

CORRESPONDENCE

Neospastis camellia S. Wang, nom. nov. (Lepidoptera: Xyloryctidae), a replacement name of *N. simaona* in China

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Abstract A species of the family Xyloryctidae, *Neospastis camellia* S. Wang, **nom. nov.**, is described as a replacement name of *N. simaona* **nom. nud.**, with the descriptions of its larva and pupa and the biological notes. The pest is feeding on the leaves of tea plant *Camellia sinensis* (L.) O. Kuntze (Theaceae).

Key words Microlepidoptera, Gelechioidea, taxonomy, nomenclature.

The tea pest, *Neospastis simaona* was originally reported by S. Wang, the corresponding author, in her PhD dissertation in 1999, based on a single male specimen collected in Simao, Yunnan, but not officially published. Then, the invalid name was cited by Wang *et al.* (2012). Here, *Neospastis camellia* S. Wang, **nom. nov.** was proposed as the replacement name of *N. simaona* Wang to conform the international zoological nomenclature.

Currently, three pests of tea plant belonging to the family Xyloryctidae in China were recorded: *Neospastis sinensis* Bradley, 1967 (Bradley, 1967), *Linoclostis gonatias* Meyrick, 1908 (Su *et al.*, 2020) and *Aeolanthus clinacta* Meyrick, 1925 (He *et al.*, 2014). The objective of this paper is to describe *N. camellia* S. Wang, **nom. nov.**, along with descriptions of its larva and pupa as well as a brief notes on its biology.

Specimens of the new species were collected from Simao (100°52'45"E, 22°45'04"N, elev. 1336m), Pu'er City, Yunnan Province, China. The type specimens are deposited in the Insect Collection of Nankai University, Tianjin, China (NKU). Images of adults were taken with a Leica M205A stereomicroscope plus Leica Application Suite 4.2 software, and photographs of genitalia were captured using a Leica DM750 microscope equipped with the same software.

Larvae of *N. camellia* S. Wang, **nom. nov.** were studied by the second author of the present paper in Yunnan from 2018 to 2020. They were collected from a tea plantation in Yunnan and fed fresh tea leaves in phytotron (temperature 24–26°C, humidity 50–70%, photoperiod L14:D10). Each larva was reared in an independent petri dish. Fresh tea leaves were supplied every two days. The development of larvae and their feeding habit were observed daily. The date of ecdysis as well as the morphological and biological characteristics were recorded manually and by camera (G7X, Canon). The body length was measured after each ecdysis.

Neospastis Meyrick, 1917

Neospastis Meyrick, 1917: 59.

Neospastis (Stenomidae): Duckworth, 1973: 18.

Type species: *Neospastis encryphias* (Meyrick, 1907).

Neospastis camellia S. Wang, **nom. nov.** (Figs 1–13)

Neospastis simaona Wang, 1999: 195 (unpublished, PhD thesis).

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Neospastis simaona Wang, In: Wang *et al.*, 2012: 742.

Diagnosis. The species is similar to *N. sinensis* Bradley, 1967. It can be distinguished from the latter in the male genitalia by the sacculus lacking a distal process, and the juxta with lateral lobes sub-triangular; in the female genitalia by the lamella antevaginalis laterally extending straightly outward. In *N. sinensis*, the sacculus has a distal process, and the lateral lobes of the juxta are sub-rectangular in basal half and bifurcate in distal half (Bradley, 1967: pl. 5, fig. 3); in the female genitalia, the lamella antevaginalis laterally extends obliquely outward and dorsad (Bradley, 1967: pl. 5, fig. 7).

Description. Adult (Figs 1–2). Wingspan 31.0–33.0 mm. Head dirty white. Antenna with scape dirty white; flagellum pale yellow annulated with brown on dorsal surface, blackish brown on ventral margin, ciliate in male. Labial palpus dirty white, second palpomere thickened by spreading scales; third palpomere about 1/2 length of second palpomere, pointed at apex. Thorax, tegula and forewing dirty white. Forewing sub-rectangular, apex obtuse, termen slightly oblique; ground color dirty white, with scattered brown scales; costal margin greyish brown basally, with a round brown spot at basal 1/4; discocellular and plical spots small, black; tornal spot larger, blackish brown, ill-defined; long slender streak formed by dense brown scales from base of costal margin running along above fold to discocellular spot, ill-defined distally; postmedian line brown, from middle of costal margin extending obliquely to beyond anterior angle of cell, then arched along outer margin of cell, and finally oblique inward to inner margin of tornal spot, with a larger spot at starting point of costal margin; subterminal line brown, from basal 5/9 of costal margin extending to outer margin of tornal spot, parallel with postmedian line, with a larger spot at starting point of costal margin; terminal line represented by blackish brown dots running from preapex along termen to tornus; fringe dirty white, tinged with brown-tipped scales. Hindwing and fringe greyish white. Legs greyish white, tarsi and spurs pale greyish brown.

Male genitalia (Fig. 3). Uncus wide at base, gradually narrowed to basal 1/3, thereafter slender to rounded apex. Gnathos shorter than uncus; mesial plate digitate, round at apex; basal arm widely banded, about twice length of mesial plate. Tegumen short, lateral arm sub-ovoid. Valva subparallel in basal half, slightly narrowed in distal half, narrowly rounded and setose apically; costa narrowly banded, slightly narrowed to pointed apex, with a narrow band arising from subbase extending to below basal 1/3 where some long setae grouped. Sacculus wide and about 2/5 width of valva basally, narrowed distally, reaching distal 1/4 length of valva, arched ventrobasally, setose ventromedially, concave at distal 1/4; strong spines running from end of sacculus along ventral margin of valva to apex, with a very narrow finely setose fold from distal 1/4 extending obliquely inward to midwidth of valva at basal 3/5. Vinculum widened anteriorly, obtuse on anterior margin. Juxta narrowly joined anteriorly; lateral lobes sub-triangular, rounded at apex, setose in distal half; basal 2/3 with a narrow sclerotized band along inner margin, bearing a spine at its posterior corner (Fig. 3a). Aedeagus with basal 1/2 slightly narrower than distal 1/2, with a few indistinct sclerites distally.

Female genitalia (Fig. 4). Papillae anales sub-rectangular, rounded on posterior margin, with short setae. Posterior apophyses about twice length of anterior apophyses. Eighth tergum composed of two quadrate plates; eighth sternum rectangular. Seventh sternum with a wrinkled sub-rectangular area near lateral margin. Lamella antevaginalis short, straight on posterior margin, rounded on anterior margin, laterally extending straightly outward to posterolateral corner of seventh sternum, forming a spiculate straight band. Antrum short, weakly sclerotized. Ductus bursae slender, membranous. Corpus bursae round, with dense spicules; signum sub-rectangular, covered with dense denticles, grooved longitudinally (Fig. 4a).

Egg. Approximately 0.7 mm long and 0.4 mm wide, spindle-shaped, with flat part in bottom, pale green in early phase, and changed to yellow green during development (Fig. 5).

Larva. Six instar stages present. Length of first instar 2.0–5.0 mm (Fig. 6); head and proscutum black brown; body translucent yellow with red ring lines in each arthromere. Second instar 5.0–6.4 mm, translucent yellow (Fig. 7); proscutum and anal plate chitinize completely; red ring lines vanished and black verrucae appeared in each arthromere gradually; verrucae different-sized dots, which symmetrically distributed in venter, flank and back of body; protothorax with 4 verrucae, mesothorax and metathorax both with 10 and 16 verrucae in each abdominal segment (1–9); seta inserted in verruca. Fourth instar changed to yellow and a pair of brown black stripes appeared in back of body from protothorax to ninth abdominal segment; black proscutum divided in half by a yellow stripe in middle (Fig. 8). Sixth instar 22.0–24.3 mm (Fig. 9); two stripes on back became black, and body changed to deep yellow and opaque.

Pupa. Length 10.25–12.10 mm, width 5.30–6.65 mm; dark brown and glossy; front obtusely rounded, tail tip sharp, back ridged, flat ventrally (Fig. 10).

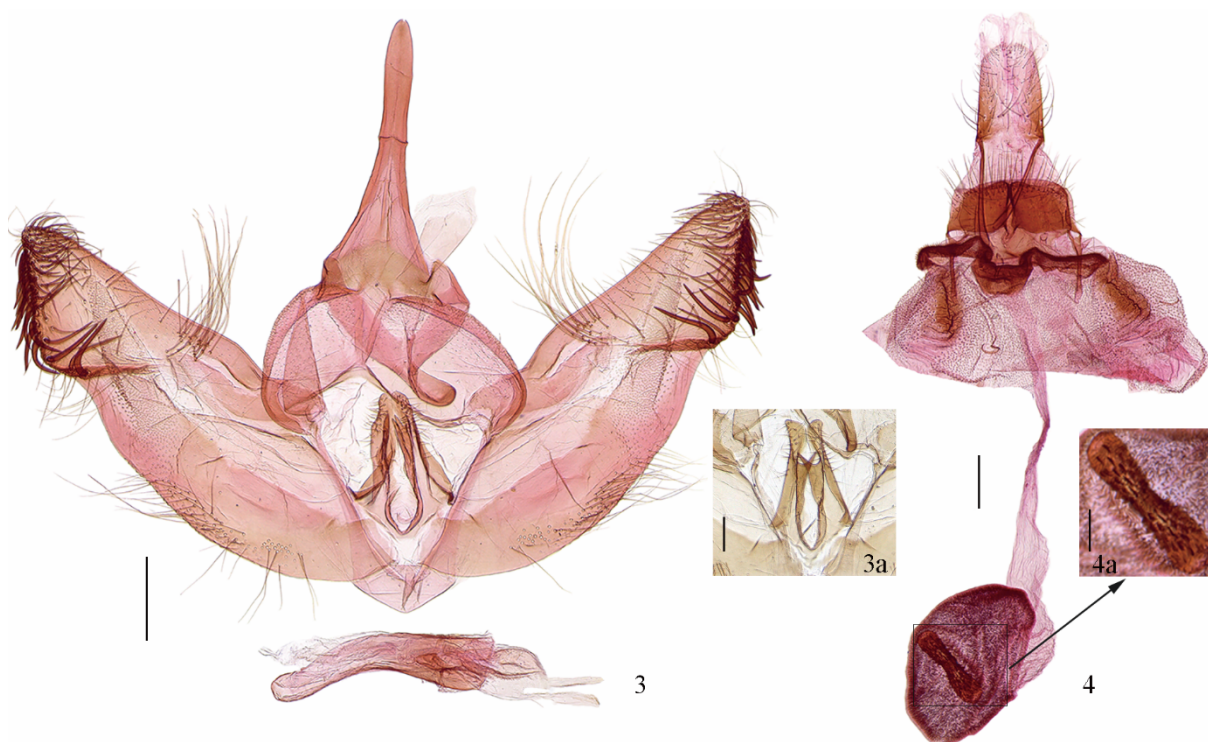
Type material. China, Yunnan: Holotype ♂, Simao, Pu'er, 1352 m, 24.IV.1995, leg. GY Yan, slide No. W95199. Paratypes. 2♂1♀, Pu'er, 30.IX.2018, leg. Q Xiao, slide Nos. TZL20452♂, TZL19804♂, TZL19805♀; 2♂2♀, Longsheng Tea Plantation, Pu'er, 10.V.2020, leg. ZB Wang, slide Nos. TZL19783♂, TZL20454♂, TZL1985♀, TZL20451♀.

Hostplant. *Camellia sinensis* (L.) O. Kuntze (Theaceae).

Distribution. China (Yunnan).



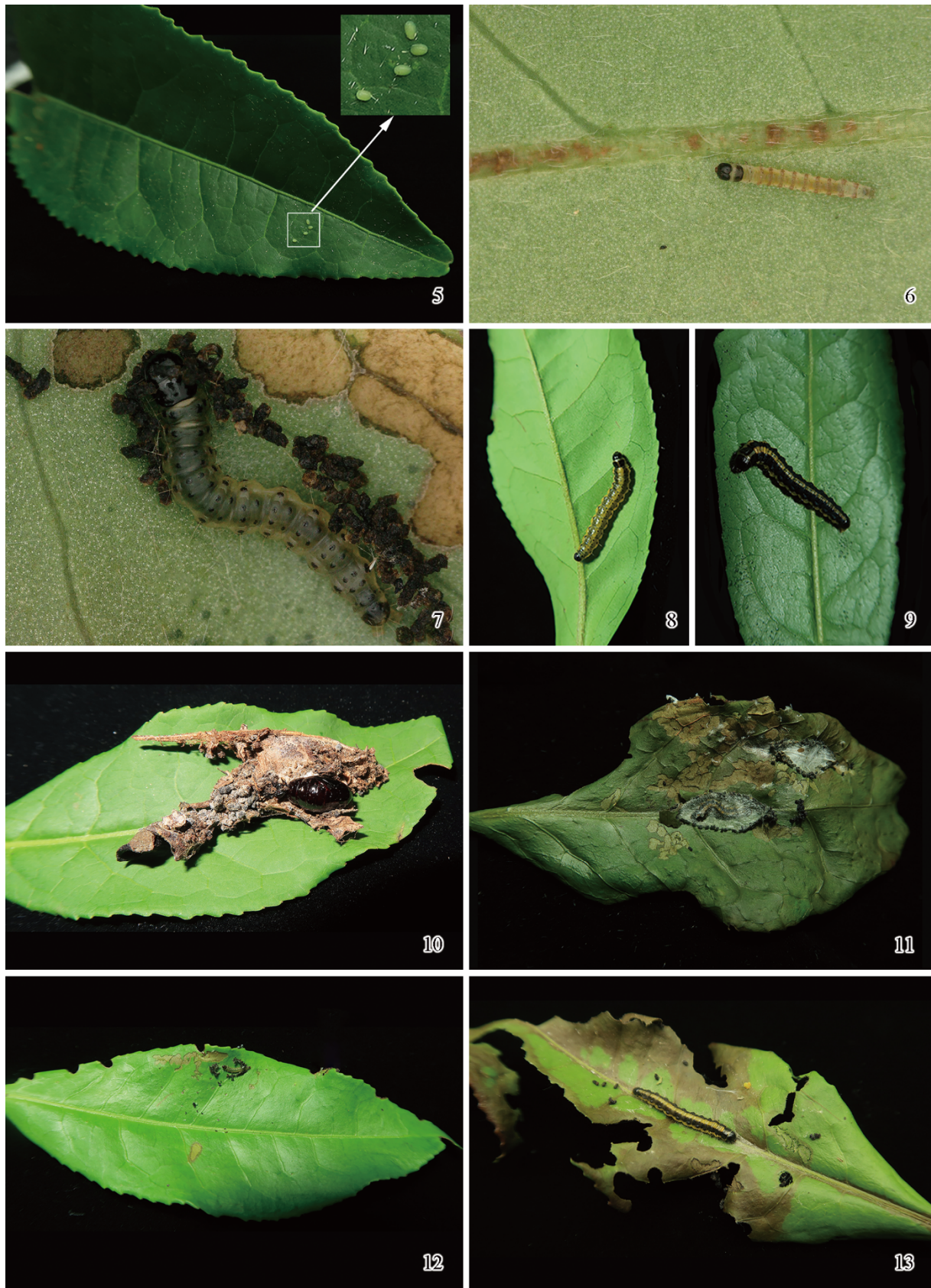
Figures 1–2. Adults of *Neospastis camellia* S. Wang, **nom. nov.** 1. Paratype, male (a. Head in lateral view; b. Head in front view). 2. Paratype, female (a. Head in lateral view; b. Head in front view). Scale bars: 1–2=2.0 mm; a–b=0.2 mm.



Figures 3–4. Genitalia of *Neospastis camellia* S. Wang, **nom. nov.** 3. Male genitalia, paratype, slide No. TZL19804♂ (a. Paratype, enlarged lateral lobes of juxta, slide No. TZL20454). 4. Female genitalia, paratype, slide No. TZL19805♀ (a. Enlarged signum). Scale bars: 3–4=0.5 mm; a=0.2 mm.

Etymology. The specific epithet is from the genus name of its hostplant, *Camellia sinensis* (L.) O. Kuntze (Theaceae), an important economical plant in China.

Biology. The larvae of *N. camellia* S. Wang, **nom. nov.** have a habit of spinning silk to make nests. They usually stick two pieces of tea leaves with silk and make "insect buds" (congregating characteristics) with faeces and silk thread inside



Figures 5–13. Immature stages of *Neospastis camellia* S. Wang, **nom. nov.** 5. Eggs. 6–8. Larvae. 6. 1st instar larva. 7. 2th instar larva. 8. 4th instar larva. 9. 6th instar larva. 10. Pupae. 11–13. Feeding behavior.

the bud. They hide in the buds during the larval stage and feed on the tea leaves around the buds (Fig. 11). The 1–4th instar larvae feed on mesophyll tissue of upper surface of tea leaves (Fig. 12). While the feeding consumption of 5th instar larvae increase rapidly and the habit of feeding also changed to gnaw leaves. The leaves that have been eaten have obvious gaps and holes (Fig. 13). Adults do not have phototaxis.

Remarks. Wang *et al.* (2012) recorded 12 hostplants of *Neospastis simaona* (invalid name) in Fujian Province, but they seemed to misidentify the species based on the present study and the study of Long *et al.* (2021). Long *et al.* (2021) studied the biology of *Agriophara rhombota* [misspelled as *rhombata*] in Simao, which could be misidentified and which is likely to be *Neospastis camellia* S. Wang, **nom. nov.** Further study will be carried out with involvement of the molecular method.

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