

First record of *Labium* (Hymenoptera: Ichneumonidae: Labiini) in South America with description of a new species from Brasil

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Abstract. *Labium* is a primitive transantarctic genus which parasitizes ground-nesting halictid bees and until now has been known only from the Australian Region. Diagnostic features include its large exposed labrum (as long as clypeus); elongate mandible with upper tooth much shorter and smaller than lower tooth; slender 1st gastric tergite with spiracle distad of middle; and short, concealed ovipositor which is slender, depressed, and without notch or nodus. *Labium wahli* is now described from south Brazilian rain forest. It differs from the Australian species by its longer flagellum which is only slightly thickened apicad and because it has no crests at base of the notauli

Resumen. *Labium* es un género primitivo de distribución transantártica, conocido hasta ahora sólo de la Región Australiana, y que parasita abejas de la familia Halictidae que nidifican en la tierra. Puede reconocerse por su labro grande y descubierto (tan largo como el clípeo); mandíbula alargada con el diente superior mucho más corto y pequeño que el diente inferior; primer terguito algo esbelto con el espiráculo ubicado detrás de la mitad; y el ovipositor corto que no se extiende más allá del ápice del gáster y que es fino, deprimido, y no tiene ni hendidura ni nodo. Se describe como nueva la especie *Labium wahli* que habita en la selva lluviosa del sur de Brasil, diferenciándose de las especies australianas por su flagelo más largo, fino y sólo levemente ensanchado hacia el ápice y porque no tiene una cresta en la base de cada notaulo.

Introduction

Labium Brullé (1846) is a large transantarctic genus which is best represented in Australia. It may be distinguished from all other ichneumonid genera by the following combination of characters:

- (1). Labrum very large, as long as or longer than wide, projecting far beyond clypeus (Fig. 1).
- (2). Apical margin of clypeus concave in dorso-ventral view (almost straight in front view) (Fig. 1).
- (3). Mandible elongate, with lower tooth strong and elongate and upper tooth small or sometimes absent (Fig. 1).
- (4). Flagellum often short and a little clavate (longer, only slightly clavate in Brazilian species), with 20 or more segments (Fig. 2).
- (5). Occipital carina complete to base of mandible, hypostomal carina absent.
- (6). Epomia strong, in Australian species often with a dorsal crest at base of notaulus (Fig. 2).
- (7). Areolet large, broad, pentagonal (Fig. 2).
- (8). Second recurrent vein with 1 bulla, often sharply angled mesad or at least sinuate (Fig. 2).
- (9). Costellian vein short, its apex truncate and with 5-8 hamuli.
- (10). Hind coxa short and stout, 2.5 or less as long as deep (Fig. 2).

- (11). Propodeum with elongate spiracle and well developed, often complete areolation (Fig. 2).
- (12). First gastric tergite elongate, straight or a little decurved apicad, with spiracle well distad of middle but far from apex (Fig. 2).
- (13). Gaster cylindric or depressed, never strongly compressed (Fig. 2).
- (14). Ovipositor short, when at rest very inconspicuous, not projecting beyond apex of gaster; depressed with strong ridges but without nodus or dorsal notch on tip (Fig. 3).

Turner and Waterston (1920) described 22 species of *Labium* from Australia. Rayment (1935) reared several Australian species as parasites of ground-nesting halictid bees in the genera *Homalictus* and *Lasioglossum*. Gauld (1984) in his excellent review of the Australian Ichneumonidae notes that he has seen an additional 30 undescribed species, so that *Labium* emerges as one of the largest and most diverse Australian ichneumonid genera. Gauld and Wahl (2000) discuss the phylogeny, biology, and geographic distribution of the world labiine genera and describe the new genus *Ozlabium* for a group of Australian species closely related to *Labium*, but differing in their shorter labrum (0.3 as long as wide basally) and by having the upper and lower mandibular teeth similar in shape and size.

Townes (1969) was the first to report *Labium* from South America but did not describe the new species which he had collected in 1966 at Teresópolis in the south Brazilian coastal mountains. In 1969 Porter collected additional Brazilian material at Serra da Bocaina in São Paulo State.

Through the kindness of Dr. David B. Wahl, director of the American Entomological Institute, I have been able to study the specimens collected by Townes and now describe this South American species, which is closely related to its Australian congeners in *Labium* (s. str.).

Labium wahl Porter, **new species**
(Figs. 1-3)

Description: Female. Color: antenna brownish black; head, mesosoma, and gaster shining dark brown with pale yellow or brownish yellow markings as follows: on palpi; most of mandible except for teeth; labrum; clypeus; malar space; on much of face except for brownish toward its center, around anterior tentorial pits, and below antennal sockets; broadly on facial orbits up to level of front ocellus; sordidly on pronotal dorsum including collar, weakly on lower pronotum anteriorly and on upper hind corner of pronotum around spiracle; weakly on tegula; extensively on mesepimeron; vaguely on hind margin of metanotum and on prescutellar carina; obscurely on apical margin of first gastric tergite, more broadly on hind margins of tergites 2 and 3, and more narrowly and weakly on apices of succeeding tergites; wings very lightly brownish infumate with subdued metallic reflections, the veins translucently pale brown with stigma, most of prestigma, and part of costal vein light yellowish; fore and mid legs yellow to brownish yellow with darker brown on much of coxae, extensively on femora, dorsally and dorso-laterally on tibiae, and toward apex on fifth tarsomere; hind leg brown on most of coxa, on trochanter and trochantellus except for yellowish ventrad, on femur except for yellowish narrowly on apex above, paler brown on tibia with yellowish at apex, and on tarsus yellowish with brownish staining toward apex of first segment and on apical 0.25 of fifth segment.

Length of fore wing: 9.4 mm. Flagellum: very long, 0.9 as long as fore wing, only faintly enlarged toward apex, with 35 segments; 1st flagellomere 3.6 as long as deep at apex and 1.5 as long as 2nd flagellomere. Mandible: elongate, gradually tapered toward apex, with upper tooth strong and elongate but lower tooth very short, less than 0.5 as long as upper.



Figure 1. *Labium wahl*, female paratype. Front view of head showing large exposed labrum, clypeus, and mouthparts.

Labrum: strongly exposed and very large, 1.0 as long as wide, longer than clypeus. Labium: long, anthophilous, glossa elongate, deeply incised and bilobed at apex with each lobe tapering to a narrow apical point. Clypeus: transversely convex, 3.0 as broad as long, its apical margin broadly concave (seen in ventral view). Malar space: 0.41 as long as basal width of mandible. Occipital carina: sharp throughout, complete across dorsum of head and laterally percurrent to base of mandible. Hypostomal carina: absent. Epomia: strong, sharp, slightly curved, not forming a crest above at basal end of notaulus. Mesoscutum: smooth and glossy with numerous tiny punctures which emit short, rather dense setae; notauli faintly traceable on basal 0.3 of mesoscutum so that a median lobe a little higher than the adjacent lateral lobes is formed anteriorly; no trace of parapsidal furrows. Mesopleuron: polished with many tiny punctures; prepectal carina strong on lower 0.4 of mesopleuron where it ends abruptly dorsad without approaching anterior margin of mesopleuron; subalarum large and swollen; sternaulus and postpectal carina absent. Meta-

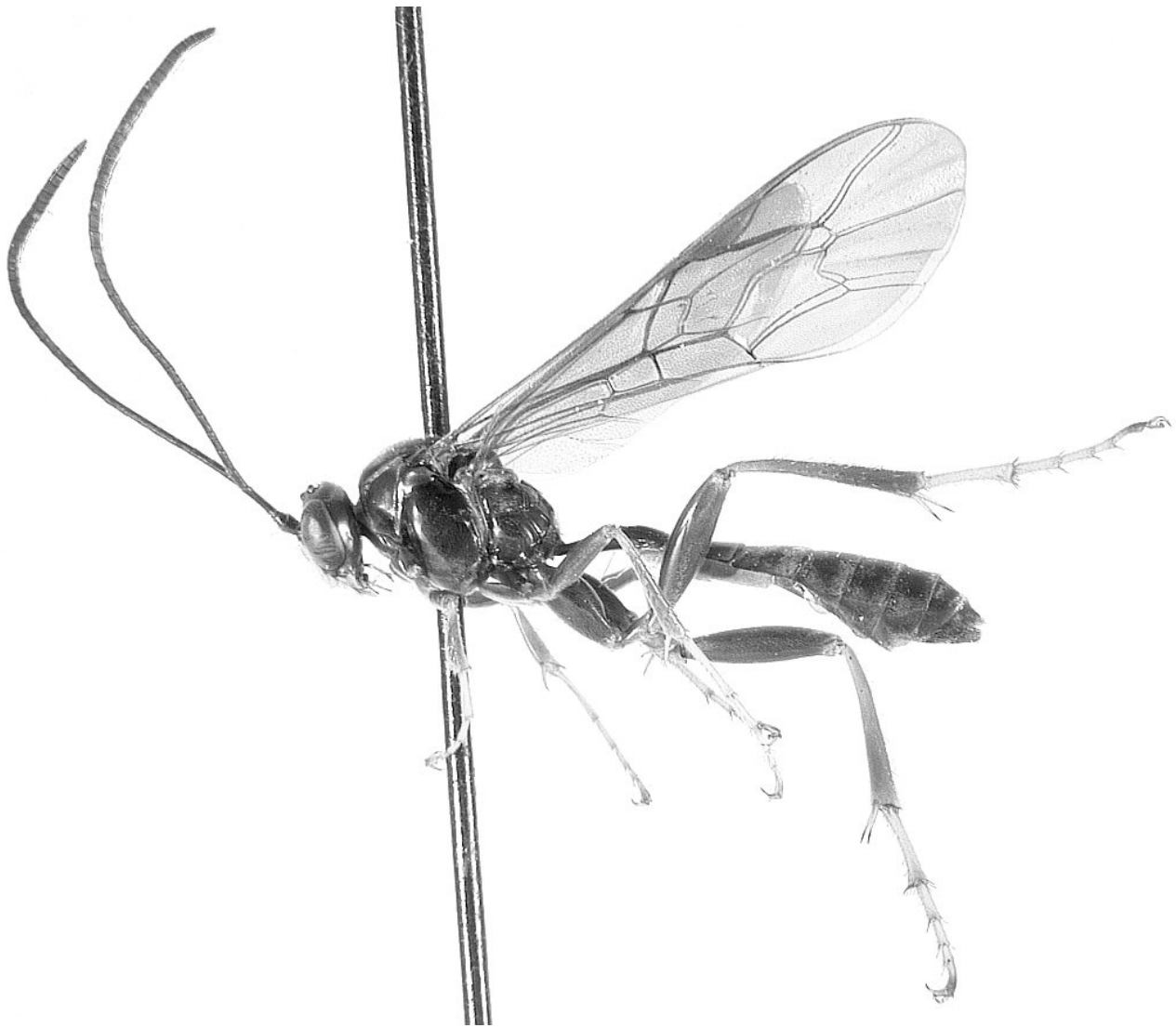


Figure 2. *Labium wahlī*, female paratype. Lateral view of entire insect.

pleuron: convex with many but well spaced small punctures which emit long, overlapping setae, with surface smooth and polished, and with submetapleural carina expanded on its basal 0.5 into a large lobe which overlaps base of mid coxa. Propodeum: spiracle large, narrow, 4.0 as long as wide; areolation with full complement of longitudinal and transverse carinae; area basalis large, rectangular, 1.4 as wide as long; areola 1.8 as long as wide, separated from petiolar area by a strong carina. Gaster: elongate fusiform, 0.6 as long as mesosoma. First gastric tergite: elongate, gently widened toward apex, with spiracle located well distad of middle but far from hind margin of tergite; postpetiole 1.0 as wide at apex as long from spiracle to apex; longitudinal carinae absent or obsolete, ventral longitudinal carina weakly suggested on petiole; first

sternite 0.5 as long as first tergite; surface of postpetiole smooth and highly polished with a few scattered tiny punctures; 2nd tergite polished with a large but weak basal thyridium and scattered tiny setiferous punctures; 3rd tergite like 2nd but more densely setose and punctate; 4th and following tergites with denser fine punctures and extensively overlapping setae. Epipleura of tergites 1-4 very broad and almost touching medio-ventrally, those of tergites 1 and 2 separated from their tergite by a sharp, percurrent carina, that of 3rd tergite separated on basal 0.3 by a sharp carina which becomes weaker apicad, that of 4th tergite separated by a weak crease which is carinate only near base, epipleura of following tergites fused with their tergite. Ovipositor: sheath short and



Figure 3. *Labium wahli*, female holotype. Lateral view of apex of gaster, showing structure of the (displaced) ovipositor.

broad, a little rounded apically, not exceeding apex of gaster; ovipositor shaft not exerted, fully concealed at rest, when displaced it is seen to be long and slender, gently up-curved, depressed, with ventral valves overlapping dorsal valves on tip, with strong crowded ridges, and without a nodus or dorsal notch. Wing venation: areolet large, 1.8 as wide as high with intercubiti strongly convergent above, 2nd abscissa of radius 0.7 as long as 2nd intercubitus; 2nd recurrent distad of middle of areolet so that 2nd abscissa of cubitus is only 0.4 as long as 1st, 2nd recurrent with 1 bulla and strongly thrust mesad, outlining an acute angle whose vertex is near middle of vein; radial cell 2.5 as long as high; 1st abscissa of radius weakly bisinuate, more strongly sclerotized than adjacent veins, 3rd abscissa of radius also bisinuate but less sclerotized than 2nd abscissa; hind wing costella short, apically truncate, with 6 hamuli; nervellus broken above middle (upper abscissa 0.7 as long as lower); discoidella complete to hind margin of wing; axillus vestigial, on hind margin of wing. Legs: fore tibia slender basally and a little swollen beyond base but hardly clavate, without a small tooth on outer side at apex, dorso-externally with many long spine-like setae; mid tibia slender, on outer surface with numerous strong spine-like setae, its apex with robust somewhat recurved spines dorsally and externally; hind coxa stout, swollen toward middle, 2.5 as long as deep; hind femur long but stout, 3.8 as long as high, smooth and polished with many tiny punctures that emit long, more or less overlapping setae; hind tibia with strong spine-like setae which are sparser than those on mid tibia, its apical spines very strong; hind

tarsus with 1st segment only slightly compressed, widening toward apex, 1.6 as high at apex as at middle and 1.8 as long as 2nd tarsomere, on its apex with a circlet of about 14 strongly sclerotized, splayed, apically acuminate spines; tarsal claws of all legs without teeth but with a large, slender empodium (0.6 length of claw).

Male. Differs from female as follows: Color: antenna brownish with weak yellow staining on scape below; mesopleuron dull yellowish below and more or less so toward middle; wings even more faintly infumate than in female; fore and mid legs more extensively yellow than in female but more or less brownish above on coxa, femur, and tibia; hind tibia yellowish above on basal 0.2 and yellowish throughout below.

Length of fore wing: 9.1 mm. Flagellum: with 36 segments, without tyloids, 1st flagellomere 3.5 as long as deep at apex and 1.5 as long as 2nd. Clypeus: 2.6 as broad as long. Propodeum: spiracle 2.4-3.0 as long as wide. First gastric tergite: 0.7 as long as mesosoma; postpetiole 1.3 as long from spiracle to apex as wide at apex. Epipleura: as in female except that epipleuron of 3rd segment is separated throughout from its tergite by a sharp carina.

Type Material. Holotype, female, BRASIL, Rio de Janeiro State, Teresópolis, 14-111-1966, H and M. Townes [AEI]. Paratypes: 9 females and 12 males, same data as holotype [AEI]; 1 female and 1 male, BRASIL, São Paulo State, Serra de Bocaina, 17-1-1969, C. Porter and A. García [FSCA].

Relationships. Comparison with several Australian species of *Labium* in the AEI collection shows that this Brazilian species is a typical member of its genus with regard to such characters as the very large labrum, concave clypeal margin, elongate mandible with upper tooth much smaller and shorter than lower tooth, absence of hypostomal carina, peculiarly angled 2nd recurrent vein, costellan vein with 6 hamuli, spiracle of 1st tergite located well distad of middle, short and stout hind coxa, and very short unexserted ovipositor.

The most important features which distinguish *L. wahli* from its Australian relatives are its (1). Long, slender flagellum which is only slightly thickened toward apex; (2) Lack of a crest at the base of each notaulus; and (3). Uncompressed 2nd hind tarsomere, as discussed also by Gauld and Wahl (2000).

In Australian material I have seen the flagellum is decidedly clavate, stout, and only 0.7 as long as the fore wing; some species lack an upper mandibular

tooth; the inner orbits may be distinctly concave just above level of antennal scrobes; the notaulus may be sharply impressed on up to basal 0.3 of mesoscutum (effaced apicad); the area basalis of the propodeum may be confluent with the areola; the petiole may have a lateral expansion on each side sub-basally; the gaster is stout, broad and depressed; and the legs are robust, often swollen, with the hind femur about 2.5 as long as high.

Biogeography. *Labium* seems to have evolved in the late Cretaceous or early Tertiary when South America+Antarctica+Australia formed a single land mass with a uniformly mild climate. Subsequent continental drift split the originally homogeneous "West Gondwanaland" biota into three separate evolutionary units, of which the Antarctic was wiped out by Pleistocene glaciation, while the South American and Australian elements persisted until recent times. The closely related genus *Labena* as discussed by Gauld and Wahl (2000) shows a distribution similar to that of *Labium* but more extensive, with groups of comparatively primitive species in Australia and temperate South America but with numerous more derived species in tropical South and Middle America and a few that reach temperate North America.

Habitat Notes. *Labium wahl*i occurs in tropical and subtropical rain forest in the coastal mountains of southern Brazil. In contrast, the Australian *Labium* fauna occupies mainly arid and rather cool habitats in the south and west of the continent (Gauld 1984).

Etymology. For Dr. David B. Wahl, director of the American Entomological Institute, in recognition of his excellent contributions to the study of ichneumonid systematics and phylogeny.

Collections

AEI American Entomological Institute, 3005 S.W. 56th Ave., Gainesville, Florida 32608

FSCA Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, P.O. Box 147100, Gainesville, Florida 32614-7100.

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