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The Genus *Himopolynema* (Hymenoptera: Mymaridae) in Taiwan and Taxonomic Comments on Some Extralimital Species 【Research report】

臺灣產鈍毛繆小蜂屬 (*Himopolynema*) (膜翅目：繆小蜂科) 之綜述【研究報告】

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Received: 2015/09/15 Accepted: 2015/11/02 Available online: 2015/12/01

Abstract

Reviewed are the seven described and one undescribed species of the fairyfly (Hymenoptera: Mymaridae) genus *Himopolynema* Taguchi in Taiwan. Neotypes are designated for *H. hishimonus* Taguchi, *H. parviscutum* Taguchi, and *H. taiwanum* Taguchi, all of which are known from Taiwan, and also for *H. malayanum* Taguchi from Malaysia; these species are redescribed and illustrated. The previously unknown females of *H. parviscutum* and *H. taiwanum* are described as is the male of *H. hishimonus* (previously known but not described). Four new species, *H. berezovski* sp. n., *H. heraty* sp. n., *H. kslini* sp. n. and *H. tarii* sp. n., are described from Taiwan. Taxonomic comments are made on some other, extralimital, species of *Himopolynema*. Separate identification keys to females of *Himopolynema* are provided for the fauna of Taiwan and to the described, recognizable species of the genus in the world. Some members of *Himopolynema* are known to be egg parasitoids of Cicadellidae and Machaerotidae (Hemiptera).

摘要

本文綜述臺灣產鈍毛繆小蜂屬 (*Himopolynema*) (膜翅目：繆小蜂科) 7 已描述種及1 未描述種，包括指定 *H. hishimonus* Taguchi、*H. parviscutum* Taguchi、*H. taiwanum* Taguchi 及馬來西亞的 *H. malayanum* Taguchi 的新模式標本及重新描述這些新模式標本及附圖。描述以前未知的 *H. parviscutum* 和 *H. taiwanum* 的雌蟲和 *H. hishimonus* 的雄蟲及4 臺灣新種：*H. berezovski* sp. n.、*H. heraty* sp. n.、*H. kslini* sp. n. 及 *H. tarii* sp. n.；並針對某些外地的 *Himopolynema* 種類給予分類評論；分別製作 *Himopolynema* 的臺灣產及世界已描述確定種類雌蟲的檢索表。已知 *Himopolynema* 的部分種類為半翅目葉蟬科 (Cicadellidae) 和巢沫蟬科 (Machaerotidae) 的卵寄生蜂。

Key words: Mymaridae, fairyfly, *Himopolynema*, taxonomy, Taiwan, egg parasitoid

關鍵詞: 繆小蜂科、繆小蜂、鈍毛繆小蜂屬、分類學、臺灣、卵寄生蜂

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The Genus *Himopolynema* (Hymenoptera: Mymaridae) in Taiwan and Taxonomic Comments on Some Extralimital Species

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ABSTRACT

Reviewed are the seven described and one undescribed species of the fairyfly (Hymenoptera: Mymaridae) genus *Himopolynema* Taguchi in Taiwan. Neotypes are designated for *H. hishimonus* Taguchi, *H. parviscutum* Taguchi, and *H. taiwanum* Taguchi, all of which are known from Taiwan, and also for *H. malayanum* Taguchi from Malaysia; these species are redescribed and illustrated. The previously unknown females of *H. parviscutum* and *H. taiwanum* are described as is the male of *H. hishimonus* (previously known but not described). Four new species, *H. berezovskiyyi* sp. n., *H. heratyi* sp. n., *H. kslini* sp. n. and *H. tarii* sp. n., are described from Taiwan. Taxonomic comments are made on some other, extralimital, species of *Himopolynema*. Separate identification keys to females of *Himopolynema* are provided for the fauna of Taiwan and to the described, recognizable species of the genus in the world. Some members of *Himopolynema* are known to be egg parasitoids of Cicadellidae and Machaerotidae (Hemiptera).

Key words: Mymaridae, fairyfly, *Himopolynema*, taxonomy, Taiwan, egg parasitoid

Introduction

The fairyfly genus *Himopolynema* Taguchi (Hymenoptera: Mymaridae), which is known only from the Old World, has the majority of its described and undescribed species in the Oriental region where it is quite speciose; a few species also occur in the Australasian and eastern Palaearctic regions. It appears to be particularly common in Taiwan, based on my study of its specimens in the insect collection of the

Taiwan Agricultural Research Institute (TARI) in Wufeng, Taichung City. Most of these were previously misidentified as members of another mymarid genus, *Chaetomymar* Ogloblin, and a few as *Acanthomymar* Subba Rao; both are now synonyms of *Palaeoneura* Waterhouse (Triapitsyn and Berezovskiyy, 2007).

Taguchi (1977) described two species from Taiwan, *H. parviscutum* Taguchi and *H. taiwanum* Taguchi, and also recorded *H. hishimonus* Taguchi from there, whose

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holotype was from Japan and paratypes from both Japan and Taiwan (one male from Taipei City). Unfortunately, his entire collection of Mymaridae is lost (Kenzou Yamagishi, personal communication), including the primary types of these two species from Taiwan from the collection of Entomological Laboratory, College of Agriculture, Ehime University, Matsuyama, Japan. Because of their unavailability, the recent publications on the genus (e.g., Hayat and Anis, 1999; Triapitsyn and Berezovskiy, 2002; Hayat *et al.*, 2003, 2008) had to rely on rather good descriptions of these species by Taguchi (1977), which, however, were still not enough for their proper recognition. Thus, matching them with other conspecific specimens from Taiwan has been a priority for any further comprehensive taxonomic studies on *Himopolynema*. This contribution fills that important gap in our knowledge of the genus.

Materials and Methods

Specimens of *Himopolynema* from Taiwan were identified as belonging to this genus during my visit of TARI in August 2013 and then borrowed for further study. Altogether, 219 slides were examined from the TARI collection, each containing a single specimen of *Himopolynema*, and also a few specimens from other collections outside of Taiwan. All but a few of them were captured by Kwei-Shui Lin, a distinguished collector of the Taiwanese insects, particularly of Chalcidoidea and Ichneumonoidea. Unfortunately, almost all of the fairyflies (except for a few air-dried specimens that were point-mounted; these were slide-mounted for this review) were slide-mounted rather poorly, without prior clearing, as entire specimens submerged in Canada balsam in different positions. That made their recognition often very difficult, particularly of laterally mounted specimens on which the configuration of

the propodeal carinae is not visible (this feature is critical for recognition of *Himopolynema* species). Nevertheless, I have managed to place most of them to known species when it was at all possible; 70 remaining specimens (the majority of which were collected in Taipei City) are impossible to identify positively with any confidence although most of these probably belong to *H. hishimonus*, and four specimens (collected at a high elevation in Alishan) represent a new, undescribed species. More than 100 extralimital specimens of *Himopolynema* spp., most of which were slide-mounted by Vladimir V. Berezovskiy at the Entomology Research Museum, University of California, Riverside, California, USA, were also examined and sorted to morphospecies.

Specimens were examined under a Zeiss Axioskop 2 plus compound microscope using Nomarski differential interference contrast optics, and photographed using the Auto-Montage[®] system; the photographs were then retouched where necessary using Adobe Photoshop[®].

Terms used for morphological features are those of Gibson (1997). All measurements were taken from the slide-mounted specimens and are given in millimeters (mm), as length or, for the wings, as length:width. Abbreviations used are: F = funicle segment of the female antenna or flagellomere of the male antenna; mps = multiporous plate sensillum or sensilla on the antennal flagellar segments (= longitudinal sensillum or sensilla or sensory ridge(s) of authors).

Acronyms for the depositories of specimens are as follows:

BMNH – The Natural History Museum,
London, England, UK

CNC – Canadian National Collection of
Insects, Arachnids, and Nematodes,
Ottawa, Ontario, Canada

FAFU – Fujian Agriculture and Forestry
University, Jinshan, Fuzhou, Fujian,
China

EUMJ – Entomological Laboratory, College

of Agriculture, Ehime University, Matsuyama, Japan
NTNU – Museum of Natural History and Archaeology, Norwegian University of Science and Technology (formerly Museum of the Royal Norwegian Society of Sciences and Letters), Trondheim, Norway
TARI – Taiwan Agricultural Research Institute, Wufeng, Taichung, Taiwan
UCDC – R. M. Bohart Museum of Entomology, University of California, Davis, California, USA
UCRC – Entomology Research Museum, University of California, Riverside, California, USA
ZLMU – Entomological Laboratory, Faculty of Agriculture, Meijo University, Tempaku, Nagoya, Japan

Taxonomy

Genus *Himopolynema* Taguchi, 1977

Himopolynema Taguchi, 1977: 137, 142 (key). Type species: *Himopolynema hishimonus* Taguchi, by original designation.

Himopolynema: Hayat & Anis, 1999: 16, 18 (short diagnosis, comments); Triapitsyn and Huber, 2000: 614 (list); Triapitsyn and Berezovskiy, 2002: 3-4 (short diagnosis, comments, key to Palaearctic species); Hayat *et al.*, 2003: 1-2 (key to species in India); Lin *et al.*, 2007: 37 (short diagnosis, list of species in Australia).

Comments: The original, very brief diagnosis of *Himopolynema* by Taguchi (1977) was complemented recently by Hayat & Anis (1999), Triapitsyn and Berezovskiy (2002), and Lin *et al.* (2007). Its species are relatively easy to recognize by a combination of the following morphological features: general body color usually mostly brown or dark brown; mandible 3-dentate, face with a pit next to each torulus; radicle more or less fused with the rest of scape; female antenna with a 6-segmented funicle (funicular segments without mps) and an entire

clava (usually with either 6 or 7 mps but with 8 mps in one undescribed species from Queensland, Australia), male flagellum 11-segmented; prosternum “closed” by propleura anteriorly (Fig. 12); pronotum usually entire but sometimes mediolongitudinally divided; head with short, blunt setae, pronotum with several blunt setae (usually strong), axilla with one such seta (although not always strong); frenal line of scutellum without a row of foveae (with the exception of one undescribed species from Papua New Guinea); propodeum not in the same plane with mesoscutum and scutellum but often at almost a right angle to them, and with well-defined submedian carinae either apart or close to each other (their configuration is species specific and thus of a great diagnostic value); marginal vein of fore wing usually with one (distal) dorsal seta (then what is probably the basal seta is usually attached to the margin of the wing membrane anterior of the marginal vein, almost touching it) but sometimes either with two dorsal setae or with one dorsal and one ventral setae; petiole attached to the gastral tergum, tarsi 4-segmented; digitus of male genitalia often with small denticles (Figs. 63, 78) but almost always without large hooks, like in *Polylnema* (*Doriclytus*) Foerster (Triapitsyn and Fidalgo, 2006), except in one undescribed species from Papua New Guinea in which it has 1 hook. *Himopolynema* appears to be most similar to the New World genus *Platyfrons* Yoshimoto, which lacks strong, blunt setae on the head and mesosoma.

Known host records in this genus are of *H. hishimonus* Taguchi from eggs of *Hishimonus sellatus* (Uhler) (Hemiptera: Cicadellidae) in Japan (Taguchi, 1977; Triapitsyn, 2002) and also of an undescribed *Himopolynema* sp. from eggs of *Hindola* spp. in Java Island, Indonesia (Hemiptera: Machaerotidae) (Balfas *et al.*, 1990 [as *Acmopolynema* sp.]; Triapitsyn, 2002).

Specimens of *Himopolynema* in the Palaearctic region can be recognized using a key by Triapitsyn and Huber (2000) and in Australia using a key by Lin *et al.* (2007). A key to its species in Taiwan, based on females, follows.

Key to species of *Himopolynema* in Taiwan (females)

- 1 Clava with 7 mps; ovipositor occupying entire length of gaster and at least slightly projecting forward anteriorly (Figs. 4, 10, 55, 64, 67); ovipositor at least 2.0x length of mesotibia and at least 1.7x length of metatibia (the *longiclavatum* species group) 2
- Clava with 6 mps; ovipositor occupying less than entire length of gaster and not projecting forward anteriorly (Figs. 13, 23, 38, 47); ovipositor at most 1.7x length of mesotibia and at most 1.4x length of metatibia 5
- 2 (1) Scape with cross-ridges (Figs. 56, 60, 65) 3
- Scape smooth, without cross-ridges (Figs. 2, 7) 4
- 3 (2) Clava slightly longer than combined length of F4-F6 (Fig. 56); ovipositor (Fig. 55) exerted beyond apex of gaster by 0.14x own length, 3.5x length of mesotibia and 2.7x length of metatibia *H. tarii* sp. n.
- Clava about as long as combined length of F3-F6 (Fig. 65); ovipositor (Fig. 67) exerted beyond apex of gaster by at most 0.05x own length, at most 2.2x length of mesotibia and at most 1.8x length of metatibia *H. sp.*
- 4 (2) Clava as long as combined length of F3-F6 plus about half length of F2 (Fig. 2); fore wing (Fig. 5) 5.3x as long as wide *H. berezovskiyi* sp. n.
- Clava as long as combined length of F4-F6 (Fig. 7); fore wing (Fig. 9) 3.8x as long as wide *H. heratyi* sp. n.
- 5 (1) Facial pits slightly below lower

- torular edge level (as in Fig. 28); blunt setae on head and mesosoma light (the *hexatricha* species group) *H. kslini* sp. n.
- Facial pits clearly above lower torular edge level: either just below, at, or slightly above upper torular edge level (Figs. 11, 35, 45); blunt setae on head and mesosoma dark (the *hishimonus* species group) 6
- 6 (5) Scape smooth, without cross-ridges (Fig. 46); propodeum with narrowly V-shaped submedian carinae connected in the middle by a short transverse carina (Fig. 48) *H. taiwanum* Taguchi
- Scape with cross-ridges (Figs. 16, 37); propodeal carinae (Figs. 15, 36, 38) not as above 7
- 7 (6) Submedian carinae on propodeum mostly parallel and next to each other except widening as a “Y” anteriorly (more so) and posteriorly (less so) (Fig. 15) *H. hishimonus* Taguchi
- Submedian carinae on propodeum curving apart from each other and connected just above midline by a short transverse carina (Figs. 36, 38) *H. parviscutum* Taguchi

Alphabetical list of species

***Himopolynema berezovskiyi* Triapitsyn, sp. n.** (Figs. 1-5)

Type material: Holotype female [CNC] on slide (Fig. 5) labeled: 1. “TAIWAN, Taichung Hsien, Wufeng 60 m, 24.IV-2.V.92 A. Smetana [T98]”; 2. “CNCI Mounted at UCR/ERM by V. V. Berezovskiy 2007 in Canada balsam”; 3. [magenta] “*Himopolynema berezovskiyi* Triapitsyn HOLOTYPE ♀”; 4. “Det. by S. V. Triapitsyn 2007”. The holotype is in good condition, lacking clava of one antenna, dissected under 4 coverslips.

Description: FEMALE (holotype). Color: head and mesosoma dark brown, petiole light brown, gaster brown; scape



Figs. 1-3. *Himopolynema berezovskiyi* sp. n., female (holotype): 1, head (frontal view); 2, antenna; 3, propodeum.

and pedicel light brown, funicle brown, clava dark brown; coxae, most of femora, apical halves or so of meso- and metatibiae and apical tarsomeres brown; blunt setae on head and mesosoma dark.

Head (Fig. 1) slightly wider than high and a little wider than mesosoma. Torulus a little above lower eye margin; facial pit at about middle of torulus level.

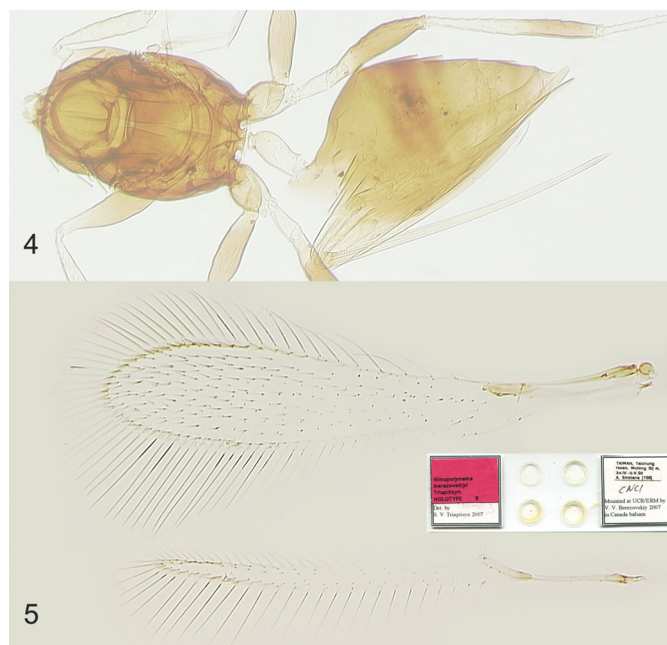
Antenna (Fig. 2) much shorter than body. Scape smooth, without cross-ridges, 2.8x as long as wide; all funicle segments short, shorter than pedicel (F6 the longest); clava large, 3.1x as long as wide, as long as combined length of F3-F6 plus about half length of F2, with 7 mps.

Mesosoma (Fig. 4). Pronotum entire, with 10 strong, blunt setae; mesoscutum

smooth, about as long as scutellum; scutellum smooth, scutellar placoid sensilla close to frenal line; axilla with a strong, blunt seta not extending to half length of scutellum; propodeum (Fig. 3) with well-developed, V-shaped submedian carinae not connected anteriorly.

Wings (Fig. 5). Fore wing 5.3x as long as wide; marginal vein with 1 weak dorsal seta; disc hyaline, with about 8 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta about equal to maximum width of wing. Hind wing 18.8x as long as wide; longest marginal seta 3.0x maximum width of wing.

Metasoma (Fig. 4). Petiole about 2.0 x as long as wide, smooth. Ovipositor



Figs. 4-5. *Himopolynema berezovskiyi* sp. n., female (holotype): 4, mesosoma and metasoma; 5, a pair of wings and slide.

occupying entire length of gaster (longer than gaster, projecting a little anteriorly) and barely exerted beyond its apex posteriorly, 2.2x length of mesotibia and 1.9x length of metatibia.

Measurements of the holotype (mm): Mesosoma: 0.246; petiole: 0.068; gaster: 0.338; ovipositor: 0.375. Antenna: scape (excluding radicle): 0.079; pedicel: 0.048; F1: 0.013; F2: 0.028; F3: 0.027; F4: 0.026; F5: 0.027; F6: 0.03; clava: 0.141. Fore wing: 0.615:0.117; longest marginal seta: 0.121; hind wing 0.563:0.03; longest marginal seta: 0.091.

MALE. Unknown.

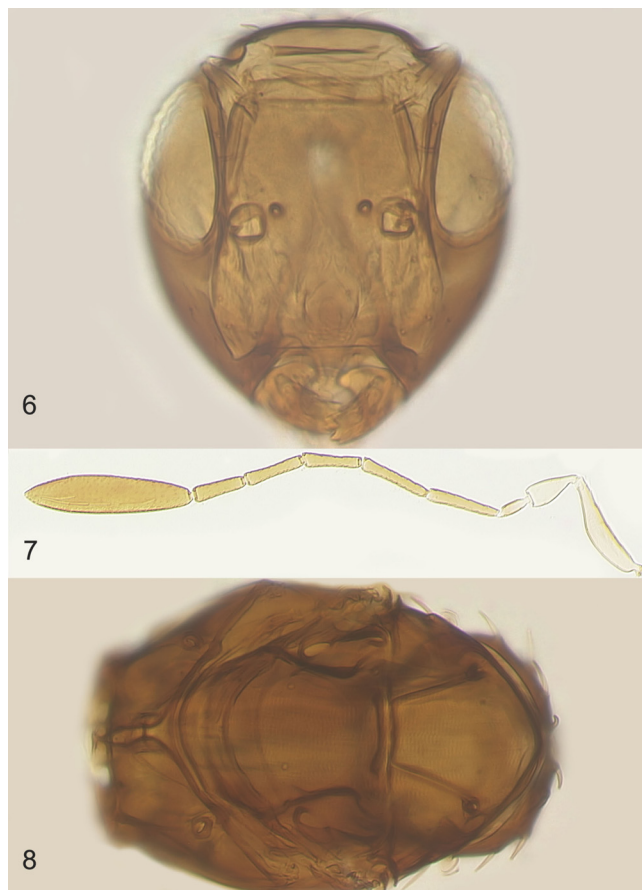
Diagnosis: This species is most similar to *H. heratyi* sp. n. from which, besides the morphological characters indicated in the key, it differs in having V-shaped submedian carinae without a transverse carina connecting them (Fig. 3) whereas these carinae are narrowly U-shaped and connected just above midline by a short transverse carina in the latter (Fig. 8).

Etymology: The new taxon is named in honor of Vladimir V. Berezovskiy, Principal Museum Preparator Emeritus at the UCRC and fellow taxonomist of the Mymaridae, who beautifully slide-mounted its holotype and many other specimens of *Himopolynema* and thousands of other fairyflies, and also kindly helped with the initial sorting of specimens of this genus to morphospecies.

Remarks: This species has been registered in ZooBank under urn:lsid:zoobank.org:act:069A519C-497F-44E5-A9CA-187C1CC975E2.

***Himopolynema heratyi* Triapitsyn, sp. n.** (Figs. 6-10)

Type material: Holotype female [UCRC] on slide (Fig. 9) labeled: 1. "TAIWAN Nantou Hsien E of Shankan, 2000-2200 m, 28.V.1990 J. Heraty, deciduous/pine forest"; 2. "UCRC Mounted at UCR/ERM by V. V. Berezovskiy 2007 in Canada balsam"; 3. [magenta] "*Himopolynema heratyi* Triapitsyn HOLOTYPE ♀"; 4.



Figs. 6-8. *Himopolynema heratyi* sp. n., female (holotype): 6, head (frontal view); 7, antenna; 8, mesosoma.

Himopolynema ♀ Det. by S. V. Triapitsyn & V. V. Berezovskiy 2008"; "5. [database label] "Univ. Calif. Riverside Ent. Res. Museum UCRC ENT 444865". The holotype is in good condition, complete, dissected under 4 coverslips.

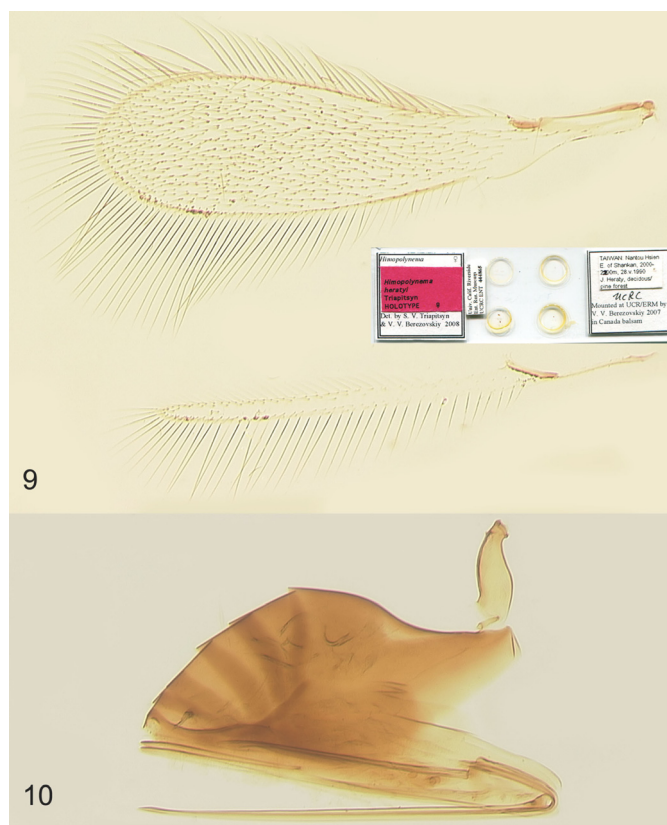
Description: FEMALE (holotype). Color: head and mesosoma dark brown, petiole light brown, gaster brown; scape and pedicel light brown, flagellum dark brown; coxae, most of femora, apical half or so of metatibia and apical tarsomeres brown; blunt setae on head and mesosoma dark.

Head (Fig. 6) a little higher than wide and about as wide as mesosoma. Torulus a little above lower eye margin; facial pit at

upper torular edge level.

Antenna (Fig. 7) very long but shorter than body. Scape smooth, without cross-ridges, 4.4x as long as wide; all funicle segments much longer than wide, only F1 shorter than pedicel (F2 the longest); clava 4.3x as long as wide, as long as combined length of F4-F6, with 7 mps.

Mesosoma (Fig. 8). Pronotum very narrow, with 10 strong, blunt setae; mesoscutum smooth, slightly longer than scutellum; scutellum smooth, scutellar placoid sensilla close to frenal line; axilla with a rather weak, long, blunt seta not extending to half length of scutellum; propodeum with well-developed, narrowly U-shaped submedian carinae connected



Figs. 9-10. *Himopolynema heratyi* sp. n., female (holotype): 9, a pair of wings and slide; 10, metasoma (lateral view).

just above midline by a short transverse carina.

Wings (Fig. 9). Fore wing 3.8x as long as wide; marginal vein with 1 dorsal seta; disc hyaline, with numerous (more than 20) rows of setae in the widest part besides admarginal rows of setae, longest marginal seta 0.94x maximum width of wing. Hind wing 21.9x as long as wide; longest marginal seta 3.9x maximum width of wing.

Metasoma (Fig. 10). Petiole a little longer than metacoxa, smooth. Ovipositor occupying entire length of gaster (a little longer than gaster, projecting a little anteriorly) and not exerted beyond its apex posteriorly, 2.3x length of mesotibia and 1.9x length of metatibia.

Measurements of the holotype (mm): Mesosoma: 0.35; petiole: 0.153; gaster:

0.62; ovipositor: 0.677. Antenna: scape (excluding radicle): 0.147; pedicel: 0.073; F1: 0.036; F2: 0.102; F3: 0.1; F4: 0.079; F5: 0.082; F6: 0.073; clava: 0.233. Fore wing: 1.027:0.271; longest marginal seta: 0.255; hind wing 0.94:0.043; longest marginal seta: 0.166.

MALE. Unknown.

Diagnosis: This species is most similar to *H. berezovskiyi* sp. n. (see its diagnosis above and the key).

Etymology: The new taxon is named in honor of its collector, John M. Heraty (UCRC).

Remarks: This species has been registered in ZooBank under urn:lsid:zoobank.org:act:9E049B95-6C1F-4D8B-893D-57746CE47439.



Figs. 11-14. *Himopolynema hishimonus* Taguchi: 11, head in frontal view (female, N end of Khao Khaw Hong near Kuan Yim shrine, 7°02'21"N 100°30'34"E, Songkhla, Thailand); 12, prosternum and propleura (male, Jinshan, Fuzhou, Fujian, China); 13, antenna and metasoma (female, neotype); 14, a pair of wings and slide (female, neotype).

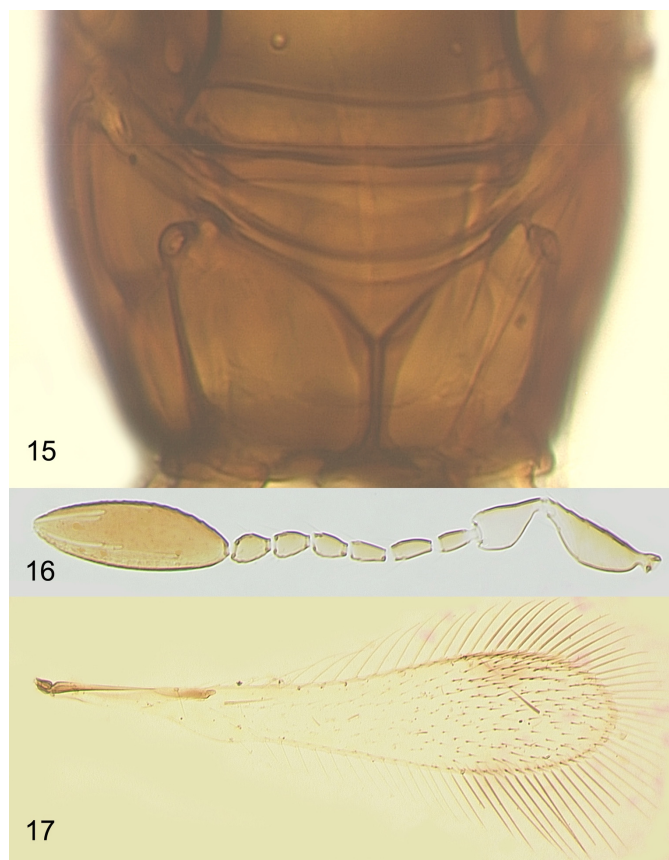
***Himopolynema hishimonus* Taguchi, 1977** (Figs. 11-20)

Himopolynema hishimonus Taguchi, 1977: 137-139, 142 (key) (holotype – female [lost from EUMJ], Ayabe, Kyoto Prefecture, Honshu Island, Japan – not examined). Type locality of the neotype designated here: Fukuoka, Fukuoka Prefecture, Kyushu Island, Japan.

Himopolynema hishimonus: Hayat and Anis, 1999: 20-22 (distribution, illustrations, measurements; compared with *H. longiclavatum* Hayat and Anis from India); Hayat and Singh, 2001: 97 (distribution in India); Triapitsyn and Berezovskiy, 2002: 5 (distribution, host association); Hayat *et al.*, 2003: 2 (key), 5 (illustration); Hayat *et al.*, 2008: 328

(distribution in India, taxonomic comments); Rehmat and Anis, 2014: 57 (distribution in India).

Type material: Neotype female [UCRC], here designated to avoid any possible ambiguity about the true identity of this species, on slide (Fig. 14) labeled: 1. “ex overwintering eggs *Hishimonus sellatus* Uhler on Mulberry #B FUKUOKA, Japan, ? Sept. 1967 K. Yasumatsu”; 2. “*Chaetomymar*” (it was misidentified as a *Chaetomymar* sp. by R. L. Doutt); 3. “*Himopolynema hishimonus* Taguchi ♀ Det. S. V. Triapitsyn 1999”; 4. [red] “*Himopolynema hishimonus* Taguchi NEOTYPE ♀”; “5. [database label] “Univ. Calif. Riverside Ent. Res. Museum UCRC ENT 285329”. The neotype is in fair condition although it is rather poorly



Figs. 15-17. *Himopolynema hishimonus* Taguchi, female: 15, propodeum (neotype); 16, antenna (N end of Khao Khaw Hong near Kuan Yim shrine, 7°02'21"N 100°30'34"E, Songkhla, Thailand); 17, fore wing (Taichung, Taiwan).

dissected to many parts under one coverslip, complete. This specimen was reared in Japan from the same leafhopper host as the lost holotype and paratypes, and perfectly matches the original description and illustrations of *H. hishimonus* (Taguchi, 1977).

Material examined: Taiwan: 2 km S of Keelung City ("Paomenszu"), K.-S. Lin: 11-X-1957 [1 ♀, TARI]; 18-IX-1957 [1 ♀, TARI]. Kenting National Park, Hengchun, Kueitzuchiaio (as "Kuraru, Heng Chung"), 25-X-1958, F.-L. Yu [1 ♀, TARI]. Shan-hsia (20 km SW of Taipei City), VIII-1968, K.-S. Lin [1 ♀, TARI]. Taichung, 16-VII-1976, K.-S. Lin ("TDAIS, on rice field") [1 ♀, TARI]. Taipei City, K.-S. Lin: 1954 [1 ♀,

TARI]; 25-V-1955 [1 ♀, TARI]; 4-5-VII-1958 [1 ♀, TARI]; 17-22-X-1958 [3 ♀, 1 ♂, TARI]; 2-3-XII-1958 [1 ♀, TARI]; 25-30-III-1963 [1 ♀, TARI]; 5-6-IV-1963 [1 ♀, TARI]; 9-10-IV-1963 [1 ♀, 1 ♂, TARI]; 15-19-IV-1963 [1 ♂, TARI]; 22-29-IV-1963 [2 ♂, TARI]; 3-11-V-1963 [2 ♂, TARI]; VI-1963 [2 ♀, 2 ♂, TARI]; 15-24-VII-1963 [1 ♀, 1 ♂, TARI]; 26-31-VII-1963 [3 ♂, TARI]; VIII-1963 [3 ♀, 3 ♂, TARI]; 16-31-X-1963 [2 ♀, 1 ♂, TARI]; 1-10-IV-1964 [1 ♂, TARI]; 3-10-XII-1964 [1 ♀, TARI]; VI-1967 [4 ♀, 3 ♂, TARI]; VII-1967 [25 ♀, 11 ♂, TARI; 1 ♂, UCRC]; VIII-1967 [6 ♀, 7 ♂, TARI]; IX-1967 [1 ♀, TARI]; XI-1967 [1 ♂, TARI]; 6-15-XII-1967 [1 ♂, TARI]; X-1968 [1 ♀, TARI]; VII-1972 [4 ♀, TARI]; 20-X-



Fig. 18. *Himopolynema hishimonus* Taguchi, male (Taipei, Taiwan): habitus.

1972 [1 ♀, TARI]; IX-1974 [1 ♀, TARI]. Taipei Hsien, Hsintien, K.-S. Lin: 9-VIII-1963 [1 ♀, TARI]; VIII-1968 [2 ♀, TARI]. Tsaoshan (20 km N of Taipei City), K.-S. Lin: 19-V-1963 [1 ♀, TARI]; 14-VIII-1963 [1 ♂, TARI].

Other material examined: China (mainland): Fujian, Fuzhou, Jinshan: 28-IX-1987, N.-Q. Lin (Lin Nai-Quan) [1 ♀, FAFU] (misidentified by M. Xu (Xu Mei) as *H. malayanum* Taguchi); 13-X-1999, M. Xu [1 ♂, FAFU] (determined by M. Xu). Guangdong, Guangzhou, 10-VII-1992, F. Bennett (from an unknown egg on *Lagerstroemia indica*) [1 ♀, UCRC]. India, Karnataka, Bangalore, 916 m, 22-31-V-1986, H. Ghorpade [1 ♀, CNC]. Thailand, Songkhla, N end of Khao Khaw Hong near Kuan Yim shrine, 7°02'21"N 100°30'34"E, 13-II-2005, D. Yanega [1 ♀, UCRC].

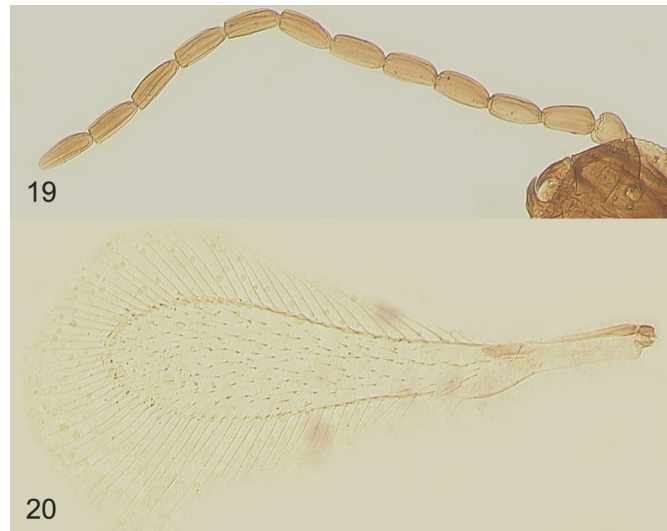
Redescription: FEMALE (neotype). Color: body dark brown except petiole light brown; scape mostly brown except lighter apically, pedicel mostly light brown, flagellum dark brown; most of leg

segments brown except trochanters, femora basally, and 3 basal tarsomeres light brown; blunt setae on head and mesosoma dark.

Antenna (Fig. 13) much shorter than body. Scape with cross-ridges, 2.1x as long as wide; all funicle segments a little longer than wide and notably shorter than pedicel (F2 the longest and F5 the shortest); clava large, 2.6x as long as wide, a little longer than combined length of F3-F6.

Mesosoma. Pronotum very narrow, entire, with 8 short, strong, blunt setae; mesoscutum smooth, shorter than scutellum and with 1 lateral, strong, blunt seta; scutellum smooth, scutellar placoid sensilla close to frenal line; axilla with a strong, short, blunt seta not extending to one-third length of scutellum; propodeum (Fig. 15) with well-developed submedian carinae mostly parallel and next to each other except widening as a "Y" anteriorly (more so) and posteriorly (less so).

Wings (Fig. 14). Fore wing 4.5x as



Figs. 19-20. *Himopolynema hishimonus* Taguchi, male (Taipei, Taiwan): 19, antenna; 20, fore wing.

long as wide; marginal vein with 1 dorsal seta; disc hyaline, with a short row of several setae just behind marginal vein and about 10 or 11 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta 0.88x maximum width of wing. Hind wing 37.6x as long as wide; longest marginal seta 5.6x maximum width of wing.

Metasoma (Fig. 13). Petiole longer than metacoxa, smooth. Ovipositor occupying 0.9x length of gaster, not exerted beyond its apex posteriorly, 1.6x length of mesotibia and 1.3x length of metatibia.

Measurements of the neotype (mm): Mesosoma: 0.273; petiole: 0.091; gaster: 0.339; ovipositor: 0.303. Antenna: scape (excluding radicle): 0.07; pedicel: 0.052; F1: 0.027; F2: 0.035; F3: 0.033; F4: 0.027; F5: 0.025; F6: 0.031; clava: 0.123. Fore wing: 0.716:0.16; longest marginal seta: 0.141; hind wing 0.677:0.018; longest marginal seta: 0.1.

Additional descriptive notes and variation (non-type specimens from the Oriental region). Head (Fig. 11) a little wider than high and about as wide as mesosoma. Torulus above lower eye margin; facial pit just below upper torular

edge level. Clava (Fig. 16) with 6 mps, 2.6x as long as wide. Axillar seta sometimes almost half length of scutellum. Fore wing 4.3-5.0x as long as wide; disc sometimes with a small brownish area in the broadest part at anterior margin (Fig. 17), longest marginal seta 0.9-1.0x maximum width of wing. Hind wing sometimes wider, 18.2x as long as wide. Petiole 2.6-2.7x as long as wide, ovipositor 1.3-1.4x length of metatibia, at most barely exerted beyond apex of gaster.

Description: MALE (non-type specimens from Taiwan, Fig. 18). Body length (slide-mounted specimens) 0.74-0.89 mm. Similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Antenna (Fig. 19) with scape 1.5-1.6x as long as wide, with cross-ridges, F1 about as long as scape. Mesosoma much longer than gaster (Fig. 18); prosternum as in Fig. 12. Fore wing (Fig. 20) 3.9-4.3x as long as wide; longest marginal seta 0.8-1.0x maximum width of wing.

Distribution: Mainland China (new record) and Taiwan (Taguchi, 1977), Japan (Iba, 1973 [as *Polynema* sp.]; Taguchi, 1977; Triapitsyn and Berezovskiy, 2002),



Figs. 21-23. *Himopolynema ?hishimonus* Taguchi, female (Taipei, Taiwan): 21, habitus (lateral view); 22, antenna; 23, gaster.

India (Hayat and Anis, 1999; Hayat and Singh, 2001; Hayat *et al.*, 2003, 2008; Rehmat and Anis, 2014), and Thailand (new record).

Comments: This species was described from a series of 12 females reared in Ayabe, Kyoto Prefecture, Japan from eggs of the leafhopper *Hishimonus sellatus* and one male from Sungshan (Songshan), Taipei City, Taiwan (Taguchi, 1977). Although its identity in Japan and Taiwan is easier to figure out than those of other Taguchi's congeneric species due to the good original description and illustrations, designation of its neotype is warranted because there is a need to distinguish it from the similar, yet

different, both described (such as for instance *H. malayanum* Taguchi, which has somewhat similar but yet different – a small transverse carina is present – propodeal carinae, also see Hayat *et al.*, 2008) and undescribed species from the Oriental region.

Male of this species is described and illustrated here for the first time because it was not described either by Taguchi (1977) or Hayat *et al.* (2008); the latter and also Rehmat and Anis (2014) recorded males of *H. hishimonus* from India.

I have also examined a series of the following female specimens from Taiwan, all collected by K.-S. Lin, which are seemingly larger than the typical *H.*



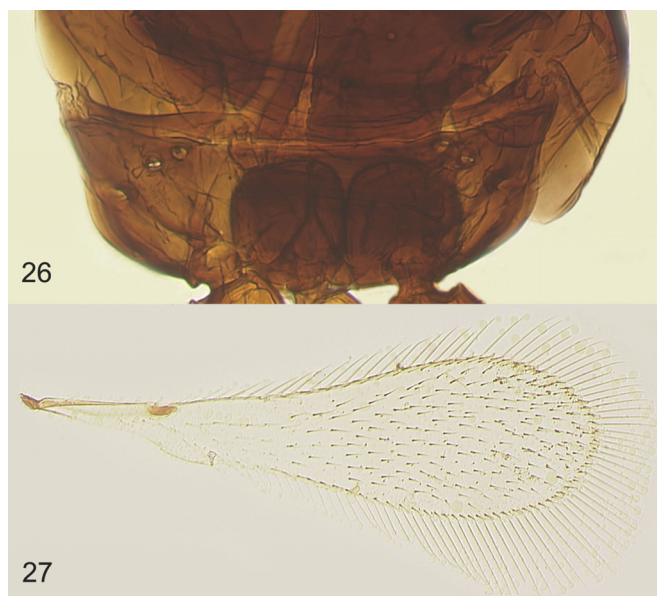
Figs. 24-25. *Himopolynema kslini* sp. n., female (holotype): 24, habitus and slide; 25, head and antennae.

hishimonus including its neotype, and in which the funicle segments are relatively somewhat longer (particularly F2 is sometimes almost as long as pedicel, Fig. 22) and also the ovipositor is notably longer (ovipositor length 0.394-0.476 mm, 1.5-1.8x length of mesotibia) and often notably (Figs. 21, 23) exerted beyond the gastral apex (by 0.07-0.18x its own length): 2 km S of Keelung City (“Paomenszu”), 18-IX-1957, K.-S. Lin [1 ♀, TARI]. Taipei City, K.-S. Lin: 17-22-X-1958 [1 ♀, TARI]; 22-29-IV-1963 [1 ♀, TARI]; 13-VII-1963 [2 ♀, TARI]; 26-31-VII-1963 [1 ♀, TARI]; 20-30-XI-1963 [1 ♀, TARI]; VI-1967 [1 ♀, TARI]; VII-1967 [3 ♀, TARI]; VIII-1967 [2 ♀, TARI]. Tsaoshan (20 km N of Taipei City): 9-VIII-1958, K.-S. Lin [1 ♀, TARI]; 14-VIII-1963, K.-S. Lin [1 ♀, TARI]. These specimens are only tentatively identified as *H. ?hishimonus* although probably they

belong to it as their all other morphological features, including the configuration of the propodeal carinae, are the same. However, they also could represent an undescribed species, but without supporting molecular data, which is lacking, the question about their true identity has to be left open for the time being.

***Himopolynema kslini* Triapitsyn, sp. n.**
(Figs. 24-30)

Type material: Holotype female [TARI] on slide (Fig. 24) labeled: 1. “Taiwan N. Taipei 4-5.VII.1958 K. S Lin sweeping # 11616”; 2. [faint, in pencil] “Mymaridae ♀ *Himopolynema* Det. S. V. Triapitsyn 2013 *Chaetomymar*”; 3. [magenta] “*Himopolynema kslini* Triapitsyn HOLOTYPE ♀”. The holotype (Fig. 24) is in fair condition although it is not cleared,



Figs. 26-27. *Himopolynema kslini* sp. n., female (paratypes): 26, propodeum (Taichung, Taiwan); 27, fore wing (Taipei, Taiwan).

complete, mounted dorsoventrally under one coverslip. Paratypes (on individual slides): 2 females labeled originally: 1. "Taiwan C. Taichung (TDAIS) 16.VII.1976 K. S. Lin on rice field # 11612 [11333]", 2. [faint, in pencil] "*Acanthomyrmar* [*Chaetomyrmar*]" (one of these paratypes lacks both fore wings and one hind wing); 1 male labeled: 1. "Taiwan N. Taipei V.1972 K. S. Lin sweeping # 11391", 2. "Mymaridae ♂ *Chaetomyrmar* [faint, in pencil]"; 1 female labeled: 1. "Taiwan N. Taipei IX.1974 K. S. Lin sweeping # 11361", 2. "Mymaridae ♀ *Chaetomyrmar* [faint, in pencil]"; 1 female labeled: 1. "Taiwan N. Taipei X.1972 K. S. Lin sweeping # 11356", 2. "Mymaridae ♀ *Chaetomyrmar* [in pencil]"; 2 males labeled: 1. "Taiwan N. Taipei X.1972 K. S. Lin sweeping # 11355 [11358]", 2. "Mymaridae ♂ *Chaetomyrmar* [in pencil]"; 1 male labeled: 1. "Taiwan N. Taipei 6-15.XII.1957 K. S. Lin sweeping # 11332", 2. "Mymaridae ♂ *Chaetomyrmar* [in pencil]"; 1 female labeled: 1. "Taiwan S. Kuraru, Heng Chung 22-29.V.1965 K. S. Lin

sweeping # 11396", 2. "Mymaridae *Chaetomyrmar* [faint, in pencil]" (Kuraru is an archaic name of Kueitzuchiao in Hengchun, Kenting National Park).

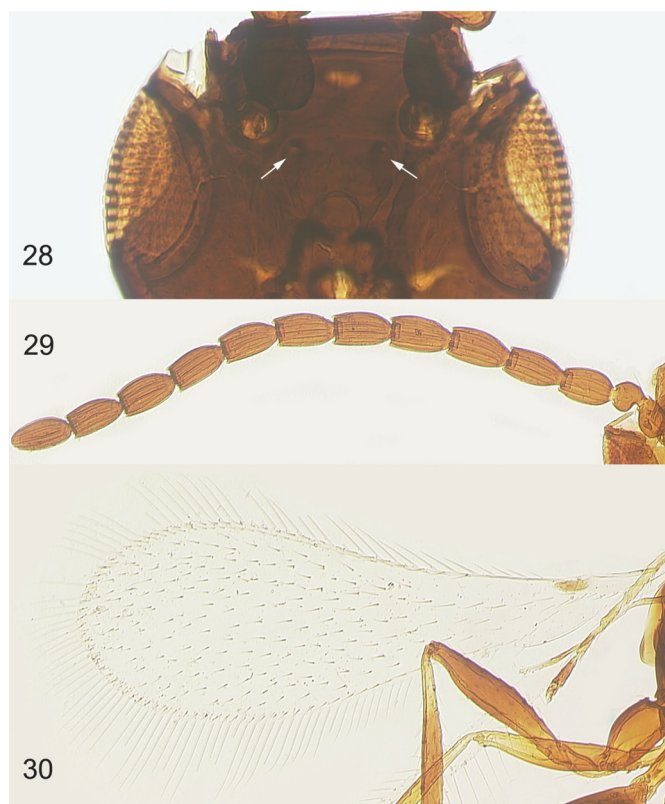
Description: FEMALE (holotype).

Color: body dark brown except petiole light brown; antenna brown except clava dark brown; legs mostly brown or dark brown except trochanters and 3 basal tarsomeres brown; blunt setae on head and mesosoma very light.

Head (Fig. 25) about as wide as mesosoma. Torulus at about mid level of eye; facial pits slightly below lower torular edge level (as in Fig. 28).

Antenna (Fig. 25) rather short, much shorter than body. Scape smooth, without cross-ridges, 1.8x as long as wide; all funicle segments much longer than wide except F6 only a little so, F1 shorter than pedicel (F2 the longest and F5 the shortest among funicle segments); clava large, 2.5x as long as wide, as long as combined length of F3-F6, with 6 mps.

Mesosoma. Pronotum with rather weak but long, blunt setae; mesoscutum



Figs. 28-30. *Himopolynema kslini* sp. n., male (paratypes, Taipei, Taiwan): 28, head in partial frontal view (arrows pointing to pits near toruli); 29, antenna; 30, fore wing.

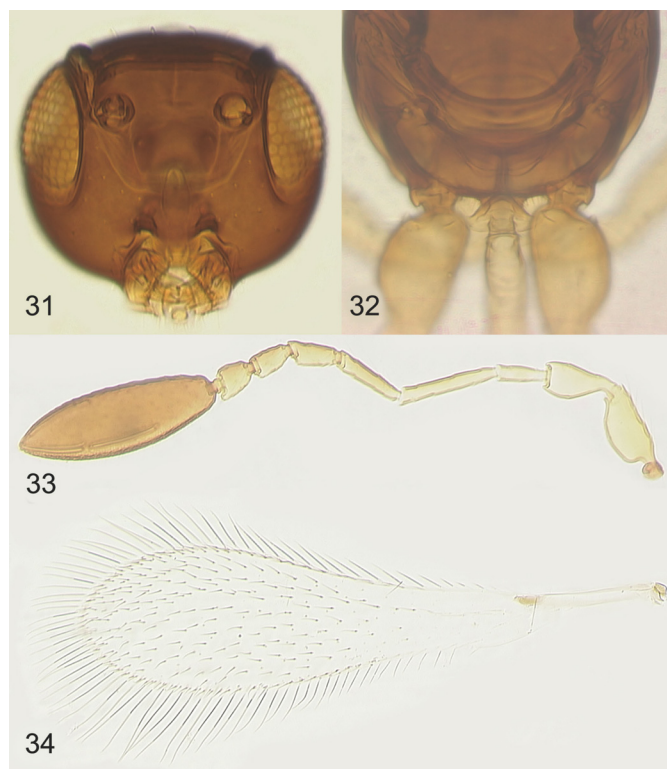
smooth, slightly longer than scutellum; scutellum smooth; propodeum with complete submedian carinae very close and parallel to each other anteriorly but notably widening apart posteriorly (as in Fig. 26), with 1 pair of setae at posterior margin.

Wings (Fig. 24). Fore wing 3.5x as long as wide; marginal vein with 1 dorsal seta; disc hyaline, with about 14 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta 0.51x maximum width of wing. Hind wing 23.3x as long as wide; longest marginal seta 3.1x maximum width of wing.

Metasoma (Fig. 24). Petiole shorter than metacoxa, smooth. Ovipositor occupying 0.9x length of gaster and barely exerted beyond its apex posteriorly, 1.2x length of mesotibia and 1.0x length of metatibia.

Measurements of the holotype (mm): Body: 1.107; head: 0.258; mesosoma: 0.443; petiole: 0.16; gaster: 0.333; ovipositor: 0.303. Antenna: scape (excluding radicle): 0.081; pedicel: 0.063; F1: 0.048; F2: 0.082; F3: 0.06; F4: 0.046; F5: 0.034; F6: 0.037; clava: 0.182. Fore wing: 0.892:0.252; longest marginal seta: 0.129; hind wing 0.77:0.033; longest marginal seta: 0.103.

Additional descriptive notes and variation (paratypes). Body length (slide-mounted specimens) 0.984-1.138 mm. Clava 2.5-3.3x as long as wide. Fore wing (Fig. 27) 3.4-3.7x as long as wide, longest marginal seta 0.48-0.66x maximum width of wing; marginal vein sometimes with 2 dorsal setae (usually with 1); disc with about 11-15 rows of setae in the widest part besides admarginal rows of setae. Petiole 1.9-2.5x as long as wide, ovipositor not or



Figs. 31-34. *Himopolynema haflongum* Hayat and Singh, female: 31, head in frontal view (4°13'N 114°56'E, Buda Camp, SW Gunung Buda Massif, Sarawak, Borneo Island, Malaysia); 32, propodeum and petiole (Na Hang Nature Reserve, Tuyên Quang, Vietnam); 33, antenna (Na Hang Nature Reserve, Tuyên Quang, Vietnam); 34, fore wing (Na Hang Nature Reserve, Tuyên Quang, Vietnam).

at most barely exerted beyond apex of gaster.

MALE (paratypes). Body length (slide-mounted specimens) 1.03-1.07 mm. Similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Antenna (Fig. 29) with scape about 1.2x as long as wide, smooth; Fl longer than scape. Mesosoma much longer than gaster; disc with about 14-16 rows of setae in the widest part besides admarginal rows of setae. Fore wing (Fig. 30) 3.0-3.1x as long as wide; longest marginal seta 0.45-0.5x maximum width of wing.

Diagnosis: *Himopolynema kslini* belongs to the informal group of species, together with *H. haflongum* Hayat and Singh and *H. hexatracha* Hayat and Basha

from India, which were with a considerable hesitation placed in *Himopolynema* by Hayat *et al.* (2003). Indeed, besides the characters on the face and propodeum indicated by them, these species from the *hexatracha* group differ from the typical *Himopolynema* (from the informal *hishimonus* species group) also usually by the relatively weaker and light-colored (but still blunt) setae on the head and mesosoma, although these setae are light in one species from Queensland, Australia that otherwise undoubtedly belongs to the *hishimonus* group. Thus they seem to represent intermediate forms between *Himopolynema* and *P. (Doriclytus)*; however, species of the latter subgenus of *Polynema* Haliday always have at most one (median) carina on the

propodeum, which can be either complete or incomplete, or lacking, whereas species of the former genus always have two submedian carinae, which can be either close together or apart from each other. Thus I agree with the opinion of Hayat *et al.* (2003) that species of the informal *hexatricha* group are better placed in *Himopolynema*.

Himopolynema kslini differs from *H. haflongum* in the much darker color of scape, pedicel, funicle, and legs, and also in the configuration of the propodeal carinae (Figs. 26 and 32, respectively), and from *H. hexatricha* in the configuration of the propodeal carinae and the much longer propodeum (very short in the latter, as illustrated by Hayat *et al.*, 2003: 3, their fig. 3).

Etymology: The new taxon is named in honor of its collector, Kwei-Shui Lin, who studied Taiwanese Hymenoptera at TARI.

Comments: This species has been registered in ZooBank under urn:lsid:zoobank.org:act:A0B4F58C-84DD-48D2-9EB9-F6D3BD45DF9B.

I have examined the following specimens of *H. haflongum* that match its original description and illustrations quite well: Malaysia, Sarawak (Borneo Island), SW Gunung Buda (White Mountain) Massif, Buda Camp (64 km S of Limbang), 4°13'N 114°56'E, 8-XI-1996, S. L. Heydon and S. Fung [1 ♀, UCDC]. Vietnam, Tuyên Quang, Na Hang Nature Reserve, 300 m, 20-24-V-1997 (rainforest) [1 ♀, CNC]. Both are new records for the respective countries. The clava of the female antenna (Fig. 33) in these specimens has 6 mps, and the marginal vein on the fore wing (Fig. 34) has 1 dorsal seta (these important data are lacking in the original description).

***Himopolynema parviscutum* Taguchi, 1977** (Figs. 35-44)

Himopolynema parviscutum Taguchi, 1977: 140-141, 142 (key) (holotype – male

[lost from EUMJ], Ronshung Spa, Taiwan – not examined). Type locality of the neotype designated here: Lanyu Taitung Hsien, Taiwan.

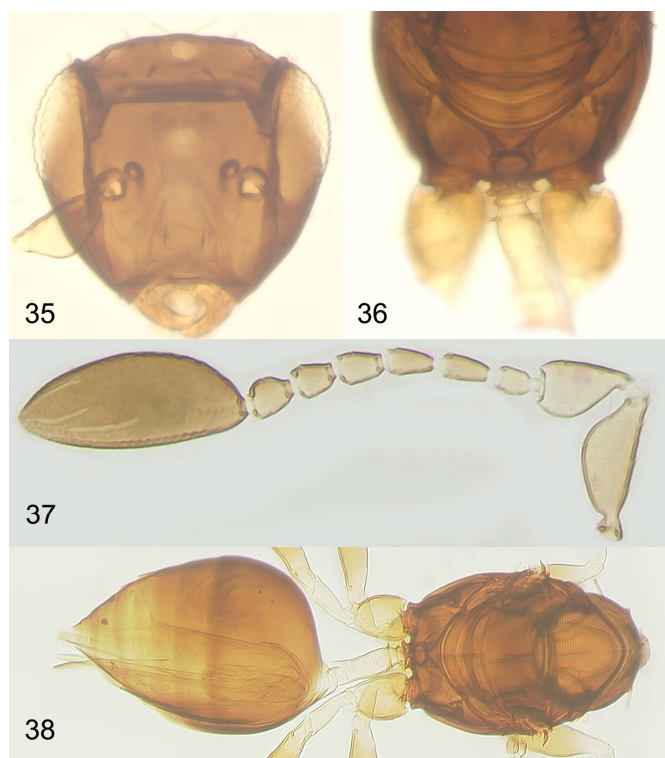
Himopolynema parviscutum: Hayat and Anis, 1999: 20 (compared with *H. longiclavatum*); Triapitsyn and Berezovskiy, 2002: 6 (compared with *H. aequum* (Girault) from Queensland, Australia).

Type material: Neotype male [TARI], here designated to avoid any possible ambiguity about the true identity of this species, on slide (Fig. 44) labeled: 1. [orange] “S. TAIWAN: Lanyu Taitung Hsien 4-9.V.1982 K. S. Lin, K. C. Chou, S. C. Lin & C. C. Pan”; 2. “TARI Mounted by V. V. Berezovskiy 2013 in Canada balsam”; 3. [red] “*Himopolynema parviscutum* Taguchi NEOTYPE ♂”; 4. “Det. by S. V. Triapitsyn 2013”. The neotype was remounted at UCRC from a point; it is now in fair condition (it had been somewhat shriveled when dry-mounted) but lacking F6-F11 of one flagellum and several leg segments, dissected under 2 coverslips. The species was described from two male specimens from Taiwan, the holotype and the paratype (the latter from Chipon Spa); therefore a matching neotype is also selected to be a male.

Material examined: Taiwan: Pintung, Kenting National Park, 210-230 m, 5-V-1991, C. K. Starr and S. M. Wu [1 ♀, CNC]. Taipei City, 2-7-IX-1963, K.-S. Lin [1 ♂, TARI]. Wulai (20 km S. Taipei City), 20-III-1963, K.-S. Lin [1 ♂, TARI].

Description: FEMALE (non-type specimen from Kenting National Park, Pintung, Taiwan). Color: head and mesosoma dark brown, petiole light brown, gaster brown; scape and pedicel light brown, funicle brown, clava dark brown; legs light brown except coxae, most of femora, apical half or so of metatibia and apical tarsomeres brown; blunt setae on head and mesosoma dark.

Head (Fig. 35) a little wider than high and about as wide as mesosoma. Torulus a



Figs. 35-38. *Himopolynema parviscutum* Taguchi, female (Kenting National Park, Pintung, Taiwan): 35, head in frontal view; 36, propodeum and petiole; 37, antenna; 38, mesosoma and metasoma.

little above lower eye margin; facial pit at upper torular edge level.

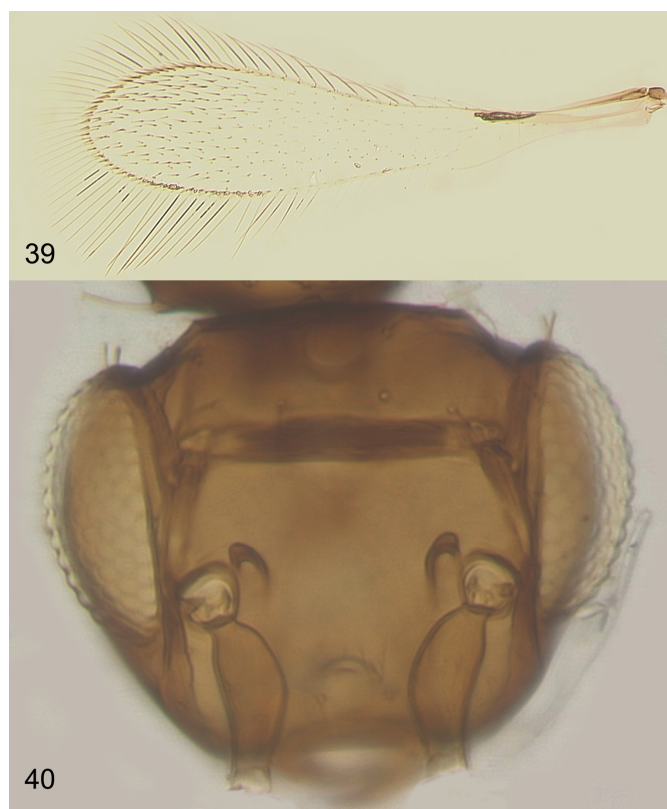
Antenna (Fig. 37) very short, much shorter than body. Scape with cross-ridges, 2.5x as long as wide; all funicle segments at least a little longer than wide and shorter than pedicel (F2 the longest); clava very large, 2.3x as long as wide, a little shorter than combined length of F2-F6, with 6 mps.

Mesosoma (Fig. 38). Pronotum entire, with 8 strong, short, blunt setae; mesoscutum smooth, as long as scutellum; scutellum smooth, scutellar placoid sensilla close to frenal line; axilla with a rather strong, long, blunt seta extending almost to half length of scutellum; propodeum (Fig. 36) with well-developed submedian carinae curving apart from each other and connected just above midline by a short transverse carina.

Wings. Fore wing (Fig. 39) 4.3x as long as wide; marginal vein with 1 dorsal seta; disc hyaline, with about 12 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta 0.8x maximum width of wing. Hind wing 20.0x as long as wide; longest marginal seta 3.1x maximum width of wing.

Metasoma (Fig. 38). Petiole a little longer than metacoxa, about 2.5x as long as wide. Ovipositor occupying 0.9x length of gaster and barely exerted beyond its apex posteriorly, 1.6x length of mesotibia and 1.4x length of metatibia.

Redescription: MALE (neotype). Similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Scape brown, pedicel light brown, flagellum brown. Head (Fig. 40) with facial pit rather large. Antenna (Fig. 41) with scape



Figs. 39-40. *Himopolynema parviscutum* Taguchi: 39, fore wing (female, Kenting National Park, Pintung, Taiwan); 40, head in frontal view (male, neotype).

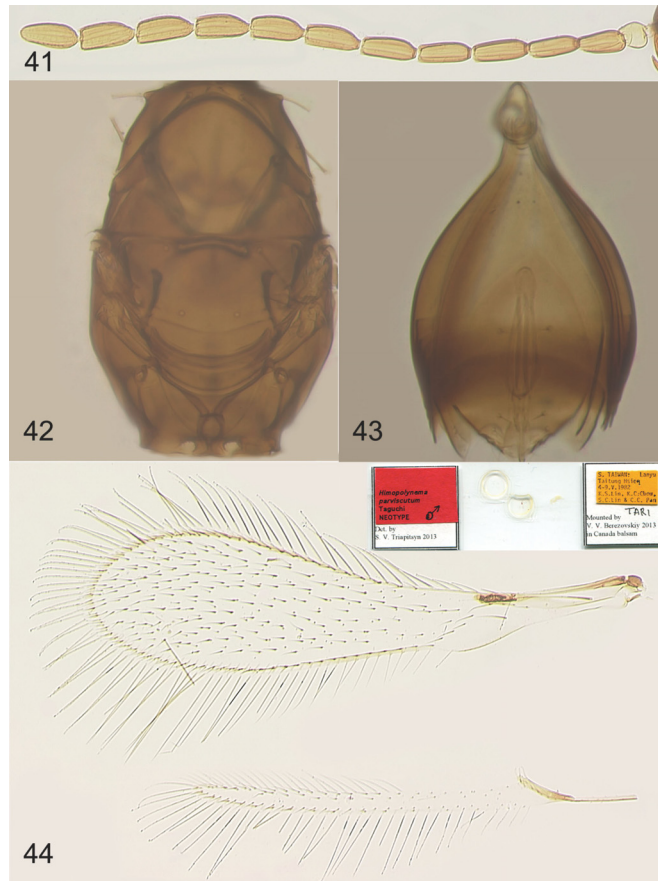
2.6x as long as wide, with cross-ridges, Fl about as long as scape. Mesosoma (Fig. 42) much longer than gaster (Fig. 43). Fore wing (Fig. 44) almost 3.9x as long as wide; longest marginal seta about 0.8x maximum width of wing. Hind wing (Fig. 44) 20.9x as long as wide; longest marginal seta 3.5x maximum width of wing. Genitalia as in Fig. 43.

Measurements of the neotype (mm): Head: 0.16; mesosoma: 0.326; gaster: 0.228; genitalia: 0.135. Antenna: scape (excluding radicle): 0.056; pedicel: 0.033; F1: 0.057; F2: 0.062; F3: 0.066; F4: 0.063; F5: 0.064; F6: 0.066; F7: 0.06; F8: 0.063; F9: 0.067; F10: 0.063; F11: 0.066. Fore wing: 0.756: 0.196; longest marginal seta: 0.16; hind wing 0.689:0.033; longest marginal seta: 0.115.

Variation (non-type specimen from Taiwan). Body length 0.86 mm.

Distribution: Taiwan (Taguchi, 1977).

Comments: The three male specimens (UCRC) from Gornotayozhnoye, Primorskiy kray of Russia, which were keyed, listed, and illustrated by Triapitsyn and Berezovskiy (2002, pp. 4-5) as *H. ?parviscutum*, were misidentified because then no comparison with the lost types of *H. parviscutum* was possible; these rather belong to an undescribed species of *Himopolynema*. Their description as a new taxon is not warranted now, at least until conspecific females from the same area are found. This redescription may also be useful for recognition of the male from India identified by Hayat *et al.* (2008) as *H. sp.*



Figs. 41-44. *Himopolynema parviscutum* Taguchi, male (neotype): 41, antenna; 42, mesosoma; 43, gaster; 44, a pair of wings and slide.

near *parviscutum*, which likely could be more similar, if not identical, to *H. longiclavatum* Hayat and Anis based on the configuration of the propodeal carinae and presence of cross-ridges on the scape.

***Himopolynema taiwanum* Taguchi, 1977** (Figs. 45-53)

Himopolynema taiwanum Taguchi, 1977: 140 (illustration), 142 (also key) (holotype – male [lost from EUMJ], Kenting National Park [as Kenting Park], Pintung, Taiwan – not examined). Type locality of the neotype designated here: Taipei City, Taiwan.

Himopolynema taiwanum: Triapitsyn and Berezovskiy, 2002: 6 (compared with

H. aequum).

Type material: Neotype male [TARI], here designated to avoid any possible ambiguity about the true identity of this species, on slide (Fig. 51) labeled: 1. “Taiwan N. Taipei 4-19.XI.1963. K. S Lin Sweeping # 11597”; 2. “Mymaridae ♂”; 3. “*Himopolynema taiwanum* Taguchi ♂ Det. S. V. Triapitsyn 2013”; 4. [red] “*Himopolynema taiwanum* Taguchi NEOTYPE ♂”. The neotype (Fig. 51) is in fair condition although it is uncleaned, complete, mounted dorsoventrally under one coverslip. The species was described from the single holotype male (Taguchi, 1977) and therefore a matching neotype is also selected to be a male.



Figs. 45-47. *Himopolynema taiwanum* Taguchi, female (Pingxiang, Guangxi, China): 45, head in frontal view; 46, antenna; 47, mesosoma and metasoma.

Material examined: Taiwan: 2 km S of Keelung City (“Paomenszu”), 16-VIII-1958, K.-S. Lin [1 ♂, TARI].

Other material examined: China (mainland): Guangxi, Pingxiang, 25-V-1985, Y.-Q. Tang [1 ♀, FAFU] (determined by M. Xu).

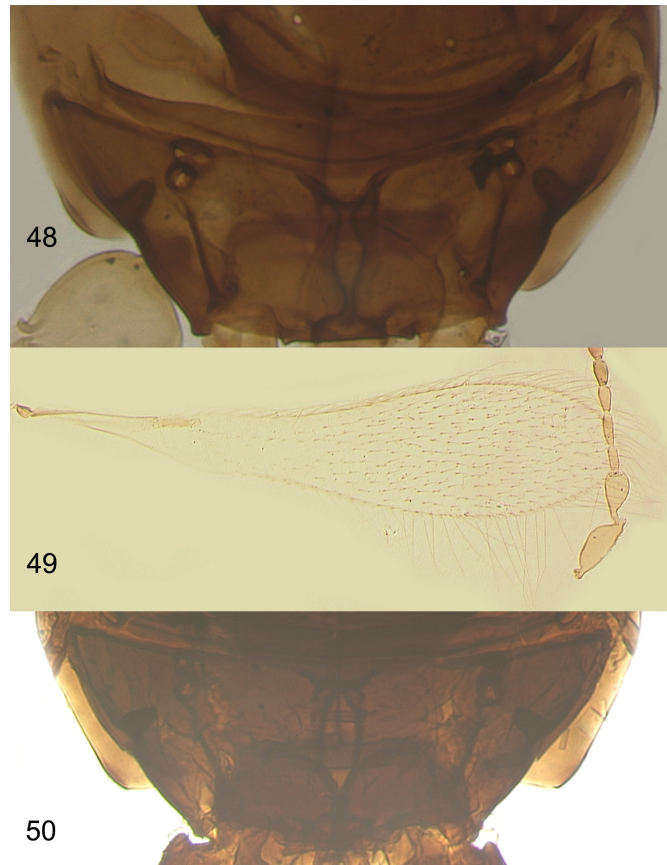
Description: FEMALE (non-type female from Pingxiang, Guangxi, China). Color: head and mesosoma dark brown, petiole light brown, gaster mostly brown to dark brown except light brown apically; scape and pedicel light brown, funicle brown, clava dark brown; legs light brown except procoxa and apical tarsomeres brown; blunt setae on head and mesosoma dark.

Head (Fig. 45) a little wider than high

and about as wide as mesosoma. Torulus about at middle of eye level; facial pit at upper torular edge level.

Antenna (Figs. 46, 49) very short, much shorter than body. Scape smooth, 2.5x as long as wide; all funicle segments at least a little longer than wide and shorter than pedicel (F2 the longest); clava very large, 2.9x as long as wide, almost as long as combined length of F2-F6, with 6 mps.

Mesosoma (Fig. 47). Pronotum entire, with at least 8 strong, short, blunt setae; mesoscutum smooth, a little longer than scutellum; scutellum smooth, scutellar placoid sensilla closer to frenal line; propodeum (Fig. 48) with well-developed submedian carinae curving apart from



Figs. 48-50. *Himopolynema taiwanum* Taguchi: 48, propodeum (female, Pingxiang, Guangxi, China); 49, fore wing and part of antenna (female, Pingxiang, Guangxi, China); 50, propodeum (male, neotype).

each other medially and connected near anterior margin of propodeum by a short transverse carina.

Wings. Fore wing (Fig. 49) 4.4x as long as wide; marginal vein with 2 dorsal setae; disc hyaline, with 14-15 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta a little more than 0.7x maximum width of wing. Hind wing about 24x as long as wide; longest marginal seta about 4x maximum width of wing.

Metasoma (Fig. 47). Petiole a little longer than metacoxa, about 3.7x as long as wide. Ovipositor occupying about 0.9x length of gaster and exerted beyond its apex posteriorly by 0.14x its own length, 1.7x length of mesotibia and 1.4x length of

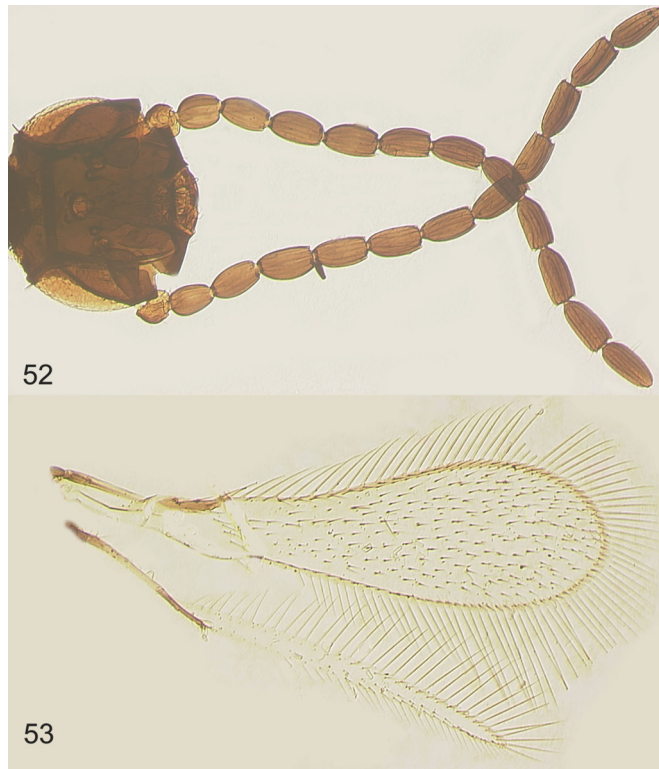
metatibia.

Redescription: MALE (neotype). Similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Body and appendages dark brown except petiole light brown and first 3 tarsomeres of all legs brown. Antenna (Fig. 52) with scape 1.75x as long as wide, smooth, F1 longer than pedicel. Mesosoma longer than gaster; propodeum as in Fig. 50. Fore wing (Fig. 53) 3.6x as long as wide; longest marginal seta almost 0.8x maximum width of wing. Hind wing (Fig. 53) 20.0x as long as wide; longest marginal seta 3.4x maximum width of wing.

Measurements of the neotype (mm): Body: 0.923; head: 0.215; mesosoma: 0.363;



Fig. 51. *Himopolynema taiwanum* Taguchi, male (neotype): habitus and slide.



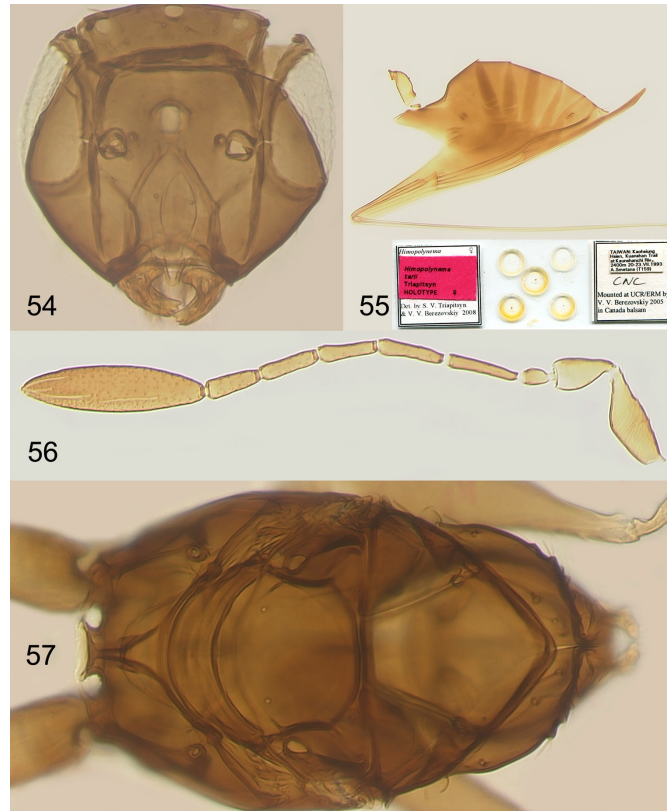
Figs. 52-53. *Himopolynema taiwanum* Taguchi, male (neotype): 52, head and antennae; 53, a pair of wings.

petiole: 0.092; gaster: 0.258. Antenna: scape (excluding radicle): 0.067; pedicel: 0.036; F1: 0.052; F2: 0.061; F3: 0.067; F4: 0.066; F5: 0.063; F6: 0.065; F7: 0.061; F8: 0.064; F9: 0.067; F10: 0.064; F11: 0.072. Fore wing: 0.719: 0.197; longest marginal

seta: 0.153; hind wing 0.64:0.032; longest marginal seta: 0.109.

Variation (non-type specimen from Taiwan). Body length 0.972 mm.

Distribution: Mainland China (new record) and Taiwan (Taguchi, 1977).



Figs. 54-57. *Himopolynema tarii* sp. n., female (holotype): 54, head in frontal view; 55, metasoma (lateral view) and slide; 56, antenna; 57, mesosoma.

***Himopolynema tarii* Triapitsyn, sp. n.**
(Figs. 54-63)

Type material: Holotype female [CNC] on slide (Fig. 55) labeled: 1. “TAIWAN, Kaohsiung Hsien, Kuanshan Trail at Kaunshanchi River, 2400 m, 20-23.VII. 1993 A. Smetana [T159]”; 2. “CNCI Mounted at UCR/ERM by V. V. Berezovskiy 2005 in Canada balsam”; 3. [magenta] “*Himopolynema tarii* Triapitsyn HOLOTYPE ♀”; 4. “Det. by S. V. Triapitsyn 2005”. The holotype is in good condition, complete, dissected under 5 coverslips. Paratypes: same data as the holotype [1 ♀, 1 ♂ on slides, CNC].

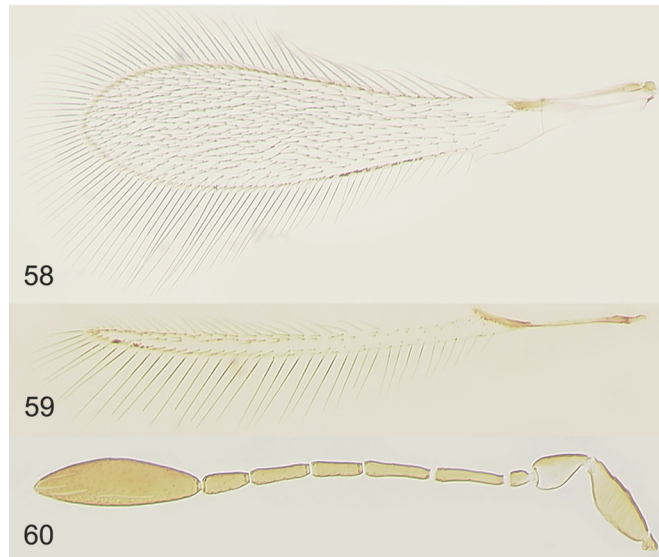
Description: FEMALE (holotype). Color: body dark brown except petiole brown; scape and pedicel brown, flagellum dark brown; legs mostly brown to dark brown except 3 first tarsomeres of all legs light brown; blunt setae on head and

mesosoma dark.

Head (Fig. 54) a little wider than high and slightly wider than mesosoma. Torulus above lower eye margin; facial pit at upper torular edge level.

Antenna (Fig. 56) long but shorter than body. Scape with cross-ridges, about 2.7x as long as wide; all funicle segments longer than wide, F1 much shorter than pedicel and by far the shortest funicle segment (F2 the longest); clava 3.8x as long as wide, slightly longer than combined length of F4-F6, with 7 mps.

Mesosoma (Fig. 57). Pronotum mediolongitudinally divided, with at least 10 strong, short, blunt setae; mesoscutum smooth, a little longer than scutellum; scutellum almost smooth (with a very faint, inconspicuous, mesh-like sculpture), scutellar placoid sensilla closer to frenal



Figs. 58-60. *Himopolynema tarii* sp. n., female: 58, fore wing (holotype); 59, hind wing (holotype); 60, antenna (paratype).

line; axilla with a rather weak, short, blunt seta not extending to half length of scutellum; propodeum with well-developed, narrowly V-shaped submedian carinae connected in the middle by a short transverse carina.

Wings. Fore wing (Fig. 58) 4.4x as long as wide; marginal vein with 1 dorsal and 1 ventral setae; disc slightly infumate, with about 20 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta equal to maximum width of wing. Hind wing (Fig. 59) 24.4x as long as wide; longest marginal seta 4.5x maximum width of wing.

Metasoma (Fig. 55). Petiole a little shorter than metacoxa, smooth. Ovipositor occupying entire length of gaster, strongly projecting forward anteriorly, and exerted beyond its apex posteriorly by 0.14x own length, 3.5x length of mesotibia and 2.7x length of metatibia.

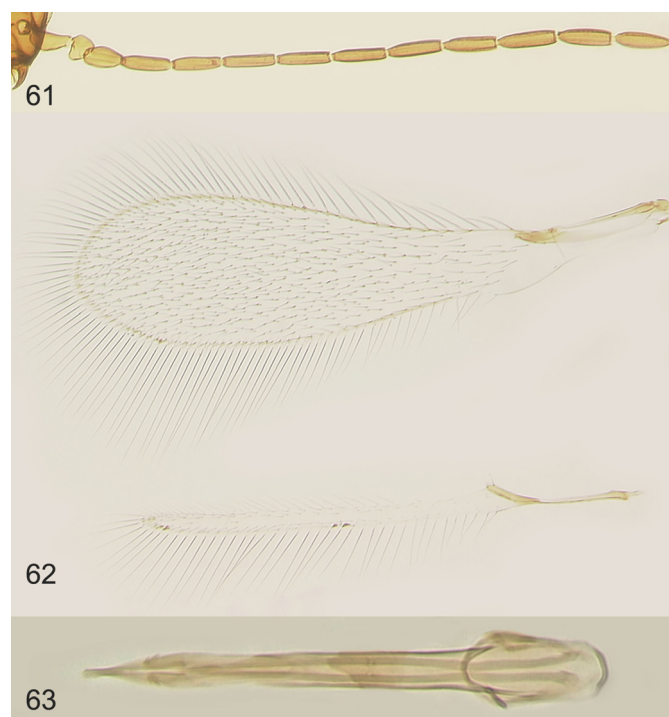
Measurements of the holotype (mm): Mesosoma: 0.387; petiole: 0.105; gaster: 0.806; ovipositor: 0.935. Antenna: scape (excluding radicle): 0.112; pedicel: 0.067; F1: 0.029; F2: 0.079; F3: 0.073; F4: 0.064;

F5: 0.065; F6: 0.061; clava: 0.206. Fore wing: 1.009:0.228; longest marginal seta: 0.228; hind wing 0.904:0.037; longest marginal seta: 0.167.

Variation (paratype). Clava (Fig. 60) 3.4x as long as wide; hind wing 23.3x as long as wide; ovipositor 3.3x length of mesotibia and 2.8x length of metatibia.

MALE (paratype). Body length 1.064 mm. Similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Body and appendages dark brown except petiole brown and first 3 tarsomeres of all legs brown. Antenna (Fig. 61) with scape 2.1x as long as wide, with cross-ridges, F1 longer than pedicel. Mesosoma longer than gaster. Fore wing (Fig. 62) 3.8x as long as wide; longest marginal seta about 0.9x maximum width of wing. Hind wing (Fig. 62) 21.1x as long as wide; longest marginal seta 4.0x maximum width of wing. Genitalia as in Fig. 63.

Diagnosis: *Himopolynema tarii* differs from all other described species of *Himopolynema* by a very long ovipositor (Fig. 55) which is strongly projecting



Figs. 61-63. *Himopolynema tarii* sp. n., male (paratype): 61, antenna; 62, a pair of wings; 63, genitalia.

forward anteriorly and exerted beyond the gastral apex posteriorly by 0.14x its own length; ratios of the ovipositor length to the lengths of mesotibia and metatibia are by far the highest among the described species of the genus.

Etymology: The new taxon is named after TARI.

Remarks: This species has been registered in ZooBank under urn:lsid:zoobank.org:act:5C7281C7-E868-49CF-BE38-7CEBE5D7953B.

***Himopolynema* sp.** (Figs. 64-70)

Material examined: Taiwan, Alishan, 2450 m: 16-VI-1965, K.-S. Lin [2 ♀, 2 ♂, TARI].

Remarks and diagnosis: Because all the available females of this species are slide mounted laterally (Fig. 64), and thus the propodeal carinae could not be seen in the dorsal view, it is not described here. It is undoubtedly a good, new species similar

to *H. longiclavatum* (particularly its female antenna), from which it is likely to differ by the configuration of the propodeal carinae that unfortunately can be observed only in one more or less dorsoventrally mounted male: the transverse carina connecting the submedian carinae is at the anterior margin of the propodeum in that male *Himopolynema* sp. (Fig. 69) whereas it is about in the middle of the propodeum in females of *H. longiclavatum* (Figs. 74, 75). Also, the longest marginal seta in *Himopolynema* sp. is equal to the maximum width of fore wing, which has more numerous and dense setae on the disc (Fig. 66), whereas it is about 0.85x maximum width of a notably less setose fore wing in *H. longiclavatum* (Fig. 76); the ovipositor in the former is at most 2.2x length of mesotibia and at most 1.8x length of metatibia whereas it is at least 2.4x length of mesotibia and at least 1.9x length of metatibia in the latter species.



Fig. 64. *Himopolynema* sp., female (Alishan, Taiwan): habitus (lateral view).

Its female is characterized by the following features. Body length 0.86-0.92 mm. Body and appendages dark brown except scape, pedicel, and petiole brown and 3 first tarsomeres of all legs light brown; blunt setae on head and mesosoma dark. Torulus just above lower eye margin; facial pit at upper torular edge level. Antenna (Fig. 65) short. Scape with cross-ridges, 2.1-2.3x as long as wide; all funicle segments longer than wide, F1 much shorter than pedicel and the shortest funicle segment (F2 the longest); clava 2.7-2.8x as long as wide, about as long as combined length of F3-F6, with 7 mps. Axilla with a rather strong, short, blunt seta not extending to half length of scutellum. Fore wing (Fig. 66) 4.1x as long as wide; marginal vein with 1 dorsal and 1 ventral setae; disc slightly infumate, with about 15 rows of setae in the widest part besides admarginal rows of setae, longest marginal seta equal to maximum width of wing. Hind wing 18.9-19.2x as long as wide; longest marginal seta 4.2-4.3x maximum width of wing. Petiole about as long as metacoxa. Ovipositor occupying entire length of gaster (Figs. 64, 67), strongly projecting forward anteriorly, and

exserted slightly beyond its apex posteriorly (by 0.03-0.05x own length), 2.1-2.2x length of mesotibia and 1.7-1.8x length of metatibia.

Its male is similar to female except for normal sexually dimorphic features of antenna and genitalia and the following. Body length 0.89-0.92 mm. Body dark brown except petiole brown; antenna brown, legs brown to dark brown except first 3 tarsomeres of all legs light brown. Antenna (Fig. 68) with scape 1.8-2.1x as long as wide, with cross-ridges, F1 longer than pedicel. Mesosoma much longer than gaster; propodeum (Fig. 69) with well-developed, widely V-shaped submedian carinae connected at anterior margin of propodeum by a transverse carina. Fore wing (Fig. 70) 3.6-3.7x as long as wide; longest marginal seta about 0.9x maximum width of wing. Hind wing 22.6x as long as wide; longest marginal seta 4.6x maximum width of wing.



Figs. 65-67. *Himopolynema* sp., female (Alishan, Taiwan): 65, antenna; 66, fore wing; 67, metasoma (lateral view).

Taxonomic notes on some extralimital species of *Himopolynema*

Himopolynema longiclavatum Hayat and Anis, 1999 (Figs. 71-76)

Himopolynema longiclavatum Hayat and Anis, 1999: 18-20 (holotype – female [BMNH], Calicut University Campus, Tenhipalam, Malappuram District, Kerala, India – not examined).

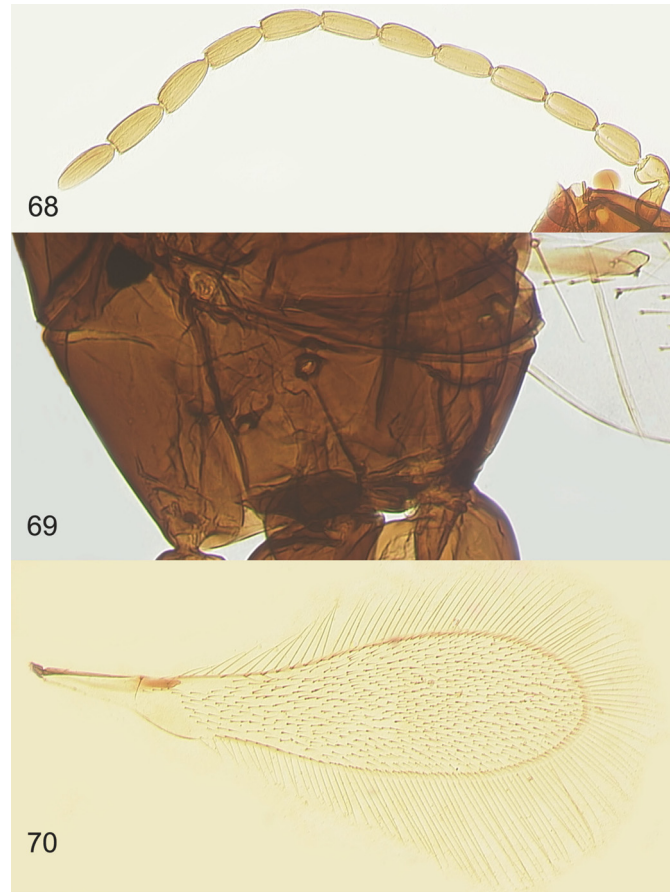
Himopolynema longiclavatum: Triapitsyn and Berezovskiy, 2002: 6-7 (compared with *H. aequum*); Hayat *et al.*, 2003: 2 (key); Manickavasagam *et al.*, 2011: 407 (distribution in India); Rehmat and Anis, 2014: 57 (distribution in India).

Material examined: Malaysia, Kuala Lumpur, University of Malaya, Rimba Ilmu Botanical Gardens, 100 m, 14-VI-1990, J. M. Heraty (on fig) [1 ♀, UCRC]. Thailand: Chiang Mai, Chiang Dao

Wildlife Sanctuary, 24-IX-1999, M. I. Wibawa [1 ♀, UCDC]. Phetchaburi, Kaeng Krachan National Park, Ban Krang, 12°47.896'N 99°27.196'E, 323 m, 24-VI-2008, M. Sharkey [1 ♀, UCRC].

Distribution: India (Hayat and Anis, 1999; Hayat *et al.*, 2003; Manickavasagam *et al.*, 2011; Rehmat and Anis, 2014), Malaysia (new record), and Thailand (new record).

Remarks: *Himopolynema longiclavatum*, which should had never been described from a laterally mounted single specimen (the holotype) because configuration of the propodeal carinae in this genus is of primary diagnostic importance, is nevertheless a possible to identify species because of its long, anteriorly projecting ovipositor (Fig. 73) and a characteristic female antenna (Fig. 72), although several similar but apparently distinct undescribed species from the same, *longiclavatum*



Figs. 68-70. *Himopolynema* sp., male (Alishan, Taiwan): 68, antenna; 69, propodeum; 70, fore wing.

informal species group, members of which have the ovipositor occupying the entire length of gaster and at least slightly projecting forward anteriorly, are known to me from the Oriental region. The male from Brindavan Gardens, Mysore, Karnataka, India, which was described and illustrated as *P. longiclavatum* but wisely not listed as a paratype (Hayat and Anis, 1999), definitely does not belong to this species because it has absolutely different propodeal carinae. Such carinae of the female specimen from Pudaiyur, Cuddalore, Tamil Nadu, India, listed by Manickavasagam *et al.* (2011), are identical (their photograph was kindly sent to me by S. Manickavasagam, Fig. 75)

to those of the females from Malaysia (Fig. 74) and Thailand, so there is no doubt whatsoever about their conspecificity. The pronotum in *P. longiclavatum* is mediolongitudinally divided (Figs. 74, 75). The number of mps on the clava of the female antenna is 6 in the specimens from Malaysia and Chiang Mai, Thailand. Also in this species, the torulus is situated well above lower eye margin, and the facial pit is at the upper torular edge level (Fig. 71). Males of *P. longiclavatum* were also reported (but not described) from Annamalai University premises in Chidambaram, Tamil Nadu, by Manickavasagam *et al.* (2011), but presence of cross-ridges on the scape and configuration of their propodeal



Figs. 71-73. *Himopolynema longiclavatum* Hayat and Anis, female (Rimba Ilmu Botanical Gardens, University of Malaya, Kuala Lumpur, Malaysia): 71, head in frontal view; 72, antenna; 73, metasoma (lateral view).

carinae were not specified; also see “Comments” to *H. parviscutum* in this communication.

***Himopolynema malayanum* Taguchi, 1977** (Figs. 77-82)

Himopolynema malayanum Taguchi, 1977: 139-140, 141 (illustration), 142 (key) (holotype – male [lost from ZLMU along with the entire *H. Taguchi* collection of Mymaridae (K. Yamagishi, personal communication)], Tanah Rata, Cameron Highlands, Pahang, [West] Malaysia – not examined). Type locality of the neotype designated here: Buda Camp (64 km S of Limbang), 4°13’N 114°56’ E, SW Gunung Buda (White Mountain) Massif, Sarawak,

Borneo Island, Malaysia.

Himopolynema malayanum: Hayat and Anis, 1999: 18 (possibly conspecific with *H. robustum* (Sveum) from Malaysia).

Type material: Neotype male of *H. malayanum* [UCDC], here designated to avoid any possible ambiguity about the true identity of this species, on slide (Fig. 81) labeled: 1. “BORNEO: SARAWAK Buda Camp sw Gn. Buda, 64km s. of Limbang 4°13’N 114°56’ E 8.XI.96 SLHeydon&SFung”; 2. [pink] “Return to Bohart Museum UC Davis”; 3. “Mounted by V. Berezovskiy 2001 Canada balsam”; 4. “*Himopolynema malayanum* Taguchi ♂ Det. S. V. Triapitsyn 1999”; 4. [magenta] “*Himopolynema malayanum* Taguchi

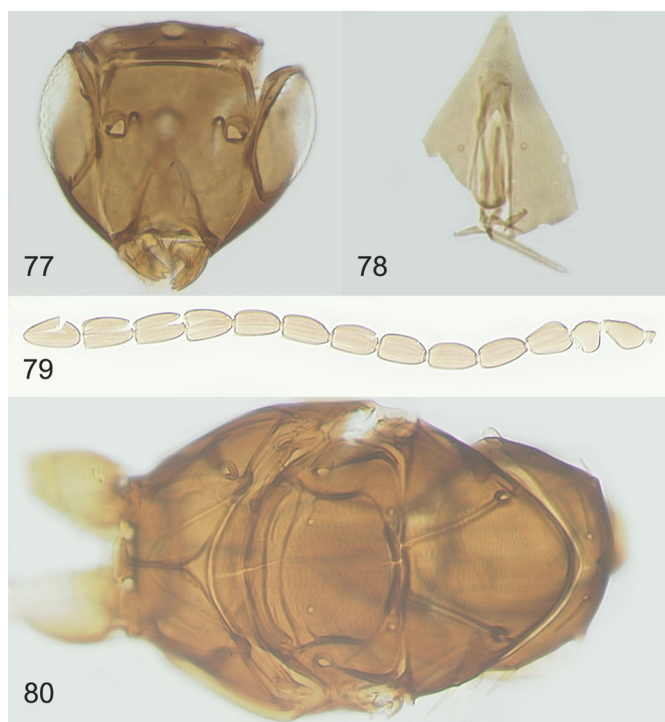


Figs. 74-76. *Himopolynema longiclavatum* Hayat and Anis, female: 74, mesosoma (Rimba Ilmu Botanical Gardens, University of Malaya, Kuala Lumpur, Malaysia); 75, mesosoma (Pudaiyur, Cuddalore, Tamil Nadu, India); 76, fore wing (Rimba Ilmu Botanical Gardens, University of Malaya, Kuala Lumpur, Malaysia).

NEOTYPE ♂". The neotype is in good condition, complete, dissected under 5 coverslips. The species was described from the single holotype male (Taguchi, 1977) and therefore a matching neotype is also selected to be a male.

Redescription: MALE (neotype). Body dark brown except petiole yellow; scape and pedicel brown, flagellum dark brown; legs yellow to dark brown; blunt setae on head and mesosoma dark. Head (Fig. 77) a little wider than high and slightly wider than mesosoma. Torulus about at middle of eye level; facial pit just above upper torular edge level. Antenna (Fig. 79) with scape 1.6x as long as wide, almost smooth (with faint, inconspicuous cross-ridges); F1 longer than pedicel, all funicle segments subequal in length

except F11 the longest. Mesosoma (Fig. 80) longer than gaster; pronotum entire, with at least 8 strong, rather long, blunt setae; mesoscutum smooth, a little longer than scutellum; scutellum smooth, scutellar placoid sensilla close to frenal line; propodeum with well-developed submedian carinae very close and parallel to each other except anteriorly, connected near anterior margin of propodeum by a short transverse carina. Fore wing (Fig. 81) 4.2x as long as wide; marginal vein with 1 dorsal and 1 ventral setae; 2 basal fringe setae on anterior margin blunt; disc hyaline and sparsely setose, with about 5 irregular rows of modified (both short and long) setae in the widest part besides admarginal rows of setae, longest marginal seta almost equal to maximum



Figs. 77-80. *Himopolynema malayanum* Taguchi, male (neotype): 77, head in frontal view; 78, genitalia; 79, antenna; 80, mesosoma.

width of wing. Hind wing (Fig. 82) 22.5x as long as wide; longest marginal seta 3.8x maximum width of wing. Petiole about as long as metacoxa. Genitalia as in Fig. 78.

Measurements of the neotype (mm): Mesosoma: 0.277; petiole: 0.062; genitalia: 0.12. Antenna: scape (excluding radicle): 0.048; pedicel: 0.033; F1: 0.052; F2: 0.055; F3: 0.056; F4: 0.055; F5: 0.055; F6: 0.053; F7: 0.055; F8: 0.052; F9: 0.053; F10: 0.055; F11: 0.072. Fore wing: 0.719: 0.197; longest marginal seta: 0.153; hind wing 0.64:0.032; longest marginal seta: 0.109.

Distribution: Malaysia (Taguchi, 1977).

Comments: Although the neotype is from Sarawak, Malaysia and not from Pahang in Peninsular [West] Malaysia, it fits quite well the original description and illustrations of Taguchi (1977). Unfortunately, I was unable to find a matching female of this species whose identity, therefore, remains not completely clear.

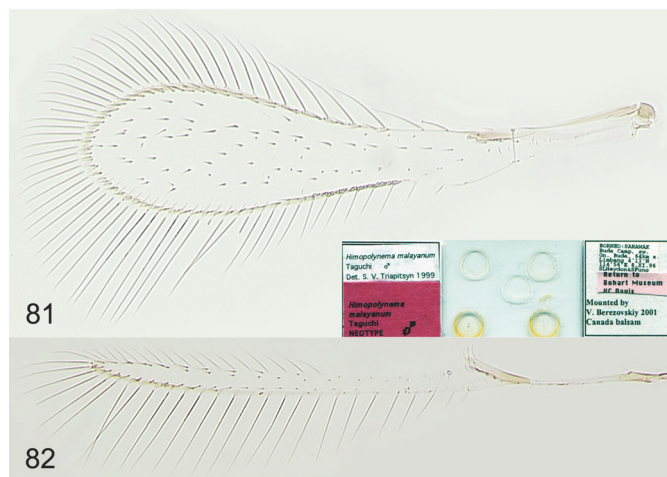
***Himopolynema robustum* (Sveum, 1982)**

Polynema robusta Sveum, 1982: 84-86 (holotype – female [lost from NTNU (Torbjørn Ekrem, personal communication)], 14 km ESE of Pandu, Sarawak (2nd division), Borneo Island, Malaysia – not examined).

Himopolynema robustum (Sveum): Hayat and Anis, 1999: 18 (possibly conspecific with *H. malayanum*), 20 (compared with *H. longiclavatum*); Triapitsyn and Berezovskiy, 2002: 6 (compared with *H. aequum*).

Distribution: Malaysia (Sveum, 1982 [as *Polynema robusta*]).

Remarks: *Himopolynema robustum*, which was described from Sarawak from a single laterally mounted female holotype (Sveum, 1982), may be either the same or, perhaps more likely, a different species from *H. malayanum* because it seemingly



Figs. 81-82. *Himopolynema malayanum* Taguchi, male (neotype): 81, fore wing and slide; 82, hind wing.

lacks the two blunt basal fringe setae on the fore wing and its discal setae could be generally relatively longer (see fig. 9, p. 86 in Sveum, 1982). Also, the fore wing of *H. robustum* is 5.5x as long as wide (Sveum, 1982). Unfortunately, the configuration of the propodeal carinae in *H. robustum* is unknown as the propodeal characters were not described nor illustrated in its original description. This unrecognizable species is thus considered a *nomen dubium*, at least for the time being; a well-mounted female matching the original description from or near the type locality is needed to reveal its true identity, if at all feasible, and designation of a neotype in that case would be desirable. Despite having examined a number of specimens of *Himopolynema* from both Sarawak and Peninsular Malaysia as well as from Indonesia, Thailand and Vietnam, unfortunately I was not able to find a well-matching female to the original description and illustrations of *H. robustum*.

Key to the described species of *Himopolynema* in the world (females, excluding *H. robustum*; female of *H. malayanum* is unknown)

- 1 Ovipositor occupying entire length of gaster and at least slightly projecting forward anteriorly (Figs. 4, 10, 55, 73); ovipositor at least 2.0x length of mesotibia and at least 1.7x length of metatibia (the *longiclavatum* species group) 2
- Ovipositor occupying less than entire length of gaster and not projecting forward anteriorly (Figs. 13, 38, 47); ovipositor at most 1.8x length of mesotibia and at most 1.5x length of metatibia 5
- 2 (1) Scape with cross-ridges (Figs. 56, 60, 72)..... 3
- Scape smooth, without cross-ridges (Figs. 2, 7) 4
- 3 (2) Clava slightly longer than combined length of F4-F6 (Figs. 56, 60); ovipositor (Fig. 55) exerted beyond apex of gaster by 0.14x own length, 3.5x length of mesotibia and 2.7x length of metatibia (Taiwan)
.....*H. tarii* sp. n.
- Clava as long as combined length of F3-F6 plus about half length of F2 (Fig. 72); ovipositor (Fig. 73) at most barely exerted beyond apex of gaster, at most 2.5x length of mesotibia and at most 2.0x length of

- metatibia (India, Malaysia, Thailand)
*H. longiclavatum* Hayat and Anis
- 4 (2) Clava as long as combined length of F3-F6 plus about half length of F2 (Fig. 2); fore wing (Fig. 5) 5.3x as long as wide (Taiwan).....
*H. berezovski* sp. n.
- Clava as long as combined length of F4-F6 (Fig. 7); fore wing (Fig. 9) 3.8x as long as wide (Taiwan).....
*H. heraty* sp. n.
- 5 (1) Facial pits at or slightly below (Fig. 31) lower torular edge level (the *hexatr* species group)..... 6
- Facial pits clearly above lower torular edge level: either just below, at, or slightly above upper torular edge level (Figs. 11, 35, 45) (the *hishimonus* species group)..... 8
- 6 (5) Propodeum with 3 pairs of setae at posterior margin (India).....
*H. hexatr* Hayat and Basha
- Propodeum with 1 pair of setae at posterior margin 7
- 7 (6) Legs mostly brown to dark brown (metacoxa dark brown); propodeum with submedian carinae as in Fig. 26 (Taiwan)*H. kslini* sp. n.
- Legs mostly dark yellow to light brown (metacoxa dark yellow); propodeum with submedian carinae as in Fig. 32 (also see fig. 7, p. 3 in Hayat *et al.*, 2003) (India, Malaysia, Vietnam).....
*H. haflongum* Hayat and Singh
- 8 (5) Toruli almost touching transverse trabecula (India).....
*H. indicum* Hayat and Basha
- Toruli not touching transverse trabecula, at a distance of notably more than 1 diameter of a torulus from it (Figs. 11, 35, 45) 9
- 9 (8) Scape smooth, without cross-ridges (Fig. 46) 10
- Scape with cross-ridges (Figs. 16, 37) 11
- 10 (9) Propodeum with narrowly V-shaped submedian carinae connected in the middle by a short transverse carina

- (Fig. 48); fore wing 4.4x as long as wide (mainland China and Taiwan)
*H. taiwanum* Taguchi
- Propodeum with U-shaped submedian carinae connected at propodeal anterior margin by a transverse carina (fig. 7, p. 4 in Triapitsyn and Berezovski, 2002); fore wing 5.3x as long as wide (Australia)
*H. aequum* (Girault)
- 11 (9) Submedian carinae on propodeum mostly parallel and next to each other except widening as a “Y” anteriorly (more so) and posteriorly (less so) (Fig. 15) (India, Japan, mainland China, Taiwan, Thailand)
*H. hishimonus* Taguchi
- Submedian carinae on propodeum curving apart from each other and connected just above midline by a short transverse carina (Figs. 36, 38) (Taiwan).....
*H. parviscutum* Taguchi

Acknowledgments

I thank Hsien-Tzung Shih and Chi-Feng Lee (TARI) for kind assistance during my visit of their collection in August 2013 and the loan of specimens, and also John T. Huber (CNC), Nai-Quan Lin (FAFU) and Steven L. Heydon (UCDC) for the loans of material. Vladimir V. Berezovski (UCRC) made several slide mounts and also helped with the initial sorting of specimens. Sagadai Manickavasagam (Parasitoid Taxonomy and Biocontrol Laboratory, Department of Entomology, Faculty of Agriculture, Annamalai University, Chidambaram, Tamil Nadu, India) provided valuable information on the specimen of *H. longiclavatum* from Tamil Nadu.

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Received: September 15, 2015

Accepted: November 2, 2015

臺灣產鈍毛繆小蜂屬 (*Himopolynema*) (膜翅目：繆小蜂科) 之綜述

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摘 要

本文綜述臺灣產鈍毛繆小蜂屬 (*Himopolynema*) (膜翅目：繆小蜂科) 7 已描述種及 1 未描述種，包括指定 *H. hishimonus* Taguchi、*H. parviscutum* Taguchi、*H. taiwanum* Taguchi 及馬來西亞的 *H. malayanum* Taguchi 的新模式標本及重新描述這些新模式標本及附圖。描述以前未知的 *H. parviscutum* 和 *H. taiwanum* 的雌蟲和 *H. hishimonus* 的雄蟲及 4 臺灣新種：*H. berezovski* sp. n.、*H. heraty* sp. n.、*H. kslini* sp. n. 及 *H. tarii* sp. n.；並針對某些外地的 *Himopolynema* 種類給予分類評論；分別製作 *Himopolynema* 的臺灣產及世界已描述確定種類雌蟲的檢索表。已知 *Himopolynema* 的部分種類為半翅目葉蟬科 (Cicadellidae) 和巢沫蟬科 (Machaerotidae) 的卵寄生蜂。

關鍵詞：繆小蜂科、繆小蜂、鈍毛繆小蜂屬、分類學、臺灣、卵寄生蜂。