

The species of *Micropterix* (Lepidoptera: Micropterigidae) recorded from The Netherlands

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Abstract: Of the 65 described species of the genus *Micropterix* seven are so far known from The Netherlands. An identification key to the Dutch species, based on external characters, is presented, and their bionomics are discussed. We found two species new to The Netherlands, viz. *Micropterix schaefferi* and *Micropterix osthelderi*.

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Introduction

The Micropterigidae, a family of smaller moths with 118 described species of which 65 are placed in the genus *Micropterix* (Heath, 1987), is represented in The Netherlands by seven species.

The Micropterigidae are probably the most primitive group of Lepidoptera. They possess, for example, functional mandibles in the adult, and their wing venation is homoneurous. Some authors (e.g. Hinton, 1946) considered the Micropterigidae as a separate order of insects because of their affinities to the Trichoptera. However, at present it is not doubted that the Micropterigidae are true Lepidoptera.

The moths are relatively small: the wingspan of the Dutch species ranges from 6.0 to 12.2 mm. The colours of the forewing are strikingly beautiful: either purple with golden markings, or bronzy golden with or without silvery markings.

We have studied the Dutch *Micropterix* material in private and museum collections, and discovered two species, new to The Netherlands, viz. *Micropterix schaefferi* Heath and *Micropterix osthelderi* Heath.

List of the Dutch species of *Micropterix*

The classification of the family has not yet

been worked out. Therefore we still follow the classification, already given by Rebel (1901), which is preferred to the alphabetical order, used by Heath (1987, 1996). This old classification is also adopted in the Dutch checklist of Microlepidoptera (Kuchlein, 1993). Also the numbering of the species is in accordance with the checklist. Thus we compiled the following list:

1. *Micropterix tunbergella* (Fabricius, 1787)
2. *Micropterix mansuetella* Zeller, 1844
3. *Micropterix aureatella* (Scopoli, 1763)
- 3a. *Micropterix schaefferi* Heath, 1975
- 3b. *Micropterix osthelderi* Heath, 1975
4. *Micropterix aruncella* (Scopoli, 1763)
5. *Micropterix calthella* (Linnaeus, 1761)

Identification

Identification of the Dutch species of *Micropterix*, based on colour and markings of the forewing, does not present great problems, unless the specimens are heavily worn (especially in the basal part of the forewing). In the latter case the male genitalia which are fairly characteristic for the species can be inspected in situ in most specimens. In contrast, the female genitalia are poorly sclerotized, and therefore not or hardly useful for identification purposes.

The key presented in this paper is based on colour and markings of the forewing only.

Key to the Dutch species of *Micropterix*

- 1 Vertex black *M. mansuetella*
 May and early June. Wingspan 7.0 - 8.5 mm.
 Forewing purple gold with pale golden markings: a spot or a fascia at one-quarter and a fascia at one-half (fig. 1).
 - Vertex yellowish, ochreous or ferruginous .
 2
- 2 Forewing golden or bronzy golden without lighter or darker fasciae 3
 Forewing with costal half or whole base purple or coppery purple.
 - Forewing with lighter or darker fasciae ... 4
 Forewing bronzy golden with silvery white markings or golden with purple fasciae or purple with golden fasciae.
- 3 Forewing with only costal half of base purple (fig. 2) *M. aruncella* (female)
 May to early July. Wingspan 6.0 - 8.5 mm.
 - Forewing with whole of base purple or coppery purple (fig. 3) *M. calthella*
 Late April, May and June. Wingspan 7.0 - 9.5 mm.
- 4 Forewing bronzy golden with silvery white markings (fig. 4) *M. aruncella* (male)
 May to early July. Wingspan 6.0 - 8.5 mm.
 Forewing markings consist of a narrow mostly incomplete fascia at one-quarter, a narrow fascia at one-half and sometimes a spot in the apical part.
 - Forewing golden with purple fasciae or purple with golden fasciae 5
- 5 Forewing bronzy golden with purple red markings (fig. 5) *M. tunbergella*
 May. Wingspan 8.0 - 10.5 mm. Forewing markings consist of a basal spot, and three mostly partial fasciae (the second one costally bifurcate).
 - Forewing purple violet with golden markings 6
- 6 Forewing basally from the first fascia without golden markings (the whole basal part similar to the ground colour) (fig. 6)
 *M. aureatella*
 May and first days of June. Wingspan 8.0 - 11.0 mm. Forewing markings consist of a sometimes partial fascia at one-quarter, a sometimes broken fascia at one-half and a mostly incomplete fascia at three-quarters.

- Forewing at least basally from the first fascia with a broad red golden dorsal streak, which may nearly reach the costa 7
- 7 Forewing with a red golden dorsal streak from base to one-half reaching the median fascia and not broader than half of the wing (fig. 7) *M. schaefferi*
 May and June. Wingspan 8.7 - 12.2 mm. The bronzy golden forewing markings consist of a fascia at one-third, a fascia at one-half, a costal spot at two-thirds (which is sometimes united with the median fascia) and an incomplete fascia at three-quarters. The red golden forewing markings consist of the basal dorsal streak and a dorsal streak near apex.
 - Forewing with a broad basal streak, fused with the first fascia; in the basal area only purple violet spots near costa and dorsum remain from the ground colour (fig. 8)
 *M. osthelderi*
 Late April and May. Wingspan 9.2 - 12.1 mm. In the forewing except for the almost completely golden basal area a bronzy golden fascia at one-half, a costal spot at two-thirds (sometimes united with the median fascia), an incomplete fascia at three-quarters (also sometimes united with the median fascia) and a red golden dorsal streak near apex.

Bionomics

The Dutch species of *Micropterix* are univoltine. Adults are diurnal from late April to early July, and usually are active only in the sunshine. The moths visit flowers where they feed on pollen by means of their chewing mouth parts. Sometimes they can be found aggregated on flowers, e.g. *Micropterix calthella* on the flowers of the buttercup (*Ranunculus*). The adults of *Micropterix* species are also found on the flowers of oak (*Quercus*), sycamore (*Acer*), hawthorn (*Crataegus*), sedges (*Carex*) and many herbaceous plants. The plant preferences of some species are given by Heath (1960). Moreover, the moths are found on tree trunks, e.g. *Micropterix tunbergella* on the trunks of hornbeam (*Carpinus betulus* L.).

While a great deal is known of the adult structure and behaviour, few data are available of the early stages, and especially the larval

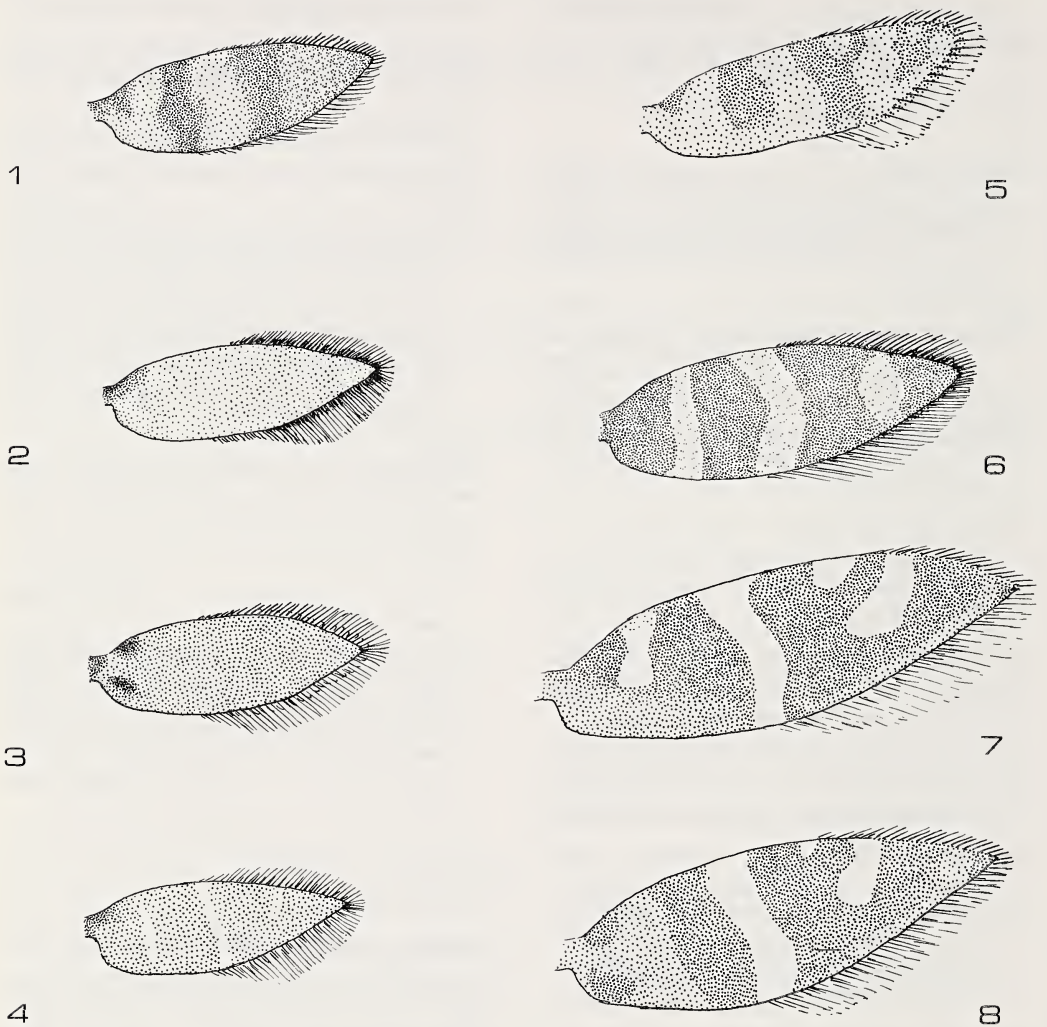


Fig. 1-8. Wing patterns of the Dutch species of *Micropterix*. 1, *M. mansuetella*; 2, *M. aruncella* (female); 3, *M. calthella*; 4, *M. aruncella* (male); 5, *M. tunbergella*; 6, *M. aureatella*; 7, *M. schaefferi*; 8, *M. osthelderi*.

habits. The eggs are laid on the surface of the soil amongst vegetation. The larvae of *Micropterix aruncella* and *M. calthella* feed on fresh photosynthetic angiosperm tissue (Carter & Dugdale, 1982). Of the other Dutch species the larval habits are unknown. It is possible that the larvae of these species live in the litter layer, cropping fungal hyphae or minute particles of leaf-litter. Both in England and in Germany *Micropterix aruncella* and *M. calthella* the larvae hibernate (Carter & Dugdale, 1982; Lorenz, 1961).

Faunistics

Distribution maps for five species of *Micropterix*, known from The Netherlands, are given in Kuchlein (1993). Additional records did not change the distribution patterns of these species essentially, so there is no real need to produce new distribution maps now. Additional data of importance are mentioned under the individual species treated below. This applies also to the two species, not incorporated in the checklist of Kuchlein (1993).

Micropterix tunbergella. The first speci-

men since nine years was found on the trunk of a hornbeam by Ch. Naves in the Heekenbroek near Drempt (province of Gelderland) in 1994. This locality is now the most northerly one in The Netherlands for this species.

Micropterix mansuetella. Ch. Naves found some specimens of this very local species in the Heekenbroek near Drempt (province of Gelderland) in 1994.

Micropterix aureatella. Of this local species a population was discovered by Kuchlein in the Wooldse Veen near Winterswijk (province of Gelderland) in May 1997.

Micropterix schaefferi. The first author discovered a small series of this species in the collection of J. B. Wolschrijn under the name *Micropterix aureatella*, collected by B. van Aartsen near Zeddam (province of Gelderland) on 7 May 1977. Of this series only three specimens are kept in the collections. This finding means an addition to the Dutch list (Kuchlein, 1993). The moth is finely figured (in colour) by Whitebread (1992), the male genitalia are pictured by Heath (1975) and Karsholt & Schmidt Nielsen (1978). *Micropterix schaefferi* is found most frequently in the mountainous regions of Central Europe, but very locally elsewhere (Belgium, Denmark, Corsica and the Balkans).

Micropterix osthelderi. The first author discovered a female of *M. osthelderi* in the collection of the Institute of Systematics and Population Biology of the University of Amsterdam (Zoological Museum) under the name *Micropterix aureatella*. This species had not been reported before from The Netherlands. The moth is figured in colour by Whitebread (1992), the male genitalia are figured by Heath (1975), Razowski (1975) and Karsholt & Schmidt Nielsen (1978). The distribution of *M. osthelderi* is confined to Central Europe, except a male, taken in 1973 in Denmark (Karsholt & Schmidt Nielsen, 1978) and this Dutch specimen. The latter was found at Epen (province of Limburg) on 28 May 1911, and collected by H. J. van der Beek. Van der Beek is the same collector who found a specimen of *Phyllonorycter irmella* (Palm) in The Netherlands (Kuchlein & Langohr, 1998). It may be

surprising that a relatively unknown collector as Van der Beek made such remarkable findings in The Netherlands. Yet we are confident that his records are reliable. In the case of *P. irmella*, of which only two specimens are known, a record from anywhere would be exceptional. *Micropterix osthelderi* was found by Van der Beek in the southern part of Limburg. In the second half of the last century it was generally felt that this part of Limburg did not belong to The Netherlands faunistically. Consequently, collecting data are scarce during that period, but round the turn of the century this opinion changed. Enthusiastic publications appeared on flora, fauna and geology of this region, and Van der Beek may have been inspired to his excursion by the popular book of Heimans (1911) on this subject which appeared shortly before his visit to Limburg. Moreover, the style of setting of both specimens (*Phyllonorycter irmella* and *Micropterix osthelderi*) is very characteristic. Finally, the specimens, albeit rather worn, were evidently fresh when they were set.

Micropterix aruncella. Recently this species is observed more frequently in the northern parts of the country. It is now also known from the West Frisian Islands, where it was found on Texel (R. de Vos). Moreover, it was recorded from the province of Groningen for the first time, where it was found at Meerwijk (near the city of Groningen) in 1995 by J. H. Donner and subsequently at Blijham (J. B. Wolschrijn) and in the Metbroek (J. H. Kuchlein) in the next year.

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