Two new species of the genus *Stathmopoda* (Lepidoptera: Stathmopodidae) closely related to *S. opticaspis* from Japan

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Abstract Two new species, *Stathmopoda albiornata* n. sp. and *S. persona* n. sp. are described. They are similar to *S. opticaspis* Meyrick, 1931 which is a common species in Japan. The adult external characteristics, wing venation, and male and female genitalia of these three species are illustrated and compared in detail. In addition, *S. albiornata* n. sp. is compared with a tropical Asian species, *S. placida* Meyrick, 1908, because it is especially similar to the latter. Larvae of *S. albiornata* n. sp., *S. persona* n. sp. and *S. opticaspis* feed on acorn and gall, on decayed leaf and fruit and on moss. In addition, Robinson et al. (2001) reported that larvae of *S. placida* prey on *Kerria lacca* (Hemiptera: Kerriidae). Though these four species might be closely related to each other, their feeding habits are very different from each other.

Key words *Stathmopoda albiornata* n. sp., *Stathmopoda persona* n. sp., taxonomy, genitalia, wing markings, wing venation.

Introduction

*Stathmopoda* is the largest genus within the Stathmopodidae and contains more than 200 species. It is mainly distributed in the tropical to subtropical regions and known to be a group with diverse feeding habits. Up to the present, 19 species have been recorded in Japan (Terada and Sakamaki, 2013; Terada, 2013). But many species were left unidentified. *Stathmopoda opticaspis* Meyrick, 1931 is one of the most common species of the genus in Japan. When I had collected and examined numerous Japanese specimens of stathmopodid moths similar to *S. opticaspis* Meyrick, 1931, I found two undescribed species in Japan. One was also rather similar to *S. placida* Meyrick, 1908 described from Myanmar. There was thus a need to compare it with *S. placida*. Larvae of the two undescribed species and *S. opticaspis* feed on acorn and gall, on decayed leaf and fruit and on moss. Additionally, Robinson et al. (2001) reported that larvae of *S. placida* prey on *Kerria lacca* (Hemiptera: Kerriidae). Their feeding habits are very different from each other, though they appear to be closely related. In this paper, I describe two new species with illustrations and remark on their distinguishing characters and distribution.

Materials and methods

Some of the specimens were received from Dr K. Yasuda at the National Institute for Agro-Environmental Sciences, Ibaraki-Pref., Japan (NIAES), Dr T. Yamauchi at the Toyama Institute of Health, Toyama-Pref., Japan (THI), Mr T. Mano at the Toyota Yahagi River Institute, Aichi-Pref., Japan (TYRI), Mr Y. Manabe and Mr S. Sameshima, and are deposited in the collection of the Entomological Laboratory, Kagoshima University, Japan (KGU). The other specimens were borrowed from the collection of the Entomological Laboratory, Osaka Prefecture University, Japan (OPU) and the Hokkaido University Museum, Japan (HoUM).

The syntype photo of *S. placida* (BMNH(E) #1054763) was received from The Natural History Museum, London, United Kingdom (BMNH) (Copyright Trustees of the BMNH, used with permission).

Wing venation was observed after preparation. Detached wings were cleaned to remove scales with a raccoon-fur brush in 40% EtOH, and were stained with acid fuchsin solution. Male and female genitalia were dissected after maceration for about 6 h in 10% aqueous KOH, heated with lactic acid in a drying oven (50°C), and stained with mercuricchrome solution.


Taxonomy

*Stathmopoda albiornata* n. sp.

[Japanese name: Shiro-obi-maikoga]

Diagnosis. This new species is similar to *S. persona* n. sp. and *S. opticaspis* but can be distinguished by the wholly dark fuscous mesothorax and the absence of basal markings on the forewing.
Description. Wing expanse 8.9–11.8 mm. Forewing length 4.0–5.6 mm. Labial palpus ochre, ventrally white, dorsally with a brownish black patch around connection of first and second segments; third segment darkened towards apex. Antenna dark fuscous, paler towards apex. Vertex and occipit dark fuscous; frons white. Tegula dark fuscous, paler towards apex. Mesothorax dark fuscous, with white to pale ochre caudal margin.

Wing markings. (Fig. 1) Forewing dark fuscous, with two fasciae at near base and middle of wing, white to pale ochre; first fascia narrowed towards costa; cilia fuscous. Hindwing and cilia fuscous.

Wing venation. (Fig. 6) Forewing lanceolate, widest near base; 13-veined; discoidal cell long, occupying basal 7/10 of wing. Sc connected with costal margin of wing at basal 1/3. R₁ from distal 1/8 of cell; R₂ from distal 1/10 of cell; R₃ from upper angle of cell; R₄ and R₅ stalked; R₆-R₈ and M₁ stalked in some individuals. M₂ from lower angle of cell. CuA₁ and CuA₂ present only near dorsum, rudimentary near base. 1A+2A connected on basal 1/7 of wing, running to about 5/11 of dorsum. Hindwing narrow, 6/7 as long as forewing; 9-veined; discooidal cell open. Rs running to near apex of costa. M₂, M₃, and CuA₁ stalked, in common with CuA₂; CuA₂ running to about 3/8 of dorsum.

Legs dark fuscous, ventrally white; fore-femur and -tibia ventrally dark fuscous; mid-tibia dorsally with verticillibristle and white rings at middle and apex; hind-tibia covered with bristles except basal 1/3 of ventral side, dorsally fuscous to dark fuscous, outside white at 1/3, ventrally white; first segment of hind-tarsus with verticillibristle at apex; abdomen dorsally fuscous, ventrally white; spine row of abdominal terga present on second to seventh segments in male, second to sixth in female.

Male genitalia. (Figs 9–11) Uncus tapering caudally with down-turned apex and setae on lateral surface. Gnathos stout, slightly longer than uncus, with round apex. Valva with round apex; costa caudally round, with setae; ccculus oval, 1.5 times as long as uncus, with numerous setae on inner surface; sacculus sclerotized, round at apex, ventrally with setae. Vinculum with blunt apex; saccus 1/4 length of uncus and cephalically subrectangular. Juxta round. Anellus lobes developed, subrectangular, weakly sclerotized, with setae on surface. Aedeagus about 3.5 times as long as uncus, with numerous small spines on vesica; some small spicules present near apex; cornutus absent; apical part of aedeagus membranous; basal sclerotized structure sometimes rudimentary; apical patch of stimuli present near apex of aedeagus, 1/3 length of aedeagus, with round apex.

Female genitalia. (Fig. 12) Seventh sternum with emarginated caudal margin. Papillae anales as long as wide, weakly sclerotized, dorsally with many short and long setae; joint membrane between papillae anales and eighth abdominal segment 2.3 times as long as papillae anales. Eighth abdominal segment dorsally and caudally sclerotized, cephado long, round, with short and long setae arranged along caudal margin. Apophyses posteriores long; apophyses anteriores about 5/9 as long as apophyses posteriores. Ostium bursae large, cup-shaped, with numerous microspines on inner surface. Ductus bursae long, longer than length of corpus bursae. Corpus bursae with two signa, small, sublobenged, situated at caudal 1/3 and middle of corpus bursae. Bulla assimilated with ductus seminalis, situated at caudal margin of corpus bursae, weakly wrinkled near base. Ductus seminalis long, apically with numerous microspines.


Host plants. Quercus acutissima Carruthers (Fagaceae).

Biology. Scarcey known. Adults emerge in early and mid-spring, late summer and mid-fall. Mature larva was found on acorn and gall or on acorn cap of the host plant in late winter.

Etymology. Albus (Latin) = white. Ornatus (Latin) = ornamented. The specific epithet, albiornatus, derives from the white to pale ochre caudal margin of the thorax and
Figs 1–4. Adult specimens.
1: Holotype, Stathmopoda albiornata n. sp. ♂, 2: syntype, S. placida ♀ (BMNH(E) #1054763) (Copyright Trustees of the BMNH, used with permission), 3: holotype, S. persona n. sp. ♂, 4: S. opticaspis ♂.

Fig. 5. Stathmopoda persona n. sp., markings of thorax.

the two white to pale ocher fasciae of forewing.

Remarks. This species cannot be distinguished from S. placida Meyrick, 1908 by wing markings (Fig. 2) but can be distinguished by the following characteristics. In this species, the ground color of the thorax is dark fuscous, the aedeagus of the male genitalia is stout, the siga of the corpus bursae and the bulla of the female genitalia are small and slender. In contrast, in S. placida, the thorax is dark fuscous studded with pale ocher, the aedeagus is slender (see Diakonoff, 1967), the siga and bulla are large and stout (see Kasy, 1973).

Stathmopoda persona n. sp.

[Japanese name: Ryukyu-obi-maikoga]

Stathmopoda sp.: Murase, 2007: 127.
Stathmopoda sp. 2: Terada and Sakamaki, 2013: 228, pl. 3–29, figs 13, 14.

Diagnosis. This new species is similar to S. albiornata n. sp. but can be distinguished by a unique mask-shaped blackish marking on the mesothorax and the presence of basal markings on the forewing. This species is also very similar to S. opticaspis but can be distinguished by the ground color of the thorax and the forewing fasciae. In this species, the thorax is grayish yellow. The third fascia of the forewing is narrow. In contrast, in S. opticaspis, the thorax is yellow. The third fascia is broad.

Description. Wing expanse 8.1–10.5 mm. Forewing length 3.8–5.1 mm. Labial palpus ocher, ventrally white, darkened...
Two new species closely related to *S. opticaspis*

Wing markings. (Fig. 3) Forewing grayish brown; costa grayish brown; two fasciae present at 1/5 and 2/3; first fascia white to pale ochre, narrowed towards costa, edged obscure ochre; second fascia ochre, narrow, sometimes reaching dorsum, with slightly inwardly oblique caudal edge; two yellow short streaks present along costa near base and near base of CuP, darkened towards base, assimilated with each other at base; white spot present between two streaks; three blotches present on base of dorsum, between apex of two streaks and near base of

towards apex; sometimes dorsally with a brown patch around connection of first and second segments. Antenna ochre. Scape fuscous. Vertex pale fuscous; frons white; occiput grayish yellow. Tegula grayish yellow. Thorax grayish yellow; prothorax pale gray; a dorsal black blotch with paired silvery spots present on middle of mesothorax, edged yellow, large, emarginated caudal margin; a silvery and a brownish black blotch present on mediocephalic and mediocaudal margin of mesothorax, respectively (Fig. 5).

Figs 6-8. Wings: shape and venation.
6: *Stathmopoda albiornata* n. sp. ♀, 7: *S. persona* n. sp. ♀, 8: *S. opticaspis* ♀.
dorsum; first and second blotches brownish black, third blotch silvery, adjacent to first and second blotches, sometimes edged ochre near dorsum; cilia fuscous. Hindwing and cilia fuscous.

Wing venation. (Fig. 7) Forewing lanceolate, widest near base; 13-veined; discoidal cell long, occupying asal 7/10 of wing. Sc connected with costal margin of wing at basal 1/3. R_{1} from about distal 1/2 of cell; R_{2} from near upper angle of cell; R_{1}, R_{3} and R_{5} from upper angle of cell; R_{4} and R_{5} stalked. M_{1} and M_{2} parallel; M_{3} from lower angle of cell. CuA_{1} and CuA_{2} present only near dorsum,
Two new species closely related to *S. opticaspis*


13: Caudal view of male, aedeagus omitted, 14: lateral view of male, aedeagus, anellar lobes and juxta omitted, 15: aedeagus, 16: ventral view of female.

rudimentary near base. 1A+2A connected basal 1/6 of wing, running to 5/11 of dorsum. Hindwing narrow, 5/6 as long as forewing; 9-veined; discoidal cell open. Rs running to near apex of costa. M_{3}, M_{3}, and Cu_{1} stalked, in common with Cu_{2}; Cu_{2} running to about 1/3 of dorsum.

Legs fuscos, ventrally white; fore-femur ventrally gray, fore-tibia dark fuscos; mid-tibia dorsally ocher, gray at 2/5 and near apex, with verticillbristle at 2/5 and apex; hind-tibia covered with bristles except basal 2/5 of ventral side, dorsally fuscos, outside yellow, white at 2/5 and apex, ventrally white; first segment of hind-tarsus with verticillbristle at apex. Abdomen dorsally fuscos, ventrally white; spine row of abdominal terga present on second to seventh segments in male, second to sixth in female.
Male genitalia. (Figs 13-15) Uncus slender, tapering caudally, with acute apex, slightly down-turned; setae present on lateral side. Gnathos slightly shorter than uncus, tongue-shaped, with apex slightly down-turned and acute in lateral view. Valva with round apex; costa round caudally, with setae; cucullus narrow, subtriangular, 1.3 times as long as uncus, with numerous setae on inner surface; sacculus sclerotized, apically blunt, ventrally with setae. Vinculum stout, with acute apex; saccus 1/3 length of uncus and round cephalically. Juxta oval. Anellar lobes developed, subtriangular, weakly sclerotized, with setae on surface. Aedeagus about three times as long as uncus, with many small spines and small triangular spicules on vesica; cornutus absent; apical part of aedeagus membranous; some sclerotized structures present near base, thin and large; apical patch of stimuli present near apex of aedeagus, 3/10 length of aedeagus, with round apex.

Female genitalia. (Fig. 16) Papillae anales longer than wide, weakly sclerotized, dorsally with many short and long setae; joint membrane between papillae anales and eighth abdominal segment long, twice as long as papillae anales. Eighth abdominal segment dorsally and caudally sclerotized, cephalodorsally round, with short and long setae arranged along caudal margin. Apophyses posteriores long; apophyses anteriores about 5/9 length of apophyses posteriores. Ostium corpus bursae, cup-shaped, with numerous microspines on inner surface. Ductus bursae shorter than corpus bursae. Corpus bursae with two signa, bar-shaped, situated at middle of corpus bursae; one of two signa small. Bulla large and stout, originating from about middle of corpus bursae, with some small spicules. Ductus seminalis long, with micro spines.


Host plants. Garinca subelliptica Merill (Cuslaeceae) (Murase, 2007).

Biology. Scarcely known. Adults emerge in mid-spring at least. Larvae are found on dead part of leaf and feed into decayed fruit of the host plant (Murase, 2007).

Etymology. Persona (Latin) = mask. The specific name, persona, derives from mask-shaped markings which consist of a dorsal black blotch with paired silvery spots on the thorax (Fig. 5).

Remarks. The known distribution of this species is limited, although the host plant (G. subelliptica) is planted in the south of the Amami Islands and distributed in Taiwan and the Philippines (Makino, 1989). For the actual distribution of this species, further survey is necessary.

Stathmopoda opticaspis Meyrick, 1931


Diagnosis. This species is similar to S. albiornata n. sp. but can be distinguished by a unique mask-shaped blackish marking on the mesothorax and the presence of basal markings on the forewing. This species is also very similar to S. persona n. sp., but can be distinguished by the forewing fasciae. In this species, the thorax is yellow. The third fascia of the forewing is broad. In contrast, in S. persona n. sp., the thorax is grayish yellow. The third fascia is narrow.

Description. Wing expanse 8.7-11.4 mm. Forewing length 4.0-5.3 mm. Very similar to S. persona n. sp., but differing in the following characteristics. Labial palpus ventrally uniformly white. Vertex ochre to yellow; occiput yellow. Tegula yellow. Thorax yellow; prothorax silvery.

Wing markings. (Fig. 4) Forewing with three fasciae near base, and at 1/4 and 3/5; second fascia white, broad; third fascia broad, sometimes not reaching dorsum, narrowed towards dorsum, with inwards oblique caudal edges; two yellow streaks not darkened towards base.

Wing venation. (Fig. 8) Forewing, R1 from about distal 1/8 of cell. Hindwing 4/5 as long as forewing.

Legs ochre; fore-femur and -tibia ventrally yellow, dark fuscous at apex; mid-tibia dorsally covered with yellow bristles; verticillibristle present at apex; bristles of hind-tibia dorsally fuscous; first and second segments of hind-tarsus with verticillibristle at apex; second segment sometimes absent.

Male genitalia. (Figs 17-19) Some sclerotized structures of aedeagus small.
Female genitalia. (Fig. 20) Joint membrane between papillae anales and eighth abdominal segment 2.3 times as long as papillae anales. Two signa, sublozenged, sometimes subtriangular, situated at caudal 1/4 and middle of corpus bursae, respectively. Bulla originating from caudal margin of corpus bursae, with many small spicules.


Distribution. Japan: Honshu, Shikoku and Kyushu. Primorsky in Russia, Coastal Korea, China (Sinev, 1999).

Host plants. Loeskebryum caviolium (Sande Lac.) M. Fleisch. ex Broth. (Hylcolemidae) (Morii, 1982).

Biology. Scarcely known. Adults emerge in summer and early fall. Larvae spin in gaps in cherry bark (Morii, 1982). They feed on living mosses (Murase, 1998) and also dead mosses for the winter (Murase, 2006).

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References


摘 要
オピマイコガに近縁な日本産Stathmopoda属の2新種（雌翅目：ニセオマイコガ科）（寺田 剛）
オピマイコガ (Stathmopoda opticaespis Meyrick, 1931) とこれに近縁であると考えられる種について検討し、2新種シロオピマイコガ (新称) (S. albiorrnata n. sp.) とヒュキュウオピマイコガ (S. persona n. sp.) について記載を行った。3種は外見的特徴が互いに似ているため、成虫の外見的特徴。翅脈、雌雄交尾器を図示し、比較した。3種は外見的には胸部や前翅の色彩、斑紋で識別できる。また、シロオピマイコガはS. placida Meyrick, 1908と外見的特徴、雌雄交尾器が酷似しているため、この2種についても比較を行った。その結果、両種は外見的には胸部の色彩で区別できることが明らかとなった。2新種は分布や生態についての情報が不足しており、さらに調査が必要である。

1. Stathmopoda albiorrnata n. sp. シロオピマイコガ (Figs 1, 6, 9-12)
Two new species closely related to *S. opticaspis*

開張8.9-11.8 mm. 前翅長4.0-5.6 mm. 頭部背面、胸部は黒褐色であり、中胸の後縁は白色。前翅は灰黑色で、基部付近、中央に白色帯が走る。雄交尾器のエデアグスには非常に多くの刺状突起と多数の小鋸歯を持ち、基部付近に硬化した構造を持つ。雌交尾器のブラには小鋸歯を欠く。幼虫はクヌギの堅果や枝幹、虫こぶから得られる。成虫は8月に発生し、3-4月ごろにも発生すると考えられる。南西諸島では10、12月にも記録がある。分布：本州、九州、奄美大島、沖縄本島、寄主植物：クヌギ（ブナ科）。

2. *S. persona* n. sp. リュウキュウオビマイコガ
(Figs 3, 5, 7, 13-16)

開張8.1-10.5 mm. 前翅長3.8-5.1mm. 頭部背面、胸部は灰黄色であり、胸部中央に1対の白色の斑紋を含む大きな黒色の斑紋を持つ(Fig. 5). 前翅は灰褐色で、基部に黒褐色帯、1/5に白色帯、2/3に黄土色帯が走る。黄土色帯は後縁に向かって細くなる。雄交尾器のエデアグスには多数の刺状突起と小鋸歯を持ち、基部付近に少数の硬化した構造を持つ。雌交尾器のブラに少数の小鋸歯を持つ。成虫は4月ごろ発生すると考えられる。本種は长瀬(2007)においてオビマイコガに似た*S. persona*属の1種として扱われた種と同種であり、幼虫が寄主植物の葉の枯れた部分や朽ちかけの果実内で生活することが報告されている。分布：沖縄本島、石垣島、寄主植物：フクギ（フクギ科）。

3. *S. opticaspis* Meyrick, 1931 オビマイコガ
(Figs 4, 8, 17-20)

開張8.7-11.4 mm. 前翅長4.0-5.3mm. 前種に似るが、頭部背面、胸部は黄色であり、前翅の黄土色帯は前種より太く、後縁に向かって細くなる。雄交尾器は前種に非常によく似ており区别が困難である。しかし、雌交尾器のブラに前種より多くの小鋸歯を持つ。成虫は6-9月に発生する。分布：本州、四国、九州：ロシア南東部、朝鮮半島、中国。寄主植物：フトリュウビゴケ（イワダレゴケ科）。

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