

**New species and new records of *Alophophion* Cushman, 1947
from Argentina and Chile (Hymenoptera: Ichneumonidae)**

Zoltán Vas

*Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum,
Department of Zoology, Hymenoptera Collection, H-1088 Budapest, Baross utca 13, Hungary.*

E-mail: vas.zoltan@nhmus.hu

Abstract – Two new species of the Neotropical genus *Alophophion* Cushman, 1947 (Hymenoptera: Ichneumonidae: Ophioninae) are described: *Alophophion lendli* sp. nov. from Argentina, and *Alophophion mahunkai* sp. nov. from Chile. Additionally, *Alophophion mapuche* Alvarado, 2014 is reported for the first time from Argentina.

Key words – species description, taxonomy, Neotropical region, Ophioninae, Adolf Lendl, Sándor Mahunka

INTRODUCTION

Alophophion Cushman, 1947 is an endemic Neotropical genus of Ophioninae (Hymenoptera: Ichneumonidae). Prior to the revision of the genus by ALVARADO (2014), only seven species were known, although TOWNES (1971) noted that it is a rather species-rich genus with many undescribed species. ALVARADO (2014) revised the genus, re-described the species known that time, described more than 40 new species and reported new distributional data for several species. As a result, 49 valid *Alophophion* species have been known, all from the Neotropical region (ALVARADO 2014, YU *et al.* 2016). Since ALVARADO (2014), no new species of the genus has been published.

Taxonomical and faunistical results published in this paper are based on the Neotropical Ophioninae material of the Hungarian National Museum Public Collection Centre – Hungarian Natural History Museum, Budapest (HNHM), and have been achieved in the frame of the ongoing identification progress in the Hymenoptera Collection of the HNHM, focusing primarily on old, still unidentified expedition materials. *Alophophion* specimens treated in this paper were collected by Hungarian zoologists: in Argentina, in 1907 by Adolf Lendl (1862–1943), and in Chile, either in 1965 by Sándor Mahunka (1937–2012) or

in 2002–2003 by György Hangay (1941–). Due to the more than 50 years long lack of a curator specialised in the taxonomy of Ichneumonidae in the HNHM the material has remained unidentified and virtually untouched until recently. In this paper, two new *Alophophion* species are described, namely *Alophophion lendli* sp. nov. from Argentina and *Alophophion mahunkai* sp. nov. from Chile, and *Alophophion mapuche* Alvarado, 2014 is reported for the first time from Argentina.

The taxonomy and nomenclature of Ichneumonidae follow YU & HORSTMANN (1997) and YU *et al.* (2016); complete nomenclatural histories of mentioned taxa are not repeated here, since they are listed in detail in these references. Morphological terminology follows primarily GAULD & MITCHELL (1978), considering some minor updates in GAULD (1991), GAULD *et al.* (1997), and ALVARADO (2014). For convenient use the following terminological explanations from GAULD & MITCHELL (1978) are given: lower face refers to the part of the face below the insertions of antennae including clypeus, but excluding labrum; its width refers to the minimum distance between inner eye orbits, and the length is the distance from the mid-apical margin of clypeus to the level of antennal insertions (i.e., lower level of toruli). Note that ALVARADO (2014) refers to the same interpretation as “face”, rather than lower face; however, in this paper consequently the term lower face is used, following GAULD & MITCHELL (1978). Additionally, the various morphological indices used by GAULD & MITCHELL (1978) and ALVARADO (2014) are also explained below. Identifications were based on CUSHMAN (1947), TOWNES & TOWNES (1966), TOWNES (1971), and ALVARADO (2014).

The specimens were identified by the author using a Nikon SMZ645 stereoscopic microscope. Taxa are listed in alphabetical order. Label data of specimens are given verbatim, with additions and explanations in square brackets if necessary.

Abbreviations – Morphological indices from GAULD & MITCHELL (1978) and ALVARADO (2014) (“/” marks division):

AI = alar index of fore wing = length of *1m-cu* between *2m-cu* and distal margin of bulla / length of *3rm*

CI = cubital index of fore wing = length of *Cu1* between *1m-cu* and *Cu1a* / length of *Cu1b*

DI = discoidal index of fore wing = greatest distance between *Cu1a* and *1m-cu* measured at 90° to *Cu1a* / length of *Cu1a* between *Cu1* and *2m-cu*

FI = frontal index of head = maximum diameter of median ocellus / distance between eyes through maximum diameter of median ocellus

ICI = inter-cubital index of fore wing = length of *3rm* / length of *M* between *3rm* and *2m-cu*

NI = nervellar index of hind wing = length of *Cu1* between *cu-a* and *M* / length of *cu-a*

SDI = second discoidal index of fore wing = length of first abscissa of *Cu1a* / length of *Cu1* between *Rs&M* and *Im-cu*

RESULTS

Prior to the present work, no identified specimen of *Alophophion* has been represented in the Hymenoptera Collection of the HNHM. As a result of the recent identification process, 16 species are currently housed in the collection (all collected in Argentina and/or in Chile): *Alophophion caleuche* Alvarado, 2014, *A. chango* Alvarado, 2014, *A. chilensis* Spinola, 1851, *A. chiquiyane* Alvarado, 2014, *A. coquimboensis* Alvarado, 2014, *A. flavorufus* Brullé, 1846, *A. mapuche* Alvarado, 2014 (firstly reported from Argentina below), *A. pachacutii* Alvarado, 2014, *A. pihuchen* Alvarado, 2014, *A. pincoya* Alvarado, 2014, *A. politus* (Morley, 1912), *A. porculatus* (Morley, 1912), *A. yagane* Alvarado, 2014, *A. yestay* Alvarado, 2014, and two new species, namely *Alophophion lendli* sp. nov. and *Alophophion mahunkai* sp. nov., which are described below. The number of the currently known *Alophophion* species has been raised to 51.

Taxonomy

Family: Ichneumonidae Latreille, 1802

Subfamily: Ophioninae Shuckard, 1840

Genus: *Alophophion* Cushman, 1947

Type species: *Ophion chilensis* Spinola, 1851, original designation

Diagnosis: CUSHMAN (1947), TOWNES (1971), ALVARADO (2014)

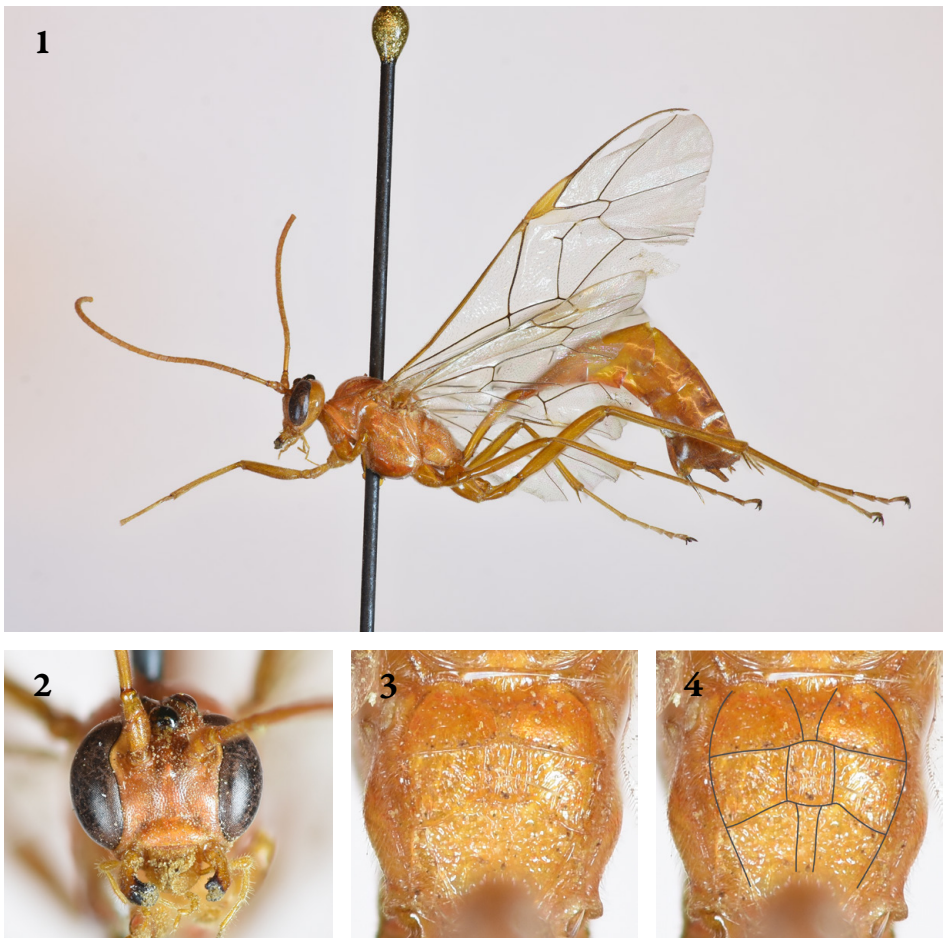
Alophophion lendli sp. nov.

(Figs 1–4)

Type material – Holotype: female, “Dr Lendl Adolf [= leg. A. Lendl], Neuquen [= Argentina, Neuquén], 1907”; specimen pinned, Id. No. HNHM-HYM 157309. Paratype: female, same label data; specimen pinned, Id. No. HNHM-HYM 157310. The holotype and the paratype are deposited in the Hymenoptera Collection of the HNHM.

Diagnosis – The new species can be identified among all known *Alophophion* species by the combination of the following character states: outer surface of mandible without a distinct, densely setose diagonal groove; malar space 0.2–0.3× as long as basal width of mandible; lower face 1.1–1.2× as wide as

long; mesopleural furrow distinct, reaching about to middle of mesopleuron; metapleuron finely punctate, ventrally more or less rugulose; propodeum with complete longitudinal and transverse carinae; lateromedian longitudinal carinae clearly distinguishable from the longitudinally rugose-striate surface sculpture between transverse carinae, parallel and close to each other behind posterior transverse carina; area superromedia clearly delimited, 1.3–1.5× as long as wide; area petiolaris present, narrow; colouration reddish testaceous, including eye orbits and inter-ocellar area; pterostigma yellowish.



Figs 1–4. *Alophophion lendli* sp. nov., holotype, 1 = habitus, 2 = head, frontal view, 3 = propodeum, 4 = propodeum, longitudinal and transverse carinae emphasised by schematic lines
(photos by Zoltán Vas)

Description – Female (Figs 1–4). Body length ca. 15 mm, fore wing length ca. 13 mm.

Head: Antenna almost as long as body, with 50 flagellomeres; first flagellomere 4–5× as long as its apical width, 1.6–1.7× as long as second flagellomere; 20th flagellomere 1.6× as long as wide; all flagellomeres distinctly longer than wide. Head transverse, polished to subpolished, indistinctly punctate except lower face distinctly, finely, densely punctate. Ocelli large, posterior ocellus separated from eye by 0.2–0.3× longest diameter of posterior ocellus, distance between ocelli 0.5× longest diameter of posterior ocellus; FI = 0.3–0.4. Inner eye orbits indented, subparallel; eye ca. 0.5× as wide as lower face. Gena in dorsal view 0.8–0.9× as long as eye width, weakly, roundly narrowed behind eyes; gena in profile 0.9× as wide as eye, measured at the level of torulus. Occipital carina absent, hypostomal carina slightly elevated. Frons weakly impressed above toruli, not carinate. Lower face transverse, 1.1–1.2× as wide as long. Clypeus in profile dorsally weakly convex, ventrally flat with apical margin slightly impressed, in frontal view its apical margin truncate, sharp. Labrum wide, apically rounded. Malar space 0.2–0.3× as long as basal width of mandible. Mandible large, not twisted, slightly narrowed towards apex, outer surface without diagonal groove, finely punctate with scattered hairs, mandibular teeth subequal.

Mesosoma: Mesosoma polished to subpolished, densely but very finely punctate on smooth background. Mesoscutum rounded in profile, 1.2–1.3× as long as wide; notaulus distinct, reaching almost to midlength of mesoscutum, anteriorly deep and more or less scrobiculate. Scuto-scutellar groove wide and deep, smooth within. Scutellum convex in profile, relatively narrow, without lateral carinae. Speculum smooth, along lower edge distinctly scrobiculate. Mesopleural furrow distinct, originating from the dorsal area of pleural part of epicnemial carina, diagonal, wide, areolate-rugulose, reaching only about to middle of mesopleuron. Epicnemial carina complete, pleural part reaching anterior margin of mesopleuron at lower third of hind margin of pronotum, ventral part stronger than pleural part. Posterior transverse carina of mesosternum incomplete, only laterally present, lamelliform. Metapleuron finely punctate on almost smooth background, ventrally more or less rugulose; submetapleural carina complete, elevated, anteriorly distinctly, lamelliformly expanded. Pleural carina of propodeum complete, distinct; propodeal spiracle large, strongly elongate. Propodeum almost evenly convex in profile; its surface smooth and finely punctate before anterior transverse carina, longitudinally rugose-striate between transverse carinae, irregularly rugose behind posterior transverse carina. Propodeum with complete longitudinal and transverse carinae, all clearly discernible; transverse carinae slightly elevated; lateromedian longitudinal carinae clearly distinguishable from the longitudinally rugose-striate surface sculpture between transverse carinae, parallel and close to each other behind posterior transverse carina, thus delimiting a narrow area petiolaris; area superomedia clearly delimited, 1.3–1.5× as long as wide; area basalis elongate

triangular. Fore wing: AI = 1.6–2.1; CI = 0.6; ICI = 0.5–0.7; DI = 0.5; SDI = 1.5; *Rs+2r* proximally slightly curved and thickened before reaching pterostigma; *Rs* weakly, evenly curved; *Rs&M* weakly curved; *1m-cu* distinctly angled, ramellus present; discosubmarginal cell with a glabrous area in its proximal corner; subbasal cell glabrous, virtually bare; *cu-a* interstitial to slightly antefurcal to *Rs&M*, vertical. Hind wing: NI = 0.8–1.2; *Rs* distinctly curved; *cu-a* straight; 7 hamuli on *R1*, hamuli similar to each other in length and shape; marginal cell proximally with a glabrous area. Legs rather slender; coxae finely, moderately densely punctate, hind coxa in profile 2× as long as deep; hind trochantellus in dorsal view 0.7–0.9× as long as wide; hind femur in profile 7–8× as long as deep. Fore tibia without spines on anterior surface; fore tibial spur with membranous flange behind macrotrichial comb along almost its entire length. Inner spur of hind tibia ca. 0.35× as long as first tarsomere of hind tarsus, with an internal row of long, dense hairs. Outer hind tarsal claw long and moderately curved, with 9–10 long, closely spaced pectinae.

Metasoma: Metasoma compressed. First tergite ca. 4.5× as long as its posterior width, almost evenly curved in profile. Second tergite in profile ca. 3× as long as its posterior depth; thyridium elongate, its distance from anterior margin of tergite less than its length; spiracle at about midlength of tergite. Ovipositor sheath shorter than posterior depth of metasoma; ovipositor with distinct dorsal subapical notch.

Colour: Reddish testaceous, including eye orbits and inter-ocellar area; mesoscutum and mesosternum somewhat more reddish than rest of body; ovipositor blackish except at apex. Wings hyaline, veins brown, pterostigma yellowish.

Male: Unknown.

Distribution – Argentina.

Etymology – The new species is dedicated to the memory of Adolf Lendl (1862–1943), collector of the type specimens, renowned Hungarian zoologist, who greatly contributed to the richness of the collections of the HNHM; the specific epithet is a proper noun in the genitive case.

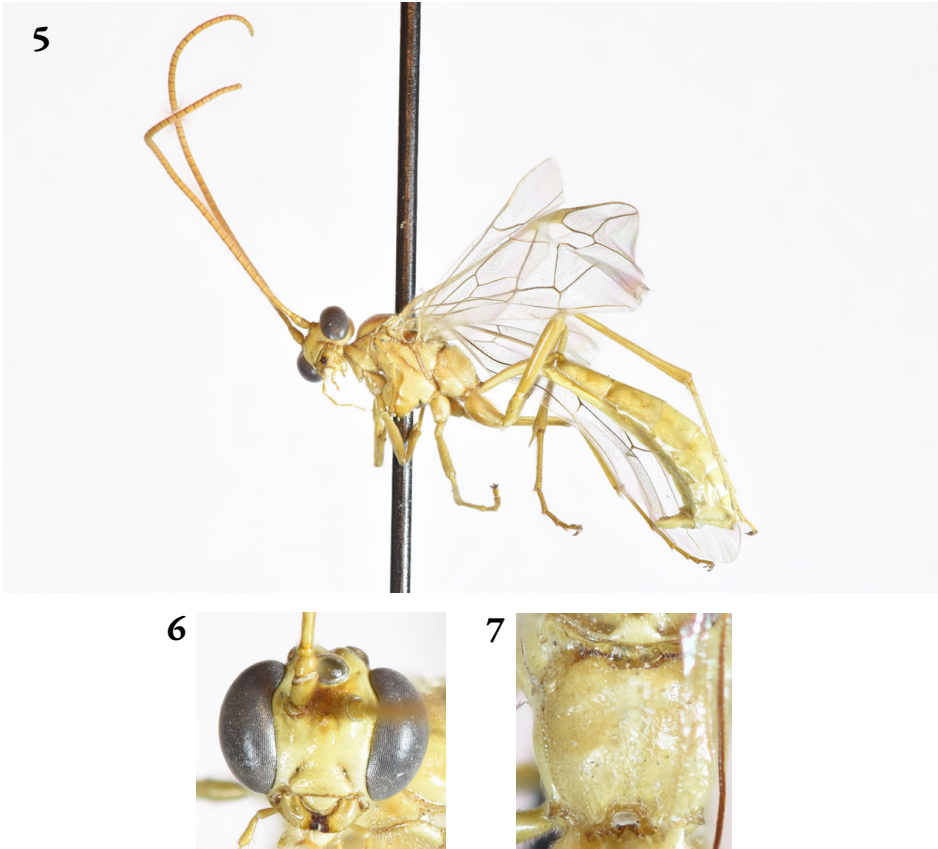
Remarks on identification – The new species belongs to “species group C” sensu ALVARADO (2014). By using the identification key in ALVARADO (2014: 33), the new species keys out with the somewhat similar *Alophosphion chiquiyane* Alvarado, 2014 at couplet 20, however without complete match. *Alophosphion chiquiyane* can be easily distinguished from *Alophosphion lendli* sp. nov. by the following: lower face as wide as long (while distinctly wider than long in the new species); mesopleural furrow reaching posterior edge of mesopleuron (while reaching only about to middle of mesopleuron in the new species); lateromedian longitudinal carinae merged into a single carina behind posterior transverse carina (while not merged in the new species); eye orbits and inter-ocellar area yellowish, clearly contrasting with the reddish testaceous main colouration of the body (while homogeneously reddish testaceous in the new species) (cf. ALVARADO 2014: figs 136, 153, 182, 201).

Alophophion mahunkai sp. nov.

(Figs 5–7)

Type material – Holotype: male, “Hungarian Soil-Zool. Exp. Chile: Prov. Tarapaca, Asapa, 22.XI.1965, Nr. P-B 163, leg. [S.] Mahunka”; specimen pinned, Id. No. HNHM-HYM 157315. The holotype is deposited in the Hymenoptera Collection of the HNHM.

Diagnosis – The new species can be identified among all known *Alophophion* species by the combination of the following character states: outer surface of mandible without a distinct, densely setose diagonal groove; malar space 0.2–0.3× as long as basal width of mandible; lower face 1.2× as wide as long; mesopleural furrow absent; metapleuron finely punctate on smooth to almost smooth surface; propodeal carinae and areae absent; colouration straw-yellow; pterostigma yellow.



Figs 5–7. *Alophophion mahunkai* sp. nov., holotype, 5 = habitus, 6 = head, frontal view, 7 = propodeum (photos by Zoltán Vas)

Description – Male (Figs 5–7). Body length ca. 11 mm, fore wing length ca. 9 mm.

Head: Antenna almost as long as body, with 45 flagellomeres; first flagellomere 5× as long as its apical width, 1.6× as long as second flagellomere; 20th flagellomere 1.6× as long as wide; all flagellomeres distinctly longer than wide. Head transverse, polished to subpolished, indistinctly punctate except lower face finely, moderately densely punctate. Ocelli large, posterior ocellus separated from eye by 0.2× longest diameter of posterior ocellus, distance between ocelli 0.4–0.5× longest diameter of posterior ocellus; FI = 0.4. Inner eye orbits indented, subparallel; eye ca. 0.55× as wide as lower face. Gena in dorsal view 0.5× as long as eye width, distinctly, roundly narrowed behind eyes; gena in profile 0.6× as wide as eye, measured at the level of torulus. Occipital carina absent, hypostomal carina slightly elevated. Frons weakly impressed above toruli, not carinate. Lower face transverse, 1.2× as wide as long. Clypeus in profile weakly convex with apical margin slightly impressed, in frontal view its apical margin truncate, sharp. Labrum wide, apically rounded. Malar space 0.2–0.3× as long as basal width of mandible. Mandible large, not twisted, slightly narrowed towards apex, finely punctate, outer surface with sparse hairs and weak, basal concavity, but without a distinct, densely setose diagonal groove, mandibular teeth subequal.

Mesosoma: Mesosoma polished to subpolished, moderately densely, very finely punctate on smooth to finely coriaceous background. Mesoscutum rounded in profile, 1.3× as long as wide; notaulus weak, reaching to anterior third of mesoscutum, anteriorly deeper impressed and weakly scrobiculate. Scuto-scutellar groove wide and deep, smooth within. Scutellum convex in profile, relatively narrow, without lateral carinae. Speculum smooth, along lower edge distinctly scrobiculate. Mesopleural furrow absent. Epicnemial carina complete, pleural part reaching anterior margin of mesopleuron at lower third of hind margin of pronotum, ventral part as strong as pleural part. Posterior transverse carina of mesosternum incomplete, only laterally present, lamelliform. Metapleuron finely punctate on dorsally smooth, ventrally very finely coriaceous background; submetapleuron carina complete, elevated, anteriorly distinctly, lamelliformly expanded. Pleural carina of propodeum present but weak; propodeal spiracle large, strongly elongate. Propodeum almost evenly convex in profile, apically slightly impressed; its surface smooth to finely coriaceous, posterior half with a few longitudinal striae; propodeal carinae and areae absent. Fore wing: AI = 2.1–2.2; CI = 0.6–0.7; ICI = 0.4; DI = 0.5; SDI = 1.5; *Rs+2r* proximally slightly curved and weakly thickened before reaching pterostigma; *Rs* weakly, almost evenly curved; *Rs&M* rather weakly curved; *Im-cu* weakly angled, ramellus absent; discosubmarginal cell with a glabrous area in its proximal corner; subbasal cell glabrous, bare; *cu-a* interstitial to *Rs&M*, almost vertical. Hind wing: NI = 0.8; *Rs* distinctly curved; *cu-a* straight; 6–7 hamuli on *RI*, hamuli similar to each other in length and shape; marginal cell proximally with a

glabrous area. Legs rather slender; coxae very finely, sparsely punctate, hind coxa in profile almost $2\times$ as long as deep; hind trochantellus in dorsal view $0.7\times$ as long as wide; hind femur in profile $7\times$ as long as deep. Fore tibia without spines on anterior surface; fore tibial spur with membranous flange behind macrotrichial comb along almost its entire length. Inner spur of hind tibia ca. $0.3\times$ as long as first tarsomere of hind tarsus, with an internal row of long, dense hairs. Outer hind tarsal claw long and moderately curved, with at least 12 long, rather closely spaced pectinae.

Metasoma: Metasoma compressed. First tergite ca. $4\times$ as long as its posterior width, rather weakly curved in profile. Second tergite in profile ca. $2.5\times$ as long as its posterior depth; thyridium small, oval, its distance from anterior margin of tergite about as long as its length; spiracle slightly before midlength of tergite. Parameres wide, apically rounded.

Colour: Uniformly straw-yellow. Wings hyaline, veins brown, pterostigma yellow.

Female: Unknown.

Distribution – Chile.

Etymology – The new species is dedicated to the memory of Sándor Mahunka (1937–2012), collector of the type specimen, renowned Hungarian acarologist, curator of the Soil Zoological Collection, head of the Zoological Department and deputy director general in the HHNM, who greatly contributed to the richness of the insect collections of the HHNM; the specific epithet is a proper noun in the genitive case.

Remarks on identification – The new species belongs to “species group C” sensu ALVARADO (2014). By using the identification key in ALVARADO (2014: 33), the new species keys out with *Alophophion capacyupanquii* Alvarado, 2014 at couplet 2, however without complete match. *Alophophion capacyupanquii* can be easily distinguished from *Alophophion mahunkai* sp. nov. by the following: longitudinal propodeal carinae posteriorly present (while entirely absent in the new species); epicnemial carina faint (while strong in the new species); spiracle of second tergite distinctly behind midlength of tergite (while slightly before midlength in the new species); posterior ocellus separated from eye by $0.7\text{--}0.8\times$ longest diameter of posterior ocellus (while by $0.2\times$ longest diameter of posterior ocellus in the new species); body predominantly brownish (while rather uniformly straw-yellow in the new species) (cf. ALVARADO 2014: figs 121, 142, 167, 186).

Faunistics

Alophophion mapuche Alvarado, 2014

Material examined – One female, “Dr Lendl Adolf [= leg. A. Lendl], Neuquen [= Argentina, Neuquén], 1907”. Deposited in the Hymenoptera Collection of the HHNM.

Remarks – First record from Argentina. This species was described and hitherto known from Chile (ALVARADO 2014, YU *et al.* 2016).

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