Article

Ecological notes on *Eugnamptus flavipes* (Sharp, 1889) (Coleoptera: Rhynchitidae), with description of the larva

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Abstract

Adult ecology and larval morphology of a rhynchitid weevil species, *Eugnamptus flavipes* (Sharp, 1889), are reported.

Key words: *Eugnamptus flavipes*, adult ecology, larval morphology, Rhynchitidae.

Introduction

Ecology and larval morphology of the genus *Eugnamptus* Schoenherr, 1839, was little known. Description of an American species *E. collaris* by Hamilton (1980) is the only available information. On the Japanese species, Izawa (1997) mentioned the oviposition mode of an affinitive genus *Aderorhinus* Sharp, 1889, in a faunal review of Aichi Prefecture, central Honshu, Japan.

I have recently had an opportunity to observe a part of oviposition habit and to examine the morphology of young larva of Japanese species *Eugnamptus flavipes* (Sharp, 1889).

Before going further, I would like to express my thanks to Messrs. H. Watari, M. Horikawa and A. Yoshida for their important information on this species, especially on the host plant.

Habitat and Ecology

A joint collecting trip was carried out by the Japan Coleopterological Society and the Japanese Society of Coleopterology on 10-11 July, 1999 around Mt. Wasamatayama, Nara Prefecture. Through the kind suggestion about the host plant by Mr. H. Watari in the meeting, I collected and observed many adults of *Eugnamptus flavipes* on the leaves of *Stewartia monadelpha* Zieb. et Zucc. (J. N.: Himeshara).

Though *Stewartia monadelpha* trees are usually too tall for collection or observation of the weevils, I found many low young trees near the peak of Mt. Wasamatayama (alt. 1344 m) and confirmed that the weevils fed on the leaves of the plant there (Fig. 1).

Fig. 1. *Eugnamptus flavipes* on the twig of *Stewartia monadelpha*.

Fig. 2. *Eugnamptus flavipes* and the bites and an oviposition hole on the leaf of *Stewartia monadelpha*.

To observe the oviposition of the weevil to the plant, I attempted to keep them in the laboratory. Two pairs of weevils were kept in a plastic container, in which live twigs (A) were put in the filled bottle and new fallen leaves (B) were laid on the bottom. I could not observe the scene of oviposition, but could find oviposition holes on the leaves (Fig. 2) and occurrence of young larvae.

The leaves on twigs (A) got dry in a month but did not fall. When I examined the leaves two months later, mines were developed inside of some leaves (A). The larvae were found in the mines. On the fallen leaves (B), however, no mines nor larvae were found. Some oviposition holes were also found on the underside of the leaves on the twigs and contained unhatched eggs. The oviposition scar was arched, 0.6 mm in length, and the cavity of egg was oval, 0.8 mm in depth. The egg is oval 0.6 mm in length and 0.4 mm in width (Fig. 3).

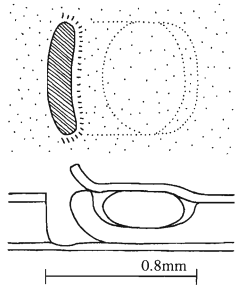

Fig. 3. Oviposition hole and egg of *Eugnamptus flavipes* (schematic).

The larvae found in the mines were supposed to be the first instar because their heads were almost 0.25 mm in width. The following description is based on the observation of 3 individuals (B1-385001 - B1-385003). The chaetotaxy and terminology follow basically Hamilton (1980) and Lee and Morimoto (1988).

Description of Larva

Body: orthosomatic, only slightly curved, depressed; 1.9 mm length, 0.6 mm width, dirty white, integument with numerous dorsal and ventral bands of yellowish-brown asperites (Figs. 6, 7).

Head: prognathous, strongly retracted, only anterior exposed in part; 0.3 mm width, yellowish-brown; mouthparts darker apically; ocellar area without obvious pigment spots (Fig. 4). Antenna two-segmented (sensu Lee and Morimoto, 1988), conspicuous; basal segment cylindrical, with 7 setae and one minute sensillum; apical segment sub-conical, apicomesad. Catapophysis prominent, pigmented. Epicranial and frontal sutures indistinct; endocarina distinct. Frons indistinct, with 5 pairs of minute setae and a pair of sensilla (fs). Dorsal epicranium with 3 pairs of setae (des). Five pairs of lateral epicranial setae present (les); les5 prominent, les4 longest. Four pairs of minute posterior epicranial setae present (pes). Clypeus three times as wide as long, with 1 pair of minute setae and 1 pair of sensilla at the base. Labrum with 1 pair of sensilla and 4 pairs of setae; anterior margin of labrum with slight median protuberance. Epipharynx bearing a pair of anteromedian setae. Mandible with 2 subequal setae. Maxillary palpus consists of 3 articles; basal article with 1 placoid sensillum, second article with inner seta at the apex; apical article subdivided into basal and apical parts, with small mid-mesal seta and 8 very small papillae at apex; stipes with 3 prominent setae and 4 sensilla on ventral surface. Labial palpus with 2 articles; basal article with 1 placoid sensillum; apical article with 5 minute papillae at apex. Premental sclerite complete, with 2 pairs of sensilla and 2 pairs of setae, 1 near base of palpus and 1 apex of ligula; ligula truncate. Postmentum with 3 pairs of setae.

Thorax: about as wide as abdomen. Prothorax (PrT): pronotum with 6 pairs of setae and 3 pairs of sensilla; anterior and posterior margins with numerous yellowish-brown asperites; posterior band forming a pattern surrounding 3 pairs of clear areas; prothoracic spiracle bicameral; spiraclar area with 2 setae (sp), shorter one above and longer one below and in front of spiracle. Epipleuron with 5 setae. Pleural area with 3 setae, 2 long and 1 short. Prothoracic sternal area twice as long as meso- and metathoracic sterna, with anterior transversal band and 3 pairs of longitudinal bands with asperites; a wide smooth pigmented area developed in the posterior part; pedal area indistinctive; eusternum including pedal area with 6 pairs of setae. Mesothorax (MsT): prodorsum with 2 pairs of minute setae (prs). Postdorsum with a pair of asperite patches; 5 pairs of setae (pds) behind the patches, 2 and 4 minute; alar area with 2 setae (al), 1 long and 1 short; spiracular area with 3 setae, 1 long and 2 short. Epipleuron with 5 setae (ep), 2 conspicuous and 3 minute. Pleural area with 2 setae (pl); 1 long and 1 rather long. Eusternum including pedal area with a pair of asperite patches; 9 pairs of setae (eu) behind patches, 5 short and 4 minute closely arranged. Metathorax (MtT): prodorsum with a pair of minute setae. Postdorsum with transversal asperite band; 5 setae behind the band, 2 and 4 minute; alar area with 2 setae, 1 long and 1 short; spiracular area with 2 setae, 1 long and 1 short. Epipleuron with 4 setae, 2 conspicuous and 2 minute. Pleural area with

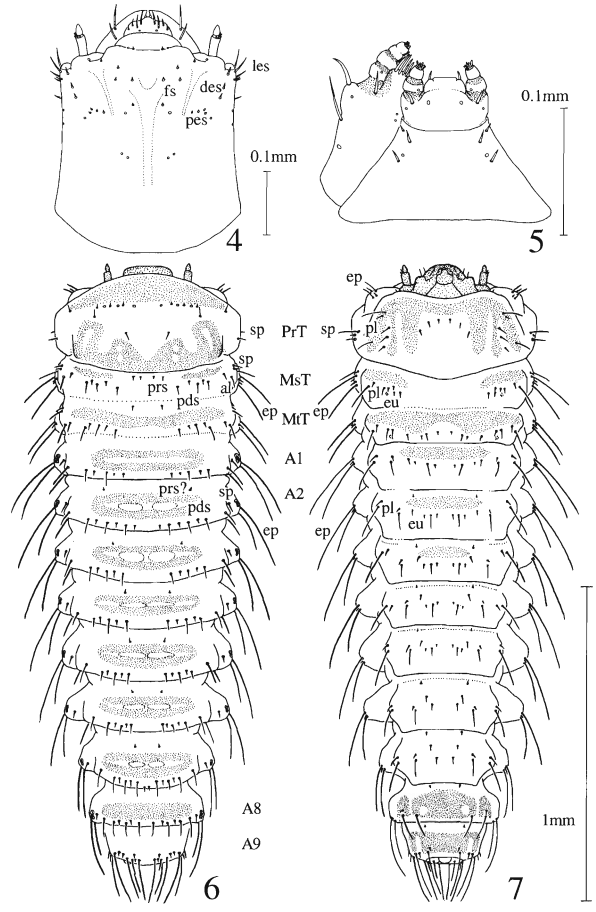

Fig. 4-7. Young larva of *Eugnamptus flavipes*. 4, head capsule in dorsal aspect; 5, maxilla, labium, prementum and postmentum in ventral aspect; 6, habitus in dorsal aspect; 7, ditto, in ventral aspect.

2 setae, 1 long and 1 short. Eusternum including pedal area with transversal asperite band; 11 pairs of setae behind the band, 4 short and 7 minute (4 minute setae closely arranged).

Abdomen: 8 pairs of lateral bicameral spiracles; the air tubes subequal to diameter of peritreme. Typical abdominal segments 2 (A2) - 7. Pro- and postdorsum indistinctive. Each tergum with a pair of weak dorsal sclerites; before and behind the sclerites, conspicuous band of asperites developed; anterior area of tergum with a pair of minute setae (prs?); postdorsum bearing 5 or 6 pairs of setae (pds), 3 pairs long the others short or minute; spiracular area with 1 seta (sp). Epipleuron with 2 long and 1 short setae (ep). Pleuron with 2 setae, 1 long and 1 short. Eusternum including pedal area with 5 to 7 pairs of setae (eu), 2 pairs rather long the others minute. Abdominal segment 1 (A1) the same as typical segments but dorsal sclerite absent. Abdominal segments 1 - 3 anterior asperites band present on eusternum; small asperites patch recognized on eusternum of abdominal segment 4. Abdominal segments 8 - 9 (A8, A9) without dorsal sclerites, asperites sparse indorsum; eusternum and pedal area covered with dense asperites, setae on eusternum reduced and difficult to locate. Anus terminal, surrounded by 4 asperitate lobes; lateral lobes around anus with 2 setae, 1 conspicuous and 1 short.

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