Plant Protection Bulletin 38: 143～148, 1996

Two new species of *Trichogramma* Westwood (Hymenoptera: Trichogrammatidae) from Taiwan

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(Accepted for publication: June 28, 1996)

ABSTRACT

Chan, M. L., Chou, L. Y., Chou, K. C., and Chen, C. C. 1996. Two new species of *Trichogramma* Westwood (Hymenoptera: Trichogrammatidae) from Taiwan. Plant Prot. Bull. 38: 143-148.

Two new species of *Trichogramma* from Taiwan, *T. neuropterae* and *T. psocopterae*, are described and illustrated. *T. psocopterae* is the first record of the known *Trichogramma* species which reared from eggs of Psocoptera.

(Key words: Trichogrammatidae, *Trichogramma*, taxonomy, new species, Taiwan)

INTRODUCTION

More than 140 species of the genus *Trichogramma* Westwood are known worldwide, which including 5 species in Taiwan. In this paper, another 2 new *Trichogramma* species, *T. neuropterae* from egg of Chrysopidae (Neuroptera) and *T. psocopterae* from egg of Psocoptera, are described from Taiwan. It is the first record that was collected the *Trichogramma* species, *T. psocopterae*, in parasitized eggs of unidentified Psocoptera. The authorship of the name of these two new species are M. L. Chan and L. Y. Chou. The terminology used in this paper follows Pinto[(1)]. The holotypes designated here are deposited in the Taiwan Agricultural

Research Institute (TARI), Taichung, Taiwan. The paratypes are preserved in TARI and National Museum of Natural Science, Taichung, Taiwan.

Trichogramma neuropterae Chan & Chou n. sp. (Figs. 1-8)

Male: Body length 0.67-0.72 mm, head width 0.23-0.31 mm, HTL 0.16-0.18 mm. Antenna: Flagellum elongate, 0.16-0.20 times as wide as long, and 1.06-1.22 HTL; with 9 BCPS and 3 PS; flagellar setae long and sharply tapering, 40-49 in number, longest setae 2.3-2.9 times as maximum width of flagellum. Mandible with 6 teeth. Mesoscutellum: anterior pair of setae elongate and stout, length about 0.44-0.65 times of posterior pair. Forewing: length 0.54-0.58 mm, FWW/FWL= 0.47-0.55; length of longest postapical setae about 0.12-0.16 FWW; RS1 with 4 to 5 setae, 9-17 setae between 4th and 5th tracks. Hindwing: anterior vein tract composed of 3-4 setae, extending more than 0.33-0.46 distance of middle tracts, posterior vein tract with 8-10 setae, almost extending apex of middle tracts.

Genitalia: Similar to *Trichogramma nomlaki* Pinto & Oatman, extremely different from other known congeners. GC round and broad, 0.61-0.81 times as wide as long; AD 0.19-0.27 GL; length of DA 0.58-0.77 GL; DLA broad and not notched laterally, with posterior extension acutely emarginate apically, and not constricted at base, extending below apex of PM and VS, PM sclerotized and directed posterolaterally, behind level of VS, VS sclerotized, apex with apical spine directed posterolaterally, occupying about 0.82-0.83 AD; IVP poorly developed; IB narrow; VR chitinized and well developed, extending nearly to base of genital capsule, about 0.07-0.23 GL. Aedeagus broad, with lateral margin sinuated, about 0.86-1.18 GL and almost same as HTL, apodemes extremely short, only about 0.41-0.44 AL.

Color: Body brownish yellow. Antenna pale brown. Mesosomal sclerites brown; legs with hind coxa brown; metasomal terga brown; wings hyaline, forewing slightly pale brown at basal third.

Female: Body length 0.74-0.79 mm, head width 0.28-0.33 mm, HTL 0.17-0.19 mm. Antenna: club 0.28-0.40 broad as long, each with 5 BCPS and 5 PS; club length 1.1-1.3 scape length. Mandible with 6 teeth. Forewing: RS1 with 4-6 setae, 9-16 setae between 4th and 5th vein tracts. Ovipositor short, OL/HTL = 0.76-0.80. Color pale brown. Antenna brown. Metasomal terga brown at basal three segments. Ovipositor brown.

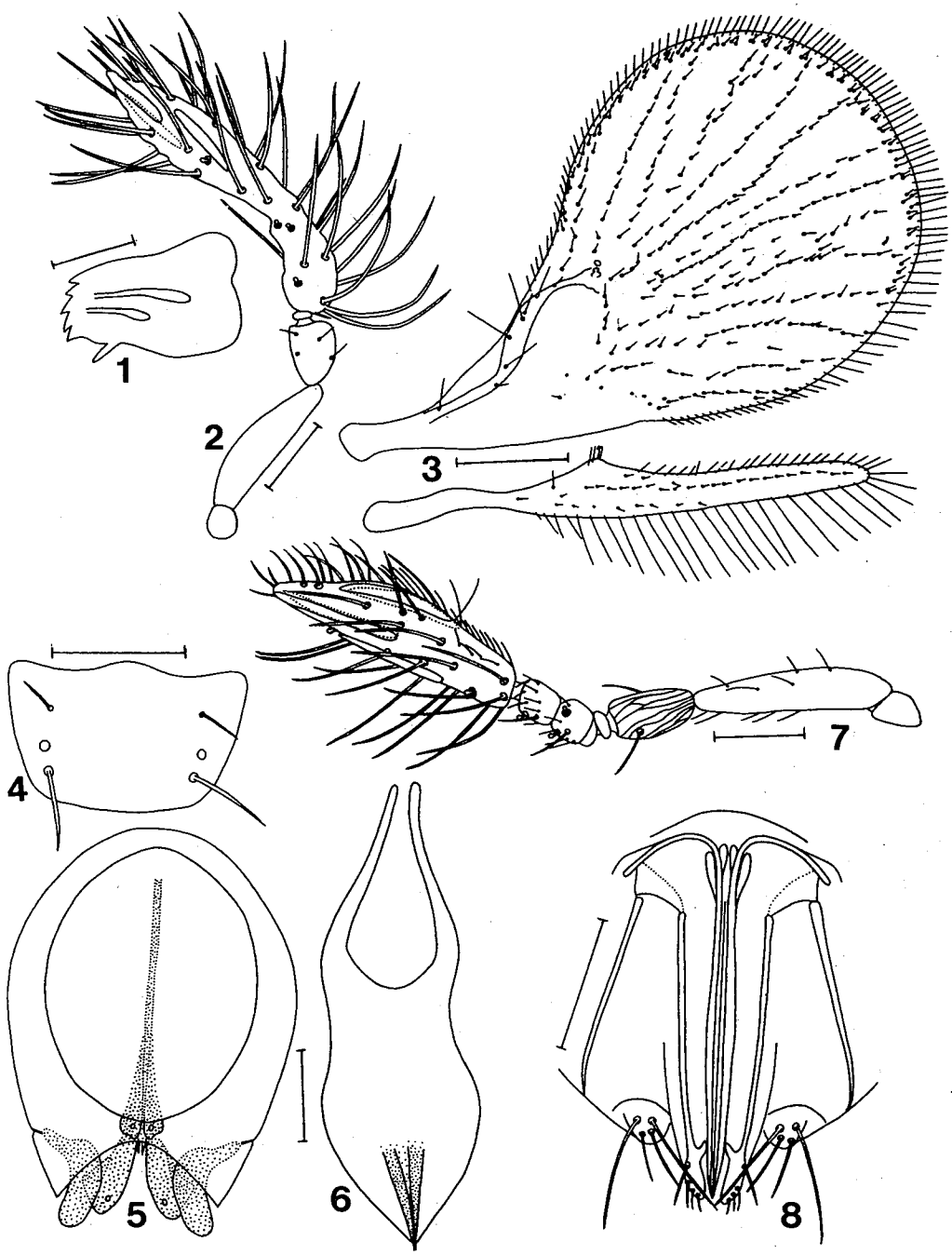
Material examined: Holotype: ♂, TAICHUNG: Wufeng, 20-III-1992 ex Chrysopidae eggs on *Boehmeria frutescens* var. *frutescens*, K.C. Chou. Paratypes: CHIAI: 1 ♂ 3 ♀, 14-IV-1992, C.Y. Wong. NANTOU: Huisun, ♂ 3 ♀, 28-X-1992 ex Chrysopidae eggs on *Crassocephalum rabens*, K.C. Chou; Tungpu, 1 ♂, X-1985, K.C. Chou. TAICHUNG: Wufeng, 5 ♀, same data as holotype.

Etymology: Named after Neuroptera.

Distribution: Taiwan.

Hosts: Eggs of Chrysopidae (Neuroptera). *Mallada basalis* (Walker) and *M. boninensis* (Okamoto) can be used as hosts for this species in laboratory.

Remarks: This new species is very closed to *Trichogramma nomlaki*[2] Pinto



Figs. 1-8. *Trichogramma neuropterae* Chan & Chou n. sp.: 1-6, male; 7-8, female. 1, mandible (dorsal view); 2, antenna; 3, wings; 4, mesoscutellum (expanded); 5, genital capsule (dorsal view); 6, aedeagus (dorsal view); 7, antenna; 8, genitalia (dorsal view) (Scale: 1, 5, 6 = 0.02mm; 2, 4, 7, 8= 0.05mm; 3 = 0.1mm).

and Oatman and both of them parasitize in eggs of Neuroptera. Its PM is dorsolateral to GS, and DLA is not elongated apically as that of *T. nomlaki*[3].

Trichogramma psocopterae Chan & Chou n. sp. (Figs. 9-16)

Male: Body small, body length 0.58-0.7 mm, head width 0.21-0.24 mm, HTL 0.14-0.15 mm. Antenna: Flagellum relatively short and straight, similar to club of female, 0.32-0.38 times as wide as long, and 0.71-0.79 HTL; with 8-9 BCPS and 3 PS; flagellar setae moderately long and fine, 41-46 in number, longest setae 1.2-1.7 times as maximum width of flagellum. Mandible quite different from other known species, with 3 teeth. Scutellum: anterior pair of setae short and fine, about 0.08-0.18 length of posterior pair. Forewing: 0.39-0.48 mm, FWW/FWL = 0.5-0.56; apical margin somewhat blunt, with fringe setae on outer margin almost same length, longest fringe setae about 0.21-0.26 FWW; RS1 with 3 setae, 2-5 setae between 4th and 5th tracks. Hindwing: anterior vein tract absent, without any seta, posterior vein tract with 3-6 setae, almost extending 0.32-0.62 distance of middle tracts.

Genitalia: GC 0.5-0.58 as wide as long; AD 0.18-0.25 GL; DA round, length of DA 0.55-0.66 GL; DLA reduced, and not well defined; posterior ends of PM extremely pointed, VS nearly the same level of tips of PM, occupying about 0.7-1.0 AD; IVP 0.44-0.63 AD; VR not visible, VP not visible. Aedeagus 1.1-1.2 GL and 0.59-0.61 HTL, apodemes 0.43-0.48 AL.

Color: Head dull brownish yellow; antenna brownish yellow. Mesosomal sclerites black; legs with hind coxa black; metasomal terga black; wings hyaline, forewing brownish yellow at basal half.

Female: Body length 0.64-0.76 mm, head width 0.22-0.26 mm, HTL 0.13-0.15 mm. Antenna: club 0.44-0.5 as broad as long, each with 4-5 BCPS and 5 PS; club length 0.93-1.2 times as scape length. Mandible with 3 teeth. Forewing: RS1 with 2-4 setae, 4-9 setae between 4th and 5th vein tracts. Ovipositor extremely long, OL/HTL = 0.92-0.99. Color dull brownish yellow. Mesosomal sclerites and metasomal terga black. Antenna brownish yellow. Legs with hind tibia blackish. Wing hyaline, forewing hyaline.

Material examined: Holotype: ♂, TAICHUNG: Wufeng, 5-VIII-1992, K.C. Chou. Paratypes: TAICHUNG: Wufeng, 42 ♀ 23 ♂, same data as holotype; 5 ♀, 18-VIII-1992, K.C. Chou. All were reared from Psocoptera eggs on *Mangifera indica.*

Etymology: Named after Psocoptera.

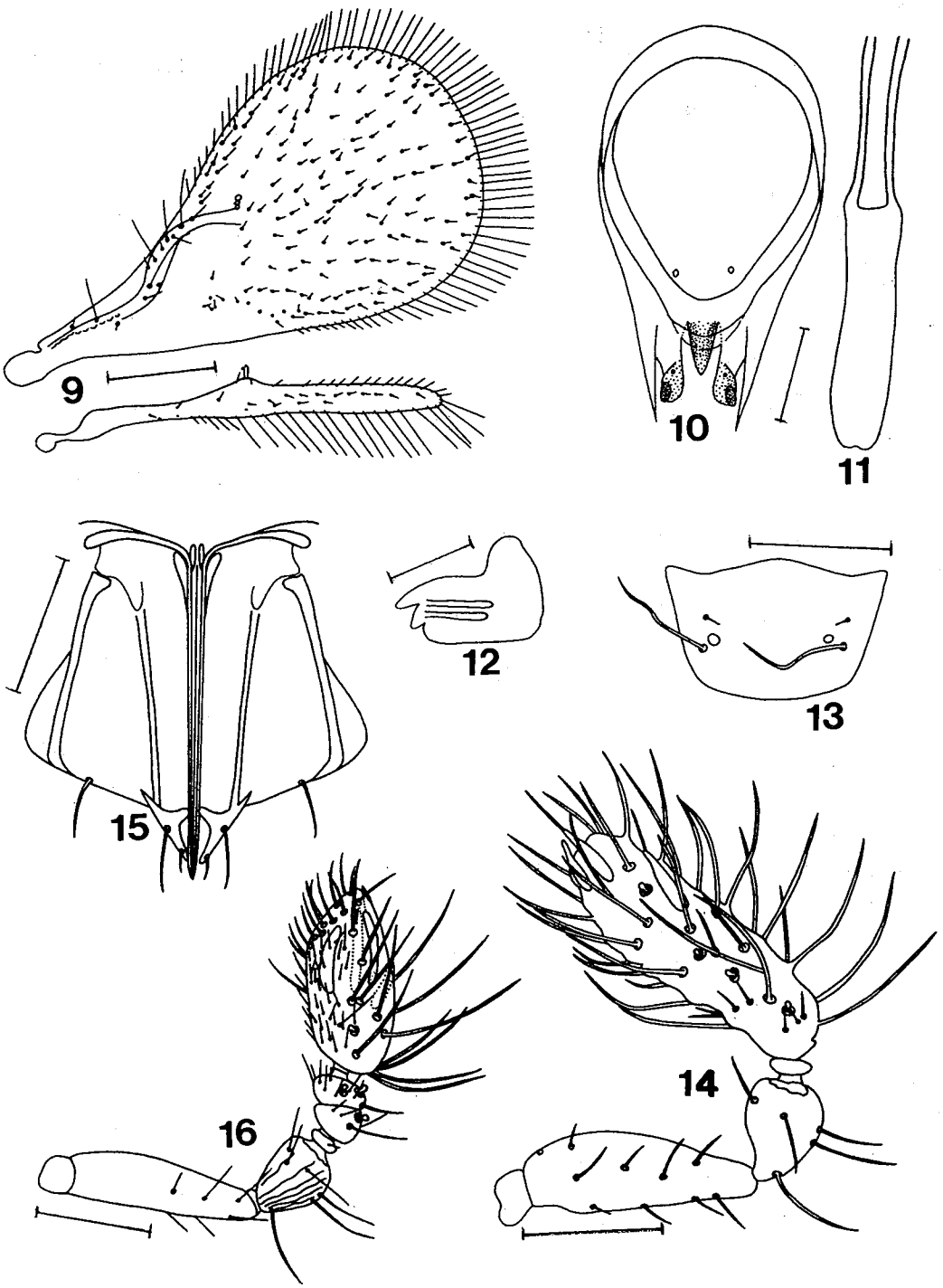
Distribution: Taiwan.

Host: Unidentified eggs of Psocoptera.

Remarks: This species is smaller than other species in size. Male antenna with shorter flagellum is very similar to those of female. Male genitalia of this species is different from that of other species with reduced and ill-defined DLA and extremely pointed posterior ends of PM.

ACKNOWLEDGMENTS

The authors are indebted to Jia-shin Liu for assistance in preparing the materials. This study was financially supported in part by the Council of Agriculture, Exe-



Figs. 9-16. *Trichogramma psocopterae* Chan & Chou n. sp.: 9-14, male; 15-16, female. 9, wings; 10, genital capsule (dorsal view); 11, aedeagus (dorsal view); 12, mandible (dorsal view); 13, mesoscutellum (expanded); 14, antenna; 15, genitalia (dorsal view); 16, antenna (Scale: 10, 11, 12 = 0.02mm; 13, 14, 15, 16 = 0.05mm; 9 = 0.1mm).

cutive Yuan, Republic of China (81AST-12.1-FAD-18(6) and 82AST-1.3-FAD-23 (12)).

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摘　　要

詹美鈴[1]、周樑鎰[2]、周根清[2]、陳健忠[2]　1996　臺灣產赤眼蜂屬(膜翅目：赤眼蜂科)二新種　植保會刊　38: 143-148. ([1]台中市　國立自然科學博物館蒐藏研究組，[2]台中縣霧峰鄉　臺灣省農業試驗所應用動物系)

赤眼蜂屬(*Trichogramma*)隸屬膜翅目、赤眼蜂科，全世界已知之種類約140種，臺灣僅有5種記錄。本文描繪臺灣產寄生於脈翅目和嚙蟲目昆蟲卵中之二新種 *Trichogramma neuropterae* 和 *T. psocopterae*, 其中嚙蟲目昆蟲卵爲首次發現之赤眼蜂屬昆蟲新寄主。

(關鍵詞：赤眼蜂科、赤眼蜂屬、分類、新種、臺灣)