

## Notes on *Eopsis beaumonti* BENSON 1959 (Hymenoptera, Tenthredinidae)

With 3 figures

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### Summary

The distribution, life history and larva of *Eopsis beaumonti* BENSON 1959 are briefly described. The larva is extremely adapted to endophagous life. It is monophagous on *Bistorta major* and is unique in having large terminal spiracles on the subanal plate of the tenth abdominal segment.

### Key words

distribution, larva, food plant, adaptation

### Zusammenfassung

Verbreitung, Bionomie und Larven von *Eopsis beaumont* BENSON 1959 werden kurz beschrieben. Die Larve ist extrem an eine endophage Lebensweise monophag in *Bistorta major* angepasst. Einzigartig sind die großen terminalen Atemöffnungen auf der Subanalplatte des zehnten Abdominalsegments.

This species was first found in June 1959 by Dr. J. de Beaumont in the Swiss Jura, Vaud, Les Pleiades (1200 m) and described in the same year by BENSON (1959) as a member of the subfamily Tenthredininae, because vein Sc+R in the forewing is slightly curved apically and because M joins Sc+R at a distance from intersection of Rs+M with Sc+R. The first character is typical for Tenthredininae, but in *Eopsis* is rather variable, this part of Sc+R being slightly curved to nearly straight. TAEGER (1986) gave a detailed redescription, and transferred *Eopsis* to the tribe Allantini of the subfamily Allantinae. LACOURT (1999) placed it in his catalogue in a tribe Eopsini, but notes in the page of Errata that Eopsini should read Allantini. Two years later (LACOURT 2001) he listed it once more as a member of the Allantini. Nevertheless, the endophagous development and unusual morphology of the larva seem to support its placement in a separate tribe. It is noteworthy that though this species is quite conspicuous and characteristic in colour, no specimens

collected before the middle of the 20th century have been detected in any collections.

Since its description *E. beaumonti* has been recorded from the following countries:

France: Jura, Lamoura 1200 m; Hautes-Alpes; Savoie; Loire; Haute-Loire 1150 m; Massif Central, 850–1200 m, Puy-de-Dôme (LACOURT, 1976, 1985, 2001 and NOBLE-COURT, 2006). Czech Republic: Giant Mts. (BENEŠ, 1984, 2012, 2013); Jizerské hory Mts. (MACEK 2009). Germany: Harz (TAEGER 1986); Bavaria (BLANK et al. 2001); Hesse (LÖHR 2014). Slovakia: High Tatra Mts., Javorina (ROLLER 1999); Zadná Javorová dolina (valley) up to 1600 m (ROLLER & HARIS 2008). Belgium: No exact locality given (MOL 2002). Poland: Giant Mts. (BENEŠ 2012, 2013). Russia: Moscow Region, based on the synonymy with *Monsoma mosquense* ZHELOCHOVTSEV, 1981 by TAEGER (1986).

In the Giant Mountains (Krkonosé in Czech, Karkonosze in Polish, Riesengebirge in German) *Eopsis beaumonti* had been found in the 1980's quite commonly in all places with stands of *Bistorta major* (BENEŠ 2013). In May 1982 this species seemed to be dominant on meadows at Harrachov-Rýžoviště, and was more common than such ubiquitous species as *Dolerus aeneus* HARTIG, 1837 or *Pachyprotasis rapae* (LINNAEUS, 1767). Larvae were found in the stems of *Bistorta major*, at all places where the plant occurred, from the lower montane zone (Harrachov, 700 m) to the alpine zone high above the upper tree line (Kaplička, saddle between Luční and Studniční Mts, 1510 m). New records of larvae: Slovakia, The Belanské Tatry Mts., Zadné Medodoly, 1200 m, Predné Medodoly, former Kežmarská chata (1600 m); The High Tatra Mts., Skalnaté pleso (lake), 1450 m. While in the 1980's plenty of larvae were found in Zadné Medodoly, by 2007 the stand of *Bistorta* had been overgrown by spruces and only three larvae could be found.

Unlike other representatives of the subfamily Allantinae, the larvae of *Eopsis* are endophagous. They bore in the stems of *Bistorta major* and are conspicuously adapted to endophagous life. Oviposition takes place into an ochrea at the base of an internode. The 1st instar larva bores immediately after eclosion into the stem above the node and starts to feed upwards towards the medulla. Oviposition apparently continues at the same locality for a longer time, as up to three larvae of different instars were found in the same stem, from the eldest one (3rd instar) in the basal internode (Fig. 2), to a freshly hatched larva in the terminal one. Data on *Rumex* as a host plant (BENEŠ, 1984, LISTON, 1997) are apparently erroneous, as a female oviposited in the laboratory into *Rumex alpinus* but the larvae developed only for a short while, then perished. Furthermore, when the larvae were transferred in the laboratory from *Bistorta* to *Rumex*, they admittedly started to bore into the pith, but died soon afterwards. They are apparently monophagous, as no larvae were found on *Bistorta vivipara* (in the Belanské Tatry Mts.) close to the stands of infested *Bistorta major*.

Infested plants are usually easily recognized by a fading, rather yellowish than pink coloration of the flower spike, which is usually also smaller. The larvae have four feeding instars. Nothing definite is known about formation of a cocoon, but it is probable that the mature larvae bore into dry stems or bark to pupate, in the same way as most other Allantinae.

#### Morphological adaptations of the larva.

Morphology of the mature larva (Fig. 1). Head subglobose, yellowish brown, without visible setae (x100), thoracic legs normal, tarsal claws with basal lobe. Integument of the body smooth, soft and whitish without visible setae, pseudopods on abdominal segments 2–7, indistinct ones on segment 8. Abdominal segments 1–7 with

six annulets, segments 8 and 9 reduced. Subanal prolegs narrow and distinctly tapering, directed backwards. Suranal plate (Fig. 3) flat, posteriorly subtruncate, laterally and posterodorsally with slightly brownish pigmented warts.

Some characters of *Eopsis* are shared with other endophagous larvae, such as the nearly glabrous integument without visible setae and the feebly developed prolegs. On the other hand, *Eopsis* possesses a conspicuous adaptation of the tracheal system that has not been found in any other sawfly larva. While in other sawfly larvae the spiracles are on thoracic segments 1 (and often also 3), and abdominal segments 1–8, the prothoracic ones being the biggest, in *Eopsis* the spiracles are present also on segment 10. A terminal pair of spiracles is located laterally in the basal part of the suranal plate and these spiracles are about twice as long as the prothoracic and abdominal ones. Further, the tracheal trunk is here also much wider than in the thoracic equivalent. The tergum of the anal segment is flat, more strongly sclerotized than other parts of the body, laterally and posteriorly with brownish warts, and is used as a cork to close an opening in the stem. In the 1st and 2nd instar larvae, the prolegs are well developed and the fine chaetotaxy of the trunk is visible (against a black background). Pale setae on posterior edge of subanal plate dense and about as long as antennae; setae on abdominal segments sparse.

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Fig. 1: Mature larva of *Eopsis beaumonti*.

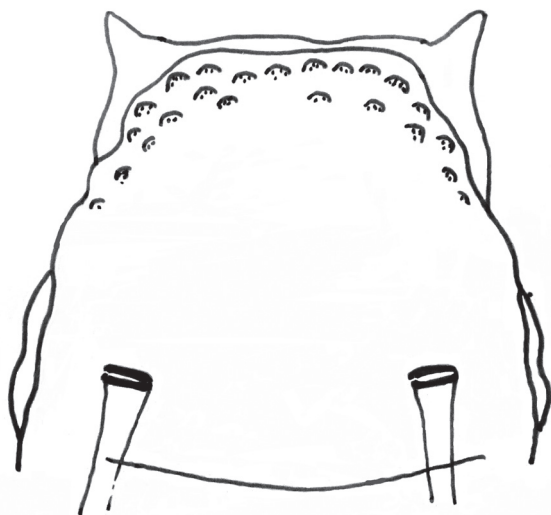


Fig. 3: Suranal plate in dorsal aspect.



Fig. 2: Dissected basal part of stem of *Bistorta major* infested by larva of *Eopsis beaumonti*.