Monoctonus leclanti sp. n. (Hymenoptera: Braconidae: Aphidiinae) from high-montane areas of southeastern Europe, and key to related species

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Monoctonus leclanti sp. n., a parasitoid of Delphiniobium junackianum Karsch. (Hemiptera: Aphididae) on Aconitum toxicum bosniacum and Aconitum pentheri in the high mountains of the Balkans is described. The species is an additional member of the high-montane aphid parasitoid guild determined in the area. A key to related species is included.

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Received 9 April 2002, accepted 8 August 2002

1. Introduction

The great variety of habitats and high diversity of plant species in southeastern Europe, originating from its complex geological history, has apparently contributed to the great diversity of aphids and their parasitoids in this area. Investigations of aphid parasitoids in high-montane areas and some refugial canyons and gorges of southeastern Europe have revealed many new and rare aphid parasitoid species and associations (Stary et al. 1998, Tomanović et al. 1998, Tomanović & Brajković 2000, Kavallieratos et al. 2001, Tomanović & Starý 2001, Tomanović 2002). This ongoing research has also led to the discovery of an undescribed Monoctonus species, which is a member of the high-montane parasitoid guild in the area. The species is described in this paper.

2. Material and methods

Aphid parasitoid material was collected on Mt. Kopaonik (1450 m a.s.l.) and Mt. Durmitor (1400 m a.s.l.). Two aphid host plants, Aconitum toxicum bosniacum and Aconitum pentheri, were sampled for aphid parasitoids. Aconitum toxicum bosniacum is a montane-subalpine species, distributed in mainly humid, calcareous habitats of the Carpathians and montane areas of the western Balkan Peninsula, while Aconitum pentheri is an endemic plant of central Balkan mountains (Gajić & Niketić 1992).
The samples from *A. toxicum bosniacum* and *A. pentheri* with an aphid colony were reared until aphid parasitoids emergence. Adult aphids were preserved in 90% ethanol and 75% lactic acid 2:1 (Eastop & van Emden 1972) for later identification.

Descriptive terminology used in this paper is based on Huber and Sharkey (1993) and Wharton et al. (1997).

3. Results

**Monoctonus leclanti** Tomanović et Starý, sp. n.

*Diagnosis.* The new species is similar to *Monoctonus nervosus* (Haliday) regarding wing venation, but it may be easily distinguished from the latter by its yellow coloration, narrower ovipositor sheath (Fig. 1f–h, j) and its chaetotaxy, prominent spiracular tubercles on petiole (Fig. 1e, i) and the number of antennal segments.

3.1. Female

*Head.* Eyes oval, medium sized, sparsely setose. Malar space equal to about 1/4 of longitudinal eye diameter. Tentorial index (tentoriocular line/intertentorial line) about 0.30. Clypeus oval, with 9–11 long setae. Labrum with 5–6 setae. Maxillary palpus 4-segmented, labial palpus 3-segmented. Antenna 16–17-segmented, not thickened at apex (Fig. 1a). Setae on flagellomeres semierect, subequal to half segment diameter (Fig. 1b). Flagellomere 1 (F1), 4.5–5 times as long as median width, slightly longer than F2, without or with single short longitudinal placode in upper part (Fig. 1b). Flagellomere 2 (F2), 3.0–3.3 times as long as median width, with 4 longitudinal placodes (Fig. 1b). F3, F4, F5 and F6 with 6, 6–8, 6–7 and 7 longitudinal placodes, respectively.

*Mesosoma.* Sparsely pubescent mesonotum with notaulices is distinct in the anterior part. Propodeum is areolated with clearly defined central pentagonal areola (Fig. 1c).

*Forewing.* Wing large, equal to body length. Stigma about 5.5 times as long as wide (Fig. 1d). Distal abscissa of R1 (metacarpace) equal to 1/3 to 1/4 of stigma length. RS+M vein distinct only in first quater, the remaining part colorless. 2RS colorless, with a small part near RS+M vein eferced (Fig. 1d). 3RS and r veins distinct.

*Metasoma.* Petiole about 1.7–1.9 times as long as wide at spiracles. Spiracular tubercles very promi-
nent (Fig. 1e). Dorsal disc of petiole rugose, with weak indications of middle longitudinal carina and with 4–5 long setae along the sides (Fig. 1e). Ovipositor sheath only moderately widened (Fig. 1f).

**Colouration.** Female largely yellow. Head: Eyes, temple and stemmaticum black. The remaining parts of head yellow to yellowish. Mouthparts yellow except mandible with dark apices. Scapus yellow, pedicel brown to yellowish, base of F1 yellow, the remaining parts of antenna black. Mesosoma: Mesonotum black. Propodeum black, except yellowish upper areolas. All lower parts of mesosoma yellow. Legs yellow with dark apices. Wing venation brown. Metasoma: Petiole brown. First half of metasoma brown to light brown. Second half of metasoma yellow to yellowish. Ovipositor sheath yellow.

**Body length:** 3.0 mm.

### 3.2. Male


### 3.3. Etymology and type individuals

**Etymology.** The name of the new species is given in honour of late professor Francois Leclant (Montpellier, France) who greatly contributed to the research of aphid diversity of Mt. Durmitor (Yugoslavia, Montenegro).


Paratypes deposited in the collections of the Belgrade Natural History Museum (4 females and one male, numbers 311/97, 611–612/99, 107/00 and 521/98) and P. Starý, České Budějovice, Czech Republic (2 females, numbers 613/99 and 101/00).

### 3.4. Key to the related species, based on females

1. Ovipositor sheath gradually widened (Fig. 1f); prominent spiracular tubercles on petiole (Fig. 1e); body of prevalently yellow coloration; antenna 16–17-segmented (Fig. 1a); labial palpus 3-segmented.............

**.............................................. Monoctonus leclanti** sp. n.

— Ovipositor sheath ploughshare shaped (Fig. 1g-h, j); spiracular tubercles not apparent (Fig. 1i); body of prevalently brown coloration; antenna 13–16-segmented; labial palpus 2- or 2-segmented ............... 2

2. Antenna 13–14-segmented (Fig. 1k); labial palpus 2-segmented; ovipositor sheath on Fig. 1j; Host aphids: Sitobion, Rhopalosiphum and Hyalopteroides .........

**.............................................. Monoctonus caricis** (Haliday)

— Antenna 15–16-segmented; labial palpus 3-segmented; ovipositor sheath on Fig. 1g; Host aphid: Impatientinum balsamines (Kalt.) ... Monoctonus nervosus** (Haliday)

### 4. Discussion

#### 4.1. Taxonomy

*Monoctonus leclanti* belongs to *Monoctonus nervosus* species group (van Achterberg 1989) which is represented by *M. nervosus* and *M. caricis* in Europe, and its relatives in North America include *M. paulensis* (Ashmead), *M. pacificus* Pike and Starý and *M. allisoni* Pike and Starý (Smith 1974, Starý 1974, Pike et al. 2000, Pike et al. 2002). Within *M. nervosus* group, *M. leclanti* has a narrower ovipositor sheath. On the basis of this character, *M. leclanti* is somewhat closer to the genus *Harkeria* Cameron.
4.2. Parasitoid guild

The host aphid, Delphiniobium junackianum is holocyclic and monocyclic on Aconitum and Delphinium plants, and is distributed in West Palaearctic (Heie 1995, Remaudière & Remaudière 1997). The parasitoid guild of D. junackianum was unknown until 1988, when several Aphidius ervi Hal. specimens were found and a new species from Italy — Aphidius sussi Pennacchio & Tremblay was described (Pennacchio & Tremblay 1988). Over the period 1997–2001, we collected 269 parasitoid specimens from D. junackianum. Aphidius sussi was the dominant parasitoid species (97% of all parasitoids) and was found from June to September. Only 8 specimens of M. leclanti (3%) were collected between mid-July and mid-August. Also, we gathered secondary parasitoids as follows: Alloxysta fulviceps (Curtis), Alloxysta victrix (Westwood), Alloxysta macrophadna (Hartig) (Cynipoidea: Charipidae), Coruna clavata (Walker) and Pachyneuron aphidis (Bouché) (Chalcidoidea: Pteromalidae).

Acknowledgements: The research was supported by Grant 03E04 (The Ministry of Science and Technology of the Republic of Serbia), Grant A6007105 (Grant Agency, Academy of Sciences of the Czech Republic) and from the Entomology Institute Project Z5007907 (Academy of Sciences of the Czech Republic) and from the Entomology Institute Project Z5007907 (Academy of Sciences of the Czech Republic). We express thanks to Aleksandar Stojanović from Belgrade Natural History Museum for identification of secondary parasitoids and Mrs. Gordana Tomović from Institute of Botany, Faculty of Biology, University of Belgrade for information about host plants.

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