



## The Neotropical genus *Klyngon* Hansson (Hymenoptera: Eulophidae), with new species and biological information

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### Abstract

The genus *Klyngon* Hansson is revised and expanded to include 13 species, 11 of which are newly described: *K. albicornis*, *K. aulacis*, *K. brasilense*, *K. copaiiferae*, *K. costalimai*, *K. gibberum*, *K. guimaraesi*, *K. hortense*, *K. pegosoma*, *K. petalon*, *K. serjaniae*. The inclusion of the new species necessitates a change of the morphological definition of the genus and diagnostic characters are modified or abandoned and new characters are introduced. The new species are described and diagnosed and all species are included in a key. The variation in the number of setae on midlobe of mesoscutum, scutellum and submarginal vein is discussed in terms of diagnostic characters for the subfamily, and the consequences of this variation for the identification of the genus with existing keys are highlighted, with a suggested solution to this problem. Biological records are available for 7 of the species, and all records are from unidentified galls, 4 species from *Copaiifera langsdorffii* (Fabaceae), 2 species from *Serjania mexicana* (Sapindaceae), and 1 species from an unidentified liana. *Klyngon* is regarded as a basal group within the tribe Entedonini and the association with galls is here speculated to be a primitive biology for the tribe.

**Key words:** Chalcidoidea, Entedoninae, Entedonini, *Copaiifera langsdorffii*, *Serjania mexicana*, gall inhabitants, basal lineage, taxonomy, identification key

### Introduction

The genus *Klyngon* was described for two new species that do not completely agree with the diagnostic characters seen in most Entedoninae (Hansson 2005). With the addition of 11 new species to this genus, previously comprising only two similar species, the diagnosis of the genus requires alteration. Most character states mentioned in the original description of *Klyngon* need to either be abandoned or modified, and new characters need to be added. The new diagnosis for *Klyngon* is found below. The inclusion of the new species even further confuses the diagnostic characters that generally serve to define the Entedoninae.

The presence of a single pair of setae on the scutellum, two pairs of setae on the midlobe of mesoscutum, two setae on the submarginal vein, and a distinct frontal suture which is well separated from the anterior ocellus are characters that have often been used as diagnostic characters for Entedoninae (La Salle & Schauff 1995; Schauff et al. 1997). However, these characters are all seen to be variable within the genus *Klyngon*: submarginal vein with 1–7 setae, mesoscutum with 1–4 pairs of setae or with 10–16 scattered setae, scutellum with 1–5 pairs of setae or with 12 scattered setae, frontal suture present or absent.

It has already been noted that there is also considerable variation in all of the above characters in the tribe Euderomphalini (LaSalle & Schauff 1994, Hansson & LaSalle 2003). Both Euderomphalini and Entedonini are considered as belonging to the Entedoninae and molecular studies indicate that the Euderomphalini is a monophyletic group that has sister-group status with the Entedonini (Gauthier et al. 2000).

The genus *Klyngon* was also included in the molecular analysis of Eulophidae (Gauthier et al. 2000) as “New Genus B”, and in most analyses it is placed as the most primitive member of the Entedonini. It may be that the characters that have so far been regarded as stable and have been diagnostic for the subfamily

Entedoninae, and have therefore been used to separate subfamilies in identification keys to the Eulophidae, arose within the Entedonini subsequent to the evolution of *Klyngon*.

The variation of the setal characters on the thorax and wings makes it very difficult to include *Klyngon* in the few dichotomous keys to genera/subfamilies that are useful for the eulophid fauna of the neotropics (see below under “identification”). In spite of these difficulties we regard *Klyngon* as a member of the subfamily Entedoninae because the following character states agree with the states present in this subfamily: 1) the number of flagellomeres, which excluding the anelli are five or less, 2) the break between the submarginal and marginal veins in the forewing, 3) the placement of *Klyngon* as a primitive member of the Entedonini based on molecular data (Gauthier *et al.* 2000).

**Biology of *Klyngon* species.** All species whose biology is known are associated with galls. Although an association with galls is not unusual within the Eulophidae (Hansson 2002, 2004; La Salle 2005), the other genera of Entedoninae known to be associated with galls, *Astichomyia* Girault, *Chrysonotomyia* Ashmead, *Closterocerus* Westwood (Protasov *et al.* 2007), *Driopteron* Hansson, *Horismenus* Walker, *Eprhopalotus* Girault, *Omphale* Westwood and *Tropicharis* Hansson (Hansson 1996, 1997, 2002, 2004, 2009), do not appear to be closely related to *Klyngon*.

Three of the species described in this paper were reared from the same collection of galls on *Copaifera langsdorffii* (Fabaceae) in Brazil. These galls are woody, round, rugose and 3–4 mm in diameter. Galls were collected on the ground underneath a *C. langsdorffii* tree in September. *Klyngon brasiliense* was the first species to emerge, in October and November of the same year, followed by *K. guimaraesi* in December and January, and *K. costalimai* in January. No other species of insects were reared from these galls.

A more detailed biology of *K. costalimai* was given by Guimarães (1957). This biology was given using the name *Nesomyia costalimai*, but this work was never officially published under the code, and the name is thus a nomen nudum and therefore not available. *Klyngon costalimai* was the only species recorded by Guimarães as emerging from the rugose galls on *C. langsdorffii*.

Other biological records for the genus *Klyngon*, in the original description of the genus and in this publication, strongly indicate that species of this genus are linked to galls. *Klyngon jimenezi* was reared from Cecidomyiidae galls on *Serjania mexicana* (Sapindaceae) in Costa Rica, and *K. serjaniae* from unknown galls on *S. mexicana* in Panama.

The absence of other insects emerging from the *Copaifera* galls in Brazil raises the possibility that at least one of the *Klyngon* species is a primary gall-inducer. Further investigation is necessary to clarify this. The presence of unidentified cecidomyiids associated with *K. jimenezi* implies a parasitoid habit with this species; however, there are other genera of Eulophidae which appear to include species which are primary gall inducers as well as species which could be parasitoids or inquiline (La Salle 2005, La Salle *et al.* 2009).

Regarding the biology of *Klyngon* it is worth noting that there are several tribes which remain unplaced within the Eulophinae, but which could represent relatively primitive members of this family, and whose members are either mainly phytophagous or associated with galls. These include Ophelimiini and Anselmellini (Gauthier *et al.* 2000) and Boucekelimini (Kim & La Salle 2005). This raises the possibility that the association with galls seen in *Klyngon* is a primitive biology within the tribe Entedonini.

## Morphological abbreviations and acronyms

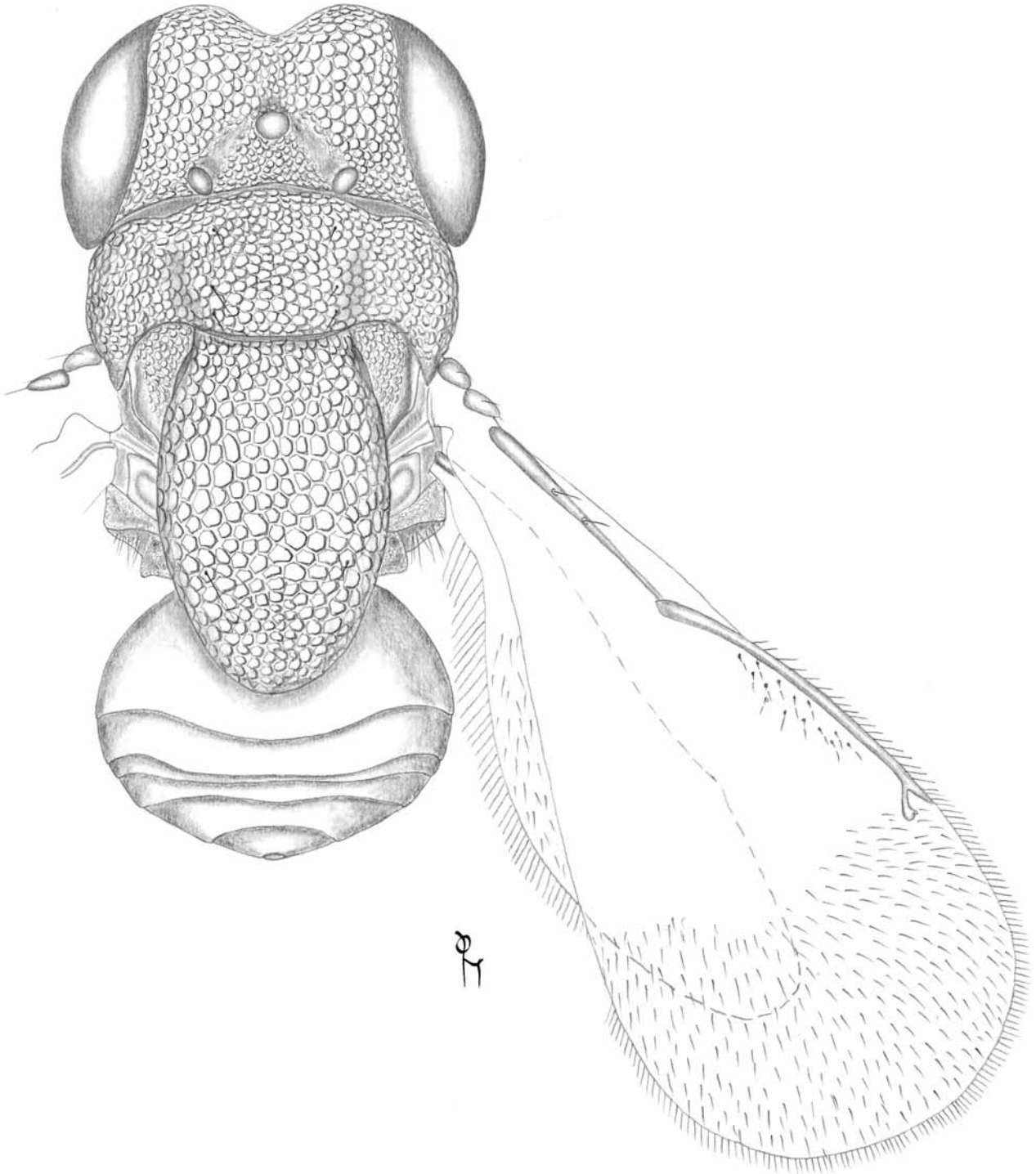
HE = height of eye; HW = height of forewing; LG = length of gaster; LM = length of marginal vein; LW = length of forewing, measured from base of marginal vein to apex of wing; MM = length of mesosoma; MS = malar space; OOL = distance between one posterior ocellus and eye; PM = length of postmarginal vein; POL = distance between posterior ocelli; POO = distance between posterior ocelli and occipital margin; ST = length of stigmal vein; WH = width of head; WM = width of mouth; WT = width of thorax. For illustrations of the morphological terms see [www.neotropicaleulophidae.com](http://www.neotropicaleulophidae.com).

ANIC = Australian National Insect Collection, Canberra, Australia; BMNH = Natural History Museum, London, England; CH = collection of Christer Hansson; DCBU = Departamento de Ecologia e Biologia

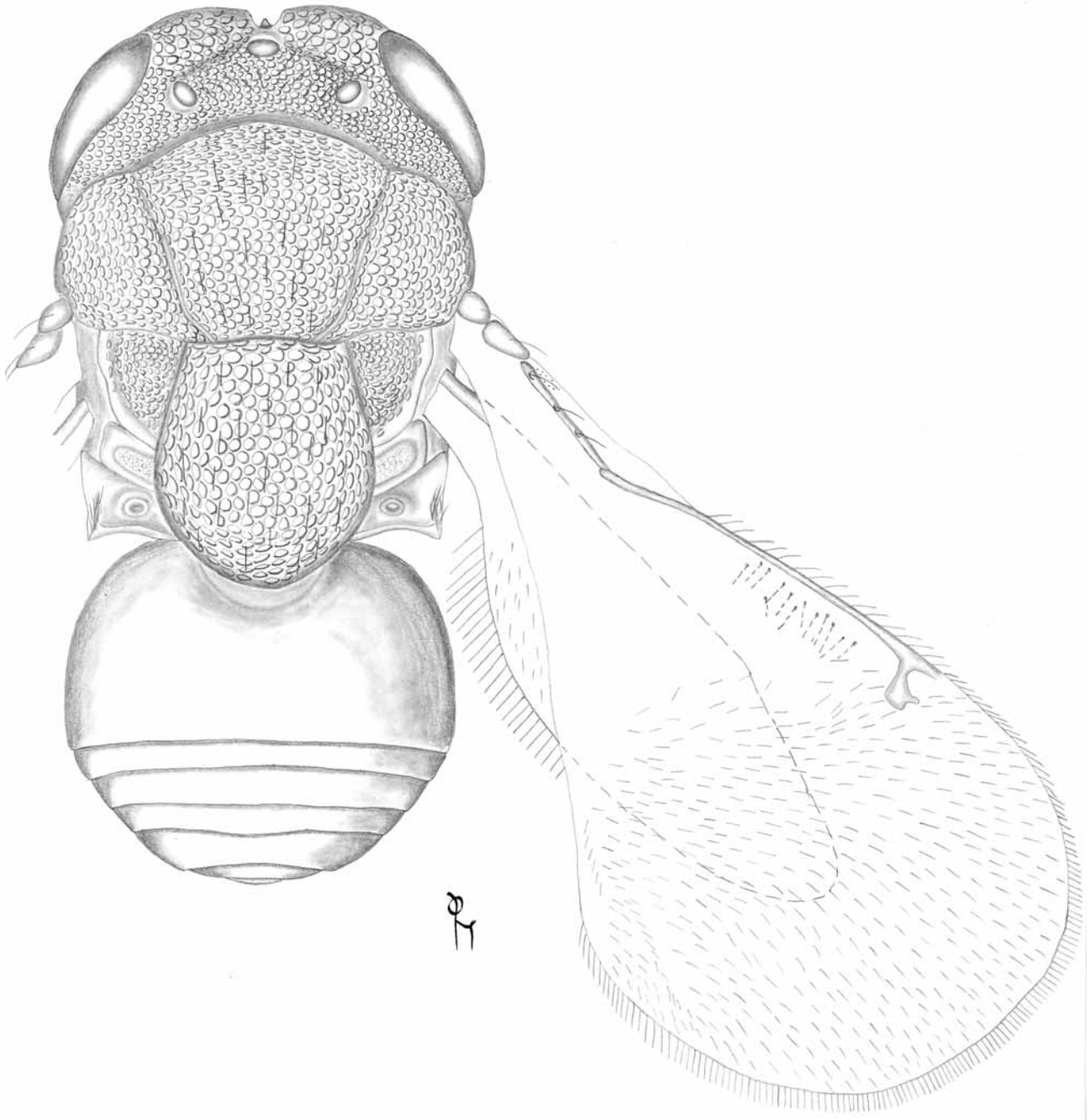
Evolutiva, Universidade Federal de São Carlos, São Carlos, SP, Brazil; INBio = Instituto Nacional de Biodiversidad, Santo Domingo, Costa Rica; MZSP = Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil; TAMU = Texas A&M University, College Station, Texas, U.S.A.

The ratios in the descriptions below are based on holotypes and one of the paratypes (if present) of the other sex.

The terminology used here follows Gibson *et al.* (1997).



**FIGURE 1.** *Klyngon costalimai* sp. nov., female paratype, length 1.9 mm.



**FIGURE 2.** *Klyngon aulacis* sp. nov., female holotype, length 1.4 mm.

### ***Klyngon* Hansson**

*Klyngon* Hansson, 2005: 131. Type species *Klyngon jimenezi* Hansson, 2005: 132, by original designation. The gender is neuter.

**Diagnosis.** Clypeus delimited laterally by more or less distinct smooth lines (i.e. not grooves) and with tentorial pits at the upper end of these lines (Fig. 50), clypeus not delimited dorsally (contrary to what was stated in the original description); pronotum strongly reduced and not visible in dorsal view. Species of *Klyngon* have a stocky and compact build and because the pronotum is very small the head fits smoothly to the mesosoma. The occipital margin is curved to follow the curvature of the mesoscutum and the occiput is concave to fit the anterior part of the mesoscutum, which makes the head and mesosoma appear as one more

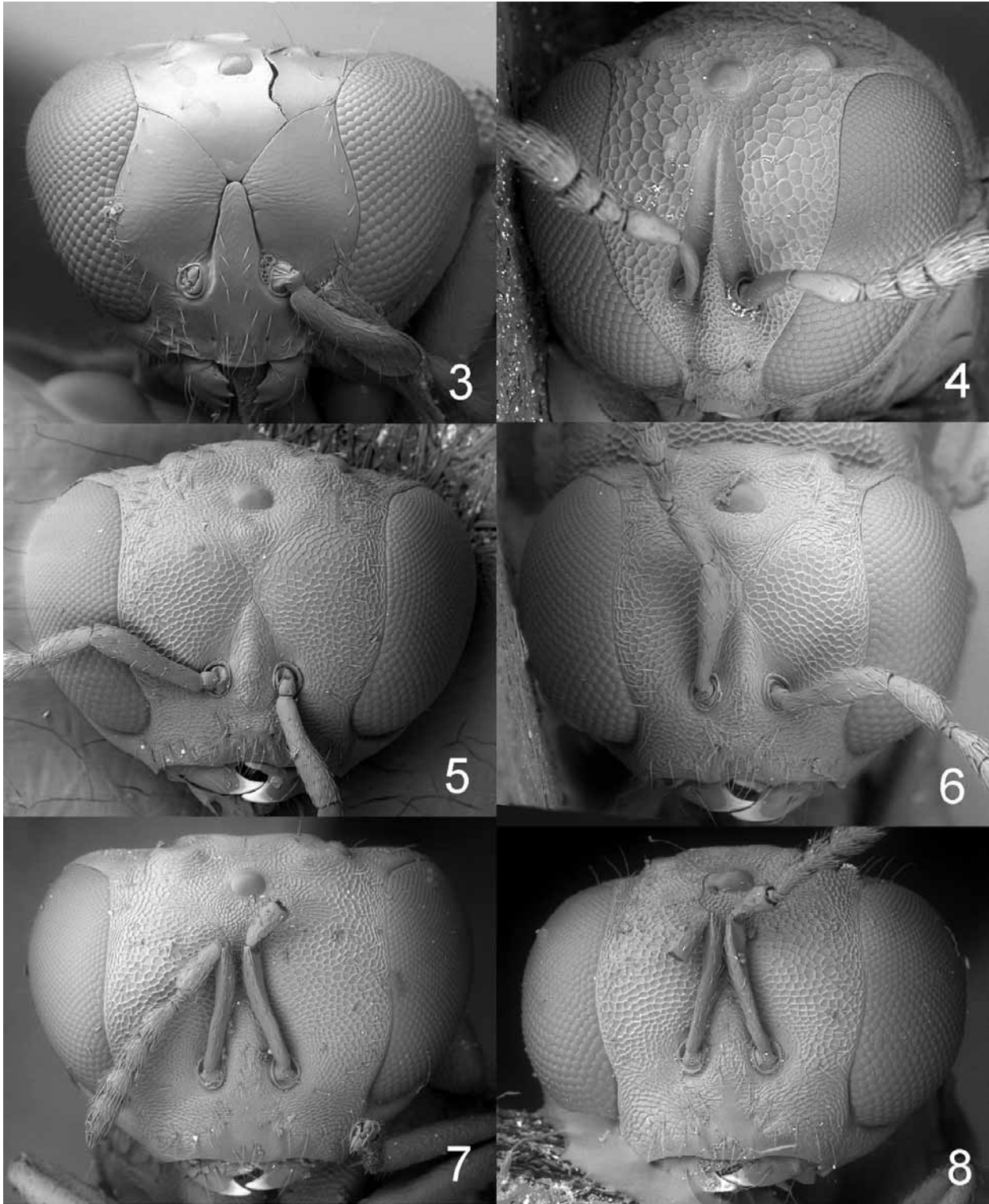
or less close-fit unit. The head and mesosoma, and sometimes also the gaster, are strongly sclerotized with a strong reticulate sculpture. Several species have the scutellum extended backwards, in some species it is so strongly extended that it covers the anterior part of the gaster (e.g. Figs 1, 40, 49). Frontal suture present or absent. The number of setae on the scutellum varies from a single pair to 5 pairs, to 12 scattered setae. On the midlobe of mesoscutum number of setae varies from 1 to 4 pairs, or with 10 to 16 scattered setae. Number of setae on the submarginal vein varies from one to seven. The petiole is always short and transverse.

**Identification.** The variation in several key characters makes both the placement and the identification of *Klyngon* difficult. The presence of a single pair of setae on the scutellum, two setae on the submarginal vein, and a distinct frontal suture which is well separated from the anterior ocellus are characters that have been used on many occasions as diagnostic characters for Entedoninae. Additionally most Entedoninae have two pairs of setae on the midlobe of mesoscutum. All of these characters are variable in *Klyngon*, which makes it difficult to identify this genus in existing keys to North American genera of Eulophidae (Schauff *et al.* 1997) or Neotropical subfamilies and tribes of Eulophidae (LaSalle *et al.* 2006).

For instance in the key to eulophid genera provided by Schauff *et al.* (1997) one immediately encounters problems with most species of *Klyngon* because the combination of number of setae on scutellum and submarginal vein does not fit in any of the two alternatives in the first couplet. If one starts with couplet 106 in the same key, where the identification of the Entedoninae starts, difficulties for the same reasons continues. Some species of *Klyngon* would run to couplet 107, where two genera from the tribe Euderomphalini, *Aleuroctonus* and *Entedononecremnus*, key out. All species of *Klyngon* differ from these two genera in having the larger part of the axillae situated behind the level of anterior margin of the scutellum. The same difficulties are encountered if one attempts to identify *Klyngon* to subfamily in LaSalle *et al.* (2006). A better option is to use the online multiple entry key to the Neotropical genera of Entedoninae on the website [www.neotropicaleulophidae.com](http://www.neotropicaleulophidae.com). This key is under construction and not all genera are yet included, but it works well for *Klyngon* as this genus is included and also because this type of key is very good for groups with a large variation in characters.

### Key to species of *Klyngon*

1. Mesoscutum with narrow and distinct notauli in posterior 2/3 (Figs 2, 39)..... *K. aulacis* **sp. nov.** (female)
- Mesoscutum with notauli absent (e.g. Figs 1, 37, 38) ..... 2
2. Posterior ocelli situated at or very close to occipital margin (e.g. Figs 22, 23, 25)..... 3
- Posterior ocelli situated away from occipital margin, at a distance of at least half shortest measure (length or width) of ocellus (e.g. Figs 24, 27, 29)..... 8
3. Frontal suture absent (Figs 9, 10) ..... *K. costalimai* **sp. nov.** (female, male)
- Frontal suture as a narrow groove, present at least medially (e.g. Figs 3, 5) ..... 4
4. Frons smooth and shiny, with only weak traces of reticulation (Fig. 3); antennal flagellum white (Fig. 87).....  
..... *K. albicornis* **sp. nov.** (female)
- Frons with strong reticulation (e.g. Figs 5, 7); flagellum dark brown to black ..... 5
5. Entire dorsellum visible in dorsal view (Fig. 38) ..... *K. copaiferae* **sp. nov.** (female)
- Dorsellum at least partially hidden under the backwards prolonged scutellum and not visible in dorsal view (e.g. Figs 37, 45, 46) ..... 6
6. With a narrow slit between scutellum and axilla (Figs 35, 45, 46) ..... 7
- Without a slit between scutellum and axilla (Fig. 37) ..... *K. brasilense* **sp. nov.** (female, male)
7. Malar space wide, HE/MS = 5.9 in female and 5.2 in male (Figs 15, 16); female flagellum with 1 large and 2 small and discoid anelli (Figs 80, 98); male flagellum 0.9X as long as scape (Fig. 99) .....  
..... *K. guimaraesi* **sp. nov.** (female, male)
- Malar space narrow, HE/MS = 37.0 in female and 13.3 in male (Figs 17, 18); female flagellum with 2 small and discoid anelli (Figs 82, 100); male flagellum 1.3X as long as scape (Fig. 101)..... *K. serjaniae* **sp. nov.** (female, male)
8. Antennal scrobes wide and deep, to accommodate scape (Fig. 14); flagellum with 4 segments (1 funicular and 3 claval) (Figs 79, 97)..... *K. petalon* **sp. nov.** (female)
- Antennal scrobes as narrow grooves (missing close to toruli in 1 species) (e.g. Figs 11, 12); flagellum with 5 segments (Figs 94, 96) ..... 9
9. Frontal suture present (Fig. 12)..... *K. hortense* **sp. nov.** (male)
- Frontal suture absent (Figs 11, 13) ..... 10



**FIGURES 3–8.** Head, frontal. 3. *Klyngon albicornis* **sp. nov.**, female. 4. *K. aulacis* **sp. nov.**, female. 5. *K. brasilense* **sp. nov.**, female. 6. *K. brasilense*, male. 7. *K. copaiferae* **sp. nov.**, female. 8. *K. copaiferae*, male.

- 10. With a narrow slit between scutellum and axilla (Fig. 41); scutellum prolonged backwards, obscuring propodeum in dorsal view (Fig. 41) ..... *K. gibberum* **sp. nov.** (female)
- Without a slit between scutellum and axilla (Figs 43, 47); propodeum visible in dorsal view (Figs 43, 47) ..... 11
- 11. Midlobe of mesoscutum with 2 pairs of setae (Fig. 43) ..... *K. pegosoma* **sp. nov.** (female)
- Midlobe of mesoscutum with about 10 scattered setae (Figs 47, 48)..... 12

12. Forewing hyaline or with median part weakly infusate (Fig. 57); female with all 5 flagellar segments distinctly separated (Figs 85, 103) ..... *K. bouceki* Hansson (female)  
 - Forewing with a complete dark brown band medially (Fig. 58); female flagellum with a 2-segmented clava (Figs 84, 101) ..... *K. jimenezi* Hansson (female, male)

## Descriptions

### *Klyngon albicornis* sp. nov.

(Figs 3, 22, 36, 59, 69, 87)

**Diagnosis.** Female flagellum white with a 3-segmented clava and funiculars distinctly narrower than clava (Figs 69, 87); frons and vertex smooth and shiny, frons with weak traces of reticulation (Fig. 3); antennal scrobes as narrow grooves (Fig. 3); frontal suture present, complete (Fig. 3); occipital margin a sharp edge with posterior ocelli situated close to margin (Fig. 22); midlobe of mesoscutum with 1 pair of setae and with notauli as narrow grooves in anterior 1/3 (Fig. 36); scutellum with 1 pair of setae (Fig. 36); forewing with basal ½ dark brown and with short marginal vein, 0.4X as long as length of wing (Fig. 59).

**Description.** FEMALE. Length 1.0 mm.

Scape yellowish-brown, pedicel and flagellum white. Frons golden-green, close to mouth opening blue metallic. Vertex golden-green. Mesoscutum and scutellum dark with metallic purple tinges. Coxae and femora dark brown with metallic tinges; fore tibia yellowish-brown, mid and hind tibiae with basal ½ dark brown and apical ½ yellowish-brown, tarsi yellowish-white. Forewing with basal ½ dark brown and apical ½ hyaline, hind wing hyaline. Gaster dark brown with metallic purple tinges.

Flagellum with 1 small anellus, 2 funiculars and a 3-segmented clava, with funiculars distinctly narrower than clava (Figs 69, 87). Frons with very weak reticulation, shiny. Vertex smooth and shiny. Antennal scrobes as narrow distinct grooves; frontal suture present, complete. Occipital margin as a sharp edge. Eyes with sparse, scattered hairs.

Mesoscutum with strong, raised reticulation; midlobe with 1 pair of setae; notauli as narrow distinct grooves in anterior 1/3. Scutellum with strong, raised reticulation; with 1 pair of setae. Propodeum with irregular sculpture; propodeal callus with 2 setae. Forewing with 2 setae on dorsal surface of submarginal vein; speculum open below.

Petiole not visible, but presumably small. Gaster circular; gastral tergites smooth and partly shriveled.

**Ratios.** HE/MS/WM = 6.4/1.0/4.0; POL/OOL/POO = 16.7/6.3/1.0; WH/WT = 1.1; LW/LM/HW = 2.7/1.0/1.5; PM/ST = 0.4; MM/LG about 1.0.

MALE. Unknown.

**Distribution.** Costa Rica.

**Biology.** Unknown.

**Material examined.** Holotype female labeled "COSTA RICA, Puntarenas, San Vito, Las Cruces, 8°47'N 82°58'W, 7-19.ii.2007, C. Hansson", in INBio.

**Etymology.** Named for the white pedicel and flagellum.

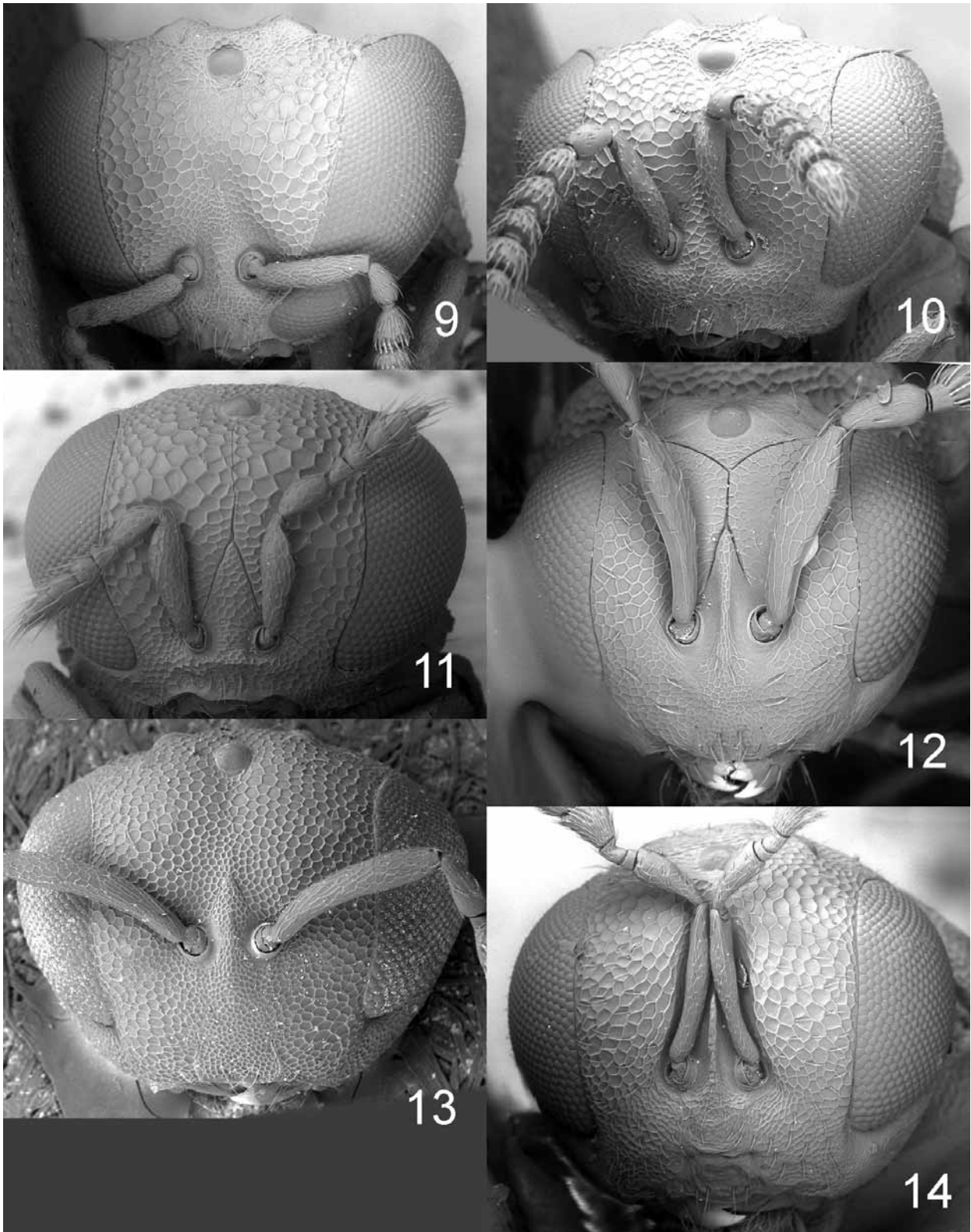
**Remarks.** The single specimen is damaged, with mesosoma partly crushed and right antenna missing. However, because the species is still recognizable, and because this group is difficult to collect, the species is included here in spite of these shortcomings.

### *Klyngon aulacis* sp. nov.

(Figs 2, 4, 24, 39, 61, 71, 90)

**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 71, 90); malar space very narrow, 0.04X as wide as height of eye (Fig. 90); antennal scrobes as deep, wide grooves (Fig. 4); frontal suture absent (Fig. 4); occipital margin rounded with posterior ocelli situated away from margin (Fig. 24); midlobe of mesoscutum

with 12 scattered setae and notauli strong and deep in posterior 2/3 (Fig. 39); scutellum with 12 scattered setae (Fig. 39); with a narrow slit between scutellum and axillae (Fig. 39); forewing with 2 rows of admarginal setae and submarginal vein with 3 setae (Fig. 61).

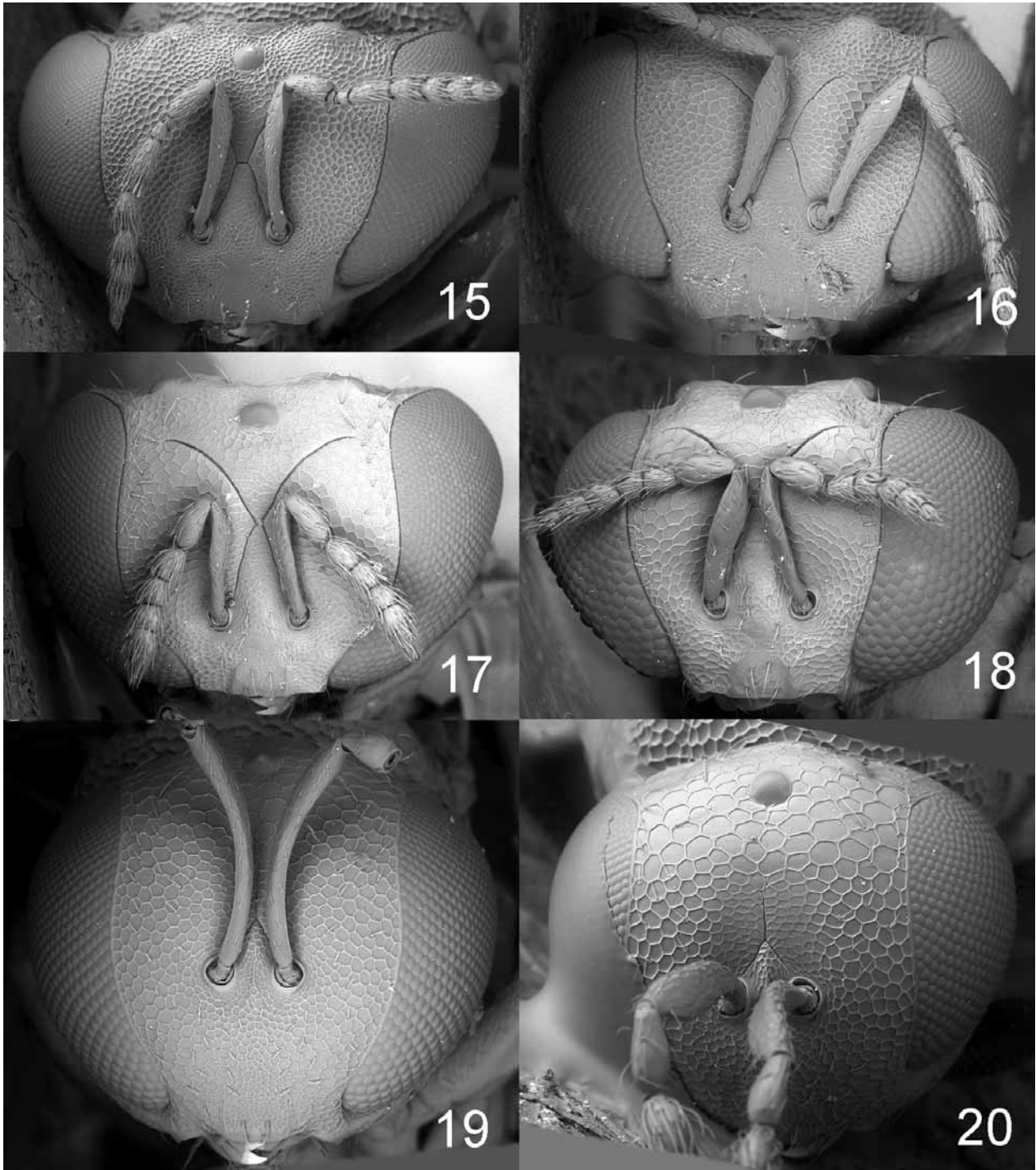


**FIGURES 9–14.** Head, frontal. 9. *Klyngon costalimai* sp. nov., female. 10. *K. costalimai*, male. 11. *K. gibberum* sp. nov., female. 12. *K. hortense* sp. nov., male. 13. *K. pegasoma* sp. nov., female. 14. *K. petalon* sp. nov., female.



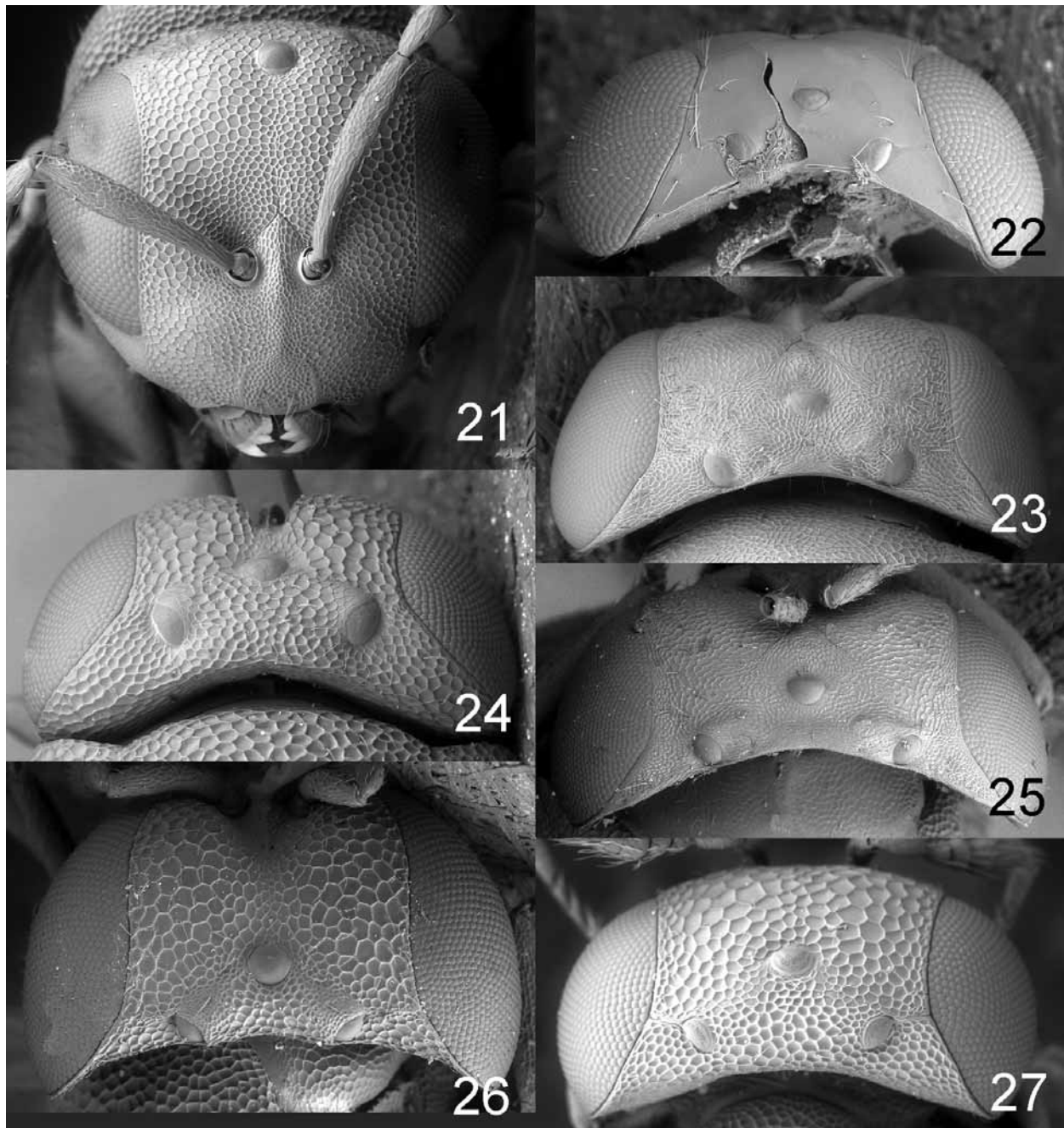
**Description.** FEMALE. Length 1.4 mm.

Scape yellowish-brown, pedicel and flagellum dark brown. Frons black with metallic green tinges. Vertex, mesoscutum and scutellum black with metallic purple tinges. Coxae, femora and tibiae dark and metallic, tarsomeres 1–3 yellowish-white, tarsomere 4 dark brown. Wings hyaline. Gastral tergites metallic bluish-green, tergites 2–7 dark with metallic purple tinges.



**FIGURES 15–20.** Head, frontal. 15. *Klyngon guimaraesi* sp. nov., female. 16. *K. guimaraesi*, male. 17. *K. serjaniae* sp. nov., female. 18. *K. serjaniae*, male. 19. *K. jimenezi* Hansson, female. 20. *K. jimenezi*, male.

Flagellum with 1 large anellus, 2 funiculars and a 3-segmented clava (Figs 71, 90). Frons and vertex with strong, raised reticulation. Antennal scrobes deep and distinctly delimited, shiny; with an interscrobial prominence; frontal suture absent. Occipital margin rounded. Eyes bare.



**FIGURES 21–27.** 21. *Klyngon bouceki* Hansson, head, frontal, female. 22–27. Vertex, female. 22. *K. albicornis* **sp. nov.** 23. *K. brasilense* **sp. nov.** 24. *K. aulacis* **sp. nov.** 25. *K. copaiferae* **sp. nov.** 26. *K. costalimai* **sp. nov.** 27. *K. gibberum* **sp. nov.**

Mesoscutum and scutellum convex. Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 12 scattered setae; notauli strong, deep in posterior 2/3, in anterior 1/3 as a narrow  $\pm$  distinct groove. Scutellum 1.1X as long as wide; with strong, raised reticulation; with 12 scattered setae; with a narrow slit between scutellum and axillae. Propodeum with posterolateral part drawn out into a point; spiracular sulcus absent; propodeal callus with 8 setae; with a narrow median carina; entire propodeal surface reticulate. Forewing with 3 setae on dorsal surface of submarginal vein; base of costal cell with setae on ventral surface; with 2 rows of admarginal setae (i.e. setae close to marginal vein) on ventral surface; speculum large and open below.

Petiole not visible, but presumably small. Gaster circular; gastral tergites smooth and partly shrivelled.

*Ratios.* HE/MS/WM = 26.0/1.0/12.5; POL/OOL/POO = 6.0/1.0/1.2; WH/WT = 1.0; LW/LM/HW = 2.0/1.0/1.4; PM/ST = 0.7; MM/LG = 1.3.

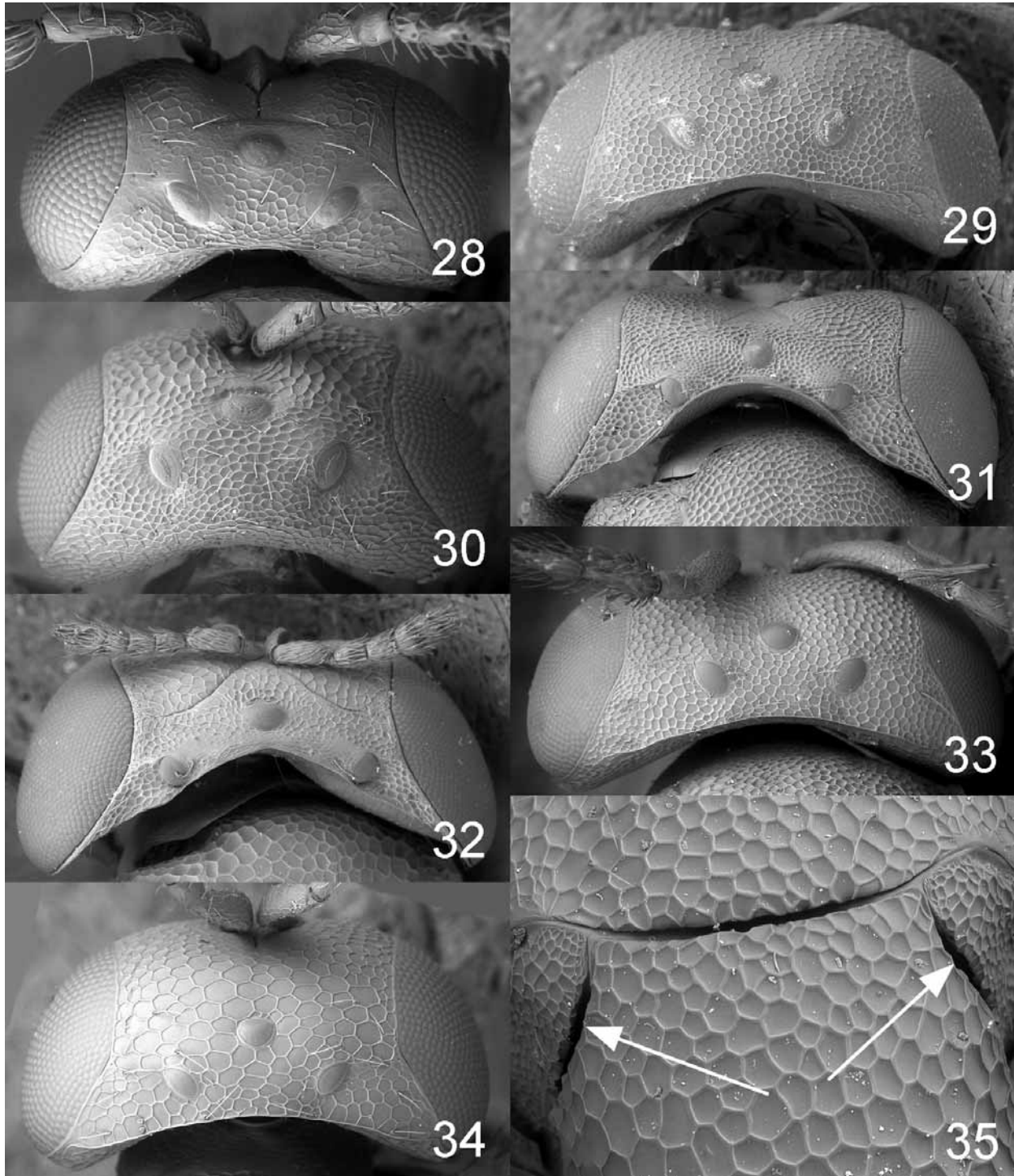
MALE. Unknown.

**Distribution.** Costa Rica.

**Biology.** Unknown.

**Material examined.** Holotype female “COSTA RICA, Heredia, Estación Biológica La Selva, 10°25'N 84°01'W, iv.1994, INBio-OET”, in INBio.

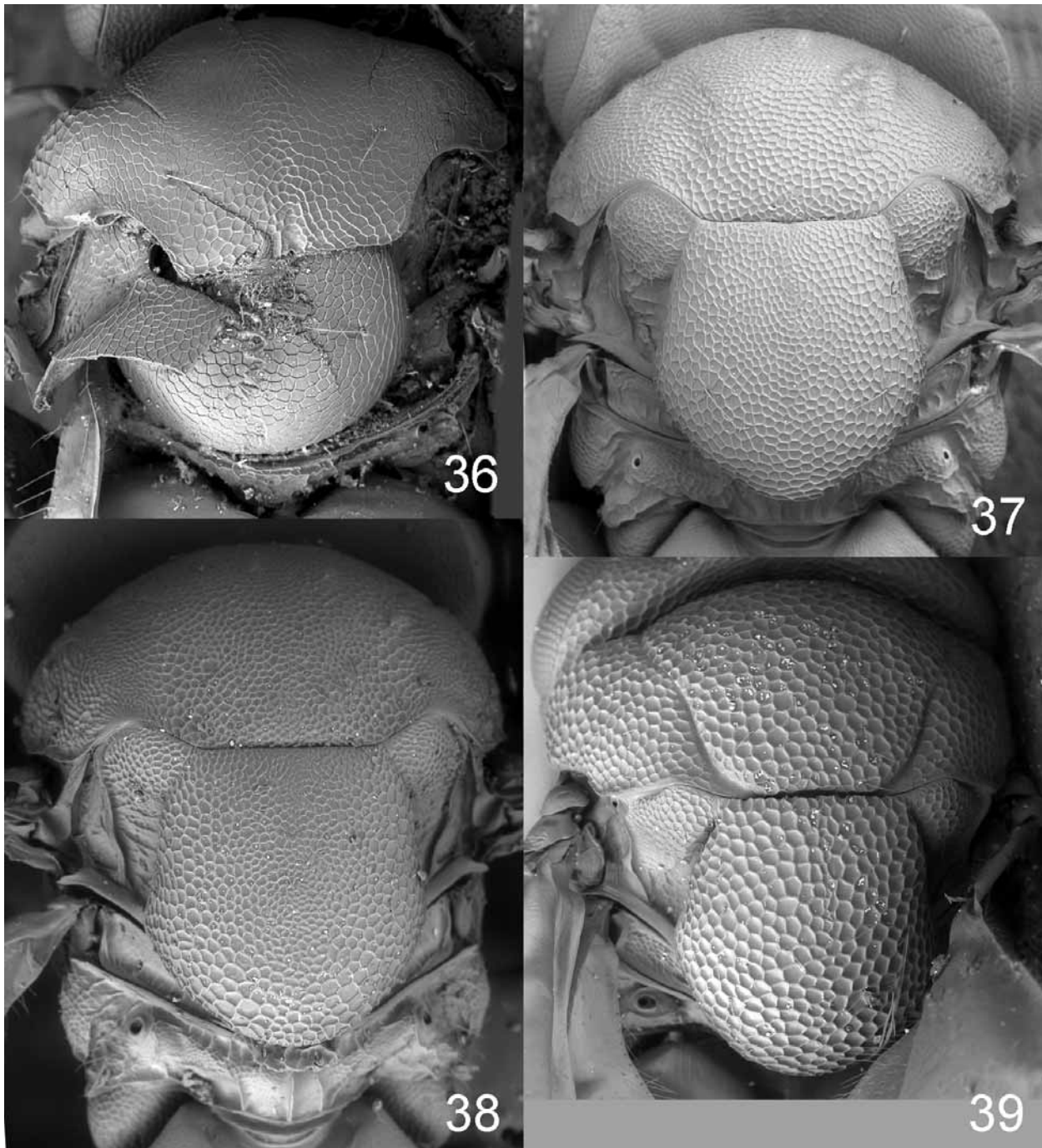
**Etymology.** Named for the distinct notaular grooves (*aulacis* = furrow in Latin).



**FIGURES 28–35.** 28–34. Vertex. 28. *Klyngon hortense* sp. nov., male. 29. *K. pegosoma* sp. nov., female. 30. *K. petalon* sp. nov., female. 31. *K. guimaraesi* sp. nov., female. 32. *K. serjaniae* sp. nov., female. 33. *K. bouceki* Hansson, female. 34. *K. jimenezi* Hansson, female. 35. *K. costalimai* sp. nov., female, part of mesoscutum and scutellum, arrows point at scuto-scutellar slit.

***Klyngon bouceki* Hansson**  
(Figs 21, 33, 47, 57, 85, 103)

*Klyngon bouceki* Hansson, 2005: 135–136. Holotype female, (in INBio), Costa Rica, examined.



**FIGURES 36–39.** Thoracic dorsum. 36. *Klyngon albicornis* sp. nov., female. 37. *K. brasiliense* sp. nov., female. 38. *K. copaiferae* sp. nov., female. 39. *K. aulacis* sp. nov., female.

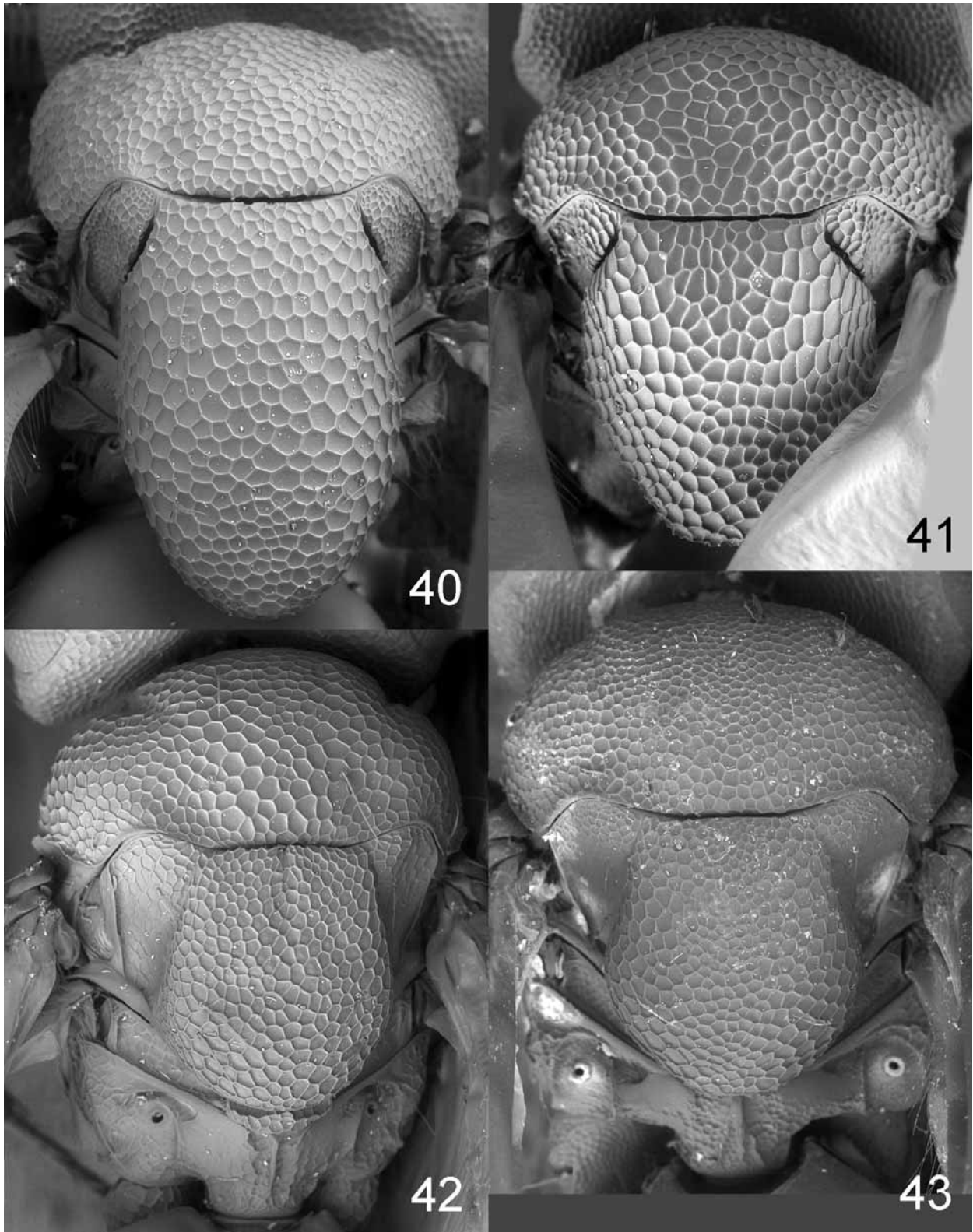
**Diagnosis.** Female flagellum with a 1-segmented clava (Figs 85, 103); antennal scrobes as narrow grooves (Fig. 21); frontal suture absent (Fig. 21); occipital margin sharp with posterior ocelli situated away from margin (Fig. 33); midlobe of mesoscutum with 10 scattered setae (Fig. 47); scutellum with 1 pair of setae (Fig. 47); forewing predominantly hyaline with 2–3 setae on submarginal vein (Fig. 57).

**Description.** See Hansson (2005).

**Distribution.** Costa Rica (Hansson 2005).

**Biology.** Unknown.

**Material examined.** As accounted for in Hansson (2005), also 1 female from Costa Rica (Guanacaste) (INBio).



**FIGURES 40–43.** Thoracic dorsum. 40. *Klyngon costalimai* sp. nov., female. 41. *K. gibberum* sp. nov., female. 42. *K. hortense* sp. nov., male. 43. *K. pegosoma* sp. nov., female.

***Klyngon brasiliense* sp. nov.**

(Figs 5, 6, 23, 37, 51, 60, 70, 72, 88, 89)

**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 70, 88); antennal scrobes as narrow grooves but absent close to toruli (Figs 5, 6); frontal suture present in median 1/6 of frons (Figs 5, 6); occipital margin sharp with posterior ocelli very close to margin (Fig. 23); midlobe of mesoscutum with 4 pairs of setae (Fig. 37); scutellum with 1 pair of setae (Fig. 37); forewing with submarginal vein with 5 setae, postmarginal vein short, PM/ST = 0.3, stigmal vein long and about same width throughout, radial cell large and bare (Fig. 60).

**Description.** FEMALE. Length 2.0–2.3 mm.

Scape yellowish-brown, pedicel and flagellum dark brown. Frons, vertex, mesoscutum and scutellum metallic bluish-green. Coxae dark and metallic, femora dark brown, tibiae and tarsi yellowish-brown. Forewing with inner  $\frac{1}{2} \pm$  infuscate. Gastral tergite 1 metallic bluish-green with posterior  $\frac{1}{2}$  metallic dark purple, tergites 2–7 metallic dark purple.

Flagellum with 1 small, discoid anellus, 1 large anellus, 2 funiculars and a 3-segmented clava (Figs 70, 88). Frons and vertex with strong, raised reticulation. Antennal scrobes as narrow grooves, not discernible close to toruli, joining below frontal suture; frontal suture as narrow groove in median 1/5 of frons. Occipital margin with sharp edge. Eyes bare.

Mesoscutum and scutellum convex. Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 4 pairs of setae; notauli indistinct. Scutellum 1.1X as long as wide; with strong, raised reticulation; with 1 pair of setae. Propodeum with posterolateral part drawn out into a blunt point; propodeum inside spiracular sulcus with 5–6 setae; propodeal surface reticulate-rugose, medially with some irregular longitudinal and narrow carinae. Forewing with 5 setae on dorsal surface of submarginal vein; costal cell bare; speculum large and open below.

Petiole very short, in dorsal view as a very short but wide stripe. Gaster circular to slightly ovate; gastral tergites strongly reticulate.

**Ratios.** HE/MS/WM = 6.6/1.0/4.6; POL/OOL/POO = 33.0/10.0/1.0; WH/WT = 1.1; LW/LM/HW = 2.1/1.0/1.3; PM/ST = 0.3; MM/LG = 0.8–1.0.

MALE. Length 1.6–2.2 mm.

Mesoscutum and scutellum golden-green to golden-red. Colour otherwise as in female.

Flagellum with 1 small discoid and 1 large anellus, 2 funiculars and a 3-segmented clava (Figs 72, 89).

Mesosoma as in female.

**Ratios.** HE/MS/WM = 9.0/1.0/6.0; POL/OOL/POO = 3.9/1.0/–; MM/LG = 0.9–1.0.

**Distribution.** Brazil.

**Biology.** From galls on *Copaifera langsdorffii* (Fabaceae).

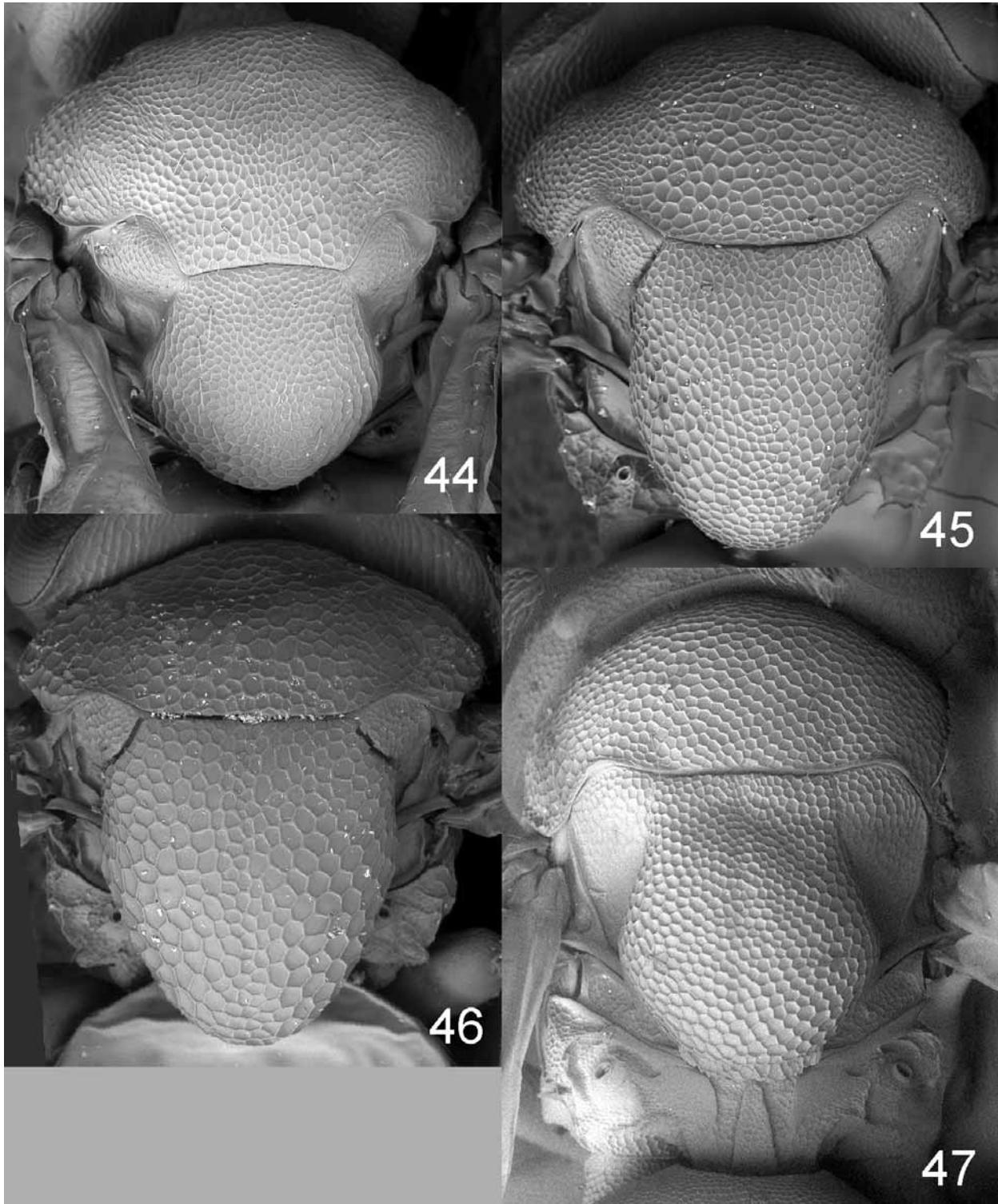
**Material examined.** Holotype female “BRAZIL, Sao Paulo, Jaguariuna, galls on *Copaifera langsdorffii*, collected 18.ix.1997, emerged xi.1997, M. Tavares, V. Costa, C. Azevedo, N. Perioto, J. LaSalle”, in MZSP. Paratypes: 65 females 50 males with same data as holotype, emerged x and xi.1997 (5 females 2 males in ANIC, 17 females 19 males in BMNH, 5 females 2 males in CH, 33 females 25 males in MZSP, 5 females 2 males in USNM).

**Etymology.** Named for the country of origin.

***Klyngon copaiiferae* sp. nov.**

(Figs 7, 8, 25, 38, 52, 62, 73, 91)

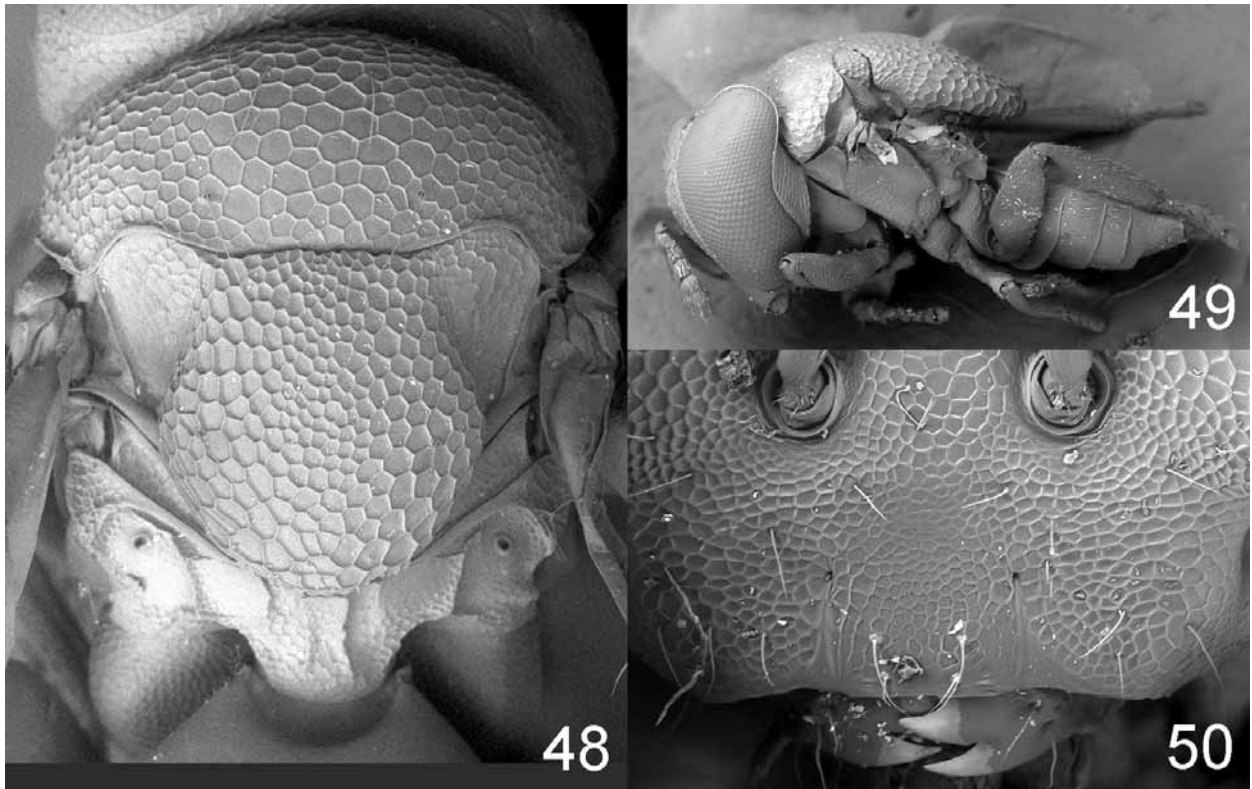
**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 73, 91); antennal scrobes as narrow grooves (Figs 7, 8); frontal suture present in median 1/5 of frons (Figs 7, 8); occipital margin sharp with posterior ocelli very close to margin (Fig. 25); midlobe of mesoscutum without setae (Fig. 38); scutellum with 1 pair of setae (Fig. 38); dorsellum projecting up behind scutellum and hence visible in dorsal view (Fig. 38); forewing with submarginal vein with 4 setae, radial cell large and bare (Fig. 62).



**FIGURES 44–47.** Thoracic dorsum. 44. *Klyngon petalon* sp. nov., female. 45. *K. guimaraesi* sp. nov., female. 46. *K. serjaniae* sp. nov., female. 47. *K. bouceki* Hansson, female.

**Description.** FEMALE. Length 2.7 mm.

Scape yellowish-brown, pedicel and flagellum dark brown. Frons black with metallic green tinges. Vertex black with purple tinges. Mesoscutum and scutellum metallic purple. Coxae dark and metallic, femora and tibiae dark brown, tarsi yellowish-brown. Forewing predominantly infusate, with apical 1/5 hyaline. Gaster metallic purple.



**FIGURES 48–50.** 48. *Klyngon jimenezi* Hansson, female, thoracic dorsum. 49. *K. serjaniae* sp. nov., female, body lateral. 50. *K. guimaraesi* sp. nov., female, clypeus.

Flagellum with 3 small anelli, 2 funiculars and a 3-segmented clava (Figs 73, 91). Frons with strong, raised reticulation. Vertex with weaker reticulation and smaller meshes than frons. Antennal scrobes as narrow grooves; frontal suture as narrow groove in median  $\frac{1}{4}$  of frons. Occipital margin with a sharp edge. Eyes bare.

Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe without setae; notauli indistinct. Scutellum 1.0X as long as wide; with strong, raised reticulation; with 1 pair of setae. Propodeum with posterolateral part drawn out into a point; propodeum inside spiracular sulcus with 8–9 setae; with a complete and narrow median carina; entire propodeal surface reticulate, reticulate-rugose laterally. Forewing with 4 setae on dorsal surface of submarginal vein; costal cell bare; speculum large and open below.

Petiole very short, in dorsal view as a very short but wide stripe. Gaster ovate; gastral tergites strongly reticulate.

*Ratios.* HE/MS/WM = 3.6/1.0/2.9; POL/OOL/POO = 38.0/9.0/1.0; WH/WT = 1.1; LW/LM/HW = 2.0/1.0/1.2; PM/ST = 0.5; MM/LG = 0.8–0.9.

**MALE.** Unknown.

**Distribution.** Brazil.

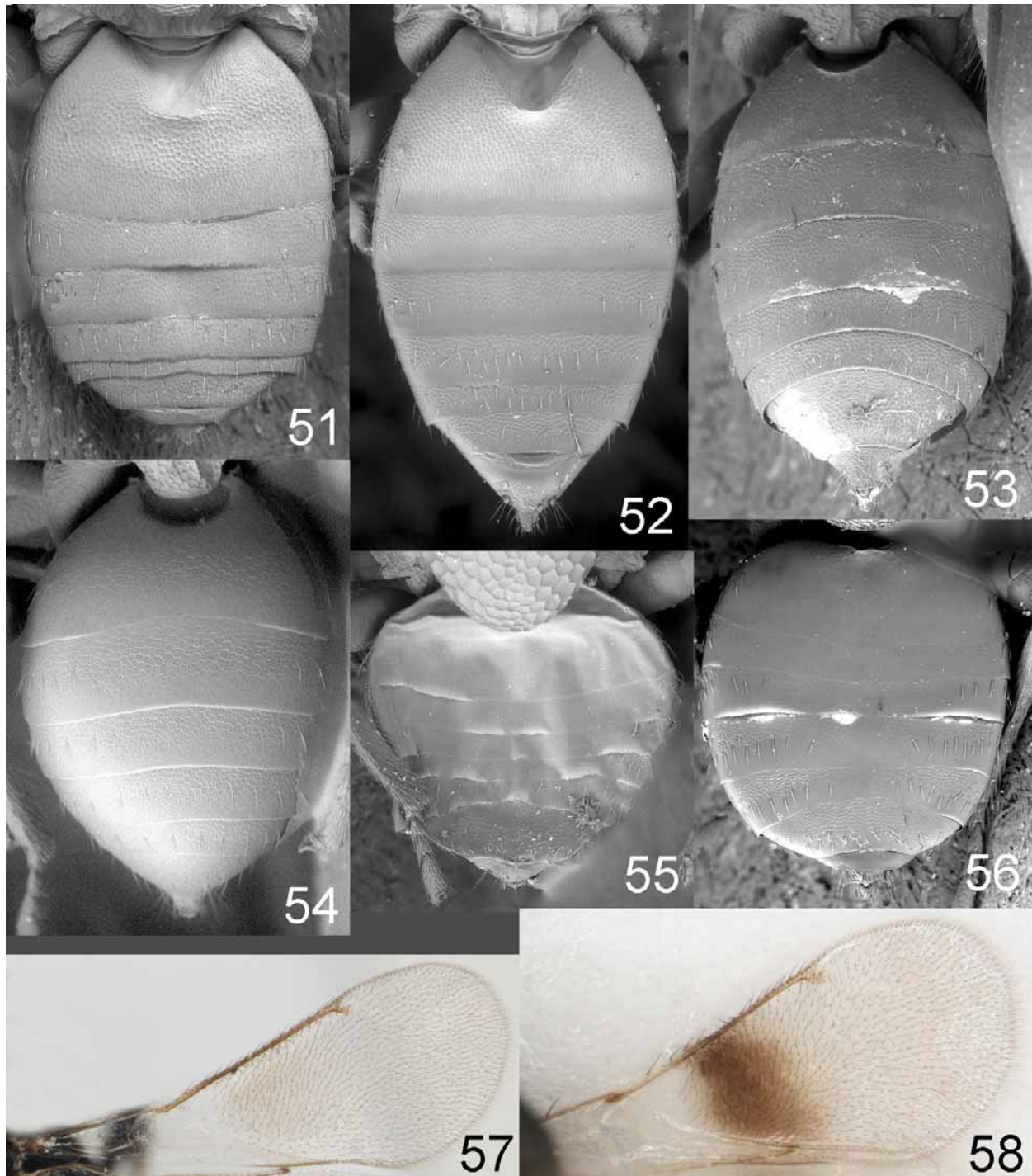
**Biology.** From galls on *Copaifera langsdorffii* (Fabaceae).

**Material examined.** Holotype female “BRAZIL, Sao Paulo, Sao Carlos, ex galhas globosas de *Copaifera langsdorffii*, vii.1994, M.T. Tavares”, in MZSP. Paratypes: 3 females with same data as holotype (2 females BMNH, 1 female MZSP); 1 female “BRAZIL, Sao Paulo, Sao Carlos, UFSC, 1994, M. Tavares, Malaise trap” (MZSP).

**Etymology.** Named for the host plant on which the galls were collected.

**Remarks.** One of the paratypes lacks the head.





**FIGURES 51–58.** 51–56. Gaster, female. 51. *Klyngon brasilense* **sp. nov.** 52. *K. copaiferae* **sp. nov.** 53. *K. pegosoma* **sp. nov.** 54. *K. jimenezi* Hansson, female. 55. *K. serjaniae* **sp. nov.** 56. *K. guimaraesi* **sp. nov.** 57–58. Forewing, female. 57. *K. bouceki* Hansson. 58. *K. jimenezi* Hansson.

***Klyngon costalimai* sp. nov.**

(Figs 1, 9, 10, 26, 35, 40, 63, 74, 75, 92, 93)

**Diagnosis.** Female flagellum with a strong 3-segmented clava (Figs 74, 92), male antenna without clava (Figs 75, 93); female malar space very narrow, 0.03X as wide as height of eye (Fig. 9); antennal scrobes and frontal suture absent (Figs 9, 10); occipital margin sharp with posterior ocelli very close to margin (Fig. 26); with a

narrow slit between scutellum and axillae (Fig. 40); mesoscutum with 3–4 pairs of setae (Fig. 40); scutellum with 1 pair of setae (Fig. 40); forewing with submarginal vein with 2 setae, with ventral surface just below marginal vein with a setose area, speculum very large and open below (Fig. 63).

**Description.** FEMALE. Length 1.9 mm.

Scape pale brown, pedicel and flagellum dark brown. Frons and vertex black with metallic bluish-green tinges. Mesoscutum and scutellum black with metallic blue and purple tinges. Coxae dark and metallic; femora dark brown; fore tibia pale brown, mid and hind tibiae dark brown; fore tarsus with tarsomere 1 yellowish-brown and 2–4 dark brown, mid and hind tarsi with tarsomeres 1–3 yellowish-brown and 4 dark brown. Wings hyaline. Gastral tergites dark brown and shiny.

Flagellum with 3 small and discoid anelli, 2 funiculars and a 3-segmented clava (Figs 74, 92). Frons and vertex with strong, raised reticulation; frons with scattered setae. Antennal scrobes and frontal suture absent. Occipital margin rounded. Eyes with scattered short hairs.

Mesoscutum and scutellum convex. Mesoscutum 0.7X as long as wide; with strong, raised reticulation; midlobe with 3–4 pairs of setae; notauli indistinct. Scutellum 1.4X as long as wide; with strong, raised reticulation; with 1 pair of setae; with a narrow slit between scutellum and axillae. Propodeum with posterolateral part drawn out into a blunt point; propodeal callus with 6–7 setae and with 3–4 additional setae inside spiracular sulcus; without a median carina; entire propodeal surface reticulate. Forewing with 2 setae on dorsal surface of submarginal vein; costal cell bare; ventral surface just below marginal vein with a setose area; speculum very large and open below.

Petiole not visible, but presumably small. Gaster circular; gastral tergites smooth and partly shrivelled.

*Ratios.* HE/MS/WM = 37.0/1.0/16.0; POL/OOL/POO = 38.0/16.7/1.0; WH/WT = 1.2; LW/LM/HW = 1.9/1.0/1.5; PM/ST = 1.0; MM/LG = 1.7.

MALE. Length 1.6 mm.

Colour as in female.

Flagellum with 3 small discoid anelli, remaining 5 flagellomeres distinctly separated (Figs 75, 93). Eyes smaller than in female, the posterior ocelli situated away from occipital margin. Head otherwise similar to female

Mesosoma as in female.

*Ratios.* HE/MS/WM = 3.1/1.0/1.9; POL/OOL/POO = 10.5/4.4/1.0; MM/LG = 1.3.

**Distribution.** Brazil.

**Biology.** From galls on *Copaifera langsdorffii* (Fabaceae).

**Material examined.** Holotype female “BRAZIL, Sao Paulo, Jaguariuna, galls on *Copaifera langsdorffii*, collected 18.ix.1997, emerged i.1998, M. Tavares, V. Costa, C. Azevedo, N. Perियो, J. LaSalle”, in MZSP. Paratypes: 2 females 1 male with same data as holotype (1 female BMNH, 1 female 1 male MZSP).

**Etymology.** Named for the famed Brazilian entomologist, Angelo Moreira da Costa Lima. This name was chosen because it is the manuscript name used for this species by Guimarães (1957).

**Remarks.** We have also examined 15 specimens belonging to this species treated by Guimarães and collected in Paraopeba, Minas Gerais (in DCBU). The material is in poor condition, with specimens badly broken, and as such they are only included in this paper for their historic interest — but they are not included in the description and are hence not type material.

### *Klyngon gibberum* sp. nov.

(Figs 11, 27, 41, 76, 94)

**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 76, 94); antennal scrobes as narrow grooves (Fig. 11); frontal suture absent (Fig. 11); occipital margin rounded with posterior ocelli situated away from margin (Fig. 27); midlobe of mesoscutum with 1 pair of setae (Fig. 41); scutellum with 1 pair of setae (Fig. 41); with a narrow slit between scutellum and axillae (Fig. 41); forewing with submarginal vein with 1 seta.

**Description.** FEMALE. Length 1.2 mm.

Entire antenna dark brown. Frons, vertex, mesoscutum and scutellum metallic bluish-green. Coxae dark

and metallic, femora and tibiae dark brown, tarsomeres 1–3 yellowish-white, tarsomere 4 dark brown. Wings hyaline. Gastral tergites dark brown, shiny.

Flagellum with 2 small discoid anelli, 2 funiculars and a 3-segmented clava (Fig. 76, 94). Frons and vertex with strong, raised reticulation; frons with 1 row of setae close to eye margin. Antennal scrobes as narrow grooves. Frontal suture absent. Occipital margin rounded. Eyes bare.

Mesoscutum and scutellum convex. Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 1 pair of setae; notauli indistinct. Scutellum 1.1X as long as wide; with strong, raised reticulation; with 1 pair of setae; with a narrow slit between scutellum and axillae. Propodeum with posterolateral part not drawn out into a point; propodeal callus with 7 setae; without a median carina; entire propodeal surface reticulate. Forewing with 1 seta on dorsal surface of submarginal vein; costal cell bare; with 1 row of admarginal setae (i.e. setae close to marginal vein) on ventral surface; speculum large and open below.

Petiole not visible, but presumably small. Gaster circular; gastral tergites smooth.

*Ratios.* HE/MS/WM = 5.2/1.0/2.6; POL/OOL/POO = 7.4/1.8/1.0; WH/WT = 1.2; LW/LM/HW = 1.8/1.0/1.4; PM/ST = 0.8; MM/LG = 1.4.

MALE. Unknown.

**Distribution.** Brazil.

**Biology.** Unknown.

**Material examined.** Holotype female labeled “BRAZIL, Espírito Santo, Linhares, ix.1972, M. Alarenha”, in MZSP.

**Etymology.** Named for the backwards extended scutellum (Latin *gibber* = hump on the back).

### ***Klyngon guimaraesi* sp. nov.**

(Figs 15, 16, 31, 45, 50, 56, 67, 80, 81, 98, 99)

**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 80, 98); antennal scrobes as narrow grooves (Figs 15, 16); frontal suture present in median 1/3 of frons (Figs 15, 16); occipital margin sharp with posterior ocelli very close to margin (Fig. 31); midlobe of mesoscutum with 1 pair of setae (Fig. 45); scutellum with 1 pair of setae (Fig. 45); with a narrow slit between scutellum and axillae (Fig. 45); forewing with submarginal vein with 3 setae, strongly hairy and infuscate in median 1/3 (Fig. 67), postmarginal vein short, 0.3X as long as stigmal vein.

**Description.** FEMALE. Length 2.8–3.0 mm.

Scape pale brown, pedicel and flagellum dark brown. Frons, vertex, mesoscutum and scutellum with metallic blue and purple tinges. Coxae dark, metallic; femora dark brown; fore tibia yellowish-brown, mid and hind tibiae with basal ½ dark brown and apical ½ yellowish-brown; tarsi yellowish-brown. Forewing hyaline with median 1/3 infuscate. Gastral tergites dark brown, shiny.

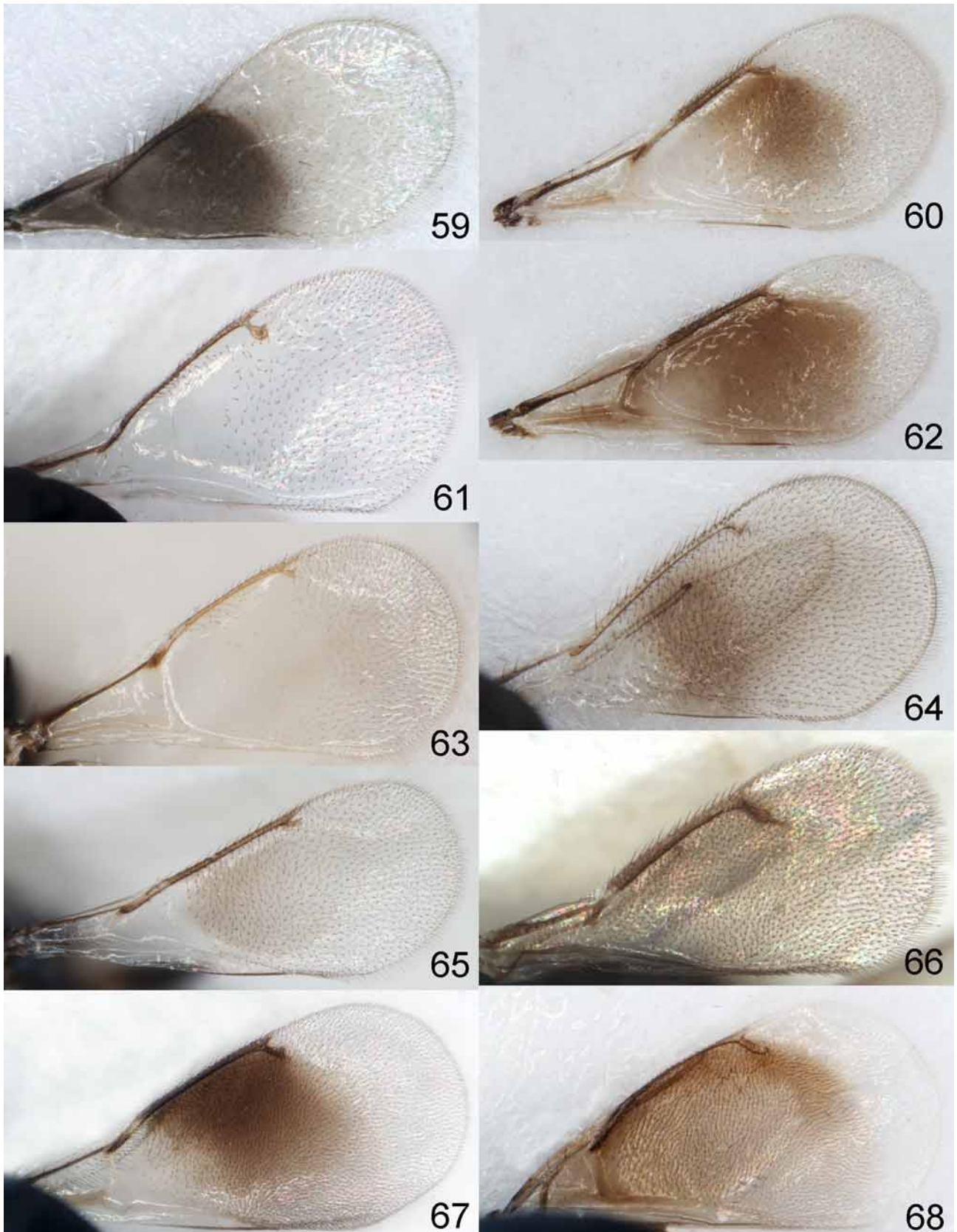
Flagellum with 1 large and 2 small discoid anelli, 2 funiculars and a 3-segmented clava (Figs 80, 98). Frons and vertex with strong, raised reticulation; frons with a row of setae along eye margin. Antennal scrobes as narrow grooves. Frontal suture present in median 1/3 of frons, as a narrow groove. Occipital margin with a sharp edge. Eyes with scattered short hairs.

Mesoscutum and scutellum convex. Mesoscutum 0.6X as long as wide; with strong, raised reticulation; midlobe with 1 pair of setae; notauli indistinct. Scutellum 1.2X as long as wide; with strong, raised reticulation; with 1 pair of setae; with a narrow slit between scutellum and axillae. Propodeum with posterolateral part drawn out into a point; propodeal callus with 6–7 setae and with 0–3 additional setae inside spiracular sulcus; without a median carina; entire propodeal surface reticulate-rugose. Forewing with 3 setae on dorsal surface of submarginal vein; costal cell bare; ventral surface just below marginal vein with a setose area; speculum open below.

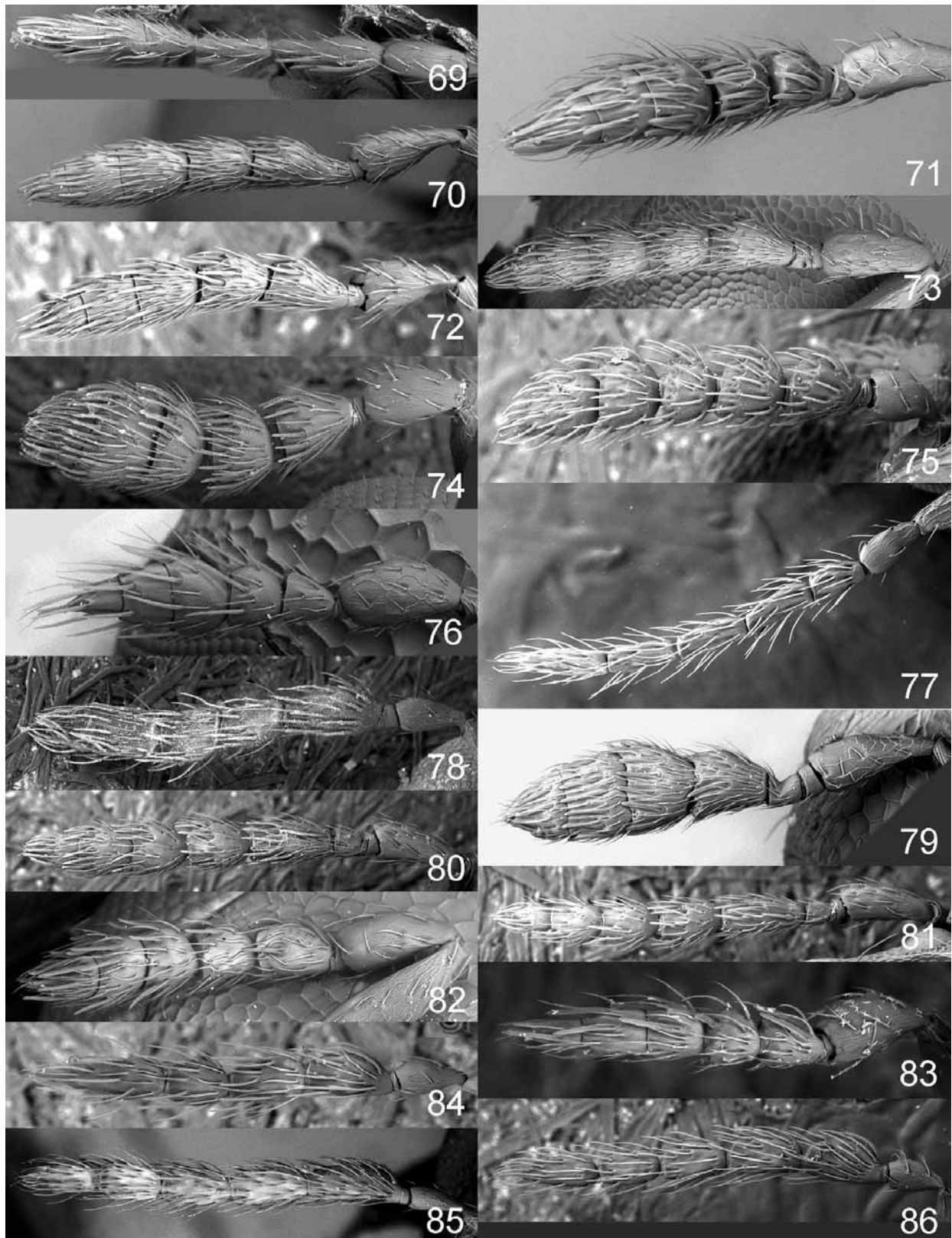
Petiole not visible, but presumably small. Gaster ovate; gastral tergites with weak reticulation.

*Ratios.* HE/MS/WM = 5.9/1.0/2.9; POL/OOL/POO = 31.5/10.5/1.0; WH/WT = 1.2; LW/LM/HW = 1.9/1.0/1.2; PM/ST = 0.3; MM/LG = 0.9.

MALE. Length 2.5–2.7 mm.



**FIGURES 59–68.** Forewing. 59. *Klyngon albicornis* **sp. nov.**, female. 60. *K. brasilense* **sp. nov.**, female. 61. *K. aulacis* **sp. nov.**, female. 62. *K. copaiferae* **sp. nov.**, female. 63. *K. costalimai* **sp. nov.**, female. 64. *K. hortense* **sp. nov.**, male. 65. *K. pegosoma* **sp. nov.**, female. 66. *K. petalon* **sp. nov.**, female. 67. *K. guimaraesi* **sp. nov.**, female. 68. *K. serjaniae* **sp. nov.**, female.



**FIGURES 69–86.** Flagellum. 69. *Klyngon albicornis* **sp. nov.**, female. 70. *K. brasilense* **sp. nov.**, female. 71. *K. aulacis* **sp. nov.**, female. 72. *K. brasilense*, male. 73. *K. copaiiferae* **sp. nov.**, female. 74. *K. costalimai* **sp. nov.**, female. 75. *K. costalimai*, male. 76. *K. gibberum* **sp. nov.**, female. 77. *K. hortense* **sp. nov.**, male. 78. *K. pegosoma* **sp. nov.**, female. 79. *K. petalon* **sp. nov.**, female. 80. *K. guimaraesi* **sp. nov.**, female. 81. *K. guimaraesi*, male. 82. *K. serjaniae* **sp. nov.**, female. 83. *K. serjaniae*, male. 84. *K. jimenezi* Hansson, female. 85. *K. bouceki* Hansson, female. 86. *K. jimenezi*, male.

Head and thoracic dorsum metallic bluish-green. All tibiae yellowish-brown. Colour otherwise as in female.

Flagellum with 2 small discoid anelli and 1 large anellus, 2 funiculars and a 3-segmented clava (the 3 apical flagellomeres are more or less fused) (Figs 81, 99). Head otherwise similar to that of female.

Mesosoma as in female.

*Ratios.* HE/MS/WM = 5.2/1.0/3.0; POL/OOL/POO = 27.5/8.3/1.0; MM/LG = 1.0.

**Distribution.** Brazil.

**Biology.** From galls on *Copaifera langsdorffii* (Fabaceae).

**Material examined.** Holotype female "BRAZIL, Sao Paulo, Jaguariuna, galls on *Copaifera langsdorffii*, collected 18.ix.1997, emerged i.1998, M. Tavares, V. Costa, C. Azevedo, N. Perioto, J. LaSalle", in MZSP. Paratypes: 19 females, 3 males with same data as holotype; 5 females 4 males from same locality, collecting date and host, but emerged xii.1997 (2 females in ANIC, 6 females 3 males in BMNH, 2 females in CH, 12 females 4 males in MZSP, 2 females in USNM).

**Etymology.** Named for José de Aguiar Guimarães, whose thesis and collected material provided inspiration for further collections of galls on *Copaifera langsdorffii*.

### ***Klyngon hortense* sp. nov.**

(Figs 12, 28, 42, 64, 77, 95)

**Diagnosis.** Male only. Antennal scrobes as distinct and narrow grooves, join below frontal suture (Fig. 12); frons with an interscrobal prominence (Fig. 12); frontal suture distinct in median 2/3 of frons (Fig. 12); occipital margin rounded with posterior ocelli situated away from margin (Fig. 28); midlobe of mesoscutum and scutellum with 2 pairs of setae (Fig. 42); forewing with submarginal vein with 3 setae; propodeum with a complete median carina (Fig. 42).

**Description.** MALE. Length 1.5 mm.

Scape yellowish-brown, pedicel pale brown, flagellum dark brown. Frons black with green, blue and purple metallic tinges. Vertex black with blue and purple metallic tinges. Mesoscutum and scutellum golden-purple. Coxae golden-purple; fore and mid femora with basal ½ dark brown and apical ½ yellowish-brown, hind femur yellowish-brown; tibiae yellowish-brown; tarsi yellowish-white. Forewing with median 1/3 weakly infuscate. Gaster with 1<sup>st</sup> tergite metallic bluish-green with posterior 1/3 golden-purple, tergites 2–7 golden-purple.

Flagellum with 1 small discoid anellus, and all 5 flagellomeres distinctly separated (Figs 77, 95). Frons and vertex with strong, raised reticulation. Antennal scrobes as narrow grooves. Frontal suture present as narrow groove in median 2/3 of frons. Occipital margin rounded. Eyes with a few very short hairs.

Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 2 pairs of setae; notauli indistinct. Scutellum 1.1X as long as wide; with strong, raised reticulation; with 2 pairs of setae, situated close together. Propodeum predominantly reticulate, with anterior 1/3 of median part smooth; propodeal callus with 2 setae; with a complete narrow median carina and plicae. Forewing with 3 setae on dorsal surface of submarginal vein; costal cell bare; speculum open below.

Petiole not visible, but presumably short. Gaster ovate; gastral tergites smooth and shiny, tergites 2–7 with very weak reticulation in posterior part.

*Ratios.* HE/MS/WM = 3.0/1.0/2.4; POL/OOL/POO = 5.9/2.3/1.0; WH/WT = 1.1; LW/LM/HW = 1.9/1.0/1.2; PM/ST = 1.1; MM/LG = 1.1.

FEMALE. Unknown.

**Distribution.** Costa Rica.

**Biology.** Unknown.

**Material examined.** Holotype male labeled "COSTA RICA, Puntarenas, San Vito, Las Cruces, 8°47'N 82°58'W, 7-19.ii.2007, C. Hansson", in INBio. Paratype: 1 male with same label data as holotype (BMNH).

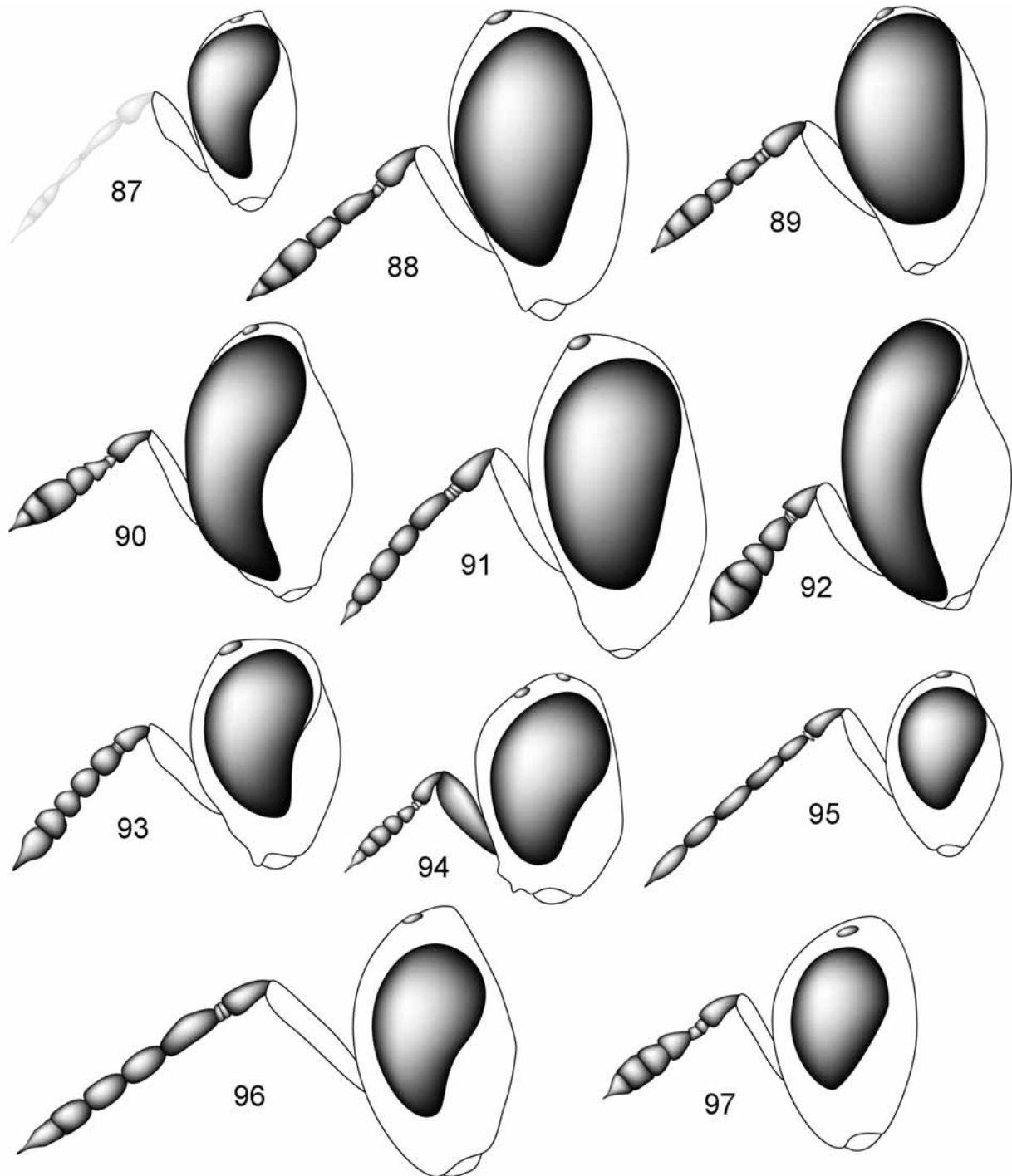
**Etymology.** Named for the type locality, Wilson Botanical Garden at Las Cruces (Latin *hortensis* = of garden).

***Klyngon jimenezi* Hansson**

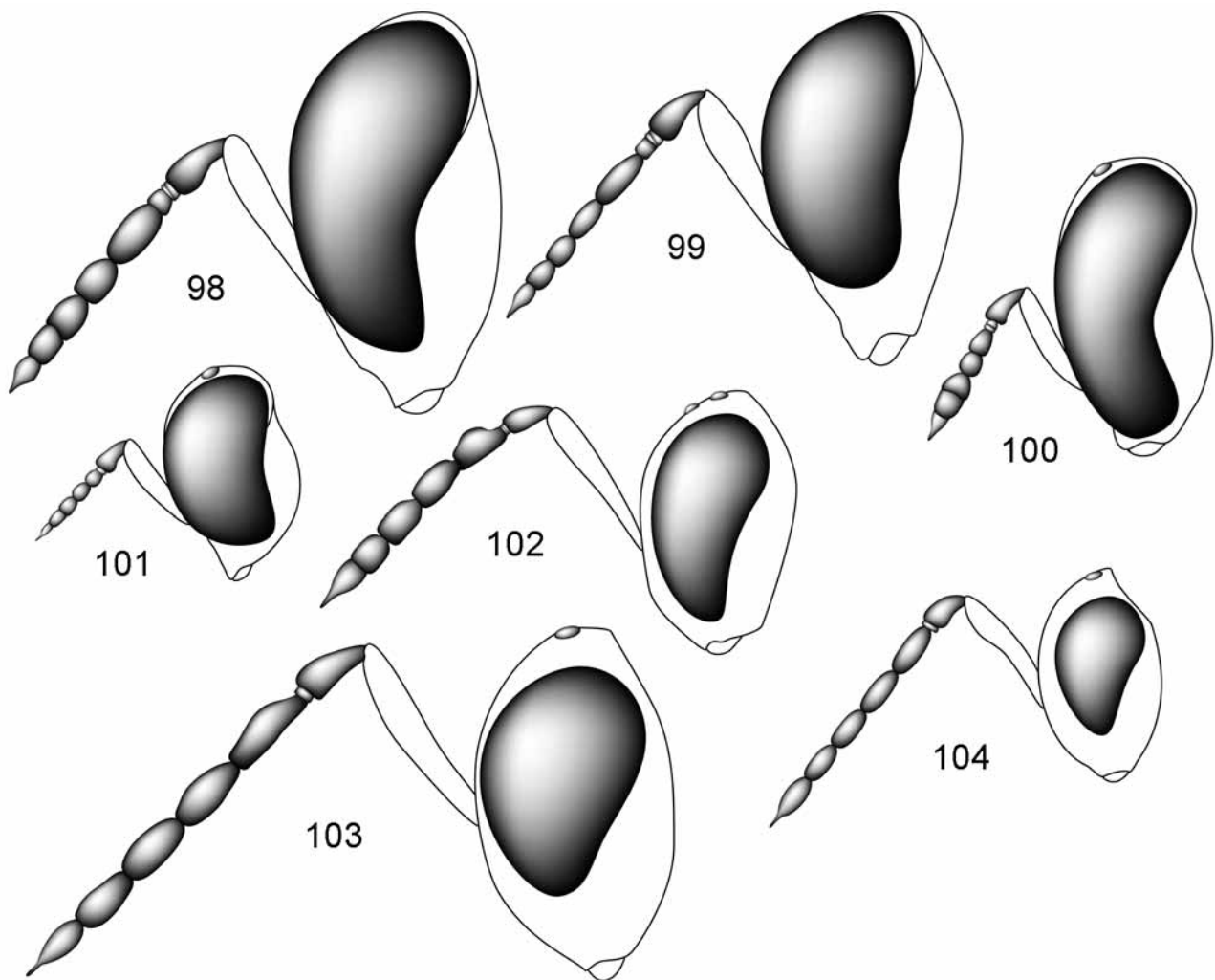
(Figs 19, 20, 34, 48, 54, 58, 84, 86, 102, 104)

*Klyngon jimenezi* Hansson, 2005: 132–134. Holotype female, (in INBio), Costa Rica, examined.

**Diagnosis.** Female flagellum with a 2-segmented clava (Figs 84, 102); antennal scrobes as narrow grooves (Figs 19, 20); frontal suture absent (Figs 19, 20); occipital margin sharp with posterior ocelli situated away from margin (Fig. 34); midlobe of mesoscutum with 10 scattered setae (Fig. 48); scutellum with 1 pair of setae (Fig. 48); forewing hyaline with part below middle of marginal vein infuscate (Fig. 58), submarginal vein with 2–3 setae.



**FIGURES 87–97.** Head and antenna, lateral. 87. *Klyngon albicornis* sp. nov., female. 88. *K. brasilense* sp. nov., female. 89. *K. brasilense*, male. 90. *K. aulacis* sp. nov., female. 91. *K. copaiferae* sp. nov., female. 92. *K. costalimai* sp. nov., female. 93. *K. costalimai*, male. 94. *K. gibberum* sp. nov., female. 95. *K. hortense* sp. nov., male. 96. *K. pegosoma* sp. nov., female. 97. *K. petalon* sp. nov., female.



**FIGURES 98–104.** Head and antenna, lateral. 98. *Klyngon guimaraesi* sp. nov., female. 99. *K. guimaraesi*, male. 100. *K. serjaniae* sp. nov., female. 101. *K. serjaniae*, male. 102. *K. jimenezi* Hansson, female. 103. *K. bouceki* Hansson, female. 104. *K. jimenezi*, male.

**Description.** See Hansson (2005).

**Distribution.** Costa Rica (Hansson 2005).

**Biology.** Unidentified gall-midges (Diptera: Cecidomyiidae) from galls on *Serjania mexicana* (Sapindaceae) (Hansson 2005).

**Material examined.** As accounted for in Hansson (2005), also 1 female 2 males from Costa Rica (Limón, Puntarenas) (BMNH, CH).

***Klyngon pegosoma* sp. nov.**

(Figs 13, 29, 43, 53, 65, 78, 96)

**Diagnosis.** Female flagellum with a 2-segmented clava (Figs 78, 96); antennal scrobes as narrow grooves (Fig. 13); frontal suture absent (Fig. 13); occipital margin sharp with posterior ocelli situated away from margin (Fig. 29); midlobe of mesoscutum with 2 pairs of setae (Fig. 43); scutellum with 1 pair of setae (Fig. 43); forewing with submarginal vein with 2 setae.

**Description.** FEMALE. Length 1.8–2.1 mm.

Scape yellowish-brown, pedicel and flagellum dark brown. Frons, vertex, mesoscutum and scutellum



black with metallic bluish-green tinges. Coxae, femora and tibiae dark and metallic, fore tarsus dark brown, mid and hind tarsi with tarsomeres 1–3 yellowish-brown and 4 dark brown. Forewing with median 1/3 weakly infusate. Gaster with 1<sup>st</sup> tergite metallic bluish-green, tergites 2–7 black with purple tinges.

Flagellum with 2 small discoid anelli, 3 funiculars and a 2-segmented clava (Figs 78, 96). Frons and vertex with strong, raised reticulation. Antennal scrobes as narrow grooves. Frontal suture missing. Occipital margin with a sharp edge. Eyes bare.

Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 2 pairs of setae; notauli indistinct. Scutellum 1.0X as long as wide; with strong, raised reticulation; with 1 pair of setae. Propodeum predominantly reticulate, with anterior 1/3 of median part smooth; propodeal callus with 3 setae; with a complete median carina, narrow anteriorly and gradually widening towards posterior part, carina is concave. Forewing with 2 setae on dorsal surface of submarginal vein; costal cell bare; speculum large, open below.

Petiole not visible, but presumably short. Gaster ovate; gastral tergites strongly reticulate.

*Ratios.* HE/MS/WM = 3.1/1.0/2.3; POL/OOL/POO = 3.2/1.8/1.0; WH/WT = 1.2; LW/LM/HW = 1.9/1.0/1.1; PM/ST = 1.0; MM/LG = 0.7–0.9.

MALE. Unknown.

**Distribution.** Brazil.

**Biology.** From galls on an unidentified liana.

**Material examined.** Holotype female “BRAZIL, Sao Paulo, Araraquara, COHAB Vitorio DeSanti, Vegetacao de Cerradao, ex galha peciolar Liana, 13.vii.1997, M.T. Tavares”, in MZSP. Paratypes: 9 females with same data as holotype (5 females in MZSP; 4 females in BMNH).

**Etymology.** Named for the strongly sclerotized and stout body (Greek *pegos* = strong, solid; *soma* = body).

**Remarks.** One of the paratypes lacks the head.

### ***Klyngon petalon* sp. nov.**

(Figs 14, 30, 44, 66, 79, 97)

**Diagnosis.** Female flagellum with 1 funicular segment and a 3-segmented clava (Figs 79, 97); antennal scrobes as deep and wide grooves (Fig. 14); frontal suture absent (Fig. 14); occipital margin rounded with posterior ocelli situated away from margin (Fig. 30); midlobe of mesoscutum with 16 scattered setae (Fig. 44); scutellum with 5 pairs of setae (Fig. 44); forewing with submarginal vein with 7 setae, marginal vein flattened and wide, stigmal vein long and narrow, postmarginal vein very short, 0.1X as long as stigmal vein, speculum small, closed below (Fig. 66).

**Description.** FEMALE. Length 1.6 mm.

Scape yellowish-brown, pedicel and flagellum dark brown. Frons black and shiny. Vertex, mesoscutum and scutellum black and shiny with weak golden tinges. Coxae, femora, tibiae and fore tarsus dark brown, mid and hind tarsi with tarsomeres 1–3 yellowish-brown, 4 dark brown. Wings hyaline. Gastral tergites dark brown and shiny.

Flagellum with 1 small discoid anellus and 1 large anellus, 1 funicular segment and a 3-segmented clava (Figs 79, 97). Frons and vertex with strong, raised reticulation. Antennal scrobes deep and distinctly delimited, shiny; with an interscrobial prominence; frontal suture absent. Occipital margin rounded. Eyes with scattered short hairs.

Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 16 scattered setae; notauli indistinct. Scutellum 1.0X as long as wide; with strong, raised reticulation; with 5 pairs of setae. Propodeum hidden under inflated gaster. Forewing with 7 setae on dorsal surface of submarginal vein; apex of costal cell with setae on ventral surface; speculum small and closed below.

Petiole not visible, but presumably small. Gaster ovate; gastral tergites smooth and partly shrivelled.

*Ratios.* HE/MS/WM = 3.3/1.0/2.7; POL/OOL/POO = 3.1/1.2/1.0; WH/WT = 1.0; LW/LM/HW = 1.9/1.0/1.3; PM/ST = 0.1; MM/LG = 0.9.

MALE. Unknown.

**Distribution.** Mexico.

**Biology.** Unknown.

**Material examined.** Holotype female labeled “MEXICO, Guerrero, 32 miles southeast Petatlan, 10.vii.1985, J. Woolley & G. Zolnerowich, 85/047”, in TAMU.

**Etymology.** Named for the flattened and wide marginal vein (Greek *petalos* = broad, flat).

***Klyngon serjaniae* sp. nov.**

(Figs 17, 18, 32, 46, 49, 55, 68, 82, 83, 100, 101)

**Diagnosis.** Female flagellum with a 3-segmented clava (Figs 82, 100); malar space very narrow, in female 0.03X as wide as height of eye; antennal scrobes as narrow grooves (Figs 17, 18); frontal suture present and almost complete, not discernible close to eyes (Figs 17, 18); occipital margin sharp with posterior ocelli very close to margin (Fig. 32); midlobe of mesoscutum with 1 pair of setae (Fig. 46); scutellum with 1 pair of setae (Fig. 46); with a narrow slit between scutellum and axillae (Fig. 46); forewing predominantly infusate with outer margin hyaline, postmarginal vein short, 0.4X as long as stigmal vein, stigmal vein long and narrow with same width throughout, submarginal vein with 3 setae on dorsal surface (Fig. 68).

**Description.** FEMALE. Length 1.2–1.8 mm.

Scape yellowish-brown, pedicel and flagellum pale brown. Frons, vertex, mesoscutum and scutellum with metallic bluish-green. Coxae dark, metallic; fore femur dark brown, mid and hind femora yellowish-brown; tibiae and tarsi yellowish-brown. Forewing infusate with apical 1/5 hyaline. Gastral tergites dark brown, shiny.

Flagellum with 2 small discoid anelli, 2 funiculars and a 3-segmented clava (Figs 82, 100). Frons and vertex with strong, raised reticulation; frons with 2 rows of setae along eye margin. Antennal scrobes as narrow grooves. Frontal suture as a narrow groove, almost complete – terminating close to eyes. Occipital margin with a sharp edge. Eyes bare.

Mesoscutum and scutellum convex. Mesoscutum 0.5X as long as wide; with strong, raised reticulation; midlobe with 1 pair of setae; notauli indistinct. Scutellum 1.2X as long as wide; with strong, raised reticulation; with 1 pair of setae; with a narrow slit between scutellum and axillae. Propodeum with posterolateral part drawn out into a point; propodeal callus with 6 setae; without a median carina; entire propodeal surface strongly reticulate-rugose and also with irregular carinae. Forewing with 3 setae on dorsal surface of submarginal vein; costal cell bare; speculum open below.

Petiole not visible, but presumably small. Gaster circular; gastral tergites smooth.

**Ratios.** HE/MS/WM = 37.0/1.0/14.0; POL/OOL/POO = 50.7/8.0/1.0; WH/WT = 1.1; LW/LM/HW = 2.0/1.0/1.3; PM/ST = 0.4; MM/LG = 1.4–1.5.

MALE. Length 1.1–1.4 mm.

Head and thoracic dorsum golden-green. Colour otherwise as in female.

Flagellum with 1 small discoid anellus, 2 funiculars and a 3-segmented clava (Figs 83, 101). Head otherwise similar to that of female..

Mesosoma as in female.

**Ratios.** HE/MS/WM = 13.3/1.0/7.0; POL/OOL/POO = 20.0/4.0/1.0; MM/LG = 1.0–1.2.

**Distribution.** Costa Rica, Panama.

**Biology.** From galls on *Serjania mexicana* (Sapindaceae).

**Material examined.** Holotype female “PANAMA, Panama, Parque Natural Metropolitano, 6.iii.1998, E. Medianero, ex galls on *Serjania mexicana*“ in BMNH. Paratypes: 4 females 3 males with same label data as holotype (3 females 2 males in BMNH, 1 female 1 male in CH); 1 female “COSTA RICA, Puntarenas, Parque Nacional Corcovado, Estación Leona, 15.ii.2002, J. Azofeifa” (INBio).

**Etymology.** Named for the host plant on which the galls were collected.

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