DESCRIPTIONS OF IMMATURE STAGES OF *SESIA SININGENSIS* (HSU) (LEPIDOPTERA : SESIIDAE)

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Abstract The mature larva and pupa of clearwing moth, *Sesia siningensis* (Hsu, 1981), are described and illustrated. Its larval parasitoid, *Apanteles conopiae* Watanabe, 1934 (Hymenoptera, Braconidae), is recorded for the first time. Some bionomic notes of *S. siningensis* are given.

Key words: Lepidoptera; Sesiidae; *Sesia siningensis*; immature stages; host-plants; *Populus* spp.; parasite; Braconidae; *Apanteles conopiae*.

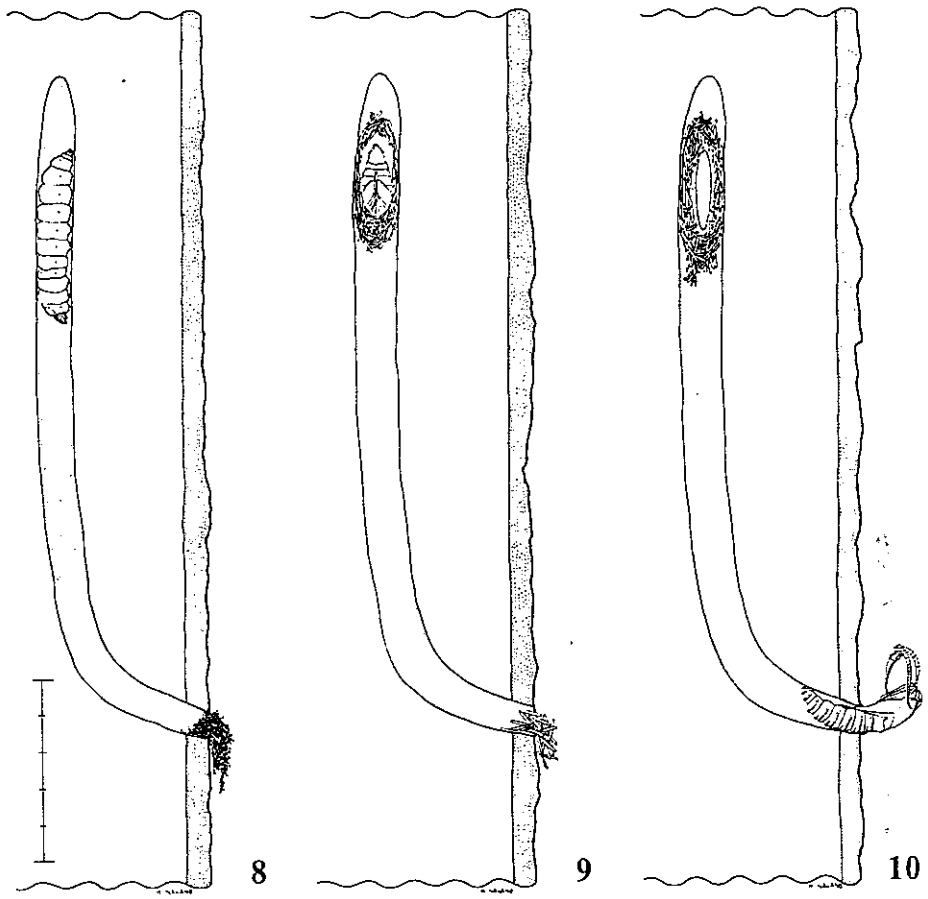
The poplar-trunk clearwing moth, *Sesia siningensis* (Hsu, 1981), is a very important pest of poplar trees, *Populus cathayana* Rehd., *P. nigra* var. *thevestina* Bean., *P. simonii* Carr., *P. canadensis* Moench. in Qinghai Province, China, and also it attacks rarely *P. bolleana* Lauche in Qinghai. The detailed account of the life history, bionomic and control of *S. siningensis* was given by Xu et al. (1984). In the present paper, descriptions of the mature larva and pupa of *S. siningensis* and bionomic notes of it are given in the following lines.

Sesia siningensis (Hsu, 1981)

(Figs. 1-15)

Mature larva (Figs. 8, 11-12): Length 37-48 mm. Head brown; mouth parts dark brown. Body bone-white; prothoracic shield (Fig. 12e) light yellowish brown, with a long and narrow oblique brown streak from near postero-dorsal corner to about middle; thoracic legs light yellowish brown, with claws dark brown; anal plate light brown. Head (Fig. 12a) broader than long; fronto-clypeus very small. Six ocelli (Fig. 12b) arranged longitudinally, ocelli V and VI widely separated from ocelli I-IV. Labrum (Fig. 12c) very wide. Mandible with four large teeth (Fig. 12d). Spiracle of 8th abdominal segment extremely lorge and located postero-dorsally (Fig. 11). Anal plate (Fig. 11) with a strong blackish brown median spine near posterior margin. Prolegs (Fig. 12h) with about 30 crochets. Anal proleg (Fig. 12i)

Figs. 1-7. *Sesia siningensis* (Hsu, 1981).
1, freshly emerged male adult; 2, ditto, female; 3, ditto, lateral aspect; 4, a poplar trunk with fresh sawdust produced by an active borer from larval tunnel; 5, *Apanteles conopiae* Watanabe (Braconidae), gregarious cocoon mass in larval tunnel, exposed; 6, the pupa in tunnel, exposed; 7, extruded pupal case.



Figs. 8-10. *Sesia siningensis* (Hsu, 1981).
8, mature larva in larval tunnel; 9, pupa in cocoon; 10, extruded pupal case from lower part of larval tunnel. Scale line = 5.0 cm.

with about 17 crochets.

Chaetotaxy: Head (Figs. 12a and b) with P1 very long; P2 minute, as large as the microscopic seta. A1 and A3 very long, A2 very short, near to and posterolaterad of A1. O1 rather short and slightly antero-dorsad of ocelli I and II; O2 very long. Prothorax (Fig. 12e) with L group trisetose and located in oblique, almost straight line on a large pinaculum. Abdomen (Figs. 12f and g) with SD1 and L1 very long on 1st-9th segments. On 9th segment L2 present, with its own pinaculum.

Material examined: 17 exs., feeding in a tunnel of *Populus cathayana,* China, Qinghai Province, Xining, 8-9. VIII. 1992, Y. Arita.

Pupa (Figs. 6-7, 13-15): Length 20.5-29.5 mm, width 6.5-7.0 mm. Brown, long, rather robust. Frontal process (Figs. 13a and b) large, smoothly curved in dorsal view; sharply and shortly pointed ventrally in lateral view. Maxillary palpi large and wide. Metathoracic legs reaching to middle of 5th abdominal segment. Wing

tips reaching to middle of 4th abdominal segments. On dorsum alar sheaths of mesothorax strong and ridged. Spines on dorsum of abdominal segments consisting of two rows on 2nd-7th segments in male and 2nd-6th in female, and one row on segment 8th and 9th in male and on 7th-9th in female. Tenth abdominal segment (Figs. 15a-c) with six pairs of spines; one pair of spines on dorsal side, two pairs on lateral side and three pairs on ventral side, the innermost pair being small.

Materal examined: 19 exs., pupa from cocoon in larval tunnel of *Populus cathayana*, China, Qinghai Province, Xining, 8-9. VIII. 1992, Y. Arita.

Bionomics (Figs. 1-10): According to Xu et al. (1984), they observed that the species takes three years. The egg is laid singly low down to 6 meters in bark crevices or on the surface of the bark of the trunk of *Populus* spp. The larva constructs a L-shaped tunnel in wood and produces into small pieces of wood chips outside of tunnel (Fig. 9). The larva bores a tunnel 40-45 mm through solid wood horizontally, then turns to up and bores through 15-20 cm vertically. The cocoon is 25-38 mm long and 22-24 mm wide, linear-oblong, and imperfect; mostpart of both sides is opened and formed in the upper portion of larval tunnel. It is constructed of rather long and narrow pieces of gnawed-off wood fragments and innerside lined with tough silk (Fig. 9). The head of pupa lays downward on cocoon in larval tunnel (Figs. 6 and 9). The adult emerges from lower part of larval tunnel in the daytime, mostly during 10:00-14:00., from end of May through September, maximally in

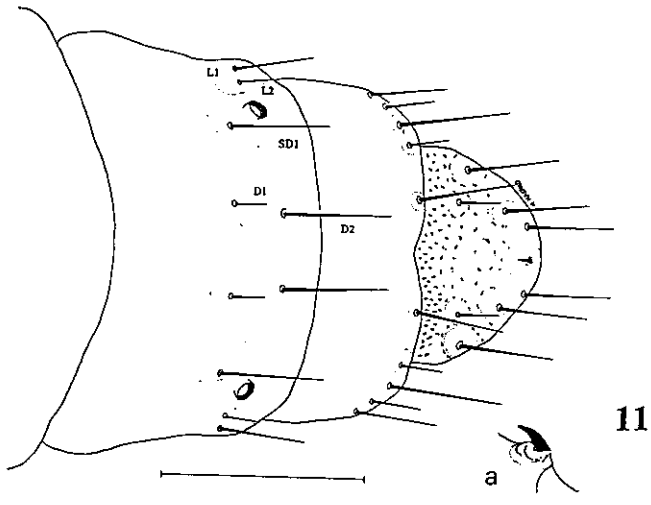


Fig. 11. *Sesia siningensis* (Hsu, 1981), dorsal view of eighth to tenth abdominal segments.
a: enlarged anal shield spine, lateral view. Scale line = 2.0 mm.

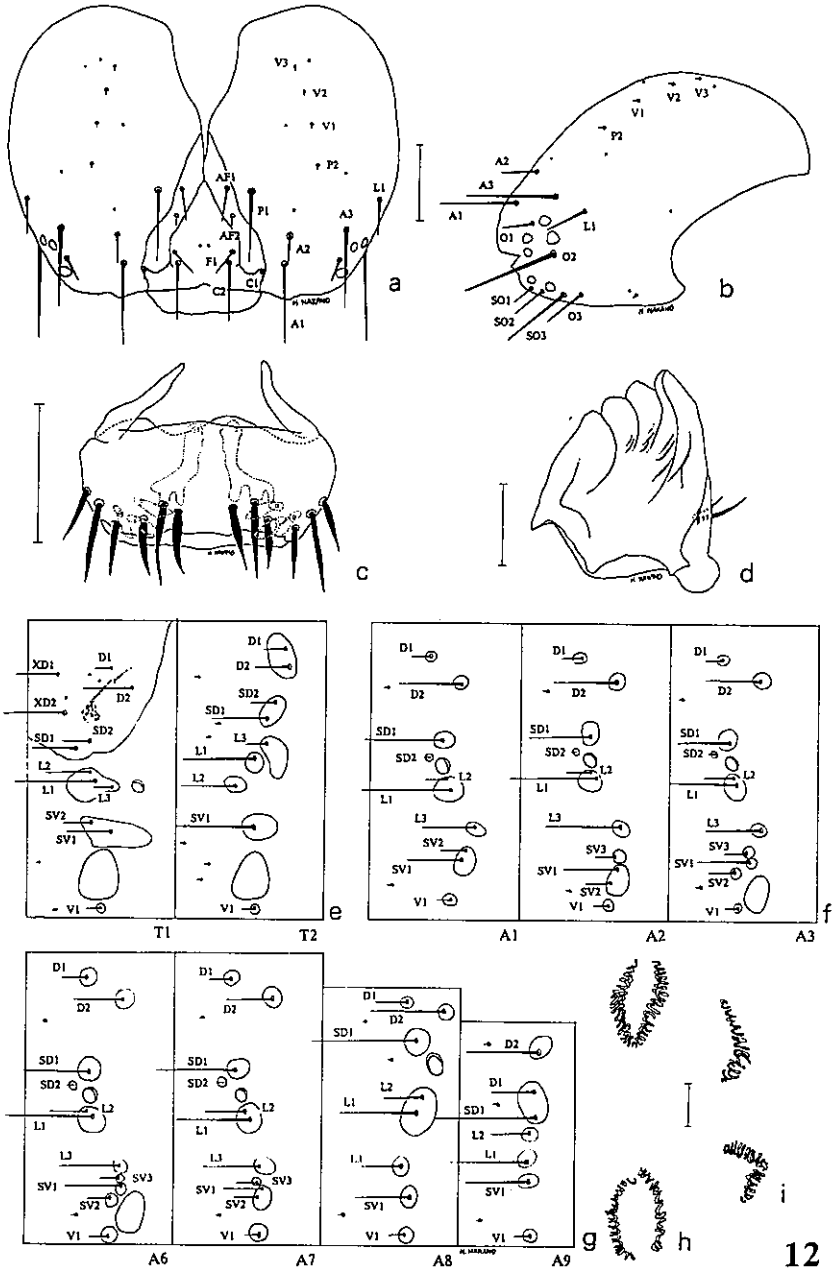


Fig. 12. *Sesia siningensis* (Hsu, 1981), mature larva.
a, head dorsal view; b, oceller region, left side; c, labrum, dorsal view; d, mandible, ventral view; e, pro- and mesothorax; f, first to 3rd abdominal segments; g, 6th to 9th abdominal segments; h, 3rd abdominal proleg, ventral view; i, anal proleg, ventral view. Scale line: a and b = 1.0 mm; c, d, h and i = 0.5 mm.