

Caloapenesia and *Neoapenesia*, New Genera of the Family
Bethylidae (Hymenoptera, Chrysidoidea) from the
Oriental Region, with Proposals of Two
New Synonymies of Genera

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Abstract Two new genera of the subfamily Pristocerinae belonging to the family Bethylidae are described from the Oriental region: *Caloapenesia* gen. nov. on the basis of *C. thailandiana* sp. nov. and *C. philippinensis* sp. nov.; *Neoapenesia* gen. nov. based on *N. leytenis* sp. nov. Two bethylid genera are newly synonymized: *Psilobethylus* KIEFFER with *Dissomphalus* ASHMEAD and *Nausakosia* BENOIT with *Prosapenesia* KIEFFER.

Key words: Hymenoptera; Bethylidae; Pristocerinae; new genera; synonymies.

The subfamily Pristocerinae, belonging to the family Bethylidae, is represented by about 440 species in 21 genera and distributed from the tropics to the temperate regions of the world. This subfamily is characterized by the male developed metanotum with a middle fovea, and the reduced eyes and absence of wings and teglae in the females.

In the course of my taxonomic study of the subfamily Pristocerinae, I have examined many specimens including types and found two new genera and two synonymies of genera. In this paper I describe those two new genera and proposed two new synonymies.

Special terms used in this paper follow those in EVANS (1964) and the following measurements and their abbreviations used in this paper.

Head length (HL): maximum length of head excluding mandibles, in full face view.

Head width (HW): maximum width of head in full face view.

Width of frons (FW): minimum width between compound eyes.

Length of mesosoma (LM): maximum diagonally length of the mesosoma excluding the pronotal cervix, in lateral view.

Length of propodeum (LP): maximum length of propodeum including declivity in dorsal view.

Width of propodeal disc (WPD): maximum width of propodeal disc in dorsal view.

Forewing length (FWL): maximum length of forewing.

Total length (TL): total length of outstretched individual, from the mandibular apex to the metasomal apex.

Length of eye (LE): maximum length of compound eye as measured in lateral view.

Length of posterior ocello-line (POL): shortest distance between posterior ocelli.

Length of antero-posterior ocello-line (AOL): shortest distance between anterior ocellus and posterior ocellus.

Length of ocello-ocular line (OOL): shortest distance between posterior ocellus and compound eye.

Width of ocellar triangle (WOT): distance across and including posterior ocelli.

Diameter of anterior ocellus (DAO): maximum diameter of anterior ocellus.

Specimens were borrowed from the following institutions.

BMNH: British Museum of Natural History, London, U.K.

MCSN: Museo Civico di Storia Naturale, Genova, Italy

MRAC: Musee Royal de l'Afrique Centrale, Tervuren, Belgium

PMA: Provincial Museum of Alberta, Alberta, Canada

ZMB: Zoologisches Museum an der Humboldt-Universität zu Berlin, Germany

ZMC: Zoologisk Museum, Copenhagen, Denmark

Caloapenesia gen. nov.

Type species: *Caloapenesia thailandiana* gen. et sp. nov.

Gender: feminine.

Diagnosis (σ^7). Small wasps with the following combinations of characters.

1. Head with posterolateral corners in frontal view.
2. Mandibles broad triangular, with 5 strong teeth.
3. Palpal formula, 6: 3.
4. Clypeus projecting medially.
5. Antennae 13-segmented, filiform.
6. Eyes prominent, with long erect hairs.
7. Ocelli large.
8. Notauli and parapsidal furrows present.
9. Propodeal disc elongate.
10. Propodeal spiracles oval.
11. Median carina of propodeum absent.
12. Transverse carina of propodeum absent.
13. Hind tibial spurs unequal in length.
14. Metasoma sessile.

15. Pterostigma absent.
16. Costa obscure to absent.
17. Median vein longer than transverse median vein (Cu-a).
18. Discoidal vein (cubitus) arising well down on transverse median vein.
19. Subgenital plate simple, with a basal stalk.
20. Genitalia with parameres deeply divided into two separate arms.

Female. Unknown.

Etymology. *Calo*, Gr., beautiful + *Apenesia*.

Distribution. Southeast Asia (Thailand, the Philippines).

Remarks. The cladistic analysis indicated that *Caloapenesia*, *Apenesia*, *Afroceras*, *Pseudisobrachium*, *Protisobrachium*, *Dissomphalus* and *Trichiscus* form a monophyletic group which is characterized by the anteriorly well produced clypeus (TERAYAMA, in prep.). However, it is not resolved the exact relationships among them. Characters 9, 12 and 13 in this genus are autapomorphic and unique in the Pristocerinae.

Key to species of the genus *Caloapenesia* (Male)

1. Head elongate, distinctly longer than wide; anteromedian ocellus not reaching level of eyes in frontal view; propodeum elongate, $1.45\times$ as long as wide *C. thailandiana* sp. nov.
- Head as long as wide; anteromedian ocellus clearly reaching level of eyes in frontal view; propodeum subrectangular, $1.27\times$ as long as wide
..... *C. philippinensis* sp. nov.

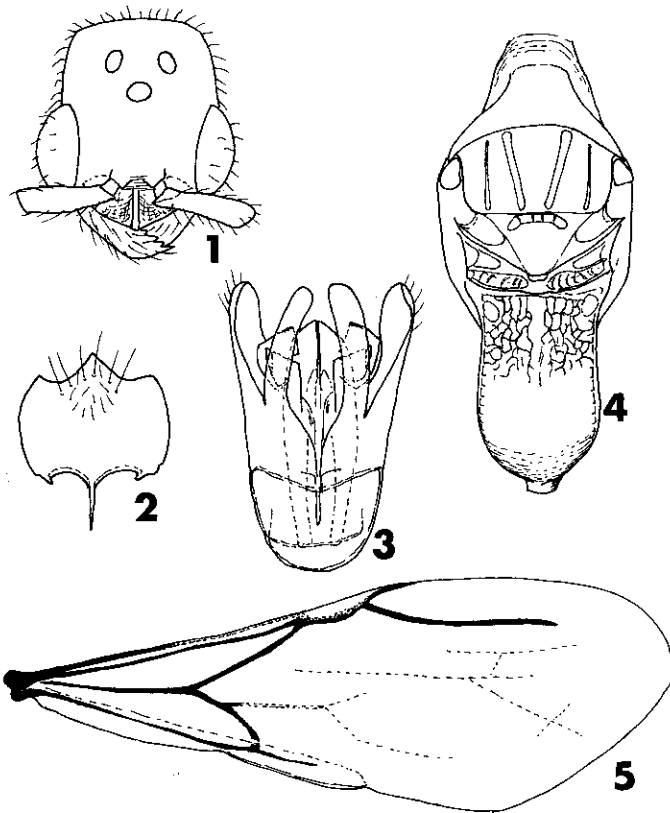
Caloapenesia thailandiana sp. nov.

(Figs. 1-5)

Holotype. Male. HL 1.10 mm; HW 1.05 mm; FW 0.65 mm; LM 2.15 mm; LP 0.80 mm; WPD 0.55 mm; FWL 3.5 mm; TL 5.0 mm.

Head and mesosoma black; metasoma reddish brown except anteromedian portion of 1st gastral tergite black; mandibles and antennae brown; legs yellowish brown.

Head $1.05\times$ as long as wide; frons and vertex smooth with dense distinct punctures. Mandibles with 5 strong teeth which decrease in size from apical to basal. Clypeus forming obtuse angle apicoventrally; median carina developed, strongly arched in profile. First 5 antennomeres in relative length; 19, 4, 8, 9, 8; scape long, $3.8\times$ as long as wide, with almost parallel sides; pedicel slightly wider than long; 3rd segment $1.9\times$ as long as wide; 4th segment $2.0\times$ as long as wide. Eyes 0.50 mm in length, with sparse hairs; hairs about 0.05 mm in length; FW $1.3\times$ LE. POL : AOL = 3 : 2; OOL $0.6\times$ WOT; DAO 0.15 mm.



Figs. 1-5. *Caloapenesia thailandiana* gen. et sp. nov. (♂). — 1, Head, frontal view; 2, subgenital plate; 3, genitalia, ventral view; 4, mesosoma, dorsal view; 5, forewing.

Pro- and mesonota smooth with dense distinct punctures; scutellar disc impunctate medially; notauli strong and linear, convergent posteriorly. Propodeum long, $1.45 \times$ as long as wide, with parallel sides; anterior $3/5$ of disc reticulate and posterior $2/5$ smooth and shining.

Metasoma sessile, smooth and subopaque. Genitalia as in Fig. 3.

Holotype. Male, Khao Yai National Park, Nakhon Ratchasima, Thailand, 700-800 m, 18-24.IV.1990, E. FULLER leg. The type is preserved in the collection of PMA.

Etymology. The specific name refers to the type locality.

Remarks. Known only from the type.

Caloapenesia philippinensis sp. nov.

(Figs. 6-10)

Holotype. Male. HL 0.90 mm; HW 0.90 mm; FM 0.53 mm; LM 1.75 mm;

LP 0.70 mm; WPD 0.55 mm; FWL 2.7 mm; TL 4.5 mm.

Head and mesosoma testaceous; metasoma yellow; antennae and legs yellow.

Head as long as wide, with almost straight occipital border in frontal view; frons and vertex microreticulate with shallow punctures. Mandibular teeth strong and triangular. Anterior border of clypeus with median angle. First 5 antennomeres in relative length 13, 5, 6, 6, 5.2; scape long, $4.0\times$ as long as wide; pedicel longer than wide; 3rd segment $2.2\times$ as long as wide. Eyes large and convex with sparse hairs; hairs about 0.06 mm in length; FW $1.0\times$ LE. POL : AOL = 5 : 4; OOL $0.64\times$ WOT; DAO 0.15 mm.

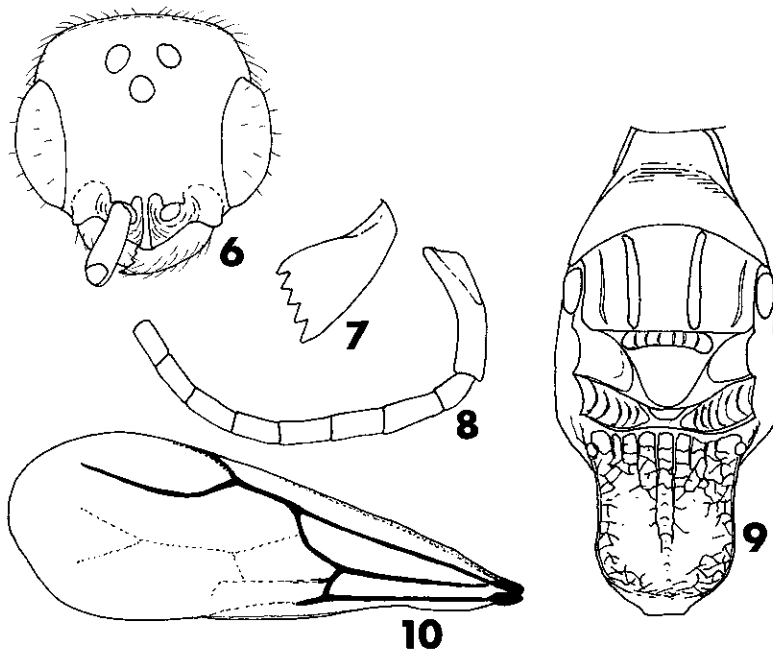
Pro- and mesonota microreticulate, with shallow punctures; notauli strong and linear, almost parallel. Propodeum $1.27\times$ as long as wide, with 4 pairs of discal carinae; basal triangular area reticulate.

Metasoma flat in profile, smooth and shining.

Holotype. Male, Tarawakan, north of Batu Batu, Tawi Tawi, Philippines, 30.VIII.1961, Noona Dan Exp. 61-62. The type is deposited in the collection of ZMC.

Etymology. The specific name refers to the type locality.

Remarks. Known only from the type which caught in a malaise trap.



Figs. 6-10. *Caloapenesia philippinensis* gen. et sp. nov. (σ^7). — 6, Head, frontal view; 7, mandible; 8, first nine antennomeres; 9, mesosoma, dorsal view; 10, forewing.

Neoapenesia gen. nov.

Type species: *Neoapenesia leytensis* gen. et sp. nov.

Gender: feminine.

Diagnosis (♂). A small wasp with the following combinations of characters.

1. Head round, posterolateral corners not forming an angle in frontal view.
2. Mandibles slender with 3 teeth.
3. Clypeus projecting medially.
4. Antennae 13-segmented, filiform but short.
5. Eyes large and slightly prominent, bare.
6. Occipital carina present.
7. Pronotal disc short, less than $0.5 \times$ mesoscutal width in dorsal view.
8. Notauli absent, parapsidal furrows present.
9. Propodeal spiracles round.
10. Propodeum with one transverse and lateral carinae.
11. Hind tibial spurs unequal in length.
12. Metasoma sessile.
13. Radius (R1) of forewings absent.
14. Basal vein reaching subcosta far based of pterostigma.
15. Discoidal vein (Cu) arising well down on transverse median vein (Cu-a).
16. Subgenital plate with 3 stalks, lateral borders strongly concave.
17. Genitalia with long parameres and long and simple aedeagus.

Female. Unknown.

Etymology. *Neo*, Gr., new + *Apnesia*.

Distribution. The Philippines.

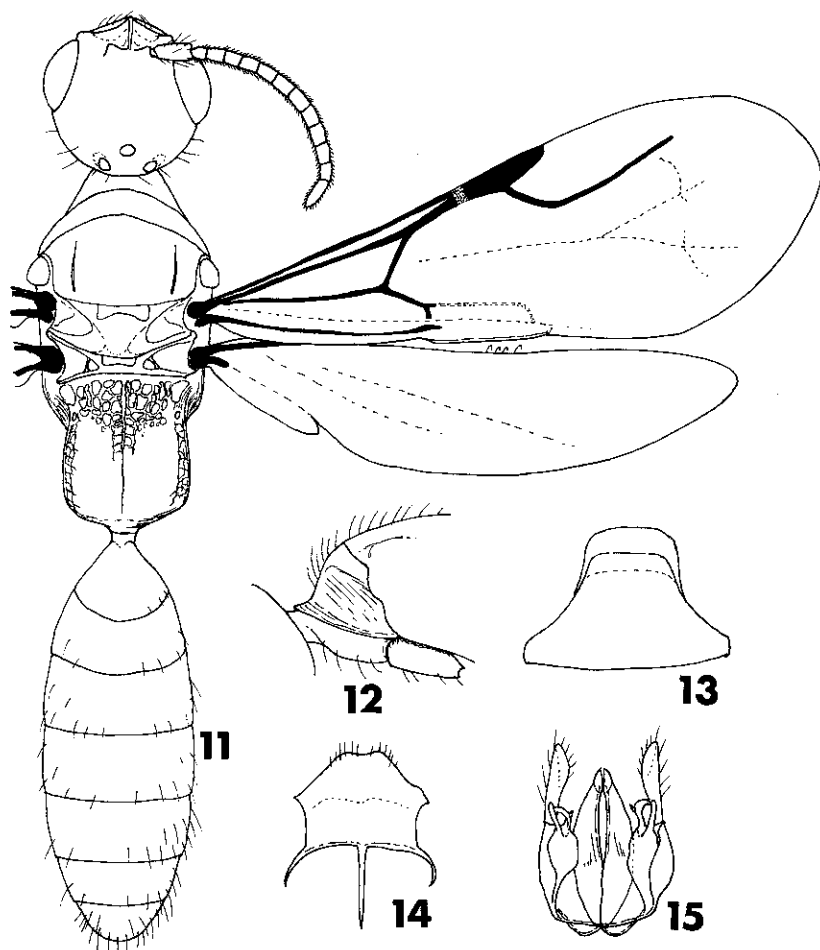
Remarks. This genus is mostly related to the genera *Protisobrachium* and *Pseudisobrachium* in the absence of notauli and the 3-stalked subgenital plate, but clearly distinguishable from the latter by the concave lateral borders of subgenital plate, short and rounded head, and extremely short pronotum.

Neoapenesia leytensis sp. nov.

(Figs. 11-15)

Holotype. Male. HL 0.70 mm; HW 0.73 mm; FW 0.48 mm; LM 1.25 mm; LPD 0.50 mm; WPD 0.50 mm; FWL 2.9 mm; TL 3.3 mm.

Head and mesosoma testaceous; mesoscutum with four large longitudinal



Figs. 11-15. *Neopapenesia leytensis* gen. et sp. nov. (σ^7). — 11, Whole body, dorsal view; 12, pronotum, lateral view; 13, ditto, anterodorsal view; 14, subgenital plate; 15, genitalia, ventral view.

brown spots; metasoma redish brown; mandibles and legs pale yellow; antennae brown.

Head as long as wide, smooth and shining, with round posterior border in frontal view. Mandibular teeth triangular; apical tooth longest. First 5 antennomeres in relative length 9, 3, 3, 3.8, 3.8; scape relatively short; pedicel $1.5 \times$ as long as wide, with parallel sides; 3rd segment $1.5 \times$ as long as wide, widest to apex; 4th and 5th segments each slightly longer than wide. Eyes 0.35 mm in length; FW $1.37 \times$ LE. Ocelli forming compact triangle; OOL $1.43 \times$ WOT; DAO 0.07 mm.

Pronotal disc ca. $3.1 \times$ as wide as long, smooth and shining. Dorsum of

mesoscutum broad, smooth and shining, with anterior border convex. Scutellar disc smooth and shining, with anterior transverse groove large and deep as in Fig. 11. Propodeal disc as long as wide, with weakly convex sides and rounded posterior border in dorsal view; transvers carina complete but weak; median carina almost reaching transverse carina; basal triangular area reticulate; posterior area smooth and shining.

Metasoma sessile, relatively flat in profile, smooth and shining.

Subgenital plate as shown in Fig. 14; genitalia as in Fig. 15.

Holotype. Male, Baybay, Leyte, Philippines, 6.II.1983, C. H. STARR & M. TUMILAP leg. The type is deposited in the collection of PMA.

Etymology. The specific name refers to the type locality.

Remarks. Known only from the type.

Genus *Dissomphalus* ASHMEAD

Dissomphalus ASHMEAD, 1893, Bull. U.S. nat. Mus., 45: 41-42. Type species: *Dissomphalus xanthopus* ASHMEAD, 1893.

Ecitopria WASMANN, 1899, Zoologica, 1: 55, 56, 127. Type species: *Ecitopria crassicornis* WASMANN, 1899. [Synonymized by EVANS, 1955.]

Thaumatepyris KIEFFER, 1910, Ann. ent. Soc. Fr. 79: 47. Type species: *Thaumatepyris punctatus* KIEFFER, 1910. [Synonymized by EVANS, 1964.]

Glenobethylus KIEFFER, 1910, Ann. ent. Soc. Fr., 79: 50. Type species: *Glenobethylus montanus* KIEFFER, 1910. [Synonymized by EVANS, 1964.]

Parecitopria OGLOBLIN, 1930, Rev. Soc. ent. Argentina, 3: 15. Type species: *Parecitopria azarai* OGLOBLIN, 1930. [Synonymized by EVANS, 1964.]

Psilobethylus KIEFFER, 1906, In E. ANDRÉ (ed.), Species des Hyménoptères d'Europe et d'Algérie, 9: 461-462. Type species: *Psilobethylus luteus* KIEFFER, 1906. Syn. nov.

The genus *Dissomphalus* is characterized by the very small mesopleura which barely produced laterally, the parallel-sided propodeum in dorsal view, and the petiolate metasoma in the females.

I have examined the type species of the genus *Psilobethylus*, *P. luteus* KIEFFER, 1906, from Italy, and confirmed that no significant differences was found between this and genus *Dissomphalus*.

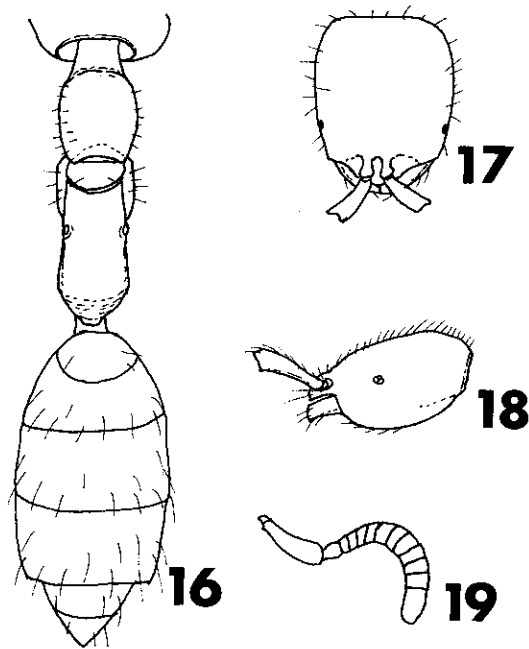
The following two species are removed from the genus *Psilobethylus*:

Dissomphalus luteus (KIEFFER, 1906) comb. nov.

(Figs. 16-19)

Psilobethylus luteus KIEFFER, 1906, In E. ANDRÉ (ed.), Species des Hyménoptères d'Europe et d'Algérie, 9: 462-463.

Holotype: Female, Vallolucano (Italy), V. 1903, SOLARI, [MCSN].



Figs. 16–19. *Dissomphalus luteus* (KIEFFER) comb. nov., ♀ (holotype). — 16, Whole body, dorsal view; 17, head, frontal view; 18, ditto, lateral view; 19, antenna.

Dissomphalus atriceps (KIEFFER, 1910) comb. nov.

Psilobethylus atriceps KIEFFER, 1910, Ann. ent. Soc. Fr., 79: 42.

Remarks. The present location of the type is unknown, and presumably lost. I provisionally transferred this to the genus *Dissomphalus*.

Genus *Prosapenesia* KIEFFER

Prosapenesia KIEFFER, 1910, Ann. ent. Soc. Fr., 79: 42–43. Type species: *Prosapenesia lacteipennis* KIEFFER, 1910.

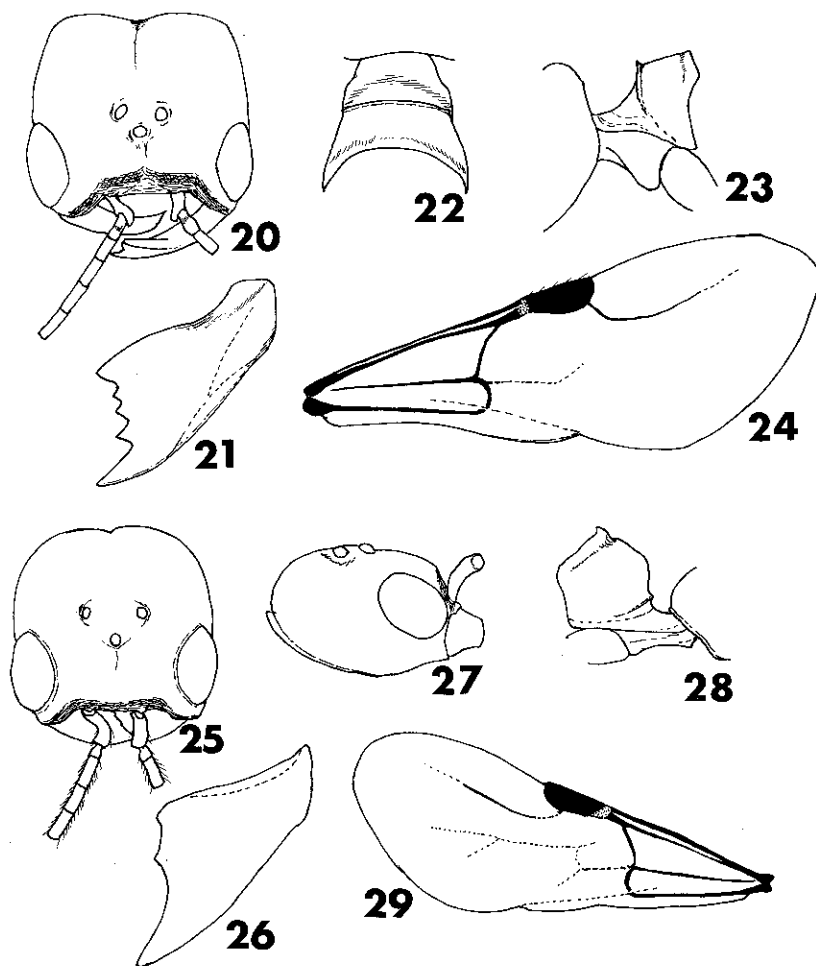
Neusakosia BENOIT, 1981, Rev. zool. Afr., 95: 839–840. Type species: *Neusakosia schoutedeni* BENOIT, 1981. Syn. nov.

I have directly compared the type species of the genus *Prosapenesia*, *P. lacteipennis* KIEFFER, 1910, from Southwest Africa (ZMB collection) with the type species of the genus *Neusakosia*, *N. schoutedeni* BENOIT, 1981, from Southeast Africa (MRAC collection).

The genera *Prosapenesia* and *Neusakosia* are mostly relating each other by having the following characters: anterior portion of head obliquely truncated; pterostigma remarkably large and broad; radius of forewings absent; radial vein

thin and weak; middle tibiae with strong spines at outer margin; posterior border of subgenital plate with a process.

Differences between them are 1) number of mandibular teeth (5 in *Prosapenesia* (Fig. 21), 3 or 4 in *Neusakosia* (Fig. 26)); 2) shape of pronotal disc (anterior border carinate in *Prosapenesia* (Figs. 22 & 23); not carinate in *Neusakosia* (Fig. 28)) (BENOIT, 1981). However, these are only species or species group level differences in comparison with the other generic characters in the Pristocerinae. So I regard *Neusakosia* as a junior synonym with *Prosapenesia*.



Figs. 20-29. 20-24, *Prosapenesia lacteipennis* KIEFFER, ♂ (holotype); 25-29, *Prosapenesia schoutedeni* (BENOIT) comb. nov., ♂ (holotype). — 20, 25, Head, frontal view; 27, ditto, lateral view; 21, 26, mandible; 22, pronotum, dorsal view; 23, 28, pronotum, lateral view; 24, 29, forewing.

Original description of the genus *Usakosia* by KIEFFER (1914) suggests that this genus closely resembles the genus *Prosapenesia*. However, since the type material of the type species of *Usakosia* was lost during the World War I (BENOIT, 1981; HUDDLESTON, pers. comm.), I have no measures to conclude about the status of this genus.

The following two species are removed from the genus *Neusakosia*:

***Prosapenesia princeps* (BENOIT, 1981) comb. nov.**

Neusakosia princeps BENOIT, 1981, Rev. zool. Afr., 95: 840, 842.

Holotype: Male, Usakos, Southwest Africa, [BMNH].

***Prosapenesia schoutedeni* (BENOIT, 1981) comb. nov.**

(Figs. 25-29)

Neusakosia schoutedeni BENOIT, 1981, Rev. zool. Afr., 95: 840-841.

Holotype: Male, Okahandja, D.S.W. Africa, Coll. SCHOUTEDEN, [MRAC].

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