

Morphological Observation on the Two Species of Ophiderinae Larvae in Korea (Lepidoptera: Noctuidae)

PIAO Mei Hua¹⁾ and Chan Young LEE²⁾

2종의 한국산 짙름나방아과 유충에 대한 형태적 관찰 박미화¹⁾ · 이찬용²⁾

ABSTRACT

The external morphologies of *Sypnoides fumosa* (Butler) and *Scedopla koreana* Sugi larvae of Ophiderinae were observed.

Key words: Larvae, Morphology, Ophiderinae, Noctuidae, Lepidoptera, Korea

요 약

짙름나방아과의 애흰줄씩음잎나방(*Sypnoides fumosa*)과 알락무늬수염나방(*Scedopla koreana*) 유충의 형태적 특징을 관찰하였다.

INTRODUCTION

The family Noctuidae is the largest group in Lepidoptera and approximately 25,000 species is known from the world at present(Yoshimatsu,1995). In Korea, over 700 species belonging to 17 subfamilies were recognized(Shin etc, 1994).

In their active larval stage, the noctuidae caterpillars cause an appreciable amount of damage to agricultural crops. Their identification at all the recognizable stages, remained on important aspect in the field of

immature taxonomy.

The larval morphologies of two species of Hypheninae and three species of Catocalinae in Korea were described by Piao and Lee(1999a, b). We here provide detailed descriptions and illustrations of the larvae of *Sypnoides fumosa* (Butler) and *Scedopla koreana* Sugi.

MATERIALS AND METHODS

The morphological features of the body of matures larvae in alcohol were

1) Department of Plant Protection, Zhejiang University, Hangzhou 310029, China

2) 강원대학교 산림과학대학 산림자원보호학과 Department of Forest Resources Protection, College of Forest Sciences, Kangwon National University, Chunchon 200-701, Korea

examined. Then, they were macerated in 10% KOH for several minutes and dissected under stereoscopic microscope(40×).

The head capsule with a fine forceps around the edges of the occipital foemen. The maxillae and labium as a unit were removed from the head capsule. The head was sketched under this condition from dorsal and ventral sides. Then the mandibles with attached tendons were removed from the head capsule.

Mouthparts and skins were mounted on microscopic slides for detailed examinations(100× or 150×).

The nomenclature of larvae setae and puncture follows Hinton(1946), and the terminology of labrum, maxillary lobe, and palpi follows Heinrich(1916), Grimes and Neunzig(1986a, b).

KEY TO SPECIES EXAMINED

1. Spinneret apical bilobed and shorter than labial palpi; mandible with one large internal tooth; crochets of prolegs uniordinal, arranged in homoideous mesoserries ----- 2
2. On A1-8, SD2 present; on A3, ventral prolegs present; labrum seta M2 directly lateral to M1, L1 lateral to L2 ----- *Sypnoides fumosa*
 - On A1-8, SD2 absent; on A3, ventral proleg absent; labrum seta M2 lateroventral to M1, L1 laterodorsal to L2 ----- *Scedopla koreana*

DESCRIPTION OF LARVAE

Genus *Sypnoides* Hampson, 1913
***Sypnoides fumosa* (Butler)(Figs. 1~7)**
애흰줄씩음잎나방(Figs. 1~7)

Body grayish yellow with reticulations

pattern, posterior of each segments with reddish brown triangularly marking in mid-dorsal area; head reddish brown with reticulations; thoracic shield brown with yellowish white marking; thoracic legs yellowish brown, outer view with yellowish white marking; anal shield reddish brown; spiracles brown with black peritremes; integument reticulations.

Head. Wider than long; ocelli I-IV forming an almost semicircle. The adfrontal sutures apex midway between the apex of front and vertical triangle; the front extends about half of the distance to vertical triangle. AFa level with front apex; A1, A2 and A3 forming a obtuse angle at A2.

Mouthparts. Labral emargination about one-fourths deep, an obtuse angled; M2 directly lateral to M1; L1 and L2 closely approximate; L1 directly behind of L2. Epipharynx have small spines. Mandible with four apical teeth on cutting edge, the first tooth apical bifid, fourth tooth with several small subteeth; inner surface with one large transverse internal tooth. Labium with membranouse postmentum, on the near center bears two conspicuous setae; mentum sclerotized, the anterior margin darker pigmented and with two inconspicuous setae; prementum with median spinneret distally and labial palpi laterally; the spinneret apical bilobed, about 4 tims as long as median breadth and slightly shorter than tip of seta on apical segment of labial palpi; stipes mostly membranous, with two seta; palpifer sclerotized and bearing one seta; palpus: basal segment bearing one seta, three sensilla trichodea, and a lobe, on the lobe with two sensilla styloconica, one

sensilla basiconica and one puncture; median segment subequal to apical segment and with one puncture; apical segment with small eight sensilla basiconica distally. Distal region of hypopharynx with scattered stout spines, proximolateral region of hypopharynx with several spines, with medial transverse cleft.

Thorax. T1: D1 closer to D2 than to XD1; SD1 and SD2 very close together and not on the shield, SD1 usually thinner than SD2; L group bisetose, L2 thinner than L1; SV group bisetose; coxal plates apparently separated from pinacula of seta V1. T2 and T3: D1, D2 and SD2 often forming a nearly straight vertical line; SD1 slightly anteroventral to SD2 and hair like; L1, L2 and L3 present; SV group unisetose; coxae in contact with pinacula of V1. Thoracic leg: coxa with seven setae; femur with two setae; tibia with six setae and one puncture; tarsus with four setae (one seta narrow, others spatulate).

Abdomen. On A1-8, D1 anterodorsal to D2; SD1 dorsal to spiracles in A1 and A7, anterodorsal to spiracles in A2-6 and A8; SD2 anterodorsal to spiracles in A1-7, directly anterior to spiracle in A8; L1 directly interal to spiracle in A1, lateroventral to spiracles in A2-8; L2 anteroventral to spiracles in A1-6 and A8, straight below spiracle in A7; L3 lateroventral to L2 in A1-6 and A8, straight below from spiracles. On A9, D1 equidistant from D2 and SD1; L group unisetose. Anal shield rounded posteriorly; anal legs with nine setae and one puncture. SV group on abdominal

segments 1, 2, 7, 8 and 9 usually 3:3:1:1:1. Prolegs on A3-6 and A10, A5 and A6 proleg subequal, may decrease in size cephalad. Crochets of A3-6 uniordinal, homoideous mesoserries. All spiracles oval, those on T1 and A8 of about the same size, and larger than the others.

Larva length: 47~60mm; Head width: 3.2~3.6mm.

Materials examined: Experiment Forest of Kangwon National University, Chunchon City, Kangwon Do, 22. VII. 1998, larvae collected on leaves of *Pterocarya stenoptera* DC.

This species are separable from relatives by the mandible with four teeth, the first tooth apical bifid, the fourth tooth with several subteeth, and inner surface with a large internal tooth; spinneret apical bilobed; proximolateral region of hypopharynx with several spines; labral setae M2 and L1 each directly lateral to M1 and L2, emargination forming a obtuse angle.

Genus *Scedopla* Butler, 1878

Scedopla koreana Sugi (Figs. 8~14)

알락무늬수염나방 (Figs. 8~14)

Body yellow with white subdorsal line on each sides; head light yellow; shield and anal shield of the body color; thoracic legs light yellow with brown claws; spiracles brownish yellow with brown peritremes; cuticle smooth.

Head. Wider than long; ocelli I-IV forming a semi-circle and evenly placed. The apex of adfrontal sutures midway between vertical triangle and apex of

front: front extends about one-thirds of the distance to vertical triangle. A1, A2 and A3 forming an obtuse angle at A2.

Mouthparts. Labral emargination about half deep, forming a acute angle; M2 distinctly lateroventral to M1 and slightly closer to M1 than to M3; L1 and L2 close approximate, L1 laterodorsal to L2. Epipharynx have small spines. Mandible have four teeth on cutting edge, the first tooth bifid, inner surface with one large transverse tooth. Labium with membranous postmentum, on the center with two conspicuous setae; prementum with median spinneret distally and labial palpi laterally; distal tip of the spinneret bilobed, about 5 times as long as median breadth and shorter than lip of seta on apical segment of labial palpi. Maxillae with cardo weakly delineated, mostly membranous bearing a hook-like one seta; palpus: basal segment bearing one seta and a lobe, on the lobe with three sensilla trichodea, two sensilla styloconica, and two sensilla basiconica and one puncture; median segment slightly longer than apical segment and with one puncture; apical segment with eight sensilla basiconica. Distal region of hypopharynx with scattered stout spines, proximolateral region with eleven flat acute projections row, without medial transverse cleft.

Thorax. T1: XD1 and XD2 positioned near anteral margin; D1 and D2 close to posteral margin of shield; D1 slightly closer to D2 than to XD1; SD1 and SD2 close together and not on the shield, SD1 usually thinner than SD2; L1 and L2 close to each other, and anterior to spiracle, L2 usually thinner than L1; SV1

and SV2 present above leg. T2 and T3: D1, D2, SD2 and SD1 forming a almost vertical line; SD1 hair like. Thoracic leg: coxa with seven setae; femur with two setae; tibia with six setae; tarsus with four setae(thick, lanceolate, spatulate, and narrow).

Abdomen. On A1-8, D1 distinctly anterodorsal to D2; SD1 dorsal to spiracle in A1 and A7, anterodorsal to spiracle in A2-6 and A8; L1 lateral to spiracle in A1, posteroventral to spiracle in A2-7, L2 anteroventral to spiracle, L3 posteroventral to L2 in A1-6 and A8, straight below from L2 in A7. On A9, D1 closer to D2 than to SD1; L group unisetose. Anal shield rounded posteriorly, anal legs with nine setae. SV group on abdominal segments 1, 2, 7, 8 and 9 usually 3:3:1:1:1. Prolegs on A4-6 and A10, A5 and A6 prolegs subequal and larger than that of A4, the crochets unisetose, arranged in homoideous meseries. All spiracles oval, those on T1 and A8 about same size and the largest, the spiracles of A1 and A7 slightly larger than those of A2-7.

Larva length: 23~28mm: Head width: 2.2~2.7mm.

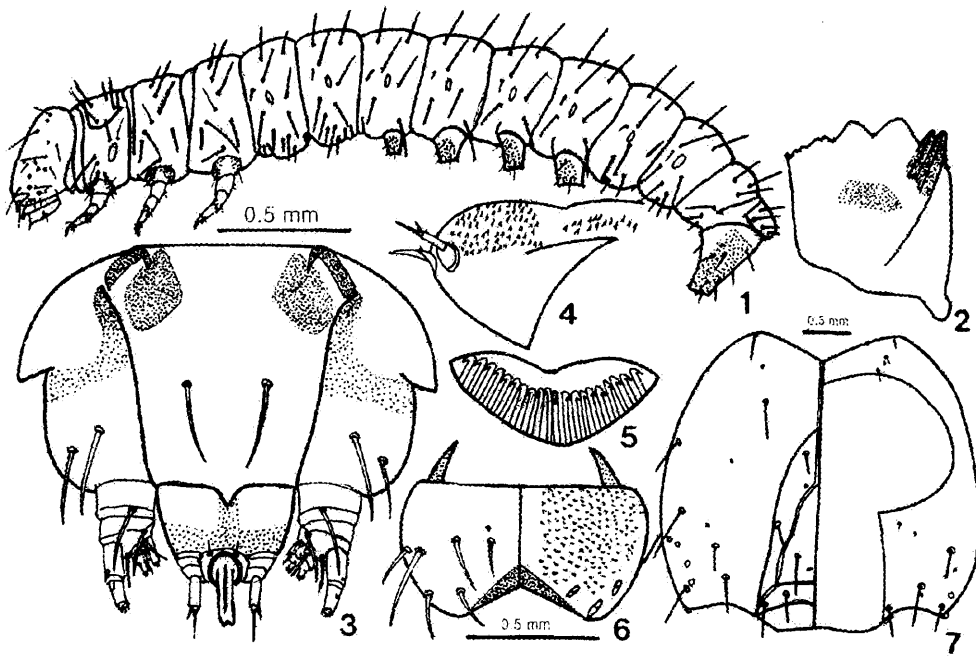
Materials examined: Experiment Forest of Kangwon National University, Chunchon City, Kangwon Do, 29. VIII. 1997(24. VI. 1998), larvae collected from leaves of *Styrax obassia* S. et Z.

This species are characteristics in having the spinneret apical bilobed and shorter than labial palpi; proximolateral region of hypopharynx with eleven flat acute projections row; mandible with four apical teeth, the first tooth bifid; labral emargination forming a acute angle, setae

M2 lateroventral to M1; prolegs of A3 without, those of A5 and A6 subequal and larger than A4.

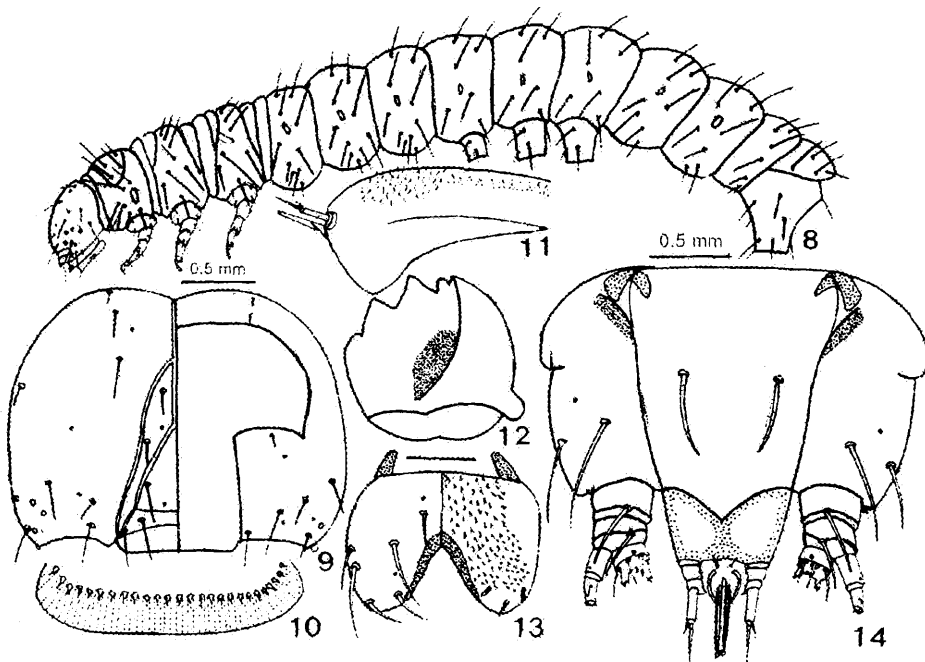
REFERENCES

- Grimes, L. R. and H. H. Neunzig 1986 a. Morphological Survey of the Maxillae in Last Stage Larvae of the Suborder Ditrysia(Lepidoptera): Palpi. Ann. Ent. Soc. Ame. 79: 489-509.
- Grimes, L. R. and H. H. Neunzig 1986 b. Morphological Survey of the Maxillae in Last Stage Larvae of the Suborder Ditrysia(Lepidoptera): Mesal Lobes(Laciniogaleae). Ann. Ent. Soc. Ame. 79: 510-526.
- Heinrich, C. 1916. On the taxonomic value of some larval characters in the Lepidoptera. Pro. Ent. Soc. 18: 154-164.
- Hinton, H. E. 1946. On the homology and nomenclature of the setae of Lepidoptera larvae, with some notes on the phylogeny of the Lepidoptera. Trans. Roy. Ent. Soc. Lond. 97: 1-37.
- Piao M. H. and C. Y. Lee, 1999 a. Morphological observation on the two species of Hypheninae larvae in Korea(Noctuidae: Lepidoptera). J. For. Sci. Kangwon Nat'l Univ. 15: 18-26.
- Piao M. H. and C. Y. Lee, 1999 b. Descriptions of larvae of three Catocalinae species in Korea(Lepidoptera: Noctuidae). Korea J. Ent. 29(4): 265-271.
- Shin, Y. H., K. T. Park and S. B. Ahn 1994. Order 30. Lepidoptera. In: Check List of Insects from Korea. The Entomological society of Korea and Korean society of Applied Entomology(ed.). Kon-Kuk Univ. Press. Seoul. pp. 364-382
- Yoshimatsu, S. I. 1995. *Schrankia costaestrigalis*(Stephens)(Lepidoptera, Noctuidae) utilizing underground spaces. Jan. J. Ent. 63(3): 541-550.



Figs. 1-7. *Sypnoides fumosa* (Butler)

1. larva 2. mandible(ventral view) 3. maxillae and labium 4. hypopharynx
5. crochets 6. labrum and epipharynx 7. head (dorsal and ventral view).



Figs. 8-14. *Scedopla corezna* Sugi

8. larvae 9. head(dorsal and ventral view) 10. crochets 11. hypopharynx
12. mandible(ventral view) 13. labrum and epipharynx 14. maxillae and labium