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**A new endemic species of *Monochroa* from the south-western Alps
(Lepidoptera: Gelechiidae)**

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Abstract

A new species of Gelechiidae is described from the Cottian Alps (Italy, France), a mountain ridge with a high proportion of endemism. *Monochroa sperata* sp. n. is most closely related to *M. inflexella* SVENSSON, 1992, from northern and central Europe but differs by the yellowish-brown labial palpi and structures of the male genitalia. *M. inflexella* is recorded as new to France and Hungary.

Key words: Lepidoptera, Gelechiidae, *Monochroa*, new species, Cottian Alps.

Zusammenfassung

Eine neue Art aus der Familie Gelechiidae wird aus den Cottischen Alpen (Italien, Frankreich) beschrieben, einem Gebiet mit einem hohen Endemismusgrad. *Monochroa sperata* sp. n. ist mit der nord- und mitteleuropäische verbreiteten *M. inflexella* SVENSSON, 1992 nächst verwandt, differiert aber sowohl durch die überwiegend gelblich beschuppten Labialpalpen als auch in männlichen Genitalstrukturen. *M. inflexella* wird erstmals für Frankreich und Ungarn gemeldet.

Introduction

Monochroa is a species-rich genus of Gelechiidae with altogether 26 species known from Europe (KARSHOLT & RAZOWSKI 1996) and only a single species, viz. *M. uralensis* JUNNILAINEN, 2010 has been added since (JUNNILAINEN & NUPPONEN 2010). Similarly to other genera of the family a complete review on a continental scale is lacking, though ELSNER ET AL. (1999) give an overview about the central European taxa. Despite of these shortcomings species of *Monochroa* are usually well defined and new taxa are rarely described, more recently *M. inflexella* from Sweden (SVENSSON 1992) and *M. moyses* from Great Britain (UFFEN 1991).

Most species of *Monochroa* are restricted to wetland habitats and very few taxa occur in mountain areas. Consequently only two species are considered as alpine endemics so far: *M. scutatella* (MÜLLER-RUTZ, 1920) and *M. dellabeffai* (REBEL, 1932) which are both restricted to habitats below or slightly above the timber line in the south-western Alps. From the alpine zone only *M. ferrea* (FREY, 1870), a species with arcto-alpine distribution, was reported so far (SATTLER 1974). The discovery of a yet unknown species living in high altitudes of the Cottian Alps (Italy) therefore comes as a surprise. The new species is here described and compared with its most close relative.

Abbreviations

TLMF	Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria.
ZMUC	Zoologisk Museum, Natural History Museum of Denmark, Copenhagen, Denmark.

Taxonomic part

Monochroa sperata sp. n. (Figs. 1-3)

Material examined. Holotype ♂, „Italien, Prov. Cuneo Colle Valvavera Umgebung 7°6'06''E, 44°22'53''N 2400-2450 m, 5.8.2008 leg. Huemer TLMF 2008-009” „P. Huemer GEL 1119 ♂“ „BC TLMF Lep 00104“ (TLMF).

Paratypes. Italy: 1 ♂, Prov. Cuneo, Colle Valcavera NE, 7°6'23''E, 44°23'04''N 2420 m, 28.7.2009, leg. Huemer (TLMF); 2 ♂♂, ditto, but 2.VIII.2010, leg. Huemer & Wieser (TLMF); Landesmuseum KÄRNTEN9, 1 ♂, Prov. Cuneo, Colle Fauniera Umgebung, 7°7'19''E, 44°23'08''N 2480-2500 m, 3.8.2008, leg. Huemer (TLMF); 2 ♂♂, same locality, but 2500 m, 28.vii.2009, leg. Skou & Skule (ZMUC). France: 2 ♂♂, Hautes-Alpes, Petit Belvédère du Viso, 2000 m, 26.7.2001, leg. Nel (gen. slide 12901 ♂ J. Nel, 13294 ♂ J. Nel) (TLMF).

Description. Adult (Fig. 1). Antenna dark brown, distal half with three light joints; labial palpus yellowish, dorsal surface of second and third segment more or less mottled with dark brown; head, thorax and tegula dark brown, face with few whitish scales; legs dark brown with indistinct whitish rings; forewing length 6-8 mm, wingspan 12-15 mm, costa nearly straight, ground colour blackish brown, small yellowish costal spot at three-quarters, tornal spot hardly discernible; hindwing grey-brown, lighter than forewing.

Genitalia ♂ (Figs. 2-3). Uncus digitate, short; gnathos absent; valva heavily sclerotized, distally tapered with slightly convex and serrated outer margin and inwardly pointed tip at apex; sacculus longish, distal part sub-triangular, with weakly concave outer and straight inner margin; saccus long, about length of entire valva, broad at base, tapered towards pointed apex; phallus with large bulbous part of about same length as narrow and weakly curved distal part, ventral surface of apical part covered with minute sclerites; vesica with irregularly shaped plate and about 45-50 spines, proximal spines short, distal spines of moderate length.

Segment VIII with pair of long coremata and additional pair of fan-like coremata in inter-segmental membrane.

Genitalia ♀. Unknown.

Diagnosis. *Monochroa sperata* sp. n. is closely related to *M. inflexella* both externally and in the male genitalia (Figs. 2-5). It differs from this and other species of *Monochroa* with dark forewings by the conspicuous yellow labial palpus. Further diagnostic characters compared to *M. inflexella* are the straight rather than concave costa of the forewing, the longer uncus and saccus and the basally more slender valva and sacculus of the male genitalia.

M. inflexella and *M. sperata* are moreover closely related to *M. elongella* (HEINEMANN, 1870) and *M. lutulentella* (ZELLER, 1839). Both these species differ in being larger, by having dark labial palps and by details of the genitalia.

Distribution. Only known from the southern part of the Cottian Alps (Italy, France).

The closely related *M. inflexella* is known from Sweden, Lithuania, Czech Republic, Slovakia, Romania (Karsholt, 2009) and Austria. It was recently published from the



Fig. 1: *Monochroa sperata* sp. n., adult, paratype.

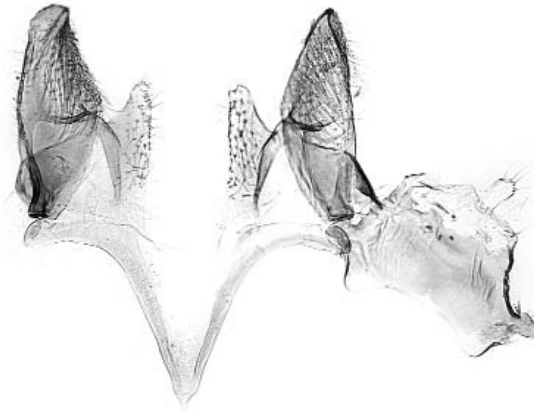


Fig. 2: *Monochroa sperata* sp. n., male genitalia, holotype.

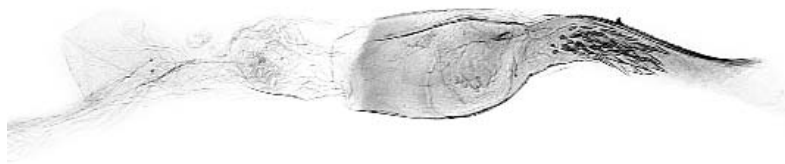


Fig. 3: *Monochroa sperata* sp. n., male genitalia, phallus, holotype.

southern Ural Mountains (Junnilainen *et al.* 2010). We can here also record it as new to France: 2 ♂♂, Hautes-Alpes, Reotier, 1000 m, 22.vi.1990, leg. A. Cox (coll. Cox and ZMUC), and from Hungary: 1 ♂, 6 km N Keszthely, 30.vi.-7.vii.1999, leg. B. S. Larsen (ZMUC).

Ecology/Habitat. Larval host-plant and early stages unknown. The adults have been observed from late July to early August. They have been collected in the late afternoon and during dusk by sweeping low vegetation and furthermore during night at light. The

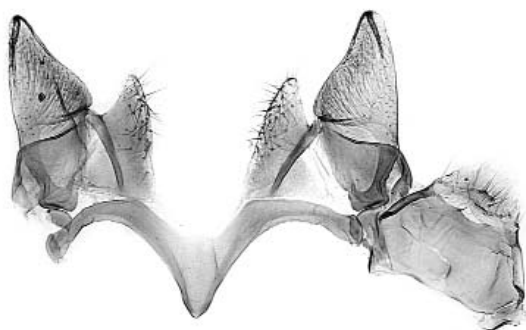


Fig. 4: *Monochroa inflexella* male genitalia.



Fig. 4: *Monochroa inflexella* male genitalia, phallus.

habitat in Italy is alpine grassland with diverse vegetation on limestone surface, interrupted by alpine scree and rock-formation.

The larva of *M. elongella* mines the leaf-stalk of *Argentina anserina* (L.) Rydb. (= *Potentilla anserina* L.) and that of *M. lutulentella* lives in the root of *Filipendula ulmaria* (L.) Maxim. Both these plants belong to the Rosaceae. In the genus *Monochroa* larvae of related species feed on related plants, and it is therefore likely that the larva of *M. sperata* sp. n. bores stems or roots of a species of the Rosaceae.

It is not a big surprise that the female of *M. sperata* sp. n. is still unknown. Females of the related species *M. inflexella*, *M. elongella* and *M. lutulentella* are rarely observed, and the female of the latter is hardly attracted to light. It is still unclear if this is because they are sluggish or because they are not active during night.

Etymology. The name refers to the latin adjective *sperata* (= hoped for) since the excursions to the type-locality were planned in the hope for new endemic species.

Remarks. Similar to other genera of Gelechiidae our description of male genitalia is based on unrolled slides. According to such slides the homology of the sacculus in

Monochroa seems doubtful, since this structure is articulated at the vinculum and should rather be called vincular process.

Discussion

Despite of more than 200 years of lepidopterological research the inventory of alpine endemic species is still incomplete. More than one third of the about 220 species restricted to the Alps has been described only since 1980 (HUEMER 1998), particularly from the southern and south-western Alps. Due to isolation mechanisms and the limited extent of historical glaciation these areas are characterized by a high degree of endemism. Almost every year additional species are discovered, among them the recently described spectacular Scopariinae species *Syrianarpia faunieralis* (GIANTI 2005). This relict species with a wingspan of more than 3 cm has no close relatives in Europe with the only exception of a further species from the southern Ukraine. Therefore one of us (P.H.) re-visited the type-locality on two occasions to collect additional samples of microlepidoptera and last but not least in the hope for additional interesting taxa. Indeed several alpine endemics could be found in the area of Colle Fauniera – Calle Valcavera, among them species with a very limited area of distribution (HUEMER 2009).

The discovery of a new species of *Monochroa* underlines the importance of this part of the Alps for alpine endemism. Despite of unfavourable weather conditions during the two excursions, particularly the very strong wind, we were able to find further probably undescribed taxa e.g. of the genus *Eulamprotes*. These results prove that alpha-taxonomy of Lepidoptera in several parts of the Alps is still challenging. Further hitherto unknown cryptic species are still to be expected in this area, a hypothesis which is supported by first preliminary results of DNA-barcoding.

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