September 2005

The Transantarctic genus *Labena* (Hymenoptera: Ichneumonidae: Labenini) in Chile

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Abstract. *Labena* is a primitive genus known from the Neotropic, Nearctic, Neantarctic, and Australian biogeographic regions. It parasitizes larvae of wood boring beetles in dead twigs and smaller branches of hardwood trees and shrubs. Descriptions are given of 2 new Chilean species: *Labena canelensis* Porter, from sclerophyll woodland in central Chile, is black with sparse white markings, has a strong tooth at the base of the submetapleural carina, and a short first gastric tergite (2.3-2.6 as long as wide at apex), whereas *L. pucon* Porter occurs in temperate wet forest of southern Chile and is black with profuse white markings, lacks a submetapleural tooth, and has the first tergite very elongate (4.0-6.2 as long as wide at apex).

Resumen. *Labena* es un género primitivo conocido de las regiones Neotropical, Neártica, Neantártica, y Australiana y cuyas especies parasitan larvas de coleópteros xilófagos en ramitas y ramas muertas de árboles y arbustos angioespermas. Se describen dos especies nuevas de Chile: *Labena canelensis* Porter, que habita en el bosque esclerófilo de Chile central, es de color negro con escasos diseños blancos, tiene un gran diente triangular en la base de la carina submetapleural, y el primer tergito gástrico robusto (2.3-2.6 tan largo como ancho en el ápice), mientras *L. pucon,* que se encuentra en las selvas húmedas del sur, se destaca por ser negra con abundantes diseños blancos, por carecer de un diente submetapleural, y por su primer tergito muy alargado (4.0-6.2 tan largo como ancho en el ápice).

Introduction

Labena, as treated at length by Gauld and Wahl (2000), seems to have originated in the Southern Hemisphere at a time when Africa already had separated from the Gondwanaland supercontinent, but while South America and Australia still remained in contact. It is assumed that *Labena* dispersed across this West Gondwana land mass very long ago, in the late Cretaceous to early Eocene. By the late Eocene, South America and Australia had drifted apart,so that the lineages on each continent have evolved in isolation for some 50 million years, as seems also to be the case with several other ichneumonid genera such as *Labium* (Porter 2003b) and *Anacis* (Porter 2003a). At the present time *Labena* has more than 60 species in the Neotropics with 2 species also in the southern Nearctic and these form a diverse but phylogenetically cohesive unit. There are 9 described *Labena* in Australia (Gauld and Wahl 2000) and none of these is closely related to the Neotropic species. In the Neantarctic region of temperate southern South America (Chile) there occur 2 more species, herein described, which show no affinity to the Neotropic or the Australian clades and, which, moreover, are so different from one another that they could well be placed in separate genera.

As here defined and taking into account the contributions of Gauld and Wahl (2000) and of Townes (1969), *Labena* may be distinguished from other related genera by the following combination of characters:

(1). Last flagellomere apically flattened.

(2). Apical margin of clypeus straight or a little convex, never concave.

(3). Notauli faintly traceable toward base of mesoscutum; parapsidal furrows never defined.

(4). Mesoscutum with humeral crests (weakly defined) at base of notauli; without transverse rugae.

(5). Gaster inserted high up on apical face of propodeum, well above insertion of hind coxae.

(6). Ovipositor prominently exserted, often as long as or longer than gaster.

(7). Areolet large, about 1.7 as wide as high.

(8). Second recurrent vein with 2 bullae.

(9). Apex of hind wing costal (costellan)vein with 1-3 hamuli.

(10). Apex of fore tibia with a strongly projecting spine or thorn on its outer margin.

(11). Fore and middle tibiae of female strongly inflated and twisted.

(12). Front tarsus with third segment much elongated and produced below into a lobe that overlaps the fourth and fifth segments.

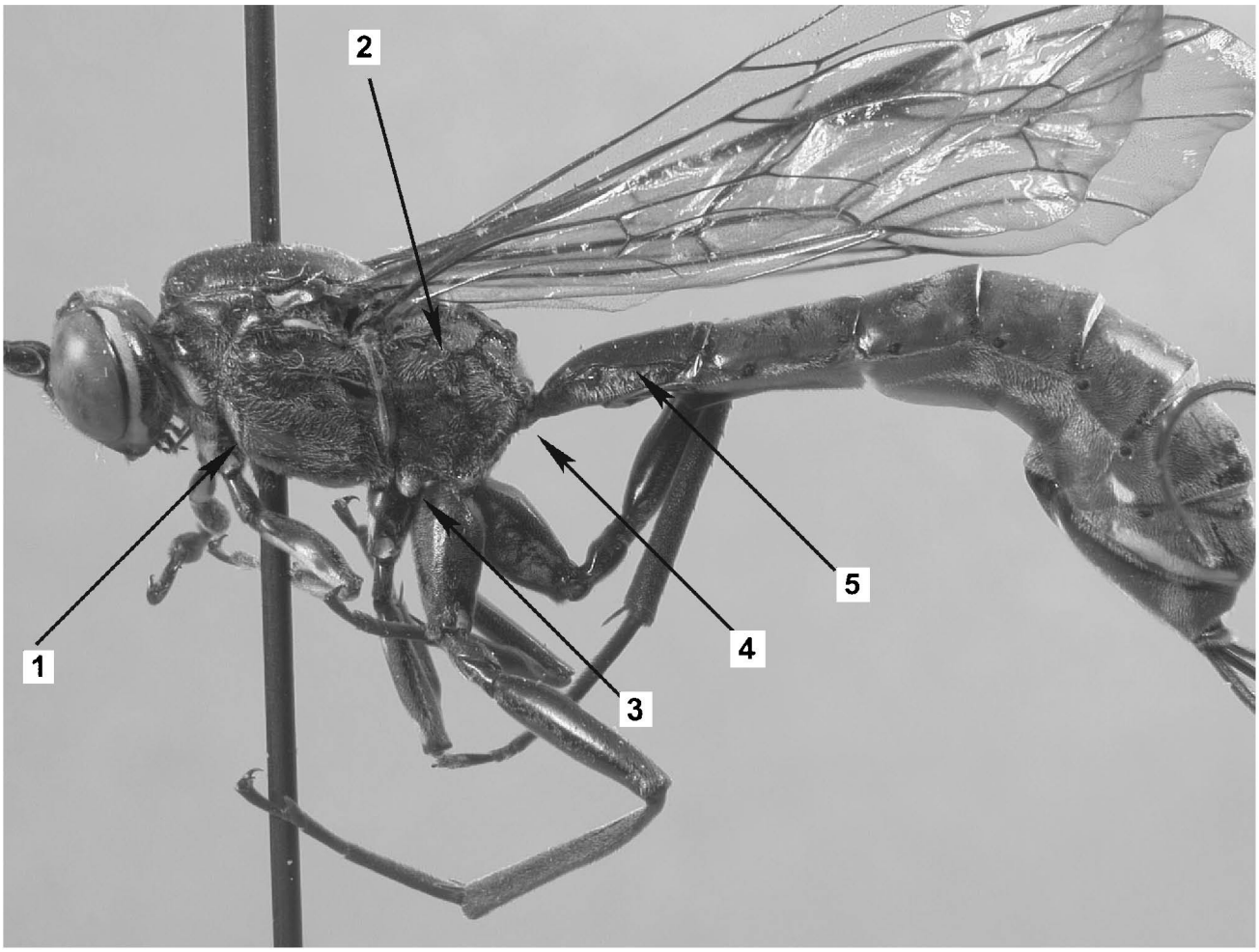

Figure 1. *Labena canelensis,* female paratype. Lateral view of head, mesosoma, and gaster. (1) Prepectal carina on mesopleuron; (2) Propodeal spiracle and areolation; (3) Metapleural tooth; (4) Insertion of gaster on propodeum; (5) First gastric tergite.

(13). Hind coxa of female interiorly near base with a vertical or oblique groove which receives the ovipositor when in use.

Barriga (1999) reared one Chilean *Labena* from a species of *Hephaestion* (Coleoptera: Cerambycidae) and a second *Labena* from *Dactylozodes* (Coleoptera: Buprestidae). It is probable that Barriga's species correspond to the *Labena* here described, but I have not seen this material in recent years. The North American *Labena grallator* (see Gauld and Wahl 2000) is known to parasitize *Thrincopyge*, *Chion*, and *Saperda* (Cerambycidae) as well as *Chrysobothris* (Buprestidae).

Labena canelensis Porter, **new species**
(Figs. 1,2,3)

Description: **Female**. Color: antenna black with a white blotch below on scape and a preapical white annulus on flagellomeres 19-28 but becoming black again on last three flagellomeres; head with clypeus mostly white with black basad and brownish staining near apex; broadly white on orbits (including most of malar space) except for a gap on vertex, and with a conspicuous white branch on upper face, reaching from each orbit mesad and dorsad to antennal sockets (forming a characteristic W-shaped mark); mesosoma black with extensive dull red staining except on median lobe of mesoscutum, much of scutellum, postscutellum and propodeal dorsum; and with sparse white markings as follows: broadly on front of pronotal collar, basally on tegula, on much of subalarum, on hind margin of mesopleuron, briefly on lower hind corner of mesopleuron, on subapical band of scutellum, on most of postscutellum, on basal projection of submetapleural carina, and briefly on lower hind corner of metapleuron; gaster black with extensive dull red

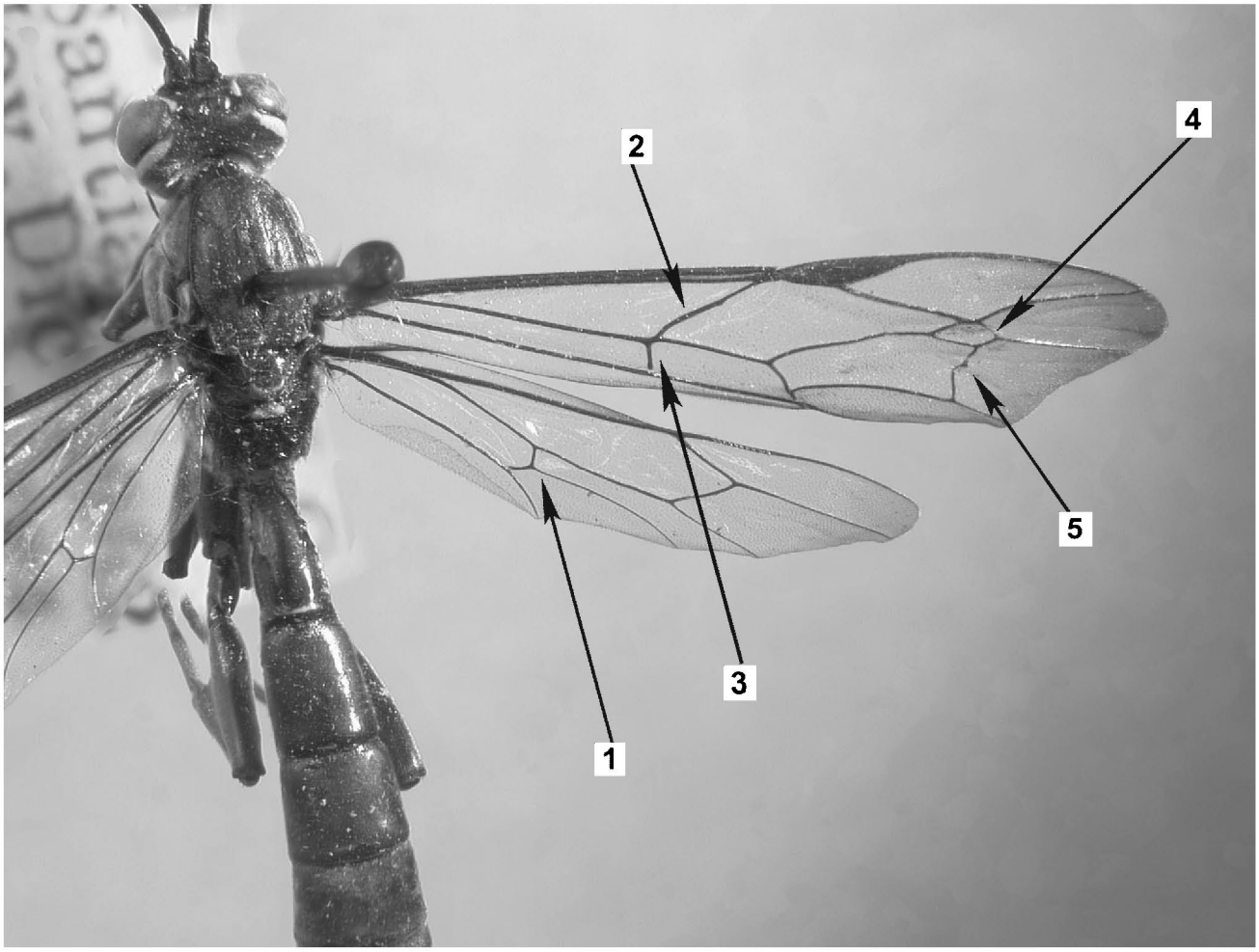

Figure 2. *Labena canelensis,* female paratype. Dorsal view of head, mesosoma, wings, and gaster. (1) Nervellus broken by discoidella; (2) Basal vein; (3) Antefurcal nervulus; (4) Areolet; (5) Second recurrent vein.

staining, especially on first and second tergites, and with a narrow, broken subapical white band on first tergite; succeeding tergites inconspicuously paler on extreme apices, except sixth tergite with a white blotch on lower hind corner and seventh, eighth and ninth tergites broadly white on apex laterally; wings hyaline, slightly dusky near apex; fore leg black with reddish staining, with a large white blotch on coxa, with white below on trochanter and trochantellus, and with femur and tibia extensively white anteriodorsally; mid leg black with reddish brown staining, with a subapical white spot anteriorly on femur, and with front face of tibia white except near base and apex; hind leg black with reddish staining that is most pronounced on coxa.

Length of fore wing: 10.7 mm. Flagellum: first segment 5.8 as long as deep at apex. Occipital carina strong throughout. Eyes: strongly emarginate opposite antennal sockets. Face: strongly and densely punctate to reticulo-punctate. Epomia: strong in scrobe, not prolonged dorsad of scrobe, but extending below a considerable distance rearward onto pronotal collar. Mesoscutum: with definite but inconspicuous humeral crests; weakly convex in profile, very finely and densely punctate. Mesopleuron: prepectal carina strong, sloping forward dorsally so as to meet front margin of mesopleuron at about its upper 0.4. Submetapleural carina: on its basal 0.5 strongly produced ventrad into a very large triangular tooth which overlies base of mid coxa. Groove between metanotum and propodeum: narrow but deep, anterior ends of median longitudinal carinae of propodeum bluntly prolonged into the groove, hind margin of metanotum opposite front end of lateral longitudinal carinae of propodeum with a broad, low, bluntly triangular projection. Propodeum: strongly areolated, dorsal longi-

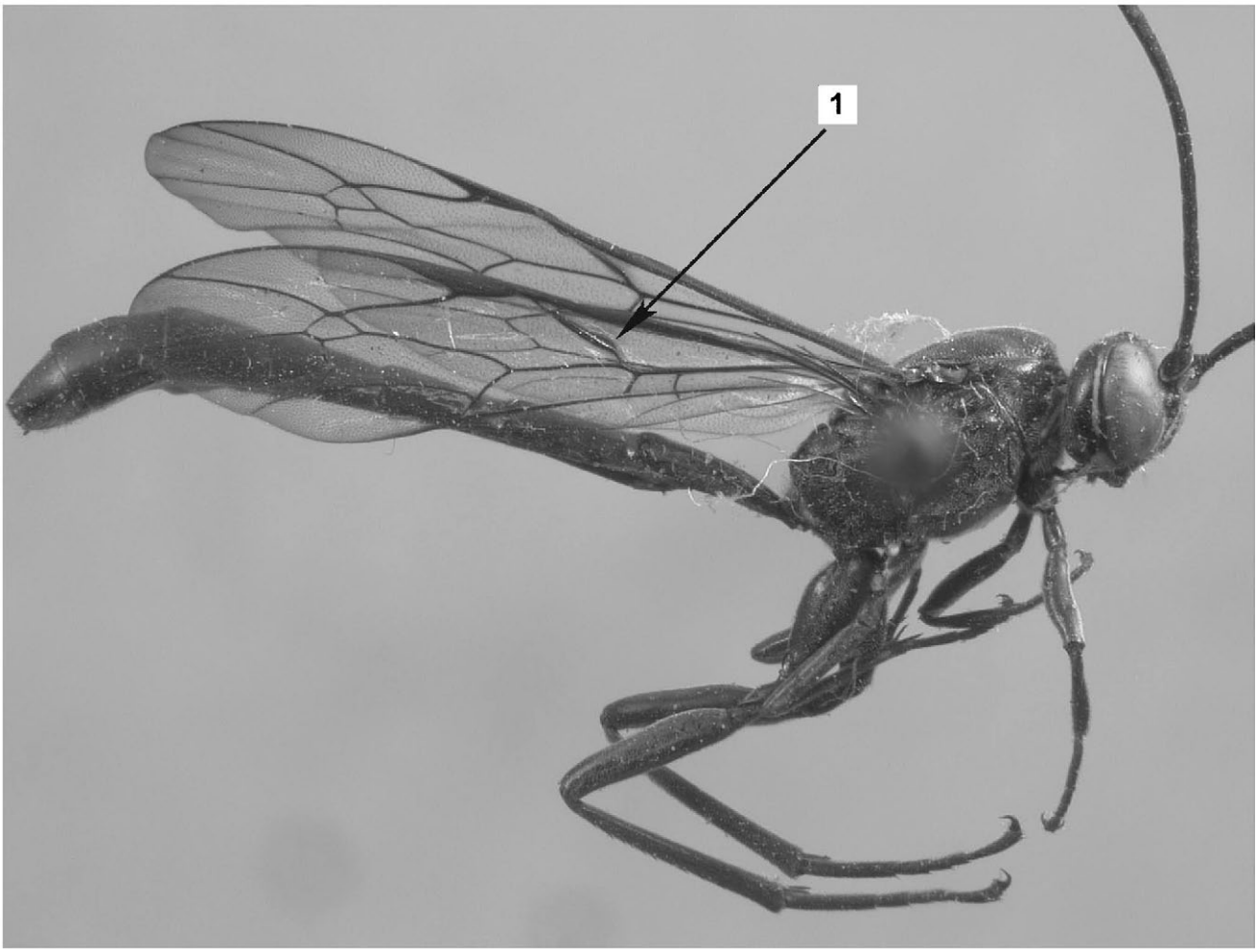

Figure 3. *Labena canelensis*, male paratype. Whole insect in lateral view. (1) Greatly inflated basal vein.

tudinal carinae sharp throughout; area basalis confluent with areola, the combined area 1.0 as wide as long; basal transcarina otherwise sharp throughout, apical transcarina well developed; lateral longitudinal carinae mostly sharp between propodeal base and juncture with apical transcarina, weaker and more irregular between apical transcarina and apex of propodeum; pleural carina weakly suggested between base of propodeum and spiracle, mostly strong but irregular between spiracle and apex; spiracle elongate, crescentic, 3.6 as long as wide. First gastric tergite: rather stout and short, 2.3 as long as wide at apex; spiracle near its basal 0.3; sternite ending only a little beyond tergite; dorsolateral carina strong and sharp throughout; ventrolateral carina more or less traceable throughout, becoming strong on postpetiole. Ovipositor: sheathed portion 0.7 as long as fore wing. Wing venation: areolet large, 1.8 as wide as high, pentagonal, intercubiti strongly convergent above so that second abscissa of radius is 0.5 as long as first intercubitus; basal vein nearly straight, subtly thickened on about its lower 0.7; nervulus 0.5 its length antefurcal; second recurrent with two bullae separated by a very short sclerotized segment; nervellus broken near middle, discoidella sclerotized throughout, apically reaching hind margin of wing; metacarpella with 9 close set hamuli, separated at most by a little more than length of one hamulus. Legs: fore tarsus with first segment 6.8 as long as deep, second segment 3.0 as long as deep, and with strong spine-like setae on tip of ventroapical lobe of third segment; hind coxa 2.3 as long as deep; hind femur 3.4 as long as deep.

Male. Differs from female as follows. Color: flagellum with white band, interrupted ventrally, on segments 12-32, apical flagellomere (33) black; orbits with white band interrupted not only on vertex but also on lower half of temple and briefly in malar

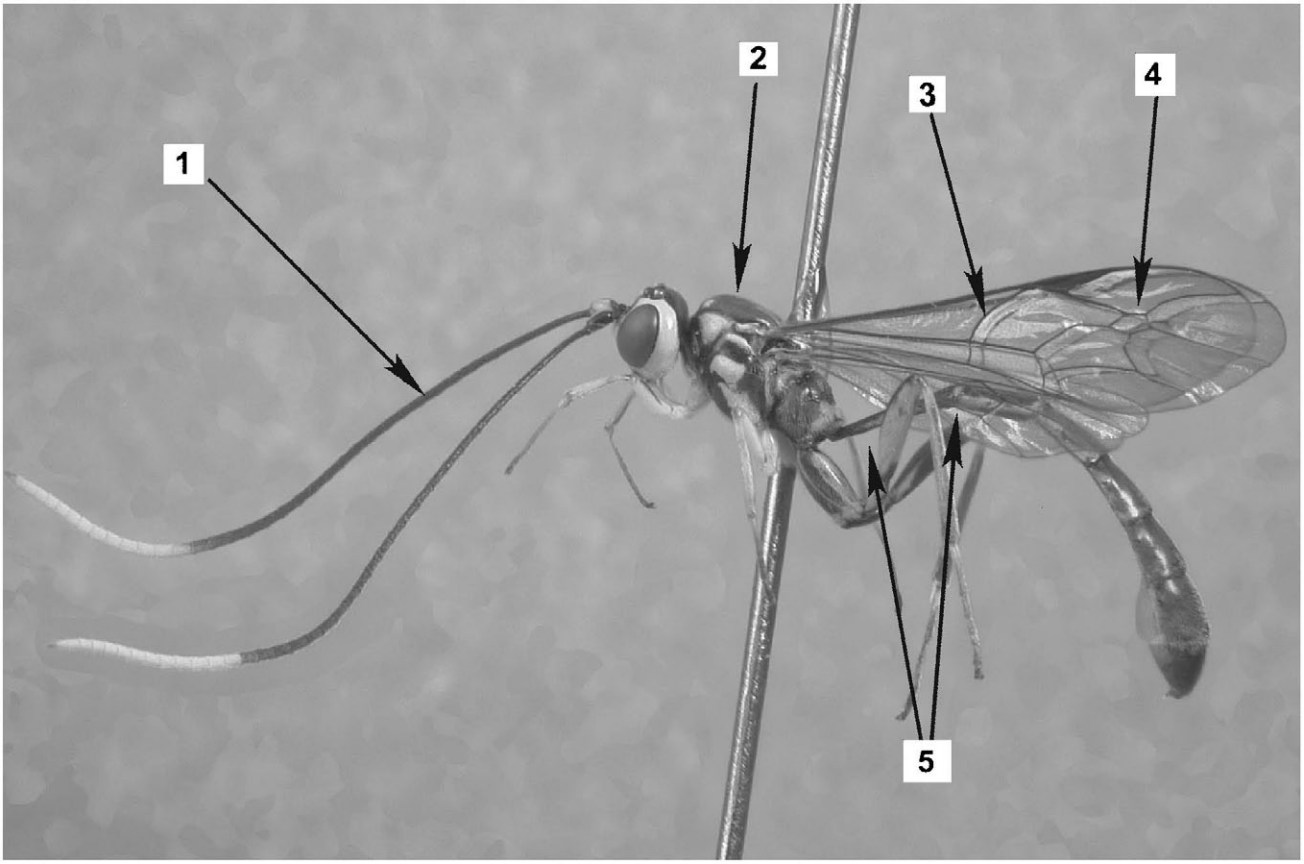

Figure 4. *Labena pucon*, male paratype. Whole insect in lateral view. Note profuse white and red markings, (1) long and slender flagellum; (2) convex mesoscutum; (3) unmodified basal vein; (4) very large and broad areolet; (5) long, slender first gastric tergite.

space; mesosoma with dull red on most of pronotum laterally, mesopleuron, mesosternum, lower metapleuron, and lateral areas of propodeum; scutellum entirely black; two white dots on postscutellum; no white in lower hind corner of meso and metapleuron; gaster with diffuse reddish staining, especially on first tergite laterally; without white markings except slightly on apex of seventh tergite; legs: mid leg black with reddish staining except for a whitish dot externally on apex of coxa, and a small white blotch near apex of femur dorsoanteriorly.

Length of fore wing: 7.8 mm. First flagellomere: 4.3 as long as deep at apex. First gastric tergite 2.6 as long as wide at apex; sternite ending about halfway between spiracle and apex of tergite. Wing venation: second abscissa of radius 0.7 as long as first intercubitus; basal vein grossly inflated on its median 0.7, narrowed dorsally toward juncture with prestigma and ventrally toward juncture with medial vein; costa+subcosta inflated postmedially but narrowing toward apex; metacarpellus with 8 close set hamuli; nervellus not broken, discoidella effaced basad but otherwise normally sclerotized. Legs: fore tarsus with first segment 5.6 as long as deep, second segment 2.2 as long as deep; hind coxa 2.8 as long as deep.

Type material. Holotype, female, CHILE, Región Metropolitana, El Canelo, 700 m, 19-XI-1964, C. Porter[FSCA]. Paratypes: 14 females and 3 males, CHILE, same locality data as holotype, 1 male, 17-IX-1953, L.E. Peña, 1 female, 16-X-1946, L.E.Peña, 1 female, 30-X-1964, C. Porter, 7 females and 1 male, 19-22-XI-1964, C. Porter, 3 females and 1 male XI-XII-1952, Ramírez; El Peumo, Río Maipo, 1 female, XI-1951, L.E. Peña; 1 female, La Obra, 18-23-XII-1953, L.E. Peña[AEI, FSCA].

Variation. Female. Color: mesosoma and gaster sometimes extensively dull red, including most of mesoscutum; tegula sometimes wholly white; white on postscutellum sometimes interrupted medially; fifth gastric tergite sometimes with a white spot in lower hind corner; mid coxa may have a white blotch on its apical 0.5 externally, mid femur may have a subbasal white area in addition to the

preapical white mark. Length of fore wing 12.2-13.4 mm. Ovipositor 0.8-0.9 as long as fore wing. Second abscissa of radius 0.6 as long as first intercubitus. Hind coxa 2.0 as long as deep. Hind femur 2.8 as long as deep. **Male.** Color: mesosoma and gaster extensively black, apex of first tergite with a weak, irregular white band. Length of fore wing 9.0 mm. First tergite 2.4 as long as wide at apex. First front tarsomere 6.2 as long as deep. Hind coxa 3.1 as long as deep.

Relationships. *Labena canelensis* does not seem closely related to any other species of its genus (see Gauld & Wahl 2000) and shows the following unusual or unique characters:

(1). Submetapleural carina produced basally into a large triangular tooth which overlies the base of the mid coxa.

(2). First gastric tergite short (2.3 as long as wide at apex), its dorsolateral carina sharply defined throughout, especially between spiracle and apex of tergite.

(3). Metacarpellan vein with 8 or 9 closely set hamuli, separated by little more than the length of one hamulus.

(4). Basal vein of male grossly inflated on its median 0.7.

(5). Basal vein of female subtly enlarged to correspond with character state seen in male.

(6). Discoidella vein of male becoming effaced basad so that it does not join the nervellus, although it is well sclerotized apicad and reaches hind margin of wing; discoidella of female sclerotized throughout so that nervellus is broken near middle.

The peculiarly inflated basal vein of the male is a feature which does not occur in any other ichneumonid genus known to me, although an analogous case is provided by *Enicospilus* and a few other genera of the subfamily Ophioninae in which the radial vein (of both sexes) may be strongly thickened basally between the first intercubitus and the pterostigma.

Habitat Notes. This species occurs in the Central or Mediterranean biotic province of Chile, where it inhabits well watered valleys and ravines in the Andean foothills, whose sclerophyll flora is characterized by the presence of trees and shrubs in such genera as *Lithraea* and *Schinus* (Anacardiaceae), *Peumus* (Monimiaceae), *Maytenus* (Celastraceae), *Quillaja* (Rosaceae), and *Beilschmiedia* and *Cryptocarya* (Lauraceae). Like most other ichneumonids in this habitat, it begins to emerge after the winter rains, in early spring (September),and is most abundant in November after which its numbers diminish with the approaching heat and drought of summer. My specimens were taken in bright sun along a dirt road as they flew around the higher branches of dense shrubbery.

Specific Name. A latinized adjective used in reference to El Canelo, a wooded *quebrada* just west of Santiago de Chile and an excellent collecting site frequented by several generations of Chilean entomologists and visiting colleagues from abroad.

Labena pucon Porter, **new species**
(Fig. 4)

Description: Female. Color: antenna black with white below on scape and a subapical white annulus on flagellomeres 16-30 and light brown on last flagellomeres (31-32); mandible white basally, brown toward middle and black toward apex; head white with black on middle of front (except two white dots below mid ocellus), across vertex around stemmaticum and thence more broadly across occiput and most of postocciput; propleuron white except black near base; pronotum black with some white on collar and mostly white on lateral lobe distad of epomia; mesoscutum red with black on declivous anterior face of median lobe and on peripheries as well as more broadly black toward apex, and with a pair of broad longitudinal white stripes which follow the (weak) notauli from base of sclerite to a little before its apex; prescutellar groove black; scutellum black with white on apical 0.3; postscutellum white; axillary troughs black with white narrowly on apical margins; tegula white; mesopleuron more or less black on peripheries, with a very large red blotch in its lower hind quadrant, with a broad white band that extends forward from base of mid coxa about 0.6 length of mesopleuron, and with another even larger white blotch reaching from prepectal carina back and below obliquely to contact the red blotch, as well as white on anterior margin above, on subalarum, and on hind margin; upper metapleuron mostly white; lower metapleuron red and black with white on apex; propodeum black on first lateral area and on combined area basalis and areola, white on petiolar area, on combined second and third lateral areas and on third pleural area, red on most of first pleural area and on much of second pleural area;

gaster with first tergite shining black with a longitudinal white stripe on each side below level of dorso-lateral carina, which is continued as a transverse white band on apex of tergite; following tergites similar to first but with the lateral white stripes progressively broader and more expanded toward apex, so that lateral 0.4 of sixth and seventh tergites is almost entirely white; wings hyaline with faint dusky staining apicad; fore leg white with blackish dorsally and dorso-posteriorly on femur, a dusky stripe above and below on tibia, and tarsus dull whitish with last segment dusky; mid leg white with dusky markings similar to but better defined than those of fore leg; hind leg with coxa mostly white on upper 0.5 and mostly black below except for a pair of premedian white streaks, also white on apex; trochanter and trochantellus black and white; femur black dorsally, posteriorly black with extensive white areas near base and apex, anteriorly and ventrally mostly white with a dusky blotch near apex that is best developed below; tibia above blackish with a white prebasal area, mostly white anteriorly except for a dusky spot near base and black on apical 0.25, largely white below, and posteriorly black with a white stripe on median 0.7 and white on base; tarsus with first segment black except white near base, second segment dusky with whitish anteriorly except on apex, third and fourth segments white with dusky staining, especially behind, and fifth segment black with whitish obscurely on base.

Length of fore wing: 8.0 mm. Flagellum: first segment 8.0 as long as deep at apex. Occipital carina absent. Eyes: weakly emarginate opposite antennal sockets. Face: smooth and polished with numerous but well separated small punctures. Epomia: defined only below in scrobe and reaching sharply below scrobe some distance along hind margin of collar. Mesoscutum: with weak humeral crests, strongly convex in profile, with numerous but well separated tiny punctures. Mesopleuron: prepectal carina sharp, vertical, not approaching front margin of mesopleuron and ending at about opposite its lower 0.2. Submetapleural carina: strong throughout, a little elevated toward base but not triangularly produced. Groove between metanotum and propodeum: fine, narrow, anterior end of dorsal longitudinal carina of propodeum produced here into a tiny tubercle, anterior ends of lateral longitudinal carinae forming a large, sharply triangular projection that corresponds to a similar and even larger process on hind margin of metanotum, the two almost meeting, so as to enclose in dorsal view an ovoid space. Propodeum: delicately areolated; area basalis confluent with areola, the two forming an elongate area that is much narrowed anteriorly and 0.8 as wide as long; basal transcarina fine and sharp dorsolaterally, obsolete laterally; apical transcarina sharp bordering areola behind, otherwise vestigial; dorsal longitudinal carinae sharply defined, except vestigial on hind face of propodeum; lateral longitudinal carinae obsolete; pleural carina faint; spiracle ovoid, 1.5 as long as broad. First gastric tergite: very long and slender, 4.0 as long as wide at apex, with first sternite ending far distad of spiracles, close to apex of tergite. Ovipositor: 1.1 as long as fore wing. Wing venation. areolet very large, intercubiti converging above but well separated, second intercubitus less strongly sloping than first, second abscissa of radius 1.0 as long as first intercubitus; basal vein gently curved, not inflated; nervulus interstitial; nervellus broken a little above middle, discoidella complete, sclerotized through to hind margin of wing; metacarpella with 6 hamuli, the basal 5 separated by more than the length of one hamulus. Legs: first segment of fore tarsus 9.5 as long as deep at apex; ventroapical lobe of third tarsomere without spines on apex, with fine setae only; hind coxa 2.2 as long as deep; hind femur 3.7 as long as deep.

Male. Differs from female as follows. Color: scape more broadly white below, pedicel white below; flagellum white to brownish white with dusky above on segments19-20, largely white on segments 21-29, on last segment (30)dark brown below and pale brown mixed with whitish above; mesoscutum more extensively black and with less red than in female; scutellum almost wholly white; mesopleuron without a well defined red blotch, and with a single large, irregularly shaped, oblique white blotch covering more than 0.6 of its surface between upper front quadrant and base of mid coxa; lower metapleuron black with some reddish above and a little white on apex; first tergite with lateral white stripe and apical white band medially interrupted; fore leg more extensively white than in female, femur with a dusky band above beyond basal 0.3, tibia slightly dusky below and in front, and tarsus with last segment blackish; mid leg similar to fore leg with femur blackish near base and with a preapical blackish streak above, tibia dusky near base and more extensively blackish above on apical 0.3, tarsus blackish suffused with dull white on segments 1-4 and with last segment black; hind leg as in female but with black areas less

extensive on coxa, and tibia and with tarsus more extensively blackish.

Length of fore wing: 5.6 mm. First flagellomere 8.1 as long as deep at apex. Propodeum: with combined area basalis and areola even longer than in female, 0.6 as wide as long; lateral longitudinal carinae and pleural carina traceable throughout. First gastric tergite: even more slender than in female, 6.2 as long as wide at apex. Wing venation: areolet very broad, 2.0 as broad as deep, second abscissa of radius 1.7 as long as first intercubitus. Legs: first segment of front tarsus 12.0 as long as deep at apex; hind coxa 2.9 as long as deep; hind femur 4.6 as long as deep.

Type material. Holotype, female, CHILE, Novena Región, Cautín Province, Pucón (Península), 9-20-XII-1993, C. Porter [FSCA]. Paratypes: 3 males, same locality as holotype, 26-30-XI-1989, C. Porter [AEI, FSCA].

Variation. Male. Color: mesoscutum in one specimen mostly red, except black on anterior declivous face of central lobe, and with the longitudinal white stripes defined only near base and again subapically; mesopleuron with a large red blotch in its lower hind quadrant; lower metapleuron red on its upper 0.7; propodeum sometimes with the first pleural area red with black near its dorsal margin and a white spot in front of spiracle, and the second pleural area red throughout; white lateral stripe of first tergite interrupted only near base although narrowed postmedially on petiole; gaster may have slight reddish staining, especially on fourth and following tergites; front leg on femur with a faint dusky band dorsad toward apex, with only slight dusky staining on tibia, and with tarsus light brown (most prominently so on last segment); mid leg with femur dusky stained near base and with a small faint dusky streak above near apex, its tibia dusky only near apex. Length of fore wing 6.7-6.8 mm. First flagellomere: 7.3-7.8 as long as deep at apex. Propodeum: combined area basalis and areola 0.7 as wide as long. Areolet: second abscissa of radius 1.1-1.2 as long as first intercubitus. First front tarsomere 9.6-9.7 as long as deep at apex. Hind coxa 2.7 as long as deep. Hind femur 4.2-4.6 as long as deep. First gastric tergite 4.8-5.0 as long as wide at apex.

Relationships. *Labena pucon* is even more aberrant within its genus than *L. canelensis*. Some of its distinctive features include:

(1). First flagellomere unusually long, 7.3-8.0 as long as deep at apex.

(2). Occipital carina absent.

(3). Prepectal carina vertical, sharply defined on lower 0.25 of mesopleuron but not approaching front margin of mesopleuron.

(4). Hind margin of metanotum with a strong triangular projection which corresponds to a similar tooth at anterior end of lateral longitudinal carina of propodeum.

(5). First gastric tergite extremely long and slender, only slightly expanded between spiracles and apex, in female 4.0 as long as wide at apex, in male 4.8-6.2 as long as wide.

(6). Areolet broad, second abscissa of radial vein 1.0-1.7 as long as first intercubitus.

(7). Ventroapical lobe of third front tarsomere not spinose on apex, with fine setae only.

The lack of an occipital carina and the vertical prepectal carina which does not approach the front margin of the mesopleuron are characters that occur also in the closely related Neantarctic and Australian genus *Certonotus* (Porter 1981, Gauld and Wahl 2000). In *Certonotus,* however, the occipital carina is present laterally, the parapsidal furrows and the notauli are both defined and the mesoscutum also has strong transverse rugae on both its median and lateral lobes, while the female mid tibia is unmodified (in *Labena* it is medially inflated and twisted).

Habitat Notes. The type locality is on the south side of a peninsula which reaches eastward into Lago Villarrica from the village of Pucón in southern Chile. This is a wet forest community in which the dominant trees are *Aextoxicon punctatum* (Aextoxicaceae) and various *Nothofagus* (Fagaceae), while ferns and the hygrophile woody vine *Asteranthera ovata* (Gesneriaceae) are abundant in the understory (Hoffmann J. 1982). Other moisture loving Hymenoptera collected here include *Brachyxiphus sp* (Xiphydriidae), *Orusella sp* (Orussidae), *Tatogaster nigra* (Ichneumonidae, Tatogastrinae), and species of the thynnid genus *Aelurus*.

Specific Name. For the type locality; Pucón, which is used as a noun in apposition, as if it were a latinized Greek noun ending in *-ôn*

Collections

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FSCA Florida State Collection of Arthropods, Florida Department of Agriculture and Consumer Services, P.O.Box147100, Gainesville, Florida 32614-7100.

Acknowledgments

I thank Dr. David B. Wahl of the American Entomological Institute for the opportunity to study material in the collection of which he is curator and Drs. Mike Thomas and Gary Steck of the FSCA for their help in preparing the *Automontage* © illustrations. As editor of *Insecta Mundi*, Dr. Thomas also gave invaluable assistance in preparing the manuscript for publication.

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