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Lucena, Daercio AA
Kimsey, Lynn S
Almeida, Eduardo AB

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The Neotropical cuckoo wasp genus *Ipsiura* Linsenmaier, 1959 (Hymenoptera: Chrysididae): revision of the species occurring in Brazil

DAERCIO A. A. LUCENA[1,3], LYNN S. KIMSEY[2] & EDUARDO A. B. ALMEIDA[1]

[1] *Laboratório de Biologia Comparada e Abelhas (LBCA), Departamento de Biologia, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto (FFCLRP), Universidade de São Paulo, Avenida Bandeirantes, 3900, 14040-901, Ribeirão Preto, SP, Brazil*
[2] *Bohart Museum of Entomology, University of California, Davis, CA, 95616, USA. E-mail: lskimsey@ucdavis.edu*
[3] *Corresponding author. E-mail: daerciobio@gmail.com*

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DAERCIO A. A. LUCENA, LYNN S. KIMSEY & EDUARDO A. B. ALMEIDA

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Table of contents

Abstract

The species of the chrysidid genus *Ipsiura* are reviewed with emphasis on the taxa occurring in Brazil. In the present study 34 *Ipsiura* species are recognized, diagnosed, and illustrated. Two new species are described here: *Ipsiura bohartiana* Lucena **sp. nov.** and *I. duckeana* Lucena **sp. nov.**, and two others are transferred from *Neochrysis* to *Ipsiura*: *I. assecia* (Linsenmaier, 1997), **comb. nov.** and *I. guayanensis* (Linsenmaier, 1997), **comb. nov.**, increasing to 41 the total of valid species in the genus. New diagnoses and redescriptions are provided for 34 species based on study of their types. For the first time, a comparative and illustrated study of male genitalia is presented for the majority of *Ipsiura* species. Notes on types and depository collections, a revised key for identification of species along with illustrations of diagnostic features, as well as geographical distribution maps are also given.

Key words: Chrysidoidea, Chrysidini, taxonomy, systematics, cleptoparasites

Introduction

Ipsiura Linsenmaier, 1959 is one of the most species-rich groups of Chrysidini in the Neotropical region. These wasps are seldom encountered in the field, but they can be abundant in trap-nesting studies. Their biology is poorly known, being limited just a few host records. Wasps in the genera *Trypoxylon* Latreille (Crabronidae), *Sceliphron* Klug (Sphecidae), *Eumenes* Latreille and *Pachodynerus* de Saussure (Vespidae: Eumeninae) are currently the only known hosts for the genus (Bohart 1985; Linsenmaier 1985; Kimsey & Bohart 1991). *Ipsiura* is essentially Neotropical, occurring mainly in South America, but also occurring as far north as the Mexican and South American Transition Zones (*sensu* Morrone 2006) and the southeastern USA. The genus is apparently absent in the Andean Region (Kimsey & Bohart 1991). Kimsey & Bohart (1991) found *Ipsiura* to be monophyletic and sister to *Exochrysis* Bohart, 1966. There is substantial evidence supporting the monophyly of *Ipsiura* and the close phylogenetic relationships with the clade composed by *Exochrysis* + *Neochrysis*, based on a recent cladistic analysis by Lucena (2015).

Ipsiura and *Neochrysis* were originally described by Linsenmaier (1959) as subgenera of *Pleurocera* Guérin-Méneville, 1842 (nec Rafinesque 1818: 355, Mollusca) to include part of the Neotropical species of Chrysidinae. A few years later, Bohart (1966) raised *Neochrysis* to genus level and transferred *Ipsiura* to be a subgenus of *Neochrysis*. Bohart (1966) also described *Exochrysis* as new subgenus of *Neochrysis* and renamed *Pleurocera* as *Pleurochrysis* Bohart, 1966, and replaced it as well as subgenus of *Neochrysis*. The classification proposed by Bohart (1966) was also followed in subsequent revisions of the North America north of Mexico and the Neotropical faunas (Bohart & Kimsey 1980, 1982; Kimsey & Bohart 1981; Linsenmaier 1985, 1997).

The taxonomy of *Ipsiura* remained unchanged until 1985, when three publications lead to several major taxonomic changes (Bohart 1985; Kimsey 1985; Linsenmaier 1985). In October 1985, Bohart elevated *Ipsiura* to genus, and described fifteen new species. In November, 1985, Kimsey reviewed the genus and elevated all subgenera of *Neochrysis* (*Exochrysis*, *Ipsiura*, *Neochrysis* s.str. and *Pleurochrysis*) to genera. In December of the same year, Linsenmaier (1985) revised the *Neochrysis* and treated all other taxa recognized as genera by Bohart (1985) and Kimsey (1985) as being subgenera of *Neochrysis* instead. In that publication, Linsenmaier (1985) followed mostly the classification previously proposed by Bohart (1966), and also described two new subgenera, 43 new species (20 of them in *Ipsiura*) and one subspecies. These independent and almost simultaneous publications resulted in some synonymies, as well as interpretational differences about the validity of some species described by Linsenmaier (1985) (*e.g.* Kimsey & Bohart 1991; Linsenmaier 1997). Kimsey & Bohart (1991) proposed synonymies of seven species described by Linsenmaier (1985). They based their study on examination of almost all types or reliably determined material of all species, except for six, and considered five species described by Linsenmaier (1985) as valid (Kimsey & Bohart 1991). Linsenmaier (1997) disagreed with all synonymies proposed by Kimsey & Bohart (1991) but one, and described a new subspecies and two new species still considering *Ipsiura* as a subgenus of *Neochrysis*. Currently 39 species are recognized as valid in *Ipsiura*, considering the 37 listed by Kimsey & Bohart (1991) plus two species later described by Linsenmaier (1997).

Matherial and methods

The following institutions and curators provided loans of material examined during the course of this study:

BME	Bohart Museum of Entomology, University of California, Davis, USA (Dr. Steven Heydon).
CAVS	Coleção de Abelhas e Vespas Solitárias, Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Ribeirão Preto, Brazil (Dr. Carlos A. Garófalo).
DZUP	Coleção Entomológica "Pe. Jesus Santiago Moure", Universidade Federal do Paraná, Curitiba, Brazil (Dr. Gabriel A. R. Melo).
FML	Instituto de Entomología–Fundación Miguel Lillo, San Miguel de Tucumán, Argentina (Dr. Carolina Berta; Dr. Emilia Constanza Perez).
INBPY	Museo Nacional de Historia Natural del Paraguay, San Lorenzo, Paraguay (Dr. Bolívar R. Garcete-Barrett).
INPA	Coleção Entomológica do Instituto Nacional de Pesquisa da Amazônia, Manaus, Brazil (Dr. Márcio L. Oliveira).

LEBIC Laboratório de Ecologia e Biogeografia de Insetos da Caatinga, Universidade Federal de Campina Grande, Patos, Brazil (Dr. Fernando C. V. Zanella; Pedro E. Santos-Neto).

LRRP Laboratório de Sistemática e Bioecologia de Parasitóides e Predadores de Ribeirão Preto, Sec. de Agricultura e Abastecimento–APTA, Ribeirão Preto, Brazil (Dr. Nelson W. Perioto; Dr. Rogéria I. R. Lara).

MPEG Museu Paraense Emílio Goeldi, Universidade Federal do Pará, Belém, Brazil (Dr. Orlando T. Silveira).

MZUSP Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil (Dr. Carlos R. F. Brandão; Dr. Kelli S. Ramos).

RPSP Coleção Entomológica "Prof. João Camargo", Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Ribeirão Preto, Brazil (Dr. Eduardo A. B. Almeida).

UFES Universidade Federal do Espírito Santo, Coleção Entomológica da Universidade Federal do Espírito Santo, Vitória, Brazil (Dr. Marcelo T. Tavares).

UNICENTRO Universidade Estadual do Centro-Oeste, Guarapuava, Brazil (Dr. Maria Luisa T. Buschini; MSc. Tayane Buggenhagen).

The external morphology of approximately 900 specimens of *Ipsiura* mainly from Brazil was examined with aid of stereomicroscopes. Species identities were determined mainly by comparison with the primary types (see below), also by comparison with identified specimens hosted in the MPEG, MZUSP and BME collections, and by descriptions presented in Bohart (1985) and Linsenmaier (1985, 1997). Additionally, taxonomic delimitations were possible by comparisons of high resolution images of types hosted in the Muséum National d'Histoire Naturelle, **MNHN**, Paris (Dr. Claire Villemant; Ms. Agnièle Touret-Alby); the British Museum of Natural History **BMNH**, London (Dr. David Notton), and the Hungarian Natural History Museum **HNHM**, Budapest (Dr. Zoltán Vas).

An effort was made to examine all types of species included in *Ipsiura* by Bohart (1966, 1985), Linsenmaier (1959, 1985, 1997) and Kimsey & Bohart (1991). Holotypes and primary types of the species that could be analyzed are indicated under their redescriptions. Moreover, specimens of *Chrysis genbergi* Dahlbom, *Chrysis klugi* Dahlbom, *Chrysis leucobasis* Mocsáry and *Chrysis leucocheila* Mocsáry identified by Dr. R. Bohart were studied in the BME collection. These specimens were labeled by Bohart as "homotypes" or "CWT" (compared with type). Holotypes of the species described by Linsenmaier (1985, 1997) could not be examined due to ongoing rennovation as well as lack of photographic resources of the "Walter Linsenmaier Collection" housed in the Natur Museum Luzern, **NMLS**, according to the curator (Dr. Marco Bernasconi).

Photographs were taken mostly using a Leica DFC425 camera attached to a Leica M205C stereomicroscope. All images were enhanced using Leica LAS Montage and Helicon Focus software to combine multiple images then enhanced with Adobe Photoshop CS6. Some morphological structures were illustrated with line drawings with aid of a camera lucida. Illustrations were made in Adobe Illustrator CS5. All measurements are given in millimeters (mm).

Distribution maps were based on locality records taken from specimen labels. Erroneous or doubtful records of species are indicated by "?". Brazil is divided into 26 states and a federal district designated by name and official acronyms is given in (http://www.ibge.gov.br/estadosat/). The distribution maps were created using the software DIVA-GIS© (ver. 7.5) (Hijmans *et al.* 2012).

Terminology and descriptions. Morphological terminology follows that of Kimsey & Bohart (1991). The abbreviations **F**, **S** and **T** are employed for **f**lagellomeres, metasomal **s**terna, and metasomal **t**erga, respectively. **MOD** refers to the **m**edian **o**cellus **d**iameters. **TFC** refers to the **t**ransverse **f**rontal **c**arina. Malar space and subantennal space refers to the least distance between the inferior ocular margin and the mandibles and between the inferior margin of antennal socket and clypeus margin, respectively.

Sexual dimorphism. It is fairly easy to distinguish males and females *Ipsiura.* Male S4 is clearly visible, protruding beyond S3 for at least one-quarter of the length of S3, whereas S4 is not visible in females (Kimsey 1985; Kimsey & Bohart 1991; Lucena 2015). Other dimorphic characters are the broad dark band occupying much of the dorsum of meso- and metasoma, which are most obvious in males of *I. affinissima*, *I. bohartiana* **sp. nov.**, *I. covillei* and *I. leucocheiloides*. Additionally, males of some species, such as *I. bohartiana* **sp. nov.**, *I. covillei*, *I. leucocheiloides* and *I. nigriventer* have conspicuous silvery pubescence on the gena, prosternum and ventral surface of the anterior legs. For all other traits, males and females *Ipsiura* are identical.

Color. The color patterns of *Ipsiura* are predominantly green to bluish, accompanied by purple or dark blue transverse stripes on dorsum of the meso- and metasoma. In most cases, coloration is not informative for species diagnosis. However, two species that can be readily diagnosed based on color are *I. genbergi* and *I. venezuelae*, which have prominent bluish purple shiny stripes on dorsum of the metasoma. Specimens preserved in alcohol or preservatives that cause excessive dehydration, tend to change color from green to bluish.

Male genitalia. Most males had their genitalia dissected, studied, and illustrated. Selected male specimens were rehydrated in a moist-chamber overnight. The terminalia was removed and cleared overnight in a 10% solution of KOH. In some cases this solution was heated to 90–100º C for 10–15 minutes. This process was interrupted with a bath in diluted lactic acid for few minutes. The genitalia was then rinsed in alcohol at 60%, and preserved in propylene glycol (adapted from Porto *et al.* 2016). Due to the rarity of some species in collections, not all could have the male genitalia studied.

Species erroneously placed in *Ipsiura*

Neochrysis (*Ipsiura*) *jenseni* (Buysson, 1906). Designation by Linsenmaier (1985). Moved to *Pleurochrysis* Bohart, 1966 by Kimsey & Bohart (1991).

Neochrysis (*Ipsiura*) *bruchi* (Brèthes, 1903). Designation by Linsenmaier (1985). Moved to *Pleurochrysis* Bohart, 1966 by Kimsey & Bohart (1991).

Neochrysis (*Ipsiura*) *bruchi* var. *quadridens* (Bischoff, 1910). Generic designation by Linsenmaier (1985). Elevated to species and moved to *Pleurochrysis quadridens* (Bischoff, 1910): junior synonym of *Pleurochrysis lynchi* (Brèthes, 1903), as interpreted by Kimsey & Bohart (1991).

Neochrysis (*Ipsiura*) *proxima* (Cameron, 1888). Generic designation by Linsenmaier (1985). Replaced into *Chrysis proxima* Cameron, 1888: junior synonym of *Chrysis intricata* Brullé, 1846, as interpreted by Kimsey & Bohart (1991).

Taxonomy

Among the 39 species presently recognized as valid in *Ipsiura* (Kimsey & Bohart 1991; Linsenmaier 1997), 32 species of *Ipsiura* are currently known for Brazil, including two newly described species.

Only the following species could not be studied: *Ipsiura assecia* (Linsenmaier, 1997), **comb. nov.**; *I. cardiofera* (Linsenmaier, 1985); *I. guayanensis* (Linsenmaier, 1997) **comb. nov.**; *I. laetiapicalis* (Linsenmaier, 1985); *I. surinamensis* (Linsenmaier, 1985); *I. ulconota* (Linsenmaier, 1985), and *I. teutoniaca* (Linsenmaier, 1985). The number of valid species in the genus is now updated to 41.

Genus *Ipsiura* Linsenmaier, 1959

Ipsiura Linsenmaier, 1959: 74 (as subgenus of *Pleurocera* Guérin-Méneville, 1842). Type species: *Chrysis marginalis* Brullé, 1846, by original designation.
Ipsiura: Bohart 1966: 142 (as subgenus of *Neochrysis* Linsenmaier, 1959).
Ipsiura: Bohart 1985: 708; Kimsey 1985: 275; Kimsey & Bohart 1991: 506.

Revised diagnosis of *Ipsiura*. Brow with a strong TFC (absent or sometimes residual in *Neochrysis* and *Pleurochrysis*); pronotum with a strong protruding nearly straight lateral carina (rounded or only sharp margins in *Exochrysis*, *Neochrysis* and *Pleurochrysis*); lateral metanotal tooth adjcent to propodeal tooth (in *Exochrysis* the metanotal lateral tooth is digitate and pointing away from propodeal angle); lateral propodeal tooth with a large, shallow, elongate fovea latero-posteriorly (regularly punctate in *Exochrysis* and *Pleurochrysis* mostly); propodeum without medial tooth (clearly protruding in *Exochrysis*); fore and hind femora with a basal fovea (absent in most *Pleurochrysis* and present only on hind femora in *Exochrysis* and *Neochrysis*); *R1* vein of fore wing shorter than the stigma length or absent (clearly longer than stigma in *Exochrysis* and many *Neochrysis* and *Pleurochrysis*); basolateral margin of T2 without translucent edges, except in *I. brevispina* and *I. longiventris* (present in mostly

species of *Exochrysis*, *Neochrysis* and *Pleurochrysis*); male S4 completely exposed (absent in some *Pleurochrysis*); male S4 about two-thirds as long as S3 (short in *Exochrysis* and *Neochrysis*); male S4 at least faintly metallic and forming a well sclerotized sclerite (in *Exochrysis*, *Neochrysis* and mostly species of *Pleurochrysis* only a narrow border composed by condensed setae is exposed); male S8 elongated and subtriangular (usually blunt apically in *Neochrysis*); genital capsule elongate, composed by long, slender, delicate elements (usually more sclerotized and robust in *Exochrysis*, and some *Neochrysis*, varying forms in *Pleurochrysis*).

Ipsiura affinissima (Ducke, 1903)

(Figs 1–6)

Chrysis affinissima Ducke, 1903: 229. Holotype ♀ [examined]: BRAZIL: Pará, Belém (MPEG).
Ipsiura affinissima: Bohart 1985: 710.
Neochrysis (*Ipsiura*) *affinissima*: Linsenmaier 1985: 477.

Diagnosis. *Ipsiura affinissima* most closely resembles *I. obidensis* (Ducke), *I. catamarcae* Bohart and *I. neolateralis* (Bohart); it can be distinguished from these and other *Ipsiura* species by the following combination of characters: T3 with six acute distal teeth (lateral teeth obstuse in *I. obidensis*), with a short and strongly convex prepit swelling (swelling low, sloping gently in *I. obidensis*), pit row indicated by very small lateral pits on T3 (pit row well-developed in *I. catamarcae*, *I. neolateralis* and *I. obidensis*); head with a well-delimited and complete TFC, forming a complete arc, as long as broad (much broader in *I. obidensis*, medially interrupted in *I. catamarcae*); fore femur without ventral tooth on distal margin (present in *I. catamarcae* and *I. neolateralis*); lower posterior margin of mesopleuron with two distinct close together tooth-like projections (projections well-separated in *I. neolateralis*); metanotum rounded (irregularly cristate to serriform in *I. catamarcae* and *I. neolateralis*); and S2 spots medium-sized (large S2 spots in related species).

Male description. *Body* (Fig. 1). *Length*: 8.9 mm. *Coloration*: head predominantly green, with dark maculations on vertex; F1 brownish green; mesosoma metallic green, with faint bluish highlights dorsally, particularly on pronotum; metasoma metallic green, with whitish spot laterally on T3;wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown; hind basitarsus greenish brown. *Head:* TFC forming complete arc (Fig. 2); F1 longer than broad, 1.3× as long as F2; scapal basin with sparse silvery pubescence. *Mesosoma:* fore femur with discrete flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (*e.g.* Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, without distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin with distinct close together tooth-like projections. *Metasoma:* T3 with six acute distal teeth, pit row only indicated by small lateral pits (Fig. 3), with protruding and short prepit swelling; S2 spots medium-sized, touching medially (Fig. 4). *Punctation:* fore femur sparsely punctate, with tiny punctures marked externally; dorsal surface of head and mesosoma with definite punctures; metasoma with shallow punctures on T3. *Genital capsule* (Fig. 5): cuspis broad, sub-triangular, asetose distally, with strong longitudinal line medially; gonostylus longer, slenderer than cuspis; digitus acute apicaly, clavate; aedeagus robust, lobes blunt apically.

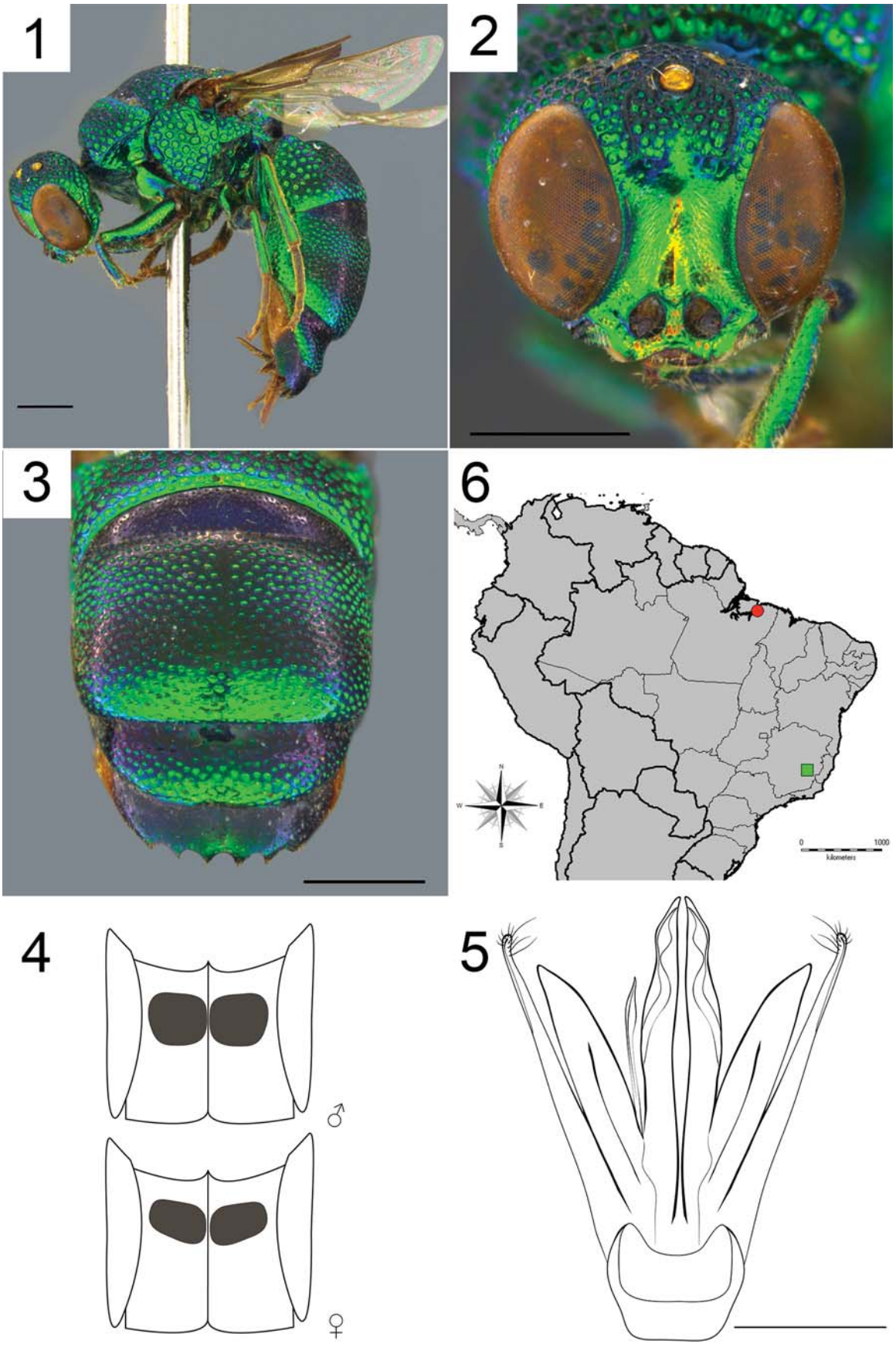
Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 4 and the broad dark band occupying much of the dorsum of meso- and metasoma.

Variation. Specimens collected by malaise trap shown variation in the color pattern with predominantly bluish coloration and some green maculation on dorsum of head and mesosoma. Specimens from the Amazonian region (Brazil: Pará, Óbidos–BME) have the punctation deeper and coarser than the specimens collected in Minas Gerais. Body length 7.9–9.2 mm.

Host. Unknown.

Distribution. Brazil (MG, PA) (Fig. 6).

Material examined. BRAZIL: Pará, Belém, 17.vi.1902, coll. Ducke, A. / Holotype ♀ *Chrysis affinissima* Ducke [MPEG].



FIGURES 1–6. *Ipsiura affinissima*, ♂. 1. Habitus, lateral view. 2. Head, frontal view. 3. T3, postero-dorsal view. Scale bar = 1 mm. 4. Spots of S2, ♂ (above) and ♀ (below). 5. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 6. Distribution, previous (red circle) and new (green square) records.

Additional material. Pará, 31.xii.1906, 1♂, coll. Ducke, A. [BME]. Minas Gerais, Marliéria, Parque Estadual do Rio Doce 19º37'S 42º34'O, 24–31.x.2002, 8♀, coll. Fontenelle, J.C.R. [UFES].

Comments. The redescription above is based on a male from Brazil: Pará, Belém.

Ipsiura bisulcata (Ducke, 1902)

(Figs 7–12)

Chrysis bisulcata Ducke, 1902: 100. Syntypes 2♀ [not examined]: BRAZIL: Pará, 14.ix.1901, 19.x.1901 A. Ducke (repository unknown).
Neochrysis (*Ipsiura*) *bisulcata*: Kimsey & Bohart 1981: 78.
Ipsiura bisulcata: Bohart 1985: 711.

Diagnosis. *Ipsiura bisulcata* most closely resembles *I. klugi* (Dahlbom), *I. prolixa* Bohart and *I. longiventris* (Ducke). It can be distinguished from these and other *Ipsiura* species by the following combination of characters: broad upper genal space (much narrower in similar species, especially *I. longiventris*); obtuse lateral teeth on T3 (acute teeth in *I. klugi*, *I. prolixa* and *I. longiventris*); metanotum rounded (strongly cristate in *I. klugi* and serriform in *I. prolixa*); subsquare-shaped and medium-sized S2 spots (S2 spots rounded and large in *I. longiventris*, and ovoid in *I. prolixa* and *I. klugi*). Additionally, the bilobate cuspis is unique in *I. bisulcata.*

Female description. *Body* (Fig. 7). *Length*: 7.6 mm. *Coloration*: head predominantly green; F1 brownish green; mesosoma metallic green, with faint bluish highlights dorsally, particularly on pronotum; metasoma metallic green, with whitish spot laterally on T3; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsomeres brown, only hind basitarsus green. *Head:* TFC enclosing the median ocellus, interrupted medially (Fig. 8); upper genal space broad, more than 2.5× MOD long; F1 longer than broad, about 1.2× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur slightly flattened on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, without distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; lower posterior margin delimited by carina, with well-separated tooth-like projections. *Metasoma:* T3 with six distal teeth, the lateral teeth obtuse (Fig. 9), pit row indicated by long and shallow foveae, prepit swelling low, sloping gently; S2 spots medium-sized, touching medially (Fig. 10). *Punctation:* fore femur with coarse punctures on outer surface; largest punctures on T1, mesopleuron and metanotum; T2 posteromedially and T3 prepit swelling with shallow and well-separated punctures.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 10, widely separated medially; broad dark band occupying much of the dorsum of meso- and metasoma. *Genital capsule* (Fig. 11): cuspis as long as gonostylus; digitus bilobate, slightly shorter than cuspis, basally narrower than apically; apices of gonostylus and cuspis with long hairs; aedeagus blunt apically, lobes elaborate (Fig. 11).

Variation. Body length 7.6–8.4 mm.

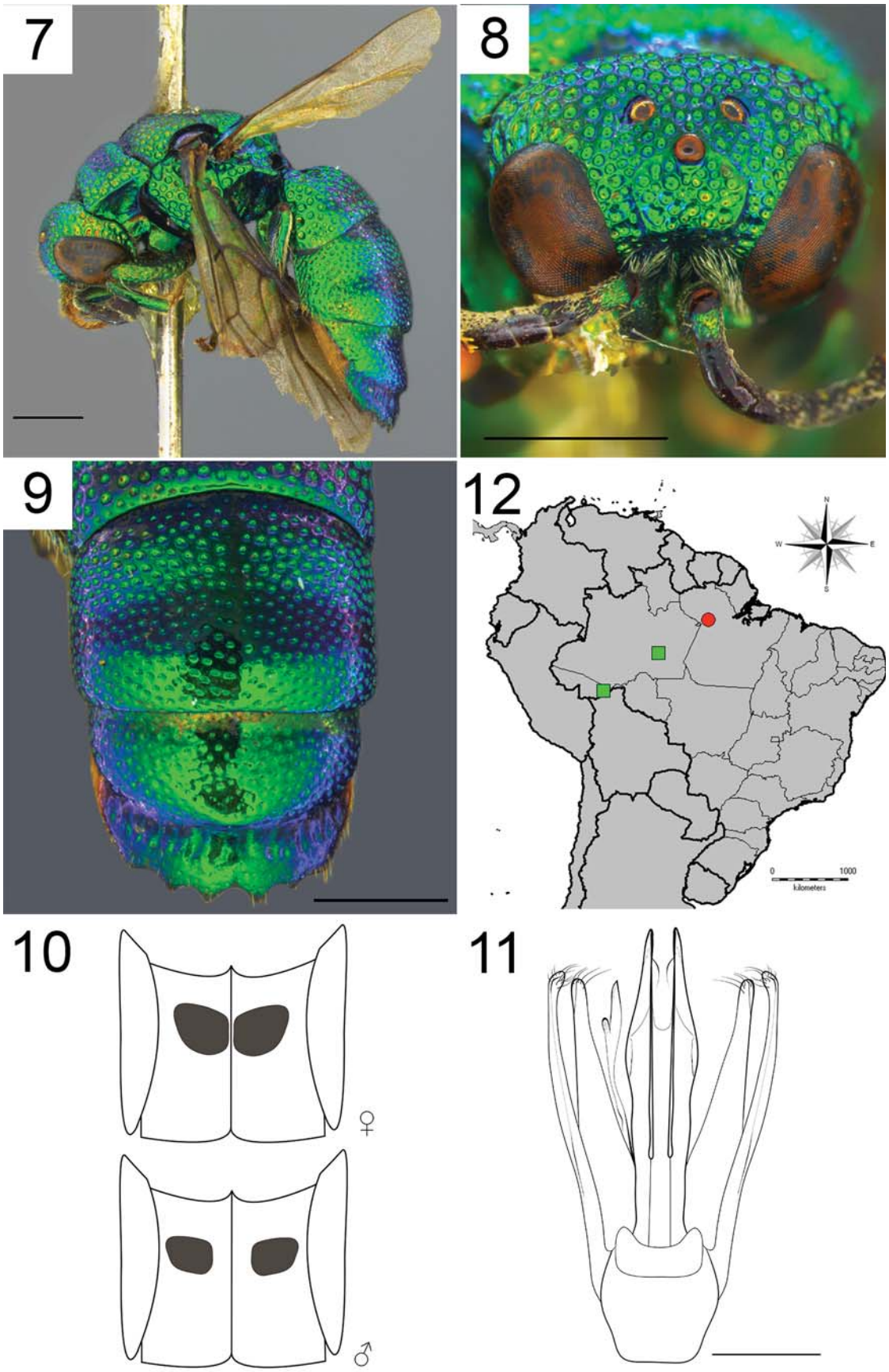
Host. Unknown.

Distribution. Brazil (AC, AM, PA) (Fig. 12).

Taxonomic remarks. There are no indications in the original description of species (Ducke 1902) nor in the catalogue of Ducke (1913) about the repository of *I. bisulcata*, and we have been unable to locate the types. Despite the lost type specimens, redescription of this species was possible based on reliably identified specimens by Ducke, housed in the MPEG and BME collections.

Material examined. BRAZIL: Acre, Senador Guiomard, Res. Catuaba 19.xi.2002, 1♂, coll. E.F. Morato [BME]. Amazonas, Manicoré Cachoeira ix.2004, 1♀, coll. Silva & Pena [INPA]. Pará, Óbidos 01.i.1907, 1♀, coll. Ducke, A.[MPEG]. Óbidos 07.i.1905, 1♀, coll. Ducke, A. [BME]. Óbidos 03.i.1907, 1♀, coll. Ducke, A. [BME].

Comments. The redescription above is based on a female from Brazil: Pará, Óbidos.



FIGURES 7–12. *Ipsiura bisulcata*, ♀. 7. Habitus, lateral view. 8. Head, frontal view. 9. T3, postero-dorsal view. Scale bar = 1 mm. 10. Spots of S2, ♀ (above) and ♂ (below). 11. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 12. Distribution, previous (red circle) and new (green square) records.

***Ipsiura bohartiana* Lucena sp. nov.**
(Figs 13–20)

Diagnosis. This species most closely resembles *I. leucocheiloides* (Ducke) and *I. nigriventer* Bohart. *Ipsiura bohartiana* **sp. nov.** is readily distinguished by the following combination of characters: T3 with four acute distal teeth (sometimes obtuse in *I. leucocheiloides*), without lateral whitish spot (whitish spot present in *I. leucocheiloides* and *I. nigriventer*); TFC forming a subrectangular enclosure (TFC rounded in *I. leucocheiloides*, widely interrupted medially in *I. nigriventer*); metasomal rim with conspicuous golden brown setae (silvery to golden setae in *I. leucocheiloides* and *I. nigriventer*); wing membrane dark brown (light brown in the most species); *R1* strongly reduced (present in *I. leucocheiloides* and *I. nigriventer*), short *M* distal to discoidal cell (long *M* in *I. nigriventer*) and by the distinct bisected lower genal space (not bisected in *I. leucocheiloides* and *I. nigriventer*). Additionally, the aedeagus lobes rounded and blunt apically, and the broad digitus are diagnostic for *I. bohartiana* **sp. nov.** (aedeagus lobes pointed apically in *I. leucocheiloides*).

Description of holotype female. *Body* (Fig. 13). *Length:* 8.2 mm. *Coloration:* head primarily green blue, with faint bluish highlights on vertex; F1 brownish; mesosoma metallic green, with purplish blue highlights on dorsum, especially on pronotum and mesoscutum (Fig. 16); metasoma metallic green blue; T3 with blue highlights dorsally, without whitish spot basolaterally; wing membrane dark brown, with blackish veins; femora and tibiae greenish; tarsi brown, basitarsi brownish green. *Head:* with well-developed TFC forming a rectangular enclosure, slightly interrupted medially (Fig. 14); F1 slightly longer than broad, 1.2× as long as F2; scapal basin with sparse silvery pubescence laterally, with shiny polished narrow stripe medially; malar and subantennal spaces very short, less than 0.5 MOD; lower genal space bisected by small irregular carina. *Mesosoma:* fore femur with distinct flattened area on outer surface of distal margin (Fig. 17), diameter of distal area subequal to diameter of proximal area; distinct erect setae on median tibia; hind tibia with some long setae among short ones; fore wing with short *M* distal to discoidal cell (as in Fig. 190); *R1* strongly reduced, just slightly indicated (as in Fig. 145), medial cell with sparse setae distally; dorsal surface of pronotum wider than head (Fig. 16); lower lateral pronotal surface smooth anteriorly, separated from the posterior surface by a transverse ridge (Fig. 17); metanotum rounded, without differentiated surface; mesopleural lower posterior margin strongly carinate, with distinct well-separated tooth-like projections. *Metasoma:* T3 with four acute distal teeth (Fig. 15), pit row represented by deep foveae, prepit swelling low, sloping gently; S2 spots medium-sized, nearly reaching each other medially (Fig. 18); metasomal borders with distinct gold brownish setae. *Punctation:* fore femur with coarse punctures on outer surface (Fig. 17); largest punctures on T1, mesopleuron and metanotum; dorsum of T3 with shallow, well-separated punctures, shiny interspaces.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 18; ventral surface of head and femora with long silvery setae; broad dark band occupying much of the dorsum of meso- and metasoma; T3 with narrow lateral whitish spot. *Genital capsule* (Fig. 19): cuspis as long as gonostylus; gonostylus wider than cuspis basally; digitus broad and round apically, slightly shorter than cuspis; cuspis and gonostylus setose apically; aedeagus lobes smooth, rounded, blunt apically.

Variation. Despite the disjointed geographical records, specimens are just divergent on whitish spot of lateral surfaces of T3. In all other diagnostic features the specimens are identical. Additionally, the specimens collected in Brazil: Minas Gerais, Marliéria and São Paulo, Boraceia (RPSP and UFES), are slightly shorter than holotype (7.9 mm *vs*. 8.2 mm).

Etymology. The species is named in honor of Richard Bohart, a talented entomologist and eminent taxonomist of Aculeata wasps.

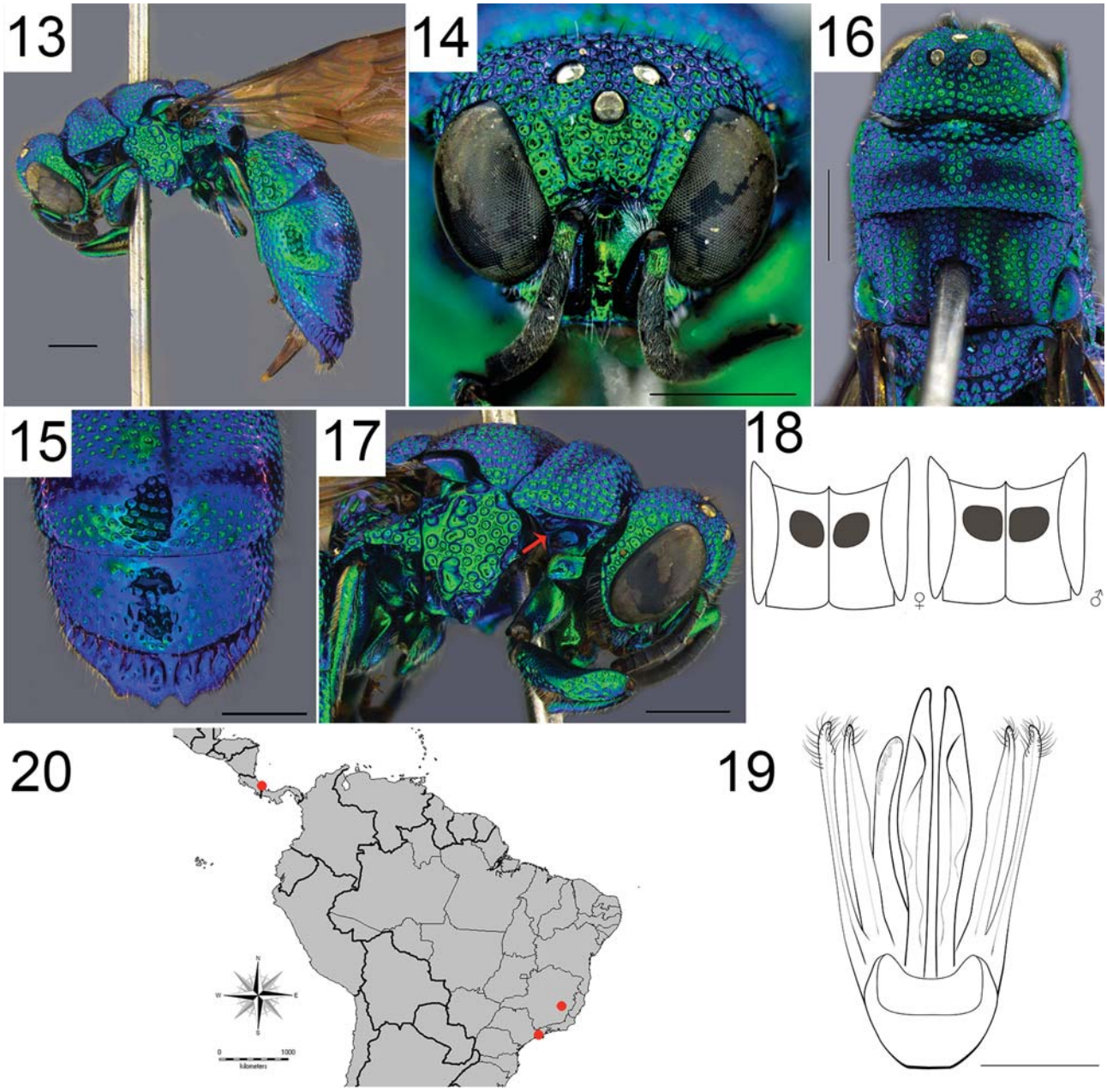
Host. Unknown.

Distribution. Brazil (MG, SP); Costa Rica (Heredia) (Fig. 20).

Remarks. *Ipsiura bohartiana* Lucena **sp. nov.** is easily distinguished from other *Ipsiura* species meanly by the subrectangular TFC, angulate laterally, fore femur with remarkable flattened area on distal margin and, bisected lower genal area. Furthermore, the aedeagus lobes rounded and blunt apically, and the broad, round digitus, are diagnostic for *I. bohartiana* **sp. nov.**.

Material examined. COSTA RICA: Prov. Heredia, La Selva 3 km S Pto. Viejo 2.iv.1985, coll. H.A. Hespenheide / Holotype ♀ *Ipsiura bohartiana* Lucena [BME]. BRAZIL: Minas Gerais, Marliéria, Parque Estadual do Rio Doce (PELD), Área Tereza 3, 19º37'S 42º34'O 09–16.xi.2003 Malaise trap, coll. J.C.R. Fontenelle, UFES

148122 / Paratype 1♀ [UFES]. Minas Gerais, Marliéria Parque Estadual do Rio Doce (PELD), Área Tereza 1, 19º37'S 42º34'O 28.x–04.xi.2007, coll. J.C.R. Fontenelle, UFES 148087 / Paratype 1♀ [UFES]. São Paulo, Boraceia, Salesópolis 21–25.x.1963, coll. Oliveira & Wygodzinsky / Paratype 1♂ [RPSP].



FIGURES 13–20. *Ipsiura bohartiana* Lucena **sp. nov.**, holotype ♀. 13. Habitus, lateral view. 14. Head, frontal view. 15. T3, postero-dorsal view. 16. Dorsum of mesosoma, dorsal view. 17. Pronotum, lateral view, posterior area of lateral surface indicated by the arrow. Scale bar = 1 mm. 18. Spots of S2, ♀ (left) and ♂ (right). 19. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 20. Distribution.

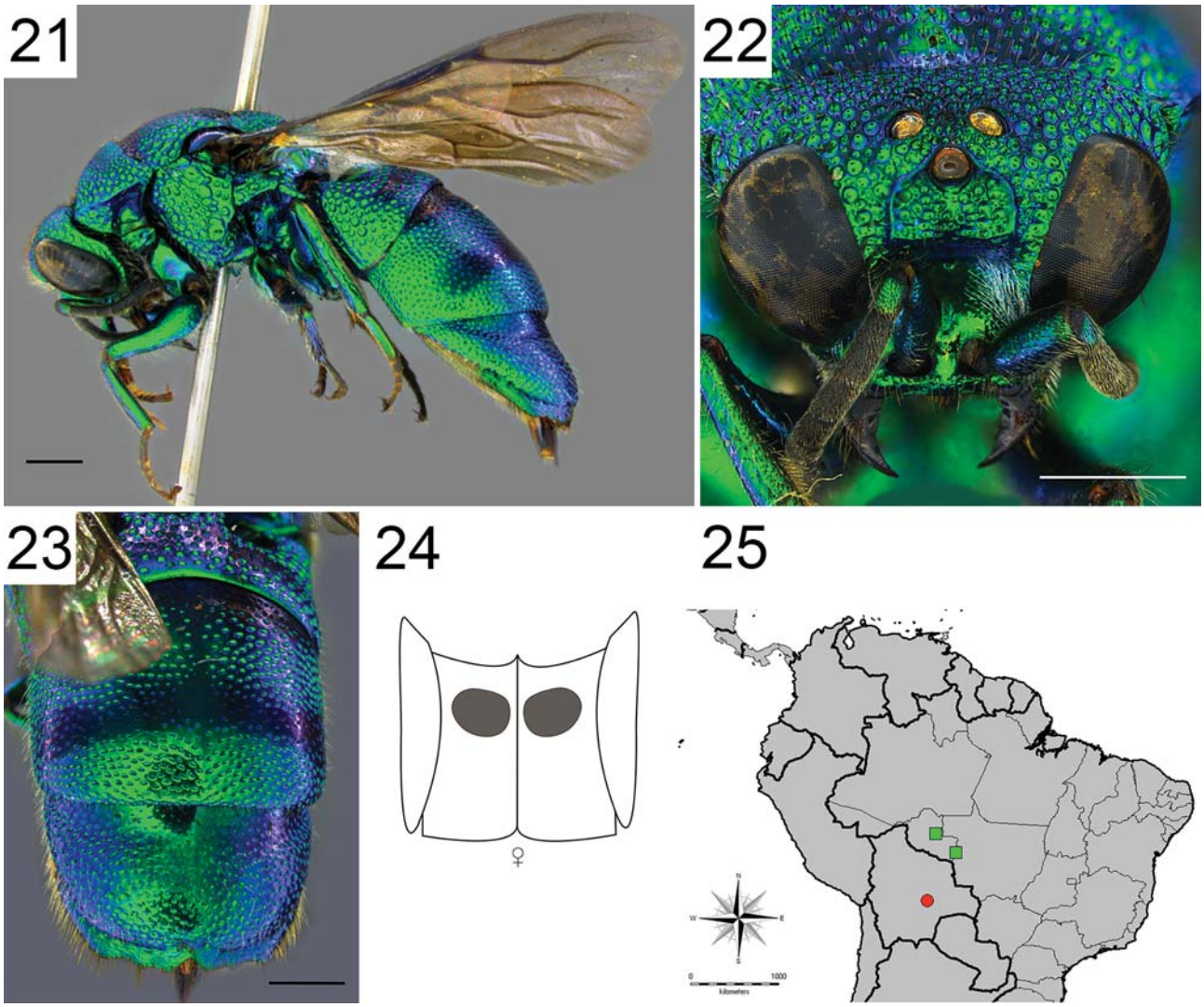
Ipsiura boliviana Bohart, 1985

(Figs 21–25)

Ipsiura boliviana Bohart, 1985: 711. Holotype ♀ [examined by photos]: BOLIVIA: Santa Cruz, Puerto Grether (BMNH).
Neochrysis (*Ipsiura*) *boliviana*: Linsenmaier 1997: 268.

Diagnosis. Large species (longer than 11 mm). *Ipsiura boliviana* most closely resembles *I. leucobasis* (Mocsáry).

It can be distinguished from *I. leucobasis* and other *Ipsiura* species by the combination of the following characters: T3 with six, obtuse, irregular distal teeth (more regular teeth in other *Ipsiura* species with six distal teeth), pit row obsolescent or obscured by anterior crease (well-developed in other *Ipsiura* species with six distal teeth) and wide and shallow depression on the median area on dorsum of pronotum (absent in *I. leucobasis*).



FIGURES 21–25. *Ipsiura boliviana*, ♀. 21. Habitus, lateral view. 22. Head, frontal view. 23. T3, postero-dorsal view. Scale bar = 1 mm. 24. Spots of S2, ♀. 25. Distribution, previous (red circle) and new (green square) records.

Female description. *Body* (Fig. 21). *Length:* 11.3 mm. *Coloration:* head predominantly metallic green, with faint bluish highlights on vertex; F1 brownish; mesosoma metallic green, with faint transverse bluish stripes on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with transverse purplish blue stripes on T1 and T2, with narrow lateral whitish spot on T3; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brown, hind basitarsus green. *Head:* TFC enclosing median ocellus, widely interrupted medially (Fig. 22); F1 longer than broad, 1.3× as long as F2; scapal basin covered with sparse silvery pubescence laterally, with broad polished stripe medially. *Mesosoma:* fore femur without flattened area or tooth-like projection ventrally on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; hind tibia with some long setae among short ones; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum much wider than head; lower lateral pronotal surface deep, smooth, punctate anteriorly, without distinct posterior area delimited by transverse ridge; pronotum with shallow wide depression medially; metanotum rounded, without differentiated surface; mesopleural lower posterior margin strongly carinate, with distinct tooth-like projections. *Metasoma:* T3 with six irregular distal teeth (Fig. 23), pit row obsolete, indicated by small obscured lateral pits; prepit swelling strong but sloping gently, marked laterally; S2

spots medium-sized, round, nearly reaching each other medially (Fig. 24); metasomal borders with some long golden setae. *Punctation:* fore femur punctate on outer surface, sparse and tiny punctures; largest punctures on T1, mesopleuron and metanotum.

Male. Unknown.

Variation. There are just a few specimens of *I. boliviana*. The most conspicous differences are in body length. Specimens collected in Brazil (Rondônia, Vilhena–DZUP) are shorter than 10.8 mm, on the other hand the holotype and paratype are larger, about 11.1 to 11.3 mm long, respectively.

Host. Unknown.

Distribution. Bolivia (Santa Cruz); Brazil (RO) (Fig. 25).

Remarks. The most similar species in the genus is *I. leucobasis*. These species share many morphological traits, as the irregular distal teeth, obsolete pit row, shape and size of S2 spots, elongated hairs on S2 and S3 of female and the robust, heavily sclerotized, serrated ovipositor. The shallow depression on the median area of pronotum is diagnostic for *I. boliviana*. Additionally, the integument of the distal margin of T3 in *I. leucobasis* is usually black and noticeably sclerotized. On the other hand in *I. boliviana* it is totally greenish. The differences in body length (about 10.8–11.3 mm in *I. boliviana* vs. 7.9–8.4 mm in *I. leucobasis*) are also diagnostic.

Material examined. BOLIVIA: Santa Cruz, Puerto Grether 230m 25.ix.1984 / Holotype ♀ *Ipsiura boliviana* Bohart [BMNH #969433]. Puerto Grether 280m 19.ix.1984, coll. M. Cooper / Paratype 1♀ [BME].

Additional material. BRAZIL: Rondônia, Ouro Preto D'Oeste 5.viii.1987, 1♀, coll. C. Elias [DZUP]. Vilhena 11.xii.1986, 2♀, coll. C. Elias [DZUP].

Comments. The redescription above is based on a female from Brazil: Rondônia, Ouro Preto D'Oeste.

Ipsiura brevispina (Ducke, 1911)

(Figs 26–29)

Chrysis brevispina Ducke, 1911: 102. Holotype ♂ [examined]: BRAZIL, Pará, A. Ducke (MZUSP).
Neochrysis (*Ipsiura*) *brevispina*: Kimsey & Bohart 1981: 78.
Ipsiura brevispina: Bohart 1985: 709.

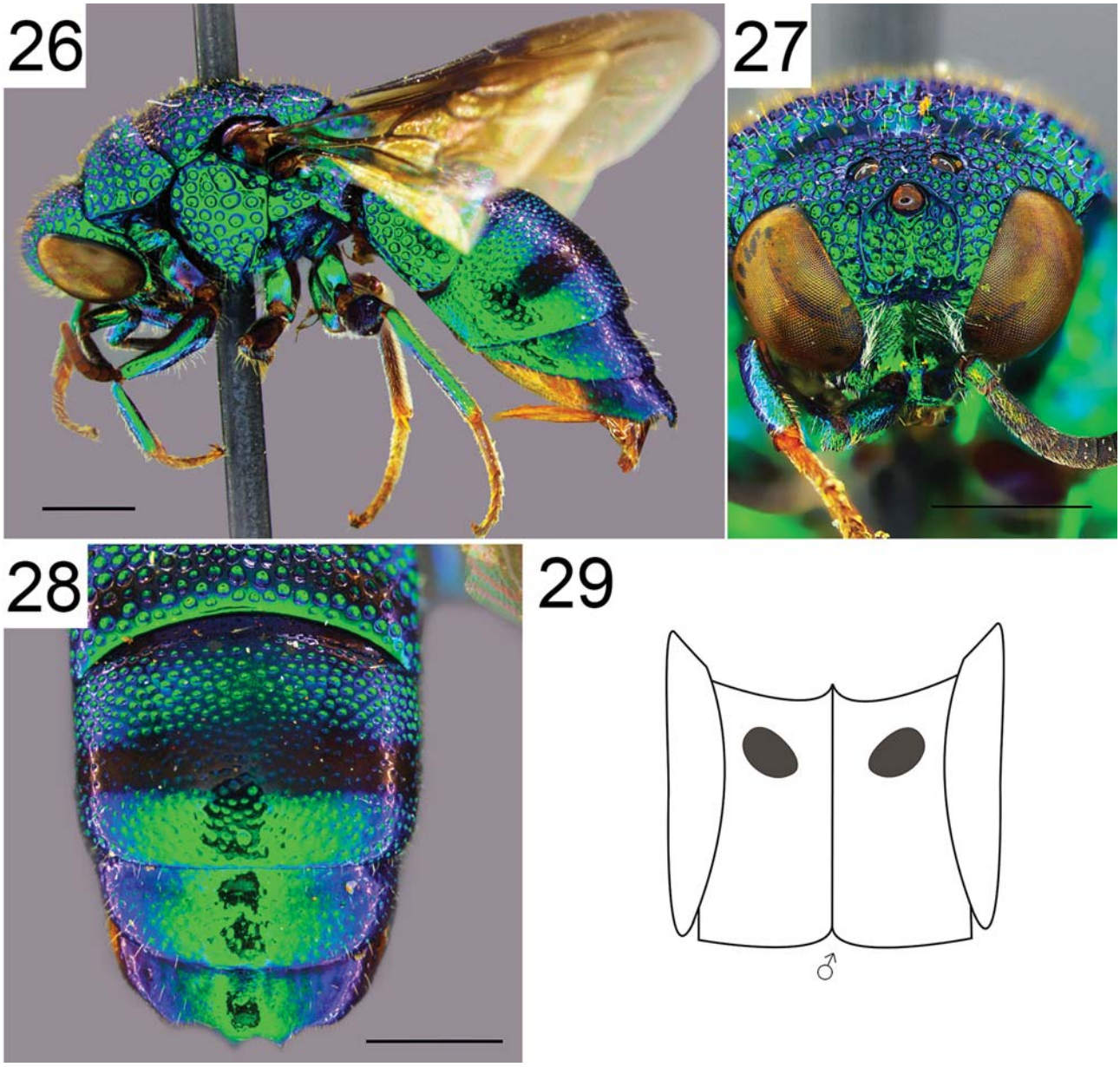
Diagnosis. *Ipsiura brevispina* most closely resembles *I. marginalis* (Brullé) and *I. ellampoides* (Ducke). It can be distinguished from these and other *Ipsiura* species by the following combination of characters: fore wing with long *M* distal to discoidal cell (short in most *Ipsiura*), *R1* absent (slightly indicated in *I. ellampoides*); T3 with four acute distal teeth (indistinguishable teeth in *I. ellampoides* and *I. marginalis*) and T2 with narrow basolateral translucent margin (absent in *I. ellampoides* and *I. marginalis*).

Holotype redescription. *Body* (Fig. 26). *Length:* 8.7 mm. *Coloration:* head predominantly green, with purplish highlights on vertex; F1 brownish green; mesosoma metallic green, with purple highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with distinct purplish stripes on dorsum of T1 and T2; T3 with shiny interspaces between punctures, broad whitish spot basolaterally; distal margin of T3 amber-colored; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brownish, hind basitarsus brownish green. *Head:* TFC enclosing the median ocellus, round enclosure, uninterrupted medially (Fig. 27); F1 longer than broad, 1.3× as long as F2 length; scapal basin with sparse silvery pubescence. *Mesosoma:* fore femur without ventral tooth-like projection or flattened area on outer surface of distal margin, diameter of distal area one-half diameter of proximal area; hind tibia with some long setae; fore wing with long *M* distal to discoidal cell, ending near distal margin of wing, *R1* absent (as in Fig. 145), medial cell asetose; dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, without distinct posterior area delimited by transverse ridge; metanotum elongate, projecting above propodeal surface; mesopleural lower posterior margin strongly carinate, with distinct equally separated tooth-like projections. *Metasoma:* T3 with four acute distal teeth (Fig. 28), prepit swelling very low, sloping gently, pit row obsolescent, indicated by tiny lateral pits; T2 with narrow translucent margin basolaterally; S2 spots small, round, separated medially at least by one spot diameter (Fig. 29). *Punctation:* tiny punctures on outer surface of fore femur; largest punctures on T1, mesopleuron and metanotum; T3 with tiny and well-separated punctures, shiny interspaces.

Female. Unknown.

Host. Unknown.

Distribution. Brazil (PA) (Fig. 30).
Material examined. Holotype only.



FIGURES 26–29. *Ipsiura brevispina*, holotype ♂. 26. Habitus, lateral view. 27. Head, frontal view. 28. T3, postero-dorsal view. Scale bar = 1 mm. 29. Spots of S2, ♂.

Ipsiura catamarcae Bohart, 1985
(Figs 31–34)

Ipsiura catamarcae Bohart, 1985: 713. Holotype ♀ [examined by photos]: ARGENTINA: Catamarca, Los Nacimientos de Abajo (FML).
Neochrysis (*Ipsiura*) *sobrina* Linsenmaier, 1985. Holotype ♀ [not examined]: BRAZIL: São Paulo (NMLS). Synonymized by Kimsey & Bohart (1991: 509).
Neochrysis (*Ipsiura*) *catamarcae*: Linsenmaier 1997: 266.

Diagnosis. This species most closely resembles *I. affinissima* (Ducke), *I. fritzi* Bohart and *I. lata* Bohart. *Ipsiura catamarcae* is readily distinguished from these and other *Ipsiura* species by the post-ocular and metapleural surfaces with polished areas, and T3 with strongly convex prepit swelling. Additionally, *I. catamarcae* has a well-

developed pit row with deep foveae (absent in *I. affinissima*, shallow foveae in *I. lata* and *I. fritzi*), fore femur with ventral tooth on distal margin (absent in *I. lata*) and the metanotum rounded (cristate to serriform in *I. lata* and *I. fritzi*).

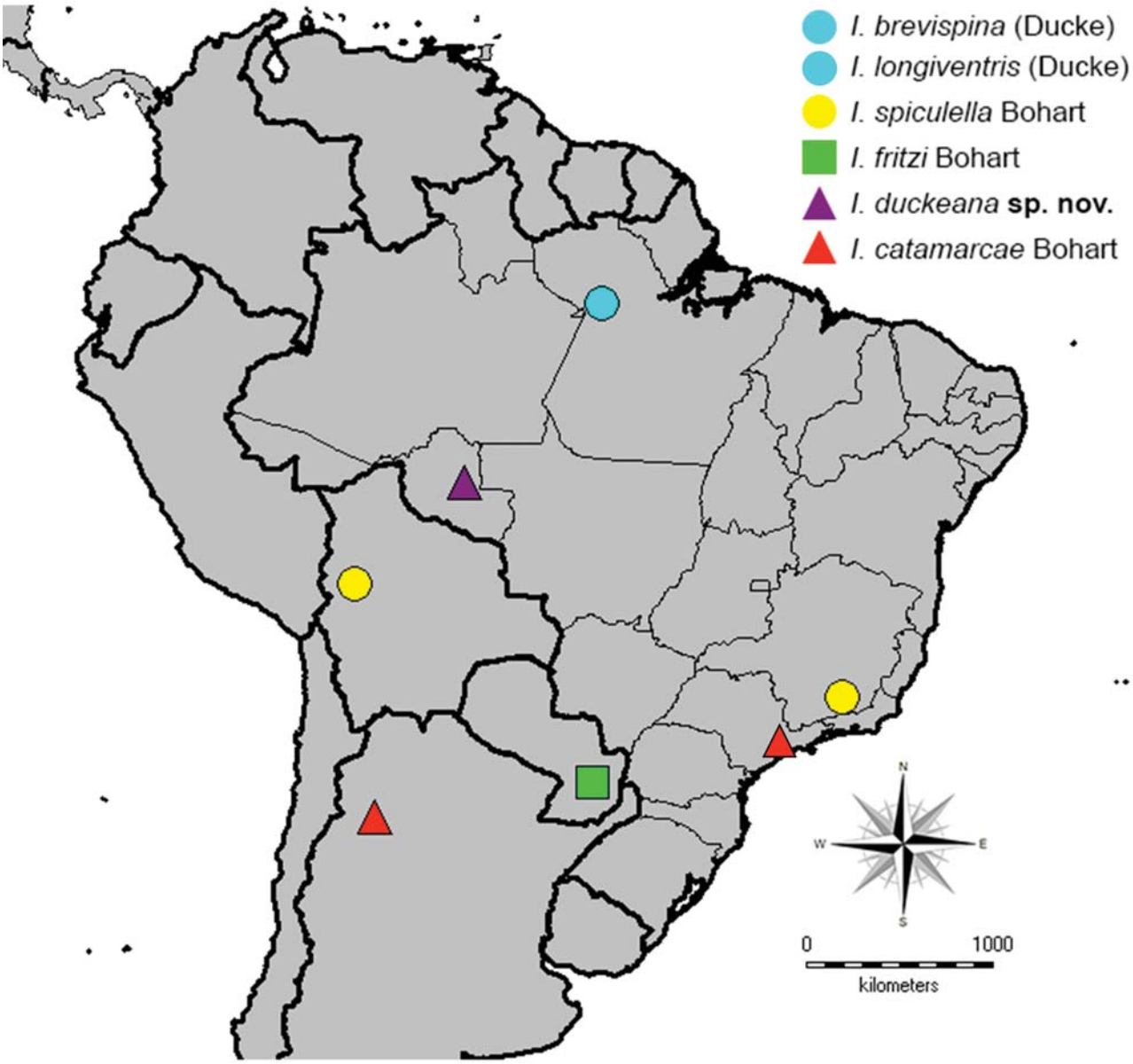


FIGURE 30. Distribution of *Ipsiura* spp. in South America.

Female description. *Body* (Fig. 31). *Length:* 9 mm. *Coloration:* head predominantly bluish green; F1 bluish brown; mesosoma metallic blue, with faint transverse bluish stripe on dorsum of pronotum; metasoma metallic blue, with transverse purple stripes on dorsum of T1 and T2; T3 with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae blue; tarsi brownish, hind basitarsus green blue. *Head:* TFC enclosing the median ocellus, subsquare, interrupted medially; F1 longer than broad, 1.3× as long as F2; scapal basin covered with dense silvery pubescence. *Mesosoma:* fore femur with distinct ventral tooth-like projection on distal margin, diameter of distal area about one-half diameter of proximal area; hind tibia with some long setae among short ones; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head (Fig. 32); lower lateral pronotal surface smooth, without distinct posterior area delimited by transverse ridge; metanotum irregularly punctate, not cristate nor projecting above propodeal surface; mesopleural lower posterior margin strongly carinate, with distinct close together tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 33), strongly convex prepit swelling; pit row with deep and large foveae; S2 spots large,

touching medially (Fig. 34). *Punctation:* fore femur impunctate on outer surface, tiny punctures marked distally; largest punctures on T1, mesopleuron and metanotum; shallow punctures on T2 and T3; post-ocular and metapleural surfaces with distinctive polished areas.

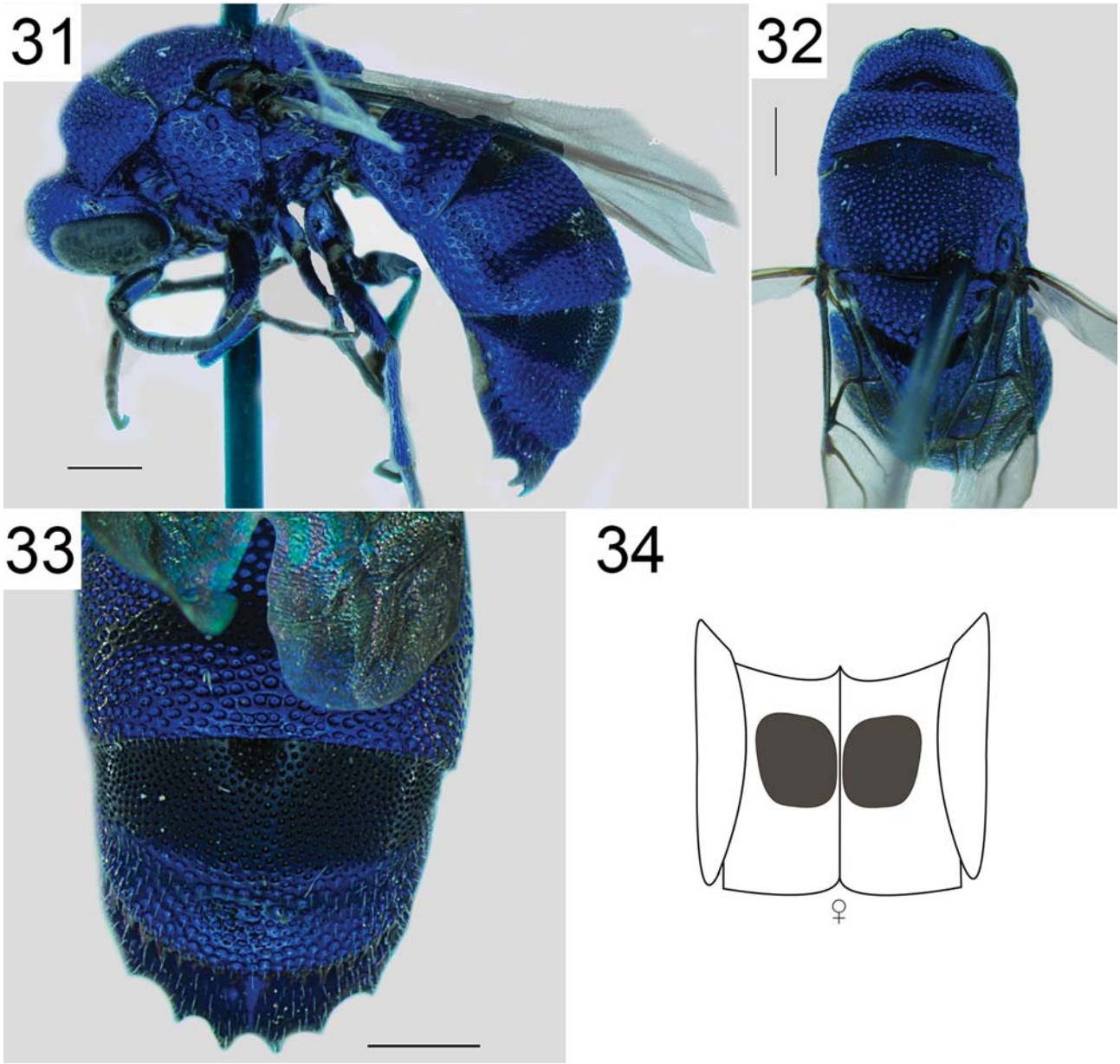
Male. Unknown.

Host. Unknown.

Distribution. Argentina (Catamarca); Brazil (SP) (Fig. 30).

Material examined. ARGENTINA: Catamarca, Los Nacimientos de Abajo, 1–15.i.1969, coll. A. Willink et al / Holotype ♀ *Ipsiura catamarcae* Bohart [FML]. Los Nacimientos de Abajo, 1–15.i.1969, coll. A. Willink et al / Paratype 1♀ [BME].

Comments. The redescription above is based on the paratype female from Argentina: Catamarca, Los Nacimientos de Abajo.

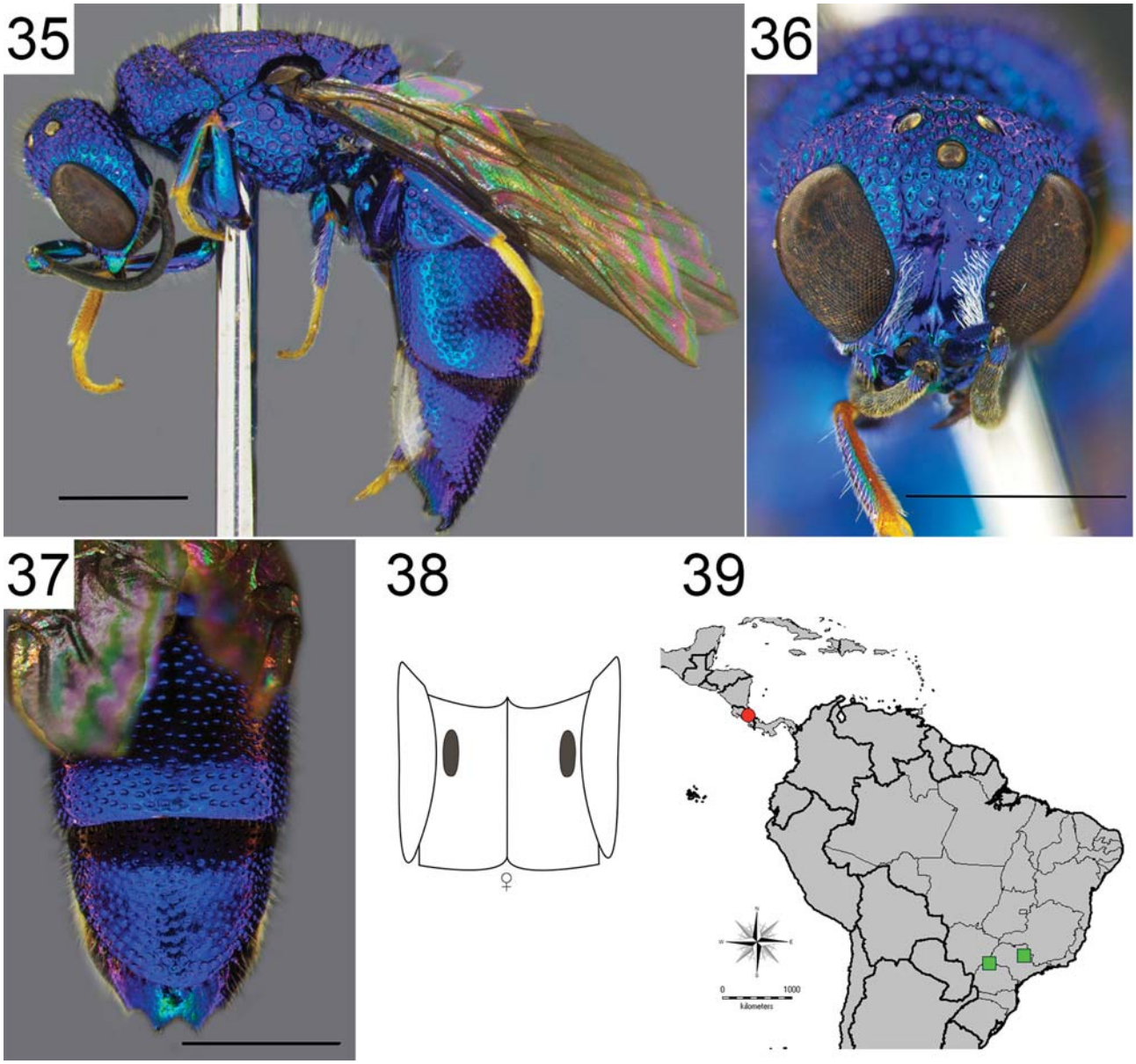


FIGURES 31–34. *Ipsiura catamarcae*, paratype ♀. 31. Habitus, lateral view. 32. Mesosoma, dorsal view. 33. T3, postero-dorsal view. Scale bar = 1 mm. 34. Spots of S2, ♀.

***Ipsiura cooperi* Bohart, 1985**
(Figs 35–39)

Ipsiura cooperi Bohart, 1985: 714. Holotype ♀ [not examined]: COSTA RICA: Cartago, Turrialba (NMNH).

Diagnosis. *Ipsiura cooperi* can be readily distinguished from other *Ipsiura* species by the following combination of characters: lateral pronotal carina irregular and not protruding; metanotum distinctively raised medially; T3 strongly convex, with lateral whitish spot, four acute distal teeth, pit row obscured, indicated only laterally; tarsi whitish; S2 spots small, oval and widely separated medially; and scapal basin with broad medial polished stripe.



FIGURES 35–39. *Ipsiura cooperi*, ♀. 35. Habitus, lateral view. 36. Head, frontal view. 37. T3, postero-dorsal view. Scale bar = 1 mm. 38. Spots of S2, ♀. 39. Distribution, previous (red circle) and new (green square) records.

Female description. *Body* (Fig. 35). *Length:* 5.5 mm. *Coloration:* head predominantly blue; F1 brown; mesosoma metallic blue, with faint transverse bluish stripe on dorsum of pronotum; metasoma metallic blue, with transverse purplish stripes on dorsum of T1 and T2; T3 with large lateral whitish spot; wing membrane light, with brown veins; femora and tibiae bluish; tarsi whitish. *Head:* TFC enclosing the median ocellus, widely interrupted medially (Fig. 36); F1 longer than broad, 1.3× as long as F2; scapal basin with dense silvery pubescence laterally, broad polished stripe medially. *Mesosoma:* fore femur without ventral tooth or flattened area on outer surface of

distal margin, diameter of distal area one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wide as or slightly wider than head; lower lateral pronotal surface punctate anteriorly, with distinct posterior area delimited by transverse ridge, lateral carina irregular and not protruding; metanotum distinctly raised medially; mesopleural lower posterior margin crenate, without tooth-like projections. *Metasoma:* T3 with four acute distal teeth (Fig. 37), pit row obsolescent, indicated by small partially obscured lateral pits, without prepit swelling; S2 spots small, oval and widely separated medially (Fig. 38). *Punctation:* tiny and sparse punctures on outer surface of fore femur; largest punctures on T1, mesopleuron and metanotum.

Male. Unknown.

Host. Unknown.

Distribution. Brazil (SP); Costa Rica (Cartago) (Fig. 39).

Remarks. *Ipsira cooperi* is readily distinguished from all other *Ipsiura* species by the metanotum raised medially, unique in this species.

Material examined. BRAZIL: São Paulo, Luis Antônio, Est. Ecol. Jataí 21º37'26''S 47º48'26''O, 11.xi.2009, 1♀, coll. NW Perioto [LRRP]. Teodoro Sampaio, Sítio São Francisco, 20.x.2011, 1♀, coll. P.R. Lopes [RPSP].

Comments. The redescription above is based on a female from Brazil: São Paulo, Luis Antônio.

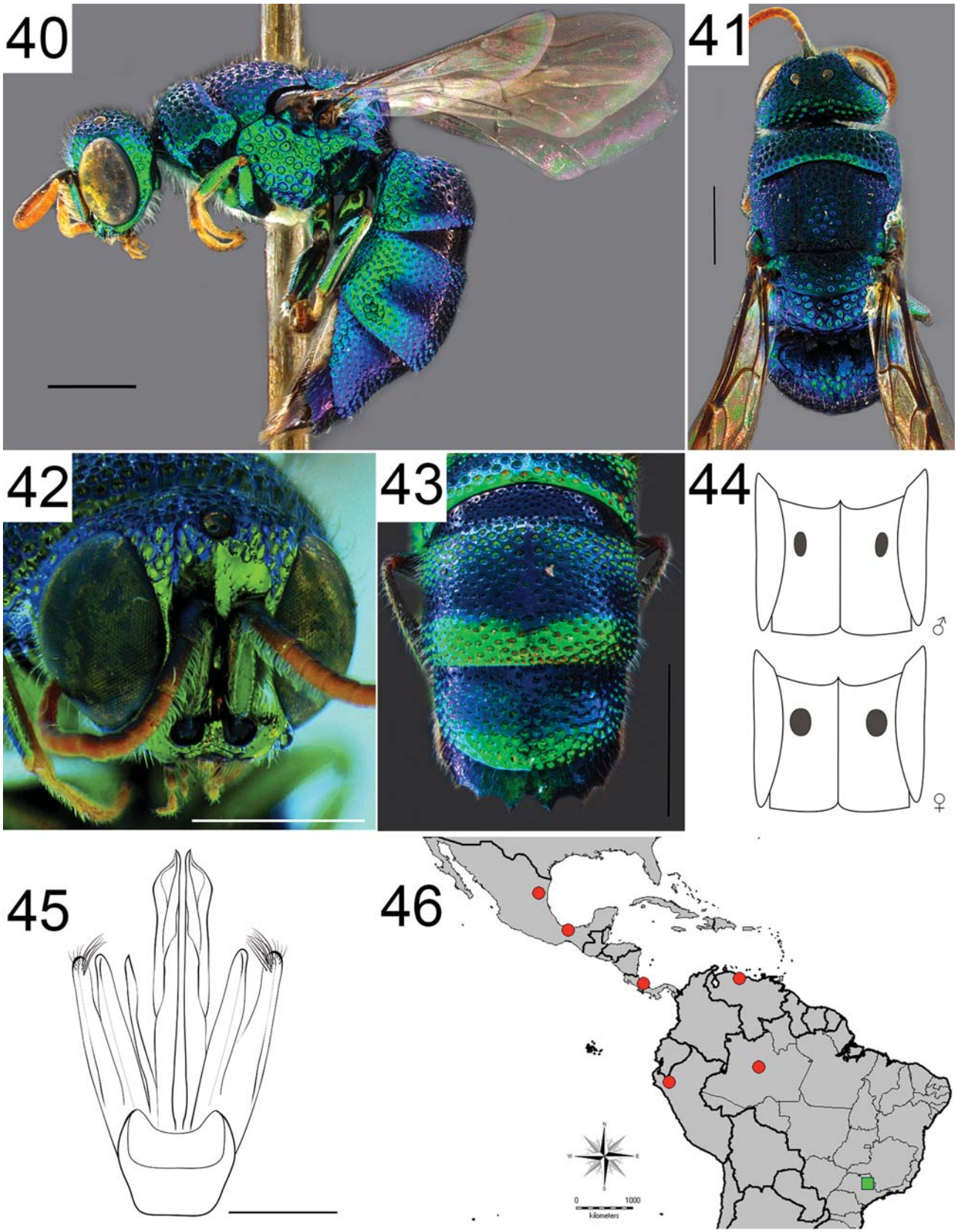
Ipsiura covillei Bohart, 1985

(Figs 40–46)

Ipsiura covillei Bohart, 1985: 714. Holotype ♂ [examined]: COSTA RICA: La Selva, Heredia, 4 km SE Puerto Viejo (BME).

Diagnosis. This species most closely resembles *Ipsiura genbergi* (Dahlbom), *I. oaxacae* Bohart and *I. frieseana* (Ducke). *Ipsiura covillei* is readily distinguished from these and other *Ipsiura* species with six distal teeth on T3, by the distinctive characters of the males: orange flagellomeres (brownish in the most species), long plumose hairs beneath flagellomeres and legs (without long hairs in most species), irregular and weakly developed pronotal carina (regular and strongly protruding in most species), and the unusual long and elaborate aedeagus lobes. Females can be easily distinguished by the following combination of characters: T3 with lateral whitish spot (absent in *I. oaxacae*), pit row partially obscured by anterior crease (pit row absent in *I. frieseana*); metanotum rounded (slightly elevated posteriorly in *I. genbergi*); S2 spots widely separated medially (close together in most species); and scapal basin with medial polished stripe (weak or covered by silvery pubescence in other related species).

Male description. *Body* (Fig. 40). *Length:* 5.8 mm. *Coloration:* head predominantly green, with purplish highlights on vertex; flagellomeres orange; mesosoma metallic green, with broad dark purple band on dorsum, especially on pronotum and mesoscutum (Fig. 41); metasoma metallic green blue, with transverse dark purple stripes on T1 and T2; large lateral whitish spot on T3; wing membrane light, with brown veins; femora and tibiae greenish; tarsi yellow whitish. *Head:* TFC enclosing the median ocellus, completely opened medially (Fig.42); F1 longer than broad, about 1.4× as long as F2; long plumose hairs beneath of legs and flagellomeres; scapal basin with sparse silvery pubescence laterally, narrow polished stripe medially. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, with tiny ventral projection basally, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum as wide as or slightly wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with distinct posterior area delimited by transverse ridge; lateral pronotal carina irregular, not protruding; metanotum rounded, without differentiated surface; mesopleural lower posterior margin crenate, without tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 43), pit row obsolescent, obscured by anterior crease and, without distinct prepit swelling; S2 spots small, round, widely separated medially (Fig. 44). *Punctation:* fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum. *Genital capsule* (Fig. 45): aedeagus lobes elaborate, sharp apically, unusually long, longer than gonostylus and cuspis; cuspis as long as gonostylus, asetose apically, slenderer than gonostylus basally; gonostylus much broader basally than apically, with long hairs distally; digitus acute apically, narrower basally than apically.



FIGURES 40–46. *Ipsiura covillei*, paratype ♂. 40. Habitus, lateral view. 41. Dorsum of mesosoma, dorsal view. 42. Head, frontal view. 43. T3, postero-dorsal view. Scale bar = 1 mm. 44. Spots of S2, ♂ (above) and ♀ (below). 45. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 46. Distribution, previous (red circle) and new (green square) records.

Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 44; without long plumose hairs beneath of legs and flagellomeres; flagellomeres brown; dorsal surfaces of body without broad dark band occupying much of the dorsum of meso-and metasoma.

Host. Species of *Trypoxylon* (specimen labels; Bohart 1985).

Distribution. Brazil (AM, SP); Costa Rica (Limón, Heredia); Mexico (Tamaulipas, Veracruz); Peru (Jaén); Venezuela (Aragua) (Fig. 46).

Material examined. COSTA RICA: Heredia, Prov. La Selva, 4 km SE Puerto Viejo 5.iv.1980 coll. R. Coville/ Trap No C307C5 / Holotype ♂ *Ipsiura covillei* Bohart (BME). Same data except / Paratypes 2♂ 3♀ [BME], 22.iii.1980 / Paratype 1♂ [BME]. MEXICO: Tamaulipas, 50 mi S Ciudad Victoria 7.vi.1961, coll. Univ. Kansas Mex. Expedition / Paratype 1♀ [BME]. Veracruz viii.1980, coll. RL Dressler / Paratype 1♀ [BME]. VENEZUELA: Aragua, 2 km N Ocumare de la Costa 21.vi.1976, coll. A.S. Menke & D. Vincent / Paratype 1♀ [BME].

Additional material. BRAZIL: Amazonas, Tefé 8.ix.1904, 1♀, A. Ducke [BME]. São Paulo, Luis Antônio Est. Ecol. Jataí, 21°36'10,5"S 47°46'03,3"W, 17.ix.2008, 3♀, coll. N.W. Perioto [LRRP]. Same data except 3.ix.2008, 1♀, [LRRP]. COSTA RICA: Heredia, Prov. La Selva Biol. Sta. 3 km S. Pto. Viejo 27.iv.1991, 1♀, coll. H.A. Hespenheide [BME]. PERU: Jaén 8.iii.1979, 1♀, coll. M.E. Irwin [BME].

Comments. The redescription above is based on a paratype male from Costa Rica: Heredia, Puerto Viejo.

Ipsiura duckeana Lucena, sp. nov.

(Figs 47–51)

Diagnosis. *Ipsiura duckeana* **sp. nov.** most closely resembles *I. cooperi* Bohart. It can be readily distinguished by T3 with four irregular distal teeth (teeth acute and regular in *I. cooperi*), without basolateral whitish spot (whitish spot present in *I. cooperi*), pit row absent (partially obscured laterally in *I. cooperi*) and TFC forming a complete arc (widely interrupted medially in *I. cooperi*).

Description of holotype female. *Body* (Fig. 47). *Length:* 7.1 mm. *Coloration:* head green; F1 green, F2 greenish brown; mesosoma metallic green, with bluish highlights on dorsum, particularly of pronotum and mesoscutum (Fig. 49); metasoma primarily green, with distinct purplish transverse stripes on dorsum of T1 and T2; T3 with bluish highlights, without lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish, basitarsi brownish green. *Head:* TFC forming a complete arc, closed medially (Fig. 48); F1 longer than broad, 1.4× as long as F2; scapal basin densely covered with silvery pubescence; malar and subantennal spaces very short, less than 0.5× MOD long. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsum of pronotum as wide or slightly narrower than head (Fig. 49); lower lateral pronotal surface irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin crenate, without distinct carina or tooth-like projections. *Metasoma:* T3 with four irregular distal teeth (Fig. 50), pit row absent, obscured by anterior crease, prepit swelling absent; S2 spots small, ovoid, widely separated medially (Fig. 51). *Punctation:* fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum.

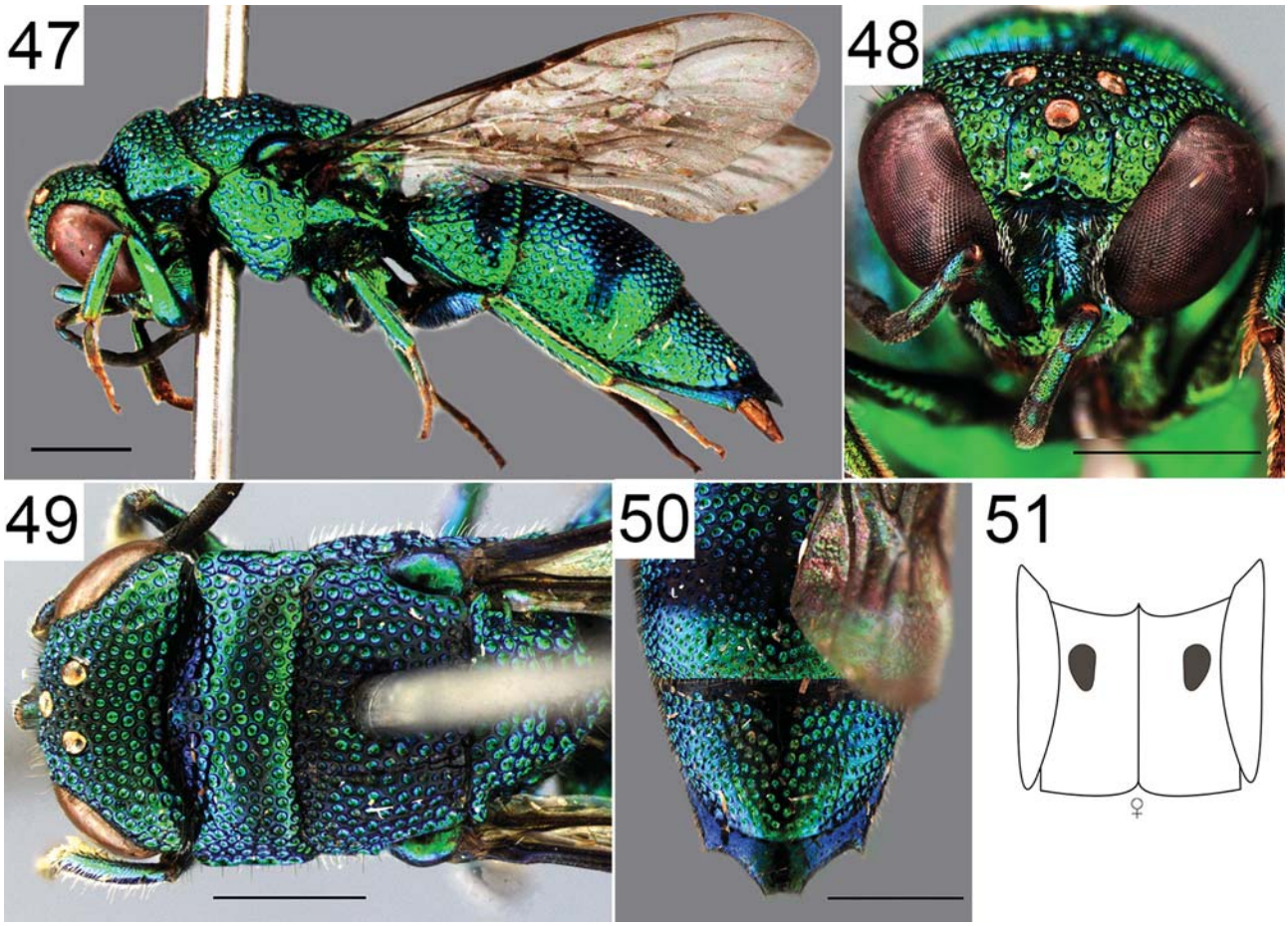
Male. Unknown.

Etymology. The species is named in honor of Adolfo Ducke, a prominent naturalist and pioneer on studies of Brazilian cuckoo wasps.

Hosts. Unknown.

Distribution. Brazil (RO) (Fig. 30).

Material examined. BRAZIL: Rondônia, Ouro Preto D'Oeste 13-15.xi.1984 / Holotype ♀ *Ipsiura duckeana* Lucena (MPEG).



FIGURES 47–51. *Ipsiura duckeana* Lucena **sp. nov.**, holotype ♀. 47. Habitus, lateral view. 48. Head, frontal view. 49. Mesosoma, dorsal view. 50. T3, postero-dorsal view. Scale bar = 1 mm. 51. Spots of S2, ♀.

Ipsiura ellampoides (Ducke, 1902)

(Figs 52–56)

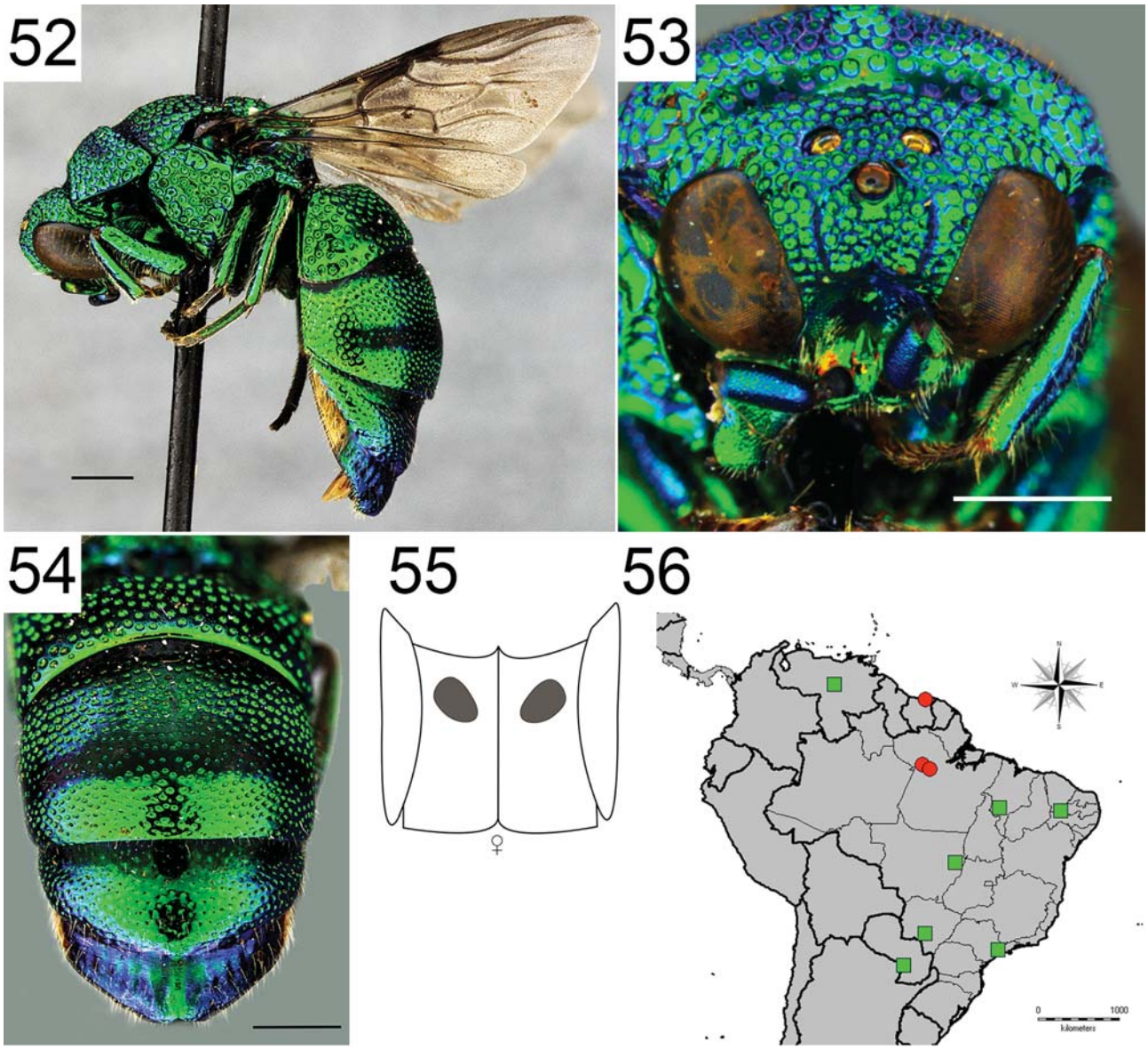
Chrysis ellampoides Ducke, 1902: 98. Lectotype ♀ [examined by photos]: BRAZIL: Pará (MNHN). Designed by Bohart, in Kimsey & Bohart (1991: 509).
Neochrysis (*Ipsiura*) *ellampoides*: Bohart 1966: 142.
Ipsiura ellampoides: Bohart 1985: 709.

Diagnosis. *Ipsiura ellampoides* most closely resembles *I. marginalis* (Brullé). It can be distinguished from that species by the following combination of characters: TFC producing a round enclosure, lacking a secondary lateral carina (rectangular-shaped, with a small secondary facial carina clearly marked in *I. marginalis*); lower posterior mesopleural carina without blunt teeth (strongly carinate, with a knob-like projection in *I. marginalis*), and metanotum slightly projecting above the propodeal surface (strongly projecting in *I. marginalis*). Additionally, *I. ellampoides* is readily distinguished from other *Ipsiura* species by the following combination of characters: fore wing with long *M* distal to discoidal cell and T3 with four very obtuse, deflected, downward distal teeth.

Female description. *Body* (Fig. 52). *Length:* 9 mm. *Coloration:* head predominantly green, with faint bluish highlights on vertex; F1 brownish green; mesosoma metallic green, with faint bluish highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with conspicuous transverse purplish stripes on T1 and T2; T3 with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown, hind basitarsus green. *Head:* TFC enclosing the median ocellus, round-shaped, completely closed medially, without secondary facial carina (Fig. 53); F1 longer than broad, 1.4× as long as F2; scapal basin covered with silvery pubescence laterally, with narrow median polished stripe. *Mesosoma:* fore femur without

flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with long *M* distal to discoidal cell, ending near distal wing margin, *R1* short, obsolescent (as in Fig. 145), medial cell asetose, sparse setae only distally; dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, sparse punctation anteriorly, without distinct posterior area delimited by transverse ridge; metanotum elongate, projecting above the propodeal surface; mesopleural lower posterior margin carinate, with distinct equally separated tooth-like projections. *Metasoma:* T3 with four broadly obtuse distal teeth, usually strongly deflected, downward (Fig. 54), pit row vestigial, indicated by shallow pits, prepit swelling strongly convex; S2 spots medium-sized, medially separated by one-half spot diameter (Fig. 55). *Punctation:* tiny and well-separated punctures on outer surface of fore femur; largest punctures on T1, mesopleuron and metanotum; T3 with shallow, well-separated punctures, shiny interspaces.

Male. Unknown.



FIGURES 52–56. *Ipsiura ellampoides*, ♀. 52. Habitus, lateral view. 53. Head, frontal view. 54. T3, postero-dorsal view. Scale bar = 1 mm. 55. Spots of S2, ♀. 56. Distribution, previous (red circle) and new (green square) records.

Variation. One specimen from Brazil: Ceará, Barbalha (BME) is uncommonly short, about 6.6 mm. Other specimens are at least longer than 7.8 mm (Brazil: Mato Grosso–BME; Paraguay: San Pedro Caballero–BME) and most of them are about 9 mm (Brazil: Pará, São Paulo; Surinam: Lelydorp and Venezuela: Bolivar; MPEG, MZUSP and BME). Body length 6.6–9.6 mm.

Hosts. Unknown.

Distribution. Brazil (CE, PA, MA, MT, MS, SP); Paraguay (Amambay); Surinam (Brokopondo); Venezuela (Fig. 56).

Remarks. Superficially *I. ellampoides* resembles *I. marginalis* (Brullé), which led Ducke (1911) to make this species as a junior synonym of *I. marginalis* (originally these species were placed in *Chrysis* Linnaeus, 1761). Subsequent analyses had revalidated the distinction between the entities (Bohart 1985; Linsenmaier 1985; 1997).

Material examined. BRAZIL: Pará 1.vii.1902, coll. A. Ducke / Lectotype ♀ *Chrysis ellampoides* Ducke (MNHN).

Additional material. BRAZIL: Ceará, Barbalha v.1969, 1♀, coll. M. Alvarenga [BME]. Maranhão, Bom Jardim–REBIO-RES, Biol. Gurupi 6.xi.2010, 1♀, coll. F.L. Oliveira, D.W.A. Marques & E.A.S. Barbosa [INPA]. Mato Grosso, Pimentel Barbosa, Rio das Mortes x.1949, 1♀ [MZUSP]. Mato Grosso do Sul, Maracajú iv.1937, 1♀, coll. G. Fairchild [BME]. Pará, Óbidos 13.i.1904, 1♀, coll. A. Ducke [MPEG]. Same data except 20.xii.1907, 1♀ [MZUSP]. Santarém ix, 1♀, coll. A. Ducke [BME]. São Paulo, São Paulo 11.ix.1966, 1♀, coll. V.N. Alin [BME]. PARAGUAY: Caballero 4.xi.1971, 1♀, coll. Pema [BME]. SURINAM: Lelydorp iv.1964, 1♀, coll. D.C Geijskes [BME]. VENEZUELA: Bolivar, rio Cuchivero Mantecal 150m 23.iii.1970, 1♀, coll. F. Fernández & C.J. Rosales [BME].

Comments. The redescription above is based on a female from Brazil: Mato Grosso, Pimentel Barbosa.

Ipsiura frieseana (Ducke, 1902)

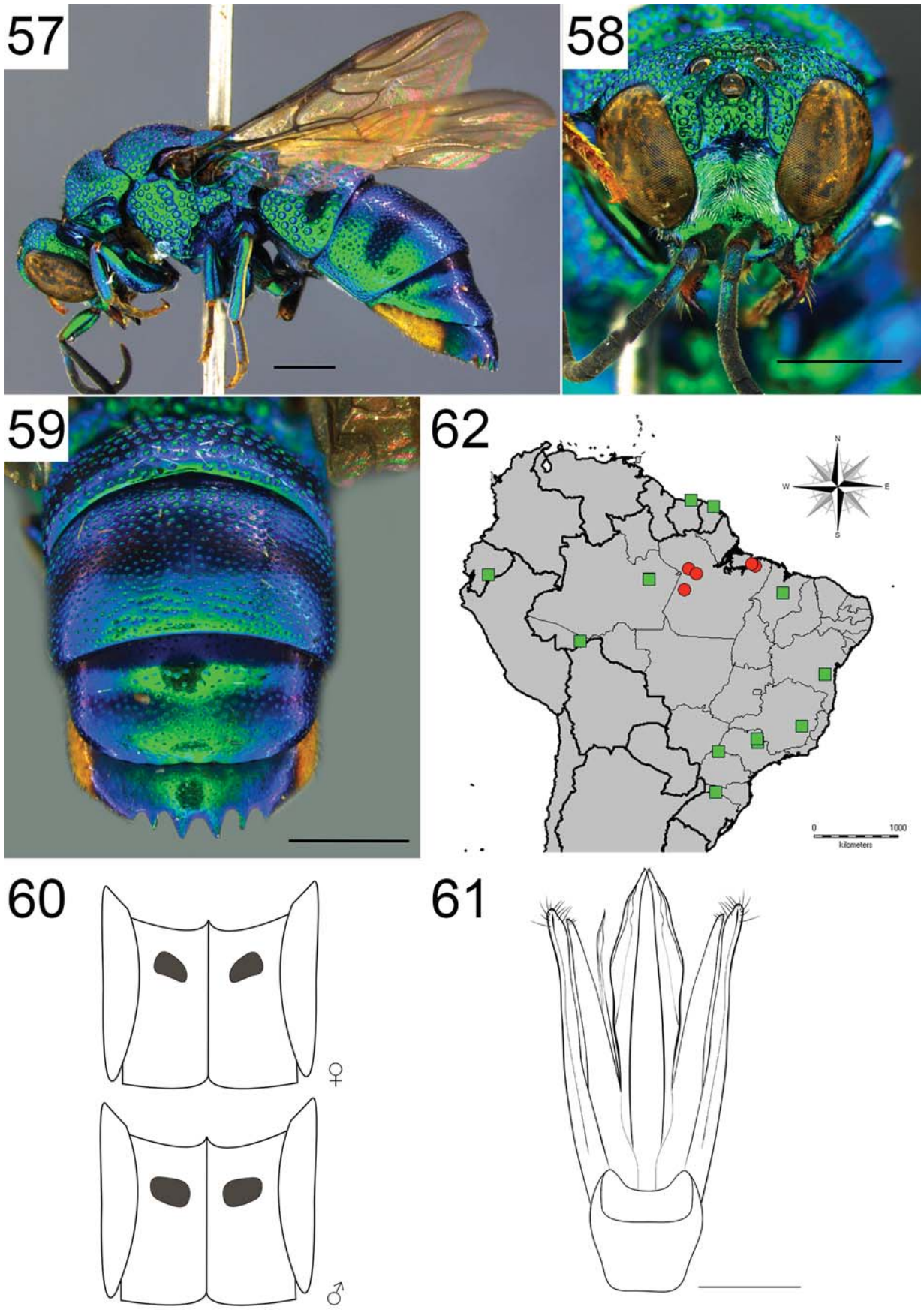
(Figs 57–62)

Chrysis frieseana Ducke, 1902: 99. Lectotype ♂ [examined by photos]: BRAZIL: Pará (MNHN). Designed by Bohart, in Kimsey & Bohart (1991: 509).
Neochrysis (*Ipsiura*) *frieseana*: Bohart 1966: 142.
Ipsiura frieseana: Bohart 1985: 710.

Diagnosis. *Ipsiura frieseana* most closely resembles *I. genbergi* (Dahlbom), *I. lilloi* Bohart and *I. obidana* Bohart. It can be readily distinguished from these and other *Ipsiura* species by the following combination of characters: T3 with low, sloping gently prepit swelling (absent or not recognizable in *I. genbergi*, *I. lilloi* and *I. obidana*), T3 with shallow, reduced, and well-separated punctures (definite punctures in *I. genbergi*, *I. lilloi* and *I. obidana*); S2 spots separated medially by one-half spot diameter (touching in *I. obidana*), and large basolateral whitish spot on T3 (narrow spot in *I. obidana*).

Female description. *Body* (Fig. 57). *Length:* 7.8 mm. *Coloration:* head predominantly green; F1 brownish green; mesosoma metallic green, with faint bluish highlights on dorsum, mostly on mesoscutum and pronotum; metasoma metallic green, with conspicuous transverse purplish stripes on dorsum of T1 and T2; T3 with large lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi light brown, meso- and hind basitarsi green. *Head:* TFC enclosing the median ocellus, widely opened medially, with distinct lateral secondary facial carina (Fig. 58); F1 longer than broad, 1.3× as long as F2; scapal basin with dense silvery pubescence. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell (as in Fig. 190), *R1* short, obsolescent (as in Fig. 145); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum slightly elevated distally but not projecting above the propodeal surface; mesopleural lower posterior margin carinate, with equally separated tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 59), pit row obsolescent, indicated primarily by small lateral pits, prepit swelling very low, sloping gently; S2 spots medium-sized, medially separated by one spot diameter (Fig. 60). *Punctation:* fore femur impunctate, tiny, sparse punctures only distally on outer surface; T3 with shallow, tiny and well-separated punctures.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 60 and the broad dark band occupying much of the dorsum of meso- and metasoma. *Genital capsule* (Fig. 61): cuspis as long as gonostylus, broader than gonostylus basally; digitus very narrow, clavate apically; gonostylus and cuspis with short setae apically; aedeagus lobes acute apically, strongly convergent apically.



FIGURES 57–62. *Ipsiura frieseana*, ♀. 57. Habitus, lateral view. 58. Head, frontal view. 59. T3, postero-dorsal view. Scale bar = 1 mm. 60. Spots of S2, ♀ (above) and ♂ (below). 61. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 62. Distribution, previous (red circle) and new (green square) records.

Variation. The most conspicuous variation noticed in this species involves the distal margin of T3. Some specimens have a short distal margin, with small teeth, and a flattened appearance in dorsal view (Brazil: Pará, Óbidos–MZUSP). Body length 6.6–7.9 mm.

Hosts. Unknown.

Distribution. Brazil (AC, AM, BA, MA, MG, PA, SC, SP); Ecuador (Morona Santiago); French Guiana (Kourou); Surinam (Paramaribo) (Fig. 62).

Material examined. BRAZIL: Pará 19.8.99 Ducke, A. / Musem Paris Brésil / Lectotype ♂ *Chrysis frieseana* Ducke (MNHM). Macapá, 21.v.1900, Ducke, A. / Paralectotype 1♀ *Chrysis frieseana* Ducke [MNHN].

Additional material. BRAZIL: Acre, Senador Guiomard, Res. Catuaba 19.xi.2002, 1♂, coll. E.F. Morato [BME]. Amazonas, Embrapa Km 31/AM 6.ii.1992, 1♀, coll. L.P. Albuquerqu & J.E. Binda [INPA]. Same data except 7.viii.1991, 1♀ [INPA], 9.i.1991, 2♀ [INPA], 12.xii.1991, 2♀ [INPA], 13.iii.1991, 1♀ [INPA], 14.xii.1991, 1♀ [INPA], 16.x.1991, 1♀ [INPA], 18.vi.1991, 1♀ [INPA], 19.ii.1992, 1♀ [INPA], 23.xi.1991, 1♀ [INPA], 25.ix.1991, 2♀ [INPA], 26.xii.1991, 3♀ [INPA], 28.vi.1991, 1♀ [INPA], 28.viii.1991, 1♀ [INPA], 28.xi.1991, 2♀ [INPA]. Manaus–Reserva Ducke/AM 1.xii.1988, 1♀, coll. J.A. Rafael [INPA]. Same data except 6.x.1988, 2♀ [INPA], 7.xii.1988, 1♀ 1♂ [INPA], 12.i.1989, 1♀ [INPA], 15.viii.1978, 1♀ [INPA], 19.i.1989, 1♀, coll. L.P. Albuquerque & J.E. Binda [INPA]. Manaus–Reserva Ducke/AM 26.viii.1988, 3♀, coll. Y.C. Mara & F. Xavi [INPA]. Same data except 30.iv.1982, 1♀, coll. J.A. Rafael [INPA], x.2003, 1♀, coll. A. Henriques [INPA]. Bahia, Jequié *campus* da UESB II 25.iii.2007, 1♀, coll. J.C. Silva-JR & Col. [LEBIC]. Maranhão, Igarapé Grande–Aldeia Araçu v.1963, 1♀, coll. Malkin [BME]. Minas Gerais, Marliéria, Parque Estadual do Rio Doce (PELD), Área Tereza 3, 26.x.2004, 1♀, coll. J.C.R. Fontenelle [UFES]. Same data except 24.x.2002, 1♀ [UFES], 03–10.xi.2004, 1♀ [UFES], 18–25.x.2001, 1♀ [UFES], 24–31.x.2002, 1♀ [UFES], 24.x.2002, 1♀ [UFES], 08–15.xi.2001, 1♀ [UFES], 28.x.2007, 1♀ [UFES], 18–25.x.2001, 1♀ [UFES], 10–17.xi.2004, 1♀ [UFES], 07–14.viii.2002, 1♀ [UFES], 14.xi.2002, 1♀ [UFES], 24.x.2002, 1♀ [UFES], 24–31.x.2002, 2♀ [UFES], 18–25.x.2001, 1♀ [UFES], 09–1.xi.2003, 1♀ [UFES], 03–10.xi.2004, 2♀ [UFES], 09–13.xii.2003, 1♀ [UFES], 08–10.xii.2003, 1♂ [UFES], 20–27.x.2004, 1♂ [UFES]. Pará, Bujaru 7.x.1977, 1♀, coll. P. Waldir [MPEG]. Óbidos, 1♀, coll. A. Ducke [MZUSP]. Same data except 24.xii.1904, 1♀, [MPEG], 4.ix.1907, 1♀ [MPEG], 1.i.1907, 1♀ [BME], 21.xii.1903, 1♀ [MPEG], 3.i.1905, 1♂ [MPEG]. Teffé 22.vi.1906, 1♂, coll. A. Ducke [MPEG]. Itaituba, R. Tapajós 4.ix.1902, 1♂, A. Ducke [MPEG]. Itaituba, R. Tapajós 4.ix.1902, 1♂, coll. A. Ducke [MPEG]. Santarém ix, 1♂, coll. A. Ducke [BME]. Santa Catarina, Nova Teutonia ii.1966, 1♂, coll. Fritz Plaumann [BME]. São Paulo, Luis Antônio, Est. Ecol. Jataí 21.xi.2007, 1♀, coll. N.W. Perioto [LRRP]. Same data except 7.xi.2007, 1♀ [LRRP]. Ribeirão Preto, campus USP, 13–16.x.2013, 1♀, coll. Martins, Ignácio, Fachin & Porto [RPSP]. Teodoro Sampaio, Parque Estadual Morro do Diabo, Sítio São Francisco, 21.i.2012, 1♀, coll. P.R. Lopes [RPSP]. ECUADOR: Morona Santiago, Cord. De Cutucu 2.vi.1981, 1♂, coll. M. Cooper [BME]. Same data except 3.vi.1981, 1♂ [BME], 9.v.1981, 1♂ [BME]. FRENCH GUIANA: Kourou, Dégrad Saramaca vi.2005, 1♀, coll. D. Faure [BME]. SURINAM: Paramaribo, Ma Retraite 20.i.1964, 1♀, coll. D.C. Geijskes [BME].

Comments. The redescription above is based on a female from Brazil: Amazonas, Manaus.

Ipsiura fritzi Bohart, 1985

(Figs 63–66)

Ipsiura fritzi Bohart, 1985: 715. Holotype ♀ [not examined]: PARAGUAY, Caaguazú (Coll. Manfredo Fritz).

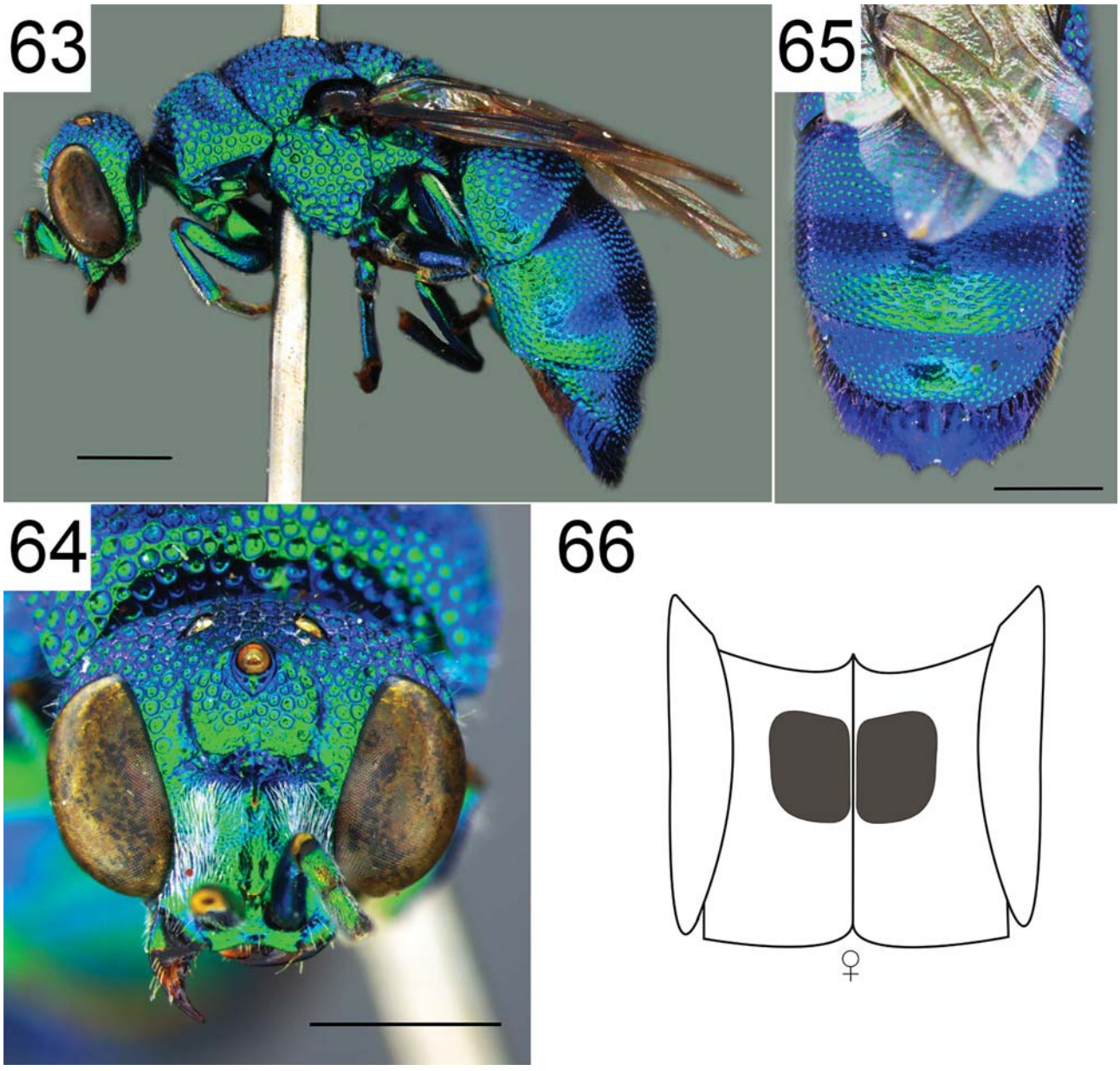
Diagnosis. *Ipsiura fritzi* most closely resembles *I. lata* Bohart and *I. obidensis* (Ducke). It is readily distinguished from these and other *Ipsiura* species by the following combination of characters: fore femur with sparse and reduced punctation on outer surface (coarsely punctate in *I. lata* and *I. obidensis*), and broad, round TFC arc (longer than broad in *I. lata*, broader than long in *I. obidensis*). Additionally, *I. fritzi* has T3 with six distal teeth; lower posterior margin of mesopleuron carinate, with distinct close together tooth-like projections, and large S2 spots touching medially.

Female description. *Body* (Fig. 63). *Length:* 7.4 mm. *Coloration:* head primarily green, with purplish blue highlights on vertex; F1 brownish green; mesosoma metallic green, with purplish blue highlights on dorsum, particularly on pronotum; metasoma metallic green, with distinct purple transverse stripes on T1 and T2, narrow

basolateral whitish spot on T3; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brown, hind basitarsus green. *Head:* TFC broad, enclosing the median ocellus, almost completely closed medially (Fig. 64); F1 longer than broad, 1.3× as long as F2; scapal basin covered with dense silvery pubescence. *Mesosoma:* fore femur without ventral tooth projection on distal margin, slightly flattened distally, diameter of distal area about one-half diameter of proximal area; hind tibia with some long setae among short ones; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum irregularly punctate, slightly elevated medially, but not projecting above propodeum; mesopleural lower posterior margin strongly carinate, with distinct close together tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 65), pit row with large foveae along distal margin, prepit swelling sloping gently; S2 spots large, touching medially (Fig. 66). *Punctation:* fore femur with sparse and reduced punctation on outer surface; largest punctures on T1, mesopleuron and metanotum.

Male. Unknown.

Host. Unknown.



FIGURES 67–72. *Ipsiura fritzi*, paratype ♀. 63. Habitus, lateral view. 64. Head, frontal view. 65. T3, postero-dorsal view. Scale bar = 1 mm. 66. Spots of S2, ♀.

Distribution. Paraguay (Caaguazú) (Fig. 30).

Material examined. PARAGUAY: Caaguazú, xii.1977, coll. M. Fritz / Paratype 1♀ *Ipsiura fritzi* Bohart (BME).

Comments. The redescription above is based on the paratype female from Paraguay: Caaguazú.

Ipsiura genbergi (Dahlbom, 1854)

(Figs 67–72)

Chrysis genbergi Dahlbom, 1854: 319. Holotype ♀ [not examined]: BRAZIL: "Brasília" (ZMLU).
Pleurocera (*Ipsiura*) *genbergi*: Linsenmaier 1959: 74.
Neochrysis (*Ipsiura*) *genbergi*: Bohart 1966: 142.
Ipsiura genbergi: Bohart 1985: 711.

Diagnosis. Superficially *Ipsiura genbergi* most closely resembles *I. lilloi* Bohart and *I. frieseana* (Ducke). It can be distinguished from these and other *Ipsiura* species by the TFC widely opened medially, metanotum somewhat elevated distally and the conspicuous shiny bluish purple transverse stripes on dorsum of T1 and T2.

Male description. *Body* (Fig. 67). *Length:* 7.4 mm. *Coloration:* head predominantly light green, with purple blue highlights on vertex; F1 green; mesosoma metallic green, with bluish purple highlights on dorsum, particularly on pronotum, mesoscutum and metanotum; metasoma metallic green, with distinct transverse bluish purple stripes on dorsum of T1 and T2, T3 with faint bluish highlights on dorsum, and lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brownish, basitarsi brownish green. *Head:* TFC enclosing the median ocellus, widely interrupted medially, with marked lateral secondary facial carina (Fig. 68); F1 longer than broad, 1.3× as long as F2; scapal basin covered with dense silvery pubescence; fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area one-half or less diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsum of pronotum wider than head; lower lateral pronotal surface punctate anteriorly, with distinct posterior area delimited by transverse ridge; metanotum somewhat elevated distally projecting above propodeal surface (lateral view); mesopleural lower posterior margin carinate, with indistinct small tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 69), pit row partially covered by anterior crease, without prepit swelling; S2 spots medium-sized to small, medially separated by one spot distance (Fig. 70). *Punctation:* tiny, sparse punctures on outer surface of fore femur; largest punctures on T1, mesopleuron and metanotum. *Genital capsule* (Fig. 71): cuspis as long as gonostylus; cuspis sharp, pointed apically; digitus very narrow and delicate, clavate apically; gonostylus and cuspis with short setae apically; aedeagus lobes acute apically.

Female. Same as male except for the characteristic shape of S2 spots as shown in Fig. 70.

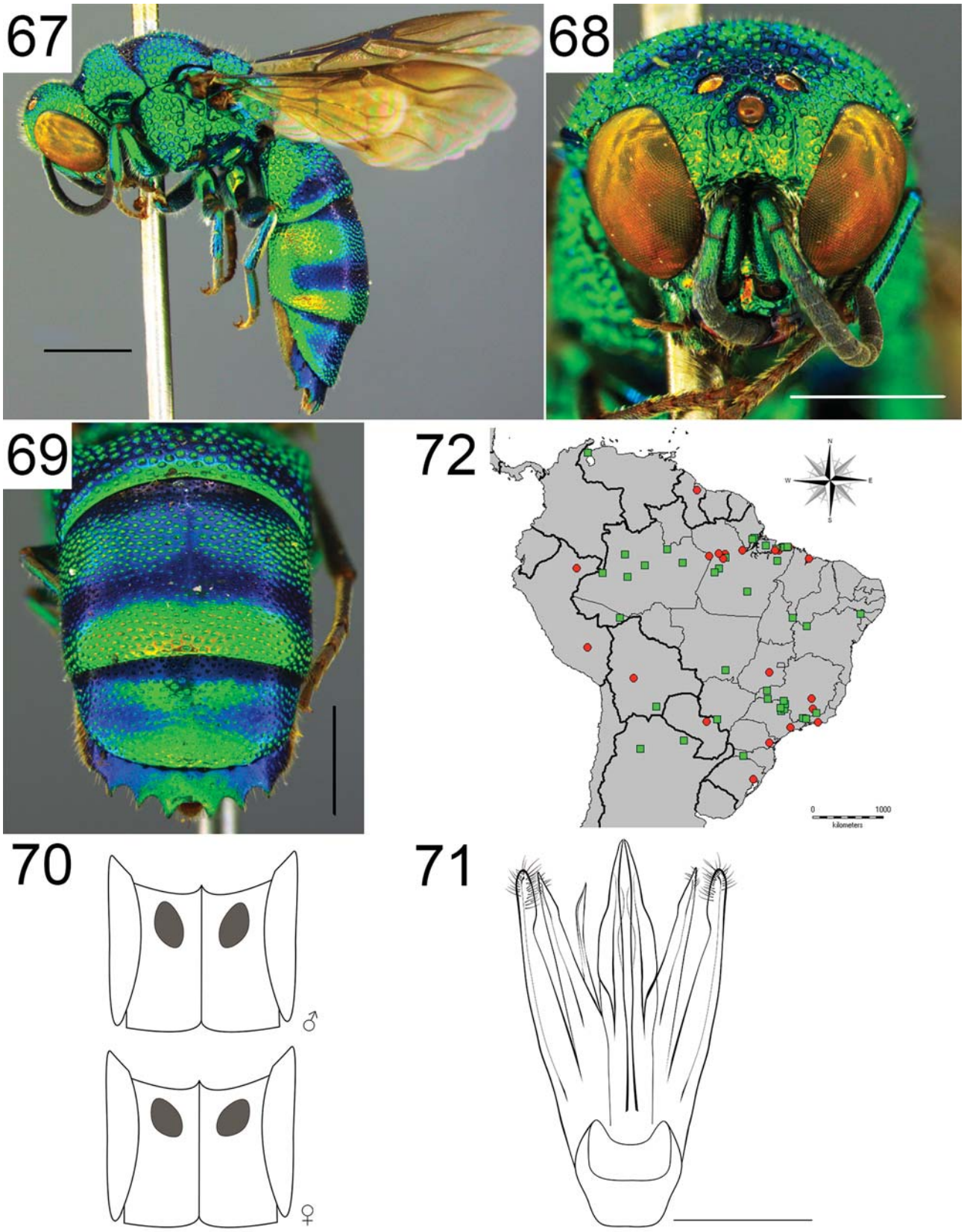
Variation. The color pattern varies from green to bluish, especially in males from Amazonian localities. Body length 6.9–7.6 mm.

Hosts. Species of *Trypoxylon* (label records).

Distribution. Argentina (Formosa, Tucumán); Bolivia (Tarija); Brazil (AL, AM, AP, BA, GO, MA, MG, MT, MS, PA, PR, RJ, RS, SC, SP); Guyana; Paraguay (Amambay); Peru (Cuzco); Venezuela (Zulia) (Fig. 72).

Remarks. *Ipsiura genbergi* is one of the most common species of *Ipsiura* and is widespread in South America.

Material examined. ARGENTINA: Formosa, Ibarreta 21.x.1977, 1♀, coll. P. Fidalgo [BME]. Tucumán, Trancas i.1987, 2♂, coll. Manfredo Fritz [BME]. BOLIVIA: Tarija, Tiguipa i.1972, 3♂ 2♀, coll. Manfredo Fritz [BME]. BRAZIL: Alagoas, Olho D'água do Casado 6.xii.2002, 1♂, coll. Débora Moura [LEBIC]. Amapá, Maragão 20.x.1900, 1♀, coll. A. Ducke [MPEG]. Maragão 21.xi.1981, 1♀, coll. I.S. Gerayeb [MPEG]. Vista Alegre, Rio Branco 6.ix.1924, 1♀, coll. J.Bequaert [BME]. Amazonas, Benjamin 18.ix.1928, 1♀, coll. K. Lenko [MZUSP]. Carauari vii.2005, 1♀, coll. Xavier-Filho [INPA]. Carvoeiro Rio Negro-Rio Branco 26.viii.1927, 2♂, coll. J. Bequaert [BME]. Serra dos Porcos viii.1977, 1♀, coll. Franklini Moore [INPA]. Bahia, Santa Rita de Cássia-Riacho Veredão 13–18.vii.1991, 1♀, coll. CRF Brandão [MZUSP]. Goiás, 2♀, coll. A. Ducke [MZUSP]. Maranhão, São Luís 6.vi.1907, 1♀, coll. A. Ducke [MPEG]. Mato Grosso, Rondonópolis 8.xii.1950, 2♀, coll. Dirings [MZUSP]. Minas Gerais, 2♂ 1♀, coll. A. Ducke [MZUSP]. Barbacena 27.x.1905, 1♂, coll. A. Ducke [MPEG]. Faz. Exp. Ituiutara 12.iii.1991, 1♀, coll. José Maria [CAVS]. Same data except 16.iii.1991, 1♀ [CAVS], 18.iii.1991, 2♀ [CAVS], 21.iii.1991, 2♀ [CAVS], 29.iii.1991, 1♀ [CAVS], 1.iv.1991, 1♀ [CAVS], 9.iv.1991,



FIGURES 67–72. *Ipsiura genbergi*, ♂. 67. Habitus, lateral view. 68. Head, frontal view. 69. T3, postero-dorsal view. Scale bar = 1 mm. 70. Spots of S2, ♂ (above) and ♀ (below). 71. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 72. Distribution, previous (red circle) and new (green square) records.

1♀ [CAVS]. Juiz de Fora 27.vii.1940, 1♂, coll. Araújo cols [MZUSP]. Passa Quatro 1903, 1♂, coll. E.R. Wagner [BME]. Pará, 24.ix.1901, 1♂, coll. A. Ducke [MPEG]. Same data except, 23.xi.1975, 1♀, coll. I.S. Gorayeb [INPA], 30.vii.1909, 1♂, coll. A. Ducke [MPEG]. Alenquer 2.vii.1979, 2♂ 3♀, coll. W. França [MPEG]. Alenquer 5.vii.1979, 1♂ 1♀, coll. W. França [MPEG]. Almeirim 8.xii.1902, 2♂, coll. A. Ducke [MPEG]. Same data except 9.xii.1902, 1♀ [MPEG], 16.xii.1902, 1♀ [MPEG]. Alter do Chão 19.ix.1969, 1♂ 1♀, coll. Exp. Perm. Amaz. [MZUSP]. Belém ix.1964, 1♂ 1♀, coll. E. Dente [MZUSP]. Bragança 14.viii.1977, 2♂, coll. W.L. Overel [MPEG]. Bujaru 25.iii.1978, 1♂, coll. P. Nolasco [MPEG]. Faro 12.v.1911, 1♀, coll. A. Ducke [MPEG]. Fordlandia i.1956, 2♂ 2♀, coll. R. Damasceno [MZUSP]. Ilha de Marajó, 1♂, coll. Chaves [MPEG]. Itaituba, Rio Tapajós vii.1960, 1♂, coll. Dirings [MZUSP]. Macapá 19.v.1900, 1♂, coll. A. Ducke [MPEG]. Óbidos i.1956, 5♂, coll. Dirings [MZUSP]. Óbidos 11.v. 1950, 2♂, coll. Campos Bella [MZUSP]. Peixe Boi 7.vii.1982, 1♂, coll. I.S. Gerayeb [MPEG]. R. Japurá 14.ix.1904, 1♀, coll. A. Ducke [MPEG]. Santarém 3.ix.1962, 1♀ [INPA]. Teffé 9.ix.1904, 1♀, coll. A. Ducke [MPEG]. Tracuateve 20.xi.1976, 1♂, coll. I.S. Gorayeb [INPA]. Tumucumaque viii.1965, 2♀, coll. Migliaze [MPEG]. Xingú, 2♀, coll. A. Ducke [MPEG]. Rio de Janeiro, Itatiaia iv.1910, 1♀, coll. J. Lima [MZUSP]. Santa Catarina, Nova Teutonia 8.xi.1954, 4♀, coll. Fritz Plaumann [BME]. São Paulo, Araçatuba, x.1961, 1♀, coll. J Lane & Rabello [MZUSP]. Cajuru, Faz. Sta. Carlota 14.xii. 1989, 2♀, coll. Garófalo, Camillo e Serrano [CAVS]. Luis Antônio, Est.Ecol.Jataí 26.ii.1992, 2♀, coll. Garófalo, Camillo e Serrano [CAVS]. Onda Verde, Faz. São João i.1946, 1♀, coll. F. Lane [MZUSP]. Paulo de Farias, Est. Ecol. P. de Farias 16.iii.1998, 1♂, coll. Garófalo, Gazola e Serrano [CAVS]. Same data except 15.v.1998, 1♀ [CAVS], 19.x.1998, 2♂ [CAVS], 14.xi.1998, 1♂ [CAVS], 19.xi.1998, 1♂ [CAVS], 9.xii.1998, 1♂ [CAVS], 25.i.1999, 1♀ [CAVS], 26.i.1999, 1♀ [CAVS], 5.iii.1999, 1♀ [CAVS], 24.iii.1999, 1♀ [CAVS], 26.iii.1999, 1♀ [CAVS], 20.iv.1999, 1♀ 1♂ [CAVS], 5.v.1999, 2♀ [CAVS], 27.v.1999, 3♀ [CAVS], 31.x.1999, 1♂ [CAVS], 3.xi.1999, 1♂ [CAVS], 8.xi.1999, 2♂ 2♀ [CAVS], 12.xi.1999, 1♀ [CAVS], 16.xi.1999, 1♀ [CAVS], 28.xii.1999, 3♀ [CAVS], 1.ii.2000, 2♂ [CAVS]. Patrocínio Paulista, Faz. Sta. Cecília 8.ii.2001, 1♂, coll. Garófalo, Gazola e Serrano [CAVS]. Same data except, 15.ii.2001, 1♂ [CAVS], 1.iii.2001, 1♀ [CAVS], 15.iv.2001, 1♂ [CAVS], 4.ii.1991, 1♂ [CAVS], 14.ii.1991, 1♀ [CAVS], 20.ii.1991, 1♀ [CAVS]. Ribeirão Preto, *campus* USP 17.vii.1972 , 1♀, coll. M. Mazucato [RPSP]. PARAGUAY: Cororo, San Pedro 5.xii.1983, 1♂ 1♀, coll. M. Wasbauer [BME]. Parque Nacional Del Chaco 11.ix.1981, 1♀, coll. H. Ferreira [BME]. PERU: Cuzco 28.ii.1952, 1♂, coll. F. Waytkowski [BME]. Iquitos 13.vii.1906, 1♂, coll. A. Ducke [MPEG]. VENEZUELA: Zulia, La Concepcion 18.vi.1976, 1♀, coll. A.S. Menke & D. Vincent [BME].

Comments. The redescription above is based on a male from Brazil: Pará, Alter do Chão.

Ipsiura goeldii (Ducke, 1907)

(Figs 73–77)

Chrysis goeldii Ducke, 1907: 17. Lectotype ♂ [examined by photos]: BRAZIL: Pará, Óbidos (BMNH). Designed by Bohart, in Kimsey & Bohart (1991: 509).

Chrysis albibasalis Mocsáry, 1913. Holotype ♂ [not examined]: BRAZIL: São Paulo (HNHM). Synonymized by Kimsey & Bohart (1991: 509).

Ipsiura goeldi: Bohart 1985: 711.

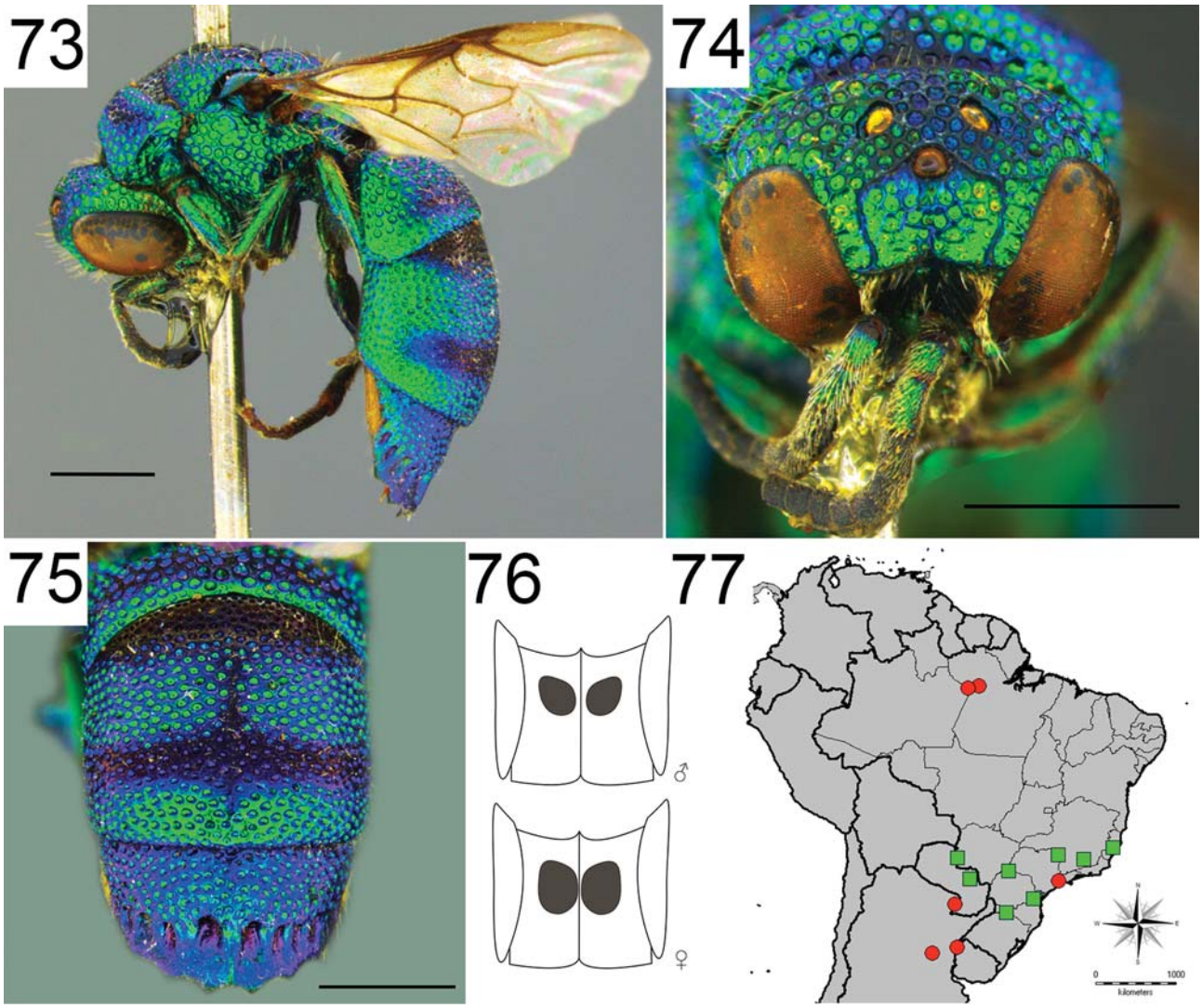
Neochrysis (*Ipsiura*) *goeldi*: Linsenmaier 1985: 466.

Diagnosis. *Ipsiura goeldii* most closely resembles *I. longiventris* (Ducke). It can be distinguished from that and other *Ipsiura* species by the bluish green body color and coarse punctation. In addition, the following combination of characters is diagnostic of *I. goeldii*: fore femur punctate on outer surface; T3 without distinct prepit swelling, six acute distal teeth; medium-sized S2 spots, and the subrectangular TFC enclosure.

Male description. *Body* (Fig. 73). *Length:* 6.7 mm. *Coloration:* head predominantly green blue, with distinct purple highlights on vertex; F1 green; mesosoma metallic green, with distinct blue highlights on dorsum, especially of pronotum and mesoscutum; metasoma metallic green blue, with transverse purple stripes on dorsum of T1 and T2, bluish highlights broadly disseminated on dorsum; T3 with bluish highlights on dorsum, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish, basitarsi green. *Head:* TFC enclosing the median ocellus, closed medially and forming a subrectangular enclosure (Fig. 74); F1 longer than broad, 1.1× as long as F2; scapal basin with dense silvery pubescence; fore femur without flattened

area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface coarsely punctate anteriorly, with distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 75), pit row completely exposed, with large, deep foveae, without prepit swelling; S2 spots medium-size to large, nearly reaching each other medially (Fig. 76). *Punctation:* coarse punctation on whole body; fore femur punctate externally; largest punctures on T1, mesopleuron and metanotum.

Female. Same as male except for the characteristic shape of S2 spots touching medially as shown in Fig. 76.



FIGURES 73–77. *Ipsiura goeldii*, ♂. 73. Habitus, lateral view. 74. Head, frontal view. 75. T3, postero-dorsal view. Scale bar = 1 mm. 76. Spots of S2, ♂ (above) and ♀ (below). 77. Distribution, previous (red circle) and new (green square) records.

Variation. Body length 6.7–7 mm.

Hosts. Unknown.

Distribution. Argentina (Formosa, Santa Fe); Brazil (ES, MG, PA, PR, SC, SP); Paraguay (San Pedro) (Fig. 77).

Material examined. BRAZIL: Pará, Óbidos / Lectotype ♂ *Chrysis goeldii* Ducke (BMNH).

Additional material. ARGENTINA: Formosa, Arroyo 10.viii.1977, 1♂, coll. Porter, Stange & Fidalgo [BME]. Same data except 11.viii.1977, 1♂ [BME]. Santa Fé, 1♀, coll. Piquete [BME]. BRAZIL: Espírito Santo, Santa Tereza 5.vi.1966, 1♂, coll. C.T. & C. Elias [DZUP]. Minas Gerais, Barbacena 9.xi.1905, 1♀, coll. A. Ducke [MPEG]. Passos 9.ix.1963, 1♂, coll. Claudionor Elias [BME]. Pará, Faro 14.i.1901, 1♂, coll. A. Ducke [MPEG].

Same data except 16.xii.1905, 1♂ [MPEG], 14.xii.1906, 1♀ [MPEG]. Óbidos 22.xii.1904, 1♀, coll. A. Ducke [BME]. Pará, 1♀, coll. A. Ducke [MPEG]. Pará 20.xi.1907, 1♀ [MPEG]. Óbidos 2.i.1907, 1♂, coll. A. Ducke [MPEG]. Paraná, Araucária 18.ii.1965, 1♀, coll. Mitchell Moure [DZUP]. Santa Catarina, Nova Teutonia vi.1968, 1♀, coll. Fritz Plaumann [BME]. Same data except i.1970, 2♀ 3♂, [BME]. São Paulo, Teodoro Sampaio, Parque Estadual Morro do Diabo, Sítio São Francisco 20.x.2011, 1♀, coll. P.R. Lopes [RPSP]. Same data except Sítio Manoel 18.x.2011, 1♀ [RPSP]. PARAGUAY: San Pedro, Cororo 5.xii.1983, 1♂, coll. M. Wasbauer [BME]. Alto Paraguay 11.ix.1997, 1♂, coll. B. Garcett [INBPY].

Comments. The redescription above is based on a male from Brazil: Pará, Óbidos.

Ipsiura irwini Bohart, 1985

(Figs 78–83)

Ipsiura irwini Bohart, 1985: 715. Holotype ♂ [examined]: EL SALVADOR, 4 mi N. Quezaltepeque (BME).

Diagnosis. *Ipsiura irwini* most closely resembles *I. lata* Bohart, *I. fritzi* Bohart and *I. obidensis* (Ducke). It can be readily distinguished from those as well as from other *Ipsiura* species by the following combination of characters: T3 without lateral whitish spot (present in *I. fritzi*, *I. lata* and *I. obidensis*), with six acute distal teeth (the lateral teeth are sometimes obtuse in *I. obidensis*); metanotum cristate medially (irregularly punctate in *I. fritzi* and faintly serriform in *I. obidensis*); fore femur without definite punctures on outer surface (coarsely punctate in *I. lata* and *I. obidensis*); TFC interrupted medially (complete in *I. lata* and *I. obidensis*) and the lower posterior mesopleural margin with two small close together tooth-like projections (well-separated in *I. lata*). Additionally, the shape of aedeagus lobes is diagnostic for *I. irwini* (Fig. 82).

Male description. *Body* (Fig. 78). *Length:* 7.6 mm. *Coloration:* head predominantly green, with faint dark bluish highlights on vertex; F1 brownish green; mesosoma metallic green, with faint dark bluish highlights on dorsum, especially of pronotum and mesoscutum; metasoma metallic green blue, with distinct transverse purple stripes on dorsum of T1 and T2; T3 with blue highlights, without lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish. *Head:* TFC interrupted medially (Fig. 79); scapal basin densely covered with silvery pubescence; F1 longer than broad, 1.3× as long as F2. *Mesosoma:* fore femur with faint ventral angle on distal margin, discrete flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum raised medially, slightly cristate; mesopleural lower posterior margin carinate, with two small close together tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 80), pit row completely exposed, with well-definite foveae, prepit swelling protruding; S2 spots large, touching medially (Fig. 81). *Punctation:* outer surface of fore femur impunctate or with only tiny sparse punctures; largest punctures on T1, mesopleuron and metanotum; well-definite punctures on dorsal surface of head and mesosoma, shallow on T2 and T3. *Genital capsule* (Fig. 82): cuspis as long as gonostylus; digitus long, very narrow, subequal to cuspis in size, pointed, clavate apically; gonostylus as broad as cuspis basally; gonostylus and cuspis with short setae apically; aedeagus with sinuouse margins, lobes elaborate, acute apically.

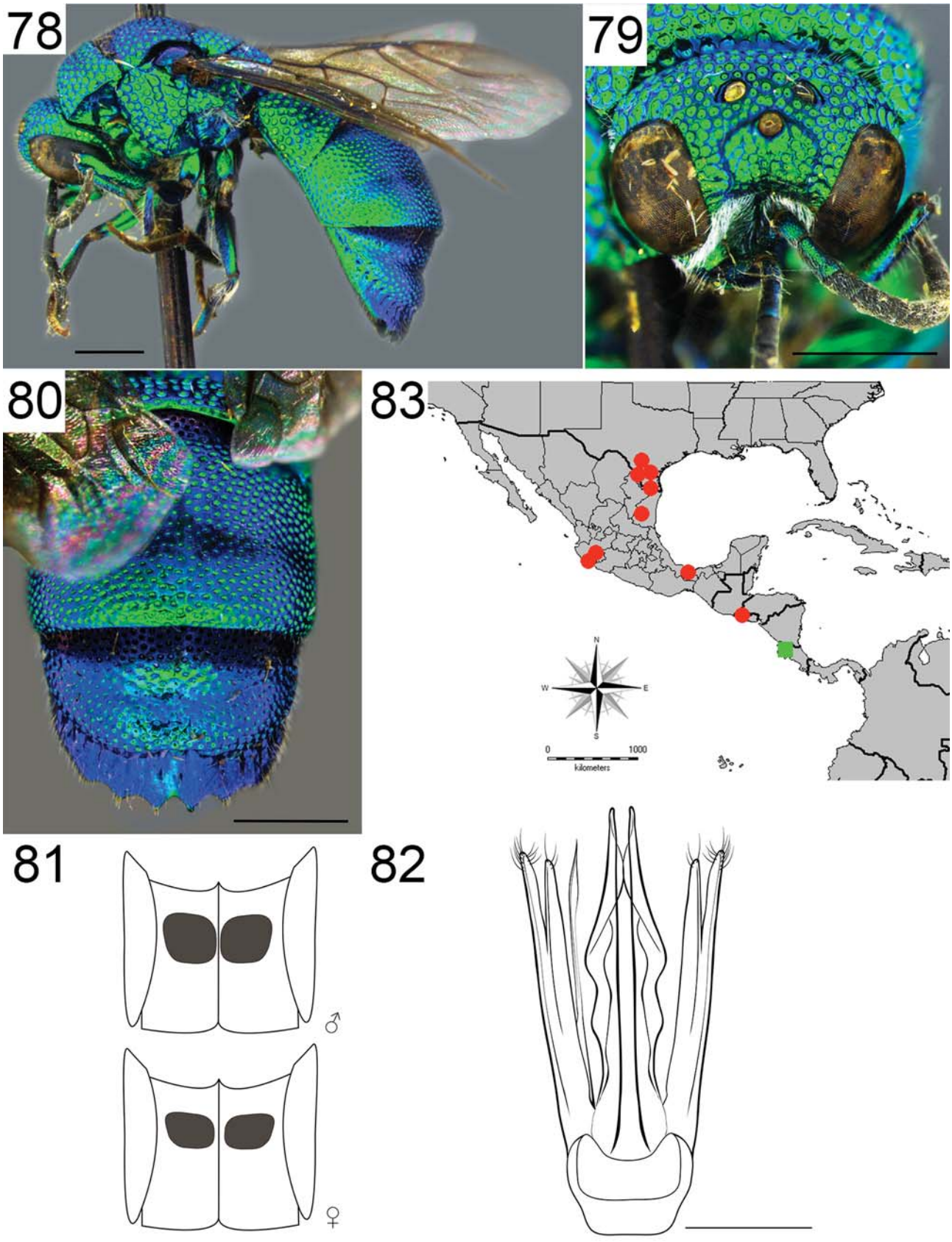
Female. Same as male except for the characteristic shape of S2 spots as shown in Fig. 81.

Variation. Body length 7.6–7.9 mm.

Hosts. Unknown.

Distribution. Costa Rica (Guanacaste); El Salvador (La Libertad); Mexico (Colima, Jalisco, Tamaulipas, Veracruz); USA (Texas) (Fig. 83).

Material examined. EL SALVADOR, 4 mi N. Quezaltepeque, vii.18.1961 coll. M.E. Irwin / Holotype ♂ *Ipsiura irwini* Bohart [BME]. Same data except vii.12.1961 / Paratypes 3♂ [BME], viii.2.1961 / Paratype 1♂ [BME], viii.23.1961 / Paratype 1♂ [BME], vii.3.1963 / Paratype 1♀ [BME]. USA: Texas, Duval Co. 18 mi N San Diego 6.ix.1981 coll. J.R. Lara / Paratype 1♀ [BME]. Texas, Laredo Webbco 23.ix.1972 coll. P.W. Treptow / Paratype 1♀ [BME]. Texas, Pearsall Frio Co. 7.vi.1972 coll. E.E. Grissel / Paratype 1♀ [BME]. Texas, Duval Co. 18 mi N San Diego 12.x.1981, 1♀, coll. G.E. Gillaspy [BME]. Hidalgo Co. Mc Allen Valley Bot. Garden 23.ix.1977, 1♀, coll. C.C. Porter [BME]. Same data except 23.xi.1981, 1♀ [BME]. MEXICO: Est. de Biologia



FIGURES 78–83. *Ipsiura irwini*, paratype ♂. 78. Habitus, lateral view. 79. Head, frontal view. 80. T3, postero-dorsal view. Scale bar = 1 mm. 81. Spots of S2, ♂ (above) and ♀ (below). 82. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 83. Distribution, previous (red circle) and new (green square) records.

Chamela Jalisco coll. A. Pescador / Paratype 1♀ [BME]. Minatitlán 8.ix.1961 coll. R. & K. Dreisbach / Paratype 1♀ [BME]. Colima, N. Manzanillo 26.viii.1970 coll. M.S. & J.S. Wasbauer / Paratype 1♀ [BME] Tamps CA. San Antonio, Ruta 101W CD. Victoria 23.vi.1981 coll. M.C. Porter & L. Stange / Paratype 1♀ [BME].

Additional material. COSTA RICA: Guanacaste, EJN 14km S Cañas 14.x.1989, 1♀, coll. F.D. Parker [BME].

Comments. The redescription above is based on a paratype male from El Salvador: Quezaltepeque.

Ipsiura klugi (Dahlbom, 1854)

(Figs 84–88)

Chrysis klugi Dahlbom, 1854: 321. Holotype ♂ [not examined]: BRAZIL (ZMK).
Chrysis cristata Mocsáry, 1913. Holotype ♂ [not examined]: BRAZIL: Rio Grande (HNHM). Synonymized by Linsenmaier (1985: 472).
Neochrysis (*Ipsiura*) *klugi*: Bohart 1966: 142.
Ipsiura klugi: 1985: 710.

Diagnosis. Superficially, *Ipsiura klugi* is very similar to *I. prolixa* Bohart. These species share many characters mainly of T3 which easily distinguish them from other *Ipsiura* species, including the long distal margin and strong teeth arranged in an arc, well-developed pit row, narrow basolateral whitish spot and the prepit swelling absent. Additionally, they have widely medially interrupted TFC and cristate metanotum which are diagnostic. They are readily distinguished each other by the shape of S2 spots (see Figs 87 and 171).

Male description. *Body* (Fig. 84). *Length:* 8.9 mm. *Coloration:* head predominantly green, with dark purple highlights on vertex; F1 brownish green; mesosoma metallic green, with bluish purple highlights on dorsum, predominantly on pronotum and mesoscutum; metasoma metallic green, with transverse purplish stripes on dorsum of T1 and T2, T3 with bluish highlights dorsally, with narrow lateral whitish spot; wing membrane brown, with brown veins; femora and tibiae greenish; tarsi brownish. *Head:* TFC forming a long arc, widely interrupted medially (Fig. 85); scapal basin densely covered with silvery pubescence; F1 longer than broad, 1.3× as long as F2. *Mesosoma:* fore femur without ventral tooth, somewhat flattened on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; wing membrane densely covered with setae; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral area irregularly punctate anteriorly, with indistinct posterior area delimited by faint ridge; metanotum cristate medially; mesopleural lower posterior margin sharply carinate, with three well-separated tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 86), pit row exposed, with large, deep foveae, without prepit swelling; S2 spots medium-sized, oval, faintly separated medially (Fig. 87). *Punctation:* fore femur coarsely punctate on outer surface; largest punctures on T1, mesopleuron and metanotum.

Female. Same as male except for the characteristic shape of S2 spots as shown in Fig. 87; metanotum strongly cristate, and unusual long distal margin of T3.

Variation. Body length 9–10.4 mm.

Hosts. Unknown.

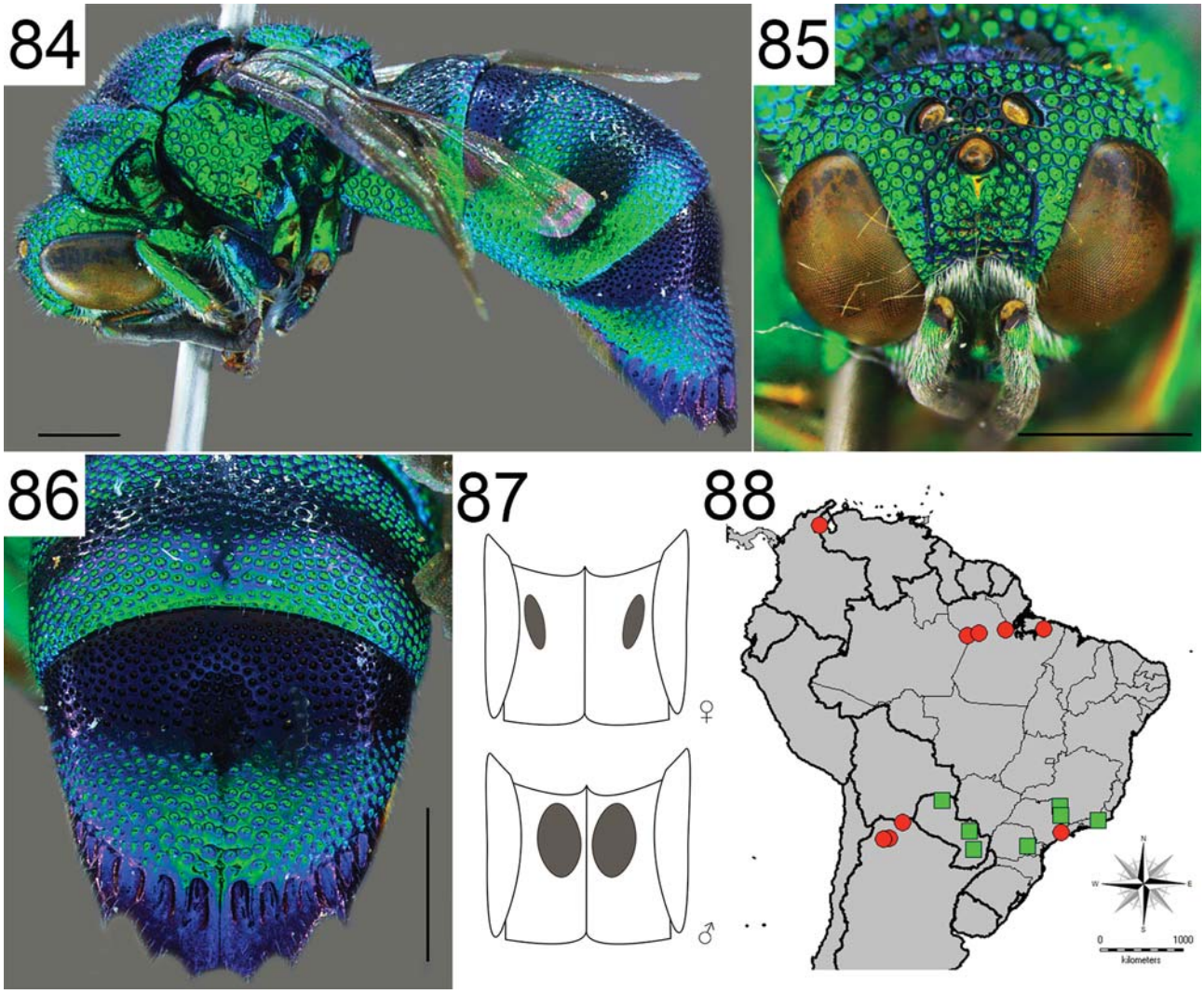
Distribution. Argentina (Jujuy, Salta, Tartagal); Brazil (MG, PA, PR, RJ, SP); Paraguay (Caaguazú, Chaco, San Pedro); Venezuela (Zulia) (Fig. 88).

Remarks. *I. klugi* is easily distinguished from other *Ipsiura* by the following combination of characters: T3 with long distal margin and sharp distal teeth, well-developed pit row, narrow whitish spot basolaterally and without prepit swelling; widely opened TFC; scapal basin densely covered with silvery setae and metanotum strongly cristate.

Material examined. ARGENTINA: Jujuy 16.i.1966, 1♀, coll. H. & M. Townes [BME]. Salta, Oran Abra Grande 18.iv.1969, 1♀ [BME]. Tartagal xi.1971, 1♀, coll. Manfredo Fritz [BME]. BRAZIL: Minas Gerais, Passos x.1963, 1♂, coll. C.T. Elias [MZUSP]. Poços de Caldas 23.xii.1962, 1♂, coll. Claudionor Elias [BME]. Pará, Almeirim 16.iv.1903, 1♀, coll. A. Ducke [MPEG]. Belém Utinga 24.vi.1977, 1♀, coll. L. Hock [MPEG]. Faro 10.vii.1909, 1♀, coll. A. Ducke [MPEG]. Óbidos 11.i.1905, 1♀, coll. A. Ducke [MPEG]. Same data except 18.xii.1907, 1♀ [MPEG], 20.xi.1904, 1♀ [MPEG], 22.xii.1904, 1♀ [MPEG]. R Arroyollos 21.iv.1903, 1♂, A. Ducke [MPEG]. Paraná, Ponta Grossa x.1943, 1♀, coll. P.J. Moure [BME]. Rio de Janeiro, Nova Friburgo xii.1976, 1♀, coll. Gred & Guimarães [MZUSP]. São Paulo, Ipiranga 1922, 1♀, coll. H. Luedizualdt [MZUSP].

PARAGUAY: Caaguazú xii.1977, 1♀, coll. Manfredo Fritz [BME]. Chaco, Venturi 4.xi.1897, 1♂, coll. J. Brèthes [BME]. San Pedro, Cororo Rio Ypane 28.xi.1983, 1♀ 1♂, coll. M. Wasbauer [BME]. Same data except 1.xii.1983, 1♂ [BME], 5.xii.1983, 4♂ 1♀ [BME]. VENEZUELA: Zulia, Tucuco 23.iv.1981, 1♀, coll. H.K. Townes [BME].

Comments. The redescription above is based on a male from Brazil: Minas Gerais, Passos.



FIGURES 84–88. *Ipsiura klugi*, ♂. 84. Habitus, lateral view. 85. Head, frontal view. 86. T3, postero-dorsal view. Scale bar = 1 mm. 87. Spots of S2, ♀ (above) and ♂ (below). 88. Distribution, previous (red circle) and new (green square) records.

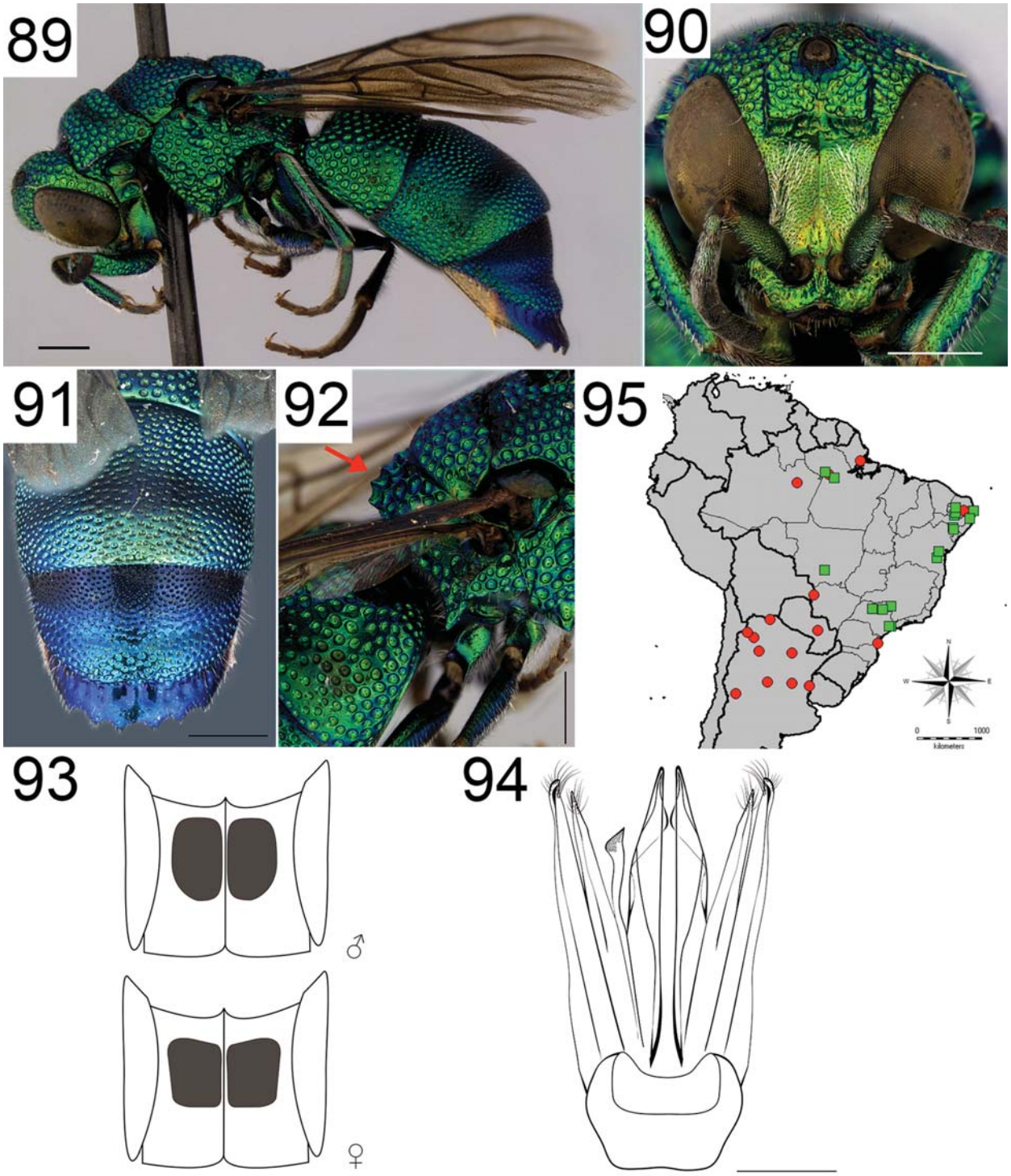
Ipsiura lata Bohart, 1985

(Figs 89–95)

Chrysis lateralis Brullé, 1846: 26 (nom. praeocc., nec Dahlbom, 1845). Lectotype ♀ [not examined]: BRAZIL: Paraná, Guaratuba (MNHN). Designed by Bohart, in Kimsey & Bohart (1991: 510).
Ipsiura lata Bohart, 1985: 716. Holotype ♂ [examined]: BRAZIL: Amazonas, Manaus (MZUSP).
Pleurocera (*Ipsiura*) *lateralis*: Linsenmaier 1959: 74.
Neochrysis (*Ipsiura*) *lateralis*: Bohart 1966: 142.

Diagnosis. *Ipsiura lata* most closely resembles *I. obidensis* (Ducke) and *I. fritzi* Bohart. It can be distinguished from those and other species of *Ipsiura* by the following combination of characters: T3 with six acute distal teeth (the lateral teeth are obtuse in *I. obidensis*); metanotum distinctly cristate medially (Fig. 92) (irregularly serriform in *I. obidensis* and slightly cristate in *I. fritzi*); TFC longer than broad (broader than long in *I. obidensis*, nearly rounded in *I. fritzi*); fore femur coarsely punctate on outer surface (almost completely impunctate in *I. fritzi*) and

the lower posterior mesopleural margin with three well-separated tooth-like projections (projections closer together in *I. obidensis* and *I. fritzi*).



FIGURES 89–95. *Ipsiura lata*, holotype ♂. 89. Habitus, lateral view. 90. Head, frontal view. 91. T3, postero-dorsal view. 92. Mesosoma, metanotum indicated by the arrow. Scale bar = 1 mm. Photos R. Kawada. 93. Spots of S2, ♂ (above) and ♀ (below). 94. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 95. Distribution, previous (red circle) and new (green square) records.

Holotype redescription. *Body* (Fig. 89). *Length:* 8.5 mm. *Coloration:* head predominantly green, with faint bluish purple highlights on vertex; F1 brownish green; mesosoma metallic green, with faint bluish purple highlights on dorsum, particularly on pronotum; metasoma metallic green, with transverse purple stripes on

dorsum of T1 and T2; T3 with bluish highlights dorsally, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish, hind basitarsus green. *Head:* TFC enclosing the median ocellus, completely closed medially (Fig. 90); F1 longer than broad, 1.3× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur with flattened area on outer surface of distal margin but not producing into a tooth projection ventrally, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum serriform to cristate medially (Fig. 92); mesopleural lower posterior margin carinate, with three well-separated tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 91), pit row completely exposed, with well definite, shallow foveae, prepit swelling sloping gently; S2 spots large, touching medially (Fig. 93). *Punctation:* outer surface of fore femur coarsely punctate; largest punctures on T1, mesopleuron and metanotum. *Genital capsule* (Fig. 94): cuspis as long as gonostylus, sharp apically; digitus shorter than cuspis, broader apically than basally, clavate; gonostylus broader than cuspis basally; gonostylus and cuspis setose apically; aedeagus lobes robust, blunt apically.

Female. Same as male except for the characteristic shape of S2 spots as shown in Fig. 93.

Variation. One female (Brazil: Maranhão, Peritoró 9.vi.1978 coll. M.F Torres–BME) has the odd condition of T3 with five irregular distal teeth, as noticed in holotype of *I. spiculella* (see discussion below). Despite its wide distribution, *I. lata* exhibits little morphological variation. Some specimens have lateral teeth on T3 more obtuse than typical. Additionally, the body coloration varies from usual greenish pattern to primarily bluish in specimens collected in northeast Brazil (Paraíba: Sta. Terezinha, Soledade; Rio Grande do Norte: Mossoró; Bahia: Milagres, Jequié). Body length 6.8–8.5 mm.

Hosts. Unknown.

Distribution. Argentina (Buenos Aires, Catamarca, Chaco, Cordoba, Entre Rios, Mendoza, Salta, Santa Fe, Tucumán); Brazil (AL, AM, AP, BA, MG, MS, MT, PA, PB, PE, PR, RN, SE, SP); Paraguay (San Pedro) (Fig. 95).

Material examined. BRAZIL: Amazonas, Manaus, ii.7.1976, coll. R. Bohart / Holotype ♂ *Ipsiura lata* Bohart (MZUSP). Same data of holotype / Paratypes 1♀ 4♂ [BME]. Mato Grosso do Sul, Corumbá iv / Paratype 1♀ [BME]. Amapá, Macapá Pacoval 7.xi.1978 coll. W. França / Paratype 1♂ [BME]. Pará, Óbidos 4.i.1907 A. Ducke / Paratype 1♀ [BME]. Santarém / Paratype 1♀ [BME]. São Paulo, São Paulo iv.1957 / Paratype 1♀ [BME]. Paraíba, Soledade/Juazeirinho 25.xi.1955 coll. José Azevedo / Paratype 1♂ [BME]. Same data except 09.iii.1956 coll. Aristoteles Silva / Paratype 1♂ [BME]. PARAGUAY: San Pedro, Cororo Rio Ypane 28.xi.1983 coll. M. Wasbauer / Paratype 1♂ [BME]. ARGENTINA: 26 km W Dique Los Molinos El Paraíso, Cordoba i.1974 coll. Martinez / Paratype 1♀ [BME]. Salta, Cachi 20.i.1966 coll. C.C. Porter / Paratype 1♂ [BME]. Cosquin Sierra de Cordoba 1.iii.1920 coll. Cornell University Expedition / Paratypes 1♂ 1♀ [BME]. Santa Fe, Estancia La Noria, Rio San Javier 17.ii.1912 coll. G.E. Bryant / Paratype 1♂ [BME]. Tucumán, Famailla iv.1947 coll. B.L. Garcia / Paratype 1♀ [BME]. Entre Rios, Palmar Colon i.1974 coll. Manfredo Fritz / Paratypes 2♀ [BME]. Salta, Pocitos vii.1971 coll. Manfredo Fritz / Paratype 1♂ [BME]. Salta, Tartagal xi.1971 coll. Manfredo Fritz / Paratype 1♀ [BME]. Chaco, San Bernardo coll. Di Iorio / Paratype 1♀ [BME].

Additional material. BRAZIL: Alagoas, Olho D'água do Casado 27.viii.2002, 1♂, coll. Débora Moura [LEBIC]. Poço da Ingazeira 28.x.2005, 1♀, coll. Débora Moura [LEBIC]. Amazonas, Manaus, *campus* UFAM 26.viii.1978, 1♀, coll. Bert Klein [INPA]. Manaus, *campus* UFAM vi.1982, 3♂, coll. J.A. Rafael [INPA]. Manaus INPA 14.v.1981, 1♀, coll. J.A. Rafael [INPA]. Manaus 11.vi.1982, 3♀, coll. J.A. Rafael [INPA]. Manaus 29.vi.1982, 1♂, coll. J.A. Rafael [INPA]. Bahia, Jequié, DIRFAV 29.vii.2006, 1♀, coll. J.C. Silva-JR [RPSP]. Jequié, UESB II 9.xii.2006, 2♀, coll. J.R. Silva-Jr [RPSP]. Same data except 20.xi.2006, 1♀ [RPSP], 25.xi.2006, 3♀ 1♂ [RPSP]. Milagres 17.iii.2012, 7♂ 3♀, coll. F. Zanella & D. Lucena [RPSP]. Mato Grosso, Três Lagoas, Faz. Dr. José Mendes 30.v.1964, 1♀ [MZUSP]. Minas Gerais, Passos 1963-1965, 4♂ 1♀, coll. C. Elias [MZUSP]. Pará, Rio Trombetas 11.i.1968, 1♂ [MZUSP]. Paraíba, João Pessoa 22.i.2001, 1♀, coll. P. Medeiros [LEBIC]. Sta. Terezinha, Faz. Tamanduá 14.xii.2009, 1♀, coll. K.D.V.S. Messias [LEBIC]. Same data except 28.ii.2011, 1♀, coll. A.D.A. Lima [LEBIC]. Pernambuco, Chã Grande 17.iii.2002, 1♀, coll. P. Milet & S. Pinto [LEBIC]. Rio Grande do Norte, Serra Negra do Norte, ESEC-Seridó 02.vii.1995, 1♀, coll. F.C.V. Zanella [LEBIC]. Same data except 18.vi.1995, 1♂ [LEBIC]. São Paulo, Barueri 17.ii.1962, 1♀, coll. K. Lenko [MZUSP]. Ibirá x.1953, 1♂, coll. Dirings [MZUSP]. Ribeirão Preto, *campus* USP 14.xii.1972, 1♀, coll. M. Mazucato [RPSP]. Same data except 20.vi.1972, 1♀ [RPSP]. Ribeirão Preto 4.viii.1986, 1♀, coll. G.M. Faria [RPSP]. Ribeirão Preto 15.i.1975, 1♀,

coll. M. Mazucato [RPSP]. Same data except 22.i.1973, 1♂ [RPSP]. São Paulo x.1962, 1♂, coll. I. Carlos [MZUSP]. São Paulo 1953, 1♂, coll. Dirings [MZUSP]. Sergipe, Canindé do São Francisco 23.ix.2005, 1♀, coll. Débora Moura [LEBIC]. Same data except 28.vi.2005, 1♂ [LEBIC].

Ipsiura leucobasis (Mocsáry, 1913)

(Figs 96–101)

Chrysis leucobasis Mocsáry, 1913: 12. Holotype ♀ [examined by photos]: BRAZIL: Santa Cruz (HNHM).
Neochrysis (*Ipsiura*) *leucobasis*: Bohart 1966: 142.
Ipsiura leucobasis: Bohart 1985: 711.

Diagnosis. *Ipsiura leucobasis* most closely resembles *I. boliviana* Bohart. Both species have six irregular distal teeth on T3, pit row obsolescent, except for small lateral pits, females with conspicuous golden hairs on S2 and S3, and T3 with narrow basolateral whitish spot. *Ipsiura leucobasis* is generally shorter than *I. boliviana* (9 mm *vs.* 11 mm), narrow upper genal space (shorter than 1.2× MOD long) and lacking the shallow depression on the median area of pronotum, which is characteristic of *I. boliviana.*

Female description. *Body* (Fig. 96). *Length:* 9 mm. *Coloration:* head predominantly green blue, with faint purple highlights on vertex; F1 brown; mesosoma metallic green, with purplish blue highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic greenish blue, with transverse purplish stripes on dorsum of T2 and T1; T3 with narrow lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brownish, hind basitarsus brownish green. *Head:* TFC enclosing the median ocellus, round-shaped but slightly interrupted medially (Fig. 97); upper genal space narrow, about 1.2× MOD long; F1 longer than broad, 1.3× as long as F2; scapal basin with dense silvery pubescence laterally, with narrow polished stripe medially. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; hind tibia with some long setae among short ones; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, irregularly punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with distinct tooth-like projections. *Metasoma:* T3 with six irregular distal teeth (Fig. 98), pit row obsolescent, indicated by small lateral pits, with distinct prepit swelling but sloping gently; S2 spots medium-sized, nearly reaching each other medially (Fig. 99). *Punctation:* fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum; T3 with shallow and separated punctures.

Male. Same as female except for the characteristic shape of S2 spots as shown in Fig. 99, and without long hairs on S2 and S3. *Genital capsule* (Fig. 100): aedeagus lobes broad, elaborate, strongly convergent apically; digitus narrow, slightly shorter than cuspis, broad apically, clavate; gonostylus and cuspis setose apically.

Variation. Body length 7.8–9.2 mm.

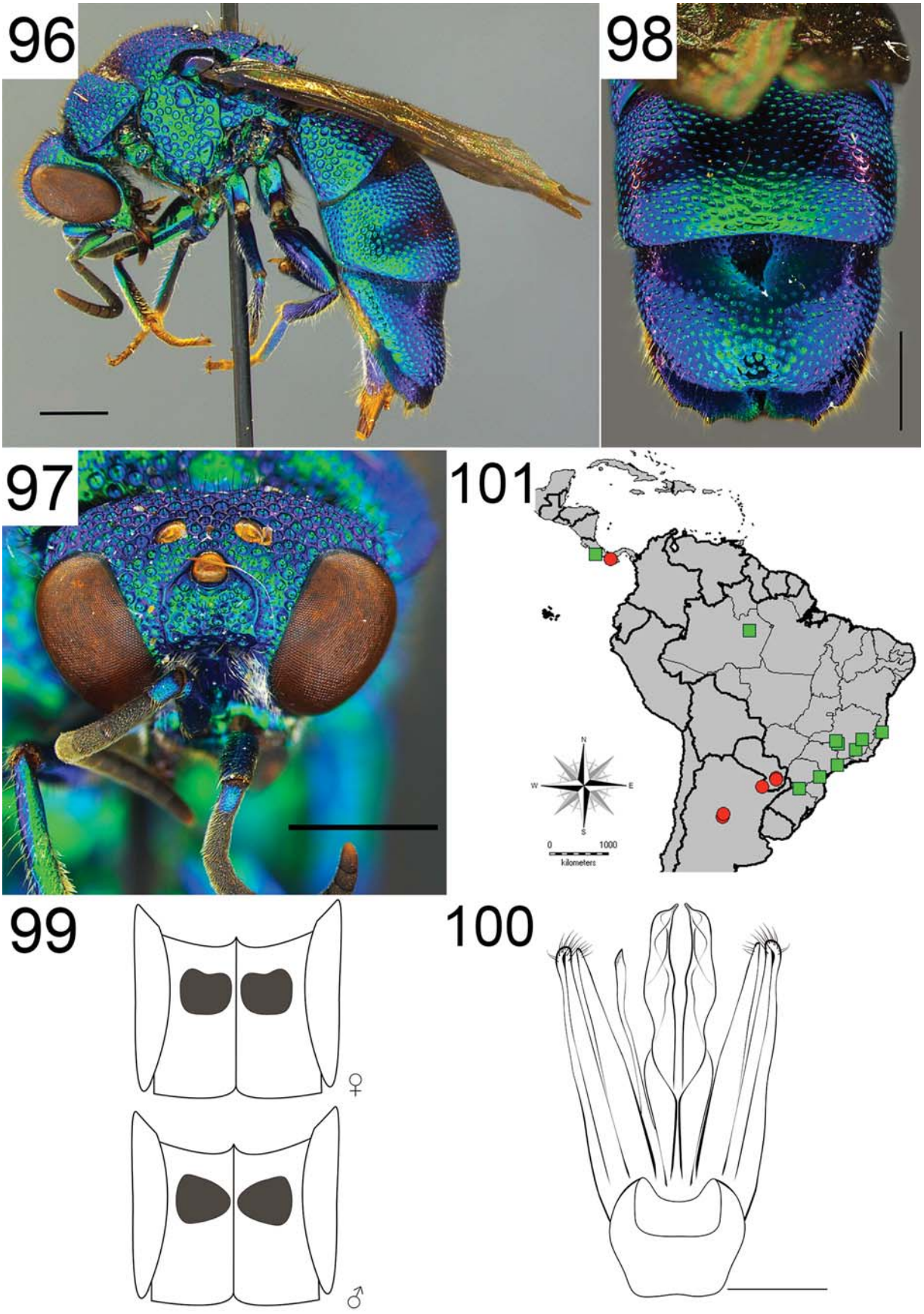
Host. Unknown.

Distribution. Argentina (Corrientes); Brazil (AM, ES, MG, PR, SC, SP); Costa Rica (Puntarenas); Panama (Colon); Paraguay (Caaguazú, Guairá, San Pedro) (Fig. 101).

Material examined. BRAZIL: Santa Cruz / Holotype ♀ (HNHM).

Additional material. ARGENTINA: Corrientes, Las Marias 10.xi.1969, 1♀, coll. C.C. Porter [BME]. Córdova, Dep. Punika V Harmosa xii.1942, 1♀, coll. M.J. Viana [BME]. BRAZIL: Amazonas, Manaus 4.iii.1986, 1♀, coll. Bert Klein [INPA]. Espírito Santo, Conc. Da Barra 25.ix.1969, 1♀, coll. C.T. & C. Elias [BME]. Minas Gerais, Barbacena 2.xi.1906, 1♀, coll. A. Ducke [MPEG]. Marliéria 09–16.xi.2003, 2♀, coll. J.C.R. Fontenelle [UFES]. Same data except 08–15.xi.2001, 1♀ [UFES], 11–18.xi.2007, 1♀ [UFES]. Serra da Canastra, São José do Barreiro 6.vii.1988, 1♀, coll. J. Camargo [RPSP]. Tapira 30.xi.1965, 1♀, coll. C. Elias [DZUP]. Paraná, Curitiba 7.xi.1967, 1♂ [DZUP]. Santa Catarina, Nova Teutonia xii.1964, 2♀, coll. Fritz Plaumann [BME]. São Paulo, Campinas iii.1921, 1♂, coll. F.X. Williams [BME]. Ipiranga, 1♂ [BME]. COSTA RICA: Puntarenas, RB Carara, Estac. Quebrada Bonita viii.1989, 1♀, coll. Hanson [BME]. Puntarenas, PN Corcovado, Est Sirena v.1989, 1♀ [BME]. PARAGUAY: Caaguazú xi.1979, 1♂, coll. Manfredo Fritz [BME]. Paso Yobai**,** 1♀ [BME]. Tacuaras, 1♂ [BME].

Comments. The redescription above is based on a female from Brazil: Amazonas, Manaus.



FIGURES 96–101. *Ipsiura leucobasis*, ♀. 96. Habitus, lateral view. 97. Head, frontal view. 98. T3, postero-dorsal view. Scale bar = 1 mm. 99. Spots of S2, ♀ (above) and ♂ (below). 100. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 101. Distribution, previous (red circle) and new (green square) records.

***Ipsiura leucocheila* (Mocsáry, 1889)**
(Figs 102–106)

Chrysis leucocheila Mocsáry, 1889: 408. Lectotype ♀ [examined by photos]: MEXICO (HNHM). Designed by Bohart, in Bohart & French (1986: 342).
Neochrysis (*Ipsiura*) *leucocheila*: Bohart 1966: 142.
Ipsiura leucocheila: Bohart 1985: 709.

Diagnosis. *Ipsiura leucocheila* most closely resembles *I. leucocheiloides* (Ducke) and *I. tropicalis* Bohart. It can be distinguished from these species by the low sloping gently prepit swelling (strongly convex in *I. leucocheiloides*), acute distal teeth on T3 (generally obtuse in *I. leucocheiloides* and *I. tropicalis*) and fore femur without flattened area on distal margin (clearly flattened in *I. leucocheiloides*). In addition, the combination of the following characters will be important for distinguishing *I. leucocheila* from other *Ipsiura* species: T3 with four sharp distal teeth, prepit swelling low, sloping gently; T3 with lateral whitish spot, pit row well-developed; round metanotum; the rounded spots on S2, and the TFC slightly interrupted medially.

Female description. *Body* (Fig. 102). *Length:* 6.5 mm. *Coloration:* head predominantly green blue, with faint bluish highlights on vertex; F1 brown; mesosoma metallic greenish blue, with faint dark purplish highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic bluish green, with transverse purplish stripes on dorsum of T1 and T2; T3 with bluish highlights dorsally, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish blue; tarsi brownish, hind basitarsus green. *Head:* TFC enclosing the median ocellus, sub-rectangular, as long as broad, slightly interrupted medially (Fig. 103); F1 slightly longer than broad, about 1.1× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur without ventral tooth-like projection or flattened area on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface with shallow, sparse punctures anteriorly, posterior area indistinctly delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with four acute distal teeth (Fig. 104), pit row well-developed, with long and deep foveae, prepit swelling low, sloping gently; S2 spots medium-sized, round, separated medially about one spot distance (Fig. 105). *Punctation:* outer surface of fore femur impuctate; largest punctures on T1, mesopleuron and metanotum.

Male. Unknown.

Variation. Body length 6.3–7.1 mm.

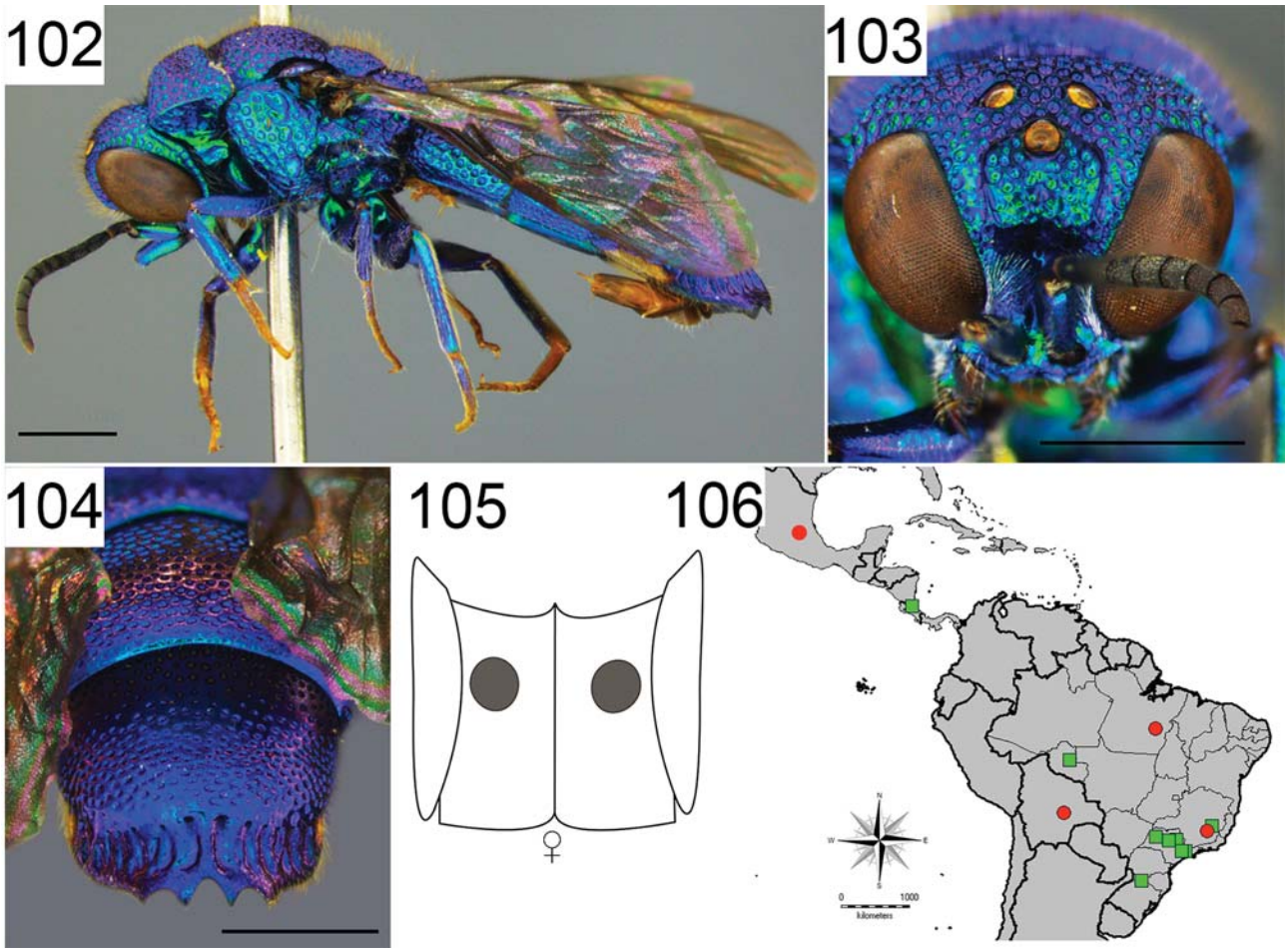
Hosts. Unknown.

Distribution. Bolivia (Santa Cruz); Brazil (MG, PA, RO, SC, SP); Costa Rica (Heredia); Mexico (Fig. 106).

Material examined. MEXICO / Lectotype ♀ (HNHM).

Additional material. BOLIVIA: Santa Cruz, Jardim Botânico 26.vii.1977, 1♀, coll. C. Porter [BME]. BRAZIL: Minas Gerais, Chapada, 1♀, coll. A. Ducke [BME]. Marliéria 22–29.x.2005, 1♀, coll. J.C.R. Fontenelle [UFES]. Same data except 24–31.x.2002, 1♀ [UFES], 03–10.xi.2004, 2♀ [UFES], 05–12.x.2012, 1♀ coll. M.T. Tavares cols [UFES], 09–13.xii.2003, 1♀ [UFES], 20–27.x.2004, 1♀ [UFES], 27.x.2004, 1♀ [UFES], 28.x.2007, 1♀ [UFES], 07–14.viii.2002, 1♀ [UFES], 15.xii.2001, 1♀ [UFES], 14.xi.2002, 1♀ [UFES], 09–16.xi.2003, 1♀ [UFES], 25.x.2001, 1♀ [UFES], 11–18.ii.2007, 1♀ [UFES], 20–27.x.2004, 1♀ [UFES], 09–13.xii.2003, 1♀ [UFES], 26.x.2003, 3♀ [UFES], 24.x.2002, 1♀ [UFES], 19–26.x.2003, 1♀ [UFES], 19–26.x.2003, 1♀, coll. M.T. Tavares [UFES]. Pará, Serra Norte-Caldeirão 10.vii.1986, 1♀, coll. J. Dias [MPEG]. Rondônia, Ouro Preto do Oeste 13.xi.1984, 1♀, coll. F.F. Ramos [MPEG]. Santa Catarina, Nova Teutonia 19.ix.1967, 1♀, coll. Fritz Plaumann [BME]. Same data except x.1967, 1♀ [BME], ii.1996, 1♀ [BME]. São Paulo, Araçatuba, Rio Jacaritinga x.1961, 1♀, coll. Lane & Rabelo [MZUSP]. Jundiaí, Serra do Japi 14.ii.1995, 3♀, coll. Camilo, Serrano & August [CAVS]. Luis Antônio, Est. Ecol. Jataí 5.xii.2007, 1♀, coll. N.W. Perioto [LRRP]. Same data except 7.xi.2007, 1♀ [LRRP], 11.x.2007, 1♀ [RPSP], 26.xi.2008, 1♀ [LRRP], 29.x.2008, 2♀ [LRRP]. Nazaré Paulista xii.1991, 1♀, coll. M.V. Ferraz [MZUSP]. Tabatinga, Faz. Itaquerê 1.xii.1963, 1♀, coll. K. Lenko [MZUSP]. COSTA RICA: Heredia, Prov. La Selva, 17.iv.1989, 1♀, coll. H.A. Hespenheide [BME].

Comments. The redescription above is based on a female from Brazil: Minas Gerais, Marliéria.



FIGURES 102–106. *Ipsiura leucocheila*, ♀. 102. Habitus, lateral view. 103. Head, frontal view. 104. T3, postero-dorsal view. Scale bar = 1 mm. 105. Spots of S2, ♀. 106. Distribution, previous (red circle) and new (green square) records.

Ipsiura leucocheiloides (Ducke, 1903)

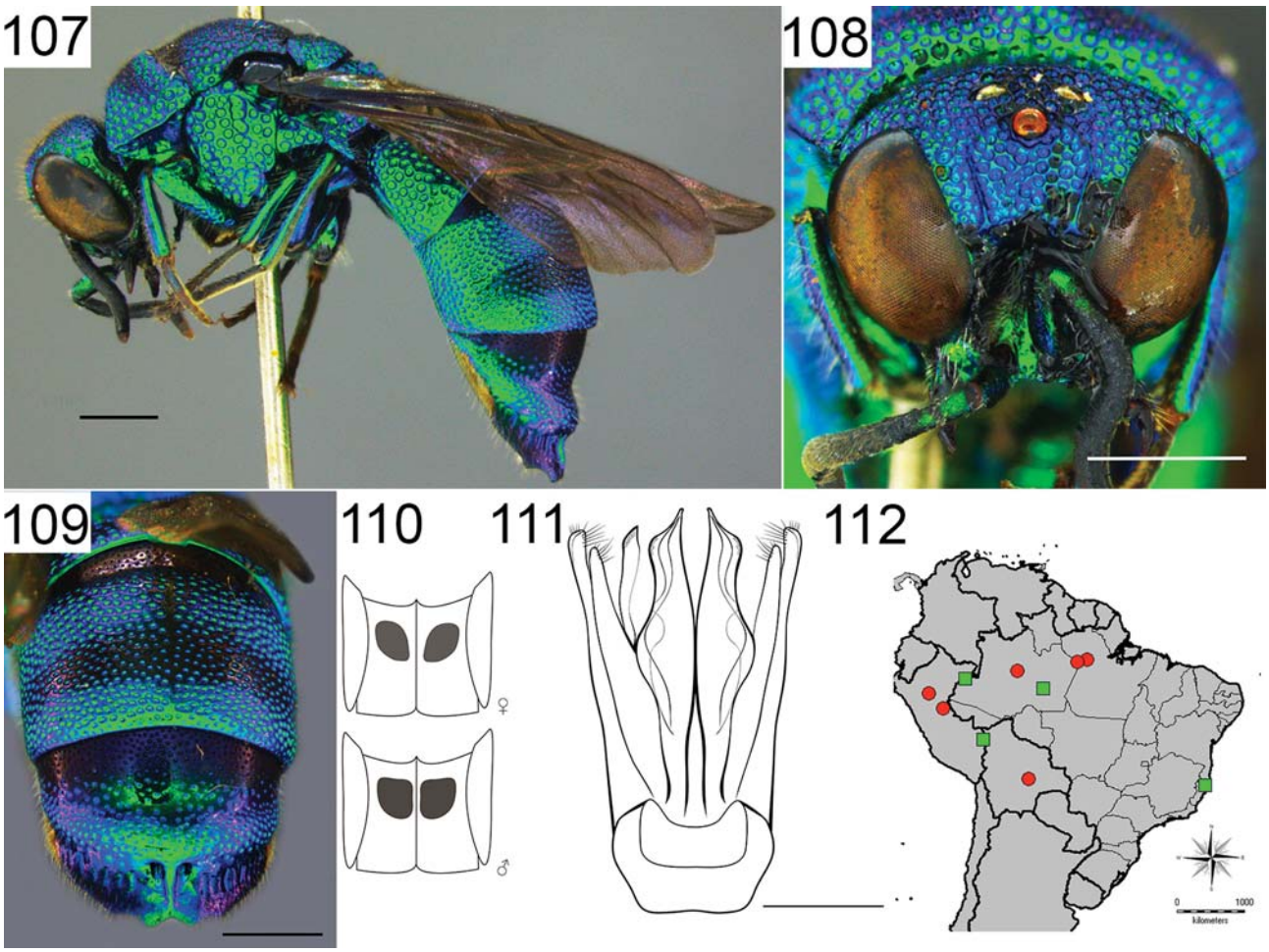
(Figs 107–112)

Chrysis leucocheiloides Ducke, 1903: 226. Lectotype ♂ [examined by photos]: BRAZIL: Pará (MNHN). Designed by Bohart, in Kimsey & Bohart (1991: 510).
Neochrysis (*Ipsiura*) *leucochiloides*: Bohart 1966: 142.
Ipsiura leucocheiloides: Bohart 1985: 709.

Diagnosis. *Ipsiura leucocheiloides* most closely resembles *I. bohartiana* Lucena **sp. nov**. and *I. nigriventer* Bohart. It is readily distinguished from these and other *Ipsiura* species by the following combination of characters: T3 with four obtuse distal teeth (sharp in *I. bohartiana* and *I. nigriventer*), with narrow lateral whitish spot (spot absent in *I. bohartiana* **sp. nov.**), with strongly convex prepit swelling (sloping gently in *I. bohartiana* and *I. nigriventer*); lower posterior margin of mesopleuron with two strong close together tooth-like projections (well-separated in *I. bohartiana* **sp. nov.** and *I. nigriventer*); and medium-sized S2 spots (unusual large in *I. nigriventer*). Additionally, the aedeagus lobes elaborate and unusual long digitus (longer than the cuspis) are diagnostic for *I. leucocheiloides* (Fig. 111).

Female description. *Body* (Fig. 107). *Length:* 8.2 mm. *Coloration:* head predominantly bluish green; F1 greenish brown; mesosoma metallic bluish green, with bluish purple transverse stripe on dorsum of pronotum, mesoscutum with broad purple highlights; metasoma metallic bluish green, with distinct transverse purplish stripes on dorsum of T1 and T2; T3 with lateral whitish spot; wing membrane brown, with brown veins; femora and tibiae greenish; tarsi brown, basitarsi brownish green. *Head:* TFC forming an incomplete arc, somewhat interrupted

medially (Fig. 108); F1 longer than broad, about 1.3× as long as F2; scapal basin covered with silvery pubescence laterally, with narrow polished stripe medially. *Mesosoma:* fore femur with distinct flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190), medial cell with sparse setae only distally; dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with distinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin strongly carinate with two close together tooth-like projections. *Metasoma:* T3 with four obtuse distal teeth (Fig. 109), pit row indicated by shallow, long foveae, with strongly convex prepit swelling; S2 spots medium-size to large, nearly reaching each other medially (Fig. 110). *Punctation:* fore femur with shallow, sparse punctures on outer surface; largest punctures on T1, mesopleuron and metanotum.



FIGURES 107–112. *Ipsiura leucocheiloides*, ♀. 107. Habitus, lateral view. 108. Head, frontal view. 109. T3, postero-dorsal view. Scale bar = 1 mm. 110. Spots of S2, ♀ (above) and ♂ (below). 111. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 112. Distribution, previous (red circle) and new (green square) records.

Male. Same as female except for the characteristic shape of S2 spots as shown in Fig. 110, the broad dark band occupying much of the dorsum of metasoma and mesosoma, and conspicuous long sivery setae ventrally on anterior legs, prosternum and gena. *Genital capsule* (Fig. 111): aedeagus lobes elaborate, sinuous, acute apically, slightly longer than gonostylus and cuspis; cuspis as long as gonostylus; digitus longer than cuspis, broad apically, clavate; gonostylus and cuspis setose apically.

Variation. Body length 7.7–8.3 mm.

Hosts. Unknown.

Distribution. Bolivia (Santa Cruz); Brazil (AM, ES, PA); Peru (Madre de Dios, Maynas, Ucayali) (Fig. 112).

Material examined. BRAZIL: Pará 25.ix.1901 coll. A. Ducke / Lectotype ♂ (MNHN). Pará, 1903 A. Ducke / Paralectotype 1♀ (MNHN).

Additional material. BOLIVIA: Buenavista, Santa Cruz 1928, 1♂, coll. J. Steinbach [BME]. BRAZIL: Amazonas, Estirão do Equador–Rio Javari x.1979, 1♀, coll. Alvarenga [BME]. Manicoré–Cachoeira ix.2004, 2♀, coll. Silva & Pena [INPA]. Tefé 10.vi.1906, 1♂, coll. A. Ducke [MPEG]. Espírito Santo, Conc. Da Barra 8.xi.1969, 1♀, coll. C.T. & C. Elias [DZUP]. Same data except 27.vi.1968, 1♀ [DZUP], 4.x.1969, 1♀ [BME]. Pará, Óbidos 1905, 2♀, coll. A. Ducke [MPEG]. Same data except 22.xii.1904, 1♀ [MPEG]. Faro 15.xii.1904, 1♂, coll. A. Ducke [MPEG]. PERU: Madre de Dios, Puerto Maldonado 1.x.1962, 1♀, coll. L.E. Pena [BME]. Maynas, Iquitos, San Roque iii.1924, 1♀, coll. Kluge [BME]. Ucayali, Pucallpa Loreto 29.viii.1960, 1♀, coll. J.M. Shunke [BME].

Comments. The redescription above is based on a female from Brazil: Espírito Santo, Conceição da Barra.

Ipsiura lilloi Bohart, 1985

(Figs 113–118)

Ipsiura lilloi Bohart, 1985: 717. Holotype ♀ [examined by photos]: ARGENTINA: Tucumán, El Cadillal Reserva Florestal (FML).

Neochrysis (*Ipsiura*) *aemula* Linsenmaier, 1985. Holotype ♀ [not examined]: BRAZIL: Santa Catarina, Nova Teutonia, coll. Plaumann (NMLS). Synonymized by Kimsey & Bohart (1991: 510).

Neochrysis (*Ipsiura*) *lilloi*: Linsenmaier 1997: 267.

Diagnosis. *Ipsiura lilloi* most closely resembles *I. genbergi* (Dahlbom). It is readily distinguished from the *I. genbergi* by the convex distal rim of T3 (nearly straight in *I. genbergi*) and F1–F3 green (only F1 is green in *I. genbergi*). Additionally, *I. lilloi* lacks the conspicuous transverse purplish stripes on dorsum of T1 and T2 seen in *I. genbergi*. *Ipsiura lilloi* can be distinguished from other *Ipsiura* species by the following combination of characters: T3 with six acute distal teeth, without distinct prepit swelling, with lateral whitish spot, pit row partially covered by anterior crease, TFC interrupted medially, the lateral secondary facial carina clearly marked and the rounded metanotum.

Male description. *Body* (Fig. 113). *Length:* 5.6 mm. *Coloration:* head predominantly greenish blue, with dark greenish highlights on vertex; F1–F3 green; mesosoma metallic green, with bluish highlights on dorsum of pronotum and mesoscutum; metasoma metallic green, with transverse purplish blue stripes on dorsum of T1 and T2; T3 with bluish highlights, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae bluish green; tarsi brownish, basitarsi brownish green. *Head:* TFC enclosing the median ocellus, widely opened medially, secondary lateral facial carina clearly marked (Fig. 114); F1 longer than broad, 1.3× as long as F2; scapal basin desenly covered with silvery pubescence. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with distinct posterior area delimited by faint transverse ridge; metanotum rounded; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 115), distal margin slightly convex, pit row partially covered by anterior crease, without prepit swelling; S2 spots small, ovoid, medially separated at least by one spot diameter (Fig. 116). *Punctation:* fore femur impunctate, tiny punctures noticed distally on outer surface; largest punctures on T1, mesopleuron and metanotum. *Genital capsule* (Fig. 117): aedeagus subequal to gonostylus and cuspis in length; aedeagus lobes narrow, delicate, pointed apically; cuspis subequal in length to gonostylus; cuspis broad basally; digitus narrow, distinctively blunt apically, clavate; gonostylus and cuspis setose apically.

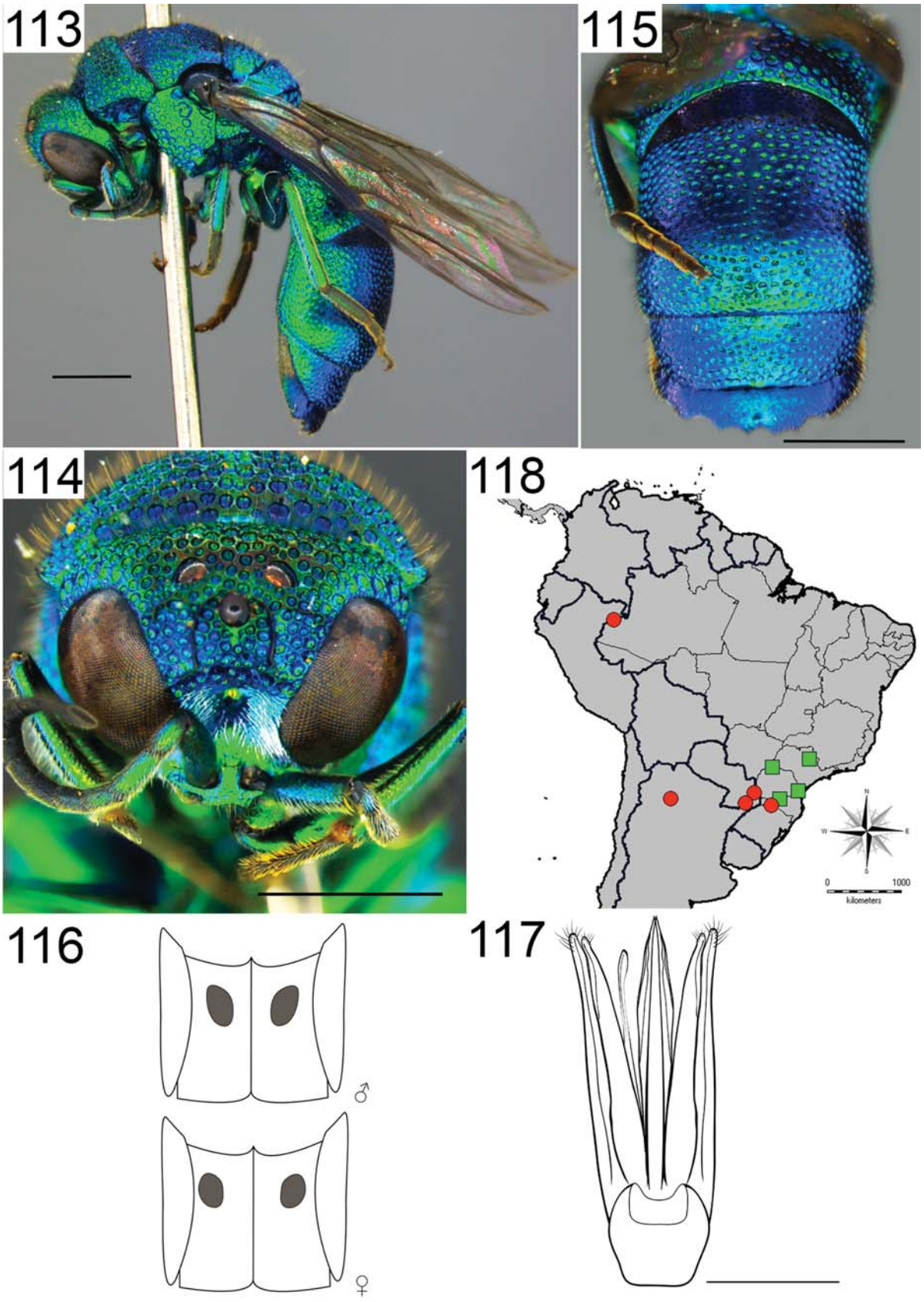
Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 116, without the broad dark band occupying much of the dorsum of meso- and metasoma.

Variation. Body length 5.6–6.1 mm.

Hosts. Specimens emerged from nests of *Ancistrocerus flavomarginatus* (Brèthes). (Tayane Buggenhagen, *personal communication*).

Distribution. Argentina (Tucumán, Misiones); Brazil (AM, PR, SC, SP); Paraguay (Itapúa) (Fig. 118).

Material examined. ARGENTINA: Tucumán, Reserva Florestal RTA 9 CA, El Cadillal 20.vi.1973, C. Porter & E. Demarest / Holotype ♀ (FML). Misiones, Cataratas del Iguazu, 5.xii.1970, coll. C. Porter & L. Stange / Paratype 1♀ [BME]. BRAZIL: Amazonas, Estirão do Equador x.1979, coll. Alvarenga / Paratype 1♀ [BME]. PARAGUAY: Itapúa, Pirapó xii.1971, coll. L. Peña / Paratypes 2♀ [BME].



FIGURES 113–118. *Ipsiura lilloi*, ♂. 113. Habitus, lateral view. 114. Head, frontal view. 115. T3, postero-dorsal view. Scale bar = 1 mm. 116. Spots of S2, ♂ (above) and ♀ (below). 117. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 118. Distribution, previous (red circle) and new (green square) records.

Additional material. BRAZIL: Paraná, General Carneiro 11.xi.2014–16.ii.2015, 11♀ 14♂, coll. Tayane Buggenhagen [RPSP]. Piraquara 3.xi.1968, 1♀, coll. P.J.S. Moure [DZUP]. São Paulo, Luis Antônio, Est. Ecol Jataí 2.ix.2009, 1♀, coll. N.W. Perioto [LRRP]. Same data except 27.ix.2007, 1♀ [LRRP], 29.x.2008, 1♀ [LRRP], 15.x.2009, 1♀ [LRRP]. Teodoro Sampaio, Parque Estadual Morro do Diabo, Sítio São Francisco 21.i.2012, 2♀, coll. P.R. Lopes [RPSP]. Same data except 21.xii.2011, 1♀ [RPSP], 17.ii.2012, 1♀ [RPSP].

Comments. The redescription above is based on a male from Brazil: Paraná, General Carneiro.

Ipsiura longiventris (Ducke, 1907)

(Figs 119–122)

Chrysis longiventris Ducke, 1907: 17. Lectotype ♀ [examined]: BRAZIL: Pará, Óbidos coll. A. Ducke (MZUSP). Designed by Bohart, in Kimsey & Bohart (1991: 510).
Neochrysis (*Ipsiura*) *longiventris*: Bohart 1966: 142.
Ipsiura longiventris: Bohart 1985: 711.

Diagnosis. *Ipsiura longiventris* most closely resembles *I. prolixa* Bohart and *I. klugi* (Dahlbom). It can be distinguished from these and other *Ipsiura* species by the following combination of characters: T2 with narrow basolateral translucent rim (absent in *I. prolixa* and *I. klugi*); large S2 spots (medium-sized to small in *I. prolixa* and *I. klugi*); T3 with six acute distal teeth and low, indistinct, sloping gently prepit swelling (prepit swelling absent in *I. klugi* and *I. prolixa*); and the TFC almost completely closed medially (widely interrupted in *I. klugi* and *I. prolixa*).

Lectotype redescription. *Body* (Fig. 119). *Length:* 7.2 mm. *Coloration:* head predominantly green, with faint bluish highlights on vertex; F1 brown; mesosoma metallic green, with faint bluish highlights on dorsum of pronotum and mesoscutum; metasoma metallic green, with faint transverse bluish purple stripes on dorsum of T1 and T2; T3 with faint bluish highlights dorsally, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish, hind basitarsus brownish green. *Head:* TFC forming long arc, slightly interrupted medially (Fig. 120); scapal basin densely covered with silvery pubescence; F1 longer than broad, 1.2× as long as F2. *Mesosoma:* fore femur without ventral tooth-like projection, slightly flattened on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 121), pit row well-developed, with large and deep foveae, prepit swelling low, sloping gently; T2 with narrow basolateral translucent border; S2 spots medium-sized, round, nearly reaching each other medially (Fig. 122). *Punctation:* fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum.

Male. Unknown.

Hosts. Unknown.

Distribution. Brazil: Pará, Óbidos (Fig. 30).

Material examined. Lectotype only.

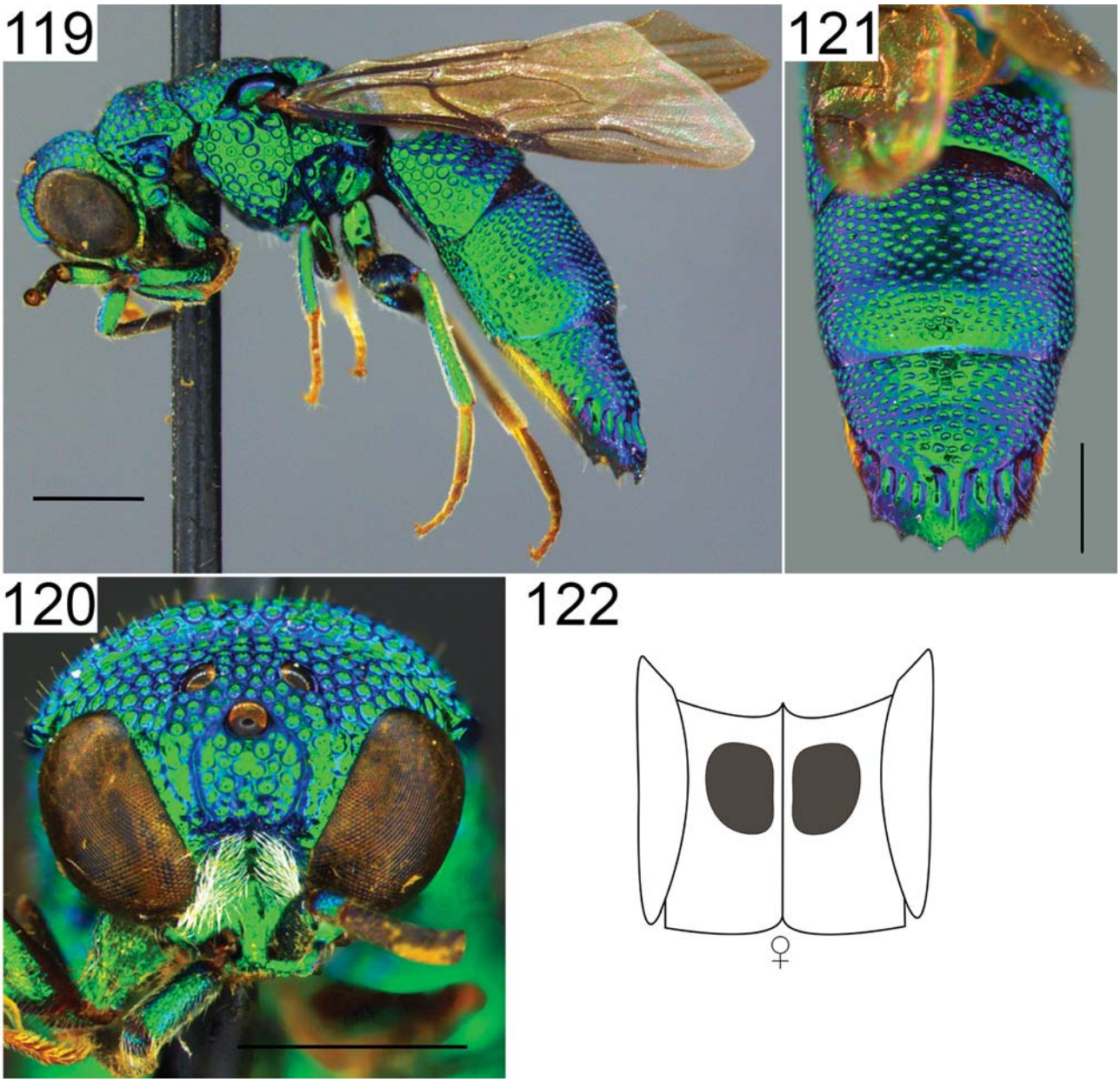
Ipsiura marginalis (Brullé, 1846)

(Figs 123–128)

Chrysis marginalis Brullé, 1846: 41. Holotype ♀ [examined by photos]: FRENCH GUIANA, Cayenne (MNHN).
Pleurocera (*Ipsiura*) *marginalis*: Linsenmaier 1959: 74.
Neochrysis (*Ipsiura*) *marginalis*: Bohart 1966: 142.
Ipsiura marginalis: Bohart 1985: 709.

Diagnosis. *Ipsiura marginalis* most closely resembles *I. ellampoides* (Ducke). It is readily distinguished from that and other *Ipsiura* species by the combination of following characters: fore wing with long *M* distal to discoidal cell;

TFC completely closed medially, rectangular, with well-marked secondary lateral facial carina (TFC rounded and without secondary lateral facial carina in *I. ellampoides*); T3 with indistinguishable teeth (deflected teeth in *I. ellampoides*); lower posterior mesopleural margin with strong knob-like projections (absent in *I. ellampoides*) and metanotum elongated, strongly projected above the propodeal surface (not so well-developed in *I. ellampoides*).

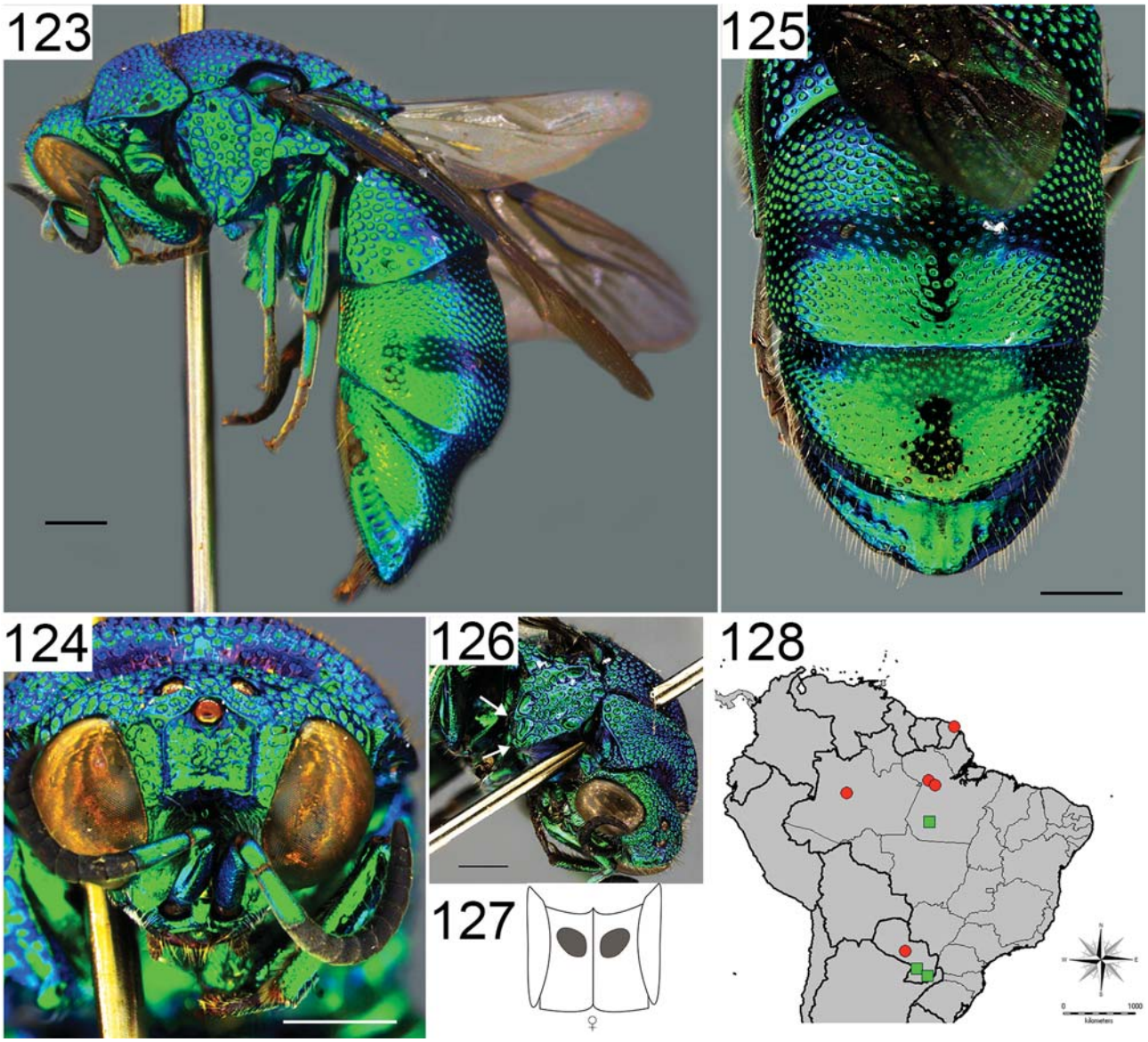


FIGURES 119–122. *Ipsiura longiventris*, lectotype ♀. 119. Habitus, lateral view. 120. Head, frontal view. 121. T3, postero-dorsal view. Scale bar = 1 mm. 122. Spots of S2, ♀.

Female description. *Body* (Fig. 123). *Length:* 12.2 mm. *Coloration:* head predominantly green, with bluish highlights on vertex; F1 green; mesosoma metallic green, with bluish highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with bluish purple stripes on dorsum of T2 and faintly indicated on T1; T3 with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brownish, basitarsi brownish green. *Head:* TFC enclosing the median ocellus, completely closed medially, forming a rectangular enclosure (Fig. 124); secondary facial carina well-developed laterally; F1 much longer than broad, about 1.9× as long as F2; scapal basin densely covered with silvery pubescence laterally, with distinct polished stripe medially. *Mesosoma:* fore femur with discrete flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with long *M* distal to discoidal cell, ending near distal wing margin, *R1* very short, slightly indicated (as in Fig. 145), medial cell asetose; dorsal

surface of pronotum much wider than head; lower lateral pronotal surface smooth, punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum elongated, strongly projected above propodeal surface; mesopleural lower posterior margin strongly carinate, along with distinct knob-like projections (Fig. 126). *Metasoma:* T3 with "two" deflected downward distal teeth (Fig. 125), pit row obsolescent, indicated by shallow and small pits, prepit swelling strongly convex; S2 spots medium-sized, separated medially about one-half spot diameter (Fig. 127). *Punctation:* fore femur punctate on outer surface; largest punctures on T1, mesopleuron and metanotum; shallow and spaced punctures on dorsum of T2 and T3, shiny interspace punctures.

Male. Unknown.



FIGURES 123–128. *Ipsiura marginalis*, ♀. 123. Habitus, lateral view. 124. Head, frontal view. 125. T3, postero-dorsal view. 126. Mesopleuron, lower posterior teeth indicated by the arrows. Scale bar = 1 mm. 127. Spots of S2, ♀. 128. Distribution, previous (red circle) and new (green square) records.

Variation. Body length 11.9–13.1 mm.

Hosts. Unknown.

Distribution. Brazil (AM, PA); French Guiana (Cayenne); Paraguay (Itapúa, Paraguarí) (Fig. 128).

Remarks. *I. marginalis* is the largest and most easily recognizable species in the genus.

Material examined. FRENCH GUIANA, Cayenne / Holotype ♀ (MNHN).

Additional material. BRAZIL: Pará, Boca do Cuminá Mirim 4.x.1969, 1♀, coll. Exp. Perm. Amaz. [MZUSP]. Óbidos 28.xii.1907, 1♀, coll. A Ducke [MPEG]. Santarém, 1♀, coll. A. Ducke [BME]. PARAGUAY,

1♀, coll. Sternitzky [BME]. Itapúa, Alto Verá 11.ii.1999, 1♀, coll. B. Garcete-Barrett [INBPY]. Paraguarí, Sapucai 25.viii.1901, 1♀ [BME].

Comments. The redescription above is based on a female from Brazil: Pará, Boca do Cuminá Mirim.

Ipsiura myops (du Buysson, 1904)

(Figs 129–134)

Chrysis myops du Buysson, 1904: 264. Holotype ♀ [examined by photos]: ARGENTINA, Tucumán. (MNHN).
Chrysis subtruncata Mocsáry, 1912. Holotype ♀ [not examined]: BRAZIL: Minas Gerais. Synonymized by Kimsey & Bohart (1991: 510).
Neochrysis (*Ipsiura*) *dehyalinata* Linsenmaier, 1985. Holotype ♀ [not examined]: BRAZIL: Santa Catarina, Nova Teutonia. Synonymized by Kimsey & Bohart (1991: 510).
Neochrysis (*Ipsiura*) *myops*: Kimsey & Bohart 1981: 78.
Ipsiura myops: Bohart 1985: 709.

Diagnosis. *Ipsiura myops* most closely resembles *I. spiculella* Bohart and *I. tropicalis* Bohart. It can be readily distinguished from these and other *Ipsiura* species by the following combination of characters: T3 with four obtuse distal teeth, without basolateral whitish spot (whitish spot present in *I. spiculella* and *I. tropicalis*), neither prepit swelling (sloping gently in *I. tropicalis*); large S2 spots (medium-sized in *I. tropicalis*). Additionally, the shape of aedeagus lobes is diagnostic for *I. myops*.

Female description. *Body* (Fig. 129). *Length:* 6.8 mm. *Coloration:* head green blue; F1 brownish green; mesosoma metallic green, with purple blue highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with purplish blue transverse stripes on dorsum of T1 and T2; T3 without lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown, hind basitarsus green. *Head:* TFC forming an incomplete arc, widely interrupted medially (Fig. 130); F1 longer than broad, 1.2× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with small indistinc tooth-like projections. *Metasoma:* T3 with four obtuse distal teeth (Fig. 131), pit row with large and deep foveae, prepit swelling absent; S2 spots large, nearly reaching each other medially (Fig. 132). *Punctation:* definite punctation at all body; tiny punctures on outer surface of fore femur; dorsum of T3 with definite, deep punctures; largest punctures on dorsum of T1 and metanotum.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 132. *Genital capsule* (Fig. 133): aedeagus longer than gonostylus and cuspis; gonostylus longer than cuspis; digitus length subequal to cuspis, strongly clavate apically; gonostylus and cuspis setose apically.

Variation. Body length 6.2–7.1 mm.

Hosts. Specimens reared from nests of *Ancistrocerus flavomarginatus* (Brèthes), *Trypoxylon agamemnon* (Richards) and *T. lactitarse* (Saussure), (Tayane Buggenhagen, *personal communication*).

Distribution. Argentina (Corrientes, Jujuy, Salta, Tucumán); Brazil (MG, PR, SC, SP); Uruguay (Tacuarembó) (Fig. 134).

Material examined. ARGENTINA, Tucumán, coll. R. du Buysson 1902 / Holotype ♀ (MNHN).

Additional material. ARGENTINA: Corrientes, Ituzaingó iii.1982, 1♀, coll. Manfredo Fritz [BME]. Las Marias 10.xi.1969, 1♀, coll. C. Porter [BME]. Salta, Pocitos i.1971, 1♀, coll. Manfredo Fritz [BME]. Jujuy, San Pedro de Jujuy 29.iv.1926, 1♀, coll. USNM [BME]. BRAZIL: Minas Gerais, Araxa 15.iv.1965, 1♂, coll. C. Elias [BME]. Barbacena 27.x.1905, 1♂, coll. A. Ducke [MPEG]. Paraná, General Carneiro 29.ix.2014–16.ii.2015, 37♀ 12♂, coll. Tayane Buggenhagen [RPSP]. Palmeira 9.x.1969, 1♀, coll. P.D. Hurd [BME]. Santa Catarina, Nova Teutonia i.1965, 1♀, coll. Fritz Plaumann [BME]. Nova Teutonia 28.iii.1966, 1♀ [BME]. Porto União 3.xii.2011, 1♂, coll. J. Iantas [DZUP]. São Paulo, Luis Antônio, Est. Ecol. Jataí 11.x.2007, 1♀, coll. N.W. Perioto [LRRP]. Nova Europa, Faz. Itaquerê 24.xi.1963, 1♀, coll. K. Lenko [BME]. URUGUAY: Tacuarembó 2.ii.1963, 1♀, coll. Bouseman [BME].

Comments. The redescription above is based on a female from Brazil: Paraná, General Carneiro.

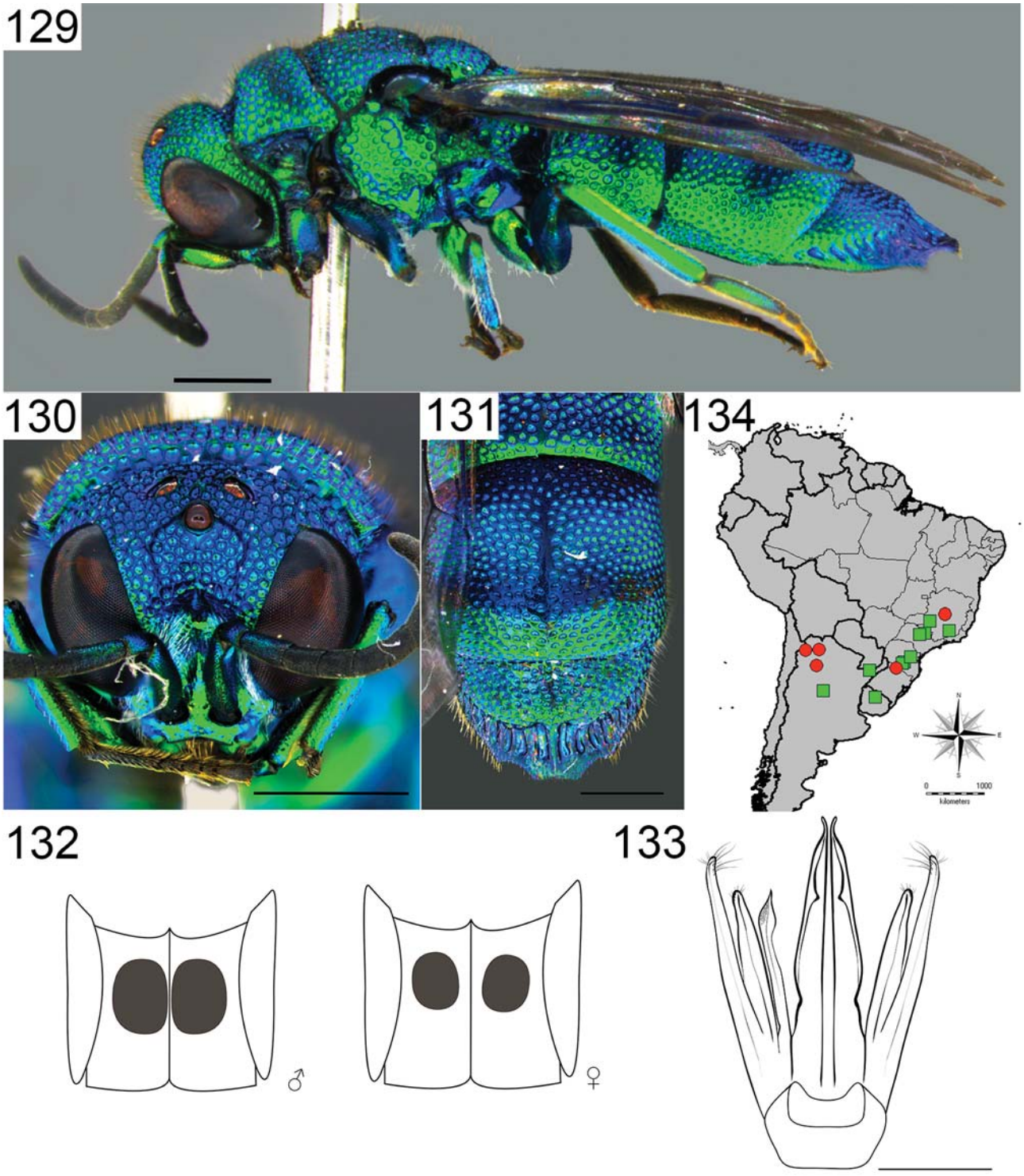


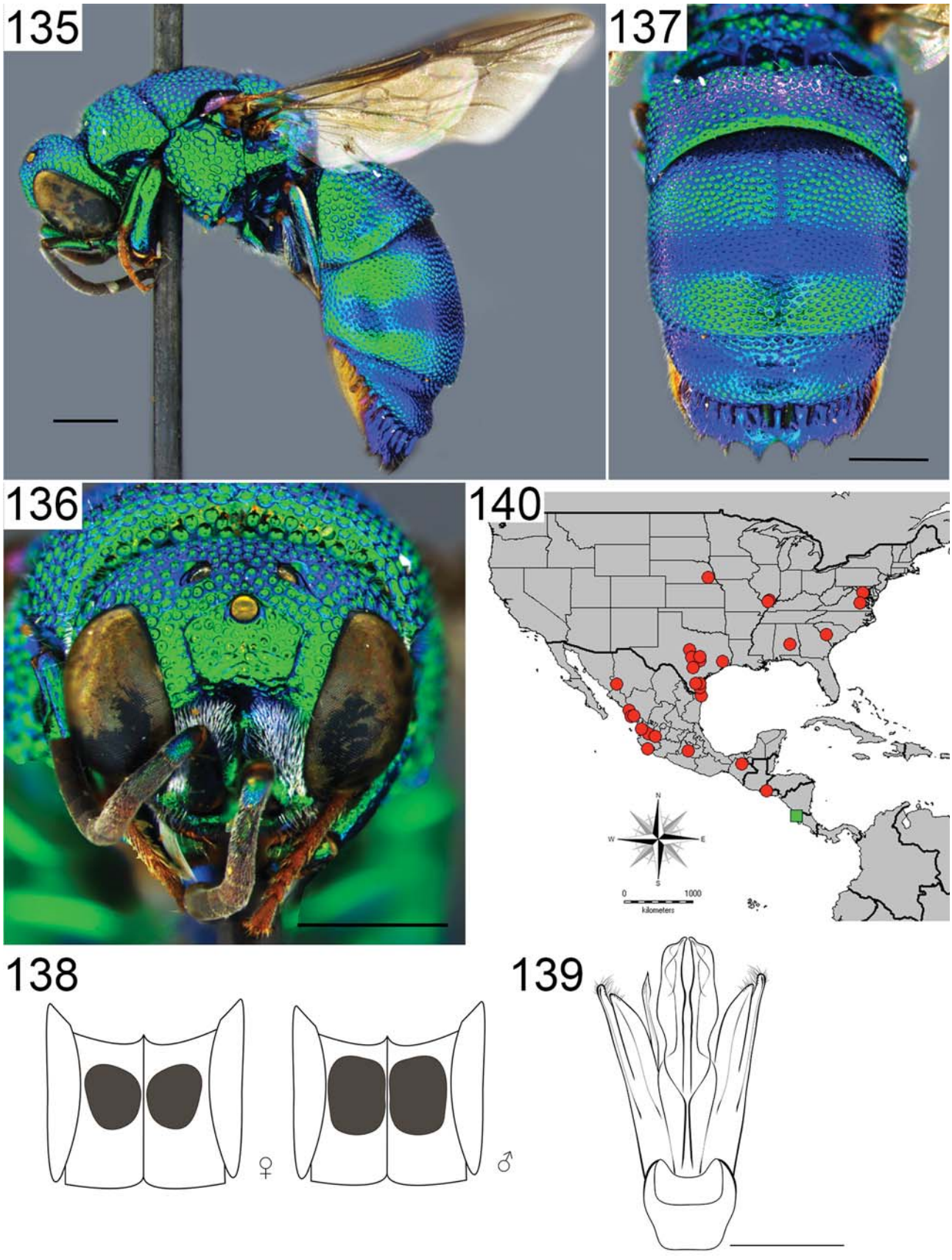
FIGURE 129–134. *Ipsiura myops*, ♀. 129. Habitus, lateral view. 130. Head, frontal view. 131. T3, postero-dorsal view. Scale bar = 1 mm. 132. Spots of S2, ♂ (left) and ♀ (right). 133. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 134. Distribution, previous (red circle) and new (green square) records.

Ipsiura neolateralis (Bohart, 1966)

(Figs 135–140)

Neochrysis (*Ipsiura*) *neolateralis* Bohart, 1966: 143. Holotype ♂ [examined]: USA, Illinois, Franklin County, West Frankfort (BME).

Ipsiura neolateralis: Bohart 1985: 710.



FIGURES 135–140. *Ipsiura neolateralis*, paratype ♂. 135. Habitus, lateral view. 136. Head, frontal view. 137. T3, postero-dorsal view. Scale bar = 1 mm. 138. Spots of S2, ♀ (left) and ♂ (right). 139. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 140. Distribution, previous (red circle) and new (green square) records.

Diagnosis. *Ipsiura neolateralis* most closely resembles *I. catamarcae* Bohart and *I. venezuelae* Bohart. It can be distinguished from these and other *Ipsiura* species by the following combination of characters: fore femur flattened distally, produced ventrally into a tooth-like projection (fore femur flattened distally but not projecting ventrally in *I. venezuelae*); TFC forming a rectangular enclosure, distinctly angulate laterally, closed medially (round, longer than broad, and usually interrupted medially in *I. catamarcae* and *I. venezuelae*); fore wing with short *M* distal to discoidal cell (long *M* in *I. venezuelae*) and metanotum cristate (punctate to irregularly serriform in *I. catamarcae* and *I. venezuelae*).

Male description. *Body* (Fig. 135). *Length:* 8.9 mm. *Coloration:* head predominantly green; F1 light brown green; mesosoma metallic bluish green, with faint bluish highlights on dorsum, particularly on pronotum and mesoscutum; metasoma metallic bluish green, with bluish purple transverse stripes on dorsum of T1 and T2; T3 with broad lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown, meso- and hind basitarsus greenish brown. *Head:* TFC forming rectangular enclosure, angulate laterally, closed medially (Fig. 136); F1 longer than broad, 1.3× as long as F2; scapal basin densely covered with silvery pubescence. *Mesosoma:* fore femur with distinct flattened area on distal margin, producing ventrally into a tooth-like projection, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with distinct posterior area delimited by transverse ridge; metanotum serrated to cristate medially; mesopleural lower posterior margin carinate, with distinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 137), with well-developed pit row, marked by large and deep foveae, with strongly convex prepit swelling; S2 spots large, touching medially (Fig. 138). *Punctation:* fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum; definite punctures on dorsum of head, meso- and metasoma, shallow punctures mostly on T2 and T3. *Genital capsule* (Fig. 139): cuspis slightly shorter than gonostylus; digitus narrow, clavate apically, longer than cuspis; cuspis broad basally; gonostylus and cuspis setose apically; aedeagus lobes elaborate.

Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 138.

Variation. Body length 8.6–8.9 mm.

Host. Unknown.

Distribution. Costa Rica (Guanacaste); El Salvador (La Libertad); Mexico (Chiapas, Jalisco, Nayarit, Sinaloa, Tamaulipas); USA (Arizona, Arkansas, Illinois, Kansas, Maryland, Nebraska, South Carolina, Texas, Virginia) (Fig. 140).

Material examined. USA: Illinois, Franklin Co.West Frankfort, vii.3.1963, coll R.M. Bohart Collector / Holotype ♂ [BME]. USA: Texas, Austin 6.viii.1953 coll. J.C Gillaspy / Paratype 1♂ [BME]. Brownwood 11.ix.1920 coll. M.A Cazier / Paratype 1♂ [BME]. Texas, Liano Co. 11.vi.1941 coll. E.Gillas / Paratype 1♀ [BME]. Liano 11.vi.1941 coll. J.E Gillaspy / Paratype 1♀ [BME]. Nueces River Uvalde 2.vii.1917 coll. J. Bequaert / Paratype 1♂ [BME]. Arkansas, Pyatt 2.vii.1957 coll. J.C Downey / Paratype 1♀ [BME]. Illinois, Crab. Orchard Lake Williamson 25.vi.1957 coll. J.C Downey / Paratype 1♂ [BME]. Kansas, Stocktoy / Paratype 1♀ [BME]. Texas, Texas / Paratype 1♀ [BME]. USA: Bourbon? 1915 coll. R.H Beamer / Paratype 1♂ [BME]. EL SALVADOR: La Libertad, Quezaltepeque 17.vi.1963 coll. D. Cavagnaro & M.E. Irwin / Paratype 1♀ [BME]. MEXICO: Chiapas, 3 mi North Petalcingo 21.viii.1963 coll F.D Parker & L.A Stange / Paratype 1♂ [BME]. Jalisco, 3 mi s.e. Plan de Barrancas 8.vii.1963 coll. F.D Parker & L.A Stange / Paratype 1♂ [BME]. Morelos, 6 mi south Temixco 16.vii.1963 coll. F.D Parker & L.A Stange / Paratype 1♂ [BME]. Sinaloa, 8 mi south Elota 26.viii.1963 coll. F.D Parker & L.A Stange / Paratype 1♂ [BME]. Mazatlan 10.ix.1957 coll. R & K Dreisbach / Paratype 1♂ [BME]. Nayarit, Navarrete 28.vii.1953 coll. D. Rockefeller / Paratype 1♀ [BME].

Additional material. COSTA RICA: Guanacaste, EJN 14km South Canãs 28.x.1985, 1♀, coll. F.D Parker [BME]. Prov. Liberia 6.viii.1964, 1♀, coll. M.G Naumann [BME]. MEXICO: Chihuahua, 2 mi North Temoris 22.viii.1968, 1♀, coll. T.A Sears; R.C Gardner & C.S Giaer [BME]. Colima, 23 mi North Manzanillo 26.viii.1970, 2♀, coll. MS & JS Wasbauer [BME]. Jalisco, Guadalajara, 1♂ 1♀ [BME]. Sinaloa, Concordia 4.vii.1963, 1♀, coll. F.D Parker & L.A Stange [BME]. Tamaulipas, Matamorosa 21.v.1979, 1♀, coll. J.R Lara [BME]. USA: Arizona, Madera Cyn. Pima County 21.viii.1977, 1♀, coll. R.W Brooks [BME]. Maryland, NW Branch Pk Montgomery 19.ii.1971, 1♀, coll. M.S. Menke [BME]. Nebraska, Lincoln 29.vi.1925, 1♀, coll. R.W Dawson [BME]. South Carolina, Aiken 6.vii.1958, 2♂, coll. R.R Suelling & M.D Suelling [BME]. Texas, Bexar County 8.ii.1931, 1♀, coll. H.B Parks [BME]. El Paistle Kenedy County 4.xi.1978, 1♀, coll. J.E Gillaspy [BME]. Kleberg County 2.v.1985, 1♂ 1♀, coll. W.J Pulawski [BME]. Kleberg County 3.v.1985, 1♂, coll. W.J Pulawski [BME]. Liberty

6.v.1934, 1♀ [BME]. 8 mi W Premont Duval County 7.iv.1980, 1♀, coll. J.R Lara [BME]. Site 55 Kleberg County 21.ii.1975, 1♀, coll. J.E Gillaspy [BME]. Same data except 7.ix.1980, 1♀, [BME]. Williamson 8.vi.1934, 1♂, coll J.E Gillaspy [BME]. Washington DC vii.1944, 1♀, R.M Bohart [BME]. Virginia, Hoods Richmond 1.vi.1927, 1♂, coll. G.W Underhill [BME].

Comments. The redescription above is based on a paratype male from USA: Texas, Nueces River Uvalde.

Ipsiura nigriventer Bohart, 1985

(Figs 141–146)

Ipsiura nigriventer Bohart, 1985: 717. Holotype ♂ [examined]: MEXICO: Oaxaca, Matias Romero (BME).

Diagnosis. *Ipsiura nigriventer* most closely resembles *I. leucocheila* (Mocsáry) and *I. leucocheiloides* (Ducke). It can be distinguished from these and other *Ipsiura* species by the following combination of characters: fore wing with long *M* distal to discoidal cell (short *M* in *I. leucocheila* and *I. leucocheiloides*); integument of propodeal foveae dull (polished, shiny in all other *Ipsiura* species) and the unusual large S2 spots (medium-sized in *I. leucocheila* and *I. leucocheiloides*).

Female description. *Body* (Fig. 141). *Length:* 8.1 mm. *Coloration:* head predominantly green, with dark blue highlights on vertex; F1 greenish brown; mesosoma metallic green, with bluish purple transverse stripes on dorsum of pronotum, mesoscutum with broad purplish blue band; metasoma metallic green, with transverse bluish purple stripes on dorsum of T2 and faintly marked on T1; integument of propodeal surface dull; T3 with dark bluish highlights, narrow lateral whitish spot basolaterally; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brown, meso- and hind basitarsus green. *Head:* TFC forming an incomplete arc, interrupted medially (Fig. 142); F1 longer than broad, 1.3× as long as F2; scapal basin with silvery pubescence. *Mesosoma:* fore femur with discrete flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with long *M* distal to discoidal cell, ending near distal wing margin, *R1* very short (Fig. 145); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, sparse punctures anteriorly, without distinct posterior area delimited by transverse ridge; metanotum with deep punctation, appearing faintly cristate; mesopleural lower posterior margin carinate, with distinct tooth-like projections. *Metasoma:* T3 with four acute distal teeth (Fig. 143), pit row well-developed, indicated by large foveae, prepit swelling very low, sloping gently; S2 spots unusual large, touching medially (Fig. 144). *Punctation:* fore femur coarsely punctate on outer surface; largest punctures on T1, mesopleuron and metanotum.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 144, the broad dark band occupying much of the dorsum of meso- and metasoma, and the femora with plusome long silvery setae.

Variation. Despite the widespread distribution, *I. nigriventer* is quite morphologically uniform. The most conspicuous variation observed in this species is body length and coloration. The specimens from southeastern USA to Costa Rica are as longer as holotype, and predominantly bluish as holotype. On the other hand, the Brazilian specimens, especially the specimens collected in São Paulo: Luis Antonio (LRRP) and Minas Gerais: Marliéria (UFES) are smaller (about 7.1–7.8 mm) and predominantly green (as seen in Figs 141–143).

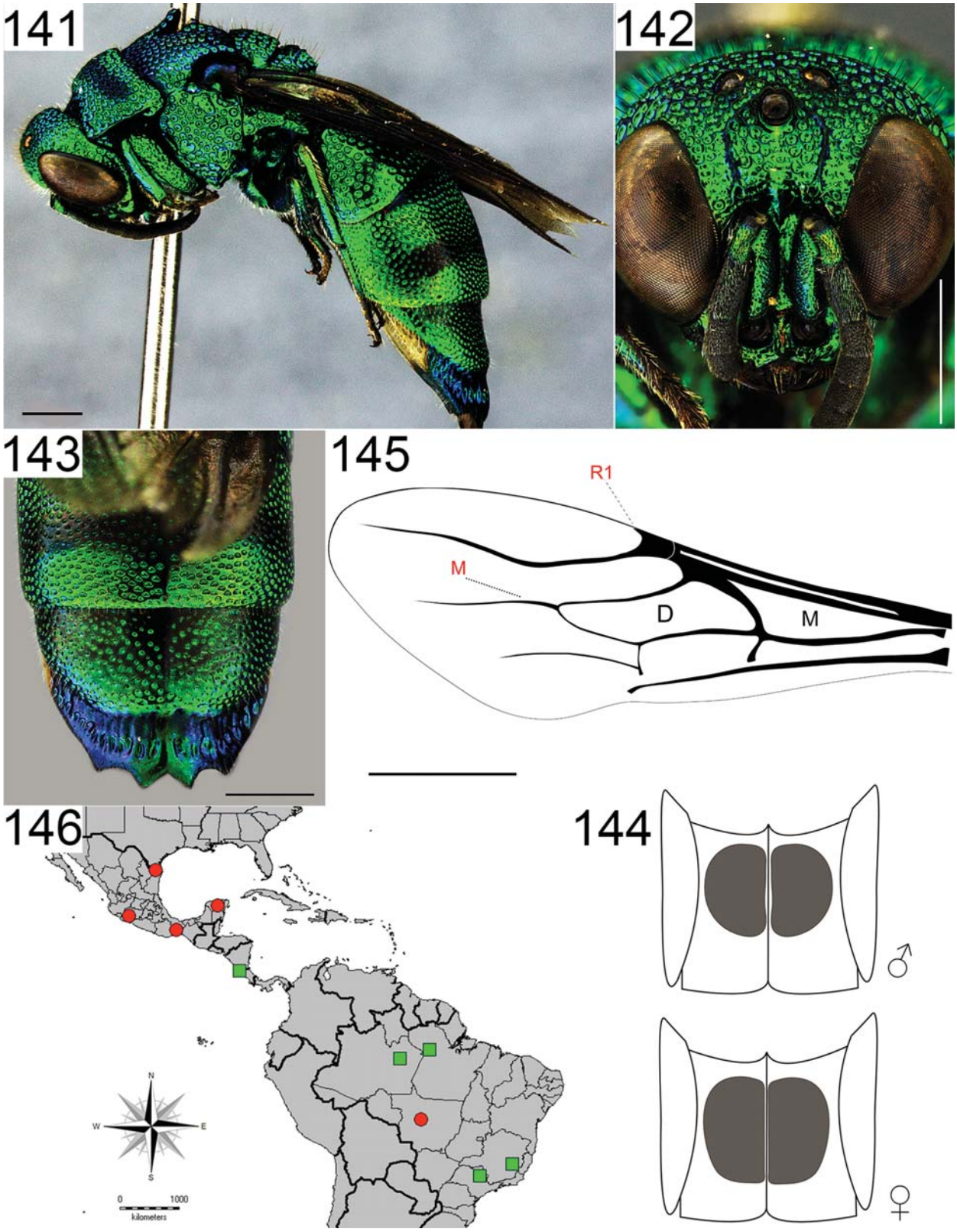
Host. Unknown.

Distribution. Brazil (AM, MG, MT, PA, SP); Costa Rica (Guanacaste); Mexico (Michoacán, Oaxaca, Yucatán); USA (Texas) (Fig. 146).

Material examined. MEXICO: Oaxaca, 23 mi south Matias Romero, viii.14.1963, F.D. Parker & L.A. Stange / Holotype ♂ (BME). MEXICO: Michoacán, 11 mi East Aqatzingan 20.viii.1954 coll. E.G. Linsley, J.W. MacSwain and R.F. Smith / Paratype 1♀ [BME]. Oaxaca, 23 mi south Matias Romero 14.viii.1963 coll. F.D. Parker & L.A. Stange / Paratype 1♂ [BME]. USA: Texas, Valley Botan. Garden McAllen Hidal County 26.xi.1981 coll. C. Porter / Paratype 1♀ [BME].

Additional material. BRAZIL: Amazonas, Iranduba, Ramal do Caldeirão 17.xi.2011, 1♀, coll. Somavilla & Azevedo [INPA]. Mato Grosso, Rio Caraguana iii.1953, 1♀, coll. Fritz Plaumann [BME]. Minas Gerais, Marliéria 14.xi.2002, 1♀, coll. J.C.R. Fontenelle [UFES]. Same data except 24.x.2002, 1♀ [UFES], 28.x.2007, 1♀ [UFES]. Pará, Óbidos, 1♀, coll. A. Ducke [MZUSP]. São Paulo, Luis Antônio, Est. Ecol. Jataí 27.ix.2007, 2♀, coll. N.W. Perioto [LRRP]. Same data except 24.x.2007, 2♀ [LRRP], 12.xi.2008, 1♀ [LRRP]. COSTA RICA: Guanacaste, Canãs 28.x.1989, 1♀, coll. F.D. Parker [BME].

Comments. The redescription above is based on a female from Brazil: Amazonas, Iranduba.

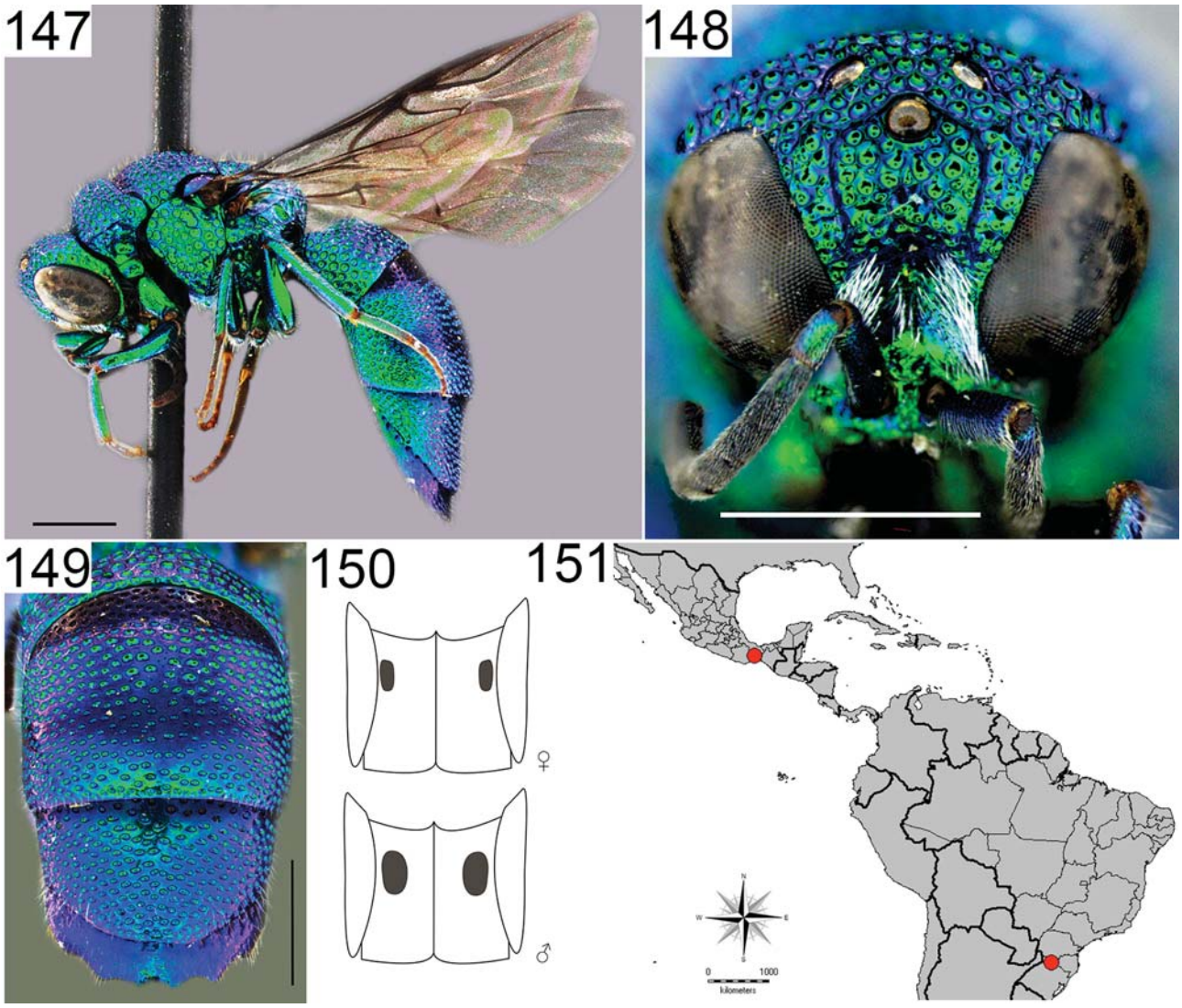


FIGURES 141–146. *Ipsiura nigriventer*, ♀. 141. Habitus, lateral view. 142. Head, frontal view. 143. T3, postero-dorsal view. Scale bar = 1 mm. 144. Spots of S2, ♂ (above) and ♀ (below). 145. Fore wing, veins *R1* and *M* indicated in red. Discoidal and medial cells are indicated by "D" and "M", respectively. Setae omitted. Scale bar = 1 mm. 146. Distribution, previous (red circle) and new (green square) records.

***Ipsiura oaxacae* Bohart, 1985**
(Figs 147–151)

Ipsiura oaxacae Bohart, 1985: 718. Holotype ♂ [examined]: MEXICO: Oaxaca, Matias Romero (BME).
Neochrysis (*Ipsiura*) *dissedidentata* Linsenmaier, 1985. Holotype ♀ [not examined]: BRAZIL (NMLS). Synonymized by Kimsey & Bohart (1991: 510).
Neochrysis (*Ipsiura*) *oaxacae*: Linsenmaier 1997: 267.

Diagnosis. *Ipsiura oaxacae* most closely resembles *I. pilifrons* (Cameron). It can be distinguished from *I. pilifrons* by the obtuse T3 distal teeth and the shape of S2 spots (Figs 149, 150). *Ipsiura oaxacae* is also readily distinguished from other *Ipsiura* species by the following combination of characters: pit row obsolescent, with small pits marked laterally; T3 without basolateral whitish spot neither distinct prepit swelling dorsally; S2 spots widely separated medially and TFC interrupted medially.



FIGURES 147–151. *Ipsiura oaxacae*, ♀. 147. Habitus, lateral view. 148. Head, frontal view. 149. T3, postero-dorsal view. Scale bar = 1 mm. 150. Spots of S2, ♀ (above) and ♂ (below). 151. Distribution.

Female description. *Body* (Fig. 147). *Length:* 7 mm. *Coloration:* head predominantly green blue, with faint purplish highlights on vertex; F1 bluish green; mesosoma metallic green blue, with faint purplish highlights on dorsum of pronotum and mesoscutum; metasoma metallic bluish green, with transverse bluish purple stripes on dorsum of T1 and T2; T3 without lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae bluish green; tarsi brown, hind basitarsus green; fore- and meso basitarsi brownish green. *Head:* TFC

enclosing the median ocellus, widely interrupted medially (Fig. 148), with lateral secondary facial carina well marked; F1 longer than broad, 1.3× as long as F2; scapal basin densely covered with silvery pubescence. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin, diameter of distal area about one-half of diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six obtuse distal teeth (Fig. 149), pit row obsolescent, with small lateral pits, partially obscured by anterior crease, prepit swelling absent; S2 spots small, widely separated medially (Fig. 150). *Punctation*: fore femur impunctate on outer surface; largest punctures on T1, mesopleuron and metanotum.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 150.

Hosts. Unknown.

Distribution. Brazil (SC); Mexico (Oaxaca) (Fig. 151).

Remarks. There are only two known specimens of *I. oaxacae*, one collected in Mexico, Oaxaca and a female from Santa Catarina, Brazil. Despite the disjointed geographic records, they agree in all specific characteristics.

Material examined. MEXICO: Oaxaca, 23 mi south Matias Romero, viii.14.1963, coll. F.D. Parker & L.A. Stange / Holotype ♂ [BME]. BRAZIL: Santa Catarina, Nova Teutonia ii.1968, 1♀, coll. Fritz Plaumann [BME].

Comments. The redescription above is based on a female from Brazil: Santa Catarina, Nova Teutonia.

Ipsiura obidana Bohart, 1985

(Figs 152–156)

Ipsiura obidana Bohart, 1985: 718. Holotype ♀ [examined]: BRAZIL: Pará, Óbidos (BME).

Diagnosis. *Ipsiura obidana* most closely resembles *I. genbergi* (Dahlbom). It can be readily distinguished by the shape of S2 spots. This species can be distinguished from other *Ipsiura* species by the following combination of characters: genal space very narrow and impunctate; fore femur slightly flattened distally and impunctate on outer surface; T3 with narrow lateral whitish spot, without distinct prepit swelling, pit row obsolescent, with small pits marked laterally, and TFC slightly interrupted medially.

Female description. *Body* (Fig. 152). *Length:* 5.9 mm. *Coloration:* head predominantly green, with faint purple highlights on vertex; F1 brown; mesosoma metallic green, with broad bluish purple band on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with transverse dark purple stripes on dorsum of T1 and T2; T3 with narrow lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brown, hind basitarsus brownish green. *Head*: genal space narrow, less than 1× MOD long; TFC enclosing the median ocellus, slightly interrupted medially (Fig. 153); F1 slightly longer than broad, about 1.1× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur slightly flattened distally, not projecting ventrally, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 154), pit row obsolescent, indicated by small lateral pits, partially covered by anterior crease, without prepit swelling; S2 spots small, ovoid, nearly reaching each other medially (Fig. 155). *Punctation*: genal space impunctate; outer surface of fore femur impunctate; largest punctures on T1, mesopleuron and metanotum; T3 with definite punctation.

Male. Unknown.

Variation. Body length 5.8–6 mm.

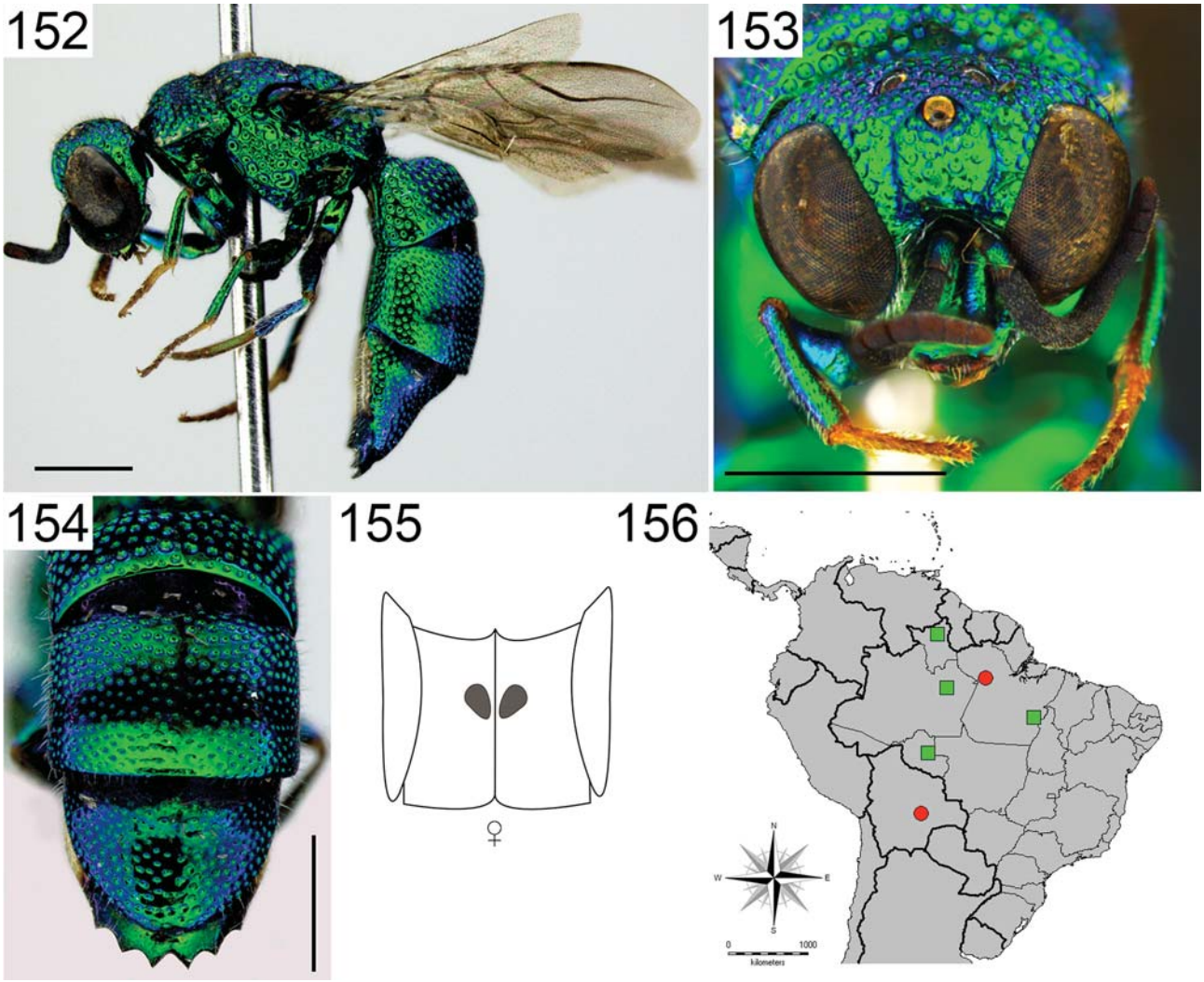
Hosts. Unknown.

Distribution. Bolivia (Santa Cruz); Brazil (AM, PA, RO, RR) (Fig. 156).

Material examined. BRAZIL: Pará, Óbidos, 17.xii.1907 A. Ducke / Holotype ♀ (BME). Pará, Óbidos 28.xii.1907 A. Ducke / Paratype 1♀ [BME]. BOLIVIA: Santa Cruz, Jardim Botânico 26.vii.1977 C. Porter / Paratype 1♀ [BME].

Additional material. BRAZIL: Amazonas, Manaus 29.vi.1982, 1♀, coll. J.A. Rafael [INPA]. Pará, Canaã dos Carajás 16.iv.1983, 1♀, coll. M.F. Torres [MPEG]. Rondônia, Ouro Preto D'Oeste 11–13.xi.1984, 1♀ [MPEG]. Roraima, Rio Uraricoera, Ilha de Maraca 13.v.1987, 1♀, coll. J.A. Rafael [INPA].

Comments. The redescription above is based on a female from Brazil: Amazonas, Manaus.



FIGURES 152–156. *Ipsiura obidana*, ♀. 152. Habitus, lateral view. 153. Head, frontal view. 154. T3, postero-dorsal view. Scale bar = 1 mm. 155. Spots of S2, ♀. 156. Distribution, previous (red circle) and new (green square) records.

Ipsiura obidensis (Ducke, 1903)

(Figs 157–162)

Chrysis obidensis Ducke, 1903: 231. Lectotype ♂ [examined by photos]: BRAZIL: Pará, Óbidos (MNHN). Designed by Bohart, in Kimsey & Bohart (1991: 511).

Chrysis anisitsii Brèthes, 1908. Lectotype ♀ [not examined]: PARAGUAY: Asunción (MACN). Designed by Bohart, in Kimsey & Bohart (1991: 511). Synonymized by Kimsey & Bohart (1991: 511).

Hexachrysis anisitsi Bischoff, 1910. Lectotype ♀ [not examined]: PARAGUAY: Asunción (ZMHU). Designed by Bohart, in Kimsey & Bohart (1991: 511). Synonymized by Kimsey & Bohart (1991: 511).

Neochrysis (*Ipsiura*) *obidensis*: Kimsey & Bohart 1981: 78.

Ipsiura obidensis: Bohart 1985: 710.

Diagnosis. *Ipsiura obidensis* most closely resembles *I. lata* Bohart. It can be distinguished from *I. lata* by the metanotum irregularly cristate medially (strongly cristate in *I. lata*), and the TFC closed medially, much broader than long (slightly interrupted and longer than broad in *I. lata*). *Ipsiura obidensis* can be distinguished from other

Ipsiura species by the following combination of characters: T3 with six distal teeth, the lateral teeth usually are strongly obtuse, prepit swelling sloping gently, and large lateral whitish spots; large S2 spots, that touching medially; scapal basin densely covered with silvery pubescence and the TFC forming broad enclosure, and closed medially.

Male description. *Body* (Fig. 157). *Length:* 6.2 mm. *Coloration:* head predominantly bluish green, with dark purple highlights on vertex; F1 bluish green, F2 brownish green; mesosoma metallic blue, with dark purple bands on dorsum, particularly on pronotum and mesoscutum; metasoma metallic blue, with transverse dark purple stripes on dorsum of T1 and T2; T3 with purplish highlights, and large lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae bluish; tarsi brown, hind basitarsus brownish blue. *Head:* TFC enclosing the median ocellus, closed medially, much broader than long (Fig. 158); F1 longer than broad, 1.2× as long as F2; scapal basin densely covered with silvery pubescence. *Mesosoma:* fore femur with discrete flattened area on outer surface of distal margin, without ventral tooth-like projection; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (*e.g.* Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, punctate anteriorly, without distinct posterior area delimited by transverse ridge; metanotum irregularly serrate to cristate medially; mesopleural lower posterior margin carinate, with distinct close together tooth-like projections. *Metasoma:* T3 with six distal teeth, the lateral teeth are broadly obtuse (Fig. 159), pit row exposed, represented by distinct, small foveae, prepit swelling sloping gently; S2 spots large, touching medially (Fig. 160). *Punctation:* outer surface of fore femur punctate, with definite sparse punctures; largest punctures on T1, mesopleuron and metanotum. *Genital capsule* (Fig. 161)*:* aedeagus longer than gonostylus and cuspis; cuspis shorter than gonostylus, broader basally than apically; digitus very narrow, shorter than cuspis, strongly clavate; gonostylus and cuspis with short setae apically.

Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 160, and usually shaperst T3 lateral teeth.

Variation. The body coloration varies from the usual blue to green, especially in specimens from northeast Brazil: Rio Grande do Norte, Paraíba and Bahia. Body length 6.1–6.5 mm.

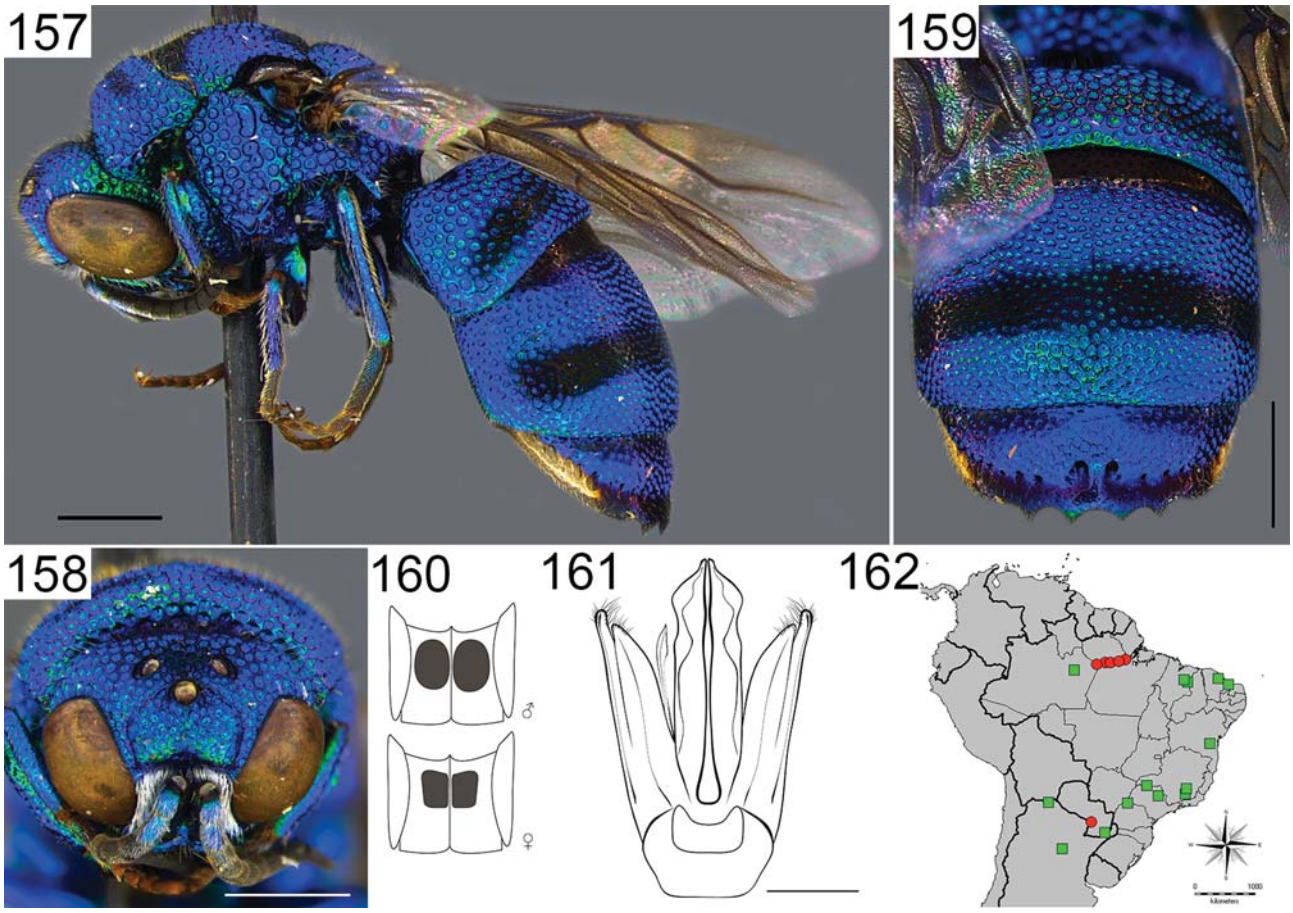
Hosts. Unknown.

Distribution. Argentina (Salta, Santa Fe); Brazil (AM, BA, CE, MA, MG, PA, RN, SP); Paraguay (San Pedro, Villarica) (Fig. 162).

Material examined. BRAZIL: Pará, Óbidos, 29.vii.1902 A. Ducke / Lectotype ♂ (MNHN).

Additional material. ARGENTINA: Salta, Tartagal 11.viii.1973, 1♀, coll. C. Porter [BME]. Santa Fé, Tostado, 1♂, coll. Andres Giai [BME]. BRAZIL: Amazonas, Manaus 22.xi.1910, 1♀, coll. A. Ducke [MPEG]. Bahia, Jequié, DIRFAV 13.x.2006, 1♀, coll. J.C. Silva-JR [LEBIC]. Same data except 10.ii.2006, 1♀ [LEBIC]. Jequié, UESB II, 28.ii.2007, 1♀, coll. J.C. Silva-JR [LEBIC]. Same data except 19.ix.2006, 1♀ [LEBIC], 20.xi.2006, 1♀ [LEBIC], 25.xi.2006, 1♂ [LEBIC]. Ceará, Baturité 25.vii.1908, 1♀, coll. A. Ducke [MPEG]. Maranhão, Caxias 29.iv.1907, 1♀, coll. A. Ducke [MPEG]. Codó 24.vi.1907, 1♀, coll. A. Ducke [MPEG]. Minas Gerais, Barbacena 22.x.1905, 1♂, coll. A. Ducke [MPEG]. Chapada?, 1♀ [BME]. Pará, Óbidos 22.vii.1903, 1♀, A. Ducke [MNHN]. Same data except 8.vii.1903, 1♂ [MPEG], 13.xii.1903, 1♀ [MPEG], 10.i.1904, 1♂ [MPEG], 21.i.1904, 1♂ [MPEG], 22.xii.1904, 1♂ [MPEG], 2.i.1905, 1♂ [MPEG], 2.i.1907, 2♂ [BME], 22.xii.1904, 1♀ [BME], 1.i.1907, 1♀ [BME], 5.i.1905, 1♀ [MPEG], 7.i.1905, 1♀ [MPEG], 11.i.1905, 1♂ [MPEG], 31.xii.1906, 1♀ [MPEG], 1.i.1907, 1♀ [MPEG], 2.i.1907, 1♂ [MPEG], 4.i.1907, 2♂ 1♀ [MPEG], 5.i.1907, 2♂ [MPEG], 8.i.1907, 1♀ [MPEG], 5.iv.1907, 1♂ [MPEG], 1.xii.1907, 1♂ [MPEG]. Alenquer 29.xii.1903, 1♀, coll. A. Ducke [MPEG]. Same data except 1.i.1904, 1♀ [MPEG]. Almeirim 8.iv.1903, 1♀, A. Ducke [MPEG]. Same data except 12.iv.1903, 1♂ [MPEG]. Faro 15.xii.1904, 1♀, coll. A. Ducke [MPEG]. Madeira Mamoré, 1♀, [MPEG]. Pará 26.ix.1901, 1♀, coll. A. Ducke [MPEG]. Same data except 28.ix.1901, 1♂ [MPEG], 24.iii.1903, 1♀ [MPEG]. Prainha 12.v.1903, 1♂ 1♀, coll. A. Ducke [MPEG]. Rio Grande do Norte, Mossoró, Faz. Sta. Júlia 6.iii.2007, 2♂ 4♀, coll. D.R.R. Fernandes [RPSP]. São Paulo, Luis Antônio, Est. Ecol. Jataí 24.x.2007, 1♀, coll. N.W. Perioto [LRRP]. Same data except 5.xii.2007, 1♀ [LRRP], 26.xi.2008, 1♀ [LRRP]. Paulo de Farias, Est. Ecol. P. Farias 9.xii.1998, 1♂, coll. Garófalo, Gazola & Serrano [CAVS]. Teodoro Sampaio, Parque Estadual Morro do Diabo, Sítio Manoel 18.x.2011, 1♀, coll. P.R. Lopes [RPSP]. PARAGUAY: Villarica xi, 1♀, coll. Sternitzky [BME].

Comments. The redescription above is based on a male from Brazil: Pará, Almeirim.



FIGURES 157–162. *Ipsiura obidensis*, ♂. 157. Habitus, lateral view. 158. Head, frontal view. 159. T3, postero-dorsal view. Scale bar = 1 mm. 160. Spots of S2, ♂ (above) and ♀ (below). 161. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 162. Distribution, previous (red circle) and new (green square) records.

Ipsiura pilifrons (Cameron, 1888)

(Figs 163–167)

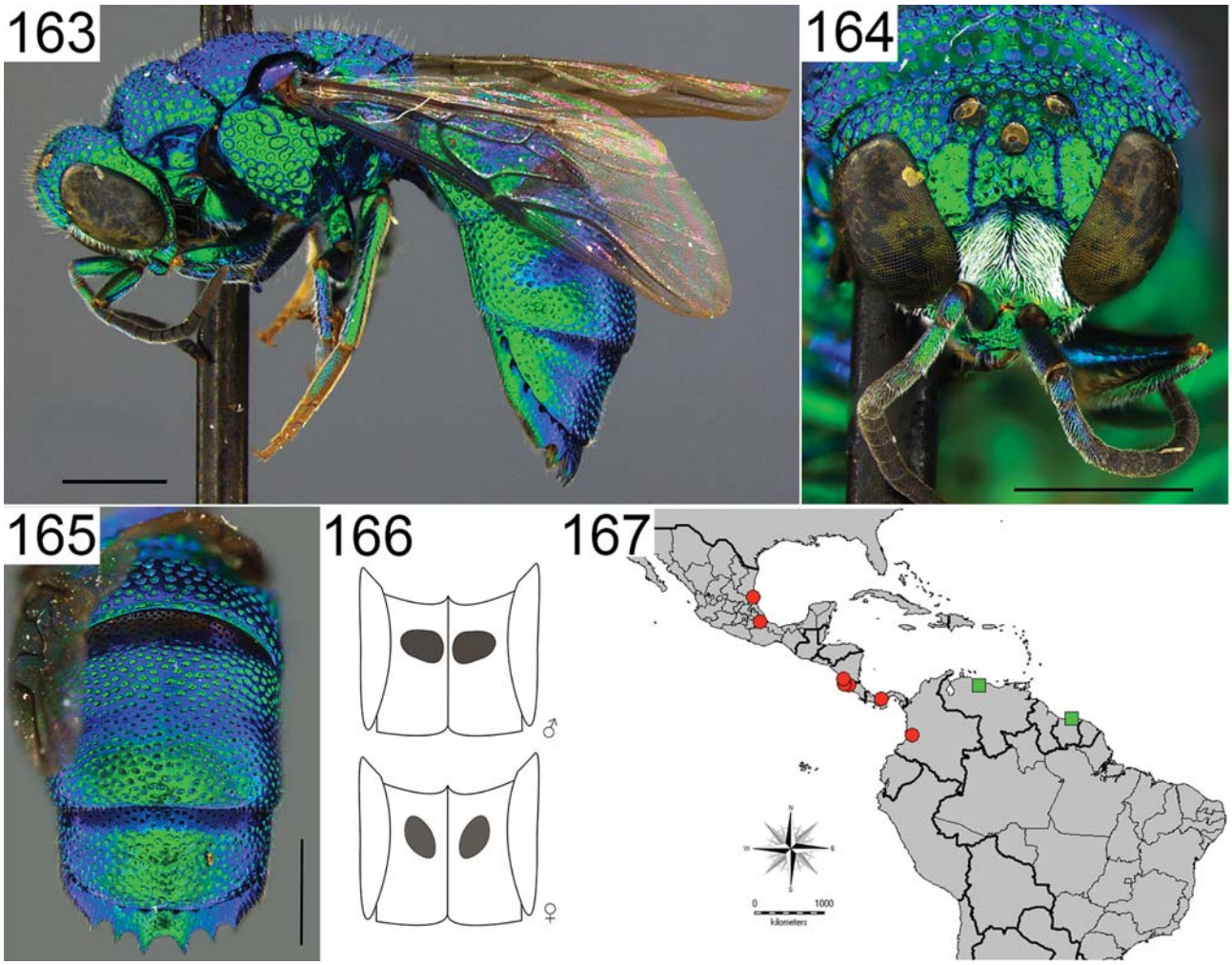
Chrysis pilifrons Cameron, 1888: 465. Holotype ♂ [examined by photos]: PANAMA (BMNH).
Chrysis stenops Mocsáry, 1889. Lectotype ♀ [not examined]: MEXICO: Tampico. Designed by Bohart, in Kimsey & Bohart (1991: 511). Synonymized by Kimsey & Bohart (1991: 511).
Neochrysis (*Ipsiura*) *pilifrons*: Bohart 1966: 142.
Ipsiura pilifrons: Bohart 1985: 711.

Diagnosis. *Ipsiura pilifrons* most closely resembles *I. oaxacae* Bohart and *I. genbergi* (Dahlbom). It can be distinguished from these species by the T3 with six acute distal teeth (broadly obtuse in *I. oaxacae*), and without lateral whitish spot (spot present in *I. genbergi*). Additionally, *I. pilifrons* can be distinguished from other *Ipsiura* species by: TFC interrupted medially, with a well-marked secondary lateral facial carina; T3 without prepit swelling, pit row obsolescent, partially covered by anterior crease, and shape of S2 spots (Fig. 166).

Male description. *Body* (Fig. 163). *Length:* 6.3 mm. *Coloration:* head predominantly green, with faint dark green highlights on vertex; F1 green, F2 greenish brown; mesosoma metallic green, with faint purplish highlights on dorsum, especially of pronotum and mesoscutum; metasoma metallic green, with faint transverse purplish blue stripes on dorsum of T1 and T2, bluish highlights on T3, without lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown, meso- and hind basitarsi bluish green. *Head:* TFC enclosing the median ocellus, widely interrupted medially (Fig. 164); secondary lateral facial carina clearly marked; F1 longer than broad, 1.3× as long as F2; scapal basin densely covered with silvery pubescence. *Mesosoma:* fore femur without flattened area or ventral tooth-like projection on outer surface of distal margin,

diameter of distal area about one-half of diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface almost impunctate anteriorly, with distinct posterior area delimited by transverse ridge; metanotum rounded, slightly raised posteriorly, not projecting above propodeal surface in lateral view; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 165), pit row partially covered by anterior crease, without prepit swelling; S2 spots medium-sized, weakly separated medially (Fig. 166). *Punctation:* outer surface of fore femur impunctate; largest punctures on T1, mesopleuron and metanotum; T3 with definite, shallow punctures.

Female. Same as male, except for the characteristic shape of S2 spots as shown in Fig. 166.



FIGURES 163–167. *Ipsiura pilifrons*, ♂. 163. Habitus, lateral view. 164. Head, frontal view. 165. T3, postero-dorsal view. Scale bar = 1 mm. 166. Spots of S2, ♂ (above) and ♀ (below). 167. Distribution, previous (red circle) and new (green square) records.

Variation. Body length 6.3–7.9 mm.

Hosts. Unknown.

Distribution. Colombia (Valle del Cauca); Costa Rica (Guanacaste); Mexico (Tamaulipas, Vera Cruz); Nicaragua (Rivas); Panama; Surinam (Wanica); Venezuela (Aragua) (Fig. 167).

Material examined. PANAMA: Boucard? / Holotype ♂ (BMNH).

Additional material. COLOMBIA: Valle del Cauca, Atuncela 10.xii.1974, 1♂, coll. R. Wilkerson [BME]. COSTA RICA: Guanacaste, Canãs 11.i.1991, 1♂ 2♀, coll. F.D. Parker [BME]. Playas del Coco 18.vii.1965, 1♂, coll. R.D. Sage [BME]. EJN 14 KmS Cañas 15.ii.199, 1♀, coll. F.D. Parker [BME]. MEXICO: Tamaulipas 1♀ [BME]. Vera Cruz, Cordoba 6.vii.1966, 1♂ 1♀, coll. J.S. Buckett, M.R. & R.C. Gardner [BME]. NICARAGUA: Rivas, San Juan del Sur 3.v.1988, 1♀, coll L.J Clark [BME]. PANAMA, 1♀ [BME]. SURINAM: Kwatta 1.ii.1961,

1♀, coll. D.C. Geijskes [BME]. VENEZUELA: Aragua, El Limón 15.ii.1986, 1♀, coll. Miller & L.A. Stange [BME].

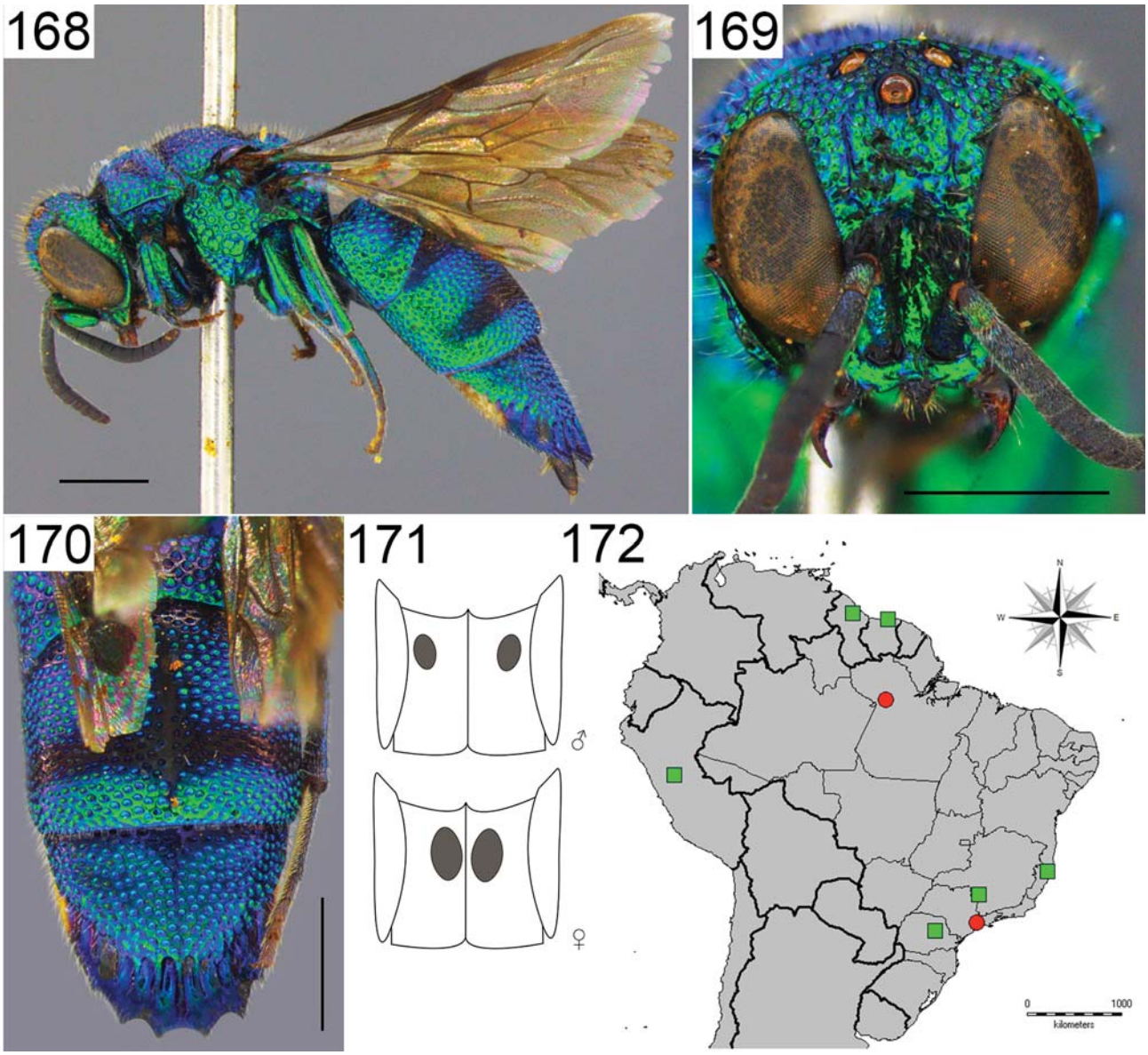
Comments. The redescription above is based on male from Mexico: Vera Cruz, Cordoba.

Ipsiura prolixa Bohart, 1985

(Figs 168–172)

Ipsiura prolixa Bohart, 1985: 718. Holotype ♂ [examined]: BRAZIL: Pará, Óbidos (BME).

Diagnosis. *Ipsiura prolixa* most closely resembles *I. klugi* (Dahlbom). These species can be distinguished each other by the shape of the S2 spots (Figs 87, 171). Additionally, *I. prolixa* can be distinguished from other *Ipsiura* species by the following combination of characters: T3 with lateral whitish spot, distal margin long, with six acute distal teeth arranged in a strong arc, without distinct prepit swelling, and pit row with large, deep foveae; metanotum irregularly cristate; fore femur with definite but sparse punctation, and the TFC widely interrupted medially.



FIGURES 168–172. *Ipsiura prolixa* Bohart, ♀. 168. Habitus, lateral view. 169. Head, frontal view. 170. T3, postero-dorsal view. Scale bar = 1 mm. 171. Spots of S2, ♂ (above) and ♀ (below). 172. Distribution, previous (red circle) and new (green square) records.

Female description. *Body* (Fig. 168). *Length:* 8.4 mm. *Coloration:* head predominantly green, with faint bluish purple highlights on vertex; F1 brownish green; mesosoma metallic green, with bluish purple bands on dorsum, particularly on pronotum and mesoscutum; metasoma metallic green, with transverse dark purple stripes on dorsum of T1 and T2, bluish highlights on T3; T3 with lateral whitish spot; wing membrane brown, with brown veins; femora and tibiae greenish; tarsi brown, basitarsi green. *Head:* TFC forming a long arc, widely interrupted medially (Fig. 169); scapal basin covered with silvery pubescence; F1 longer than broad, 1.2× as long as F2. *Mesosoma:* fore femur without ventral tooth, slightly flattened on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; forewing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral area irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum irregularly cristate medially; mesopleural lower posterior margin carinate, with three well-separated tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 170), pit row exposed, with large, deep foveae, without distinct prepit swelling; S2 spots medium-sized, round, near reaching each other medially (Fig. 171). *Punctation:* outer surface of fore femur coarsely punctate; largest punctures on T1, mesopleuron and metanotum.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 171.

Variation. Body length 8.1–8.5 mm.

Hosts. Specimens have been reared from nests of *Eumenes* species (Vespidae: Eumeninae) (label records).

Distribution. Brazil (ES, MG, PA, PR, SP); Guyana (Cuyuni-Mazaruni); Peru (Leoncio Prado); Surinam (Paramaribo) (Fig. 172).

Material examined. BRAZIL: Pará, Óbidos 3.i.1907 A. Ducke / Holotype ♂ (BME). São Paulo, São Paulo 1961 coll. K.W. Cooper / Paratype 1♀ [BME].

Additional material. BRAZIL: Espírito Santo, Conceição da Barra iii.1961, 1♀, coll. C. Elias [BME]. Minas Gerais, Alpinopolis iii.1961, 1♀, coll. C. Elias [BME]. Pará, Óbidos 24.xii.1910, 1♂, coll. A. Ducke [BME]. Paraná, Telêmaco Borba 15.xii.1986, 1♀, coll. Lev. Ent. PROFAUPAR [DZUP]. GUYANA: Bartica 23.xii.1912, 1♀ [BME]. PERU: Tingo María, Rio Huallaga ii.1947, 1♀, coll. Weyranch [BME]. Tingo María vii.1952, 1♂, coll. Weyrauen [BME]. SURINAM: Paramaribo, Ma Retraite 21.iii.1964, 1♀, coll. D.C. Geijskes [BME].

Ipsiura spiculella Bohart, 1985

(Figs 173–178)

Ipsiura spiculella Bohart, 1985: 719. Holotype ♂ [examined]: BRAZIL: Minas Gerais, Barbacena (BME).

Neochrysis (*Ipsiura*) *superleucocheila* Linsenmaier, 1985. Holotype ♀ [not examined]: BOLIVIA, Santiago (NMLS). Synonymized by Kimsey & Bohart (1991: 511).

Neochrysis (*Ipsiura*) *spiculella*: Linsenmaier 1997: 266.

Diagnosis. *Ipsiura spiculella* most closely resembles *I. tropicalis* Bohart. It can be distinguished by T3 without a distinct prepit swelling (low and sloping gently in *I. tropicalis*), the large S2 spots and the TFC forming an incomplete arc widely interrupted medially. Additionally, the male genital capsule with digitus broadly clavate apically, and the long, round apically aedeagus lobes is diagnostic for *I. spiculella.*

Male description. *Body* (Fig. 173). *Length:* 6.1 mm. *Coloration:* head predominantly green, with dark green spot on vertex; F1 greenish brown; mesosoma metallic green, with faint bluish purple highlights on dorsum of pronotum and mesoscutum; metasoma metallic green, with transverse bluish purple stripes on dorsum of T1 and T2, with bluish highlights on T3, with narrow whitish spot basolaterally; wing membrane brown, with brown veins; femora and tibiae greenish; tarsi brown, basitarsi brownish green. *Head:* TFC forming long arc, widely interrupted medially (Fig. 174); scapal basin covered with silvery pubescence; F1 longer than broad, 1.4× as long as F2. *Mesosoma:* fore femur without ventral tooth or flattened area on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral area irregularly punctate anteriorly, with indistinct posterior area delimited by faint transverse ridge; metanotum rounded, without differentiated surface. *Metasoma:* T3 with four obtuse distal teeth (Fig. 175), pit row exposed, with large foveae, without distinct prepit swelling; S2 spots large, nearly reaching each other medially (Fig. 177). *Punctation:* outer surface of fore femur with sparse punctures; body densely punctate; largest punctures on T1, mesopleuron and

metanotum. *Genital capsule* (Fig. 178): aedeagus lobes very long, round, blunt apically; digitus shorter than cuspis, unusually broad apically, clavate; gonostylus as broad as cuspis basally; gonostylus and cuspis setose apically.

Female. Not examined.

Hosts. Unknown.

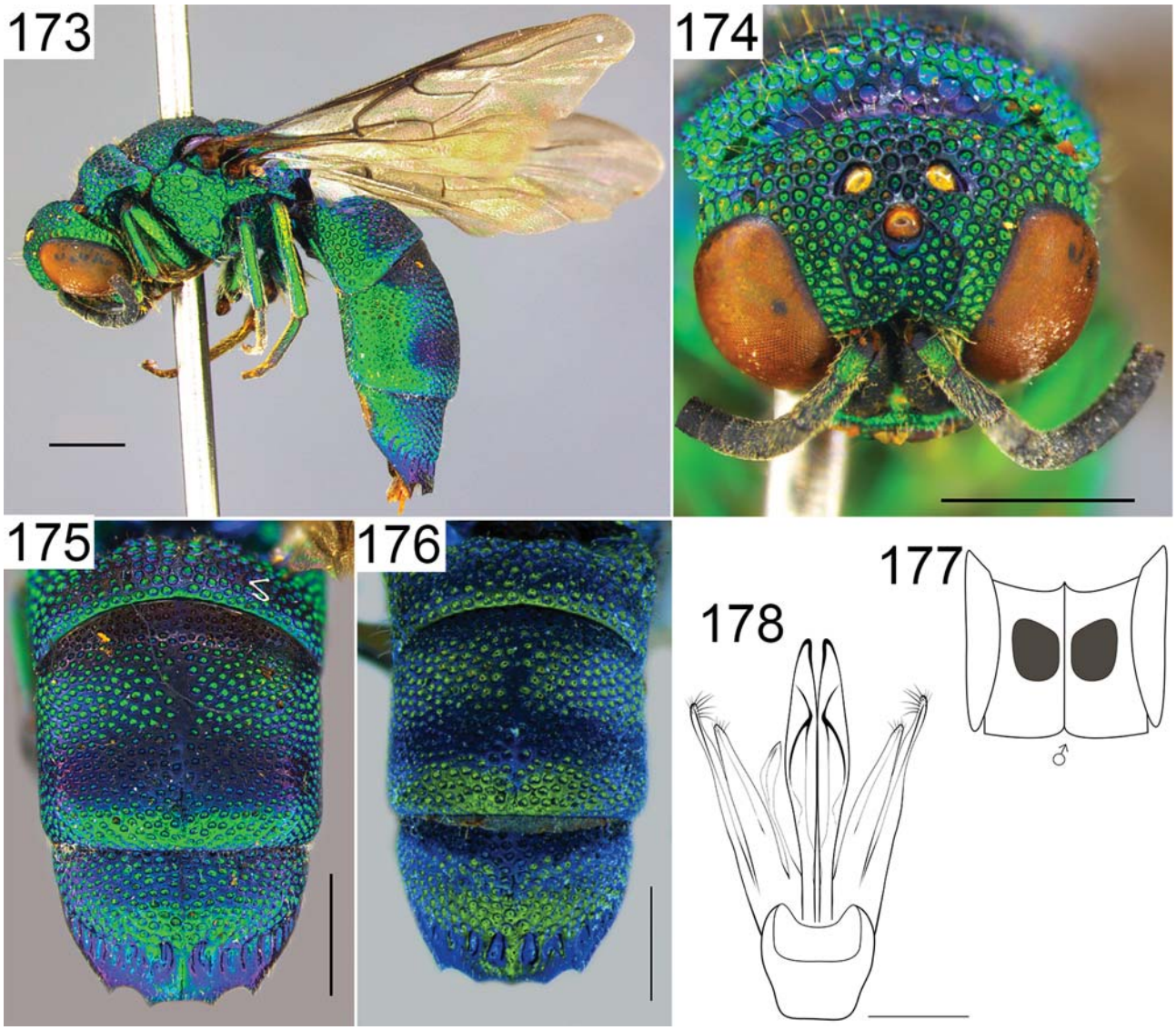
Distribution. Bolivia (Santiago); Brazil (MG) (Fig. 30).

Remarks. The odd condition of T3 distal teeth noticed in holotype of *I. spiculella* (Fig. 176) has been also observed in other specimen but of *I. lata* Bohart (Brazil: Maranhão, Peritoró 9.vi.1978 coll. M.F Torres–BME). Based on more than 900 analyzed specimens is accurate to say that the condition of five or odd numbers of distal teeth on T3 is unusual in *Ipsiura* even considering the plasticity of this character (Lucena 2015).

Material examined. BRAZIL: Minas Gerais, Barbacena 25.x.1905 A. Ducke / Holotype ♂ [BME].

Additional material. BRAZIL: Minas Gerais, Barbacena 24.x.1905, 1♂, coll. A. Ducke [MPEG].

Comments. The redescription above is based on a male from Brazil: Minas Gerais, Barbacena.



FIGURES 173–178. *Ipsiura spiculella*, ♂. 173. Habitus, lateral view. 174. Head, frontal view. 175. T3, postero-dorsal view.176. T3, postero-dorsal view, holotype ♂. Scale bar = 1 mm. 177. Spots of S2, ♂. 178. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm.

***Ipsiura tropicalis* Bohart, 1985**
(Figs 179–184)

Ipsiura tropicalis Bohart, 1985: 719. Holotype ♂ [examined]: MEXICO: Morelos, Cuernavaca (BME).
Neochrysis (*Ipsiura*) *amaurotica* Linsenmaier, 1985. Holotype ♂ [not examined]: BRAZIL (NMLS). Synonymized by Kimsey & Bohart (1991: 511).
Neochrysis (*Ipsiura*) *tropicalis*: Linsenmaier 1997: 266.
Neochrysis (*Ipsiura*) *tropicalis amaurotica*: Linsenmaier 1997: 266.

Diagnosis. *Ipsiura tropicalis* most closely resembles *I. spiculella* Bohart. It can be distinguished by the following combination of characters: T3 with distinct lateral whitish spot (narrow, obsolescent in *I. spiculella*), prepit swelling sloping gently (absent in *I. spiculella*), pit row represented by large, deep foveae; TFC almost complete medially (medially interrupted in *I. spiculella*); aedeagus lobes acute apically (blunt in *I. spiculella*), and S2 spots medium-sized, touching medially (large spots, slightly separated medially in *I. spiculella*).

Female description. *Body* (Fig. 179). *Length:* 6.8 mm. *Coloration:* head predominantly green blue, with bluish highlights on vertex; F1 brownish green; mesosoma metallic green, with purplish blue stripe on pronotum, broad purplish blue band on dorsum of mesoscutum; metasoma metallic green, with bluish purple transverse stripes on dorsum of T1 and T2; T3 with bluish highlights dorsally, with lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae greenish; tarsi brown, basitarsi brownish green. *Head:* TFC slightly interrupted medially (Fig. 180); F1 longer than broad, 1.3× as long as F2; scapal basin densely covered with silvery pubescence. *Mesosoma:* fore femur without ventral tooth-like projection or flattened area on outer surface of distal margin, diameter of distal area about one-half diameter of proximal area; fore wing with short *M* distal to discoidal cell, *R1* shorter than stigma (as in Fig. 190); dorsal surface of pronotum wider than head; lower lateral pronotal surface irregularly punctate anteriorly, with distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with indistinct tooth-like projections. *Metasoma:* T3 with four obtuse distal teeth (Fig. 181), pit row with large, deep foveae, prepit swelling low, sloping gently; S2 spots medium-sized, touching medially (Fig. 182). *Punctation:* fore femur with tiny, sparse punctures on outer surface; dorsal surface of T3 with definite, deep punctures; dorsal surface of T1 and metanotum with largest punctures.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 182. *Genital capsule* (Fig. 183): gonostylus slightly longer than cuspis; digitus narrow; cuspis shield-like, broad basally; gonostylus setose apically; aedeagus lobes sharp, pointed apically.

Variation. The holotype and specimens from the Central America and north South America are primarily greenish blue. Additionally, specimens from those localities have a broad cuspis basally (as in the Fig. 183). On the other hand, the South American specimens are predominantly green (as in the Figs 179–181), and also have the slenderer cuspis instead, but we had considered that these features do not form a pattern. Body length 6.4–6.9 mm.

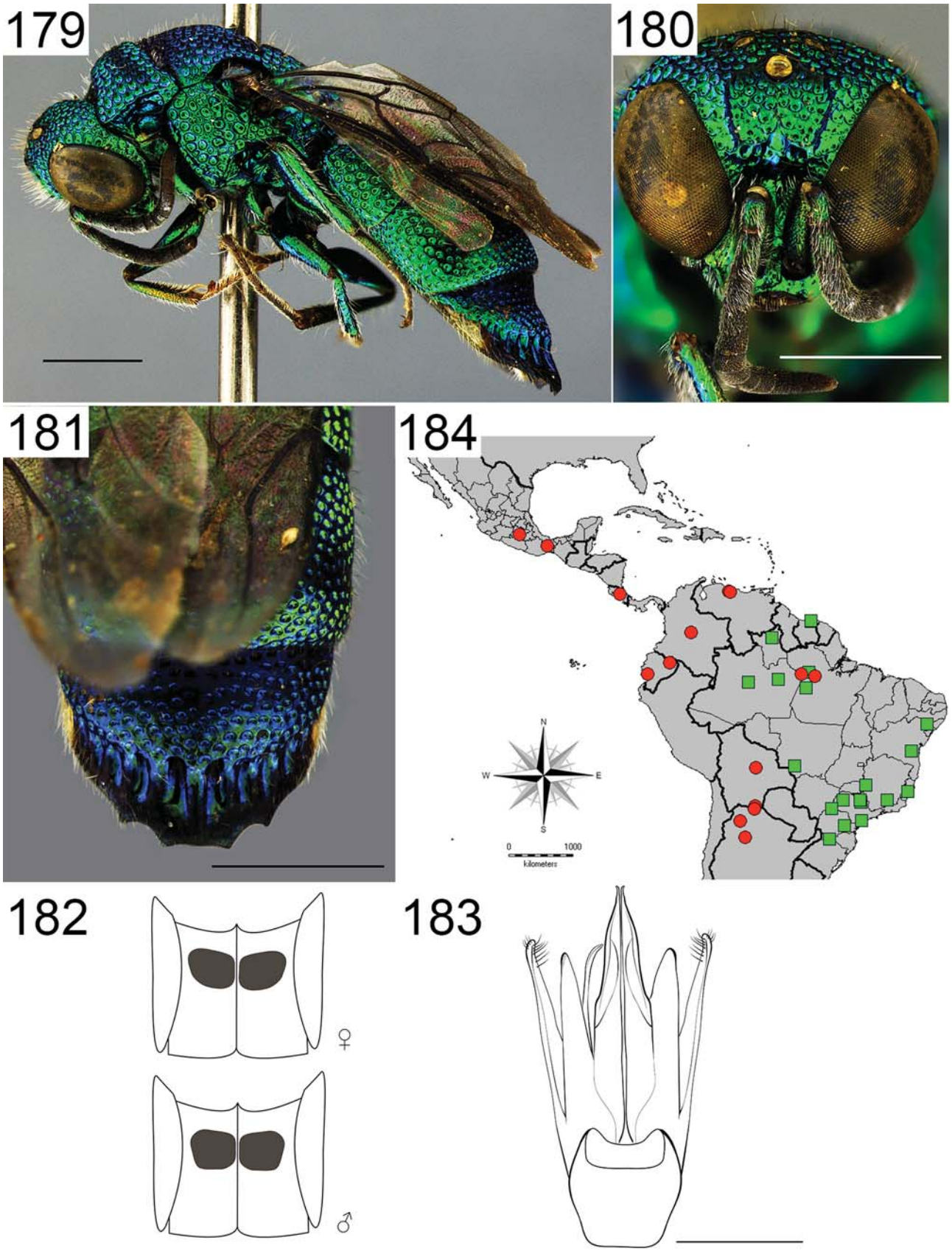
Hosts. Unknown.

Distribution. Argentina (Salta, Tucumán); Bolivia (Santa Cruz); Brazil (AM, BA, ES, MG, MT, PA, PR, RR, SC, SE, SP); Colombia (Meta); Costa Rica (Guanacaste, San Jose); Ecuador (Napo, Santa Cecilia); Mexico (Morelos, Oaxaca, Veracruz); Panama (Panamá Oeste); Surinam (Paramaribo); Venezuela (Aragua) (Fig. 184).

Remarks. *Ipsiura tropicalis* is the most common species in South America.

Material examined. MEXICO: Morelos, 5 mi East Cuernavaca 26.iii.1962 F.D.Parker / Holotype ♂ (BME). Same data except 26–29.iii.1962 / Paratypes 3♂ 10♀ [BME]. Vera Cruz, Cordoba 6.vii.1966 J.S. Buckett, M.R & R.C. Gardner / Paratypes 2♀ [BME]. Vera Cruz, Minatitlán 8.ix.1961, coll. R. & K. Dreisbach / Paratype 1♂ [BME]. Oaxaca, Palomarea 5.xi.1961 coll. R. & K. Dreisbach / Paratype 1♂ [BME]. COSTA RICA: San Jose coll. R. Bohart / Paratype 1♀ [BME]. Guanacaste, Hacienda Pacífica / Paratype 1♂ [BME]. PANAMA: Rio Trinidad, Pan 16.iii.12 / Paratype 1♀ [BME].

Additional material. ARGENTINA: Tucumán, El Solidad 16.ix.1969, 1♀, coll. L.A. Stange [BME]. La Soledad 11.viii.1966, 1♀, coll. E. Bucher [BME]. Rio Nio 26.iv.1966, 1♀, coll. L.A. Stange [BME]. Salta, Orãn Abra Grande 9.ii.1967, 1♀, coll. R. Coolback [BME]. Orãn Abra Grande 18.iv.1969, 1♀, coll. C. Porter [BME]. Tartagal xi.1971, 1♂, coll. Manfredo Fritz [BME]. Tartagal 11.viii.1973, 2♀, coll. C. Porter [BME]. Pocitos, 2♀, coll. Manfredo Fritz [BME]. BOLIVIA: Sunchal, 1♀, coll. M. Fritz [BME]. BRAZIL: Amazonas, Rio Taruma Mirim 29.xi.1991, 1♀, coll. M.V. Garcia [INPA]. Bahia, Jequié, *campus* UESB II 19.ix.2005, 1♀, coll. J.C. Silva-Jr



FIGURES 179–184. *Ipsiura tropicalis*, ♀. 179. Habitus, lateral view. 180. Head, frontal view. 181. T3, postero-dorsal view. Scale bar = 1 mm. 182. Spots of S2, ♀ (above) and ♂ (below). 183. Ventral view of genital capsule, digitus omitted on right side, scale bar = 0.5 mm. 184. Distribution, previous (red circle) and new (green square) records.

[RPSP]. Espírito Santo, Santa Teresa 12.x.1964, 1♂, coll. C. Elias [DZUP]. Mato Grosso, Cáceres 16.i.1985, 1♂, coll. C. Elias [DZUP]. Minas Gerais, Barbacena 24.x.1905, 1♂, coll. A. Ducke [MPEG]. Patrocínio 5.x.1965, 1♀, coll. C. Elias [DZUP]. Pará 8.xi.1901, 1♀, coll. A. Ducke [MPEG]. Itaituba, Rio Tapajós 3.ix.1902, 1♀, coll. A. Ducke [MPEG]. R. Arroyollos 21.iv.1903, 1♀, coll. A. Ducke [MPEG]. Faro 16.vii.1903, 1♂, coll. A. Ducke [MPEG]. Óbidos 21.xi.1904, 1♂ 1♀, coll. A. Ducke [MPEG]. Tefé 10.vi.1906, 1♀, coll. A. Ducke [MPEG]. Lago Grande de Villa Franca 6.i.1907, 2♂, coll. A. Ducke [MPEG]. Óbidos 20.xi.1907, 1♂, coll. A. Ducke [MPEG]. Same data except 6.x.1909, 1♀ [MPEG], 27.vii.1912, 1♀ [MPEG], 1906, 1♂ [MPEG], 20.xii.1904, 1♀ [BME], 1.i.1907, 1♀ [BME]. Paraná, Ponta Grossa 28.iv.1988, 1♀, coll. Lev. Ent. PROFAUPAR [DZUP]. Roraima, Rio Uraricoera, Ilha de Maraca 2.v.1986, 1♀, coll. J.A. Rafael, J.E.B. Brasil & L.S. Aquino [INPA]. Santa Catarina, Nova Teutonia 30.x.1963, 1♀, coll. Fritz Plaumann [BME]. Same data except 18.x.1965, 1♀ [BME], x.1965, 1♀ [BME], xi.1965, 1♀ 1♂ [BME], xi.1966, 1♀ [BME], ii.1974, 1♀ [BME]. São Paulo, Araçatuba x.1961, 1♀, coll. J. Lane & Rabello [MZUSP]. Juquiá 1935, 1♀, coll. J. Lane [BME]. Luis Antônio, Est. Ecol. Jataí 7.xi.2007, 1♀, coll. N.W. Perioto [RPSP]. Same data except 11.x.2007, 1♀ [LRRP], 15.x.2008, 1♀ [LRRP], 29.x.2008, 1♀ [LRRP], 30.ix.2009, 1♀ [LRRP], 5.xii.2007, 1♀ [LRRP], 24.x.2007, 1♀ [LRRP], 26.xi.2008, 1♀ [LRRP]. Ribeirão Preto, *campus* USP, 1♀, coll. L.C. Rocha-Filho [RPSP]. Teodoro Sampaio, Parque Estadual Morro do Diabo, Sítio São Francisco 23.vi.2011–14.iv.2012, 7♀, coll. P.R. Lopes [RPSP]. Sergipe, Canindé do São Francisco 25.xi.2002, 1♂, coll. Débora Moura [LEBIC]. COLOMBIA: Meta El Porvenir 27.ii.1979, 1♂, coll. R. Wilkerson [BME]. ECUADOR: Napo, Limoncocha 25.ix.1974, 1♂, coll. B.A. Drummond [BME]. Santa Cecília, Napo Pastaza 14.vi.1967, 1♀, coll. J.D. Lynch [BME]. SURINAM: Samatraweg, Lelydorp 1964, 1♂, coll. D.C. Geijskes [BME]. Paramaribo 21.iii.1964, 1♂, coll. D.C. Geijskes [BME]. Same data except 10.iv.1964, 1♀ [BME]. Republier 28.ii.1963, 1♀, coll. D.C. Geijskes [BME]. VENEZUELA: Aragua, Cagua iv.1965, 2♀, coll. E. Doreste [BME]. El Limon 19.ii.1960, 1♀, coll. M. Gelbes [BME].

Comments. The redescription above is based on a female from Brazil: São Paulo, Luis Antônio.

Ipsiura venezuelae Bohart, 1985

(Figs 185–189)

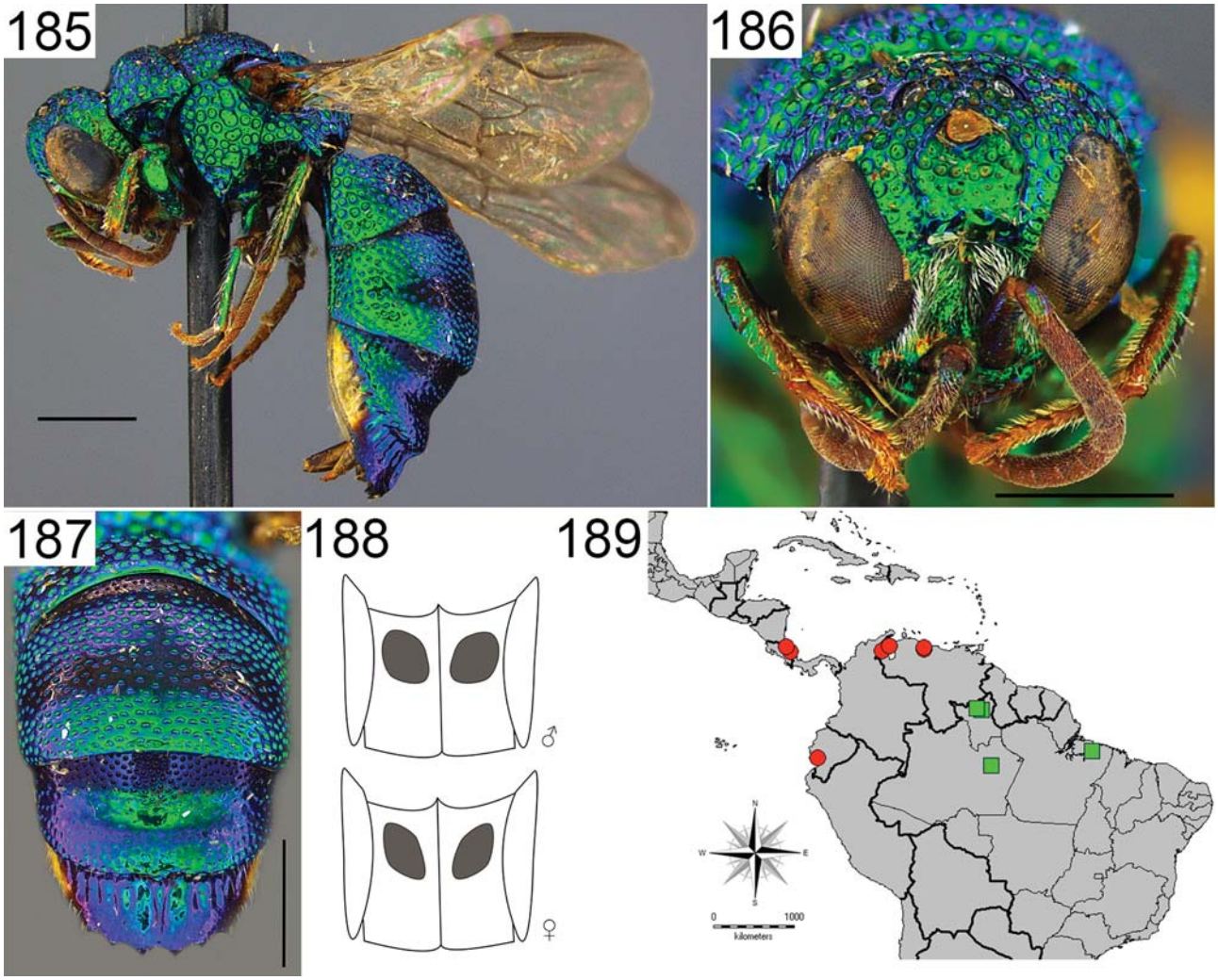
Ipsiura venezuelae Bohart, 1985: 720. Holotype ♂ [not examined]: VENEZUELA: Zulia, La Concepción (NMNH).
Neochrysis (*Ipsiura*) *schlaeflei* Linsenmaier, 1985. Holotype ♀ [not examined]: VENEZUELA: San Joaquín (NMLS). Synonymized by Kimsey & Bohart (1991: 512).
Neochrysis (*Ipsiura*) *venezuelae*: Linsenmaier 1997: 267.

Diagnosis. *Ipsiura venezuelae* most closely resembles *I. neolateralis* (Bohart) and *I. catamarcae* Bohart. It can be distinguished from those and other *Ipsiura* species by the following combination of characters: fore wing with long *M* distal to discoidal cell (short in *I. catamarcae* and *I. neolateralis*); shallow and well-separated punctures on T3 (well-definite and regularly spaced in *I. catamarcae* and *I. neolateralis*); body with remarkable purple highlights (faint bluish highlights in *I. catamarcae* and *I. neolateralis*); metanotum rounded (irregularly punctate, cristate to serriform in *I. catamarcae* and *I. neolateralis*) and medium-sized S2 spots (large spots in *I. catamarcae* and *I. neolateralis*).

Female description. *Body* (Fig. 185). *Length:* 6.7 mm. *Coloration:* head primarily green, with faint purple highlights on vertex; F1 brownish; mesosoma metallic green, with transverse purplish stripe on dorsum of pronotum, broad purplish band on mesoscutum; metasoma metallic green, with dark purple transverse stripes on dorsum of T1 and T2; T3 with large lateral whitish spot; wing membrane light brown, with brown veins; femora and tibiae green; tarsi brown, meso- and hind basitarsi greenish brown. *Head:* TFC enclosing the median ocellus, slightly interrupted medially (Fig. 186); F1 longer than broad, 1.3× as long as F2; scapal basin covered with silvery pubescence. *Mesosoma:* fore femur strongly flattened on outer surface of distal margin, diameter of distal area subequal to diameter of proximal area; fore wing with long *M* distal to discoidal cell, ending near distal wing margin (as in Fig. 145), *R1* shorter than stigma (as in Fig. 190), medial cell setose; dorsal surface of pronotum wider than head; lower lateral pronotal surface smooth, impunctate, without distinct posterior area delimited by transverse ridge; metanotum rounded, without differentiated surface; mesopleural lower posterior margin carinate, with distinct close together tooth-like projections. *Metasoma:* T3 with six acute distal teeth (Fig. 187), prepit swelling strongly convex, pit row with large, deep foveae; S2 spots medium-sized, medially separated at least by

one-quarter spot diameter (Fig. 188). *Punctation:* fore femur with irregular, sparse punctures; largest punctures on T1, mesopleuron and metanotum; vertex roughly punctate; T3 with shallow well-separated punctures.

Male. Same as female, except for the characteristic shape of S2 spots as shown in Fig. 188.



FIGURES 185–189. *Ipsiura venezuelae*, ♀. 185. Habitus, lateral view. 186. Head, frontal view. 187. T3, postero-dorsal view. Scale bar = 1 mm. 188. Spots of S2, ♂ (above) and ♀ (below). 189. Distribution, previous (red circle) and new (green square) records.

Variation. Specimes from north Brazil are predominantly green, without purplish highlights on body. Body length 6.7–7.1 mm.

Host. Unknown.

Distribution. Brazil (AM, PA, RR); Costa Rica (Limón); Ecuador (Guayas); Venezuela (Aragua, Zulia) (Fig. 189).

Material examined. COSTA RICA: Limón, Hacienda Tapezco 20.iii.1978 coll. D. Panny, D. Moeller & C. Lewis / Paratype 1♀ [BME]. VENEZUELA: Aragua, 2 KmN. Ocumare De La Costa 21.vi.1976 coll. A.S Menke & D. Vincent / Paratype 1♀ [BME]. Balao Chico? 23.iv.1963 L. Pena / Paratype 1♂ [BME]. Venezuela: Zulia, Maracaibo 16.ix.1973 coll. R. Bohart / Paratype 1♀ [BME].

Additional material. BRAZIL: Amazonas, Manaus, Reserva Ducke 6.xi.1978, 1♀, coll. N. Penny [INPA]. Pará, Belém COAGB 17.ix.2010, 1♀, coll. I. Santos, L. Lima, J. Santos & J. Rocha [MPEG]. Roraima, Rio Uraricoera, Ilha de Maraca 30.xi.1987, 1♀, coll. J.A. Rafael [INPA].

Comments. The redescription above is based on a paratype female from Venezuela: Aragua, Ocumare de la Costa.

Identification key to the species of *Ipsiura*

This key comprises 34 of the 41 valid species in *Ipsiura*, and is modified from keys provided by Bohart (1985) and Linsenmaier (1985, 1997).

1. Fore wing with long *M* distal to discoidal cell (Fig. 145) 2
- Fore wing with short *M* distal to discoidal cell (Fig. 190) 6
2. T3 with four or six distal teeth 3
- T3 without distinct distal teeth or deflected and downward (Figs 54 and 125) 5
3. T3 with six sharp distal teeth (Fig. 187) . . . . . *I. venezuelae* Bohart
- T3 with four sharp distal teeth (Figs 28, 143) 4
4. Integument of propodeal surface polished; metanotum slightly projecting above propodeal surface; T3 with large lateral whitish spot; T2 with narrow translucent border basolaterally . . . . . *I. brevispina* (Ducke)
- Integument of propodeal surface, especially on largest foveae, dull; metanotum irregularly punctate, cristate, not projecting above propodeal surface; T3 with narrow lateral whitish spot; T2 without translucent border . . . . . *I. nigriventer* Bohart
5. Large, longer than 12 mm; lower posterior margin of mesopleuron strongly carinate, with remarkable knob-like projections (Fig. 126); T3 with two broadly obtuse, deflected downward distal teeth (Fig. 125); TFC strong, quadrate, with well marked secondary lateral facial carina (Fig. 124); F1 1.9× as long as F2 . . . . . *I. marginalis* (Brullé)
- Moderate-sized, less than 10 mm long; lower posterior margin of mesopleuron without knob-like projections; T3 with four deflected downward distal teeth (Fig. 54); TFC longer than broad, without secondary lateral facial carina (Fig. 53); F1 1.4× as long as F2 . . . . . *I. ellampoides* (Ducke)
6. T3 with four or rarely five distal teeth 7
- T3 with six distal teeth, lateral teeth sometimes obtuse (Figs 149 and 159) 14
7. T3 with five obtuse distal teeth (Fig. 176) or if with four teeth (Fig. 175) then T3 with narrow lateral whitish spot (Fig. 173), T3 without prepit swelling, TFC widely interrupted medially (Fig. 174) and large S2 spots, nearly reaching each other medially (Fig. 177). Male: aedeagus unusual long, lobes elaborate, blunt apically (Fig. 178); digitus clavate (Fig. 178) . . . . . *I. spiculella* Bohart
- T3 with four distinct distal teeth; T3 with or without lateral whitish spot (as in Figs 13, 179), T3 with prepit swelling well-developed, sometimes low and sloping gently (as in Fig. 179), TFC various, S2 spots usually small to medium-sized. Male: aedeagus usually as long as other elements, pointed, sharp or blunt apically (Figs 19, 111, 133); digitus various (Figs 19, 111, 133) 8
8. T3 with lateral whitish spot 9
- T3 without lateral whitish spot (or lateral spot faintly marked basolaterally in *I. bohartiana* **sp. nov.**) 12
9. Pit row absent or indicated laterally by small pits, partially covered by anterior crease (Fig. 37); metanotum projecting upward medially (Fig. 35); T3 strongly convex (Figs 35, 37); scapal basin with sparse silvery pubescence laterally, with broad polished stripe medially (Fig. 36); tarsi whitish yellow; S2 spots small and separated medially at least by two spot diameters (Fig. 38) . . . . . *I. cooperi* Bohart
- Pit row well-developed (as in Fig. 104); metanotum evenly rounded, without differentiated surface; scapal basin covered with silvery pubescence, without broad medial polished stripe; T3 nearly straight, slightly convex; tarsi brownish; S2 spots medium-sized, less than two spot diameters separated medially 10
10. T3 with strong convex prepit swelling (Figs 107, 109); fore femur with distinct flattened area on outer surface of distal margin; lower posterior margin of mesopleuron with distinct close together tooth-like projections. . . . . *I. leucocheiloides* (Ducke)
- T3 with low prepit swelling, sloping gently (Figs 104, 179, 181); fore femur without flattened area on distal margin; lower posterior margin of mesopleuron carinate, with indistinct tooth-like projections; widespread species 11
11. T3 with four acute distal teeth (Fig. 104); S2 spots round, separated at least by one-half spot diameter medially (Fig. 105) . . . . . *I. leucocheila* (Mocsáry)
- T3 with four obtuse distal teeth (Fig. 181); S2 spots touching medially (Fig. 182) . . . . . *I. tropicalis* Bohart
12. S2 spots small, widely separated medially, at least by two spot diameters (Fig. 51); T3 distal teeth distinctly irregular (Fig. 50); TFC forming a rounded enclosure (Fig. 48) . . . . . *I. duckeana* Lucena **sp. nov.**
- S2 spots medium-sized, touching medially (Figs 18, 132); T3 distal teeth clearly defined, either acute (Fig. 15) or obtuse (Fig. 131); TFC angulate laterally (Figs 14, 130) 13
13. T3 distal teeth acute (Fig. 15); lower genal space bisected by discrete longitudinal carina (Fig. 13 and 17); fore femur with distinct flattened area distally (Fig. 17); metasomal segments with long brownish hairs along lateral margins; T3 with shallow and well-separated punctures. . . . . *I. bohartiana* Lucena **sp. nov.**
- T3 distal teeth obtuse (Fig. 131); lower genal space without longitudinal carina; fore femur without flattened area on distal margin; metasomal segments without long brownish hairs along lateral margins; T3 with definite deep punctation . . . . . *I. myops* (Buysson)
14. T3 with six irregular distal teeth (Figs 23 and 98); scapal basin with broad medial polished stripe. Female: S2 and S3 with long golden hairs; ovipositor robust, T6 heavily sclerotized, T5 serrate 15
- T3 distal margin with four to six distinct sharp teeth (except *I. bisulcata*, *I. obidensis* and *I. oaxacae*); scapal basin usually without broad medial polished stripe. Female: S2 and S3 with short, usually decumbent silvery pubescence; ovipositor generally not as above 16
15. Large, longer than 10 mm; dorsal surface of pronotum with shallow but distinct medial depression; distal margin of T3 green-

ish (Fig. 23) ..... *I. boliviana* Bohart

- Moderate-sized, less than 9.5 mm long; dorsal surface of pronotum without medial depression; integument of distal margin of T3 black (Fig. 98) ..... *I. leucobasis* (Mocsáry)

16. T2 with narrow basolateral translucent border ..... *I. longiventris* (Ducke)
- T2 without translucent basolateral border 17

17. T3 with distinct anterior prepit swelling, delimited by rather definite anterior crease or narrow groove (*e.g.* Figs 1, 31, 63, 78, 89, 135, lateral views); TFC usually almost completely closed medially, without secondary lateral facial carina; fore femur with flattened area or ventral tooth-like projection on distal margin, with definite punctures on outer surface, sometimes with small, well-separated punctures; S2 spots large to medium-sized, touching medially 18
- T3 without distinct prepit swelling or swelling very low, sloping gently, without anterior crease or groove (as in Figs 67, 73, 168); other characters various 24

18. T3 without lateral withish spot ..... *I. irwini* Bohart
- T3 with lateral whitish spot 19

19. Pit row absent or obscured by anterior crease (Fig. 3); metanotum rounded; lower posterior margin of mesopleuron strongly carinate, with distinct close together tooth-like projections; TFC closed medially (Fig. 2) ..... *I. affinissima* (Ducke)
- Pit row well-developed, with conspicuous foveae (as in Figs 33, 65, 91, 137, 159); other characters various 20

20. Fore femur flattened distally, produced ventrally in a tooth-like projection, irregularly punctate on outer surface, with well-separated punctures; prepit swelling well-developed, strongly convex; metanotum irregularly serrate to round 21
- Fore femur flattened distally, not extending ventrally in a tooth-like projection, coarsely punctate externally, with large, coarse punctures; prepit swelling gradual, sloping gently; metanotum serrate, cristate or serriform 22

21. Integument primarily bluish green; lower posterior margin of mesopleuron strongly carinate, with distinct close together tooth-like projections; pit row with medium-sized foveae (Fig. 33); postocular area and metapleuron extensively smooth and impunctate; Argentina ..... *I. catamarcae* Bohart
- Integument primarily greenish blue; lower posterior margin of mesopleuron carinate, with well separated tooth-like projections; pit row with large, deep foveae (Fig. 137); postocular area and metapleuron evenly punctate; southeastern USA to Costa Rica ..... *I. neolateralis* (Bohart)

22. Metanotum somewhat raised and serrate in profile, not projecting over propodeum; fore femur slightly flattened on distal margin, with tiny, sparse punctures on outer surface; TFC slightly interrupted medially, round-shaped, slightly broader than long (Fig. 64); Paraguay ..... *I. fritzi* Bohart
- Metanotum cristate to serriform (as in Fig. 92); fore femur with flattened area on distal margin, coarsely punctate on outer surface; TFC various; widespread South America 23

23. Metanotum strongly cristate medially (Fig. 92); fore femur clearly flattened on distal margin; TFC longer than broad (Fig. 90); T3 with six acute distal teeth (Fig. 91); body length over 6.9–8.5 mm. Male: aedeagus lobes as in Fig. 94 ..... *I. lata* Bohart
- Metanotum nearly flat in profile, irregularly serriform; fore femur slightly flattened on distal margin; TFC much broader than long (Fig. 158); lateral distal teeth of T3 very obtuse (Fig. 159); body length 6.5 mm or shorter. Male: aedeagus lobes as in Fig. 161 ..... *I. obidensis* (Ducke)

24. Pit row weakly developed, usually with small partially covered pits (as in Figs 43, 59, 115, 149, 154, 165); TFC interrupted medially, with well marked small lateral secondary facial carina (as in Figs 58, 114, 148, 164); T3 with or without lateral whitish spot; metanotum rounded, without differentiated surface; fore femur impunctate and polished on outer surface; diameter of distal area of fore femur about one-half diameter of proximal area 25
- Pit row represented by crease followed by series of rather long, deep depressions (as in Figs 75, 86, 170); TFC usually widely interrupted medially (except by *I. goeldii* that is almost completely closed medially, as in Fig. 74), without lateral secondary facial carina (Figs 74, 85, 169); T3 with lateral whitish spot; metanotum rounded, cristate, serriform or crenate in lateral view; fore femur punctate on outer surface, usually coarsely punctate; diameter of distal area of fore femur subequal to diameter of proximal area 31

25. T3 without lateral whitish spot 26
- T3 with lateral whitish spot 27

26. T3 distal teeth acute (Fig. 165); S2 spots nearly reaching each other medially (Fig. 166); Mexico to Surinam ..... *I. pilifrons* (Cameron)
- T3 distal teeth broadly obtuse (Fig. 149); S2 spots widely separated medially (Fig. 150); Mexico to Brazil . *I. oaxacae* Bohart

27. Lateral pronotal carina irregular, not protruding; scapal basin with narrow polished median stripe. Male: venter of flagellomeres and tarsi mostly orange yellowish (Figs 40–42); dorsum with broad dark purplish spots covering mostly dorsal surfaces of head, meso- and metasoma (Fig. 41). ..... *I. covillei* Bohart
- Lateral pronotal carina even protruding; scapal basin without polished median stripe. Male: venter of flagellomeres and tarsi mostly brownish; dorsum with or without broad dark purplish spots covering dorsal surfaces of body 28

28. Pit row absent or only indicated by tiny lateral pits (Figs 59, 154) 29
- Pit row noticeable but partially obscured by anterior crease (as in Figs 69, 115) 30

29. S2 spots small, nearly reaching each other medially (Fig. 155); T3 with definite punctation; small species, body length less than 6.5 mm ..... *I. obidana* Bohart
- S2 spots medially separated by one spot diameter (Fig. 60); T3 with shallow, well-separated punctures; medium-sized species, body length longer than 7mm ..... *I. frieseana* (Ducke)

30. Metasoma with bright, tranverse shiny bluish purple stripes on T1 and T2 (Figs 67, 69); metanotum slightly extending over propodeum in lateral view; distal border of T3 straight; medium-sized, body length more than 6.5 mm; widespread in South America ..... *I. genbergi* (Dahlbom)

- Metasoma with faint tranverse bluish stripes, particularly on T2 (Fig. 113); metanotum not extending over propodeum in lateral view; distal border of T3 somewhat convex; small species, body length less than 6 mm; southern South America ..... *I. lilloi* Bohart

31. Metanotum rounded, without differentiated surface 31
- Metanotum cristate to serriform medially 32

31. TFC forming pentagon enclosure, with well marked lateral angles (Fig. 74); F1 green; lower lateral pronotal surface punctate (Fig. 73); pit row with deep foveae (Fig. 75); lateral teeth of T3 acute; body primarily greenish blue; T3 with well-defined punctures ..... *I. goeldii* (Ducke)
- TFC with smooth lateral margins (Fig. 8); F1 brown; lower lateral pronotal surface impunctate (Fig. 7); pit row with shallow foveae (Fig. 9); lateral teeth of T3 usually obtuse (Fig. 9); body primarily light green; T3 with shallow, small, well-separated punctures ..... *I. bisulcata* (Ducke)

32. Metanotal surface strongly cristate, particularly in females. Female: S2 spots elongated and widely separated medially (Fig. 87); large species, body length 9–10 mm (Fig. 84). ..... *I. klugi* (Dahlbom)
- Metanotal surface serriform or slightly convex medially but not cristate. Female: S2 spots round, near reaching each other medially (Fig. 171); medium-sized species, body length less than 9 mm (Fig. 168) ..... *I. prolixa* Bohart.

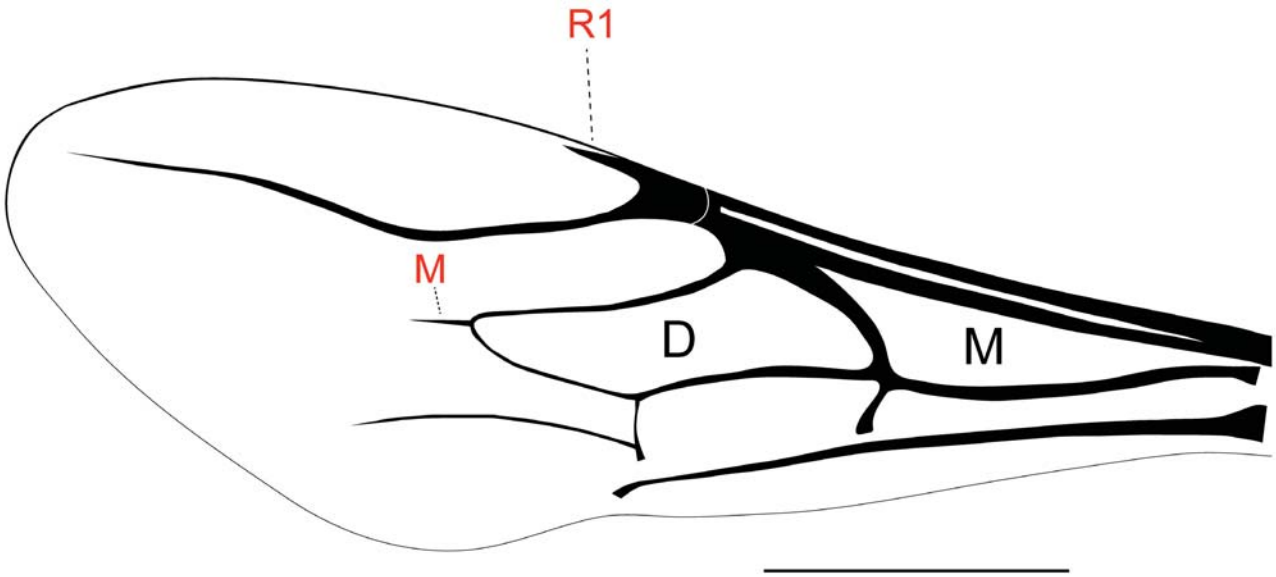


FIGURE 190. Generalized *Ipsiura* fore wing. *R1* and *M* veins indicated in red. Discoidal and medial cells are indicated by "*D*" and "*M*", respectively. Setae omitted. Scale bar = 1 mm.

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