

## *Monochroa bronzella* sp. n. from the southwestern Alps (Lepidoptera: Gelechiidae)

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**Abstract.** *Monochroa bronzella* sp. n. is described from the southwestern Alps (France, Italy). It is closely related to *M. nomadella* (Zeller, 1868), with which it was hitherto confused. Literature records of *M. nomadella* from France and northwestern Italy refer to *M. bronzella* sp. n. The two species are most clearly distinguishable in the signa of the female genitalia. Females of both species have reduced wings, most pronounced in *M. nomadella*. The new species is found in mountain areas at altitudes from around 800 to 2000 m. Adults and male and female genitalia of these two species are figured.

**Résumé.** *Monochroa bronzella* sp. n. est décrit du sud-ouest des Alpes (France, Italie). Il est voisin de *Monochroa nomadella* (Zeller, 1868) avec lequel il a été parfois confondu. Les signalisations de *M. nomadella* de France et du nord-ouest de l'Italie concernent en réalité *M. bronzella* sp. n. Les deux espèces se distinguent facilement par le signum des genitalia femelles. Les femelles des deux espèces ont les ailes réduites, caractère plus prononcé chez *M. nomadella*. La nouvelle espèce vole dans des zones montagneuses entre 800 et 2000 m. Imagos mâles et femelles des deux espèces sont figurés.

### Introduction

*Monochroa* is a species-rich genus of Gelechiidae with altogether 30 species known from Europe, including the Canary Islands (Huemer & Karsholt 2010; Karsholt 2011). Similarly to other genera of the family a complete review on a continental scale is lacking, though Elsner et al. (1999) give an overview of the central European taxa. *Monochroa* species can be divided into species groups based on host-plant relationships and genitalia characters (Gregersen & Karsholt, unpublished). The species dealt with here belongs to the *M. ferrea*-group, which is characterised by having the vinculum of the male genitalia with medial oval sclerotisation and the phallus cylindrical with numerous small spines in the vesica, and larvae (as far as known) feeding on *Carex* (Cyperaceae).

Most species of *Monochroa* are restricted to wetland habitats and only a few taxa occur in mountain areas. Species of the *M. ferrea*-group inhabit sandy or rocky areas from lowlands to high altitudes. Below we describe a new species which was hitherto confused with *M. nomadella* (Zeller, 1868) and compare it with its closest relative.

## Abbreviations

BALD	Collection of Giorgio Baldizzone, Asti, Italy
BAS	Collection of Graziano Bassi, Avigliana, Italy
FOUR	Collection of François Fournier, Clermont-Ferrand, France
MHNL	Musée d'Histoire Naturelle de Lyon, France
TLMF	Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria
VAR	Collection of Thierry Varenne, Nice, France
ZMUC	Zoologisk Museum, Natural History Museum of Denmark, Copenhagen, Denmark

## Taxonomic part

### *Monochroa bronzella* sp. n.

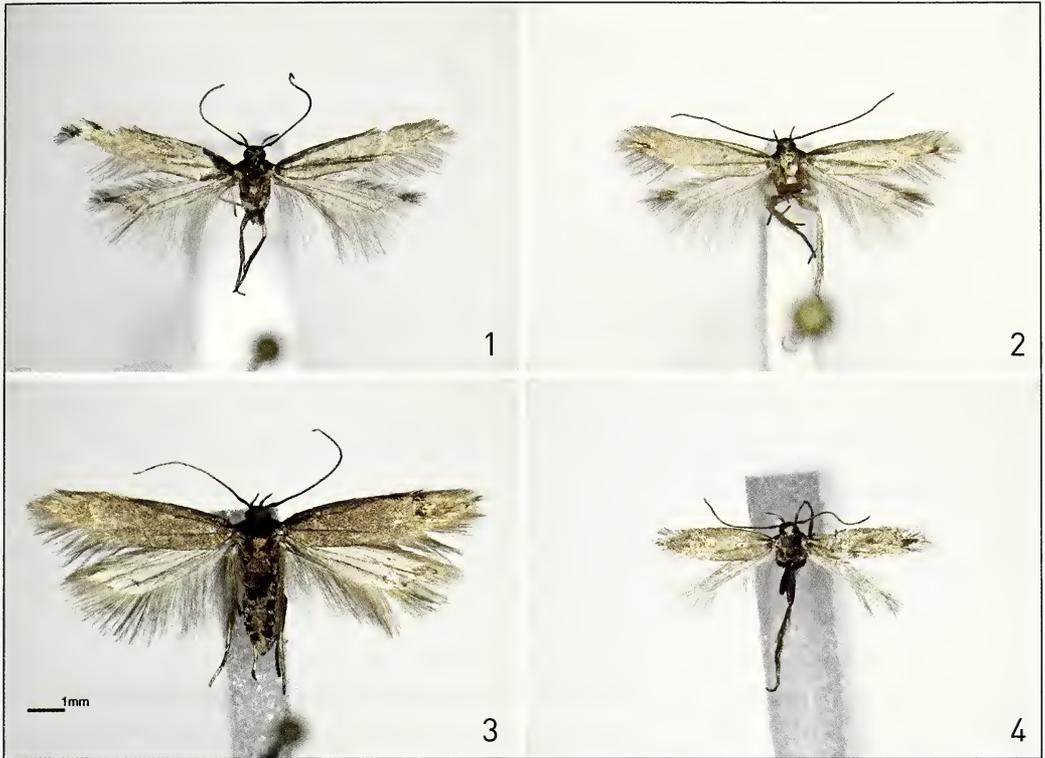
**Figs 1, 2, 5, 7, 9, 11**

**Material.** Holotype ♂, 'route du Col de TENDE Alpes Maritimes 4.viii.2007 uv/vm 1360 m' '*Monochroa bronzella* n. sp. ♂ Th. Varenne leg.' 'HOLOTYPE' 'P. Huemer GEL 1176 ♂' (TLMF). – Paratypes: **France**, 2♂, same data as holotype, genitalia slide Nel 21929 (VAR); same data as holotype, 1♂, 16.vii.2009, genitalia slide Fournier 798 (FOUR); Vaulcuse, Saint-Christol, 2♂, 8.vii.1992, leg. Moulignier, genitalia slide Nel 1592, 1606 (MHNL, TLMF). **Italy**, Piemonte, Valsusa, Bussoleno, Pian Cervetto, 1400 m, 1♂, 7.vi.1989, leg. Bassi (BAS); *ibid*, but Rocci Amelone, 1♂, 27.v.1990, leg. Baldizzone, genitalia slide Hendriksen 1404 (ZMUC); *ibid*, but Mompantero, 1200 m, 3♂, 18.vi.1993, leg. Bassi, genitalia prep. Elsner 882 (in tube) (BAS, ZMUC); *ibid*, but Mompantero, Mt. Rocciamelone, 800 m, 1♂, 30.v.1998, leg. Bassi (BAS); *ibid*, but 1100 m, 1♂, 24.v.2011, leg. Baldizzone, genitalia slide Nel 25346 (BALD); Piemonte (CN), Parco Natur. Reg. Alpi Marittime, S. Giacomo di Entracque, Valle della Rovina, 1537–1800 m, 1♂, 14.vii.1996, leg. Baldizzone (BALD); *ibid*, S. Giacomo di Entracque, sopra Lago della Rovina (Rocca Barbis), 1550–1850 m, 1♂, 20.vii.1997, leg. Baldizzone (BALD); *ibid*, but 1850–2000 m, 1♂, 26.vii.1997, leg. Baldizzone (BALD); *ibid*, but Entracque, Trinità, Vallone Grande, 1400 m, 2♂, 15.vii.1996, leg. Baldizzone, genitalia slide Hendriksen 2036 (BALD, ZMUC); *ibid*, but, Mt. Ray, 1500–1800 m, 16♂, 3♀, 20. & 24.vii.1999, leg. Baldizzone, genitalia slides Hendriksen 2500, 2544, Huemer 12/1330 (BALD, ZMUC); *ibid*, but 6♂, 3♀, 18. & 20.vii.2000, leg. Baldizzone (BALD); *ibid*, Entracque, Trinità, Sentiero per Colle della Garbella, 1600–2000 m, 1♂, 16.vii.2000, leg. Baldizzone (BALD); *ibid*, 2000 m, 2♂, 21.vii.2000, leg. Baldizzone (BALD); Prov. Cuneo, Colle della Lombarda, 1750 m, 6♂, 17.vii.2012, leg. Huemer (TLMF).

**Description.** **Adult** (Figs 1, 2). **Male** (Fig. 1): Wingspan male 13–16 mm. Labial palp slender; segment 2 slightly shorter than segment 3, cream-coloured, overlaid with fuscous on lower and outer surface; segment 3 fuscous. Antenna dark brown; a few paler rings near tip. Head, thorax and tegula shining fuscous. Forewing dark bronze fuscous; an indistinct dark spot at apical part of the cell; fringe grey; no fringe line present. Hindwing grey, with greyish fringe. **Female** (Fig. 2): Similar to male but smaller (wingspan 9 mm) and with head shining metallic-fuscous and forewings shining bronze-coloured, slightly darker towards apex, without any markings.

**Remarks.** The examined specimens show only little variation. Worn specimens become paler, with more metallic shine.

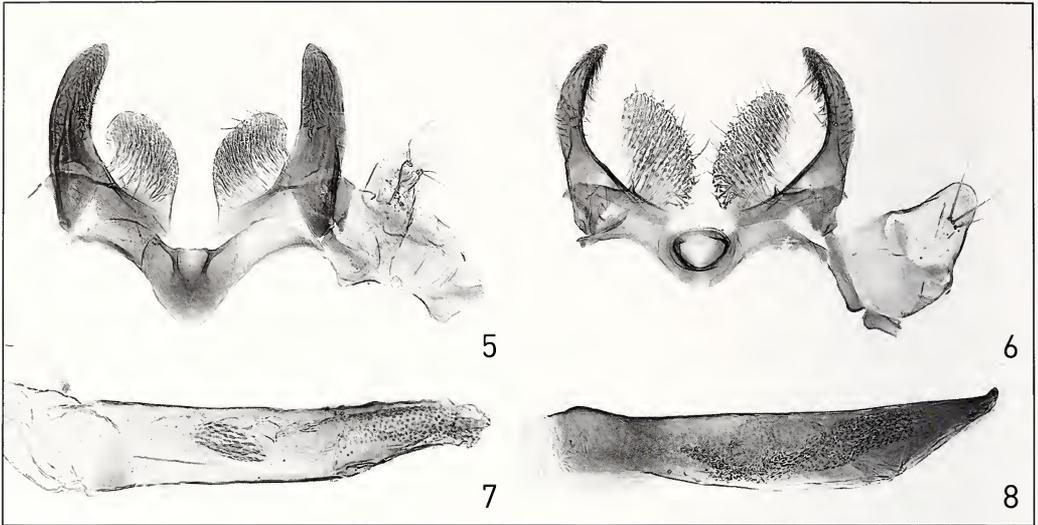
**Male genitalia** (Figs 5, 7). Uncus digitate, short, with four long setae; gnathos absent; valva heavily sclerotised, broad and weakly curved, distal part gradually tapered towards apex, apex with sclerotised wall; sacculus broad, sub-oval, with weakly concave outer and convex inner margin; vinculum with paired posteromedial ridge; saccus short and broad, rounded; phallus massive, straight, distal third tapered; *in situ* apical part of vesica with granular surface, medial part with separate group of about 50 small spines. Segment VIII with pair of short coremata in intersegmental membrane.



**Figs 1–4.** *Monochroa* spp., adults. 1. *M. bronzella* sp. n., ♂, holotype; 2. *ibid*, ♀, paratype, Italy; 3. *M. nomadella* (Zeller), ♂, Italy; 4. *ibid*, ♀, Russia.

Female genitalia (Figs 9, 11). Papillae anales elongate; apophyses posteriores and anteriores slender, rod-like, about the same length; segment VIII smooth, ventral part largely membranous, sclerotised subgenital plate semi-oval, longitudinal, covered with numerous microtrichia; antrum and posterior part of ductus bursae membranous, posteromedial part with long sclerotised plate; inception of ductus seminalis anteriorly followed by short granular section; corpus bursae oval, covered with microtrichia; signum a large irregularly shaped sub-oval plate, medially slightly constricted, anterior and posterior part with about 4 teeth.

**Diagnosis.** *M. bronzella* sp. n. resembles the closely related, frequently slightly smaller *M. nomadella* (wingspan of males 12–14 mm, females 8 mm) (Figs 3, 4), which has a black streak in the fold and often also a black spot at 4/5 of the forewing, as well as one at the apical part of the cell. Females of *M. bronzella* have shinier bronze-coloured forewings than the dark greyish brown (and slightly brachypterous) female of *M. nomadella*. The closely related *M. ferrea* (Frey, 1870) has darker, metallic grey forewings with similar markings as in *M. nomadella*, and should not be confused with *M. bronzella* sp. n. Its genitalia are figured by Sattler (1974) and Elsner et al. (1999) (see also remarks). *Eulamprotes unicolorella* (Duponchel, 1843) is similar to females of *M. bronzella* in having unicolorous, metallic shiny forewings, but those, as well as the labial palps, head, thorax and tegulae, are distinctly darker.



**Figs 5–8.** *Monochroa* spp., ♂-genitalia. **5.** *M. bronzella* sp. n., slide Huemer GEL 1176; **6.** *M. nomadella* (Zeller), slide Huemer GEL 1177; **7.** *M. bronzella* sp. n., phallus, slide Huemer GEL 1176; **8.** *M. nomadella* (Zeller), phallus, slide Huemer GEL 1177.

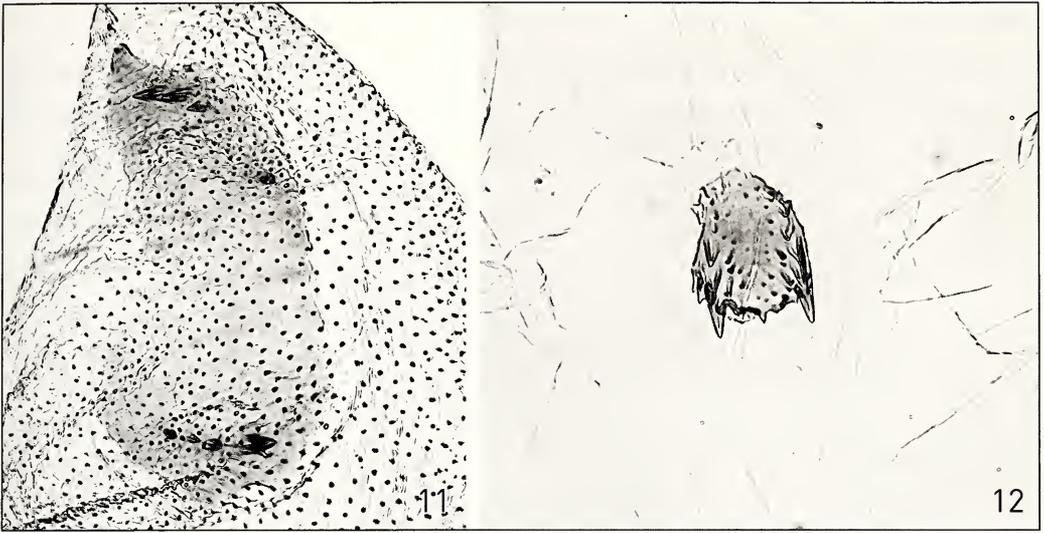


In the male genitalia the new species differs from the most closely related *M. nomadella* and *M. ferrea* by the distinctly broader and not sickle-shaped or apically pointed valva and the shape of the sacculus, and from *M. nomadella* by having a field of spines on the phallus (Figs 5–8; Elsner et al. 1999: pl. 8, Fig. 67). The female genitalia are easily distinguished from all other *Monochroa* by the large signum of unique shape (Figs 9, 11) which is completely different, for example, in the externally similar *M. nomadella* (Figs 10, 12); furthermore the long sclerite of the ductus bursae is characteristic.

**Distribution.** Only known from the southwestern Alps of France and Italy.

**Ecology/Habitat.** Larval host plant and early stages are unknown. Adults have been observed from late May to late July and they have been collected during night

**Figs 9, 10.** *Monochroa* spp., ♀-genitalia. **9.** *M. bronzella* sp. n., slide Huemer GU 12/1330; **10.** *M. nomadella* (Zeller), slide Huemer GU 12/1331.



**Figs 11, 12.** *Monochroa* spp., ♀-genitalia, signum enlarged. 11. *M. bronzella* sp. n., slide Huemer GU 12/1330; 12. *M. nomadella* (Zeller), slide Huemer GU 12/1331.

at light. It remains unclear if the female is able to fly. Elsner (in litt.) found hundreds of males of *M. nomadella* coming to the UV light, whereas a single female specimen was collected by sweeping grass and various vegetation. The larva of the related *M. ferrea* (Frey, 1870) has been reared from *Carex ericetorum* Pollich. (Cyperaceae) (Kaitila 1996). The habitats of *M. bronzella* sp. n. are steppic and xerothermic slopes. The species seems to be restricted to siliceous soil whereas the related *M. nomadella* prefers calcareous habitats (Elsner et al. 1999).

**Etymology.** The name of the new species refers to its uniformly bronze-coloured forewings.

**General Remarks.** Similar to descriptive taxonomy of other genera of Gelechiidae, our description of male genitalia is based “on unrolled” slide preparations (Huemer 1987; Pitkin 1986). 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 the vincular process.

Literature records of *M. nomadella* from France (Fournier 2010) and northwestern Italy (Karsholt 2004) refer to *M. bronzella* sp. n. and *M. nomadella* should be deleted from the list of Lepidoptera found in France. Confirmed Italian records exist from South Tyrol to northeastern Italy (Prov. Pordenone). As pointed out by Junnilainen et al. (2010) the figure of the female genitalia of *M. nomadella* in the widely used book on Central European Gelechiidae (Elsner et al. 1999) is erroneous. In fact two figures have been inadvertently transposed on pl. 49 and thus fig. 67 refers to *M. nomadella* whereas fig. 68 depicts *M. ferrea* (Elsner in litt.).

## Discussion

*Monochroa* is one of the morphologically particularly difficult genera of Gelechiidae and identification from external appearance may cause serious problems. Dissection of genitalia is thus often inevitable for a safe identification. Due to the overall similarity of the adults and the frequently hidden living habits, the species inventory of the European fauna is still incomplete. New taxa have been described more or less regularly during the last decades, even from well explored areas such as Great Britain and Scandinavia, but also from the Alps (Huemer & Karsholt 2010; Svensson 1992; Uffen 1991). However, considering the lack of a thorough generic revision, the description of new taxa must be done with due care and is only possible within species-groups with resolved taxonomy. The species group of *M. nomadella* and *M. ferrea* is not yet fully resolved and according to preliminary results of DNA-barcoding may include further cryptic species. However, the genitalia characters of *M. bronzella* sp. n. are unmistakable and it was obviously only by chance that the species was not recognised earlier. As with several other recently described taxa (see Huemer & Karsholt 2010), this record reinforces the importance of the southwestern Alps for overlooked species, most of which are restricted to this part of the Alps.

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