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## Five New Species of Polycentropodid Caddisflies from Taiwan (Trichoptera: Polycentropodidae) 【Research report】

### 臺灣產多距石蛾科之五種新種（毛翅目）【研究報告】

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#### Abstract

Only 1 species of Polycentropodid caddisfly *Polyplectropus inaequalis* Ulmer, 1927 had previously been recorded in Taiwan. Here we add 5 more species of this family, i.e., *Nyctiophylax taiwanensis*, *Polycentropus unicus*, *Polycentropus nigrospinus*, *Polyplectropus tuchiaensis* and *Polyplectropus inusitatus*. All these species are new to science. The male and female are described and illustrated.

#### 摘要

以往臺灣僅記錄一種之多距石蛾，*Polyplectropus inaequalis* Ulmer, 1927。本文描述五種多距石蛾科新種，即 *Nyctiophylax taiwanensis*, *Polycentropus unicus*, *Polycentropus nigrospinus*, 及 *Polyplectropus inusitatus* 之雌蟲及雄蟲，並輔以重要之性狀圖。

**Key words:** taxonomy, new species, Polycentropodidae, Taiwan

**關鍵詞:** 分類、新種、多距石蛾科、臺灣。

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# Five New Species of Polycentropodid Caddisflies from Taiwan (Trichoptera: Polycentropodidae)

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## ABSTRACT

Only 1 species of Polycentropodid caddisfly *Polyplectropus inaequalis* Ulmer, 1927 had previously been recorded in Taiwan. Here we add 5 more species of this family, i.e., *Nyctiophylax taiwanensis*, *Polycentropus unicus*, *Polycentropus nigrospinus*, *Polyplectropus tachiaensis* and *Polyplectropus inusitatus*. All these species are new to science. The male and female are described and illustrated.

**Key words:** taxonomy, new species, Polycentropodidae, Taiwan

## Introduction

Only 1 species of Polycentropodid caddisfly had been recorded in Taiwan, *Polyplectropus inaequalis* Ulmer, 1927. Here 5 new species are added to Taiwanese caddisfly fauna. All specimens were collected by the senior author, unless indicated otherwise. The adults were captured by light trap or by sweeping along the riverside. Specimens were preserved in 75% alcohol. The abdomens of both male and female caddisflies were cleared in 10% potassium hydroxide (KOH) at 90°C for 15 minutes, and then were examined and drawn in glycerin under a stereomicroscope. The holotypes and some paratypes are deposited in the National Museum of Natural Science of Taiwan (NMNS); other paratypes are deposited in the Department of Biology, Tunghai University, Taiwan (BTHU).

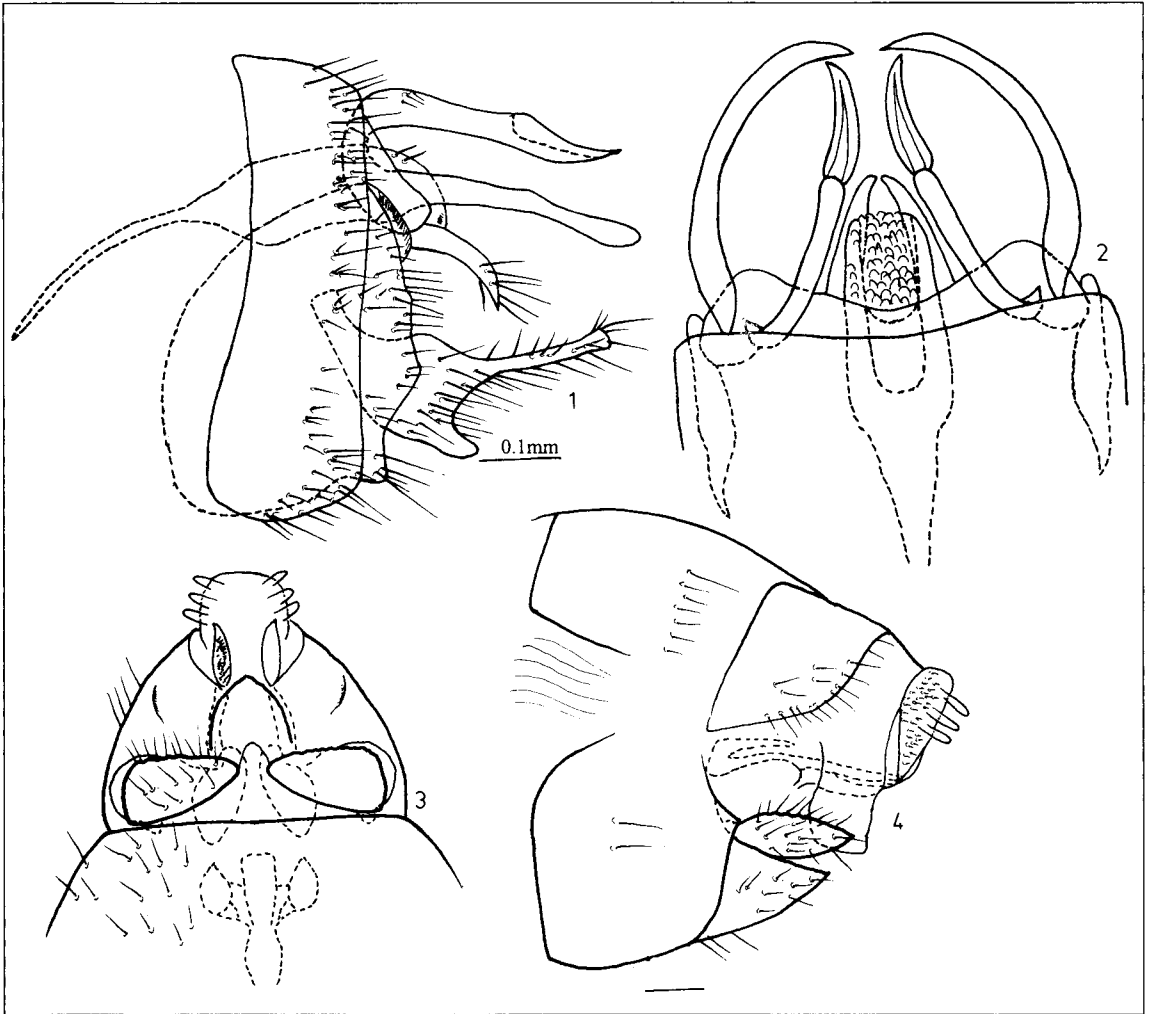
The terminologies of Mosely & Kimmins (1953) and Neboiss (1989) are followed in this paper in the descriptions of male and female specimens.

## Descriptions of New Species

*Nyctiophylax (Paranyctiophylax) taiwanensis* n. sp. (Figs. 1-4)

Color yellowish brown, ca. 4.3-4.6mm long, antenna as long as forewing length, scape slightly stout. 3rd segment of maxillary palpi not arising from apex of 2nd. Spur formula 3-4-4. Forewing ca. 4.3mm long, f1 absent; discoidal, median and thyridial cell closed; anal vein looped. Hindwing ca. 3.9mm long, f2 and f5 present; median cell open, discoidal cell small, triangular, thyridial cell elongated.

Male genitalia: IX segment narrow, slightly broader ventrally. Preanal appendage arising from distal-lateral margin of IX tergite, 2-segmented, apex pointed. Superior appendage elongated. Paraproctal process conspicuous, sickle-like and curved. Inferior appendage base slender and broader, with a mesoventral branch. Phallus stout, rectangular, apex membranous, with a long stalk length about equal to phallus, arising from junction of VII and VIII.



Figs. 1-4. *Nyctiophylax taiwanensis*, n. sp.: 1, male genitalia lateral; 2, dorsal; 3, female genitalia ventral; 4, lateral.

Female genitalia: VIII small, sternite round, ventral plate triangular. IX sternite tongue-shaped.

Holotype: ♂, TAICHUNG: Wushikang, 460m, 3-VI-1995, (NMNS).

Paratypes: 1♀, same data as holotype, (NMNS). TAOYUAN: Koyu stream, 1 ♂, 1700m, 29-VI-1988. E. Chen, (BTHU).

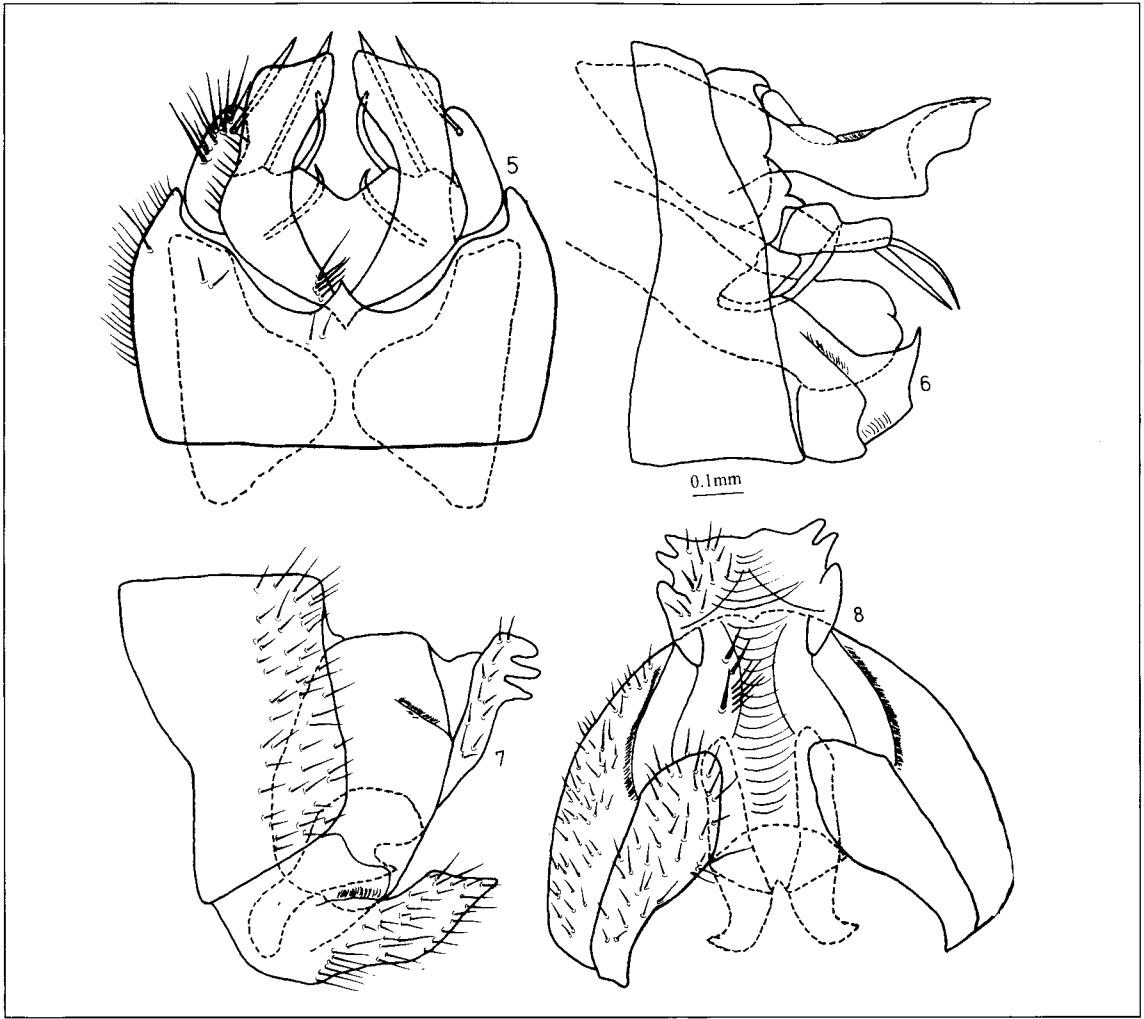
Notes: This species is similar to *N. kabaensis* Neboiss and *N. lumarius* Neboiss, but stronger curved dorsal spines and a different ventral aspect of the inferior

appendage are found in this species.

Etymology: Latinization: *taiwanensis*, from Taiwan.

*Polycentropus unicus* n. sp. (Figs. 5-8)

Color yellowish brown, ca. 4.0mm long. Antenna shorter than forewing, scape stout but not long. First 2 segments of maxillary palpi equal in length. Spur formula 3-4-4, legs covered with dense dark setae. Forewing ca. 4.9mm long, all forks present; discoidal and thyridial cell



Figs. 5-8. *Polycentropus unicus* n. sp.: 5, male genitalia ventral; 6, lateral; 7, female genitalia lateral; 8, ventral.

about equal length, median cell open. Hindwing ca. 4.1mm long, f1 and f5 absent; median cell open, discoidal cell narrow and elongated, starting before base of thyridial cell.

Male genitalia: IX tergite well developed and broad, ventral plate subtriangular and posterior broader in lateral view. Superior appendage blade-shaped and curved ventrally. Paraproctal process arising below lateral plate, truncated mesoventrally, with pair of long pointed

processes upward. Inferior appendage rectangular, moderately truncated at inner margin, pair of processes arising from lateral side, and a slender pointed process arising near apex. Paramere slender, tapering distally, arising from the middle of VIII. Phallus short and rectangular in lateral view.

Female genitalia: VIII segment well developed, sternite rounded and broad, ventral plate subtriangular with broader and truncated apex. X membranous.

Holotype: ♂, TAICHUNG: Wushikang, 460m, 3-VI-1995, (NMNS).

Paratypes: ♂, same data as holotype, (BTHU). HUALIEN: 1♀, Antung Spring, 24-VIII-1994, (NMNS). ILAN: 3♂, Minchi, 1200m, 16-VIII-1995. KAOHSIUNG: 1♂, Fushing, 900m, 11-XI-1995, (NMNS). TAICHUNG: 1♂ 1♀, Tachia Stream, 600m, 23-X-1994, (BTHU); 1♂, Shigua forest, 400m, 26-VII-1995, (NMNS). TAINAN: 2♀, Kuantzling, 14-IX-1994, (NMNS). TAITUNG: 4♂ 1♀, Lichiu, 150m, 21-XI-1995, (NMNS).

Other specimens examined: HUALIEN: 3♀, Hougnya Stream, 700m, 6-VII-1988. E. Chen. NANTOU: 7♀, Puli Stream, 600m, 8-VII-1988. E. Chen. TAIPEI: 33♂, Sunchi Stream, 25m, 27-VI-1988. E. Chen; 4♂ 3♀, Naisung Stream, 50m, 2-VII-1988. E. Chen; 14♀, Sunchi Stream, 25m, 27-VI-1988. E. Chen. TAITUNG: 2♂ 7♀, Orchid Island, 26-VII-1988. E. Chen. TAOYUAN: 3♂ 4♀, Koya Stream, 1700m, 29-VI-1988. E. Chen.

Notes: The male genitalia of this species differs from all known species of the genus in having the unique X dorsal plate and inferior appendage, the female are similar to *Polycentropus drummondi* Illies, but differ in the shape of ventral plate.

Etymology: Latin: *unicus*, unique.

*Polycentropus nigrospinus* n. sp. (Fig. 9-12)

Color brown, ca. 5.1mm long, covered with dense setae. Antenna slightly longer than forewing. Hood with a dark butterfly-shaped spot on dorsum. First 2 segments of maxillary palpi short, densely covered with long brown setae, 3rd segment not arising from apex of 2nd segment. Spur formula 3-4-4. Forewing ca. 5.3mm long, densely covered with dark brown setae; all apical forks present, f2 rectangular; discoidal cell long, equal length to median cell, thyridial cell closed. Hindwing ca. 4.6mm long, apical forks 3 and 4 absent, discoidal cell

slender.

Male genitalia: IX tergite well developed, sternite broader ventrally, dorsal plate finger-like in dorsal view. Superior appendage stout, arising above upper angle of IX sternite. Paraproctal process slender, apex pointed. Inferior appendage broader distally, with a small process and black spines. Phallus rectangular, with endophallic membrane incorporated with 2 pairs of sclerite spines.

Female genitalia: IX sternite broad, ventral plate tapering basely and rounded distally.

Holotype: ♂, TAIPEI: Yangminshan, Sung Stream, 400m, 20-VII-1988. E. Chen, (NMNS).

Paratypes: 2♂, same data as holotype, (NMNS). TAICHUNG: 1♂, Tachia Stream, 1500m, 4-VII-1988. E. Chen, (NMNS); 1♂ 1♀, Wuling Stream, 2200m, 18-VI-1988. E. Chen, (NMNS); 1♂, Hsuehshan Stream, 2300m, 18-VII-1988. E. Chen, (BTHU).

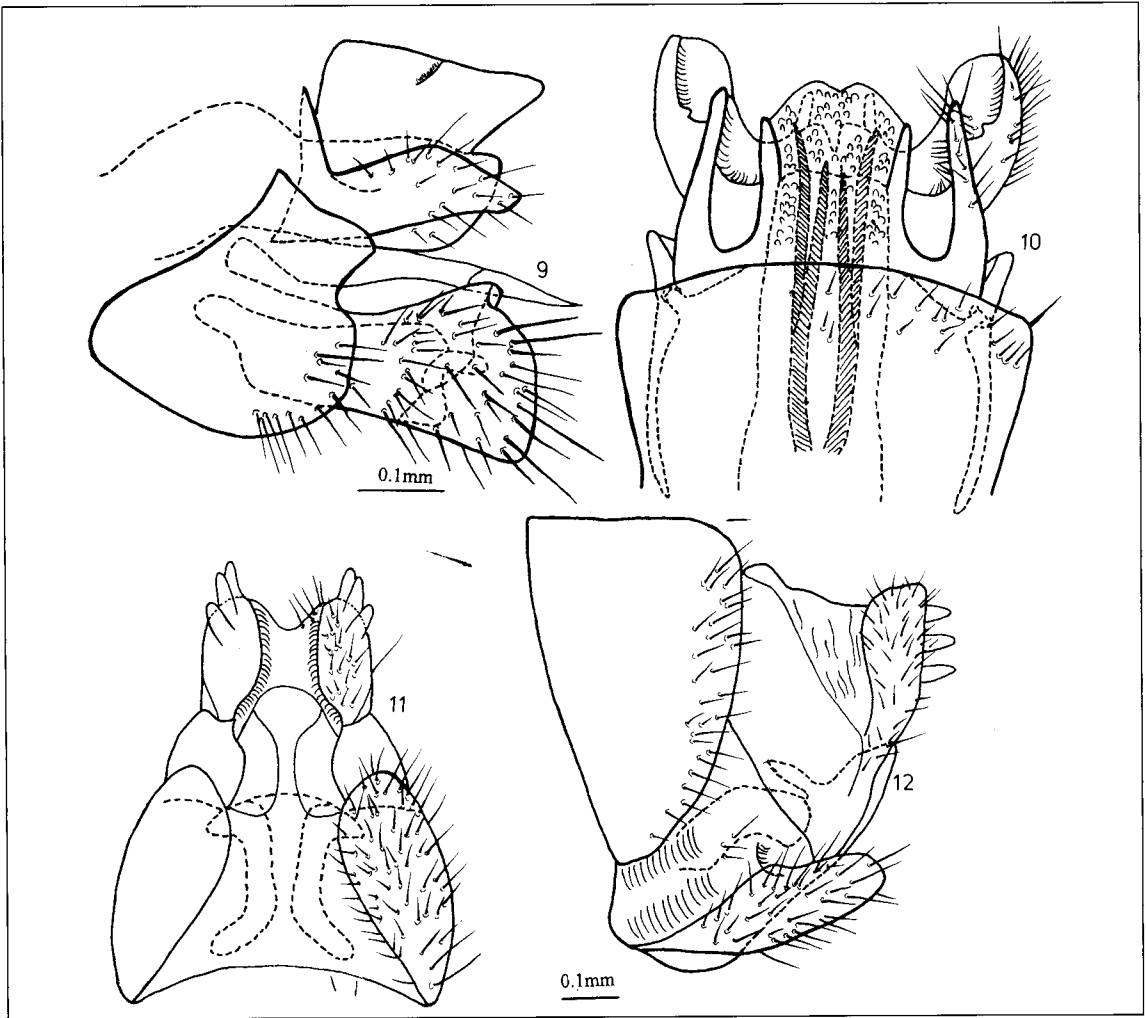
Notes: This species is similar to *Polycentropus altmani* Hamilton, but has a stout inferior appendage, and the phallus with long black spines.

Etymology: Latin: *nigr*, black; *spina*, spine.

*Polyplectropus tachiaensis* n. sp. (Figs. 13-14)

Color yellowish brown, ca. 6.4mm long. Antenna longer than forewing, scape stout and short. First 2 segments of maxillary palpi short and bulbous. Spur formula 3-4-4. Forewing ca. 7.9mm long, all apical forks present, f1 with stalk as long as f1, f3 not reaching to median cell; discoidal cell elongated, a bright area present among Sc, R1 and r1-r2 crossvein. Hindwing ca. 6.1mm long, f2 and f5 present, median cell open.

Male genitalia: IX tergite small, rectangular, sternite with deep concave at frontal margin. Superior appendage stout, slightly broad distally. Paraproctal process stout, curved, apex pointed. Para-



Figs. 9-12. *Polycentropus nigrospinus* n. sp.: 9, male genitalia, lateral; 10, dorsal; 11, female genitalia ventral; 12, lateral;

mere elongated, tapering distally. Inferior appendage stout, apex with some black spines. Phallus slender, short, apex somewhat membranous.

Female: Unknown.

Holotype: ♂, TAICHUNG: Tachia Stream, 1500m, 4-VII-1988. E. Chen, (NMNS).

Paratypes: 2 ♂, same data as holotype, (NMNS).

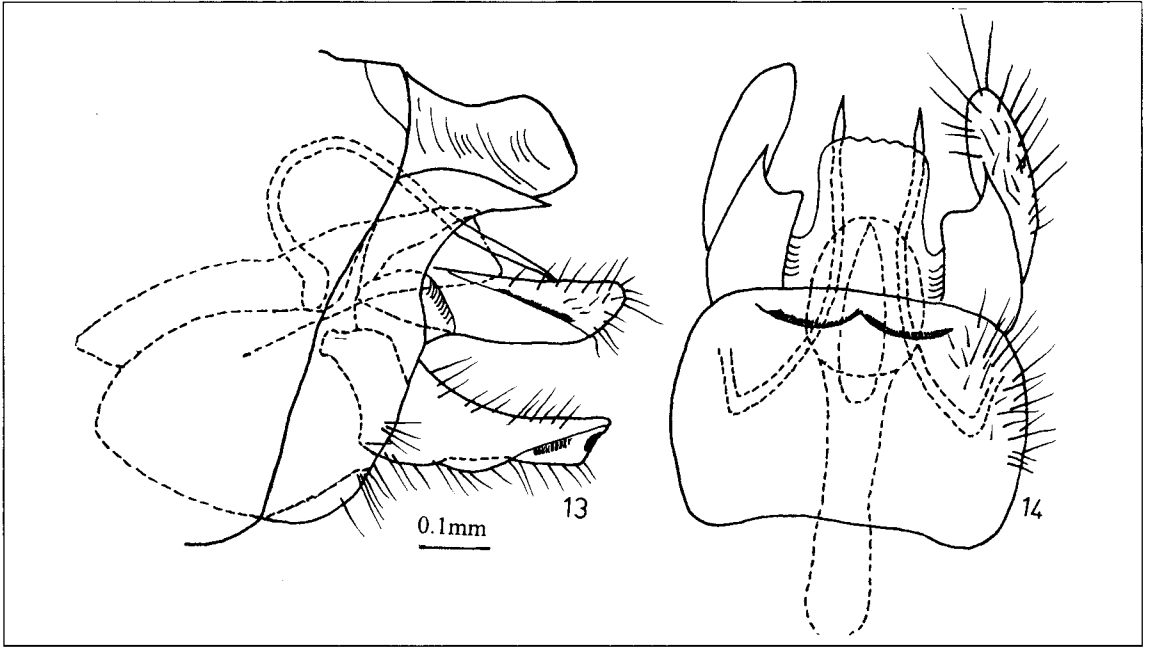
Notes: The male genitalia of this species differs from other known species in this genus in the shapes of the inferior

appendage, X dorsal plate and phallus.

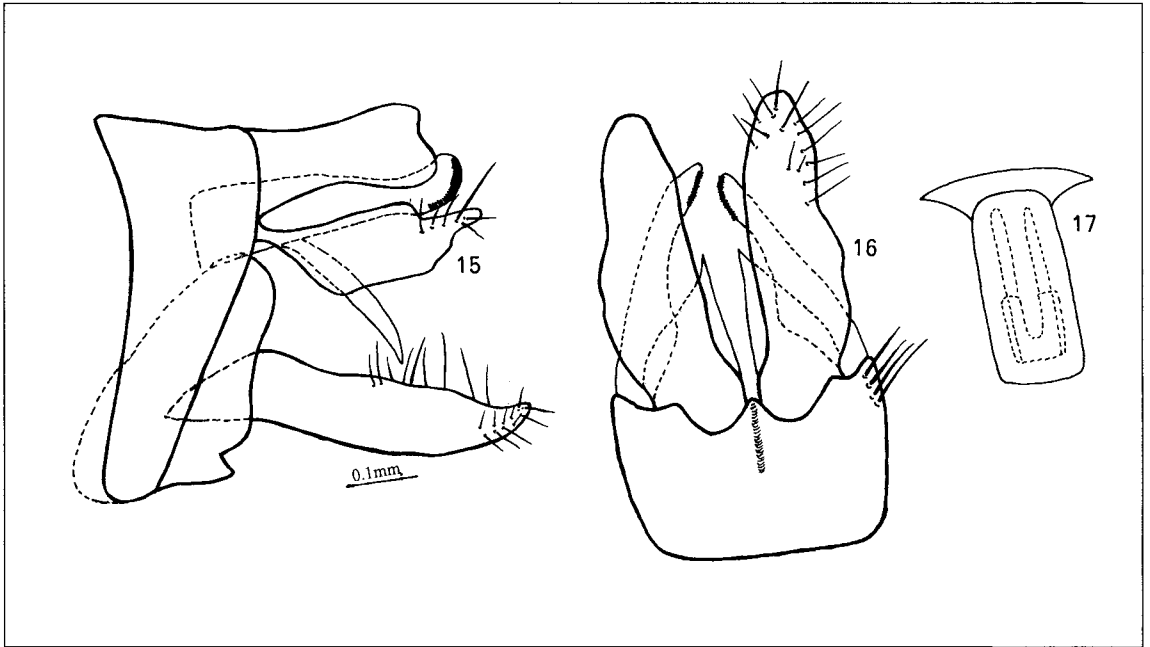
Etymology: Latinization: *tachiaensis*, from Tachia Stream.

*Polyplectropus inusitatus* n. sp. (Figs. 15-17)

Color yellowish brown, ca. 4.7mm long. Antenna shorter than forewing, scape bulbous. First 2 segments of maxillary palpi equal in length and bulbous. Spur formula 3-4-4. Forewing ca. 5.6mm long, all apical forks present; discoidal



Figs. 13-14. *Polyplectropus tachiaensis* n. sp.: 13, male genitalia lateral; 14, dorsal;



Figs. 15-17. *Polyplectropus inusitatus* n. sp.: 15, male genitalia lateral; 16, ventral; 17, phallus dorsal.

cell open, median and thyridial cell closed. Hindwing ca. 4.1mm long, f1 and f2 absent; discoidal and median cell open, thyridial cell closed, triangular.

Male genitalia: IX lateral narrowed, with a small triangular process ventrally, sternite broader. Superior appendage base narrow, round and pointed distally. Para-proctal process sickle-like, curved downward. Inferior appendage elongated, with a small tubercle. Paramere slender, swollen, apex rounded, with tiny black spines aligned. Phallus short, stout, without endothelia sclerite.

Female: Unknown.

Holotype: ♂, KAOHSIUNG: Weirjein Stream, 1200m, 11-XI-1995, (NMNS).

Note: This species differs from other known species of this genus in the shapes of the inferior appendage, X dorsal plate and phallus.

Etymology: Latin: *inusitatus*, unusual.

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# 臺灣產多距石蛾科之五種新種(毛翅目)

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## 摘 要

以往臺灣僅記錄一種之多距石蛾，*Polyplectropus inaequalis* Ulmer, 1927。本文描述五種多距石蛾科新種，即*Nyctiophylax taiwanensis*, *Polycentropus unicus*, *Polycentropus nigrospinus*, *Polyplectropus tachiaensis*及*Polyplectropus inusitatus*之雌蟲及雄蟲，並輔以重要之性狀圖。

**關鍵詞**：分類、新種、多距石蛾科、臺灣。