

THE CICADA GENUS *Semia* Matsumura, 1917 (Hemiptera: Cicadidae) FROM VIETNAM, WITH NEW RECORDS AND A KEY TO SPECIES

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ABSTRACT: The genus *Semia* Matsumura that is from East Asia. According to Lee & Hill, 2010, this genus belongs to subtribe Psithyristriina within the tribe Cicadini. There are six species *S. watanabei* (Matsumura), *S. klapperichi* Jacobi, *S. lachna* Lei & Chou, *S. majuscula* Distant, *S. spinosa* Pham, Hayashi & Yang, and *S. gialaiensis* Pham & Constant. A revised description of the cicada species *Semia watanabei* (Matsumura, 1907) is provided. A key to the four Vietnamese *Semia* species: *S. majuscula* (Distant), *S. watanabei* (Matsumura), *S. spinosa* Pham, Hayashi & Yang, and *S. gialaiensis* Pham & Constant is provided. Synonymic lists and new locality records for the four species of *Semia* from Vietnam are provided.

Keywords: Auchenorrhyncha, Cicada, *Semia*, morphology, new record, Vietnam.

INTRODUCTION

The cicada genus *Semia* Matsumura, 1917, containing six species: *S. watanabei* (Matsumura, 1907), originally known from Taiwan [11], *S. klapperichi* Jacobi, 1944 from Fukien Province, China, *S. lachna* Lei & Chou, from Hainan Province, China, *S. majuscula* Distant from Vietnam and Laos, *S. spinosa* Pham, Hayashi & Yang, 2012, from Vietnam, and *S. gialaiensis* Pham & Constant, 2013 from Vietnam [2, 24, 25].

Pomponia lachna Lei & Chou and *Terpnosia majuscula* (Distant) were transferred to *Semia* [14]. Recently, Pham et al. (2012) [25] described *S. spinosa* from south Vietnam and Pham & Constant (2013) [24] described *S. gialaiensis* from Gia Lai province, Tay Nguyen area, Vietnam.

Prior to this work, three species of *Semia* were known to occur in Vietnam. A fourth species is recorded herein from Vietnam, previously known from Taiwan. A key to all 4 species of *Semia* from Vietnam is provided.

MATERIALS AND METHODS

A male of the species *Semia watanabei*, was collected from the Xuan Lien nature reserve, Thuong Xuan district, Thanh Hoa province in north Vietnam. Material studied for this paper is deposited in the Vietnam National Museum of Nature, Hanoi, Vietnam.

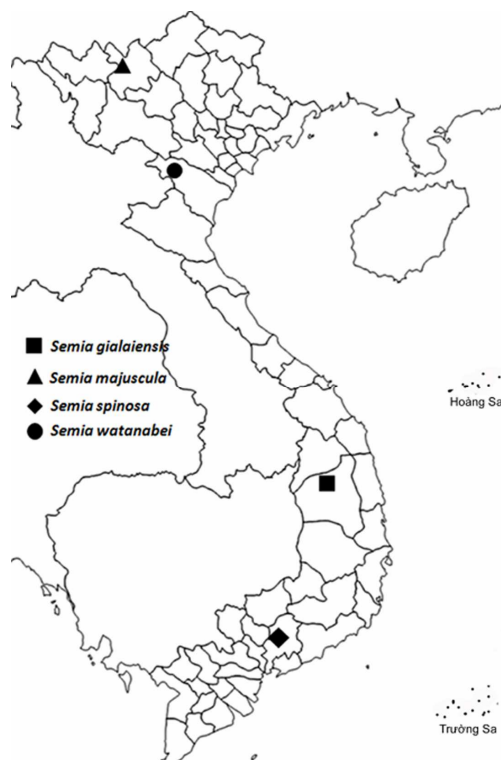


Figure 1. Distribution of the *Semia* species in Vietnam

Nomenclature for family, subfamily and tribal classification follows Lee & Hill (2010) [12]. Morphological terminology follows Moulds (2012) [22]. The male genitalia of the Vietnam record of *S. watanabei* was examined

and photographed using a dissecting microscope (Leica EZ4 HD) (fig. 3). A distribution map produced by the software *CFF* 2.0 [1] for *Semia* species from Vietnam (Fig. 1), and photos of habitus for *S. watanabei* are provided (fig. 2).

Abbreviations used in this paper are as follows: VNMN, Vietnam National Museum of Nature, Hanoi, Vietnam; NP, National Park.

RESULTS AND DISCUSSION

Genus *Semia* Matsumura, 1917

Semia Matsumura, 1917: 195. Type species: *Leptopsaltria watanabei* Matsumura, 1907 (Formosa).

Diagnosis. Head nearly as wide as or

slightly narrower than base of mesonotum; inner area of pronotum generally concolorous to outer dilatation; male abdomen cylindrical, much longer than distance from head to cruciform elevation and slightly widest across 4th abdominal segment and wider than base of mesonotum; male tymbal cover very small and semicircular, mostly exposing tymbal in dorsal view; male 8th abdominal tergum mostly covered with white powder; ovipositor not protruding beyond abdominal segment 9; male operculum scale-like, roundish, and not extending beyond 2nd abdominal sternum; wings hyaline; 6th apical cell of forewing about as long as or longer than twice of 5th apical cell in median length [16].

Key to the species of the genus *Semia* from Vietnam

1. Hind wing without infuscation along hind margins of apical cells.....2
- Hind wing with continuous infuscation along hind margins of apical cells 1-6...*S. majuscula*
2. Abdomen with central, longitudinal broad brown streak; uncus lobes triangular and divergent, uncus lobe with two spines (fig. 4F).....*S. spinosa*
- Abdomen without central, longitudinal broad brown streak; uncus lobe without two spines.....3
3. Uncus lobe with one projection protruding from below the uncus and parallel with uncus lobe (fig. 4G), body length 32-34 mm.....*S. gialaiensis*
- Uncus lobe without one large projection protruding from below the uncus and parallel with uncus lobe (fig. 4E), body length approximately 38 mm.....*S. watanabei*

Semia watanabei (Matsumura, 1907)

Leptopsaltria watanabei Matsumura, 1907: 96 [TL: Hoppo, Formosa]; Schmidt, 1932: 123.

Pomponia watanabei: Matsumura, 1913: 78.

Semia watanabei: Matsumura, 1917: 196; Kato, 1925a: 32; Kato, 1926b: 175; Kato, 1927a: 33; Kato, 1930: 53,67; Kato, 1931: 221; Kato, 1932: 295; Schmidt, 1932: 125; Kato, 1933, pIs. 28-29; Hirayama, 1937: 184; Kato, 1938a: 13; Kato, 1956: 116, 133,187; Hayashi, 1979: 260; Duffels and van der Laan, 1985: 112.

Material examined: 1♂: Xuan Lien nature reserve, Thanh Hoa, 16-23.IV.2012, coll. Hoang Vu Tru (VNMN).

Redescription: *Head:* head pale yellowish-brown with following markings: broad median longitudinal band on frons and supra-antennal

plate, dark brown; postclypeus dorsally with two oblique oval dark brown patches, in facial view upper half with transverse brown bands, lower half blackish brown; lower half of anteclypeus blackish brown, area between eye and antenna on gena, lorum and apex of rostrum, dark brown. Head including eyes as wide as mesonotum at base; rostrum reaching posterior coxae.

Thorax (figs 2A, 2B): pale yellowish-green, longitudinal broad band on pronotum narrowed centrally, longitudinal broad band on mesonotum, spot between submedian and lateral sigillae, scutal depression, two spots on lateral margin of mesonotum, central area of cruciform elevation, second anepisternum, anepimeron and katepisternum, dark brown. Pronotal collar with a small dentate projection.

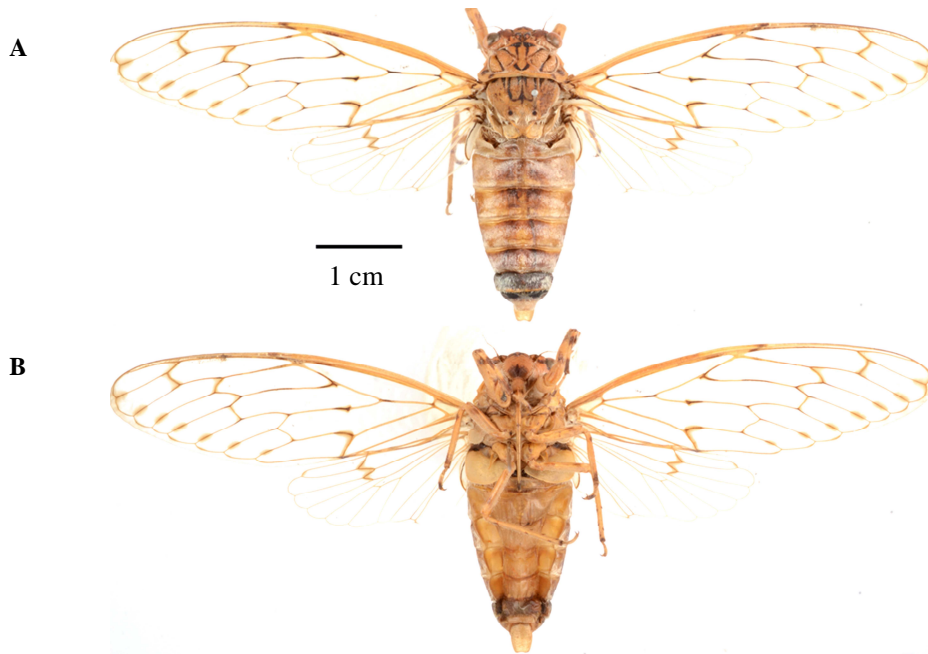


Figure 2. *Semia watanabei* (Matsumura, 1907): A. dorsal view of male; B. ventral view of male.

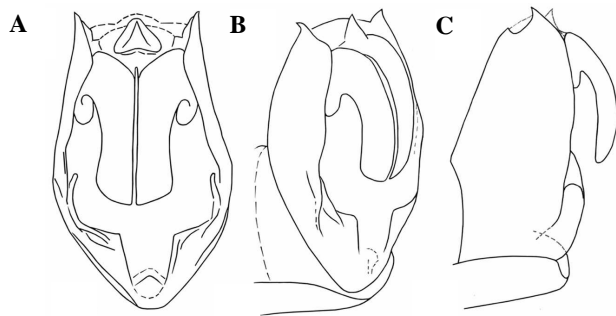


Figure 3. *Semia watanabei* (Matsumura, 1907): A. male genitalia in ventral view; B. male genitalia in lateroventral view; C. male genitalia in lateral view.

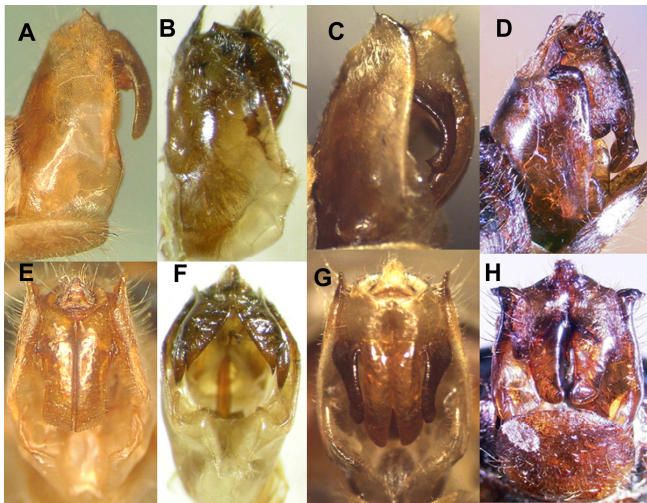


Figure 4. Male genitalia of *Semia* species in lateral view. *S. watanabei*: A; *S. spinosa*: B (after Pham et al., 2012); *S. gialaiensis* (after Pham & Constant, 2013): C; *S. majuscula*: D (after Lee, 2012a) and in ventral view. *S. watanabei*: E; *S. spinosa*: F (after Pham et al., 2012); *S. gialaiensis* (after Pham & Constant, 2013): G; *S. majuscula*: H (after Lee, 2012a).

Wings (fig. 2A): fore and hind wings hyaline, with veins brown or fuscous, and costal margin tawny; fore wings slightly tinged and spotted with infuscations on most veins.

Legs (fig. 2B): pale yellow with markings as follows: fore leg with femur, tibia, metatarsus and pretarsus blackish brown, primary spine of femur dark brown, secondary spine dark brown; mid leg with coxa and femur pale yellow, tibia pale brown, apex of femur black, apex and base of tibia black, metatarsus and pretarsus dark brown, mesotarsus pale yellow; hind leg, with femur pale yellow, apex of femur dark brown, tibia pale brown, base of tibia dark brown, tibial spur, tibial comb, and thumb of tibial comb dark brown.

Abdomen (fig. 2B): pale greenish brown in dorsal view, with a longitudinal broad dark brown streak, tergites 3-7 with their lateral margins edged pale brown (fig. 2A); pale brown in ventral view, anterior margin of sternites III - VI and sternites VII and VIII dark brown; epipleurites 3-6 lighter than sternites (fig. 2B). abdomen brownish ochreous with few markings; male 6th and 7th abdominal segments darker than other segments; male 8th tergum covered with thick white pollinosity.

Operculum (fig. 2B): pale yellow-green, short, transverse, and not reaching beyond anterior margin of sternite II, with a triangular blackish marking at anterolateral part.

Male genitalia (figs 3A, B): Pygofer oblong in ventral view, with an acute triangular caudal beak; uncus with a pair of long lobes, which are substantially, roundly curved inward; Anal styles and anal tube dark brown. Aedeagus very slender.

Measurements in mm: (1♂): body length: 33.4; fore wing length: 42.1; fore wing width: 12.1; head width: 9.0; pronotum width: 10.6.

Distribution: Taiwan, Vietnam (New Country Record).

Semia gialaiensis Pham & Constant, 2013

Semia gialaiensis: Pham & Constant, 2013: 496.

Material examined : ♂ (holotype):

Vietnam, Kon Ka Kinh NP, Dak Roong, Kbang, Gia Lai province, 22.II.2012, light trap, 14°25'41.3''N, 108°21'32.9''E, 1230 m, coll. Hoang Vu Tru (VNMN); Paratypes: 5♂ (paratypes): Vietnam: Kon Ka Kinh NP, Dak Roong, Kbang, Gia Lai province, 22.II.2012, 14°25'41.3''N, 108°21'32.9''E, 1230m, coll. Hoang Vu Tru (VNMN); 1♂: same locality, 18.III.2012, light trap, 14°25'30.5''N, 108°24'06.4''E, 1060 m, coll. Tran Thieu Du (VNMN); 1♂: Kon Ka Kinh NP, A Yun, Mang Yang, Gia Lai province, 29.II.2012, light trap, 14°12'11.3''N, 108°18'49.0''E, 880 m, coll. Hoang Vu Tru (VNMN).

Distribution: Vietnam (Gia Lai).

Remarks: The new species differs from *S. klapperichi* in the infuscations on the hind wing which lacks spots along ambient veins while *S. klapperichi* has spots along ambient vein. *S. gialaiensis* sp.nov. is distinguishable from *S. spinosa* and *S. watanabei* by the body size, which is shorter than 34 mm in *S. gialaiensis*, 38 mm in *S. watanabei*, and shorter than 30mm in *S. spinosa*. The new species also differs from *S. majuscula* and *S. lachna* in the structure of the uncus, which has one large projection protruding from below the uncus and running parallel with the uncus lobe in the new species, uncus lobe tapering to subapex and expanded roundedly at apex in *S. majuscula*, and uncus lobe with much widened apex in *S. lachna* [24].

Semia majuscula (Distant, 1917)

Terpnosia majuscula Distant, 1917b: 319, 323 [TL: Laos; Chapa]; Metcalf, 1963a: 436; Lee, 2008a: 9; Pham & Yang, 2009: 14.

Material examined: No specimen was examined.

Diagnosis: Anterolateral margin of pronotum very weakly amplified. Forewing crossvein r nearly parallel to outer margin of forewing. Forewing ulnar cell 1 not longer than ulnar cell 2. Forewing with infuscations on crossveins r, r-m, m, and m-cu and bases of veins RA2, RP, M1-4, and CuA1, vein CuA2, apical area of cubitus posterior+anal vein 1 (CuP+1A), part of vein M between rc and u2,

and vein parts around nodal line intersection. Roundish infuscation present on each hind margin of veins RA2, RP, M1-4, and CuA1. Hind wing with continuous infuscation along hind margins of apical cells 1-6. Male abdominal tergite 8 without white pollinosity. Timbal cover rudimentary, wider than long. Uncal lobe tapering to subapex but bulbous (expanded roundedly) at apex, being slightly twisted longitudinally at apex [14].

Distribution: Vietnam (Sa Pa, Lao Cai); Laos.

***Semia spinosa* Pham, Hayashi & Yang, 2012**

Semia spinosa: Pham, Hayashi & Yang, 2012: 33.

Material examined: ♂ (holotype): VIETNAM [VC.Ho.0650, Phu Ly, Ma Da-Vinh Cuu NR, Dong Nai Province, 4.VIII.2008, light trap, 11°24'42.4"N, 107°06'19.5"E, 100-150 m, coll. Hoang Vu Tru] (VNMN)., 2♂♂ (paratypes): VIETNAM [VC.Ho.0626, 0631, Phu Ly, Ma Da-Vinh Cuu NR, Dong Nai Province, 31.VII.2008, 100-150 m, coll. Hoang Vu Tru] (VNMN).

Distribution: Vietnam (Dong Nai).

Remarks: *S. spinosa* is distinguishable from *S. watanabei* and *S. klapperichi* by the body size, which is shorter than 30mm (in male) in *S. spinosa* and longer than 35mm (in male) in *S. watanabei* and *S. klapperichi*, and from *S. klapperichi* it differs in the infuscations on the hind wings which lack spots along the ambient veins present in *S. klapperichi*. The new species also differs in the structure of the uncus which has the lobes strongly divergent with acute apical spines [25].

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**GIỐNG *Semia* Matsumura, 1917 (Hemiptera: Cicadidae)
VỚI GHI NHẬN MỚI MỘT LOÀI CHO KHU HỆ CỦA VIỆT NAM**

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TÓM TẮT

Ghi nhận mới và mô tả loài ve sầu *Semia watanabei* (Matsumura, 1907) cho khu hệ côn trùng Việt Nam thuộc giống *Semia* Matsumura. Mẫu vật của loài này thu được ở khu bảo tồn thiên nhiên Xuân Liên, tỉnh Thanh Hóa. Hình ảnh mẫu vật cá thể con trưởng thành, cấu tạo bộ phận sinh dục của con đực và bản đồ phân bố của chúng được cung cấp. Khóa định loại của các loài thuộc giống *Semia* dựa vào cá thể đực con trưởng thành ghi nhận có mặt ở Việt Nam được trình bày. Loài mới này được phân biệt với tất cả các loài còn lại của nhóm loài này bởi cấu trúc của bộ phận sinh dục con đực trưởng thành. Bộ phận sinh dục con đực nhìn từ phía bụng hình thuẫn dạng chữ nhật, với lớp lông tơ dài ở mép bên; thùy gốc của bộ phận sinh dục con đực hình chữ S với đỉnh nhô lên rõ rệt, thùy bên của bộ phận sinh dục con đực nhìn từ phía bụng với mép ở đỉnh thẳng và rộng; một đường hẹp lượn tròn hơi cong ở phía trong; uncus phân nhánh, thùy uncus kéo dài; dorsal beak sắc nhọn, màu nâu; anal styles và anal tube màu nâu tối.

Từ khóa: *Semia watanabei*, ghi nhận mới, hình thái học, ve sầu và rầy, Việt Nam.

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