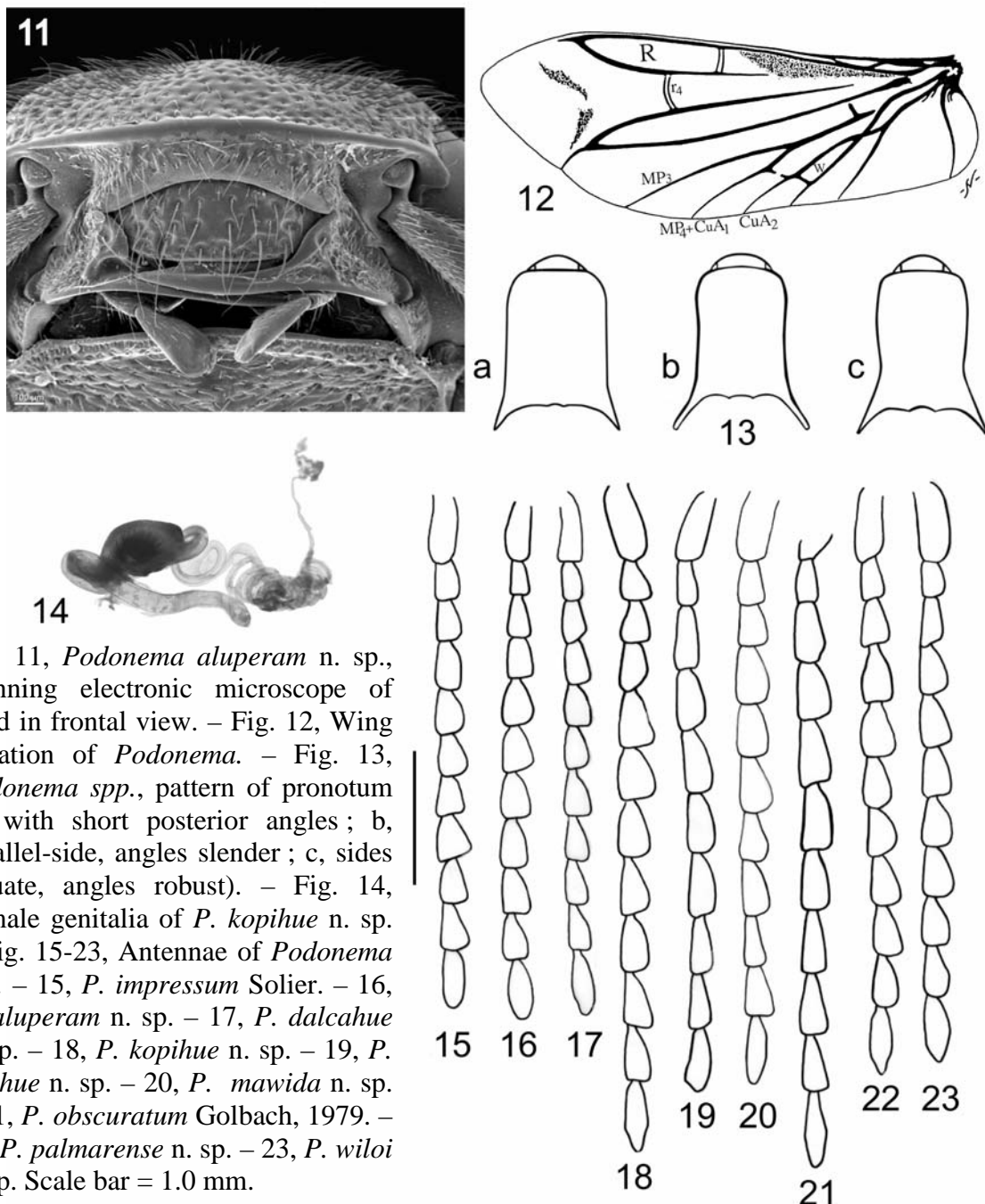


Fig. 11, *Podonema aluperam* n. sp., scanning electronic microscope of head in frontal view. – Fig. 12, Wing venation of *Podonema*. – Fig. 13, *Podonema* spp., pattern of pronotum (a, with short posterior angles ; b, parallel-side, angles slender ; c, sides sinuate, angles robust). – Fig. 14, Female genitalia of *P. kopihue* n. sp. – Fig. 15-23, Antennae of *Podonema* spp. – 15, *P. impressum* Solier. – 16, *P. aluperam* n. sp. – 17, *P. dalcachue* n. sp. – 18, *P. kopihue* n. sp. – 19, *P. maihue* n. sp. – 20, *P. mawida* n. sp. – 21, *P. obscuratum* Golbach, 1979. – 22, *P. palmarensense* n. sp. – 23, *P. wiloi* n. sp. Scale bar = 1.0 mm.

Legs brown, tarsomere 3 length 1.2 times tarsomere 4 length; TP: 35-19.7-12.8-11.1-21.4.

Male genitalia. Aedeagus 2.4 times longer than wide; median lobe parallel-sided, parameres not reaching apex of median lobe (fig. 33).

Etymology. – This species is named *aluperam*, from the Mapudungun word which means *altitude*, because it was collected at quite high elevation (800 m).

Distribution. – Chile, Region X (fig. 41).

Diagnosis. – This species can be recognized by the combination of the following features: red brown body color. PEI: 2.5, EI: 2.8; dull integument; antennomere 11 ovate; pronotum parallel-sided; robust posterior pronotal angles and light yellow humeral area.

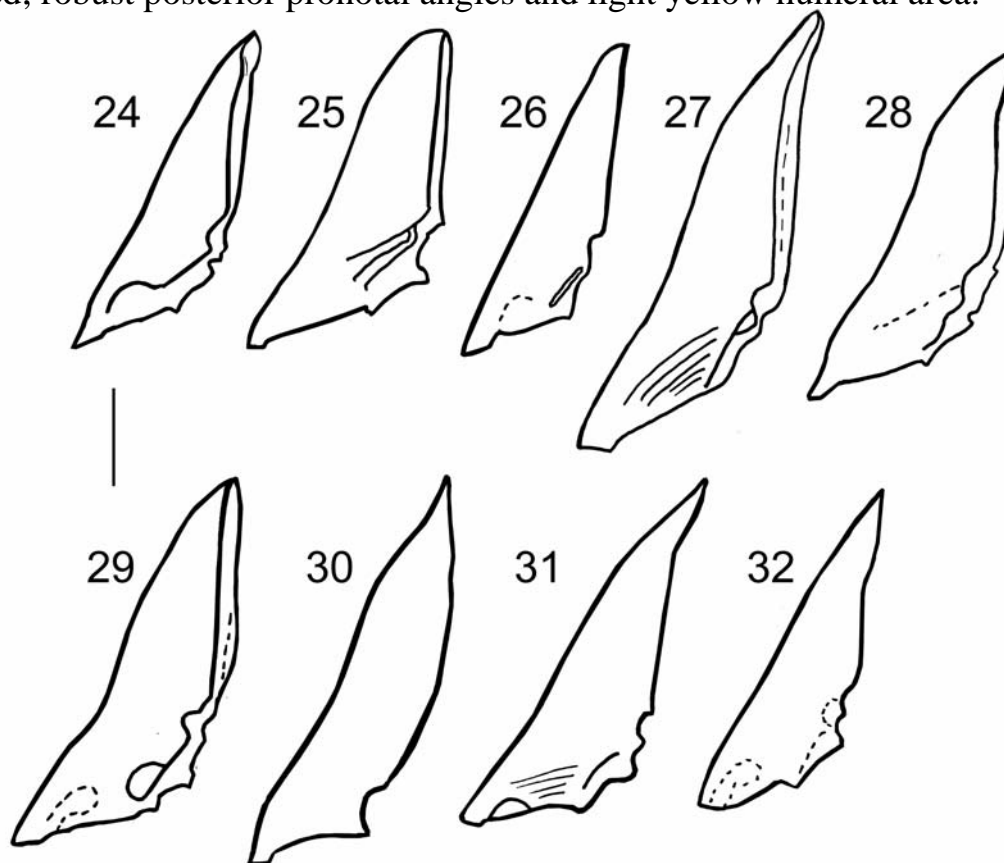


Fig. 24-32. – Pronotal hypomeron of *Podonema* spp. – 24, *P. impressum* Solier. – 25, *P. aluperam* n. sp. – 26, *P. dalcahue* n. sp. – 27, *P. kopihue* n. sp. – 28, *P. maihue* n. sp. – 29, *P. mawida* n. sp. – 30, *P. obscuratum* Golbach, 1979. – 31, *P. palmarensis* n. sp. – 32, *P. wiloi* n. sp. Scale bar = 0.5 mm.

***Podonema dalcahue* n. sp.** (fig. 3, 17, 26, 34, 41)

HOLOTYPE: ♂, "Chile, X Region, Dalcahue N.E. Castro, 31.I.1981, L. E. Peña", in MNNC.

PARATYPES: 1 ex., *idem* holotype, in MNNC; 1 ex., "Dalcahue, Isla Chiloé, Chiloé, Chile, Feb' 61 1961, L. E. Peña", in ETA.

Description. – Body dark orange; integument semi-shiny; total body length 11.6 mm, width 3.2 mm; head length 0.7 mm, width 1.4; PEI: 2.6; (fig. 3).

Head orange, brown, with a dark spot anteriorly; antennae light brown; antennomere 11 ovate, not reaching apex of posterior pronotal angles; AP: 8.5-9.6-9-9-9.6-10.2-9.6-10.2-10.2-14.1 (fig. 17).

Prothorax sides sinuate; convex and wider anteriorly; dark brown with a wide dark longitudinal stripe; posterior pronotal angles slender; pronotosternal hypomeron without carina basally (fig. 26); antennal groove simple; procoxae separated by 2.6 times procoxal diameter; prosternal process length after procoxae 1.6 times procoxal diameter; PI: 1.3.

Scutellum parallel-sided; black; 1.5 times longer than wide; mesocoxae separated by 0.7 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.2 time mesocoxal diameter. Elytra dark brown; humeri light brown; elytral pits darker coloration than integument; EI: 2.8.

Legs light brown; tarsomere 3 1.2 times length tarsomere 4; TP: 30.1-16.7-15.9-13.5-23.8.

Male genitalia. Aedeagus 2.7 times longer than wide; median lobe sides sinuate, parameres not reaching apex of median lobe (fig. 34).

Etymology. – This species is named after the place, Dalcahue, where it was collected. The word "dalcahue" comes from the Mapudungun language, and it means place of "dalcas" (canoes).

Distribution. – Chile, Region X (fig. 41).

Diagnosis. – This species can be recognized by the combination of the following features: dark orange body color; shiny integument; PEI: 2.6; EI: 2.8; antennomere 11 ovate, not reaching apex of posterior pronotal angles; and anteriorly convex and wider pronotum.

***Podonema kopihue n. sp.* (fig. 4, 18, 27, 35, 41)**

HOLOTYPE: ♂, "20-CHILE, IX Region, Las Ochocientas, Villarrica, 39°10.008'S 71°059.253'W, 724 m, 14.XII.2003, Canopy Fogging 40cc/l, *Nothofagus dombeyi*, Coigüe, Arias et al., UC Berkeley", in MNNC.

PARATYPE: ♂, same data as holotype, in EMEC.

Other material studied. – 1 ♂ and 1 ex., "Parque Los Paraguas, Cherquenco, I.1978, Collector R. Perez de Arce F, JBT", in MNNC; 1 ♂, "Chile, IX Region, Puma Salto, 39°25S 71°45W, 7.XII.1994, S. L. Heydon E. T. Arias", in ETA.

Description. – Body red-brown; integument shiny; total body length 13 mm; head length 0.4 mm, width 3.5 mm; PEI: 2.7 (fig. 4).

Head brown, lack a dark spot anteriorly; clypeus with a vertical carina; antenna dark brown, antennomere 11 pointed, not reaching apex of posterior pronotal angles; AP: 6.7-8.4-8.8-8.4-8.8-9.7-9.7-9.2-9.2-9.2-11.8 (fig. 18).

Prothorax parallel-sided; slightly convex anteriorly; brown-red; at pronotal base medially a thin, elongate, small glabrous and lacking punctures area; posterior pronotal angles robust; pronotosternal hypomerion with several carinae basally (fig. 27); antennal groove excavate; procoxae separated by 1.1 times procoxal diameter; prosternal process length after procoxae 1.4 times procoxal diameter; PI: 1.3.

Scutellum tongue-shape; flat; black; 1.4 times longer than wide; mesocoxae separated by 0.5 times mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.2 time mesocoxal diameter. Elytra dark-brown; elytral pits darker coloration than integument; sides bordering scutellum strongly depressed; EI: 2.7.

Legs dark brown, except tarsomeres light brown; tarsomere 3 1.7 times length tarsomere 4, TP: 36.7-19.1-14.2-8.3-21.7.

Male genitalia. Aedeagus 2.5 times longer than wide; parameres almost reaching apex of median lobe (fig. 35).

Etymology. – This species is named *kopihue*, a word that comes from the Mapudungun language, which means *fruit* of the *Koikopiu*, which is the National flower of Chile ("copihue").

Diagnosis. – This species can be recognized by the combination of the following features: red-brown body color; shiny integument; PEI: 2.7, EI: 2.7; antennomere 11 pointed, not reaching apex of posterior pronotal angles; pronotum parallel-sided.

Distribution. – Chile, Region IX (fig. 41).

***Podonema maihue n. sp.* (fig. 5, 19, 28, 36, 41)**

HOLOTYPE: ♂, "Chile, Valdivia, Pucura, I.1975, *T. Cekalovic*", in MNNC.

PARATYPES: 1 ex., *idem* holotype, in TSP; 1 ex., "Valdivia, Chile, 18.XII.83", in MNNC; 2 ex., "Valdivia, Chile, 1.XI.80", in MNNC and EMEC.

Other material studied. – 1 ex., "Chile, Valdivia, Santo Domingo, 21.XII.1983, *T. Cekalovic*", in MNNC; 1 ex., "Chile, Valdivia, Santo Domingo, 12.21.1983, *T. Cekalovic*", in MNNC; 1 ex., "Chile, Valdivia, Pucura, I.1975, *T. Cekalovic*", in USNM; 1 ex., "Chile, Valdivia, Pucura, I.1978", in USNM.

Description. – Body red-brown; integument dull; total body length 14.4 mm; head length 0.6 mm, width 2.8 mm; PEI: 2.1; (fig. 5).

Head brown, with a dark spot anteriorly; antennae yellowish, antennomere 11 irregular shape, not reaching apex of posterior pronotal angles; AP: 7.6-9.4-10-11.3-10.4-10.4-10-10.4-10-10.5 (fig. 19).

Prothorax sides sinuate; convex; at pronotal base medially a thin, elongate, small area, lacking punctures; posterior pronotal angles robust; pronotosternal hypomeron without carina basally (fig. 28); antennal groove excavate; procoxae separated by 0.9 time procoxal diameter; PI: 1.8.

Scutellum tongue-shape; 1.8 times longer than wide; mesocoxae separated by 0.7 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.3 time mesocoxal diameter. Elytra brown; most elytral pits surrounded by a darker coloration than integument; EI: 3.4.

Legs dark brown, tarsomeres light brown, tarsomere 3 1.8 times length tarsomere 4; TP: 35.2-18.8-16.4-9.3-20.3.

Male genitalia. Aedeagus 2.5 times longer than wide; median lobe anteriorly convex; sides strongly sinuate and parameres not reaching apex of median lobe (fig. 36).

Etymology. – This species is named *maihue*, a word that comes from the Mapudungun language which means *place of rain*, because of the heavy rains in the city of Valdivia.

Distribution. – Chile, Region X (fig. 41).

Diagnosis. – This species can be recognized by the combination of the following characters: red-brown body color; dull integument; PEI 2.1; EI: 3.4; antennomere 11 with irregular shape, reaching apex of posterior pronotal angles; pronotal sides sinuate.

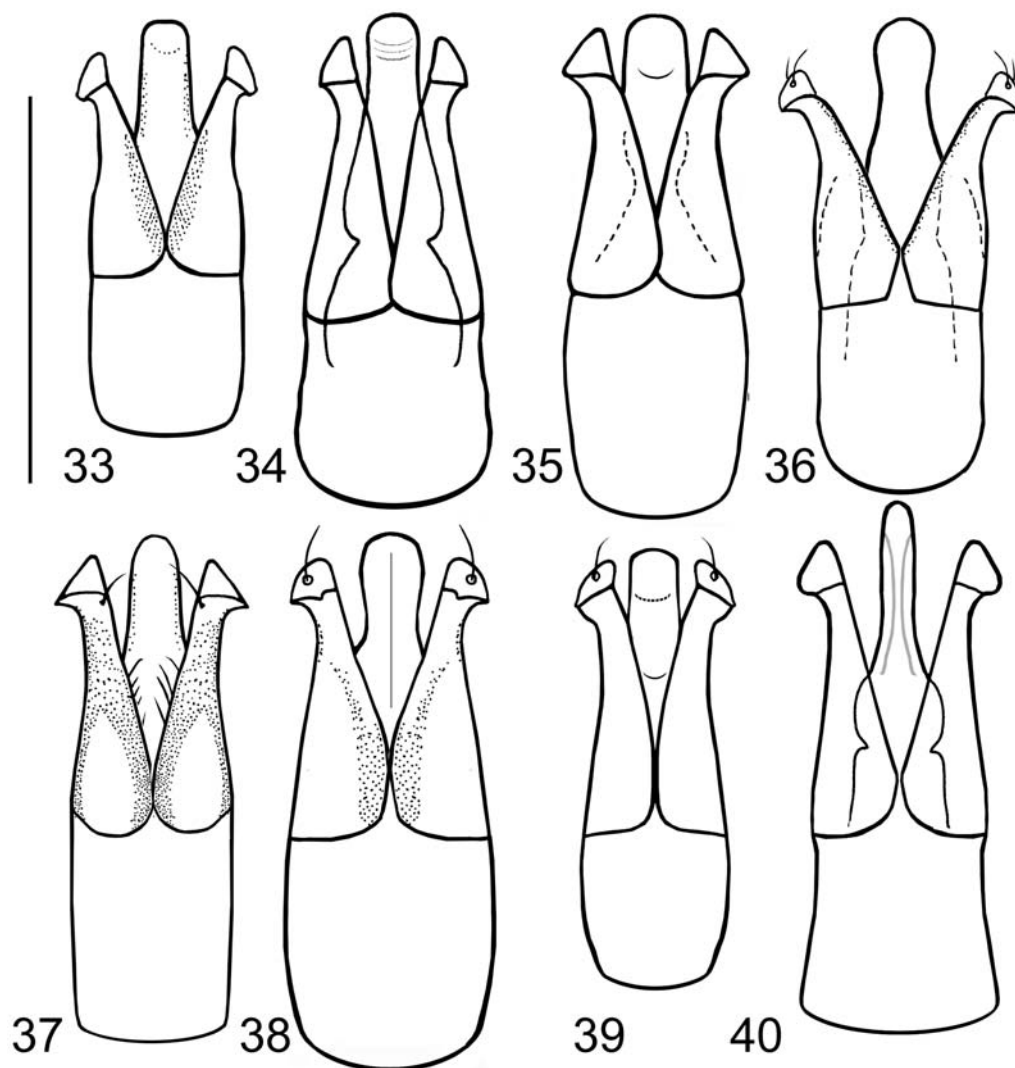


Fig. 33-40. – Male genitalia, aedeagus of *Podonema* spp. – 33, *P. aluperam* n. sp. – 34, *P. dalcahue* n. sp. – 35, *P. kopihue* n. sp. – 36, *P. maihue* n. sp. – 37, *P. mawida* n. sp. – 38, *P. obscuratum* Golbach, 1979. – 39, *P. palmarense* n. sp. – 40, *P. wiloi* n. sp. Scale bar = 0.5mm.

***Podonema mawida* n. sp.** (fig. 6, 20, 29, 37, 41)

HOLOTYPE: ♂, "Chile, Los Lleuques, VIII Region, 4-Oct-2003, *Sergio Ocares*", in MNNC.

PARATYPES: 1 ♂, *idem* holotype, in MNNC; 1 ♀, *idem* holotype, in USNM; 1 ♀, "Chile, Ñuble, Las Trancas, I.1978, *T. Cekalovic*", in USNM; 1 ex., "Chile, Termas de Tolguaca, 15-20.I.59, *L. E. Peña*", in EMEC.

Other material studied: 1 ex., "Chile Talca, Altos de Vilches, 21.XII.73, *P. Vidal*", in VDMC; 1 ex., "Chile, prov. Curicó, El Potrero Grande, El Reivo [not legible], 10.XII.1996, *leg J. E. Barriga*", in collection J. E. Barriga, 156196 JBT (MNNC).

Description. – Body red-brown; integument shiny; total body length 13.9 mm, width 3.5 mm; head length 0.5 mm, width 2.1 mm; PEI: 2.2; (fig. 6).

Head brown, with anterior dark spot highly reduced; antennae yellowish, antennomere 11 pointed, not reaching apex of posterior pronotal angles; AP: 8-9-9.5-11-10.6-10.1-11.1-10.1-10.1-10.5 (fig. 20).

Prothorax sides sinuate; strongly convex anteriorly; red with a narrow dark stripe enlarging towards posterior edge; posterior pronotal angles robust; pronotosternal hypomerone umbilicate, without carina at base (fig. 29); antennal groove simple; procoxae separated by 1.1 times procoxal diameter; prosternal process length after procoxae 1.7 times procoxal diameter; PEI: 1.5.

Scutellum tongue-shape, shiny, flattened posteriorly; brown; mesocoxal diameter separated by 0.6 time; posterior margin of mesosternal cavity extending posteriorly 0.3 time mesocoxal diameter. Elytra brown-orange; pits same color as elytral integument, EI: 2.6.

Legs yellow brown, tarsomere 3 1.5 times length tarsomere 4; TP: 35-17.9-13.8-8.9-24.4.

Male genitalia. Aedeagus 3.2 times longer than wide; anteriorly convex; median lobe (fig. 37), parameres not reaching apex of median lobe.

Etymology. – This species is named *mawida*, a word that comes from the Mapudungun language that means forests.

Distribution. – Chile, Region VII-VIII (fig. 41).

Diagnosis. – This species can be recognized by the combination of the following features: red-brown body color; shiny integument; PEI: 2.2; antennomere 11 pointed, reaching apex of posterior pronotal angles; pronotum parallel-sided.

***Podonema obscuratum* Golbach, 1979, n. stat.** (fig. 7, 21, 30, 38, 41)

Podonema impressum obscuratum Golbach, 1979: 407.

Material examined. – 1 ♂, "L Menendez, S Sur (69) 575 M. Chubut, Argentina, *Leg M. y P. Gentili*", in IMLA; 1 ex., "Chile, Provincia de Valdivia, 3 km SE of Neltume, L lake, Piriñuco, 39°52'S 71°55'W, Site C El. 530 m, 21.XI.1987, *Ashworth, Fugiseth, Maliske*", in NDSU; 1 ♂, "Valdivian Rain Forests, en General vegetation", in NDSU; 1 ♀, "Chile, Chiloé Is., 9 km NW Dalcahue, 7.II.1968", in MNNC; 1 ex., "Chile, X Region Dalcahue, NE Castro, 31.I.1981, *L. E. Peña*", in USNM; 1 ♀, "Chile, Cautin, Villarrica, 15.II.1977, *T. Cekalovic*", in ETA.

Description. – Body dark brown; integument dull; thick, decumbent; total body length 13.3 mm, width 3.2 mm; head length 0.4 mm, width 2.2 mm; PEI: 2.8; (fig. 7).

Head orange brown, with a dark spot anteriorly, antennae light brown; antennomere 11 pointed, reaching posterior pronotal angles, AP: 8.47-9.60-9.03-9.03-9.60-10.16-9.60-10.16-10.16-14.19 (fig. 21).

Prothorax sides sinuate; convex and wider anteriorly; dark brown with a wide dark longitudinal stripe covering one third of the pronotal area; PI: 1.4; posterior pronotal angles elongate; pronotosternal hypomerone without carina basally, rugulose (fig. 30); antennal groove excavate; procoxae separated by 1.1 times procoxal diameter; prosternal process length after procoxae 1.8 times procoxal diameter.

Scutellum tongue-shape; shiny; anteriorly carinate, flattened posteriorly; black, 1.5 times longer than wide; mesocoxae separated by 0.6 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.1 time mesocoxal diameter. Elytra dark brown; humeri light brown; elytral pits darker coloration than integument; EI: 3.2.

Legs light brown, tarsomere 3 1.2 times length tarsomere 4; TP: 38.2-14.7-11.8-8.8-26.5.

Male genitalia. Aedeagus 2.7 times longer than wide; median lobe sides sinuate, parameres not reaching apex of median lobe (fig. 38).

Distribution. – Chile (Region X) and Argentina (fig. 41).

Diagnosis. – *Podonema impressum* presents the following features: brown light coloration with a brownish band at middle of pronotum; antennomere 11 elongate; elytra light brown; parallel sided pronotum; posterior pronotal angles robust; *P. obscuratum* presents the following features: brown dark coloration with a dark brown band at middle of pronotum; antennomere 11 elongate; elytra dark brown, parallel sided pronotum; posterior pronotal angles slender.

Remarks. – The holotype, designated by GOLBACH (1979), is deposited in the private collection of Gentili in Argentina. I did not have access to study this holotype. Golbach mentioned the holotype length as 16mm and width as 3.5 mm, with the locality data: Provincia Neuquén, Boquete, Lolog, II.1968 (without collector).

Podonema palmarensis n. sp. (fig. 8, 22, 31, 39, 41)

HOLOTYPE: ♂, "6-Chile, X Region, Palmar lake, Puyehue, 693 m, 40°47.514S 72°19.562W, 22.I.2003, 19:45PM, Fogging 100cc/l, Mañío short leaves, Arias et al., UC Berkeley", in MNNC.

PARATYPES: 2 ♂, *idem* holotype, in MNNC; 1 ex., *idem* holotype, in ETA.

Other material studied. – 1 ex., "Chile, Llanquihue, Lago Chapo, 16.II.1982, G. Arriagada", in VDMC; 1 ex., "Chile, X Region, Paso Carriñe, 9/14.II.1996, leg. Andres Fierro", in VMDC.

Description. – Body red-brown; integument shiny; total body length 13.1 mm, width 3.2 mm; head length 0.6 mm, width 1.9 mm; PEI: 2.6 (fig. 8).

Head brown, with anterior dark spot highly reduced; antennomere 11 pointed, reaching apex of posterior pronotal angles; AP: 7.6-9.6-11.1-10.6-10.1-10.1-10.1-10.1-10.6 (fig. 22).

Prothorax parallel-sided; convex; light brown reddish; at pronotal base medially a thin, small glabrous and impunctate area; posterior pronotal angles robust; pronoto-sternal hypomeron umbilicate, with at least 3 carinae basally (fig. 31); antennal groove simple; procoxal distance 0.7 time procoxal diameter; prosternal process length after procoxae 1.7 times procoxal diameter; PI: 1.4.

Scutellum tongue-shaped; mesocoxae separated by 0.5 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.1 time mesocoxal diameter. Elytra brown; humeri orange, distinct border curved, darker; some elytral pits darker than integument; EI: 2.8.

Legs yellow-brown, tarsomere 3 1.6 times length of tarsomere 4; TP: 31.7-19.8-16-9.9-22.6.

Male genitalia. Aedeagus 2.9 times longer than wide; convex anteriorly; median lobe sides sinuate (fig. 39) and parameres not reaching apex of median lobe.

Etymology. – This species is named *palmarensis* after the place where it was collected.

Distribution. – Chile, X Region (fig. 41).

Diagnosis. – This species can be recognized by the following features: red-brown body color; shiny integument; PEI: 2.61; EI: 2.80; pronotum parallel-sided; humeri orange.

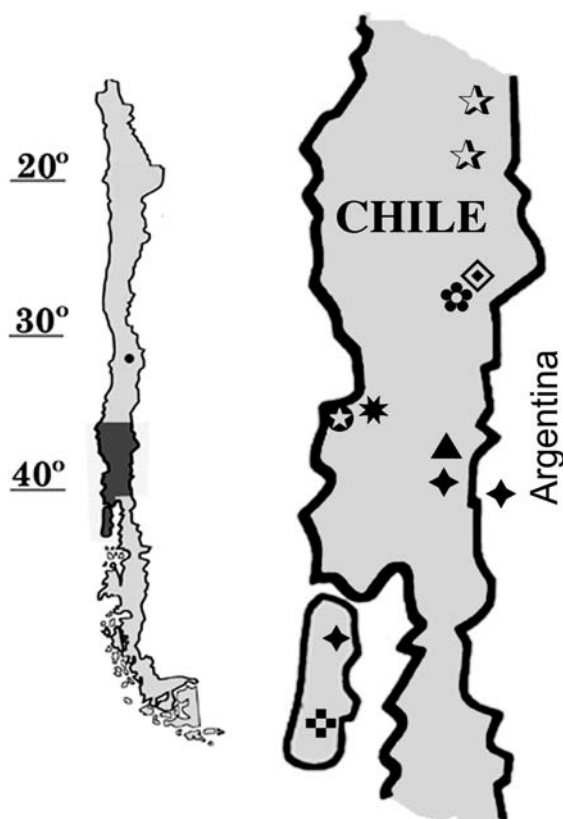


Fig. 41. – Map of Chile and Argentina, with distribution of *Podonema* spp.: (◇) *P. aluperam* n. sp.; (⊕) *P. dalcahue* n. sp.; (⊛) *P. kopihue* n. sp.; (★) *P. maihue* n. sp.; (☆) *P. mawida* n. sp.; (◆) *P. obscuratum* Golbach 1979; (▲) *P. palmarensis* n. sp.; (⊙) *P. wiloi* n. sp.

***Podonema wiloi* n. sp.** (fig. 9, 10, 23, 32, 40, 41)

HOLOTYPE: ♂, Chile, X Region, 06.XII.2005, Malaise trap, *Arias & Ruiz*, UCB (MNNC).

Description. – Body yellow brown; integument shiny; total body length 12 mm, width 3 mm; head length 0.3 mm, width 1.7 mm; PEI: 2.7 (fig. 9, 10).

Head brown, with a dark spot anteriorly; antennae yellow, antennomere 11 ovate, reaching base of posterior pronotal angles; AP: 7.25-9.84-10.36-10.36-10.36-10.36-9.84-10.36-10.91 (fig. 23).

Prothorax parallel-sided; convex anteriorly; dark; pronotosternal hypomeron (fig. 31) lack carina basally, (fig. 32) rugulose; antennal groove simple; procoxal distance 1.1 times procoxal diameter; PI: 1.3.

Scutellum triangular, flattened posteriorly; dark brown; mesocoxae separated by 0.6 time mesocoxal diameter; posterior margin of mesosternal cavity extending posteriorly 0.2 time mesocoxal diameter. Elytra brown; pits surrounded by a darker coloration; EI: 2.8.

Legs yellow-brown, tarsomere 3 2.45 times length tarsomere 4, tarsomere 4 conic; TP: 38.3-19.5-15.6-9.4-17.2.

Male genitalia. Aedeagus 2.7 times longer than wide; convex anteriorly; median lobe sides sinuate (fig. 40), parameres not reaching apex of median lobe.

Distribution. – Chile, Region X (fig. 41).

Etymology. – This species is named *wiloi*, honoring my dad Guillermo Arias Villegas, who has always helped my work and studies. Wilo is his nickname.

Diagnosis. – This species can be recognized by the combination of the following features: yellow-brown body color; shiny integument; PEI: 2.7; EI: 2.8; antennomere 11 ovate, not reaching apex of posterior angles; anteriorly convex and parallel-sided pronotum.

ACKNOWLEDGMENTS. – I thank very much for his help: my dad Guillermo Arias Villegas. I also thank Stéphane Boucher for his valuable review and suggestions, and Fred G. Andrews who took SEM photographs. Special thanks go to my husband, Richard M. Bohart, who encouraged me in pursuing systematics. This project was supported by the National Science Foundation DEB 445413 to E. T. Arias and K. W. Will.

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ANALYSE D'OUVRAGE

Jean-Philippe DESPARINS. – *Dictionnaire à l'usage de l'entomologiste*. Educagri éditions, BP 87999, F – 21079 Dijon, 134 p. 15 x 23 cm, figures, ISBN 978-2-84444-757-9. Prix : 24 €.

Voici un livret d'un format pratique, illustré avec des photographies en couleurs et des dessins au trait, qui s'adresse « à ceux qui par hasard, nécessité ou curiosité poseront leur regard sur de si petites et industrieuses créatures », autrement dit à un public assez large et essentiellement à des entomologistes débutants, bien qu'il renferme un nombre important d'entrées qui dépassent nettement ce cadre, avec des termes d'emploi peu courant, en particulier relatifs à l'anatomie interne.

La préface, « Lettre d'un insecte... », est résolument écologique tout comme l'introduction, mais malencontreusement signée « Un Collembole anonyme », ceux-ci n'étant plus considérés actuellement comme des Insectes.

Les entrées, près de mille, débouchent sur des définitions succinctes de une à quelques lignes, souvent imprécises, quelquefois gravement erronées. Ainsi les cerques sont indiqués pluriarticulés, ce qui n'est pas toujours le cas et c'est d'autant plus gênant que la figure correspondante en montre qui ne le sont pas. Sur la page suivante on peut lire que les chenilles s'enferment dans un cocon soyeux à l'issue de leur développement, ce qui est très loin d'être le cas général. Quelques pages plus loin les ailes antérieures des Coléoptères sont qualifiées d'hémélytres, tandis que coccidiphage est défini comme « qui se nourrit de coccinelles. Ex. les Drosophilidea ». Et je ne détaille que dans la lettre C.

Il est vraiment dommage que le texte n'ait pas été relu avant publication par des entomologistes compétents ; d'autre part les quelque 140 photographies en couleurs (dont la moitié se rapportent aux criquets) ne montrent pas toujours nettement ce qu'il faut, alors que certaines reviennent bien inutilement plusieurs fois (six fois pour l'aile antérieure de criquet).

Cependant la majorité des définitions sont correctes, mais comment un débutant pourrait-il s'y retrouver, séparer "le bon grain de l'ivraie" ? Il y avait la matière à faire une œuvre utile, avec un texte concis et toujours exact, et des illustrations précises ; mais ce sera pour une autre fois.

Roger ROY