

Descriptions of larvae of *Birka annulitarsis* and *B. cinereipes* (Hymenoptera: Symphyta: Tenthredinidae)

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Abstract. The larva of *Birka annulitarsis* (Thomson, 1870) is described and illustrated for the first time, and the larva of *Birka cinereipes* (Klug, 1816) is redescribed. Data on the larval biology are summarized and evaluated. *Pulmonaria angustifolia* (Boraginaceae) is the first specified larval host plant of *Birka annulitarsis*.

Key words. Hymenoptera, Symphyta, Tenthredinidae, Selandrinae, *Birka*, larva, host plant, Czech Republic, Palearctic Region

Introduction

The genus *Birka* Malaise, 1944, with 17 described species, is distributed in the Holarctic and Oriental Regions (TAEGER et al. 2010). Three species of this genus occur in Europe (TAEGER et al. 2010) and two of them are recorded in the Czech Republic (BENEŠ 1989). The biology of all species is poorly known, and the larval host plants are known only for two European species: *Birka cinereipes* (Klug, 1816) and *B. annulitarsis* (Thomson, 1870). The known host plants both belong to the Boraginaceae. In comparison to the other genera of Selandriinae, where the host plants are either monocot angiosperms or pteridophytes, the association with eudicot Boraginaceae makes the genus *Birka* rather exceptional within Selandriinae.

This contribution is a part of a planned series of articles dealing with so far unknown or undescribed larvae of sawflies, and thus follows the author's preceding contributions (MACEK 2012a,b) on the same subject.

Material and methods

The larvae of both species were collected in the field and reared in captivity to adulthood in order to verify both their host plants and species identity. This study was carried out in the Czech Republic. Larvae were photographed and all pictures saved in a digital image archive maintained by the National Museum, Praha, Czech Republic. The material was collected

and identified by the author of the current paper. The reared and collected adults, and also larvae preserved in alcohol, are deposited in the museum. Morphological terms are based on a comprehensive study by VIITASAARI (2002). Map field codes follow the grid mapping system according to PRUNER & MIKA (1996).

Abbreviations: NM – Nature Monument, NNR – National Nature Reserve, NR – Nature Reserve, PLA – Protected Landscape Area; NMPC – collection of the National Museum, Praha, Czech Republic.

Results

Birka annulitarsis (Thomson, 1870)

(Fig. 1)

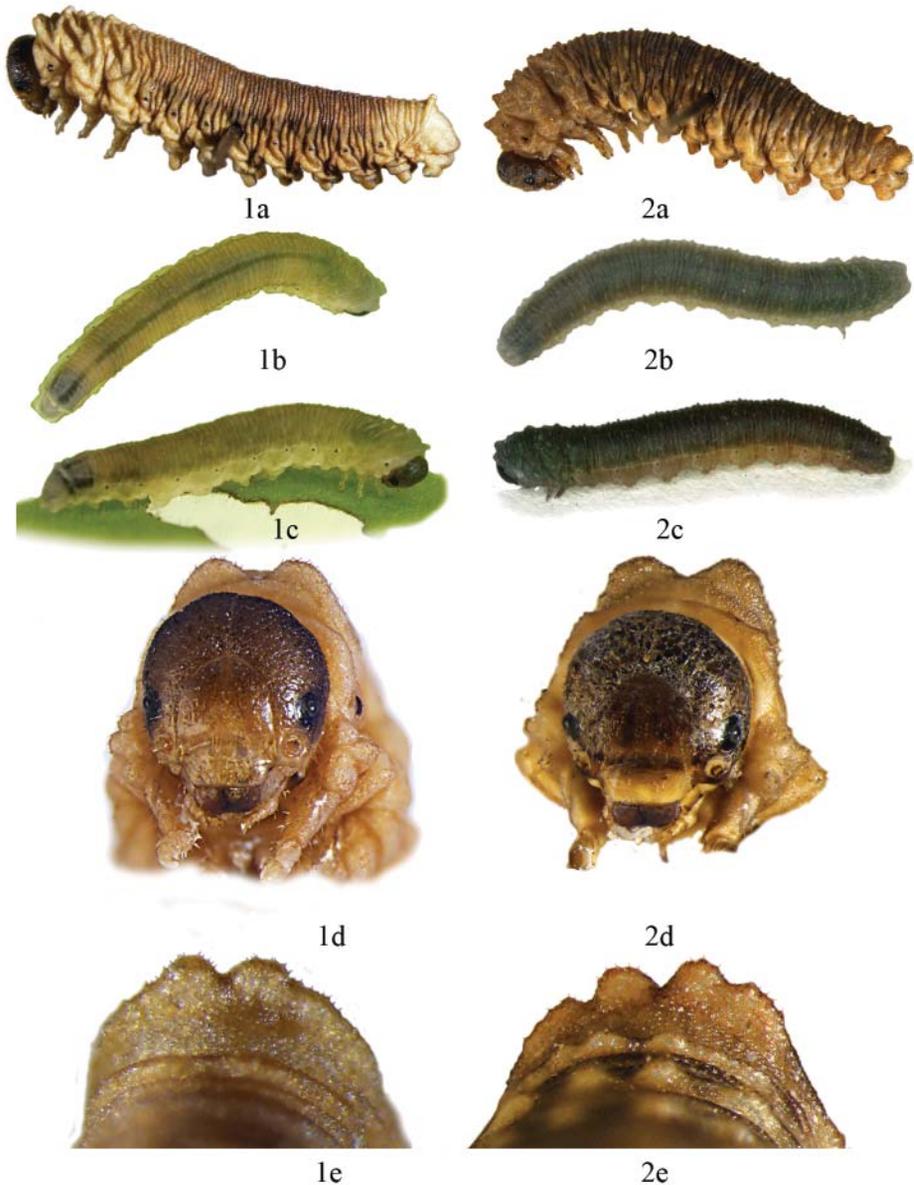
Material examined. CZECH REPUBLIC: MORAVIA MER.: Bilé Karpaty PLA, Machová (7171), 30.viii.2007, 4 larvae on *Pulmonaria angustifolia*; U Petrůvky NM (6872), 25.ix.2008, 7 larvae on *Pulmonaria angustifolia*, 1 female emerged 12.v.2009, all J. Macek lgt. (NMPC).

Description of the last feeding instar larva. Body length 10–12 mm. Head black, in lower part yellowish; whole head covered with scattered fine homogeneous pubescence; clypeus with six setae, labrum with four setae; mandibles with two setae, stipes and palpifer with two setae; second segment of maxillary palps with one small seta; praementum with two setae, second segment of labial palp with one short seta; body in upper part grey-yellowish, in lower part paler; cuticle granulose, spiracles black; first annulus of prothorax with a pair of large dorsal lobes with short cylindrical setae, third annulus of prothorax and first and third annulus of mesothorax with a pair of short wart-like projections with several short cylindrical setae; trochanter as long as femur, with scattered long hair-like setae, tibia as long as tarsus with three hair-like setae, third abdominal segment with seven annulets; second and fourth annulets with a pair of short dorsal cylindrical setae, first postspiracular lobe with one, second postspiracular lobe with two short cylindrical setae, prominent subspiracular and suprapedal lobes with short cylindrical setae, ninth abdominal segment with transverse, bilobed ridge with short scattered cylindrical setae, suranal lobe with short hair-like setae posteriorly; basal interior parts of prolegs with several long hair-like setae.

Notes on identification. The larvae of *Birka annulitarsis* differ from the similar larvae of *B. cinereipes* in smooth abdominal segments and bilobed transverse ridge on the ninth abdominal segment.

Bionomics. Habitat: mesic meadows, oak-hornbeam and thermophilous oak forests from colline to submontane zone. Polyvoltine. Flight period from mid April to the beginning of September.

Larvae were collected in August and September on leaves of *Pulmonaria angustifolia* in the flowery meadows of Bilé Karpaty Protected Landscape Area in southern Moravia, Czech Republic. They can be found by day, tightly attached with body outstretched on the base of upper surface of leaf blade of the food plant. The larvae are easily detected because of the skeletonized holes on the leaves. Mature larvae build a firm cocoon in soil, where they hibernate in praepupal stage.



Figs 1–2. 1 – *Birka annulitarsis* (Thomson, 1870), 2 – *Birka cinereipes* (Klug, 1816): a, d, e – mounted larva from alcohol; b, c – living larva; a, c – lateral view; b – dorsal view; d – frontal view; e – abdominal segment IX, dorsal view. Scale: a – 5 mm; b, c – 10 mm; d, e – 1 mm.

Discussion. ZIRNGIEBL (1954) noted *Rubus* sp. as host plant without any more details on the developmental stages relating to this plant. For that reason LISTON (1995) and TAEGER et al. (1998) mentioned *Rubus* as a problematic food plant and indicated it with a question mark. MACEK (2009) first recorded *Pulmonaria* sp. from Bílé Karpaty Mts. as a proved larval foodplant based on the collection and rearing of larvae. The food plant is here specified as *Pulmonaria angustifolia* L. Besides, adults of this species were also swept in various parts of Bohemia in deciduous forests with rich growth of *Pulmonaria officinalis*, which might be another larval foodplant.

Birka cinereipes (Klug, 1816)

(Fig. 2)

Material examined. CZECH REPUBLIC: BOHEMIA CENTR.: Český kras PLA, Srbsko (6050), Karlštejn NNR, 13.ix.2008, 28 larvae on *Myosotis palustris*, 2 females emerged 25.iv.2009; Blaník PLA, Částrovické rybníky NR (6355), 27.vii.2010, 4 larvae on *Myosotis palustris*; all J. Macek lgt. (NMPC).

Redescription of the last feeding instar larva. Body length 9–12 mm. Head black, clypeus and labrum brown, whole head covered with scattered fine homogeneous pubescence; clypeus with six setae, labrum with four setae; mandibles with two setae, stipes and palpifer with two setae; second segment of maxillary palps with one small seta; praementum with two setae, second segment of labial palp with one short seta; body in upper part black grey, in lower part yellowish grey; cuticle granulose, spiracles black; prothorax with a pair of enlarged dorsal and subspiracular lobes and wart-like suprapedal prominence; mesothorax with a pair of short wart-like dorsal projections and wart-like lateral projection; trochanter as long as femur covered with scattered hair-like setae, tibia as long as tarsus, covered with several scattered setae; body setae, excluding suranal and subanal lobes very short, cylindrical; third abdominal segment with seven annulets; annulets two and four with a pair of prominent wart-like dorsal protuberances with two setae; second annulet with two, fourth annulet with one, and third annulet in lower part with one, pale swellings with one or two setae; first postspiracular lobe with one, second postspiracular lobe with two or three setae; prominent subspiracular and suprapedal lobes with six to eight setae; ninth abdominal segment with transverse ridge with four lobes with two setae; suranal lobe with dense long hair-like setae on posterior half erected from black tiny conical warts; basal interior parts of prolegs with scattered conical and hair-like setae.

Notes on identification. The larvae of *Birka cinereipes* differ from the similar larvae of *B. annulitarsis* in the second and fourth annulet of the abdominal segments with wart-like protuberances and quadrilobed transverse ridge on the ninth abdominal segment.

Bionomics. Habitat: mesic and humid meadows, shore vegetation alongside waterpools, brooks and rivers from planar to montane zone. Polyvoltine, flight period from the end of April to the beginning of September. Host plants: *Myosotis palustris*, *M. arvensis* (LORENZ & KRAUS 1957).

I collected the larvae abundantly on *Myosotis palustris* in September beside the shore of the pool in Karlštejn NNR and in July in a humid meadow in Částrovické rybníky NR. The larvae rest outstretched on the lower side of the leaf and are detectable by the characteristic

skeletonized holes. The larva is inactive, falling down to the herb litter if disturbed and resting here with outstretched body for a long time. The mature larvae burrow into the soil, forming a firm cocoon for hibernation in the prepupal stage.

Discussion. The larva was first described by LORENZ & KRAUS (1957) and supplemented with some other additional characters by VIKBERG & NUORTEVA (1997). However there are some discrepancies in description of the third abdominal segment between these authors, caused by their different conventions for numbering the annulets: annulet 3 in the latter publication is annulet 2 in the former. The redescription provided here is more easily comparable with the description of *B. annulitarsis*.

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