

**TAXONOMIC STUDIES ON *PSILOCERA* FROM INDIA  
WITH DESCRIPTIONS OF TWO NEW SPECIES  
(HYMENOPTERA: CHALCIDOIDEA: PTEROMALIDAE)**

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**ABSTRACT.** Two new species of *Psilocera* Walker, viz., *P. scutellata* and *P. heydoni* are described from India. *Acanthometopon* Ashmead is synonymised under *Psilocera*. Diagnostic characters and a key to the Indian species of *Psilocera* are given.

Key words: Hymenoptera, Pteromalidae, *Psilocera*, new species. Oriental Region, India.

### Introduction

*Psilocera* was described by Walker (1833) from Britain with *P. obscura* Walker as the type species. It includes about 25 species described from different parts of the world (Noyes, 1998). From the Indian subcontinent it is known by three species, viz., *P. ghanii* Subba Rao from Pakistan, and *P. vinayaki* Sureshan & Narendran and *P. clavata* Sureshan & Narendran from India (Subba Rao, 1981; Sureshan & Narendran, 1995).

The genus *Acanthometopon* is so far known only by the type species, *A. clavicorne* Ashmead from Brazil, Sri Lanka, Laos and China (Bouček, 1988). *Acanthometopon* is very close to *Psilocera* except for the hump on the scutellum in the former genus. Bouček (1988) commented that *Acanthometopon* should probably constitute a subgenus under *Psilocera*. Bouček & Heydon (1997) placed *Acanthometopon* under *Psilocera* though the synonymy was not formalised. I collected two undescribed species of *Psilocera* with a hump on the scutellum. I also examined the type of *A. clavicorne* Ashmead in the USNM.

Based on the study of *A. clavicorne* Ashmead and the two new species of *Psilocera* with a hump on scutellum, I hereby synonymise *Acanthometopon* under *Psilocera* and describe *P. scutellata* and *P. heydoni* as new species from India. *P. clavicornis* (Ashmead) is redescribed and a key to the Indian species of *Psilocera* is provided.

The type specimens are deposited in Zoological Survey of India, Western Ghat Field Research Station, Calicut.

The morphological terminology used in this paper follows that of Bouček (1988) and Bouček & Rasplus (1991). The following abbreviations are used in the text: F<sub>1</sub>-F<sub>6</sub> - funicular segments 1 to 6; MV - marginal vein; OOL - ocello-ocular distance; PMV - postmarginal vein; POL - post-ocellar distance; SMV - submarginal vein; STV - stigmal vein; USNM - United States National Museum, Washington, DC, USA

### *Psilocera* Walker

*Psilocera* Walker, 1833: 373. Type species: *P. obscura* Walker, by monotypy.

*Acanthometopon* Ashmead, 1904: 314, 315, 498. Type species: *A. clavicorne* Ashmead, by monotypy and original designation. **Syn. nov.**

Further generic synonyms are: *Metopon* Walker, 1834; *Eupsilocera* Westwood, 1838; *Metopon* Agassiz, 1846; *Dichalysis* Forster, 1856; *Lophocomodia* Ashmead, 1888; *Polycystoides* Girault, 1913; and *Parapolycystus* Girault & Dodd, 1915.

The genus belongs to the subfamily Pteromalinae. The diagnostic characters are: Head distinctly wider than thorax, moderately reticulate except on a narrow elevated area between the clypeus and toruli faintly reticulate and shiny. Vertex narrow. Occiput abruptly sloping, distinctly concave, immargined. Clypeal area striate, lower margin with two triangular teeth. Gena with a hollow above the base of mandible, posteriorly rounded. Antennae inserted below middle of face, in female flagellum with 2 or 3 anelli, strongly clavate; clava with a large area of micropilosity, sutures oblique. Male flagellum very long, filiform with 6-8 peduncles between segments bearing whorls of setae.

Thorax strongly arched in profile, reticulate punctate. Pronotum less wide than mesoscutum; collar anteriorly carinate, mainly in the middle. Mesoscutum convex; notauli incomplete, reaching little beyond middle. Scuto-scutellar suture arched. Scutellum highly convex, some times with a conical hump bearing a fingernail-like tip; frenal area clearly marked off. Propodeum finely reticulate, constricted into a nucha, with median carina crossed by costula; spiracle moderate, elongate; postspiracular sulcus distinct; supracoxal flange narrow; callus with moderate thin pilosity. Prepectus shorter than tegula, reticulate. Upper mesepimeron and subalar area shiny. Fore wing moderately pilose; marginal fringe present. Legs slender, hind tibia with one spur.

Gaster short, acuminate; petiole smooth, hardly longer than broad; hind margin of basal tergites incised in the middle. Male petiole sometimes a little longer than wide.

*Psilocera* closely resembles *Acanthometopon* except for the conical hump on scutellum bearing a fingernail-like tip in the latter. I have examined the type of *A. clavicorne* Ashmead in which the conical hump of scutellum is pronounced and the fingernail tip sharp and elongate (Fig. 1). However, this character is less pronounced in *P. scutellata* and *P. heydoni* which show an intermediate nature (Figs. 4, 7). Therefore, the identity of *Acanthometopon* cannot be justified on this character alone.

#### Key to the Indian species of *Psilocera*, females

1. Scutellum with a conical hump bearing a fingernail-like tip (Figs. 4, 5, 7, 8).....2
- Scutellum normal, without any conical hump (Figs. 10, 12).....3
2. Hump of scutellum short (Figs. 7, 8); median length of scutellum up to tip of hump 0.73x mesoscutum length; hind tibial spur long, almost half

- as long as basitarsus; fore wing with PMV 0.72x as long as MV; eye short, height 1.6x width; gaster dorsally with metallic blue reflection; antenna with scape, pedicel and anelli brown; legs with femora brown.....*P. heydoni*, sp. nov.
- Hump of scutellum long (Figs. 4, 5), median length of scutellum up to tip of hump 0.82x mesoscutum length; hind tibial spur short, 0.3x as long as basitarsus; PMV 0.9x as long as MV; eyes longer, height 1.9x width; gaster without metallic blue reflection; scape, pedicel and anelli testaceous; femora testaceous.....*P. scutellata*, sp. nov.
3. Antennae with scape never reaching median ocellus; flagellum strongly clavate; F<sub>1</sub> short, anelliform (Fig. 11); antennae except club testaceous.....*P. clavata* Sureshan & Narendran
- Scape hardly reaching lower margin of median ocellus; flagellum less clavate; F<sub>1</sub> not anelliform (Fig. 13); antenna except scape, pedicel, anelli and F<sub>1</sub> blackish brown.....*P. vinayaki* Sureshan & Narendran

### 1. *Psilocera clavicornis* (Ashmead) (Figs. 1-3, 14)

*Acanthometopon clavicorne* Ashmead, 1904: 498. Brazil: Corumba.

The species is redescribed here based on the study of the holotype.

*Female*: Length 4.0 mm. Head and thorax black; gaster brownish black with metallic blue reflection dorsally and brown ventrally. Eyes cupreous. Antennae with scape, pedicel, anelli, F<sub>1</sub> and F<sub>2</sub> testaceous; remainder brown with club darker. Coxae concolorous with thorax; fore femora dark brown except tips and remaining parts of fore legs yellow; remaining parts of legs testaceous with tips of tarsi brown. Tegulae brownish black; fore wing membrane hyaline; veins brown.

Head moderately reticulate punctate; reticulation finer and closer on lower face, gena and vertex; pubescence moderately dense. In dorsal view head width 2.1x length; temple length 0.6x eye length; POL 1.4x OOL; in front view head width 1.3x height; malar space length 0.4x eye height; eyes separated 1.1x by their height; eye height 1.6x width. Scape just reaching median ocellus, length 0.7x eye height; length of pedicel plus flagellum 0.8x head width; anelli equal; F<sub>1</sub> 1.2x as long as broad; F<sub>2</sub> as long as F<sub>1</sub>; F<sub>3</sub> slightly shorter than F<sub>2</sub>; F<sub>4</sub> shorter than F<sub>3</sub>; clava as long as 4.5x the preceding segments combined.

Thorax (Figs. 1, 2) with pronotal collar finely reticulate, 0.8x as wide as mesoscutum. Mesoscutum reticulate punctate with sparse white hairs and long brown bristles, width 2.2x length. Scutellum similarly sculptured as mesoscutum, almost shiny on tip of scutellar hump, with long brown bristles; scutellar hump long with fingernail sharp and highly projecting; median length of scutellum up to tip of hump 0.93x mesoscutum length. Propodeum medially 0.8x as long as mesoscutum; costula and median carina sharp; spiracles long, oval; callus with dense white hairs. Prepectus finely reticulate. Metapleuron uniformly moderate reticulate. Fore wing (Fig. 14) length

2.6x width; basal cell closed below, hairy; speculum open below. Relative lengths: SMV 46, MV 31, PMV 24, STV 9.

Gaster collapsing, 0.8x as long as the rest of body and 1.9x as long as hind tibia.

*Specimens examined*: BRAZIL: Corumba, 1 ♀ (holotype), Coll. H.H. Smith (USNM. Type No. 60551).

## 2. *Psilocera scutellata*, sp. nov. (Figs. 4-6, 15-16)

*Female*: Length 2.5-3.6 mm (holotype 3.3 mm). Head and thorax black; gaster dark brown. Antennae with scape, pedicel and anelli testaceous, remainder black. Coxae concolorous with thorax, remaining parts of legs testaceous with tips of tarsi brown. Tegulae pale brown; fore wing membrane hyaline; veins brown.

Head moderately reticulate, reticulation finer and closer on lower face, gena and vertex; pubescence moderately dense. In dorsal view head width 2.1x length; POL 1.3x OOL; temple length 0.8x eye length; in front view head width 1.3x height; eyes separated 1.5x by their height; eye height 1.9x width; malar sulcus finely indicated. Scrobe deep, reaching median ocellus. Antennal scape reaching median ocellus, length 0.74x eye height; length of pedicel plus flagellum 0.9x head width; pedicel length 2x width; second anelli little longer than first;  $F_1$  1.6x as long as broad and little shorter than  $F_2$ ;  $F_3$  as long as  $F_2$ ;  $F_4$  little shorter than  $F_3$  and as long as  $F_5$ ;  $F_6$  shortest; clava slightly longer than four preceding segments combined.

Thorax (Figs. 4, 5) with pronotum finely reticulate, 0.8x as wide as mesoscutum. Mesoscutum reticulate punctate, width 2.1x length, with sparse long white hairs and brown bristles. Scutellum with a conical hump bearing a fingernail like-tip, not highly projecting, similarly sculptured and pubescent as on mesoscutum; median length of scutellum up to tip of hump 0.82x mesoscutum. Propodeum medially 0.7x as long as mesoscutum; nucha more coarsely reticulate. Prepectus finely reticulate. Metapleuron moderately reticulate, anterior half finely reticulate. Hind tibial spur short, length 0.3x basitarsus. Fore wing (Fig. 15) length 2.5x width, basal hair line indicated; basal cell not closed below; PMV 0.9x MV. Relative lengths: SMV 41, MV 23, PMV 20, STV 10.

Gaster collapsing, ovate, length 1.8x hind tibia length and 0.9x as long as the rest of body.

*Male*: Length 1.7-2.4 mm. Resembles female but differs in the nature of antenna (Fig. 16) with two short anelli and pedunculate funicular segments each bearing two whorls of long hairs; gaster highly collapsing.

*Holotype*: ♀, INDIA: Kerala: Malappuram District: Calicut University Campus, 10.ix.1986, Coll. P.M. Sureshan. In ZSI WGRS, Calicut.

*Paratypes*: 23 ♀, 11 ♂, Same data as holotype except vi-x.1986; 1 ♂, Kerala: Calicut, 8.viii.1985, Coll. T.C. Narendran; 1 ♂, Kerala: Parambikulam Wild Life Sanctuary, 17.iii.1996, Coll. P.M. Sureshan. In ZSI WGRS, Calicut.

*Etymology:* The name of the species pertains to the characteristic nature of the scutellum.

*Remarks:* This species resembles *P. heydoni* but differs from the latter as given in the key.

### 3. *Psilocera heydoni*, sp. nov. (Figs. 7-9, 17-18)

*Female:* Length 2.7-2.9 mm (holotype 2.7 mm). Head and thorax black; gaster blackish brown, dorsally with metallic blue reflection, ventrally brown. Antennae with scape, pedicel and anelli brown, remainder black. Coxae concolorous with thorax, femora dark brown; remaining parts of legs yellowish brown with tips of tarsi brown. Tegulae brown; fore wing membrane hyaline; veins brown.

Head similar to that of *P. scutellata* in shape, sculpture and pubescence. In dorsal view head width 2.2x length; POL 1.4x OOL; temple length 0.6x eye length; in front view head width 1.4x height; malar space length 0.3x eye height; eyes separated 1.3x by their height; eye height 1.6x width; malar sulcus finely indicated: Antennae (Fig. 9) with scape just reaching median ocellus, length 0.7x eye height; length of pedicel plus flagellum 0.8x head width; antennae otherwise similar to *P. scutellata* but flagellum less wider.

Thorax (Fig. 7, 8) similar to *P. scutellata* but differs as follows: hump of scutellum shorter; median length of scutellum up to tip of hump 0.73x mesoscutum length; hind tibial spur long, almost half as long as basitarsus. Fore wing (Fig. 17) length 2.3x width, PMV 0.72x MV. Relative lengths: SMV 38, MV 22, PMV 16, STV 7.

Gaster collapsing, length 1.7x hind tibia length and 0.8x the rest of body.

*Male:* Length 1.6 mm. Resembles female but differs in the nature of antenna (Fig. 18), gaster highly collapsing and all legs including coxae uniformly brown.

*Holotype:* ♀, INDIA: Karnataka: Coorg District: Nemanakolly Reserve Forest, 7-iii-1994, Coll. P.M. Sureshan. In ZSI WGRS, Calicut.

*Paratypes:* 1♀, Same data as holotype; 1♂, Karnataka: Coorg District: Otekolly Reserve Forest, 8-iii-1994, Coll. P.M. Sureshan. In ZSI WGRS, Calicut.

*Etymology:* The species is named in honour of Dr. Steven L. Heydon, University of California, Davis.

*Remarks:* This species closely resembles *P. clavicornis* (Ashmead) but differs from it in having a short scutellar hump, fore wing with basal cell not hairy and closed below, antennae with scape, pedicel and anelli brown and smaller size 2.7-2.9 mm. (in *P. clavicornis*, the scutellar hump is long with a fingernail like-tip distinctly projecting; fore wing with basal cell closed below and hairy; antennae with scape, pedicel, anelli, F<sub>1</sub> and F<sub>2</sub> testaceous and size larger, 4.0 mm).

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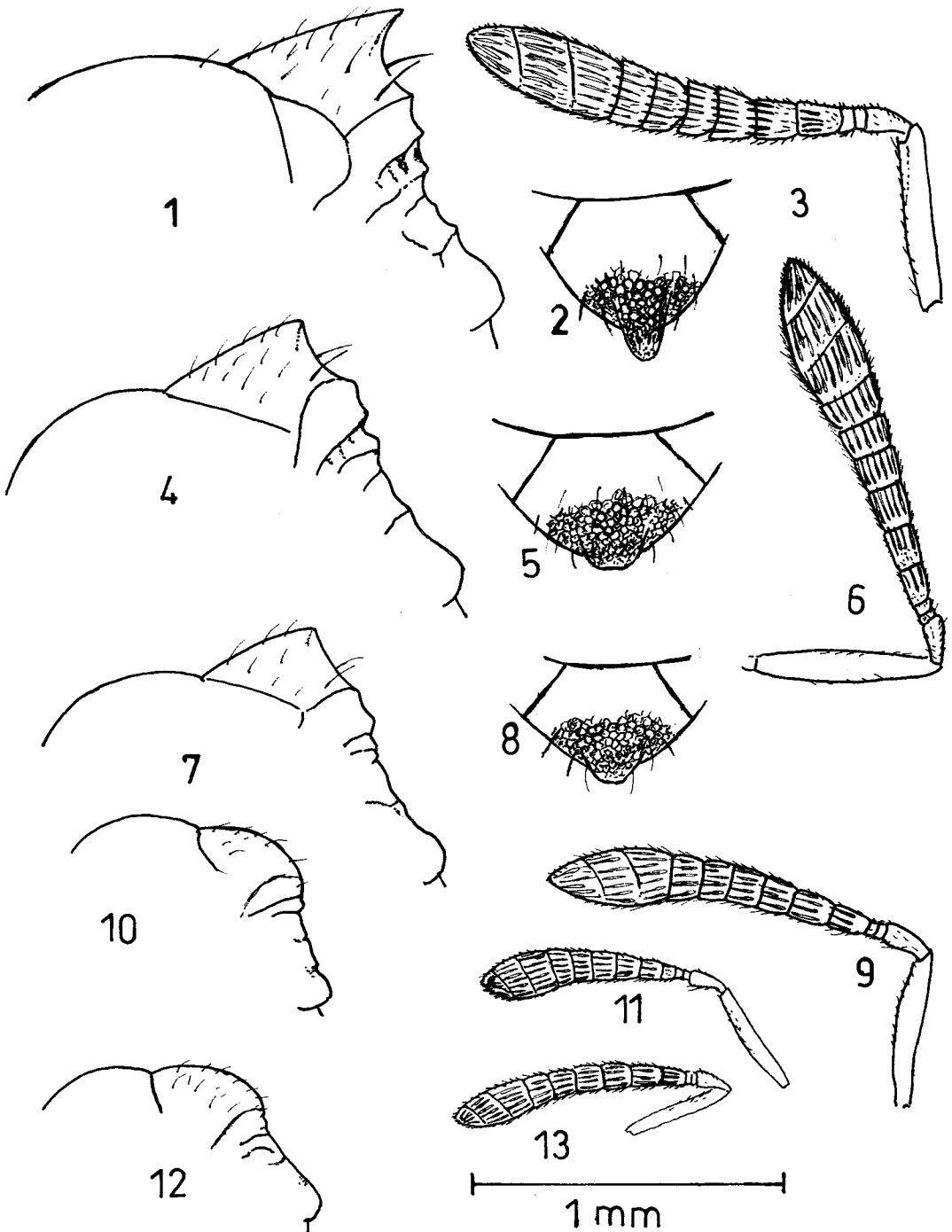
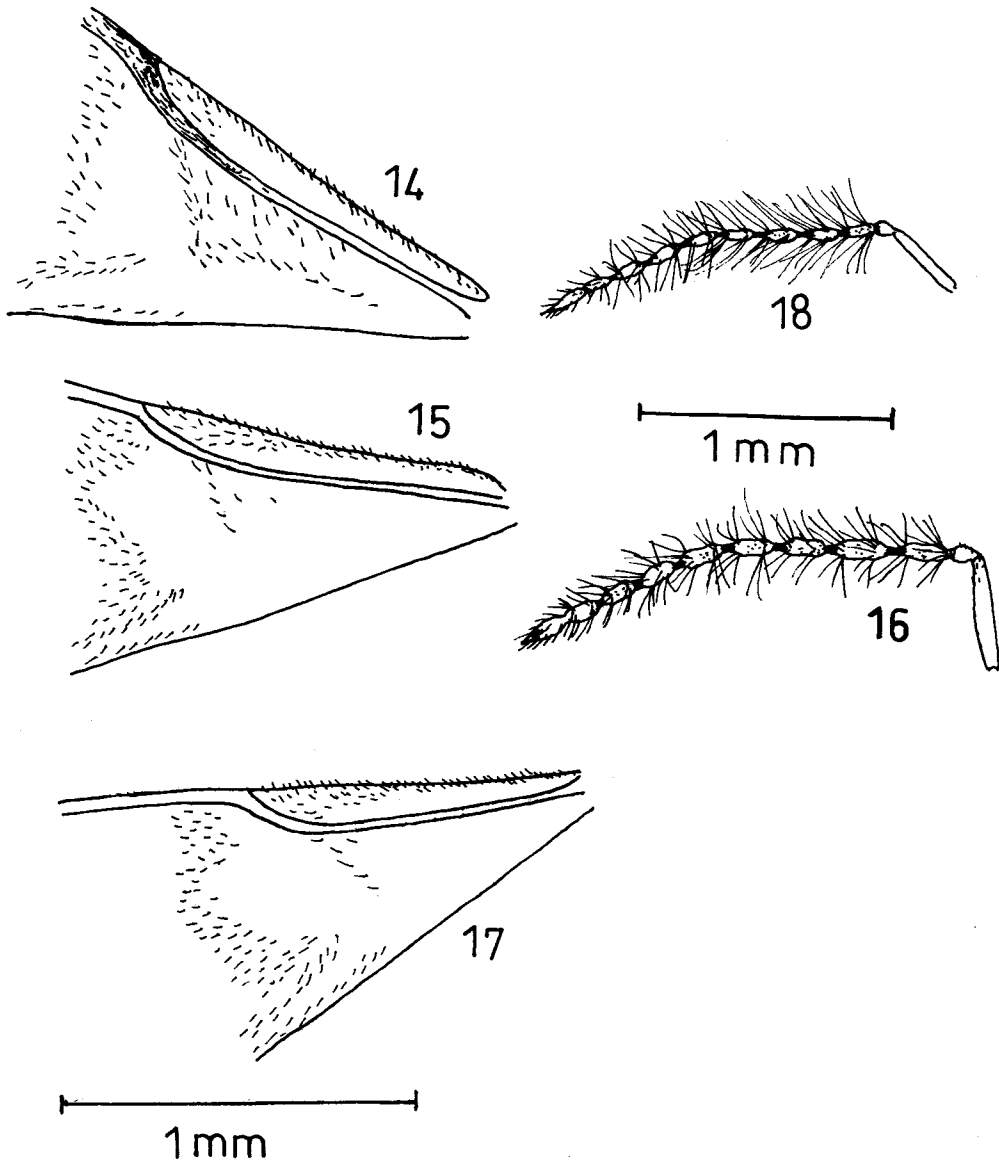


Fig. 1-13. 1-3, *Psilocera clavicornis* (Ashmead) ♀: 1, profile view of thorax; 2, hump of scutellum in dorsal view; 3, antenna. 4-6, *P. scutellata*, sp. nov., ♀: 4, profile view of thorax; 5, hump of scutellum in dorsal view; 6, antenna. 7-9, *Psilocera heydoni*, sp. nov., ♀: 7, profile view of thorax; 8, hump of scutellum; 9, antenna. 10-11, *Psilocera clavata* Sureshan & Narendran, ♀: 10, profile view of thorax; 11, antenna. 12-13, *Psilocera vinayaki* Sureshan & Narendran, ♀: 12, profile view of thorax; 13, antenna.



Figs. 14-18. 14, *Psilocera clavicornis* (Ashmead), basal part of fore wing; 15-16, *Psilocera scutellata*, sp. nov.: 15, basal part of fore wing; 16, male antenna. 17-18, *Psilocera heydoni*, sp. nov.: 17, basal part of fore wing; 18, male antenna.