

New Records of Psychomyiidae (Insecta: Trichoptera) from Vietnam

Duc Huy Hoang* and Yeon Jae Bae**

(Department of Biology, Seoul Women's University, Seoul 139-774, Korea)

ABSTRACT

An examination of caddisfly materials from the field trips in Vietnam during 2002–2003 resulted in the recognition of the male adult of *Tinodes reuso* Malicky & Chantaramongkol (new Vietnamese record) and four undetermined species of larvae (*Psychomyia* VL1, *Psychomyia* VL2, *Paduniella* VL1, and *Tinodes* VL1) in the family Psychomyiidae. Genera *Psychomyia* and *Paduniella* are recorded from Vietnam for the first time. Material data, descriptions, diagnoses, distributions, and taxonomic remarks are provided.

Key words: caddisflies, description, larvae, *Paduniella*, *Psychomyia*, *Tinodes*

INTRODUCTION

The caddisfly family Psychomyiidae is widely distributed in most faunal regions of the world and 117 species are recorded in Southeast Asia (Morse, 2005). Adults of six species of Psychomyiidae are known in Vietnam by Malicky (1995) and Mey (1996): *Lype vietnamella* Mey, *Tinodes apteryx* Malicky, *Tinodes meleagris* Malicky, *Tinodes micrapteryx* Malicky, *Tinodes physetes* Malicky, and *Tinodes triomdys* Malicky. Adults and larvae of Psychomyiidae are generally found in mountain areas in Vietnam.

The adult of Psychomyiidae is characterized by the absence of ocelli. Maxillary palpi are 5-segmented in both sexes and segment III is never inserted before the apex of segment II. Antennae

*Current address: Department of Zoology, Vietnam National University–Ho Chi Minh City, Vietnam

**To whom correspondence should be addressed

Tel: 82-2-970-5667, Fax: 82-2-970-5974, E-mail: yjbae@swu.ac.kr

are moderately robust and about as long as forewings. Mesoscutum has a pair of ovoid setal warts. Forewings are slender, rounded or tapered apically; thyridial cell is very small. Hindwings are narrow and lanceolate; costal margin is protruded at mid-length. Tibial spurs are 2.4.4.

In the larva, the head has a broad triangular ventral apotome. Maxillary lobe is broad and flattened; submental sclerites are paired and separated. Labium is well-extended beyond anterior margin of head; labial palpi are absent. Foretrochantin is broad, hatchet-shaped, and separated from propleuron by well-marked suture. Pronotum is sclerotized. Forelegs are stouter than other legs; tarsal claws are short and bear a stout basal process with long setae. Abdomen lacks lateral setae.

In a series of caddisfly systematics of Vietnam, we report five species of Psychomyiidae including adults of one species new to Vietnam, and four unidentified species from the larvae. Since the larvae have not been associated with previously described nominal species of adults, we informally classify the larvae using a symbol VL (Vietnamese Larva).

MATERIALS AND METHODS

Adult and larval materials were collected from mountain streams in Vietnam during 2002–2003. All the materials are preserved in 80% ethanol and deposited in the Aquatic Insect Collection of Seoul Women's University (SWU-AIC). Morphological terminology follows Ross (1956). Abbreviations in material examined are as follows: A (adult), L (larva); alt (altitude), Cr (creek), Mt (mountain), NP (National Park), Prov (Province), R (river); DHH (Duc Huy Hoang), TKTC (Thi Kim Thu Cao), VVN (Van Vinh Nguyen), YJB (Yeon Jae Bae).

TAXONOMIC ACCOUNTS

Key to the Genera of Vietnamese Psychomyiid Larvae

1. Anal claws with well-developed teeth arising from ventral margin 2
 - Anal claws without teeth on ventral margin 3
2. Submental sclerites of ventral apotome of head prominent and much longer than wide *Psychomyia*
 - Submental sclerites of ventral apotome of head smaller and wider than long *Paduniella*
3. Mandibles with prominent hump dorsolaterally; submental sclerites usually large, approximately a half as long as wide *Tinodes*
 - Mandibles without prominent bump dorsolaterally; submental sclerites small, approximately one-third as long as wide *Lype*

1. *Psychomyia* VL1 (Fig. 1A–D)

Material examined. VIETNAM: Lao Cai Prov. –15L, Sapa, Mong Sen, 29 Dec. 2000 (TKTC); 2L, Sapa, Ta Phin, 29 Dec. 2000 (TKTC); 2L, Sapa, Trung Trai, 29 Dec. 2000 (TKTC). Dak Nong Prov. –7L, Dak Song, Dak Pri Cr. 740 m, 5 Mar. 2001 (DHH).

Description. Adult and pupa. Unknown.

Larva. Body length 5.3 mm, width 0.6 mm. *Head:* Head length 0.6 mm, width 0.6 mm, dorsally U-shaped, with two well developed processes symmetrically on anterior margin of frontoclypeus, basically ivory with brown color pattern (Fig. 1A); setae relatively long. Submental sclerites very large; each sclerite longer than wide; mentum small and triangular (Fig. 1C). *Thorax:* Prothoracic nota ivory, with brown markings ambiguously, with few long setae. Legs stout (Fig. 1B). Posterolateral corners of pronotum extended ventrally as thin sclerotized band (Fig. 1C). *Abdomen:* Abdominal segments moderately narrow in posterior body in lateral view. Anal prolegs with basal segment shorter than lateral sclerites, with few long setae; anal claws well developed, with comb-like teeth on ventral margin.

Diagnosis. This species can be distinguished from *Psychomyia* VL2 by the shape of anterior margin of frontoclypeus and distinct fuscous pattern (Fig. 1A).

Distribution. Vietnam.

Remarks. The larvae of *Psychomyia* VL1 from Dak Nong Province show color variations. Their head is uniformly ivory and has one protrusion between two processes on the anterior margin of frontoclypeus (Fig. 1D). The genus *Psychomyia* is new to Vietnam.

2. *Psychomyia* VL2 (Fig. 1E–G)

Material examined. VIETNAM: Lao Cai Prov. –1L, Sapa, Dong Tuyen, 29 Dec. 2000 (TKTC); 2L, Sapa, Ta Phin, 29 Dec. 2000 (TKTC); 1L, Sapa, Trung Trai, 29 Dec. 2000 (TKTC). Vinh Phuc Prov. –2L, Me Linh, 12 Jan. 2001 (TKTC). Dak Nong Prov. –3L, Dak Song, Dak Pri Cr. 450 m, 13 Mar. 2001 (DHH).

Description. Adult and pupa. Unknown.

Larva. Body length 4.5 mm, width 0.8 mm (Fig. 1E). *Head:* Head length 0.5 mm, width 0.5 mm, dorsally U-shaped, with two poorly developed processes symmetrically on anterior margin of frontoclypeus, basically ivory with brown color pattern (Fig. 1F). Setae relatively long. Submental sclerites very large, each sclerite longer than wide; mentum small and triangular, slightly depressed horizontally (Fig. 1G). *Thorax:* Prothoracic nota ivory with brown markings ambiguously. Legs stout. Posterolateral corners of pronotum extended ventrally as thin sclerotized band. *Abdomen:* Abdominal segments moderately narrow in posterior body in lateral view. Anal prolegs stout, with basal segment shorter than lateral sclerites, with few long setae; anal claws well developed, with comb-like teeth on ventral margin.

Diagnosis. This species is similar to *Psychomyia* VL1 but can be distinguished by the poorly developed processes on the anterior margin of frontoclypeus (Fig. 1F).

Distribution. Vietnam.

3. *Paduniella* VL1 (Fig. 1H–I)

Material examined. VIETNAM: Lao Cai Prov. –2L, Sapa, Ta Van, 28 Dec. 2000 (TKTC).

Description. Adult and pupa. Unknown.

Larva. Body length 2.8 mm, width 0.4 mm. *Head:* Head length 0.4 mm, width 0.3 mm, longer than wide, convex in anterior margin of frontoclypeus, basically chocolate color, with light muscle scars regularly (Fig. 1H). Submental sclerites 0.5 x as long as wide; mentum broad and triangular

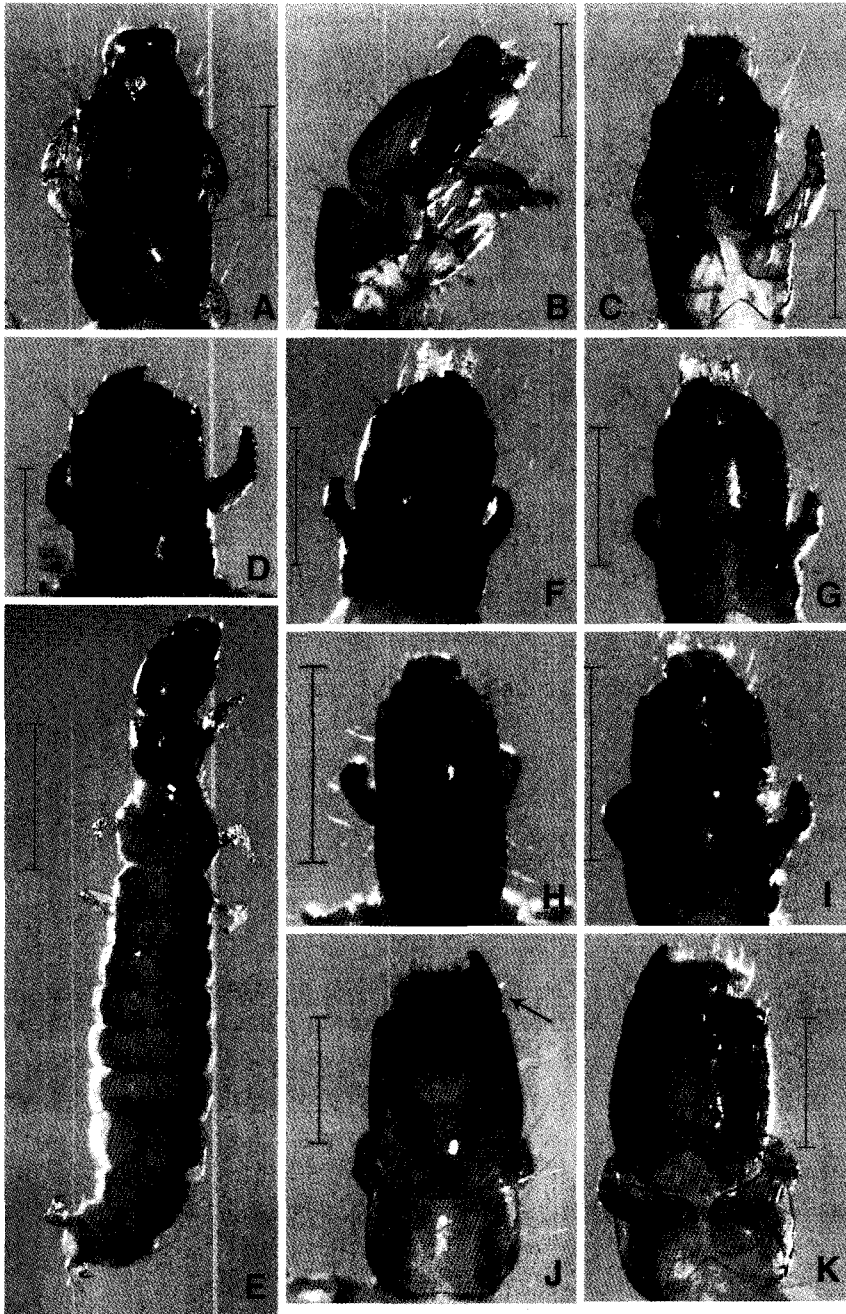


Fig. 1. Larvae of Psychomyiidae. A, *Psychomyia* VL1, head and prothorax, dorsal; B, *Psychomyia* VL1, head and prothorax, lateral; C, *Psychomyia* VL1, head and prothorax, ventral; D, *Psychomyia* VL1, head and prothorax of specimens from Dak Nong, dorsal; E, *Psychomyia* VL2, whole larva, dorsal; F, *Psychomyia* VL2, head and prothorax, dorsal; G, *Psychomyia* VL2, head and prothorax, ventral; H, *Paduniella* VL1, head and prothorax, dorsal; I, *Paduniella* VL1, head and prothorax, ventral; J, *Tinodes* VL1, head and prothorax, dorsal; K, *Tinodes* VL1, head and prothorax, ventral. Scale bars = 0.5 mm (A–D, F–K), 1 mm (E).

(Fig. 1I). *Thorax*: Prothoracic nota chocolate color, with light speckles regularly. Legs short and stout. Posterolateral corners of pronotum extended ventrally as thin sclerotized band (Fig. 1I). *Abdomen*: Abdominal segments moderately narrow in posterior body in lateral view. Anal prolegs with basal segment shorter than lateral sclerites; anal claws well developed, with comb-like teeth (5–6) on the ventral margin.

Diagnosis. This species can be distinguished from other species of *Psychomyia* by the shape of head and submental sclerites. The head is longer than wide (Fig. 1H) and the submental sclerites are not large and a half as long as wide (Fig. 1I).

Distribution. Northern Vietnam.

Remarks. The genus *Paduniella* is new to Vietnam.

4. *Tinodes reuso* Malicky & Chantaramongkol (Fig. 2A–E)

Tinodes reuso Malicky & Chantaramongkol 1993: 466, 486 (♂, Chattrakan, Thailand).

Material examined. VIETNAM: Dak Nong Prov. – 2♂, Dak Song County, Dak Pri Cr., alt. 630

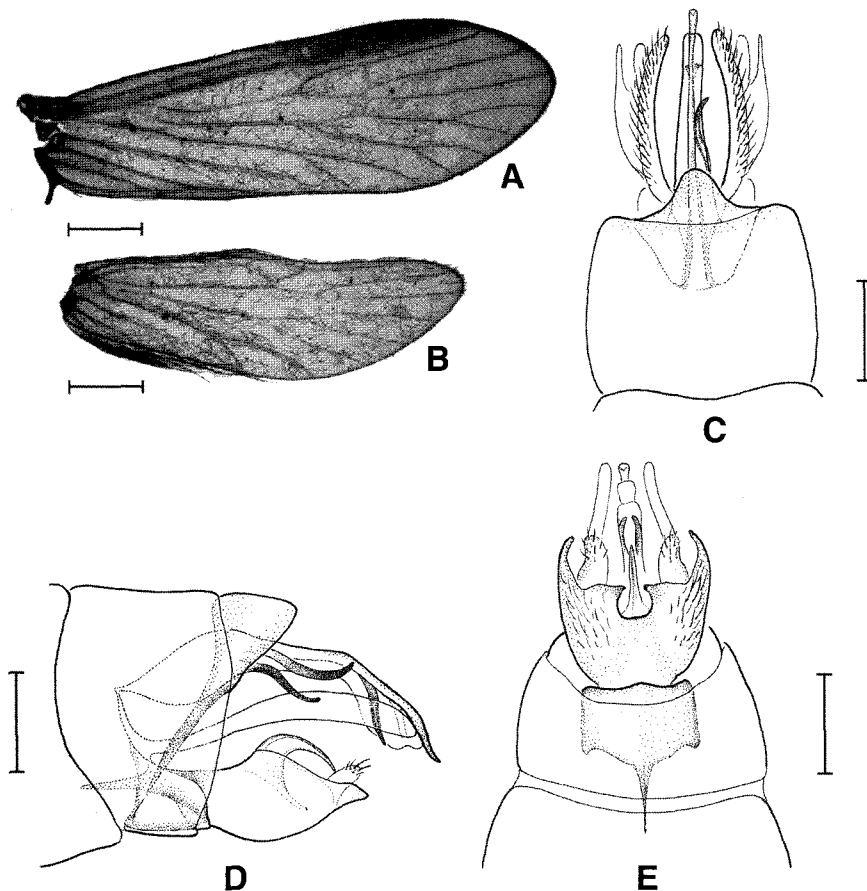


Fig. 2. Male adult of *Tinodes reuso* Malicky & Chantaramongkol. A, forewing; B, hindwing; C, male genitalia dorsal; D, male genitalia, lateral; E, male genitalia, ventral. Scale bars = 0.5 mm (A–B), 0.2 mm (C–E).

m, 18 Apr. 2003 (DHH).

Description. Male adult. Body length 3 mm, forewings 4 mm. Body color brown. *Head:* Antennae length 3.5 mm, brown. *Wings:* Forewings (Fig. 2A) moderately slender, round apically; jugal lobe present; crossvein R-M ending in R5; fork I absent. Hindwings (Fig. 2B) with setae in costal margin basally. *Male genitalia* (Fig. 2C-E): Segment X dorsally simple and semi-membranous, with two long setose appendages originated deeply inside ventrolaterally. Basal segment of inferior appendage fused basally, with carina-like structure at posteromedian margin; distal segment of inferior appendage setose and tuberos. Aedeagus with dorsal sclerotized thread and parameres as in Fig. 2D.

Female adult, pupa, and larva. Unknown.

Diagnosis. The male adult of *Tinodes reuso* can be distinguished by the inferior appendages that have carina-like structure (Fig. 2E). Aedeagus has dorsal sclerotized threads (Fig. 2D).

Distribution. Thailand, Southern Vietnam.

5. *Tinodes* VL1 (Fig. 1J–K)

Material examined. VIETNAM: Dak Nong Prov.–3L, Dak Song, Dak Pri Cr. alt. 970 m, 7 Mar. 2001 (DHH).

Description. Adult and pupa. Unknown.

Larva. Body length 6.4 mm, width 0.9 mm. *Head:* Head length 0.8 mm, width 0.6 mm, dorsally U-shaped, slightly wider posteriorly, straight in anterior margin of frontoclypeus, uniformly ivory (Fig. 1J). Mandibles with prominent hump dorsolaterally (Fig. 1J). Submental sclerites small and 0.5 x as long as wide (Fig. 1K). *Thorax:* Prothoracic nota ivory. Legs short and stout. Posterolateral corners of pronotum extended ventrally as thin sclerotized band. *Abdomen:* Abdominal segments moderately narrow in posterior body in lateral view. Anal prolegs with basal segment shorter than lateral sclerites, with few long setae; anal claws small and simple.

Diagnosis. This species can be distinguished from other species of *Psychomyia* and *Paduniella* VL1 by the mandibles that have prominent dorsolateral hump (Fig. 1J). Anal claws lack teeth.

Distribution. Southern Vietnam.

ACKNOWLEDGMENTS

We thank Dr. V. V. Nguyen (Hanoi University of Science, Hanoi) and Ms. T. K. T. Cao (IEBR, Hanoi) for their assistance in field trips. We also thank Dr. K. Tanida, Dr. B. Armitage, Dr. J. Morse, and Mr. T. Nozaki for providing related literatures. This work was supported by the Bahrom Research Grant of Seoul Women's University in 2005.

REFERENCES

- Malicky, H. and P. Chantaramongkol, 1993. Neue Trichopteren aus Thailand. Teil 1: Rhyacophilidae, Hydrobiosidae, Philopotamidae, Polycentropodidae, Ecnomidae, Psychomyiidae, Arctopsychidae,

- Hydropsychidae (Arbeiten über thailändische Köcherfliegen Nr. 12). Linzer Biol. Beitr., **25**: 433-487.
- Malicky, H., 1995. Neue Köcherfliegen (Trichoptera, Insecta) aus Vietnam. Ent. Berichte Luzern, **27**: 119-128.
- Mey, W. 1996. Die Köcherfliegenfauna des Fan Si Pan-Massivs in Nord-Vietnam, 1. Beschreibung neuer und endemischer Arten aus den Unterordnungen Spicipalpia und Annulipalpia (Trichoptera). Beitrage Ent., **46**: 39-65.
- Morse, J. C. (ed.), 2005. Trichoptera world checklist. <http://entweb.clemson.edu/database/trichopt/index.htm>, effective 29 August 2005.
- Ross, H. H., 1956. Evolution and Classification of the Mountain Caddisflies. The University of Illinois Press, Urbana.

RECEIVED: 4 October 2005

ACCEPTED: 28 October 2005

베트남산 통날도래과(날도래목)의 미기록종

황 득 휘* · 배 연 제**

(서울여자대학교 생물학과)

요 약

2002-2003년 동안 베트남의 현지조사를 통하여 채집한 날도래 표본을 이용하여 통날도래과에 속하는 *Tinodes reuso* Malicky & Chantaramongkol (베트남 미기록종) 및 4종 (*Psychomyia* VL1, *Psychomyia* VL2, *Paduniella* VL1 및 *Tinodes* VL1)의 유충(미결정충)을 확인하여 보고하였다. *Psychomyia*와 *Paduniella*속은 베트남에서 처음으로 기록된다. 표본자료, 기재문, 진단문, 분포 및 분류상의 비고를 수록하였다.