

## Description of the female of *Elachista leifi* (Lepidoptera: Elachistidae)

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The female of *Elachista leifi* Kaila & Kerppola is described based on two females collected in northern Finland. In addition to the larger size; the almost black ground colour, the small light area at fringe at the tip of the forewing and the bluish lustre on the underside of the thorax are the best diagnostic characters. The female genitalia of the species can be separated from those of other closely related species, except *E. kilmunella*, by the shape of antrum, the teeth of ductus bursae and the size and shape of signum. We did not find any reliable differences in female genitalia between *E. kilmunella* and *E. leifi*, due to variation in the characteristics of *E. kilmunella*.

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### 1. Introduction

*Elachista leifi* was described by Kaila & Kerppola (1992) from material collected in Kuusamo, northern Finland. The description was based on males. According to Kaila & Kerppola (1992), *E. leifi* belongs to the large black-and-white elachistids and resembles *E. eskoi* Kyrki & Karvonen, 1984 and large specimens of *E. kilmunella* Stainton, 1849 and *E. excelsicola* Braun, 1948 (= *parasella* Traugott-Olsen, 1974, see Kaila [1999]). It occurs widely in northern Finland, but has also been found in the biogeographical province of *Ostrobothnia australis* in Central Finland (Kerppola *et al.* 1995). So far, the female has remained unknown.

In 1994–1995, we carried out faunistic research in the planned Vuotos water reservoir area in Pelkosenniemi, Northern Finland (Itämies &

Mutanen 1996). From the bogs in this area, we found males of *E. leifi* and later an unknown female specimen from the same site. Because no other *Elachista* species were found and the specimen did not match any other species, we considered it to represent the female of *E. leifi*, which is here described and compared to other closely related species.

### 2. Material

We obtained two females dated as follows: Suomi KemLE: Pelkosenniemi, 7452:532, 03.VII.1995, J. Itämies leg. (Gen prep. No. 875 ZMO); Suomi Ks: Posio, 734:57, Riisitunturi, 16.VII.1997, M. Mutanen leg. (Gen prep. No 1074 J. Itämies). For comparison, we had 15 slides of *E. kilmunella* females from Sweden (Zoological Museum, Lund University) and 12 from Finland as well as 4 *E. excelsicola* females from Finland (coll. Zool. Mus. Oulu and private collections).



Fig. 1. *Elachista leifi* Kaila & Kerppola female (Finland KemLE: Pelkosenniemi 7452:532, 03.VII.1995, J. Itämies leg.).

### 3. Description

Head dark grey, frons light grey, clypeus shining black with bluish lustre. Labial palpus light grey above and almost black below. Antenna shining black, without rings. Tegula and thorax shining black with bluish lustre, which is particularly clear on the underside. Abdomen dorsally grey, ventrally shining black with bluish lustre. Scales around ovipositor light ochreous grey. Tibius shining black with relatively strong bluish lustre. Legs otherwise grey with a light yellowish patch in the middle of the hind tibiae and the tarsal articles ringed with yellowish.

Wingspan 11–12 mm. Forewing length 5 mm; ground-colour very dark, almost black (Fig. 1); basal part of costa tinged with bluish lustre; median fascia white, almost straight, reaching costa, where it is narrowest; costal spot white, almost square in shape, apex inwards curved; a white large tornal spot slightly more medially situated than the costal spot; costal and tornal spots slightly, but clearly separate, fringe line black and distinct, fringe grey with the small creamy white area at the tip of forewing. Hindwings grey; fringe grey with yellowish tint.

*Genitalia.* Apophyses of almost equal length (Fig. 2). Antrum wide and funnel-shaped. Ostium very large, wide antrum finely spined inside; lateral rims long, strong; dorsal wall with a median patch of minute spines (Fig. 3a). Colliculum narrow and long, about twice as long as apophyses posteriores. Ductus bursae with a few small triangular teeth at the inception of ductus seminalis (Fig. 3b), anteriorly weakly sclerotized. Signum oblong with numerous teeth of varying shape and length (Fig. 3c).

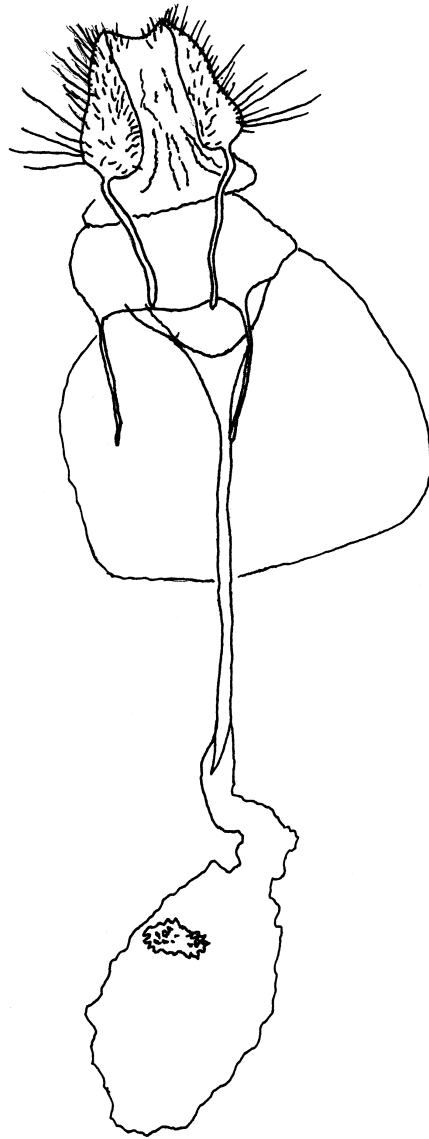


Fig. 2. Female genitalia of *Elachista leifi* Kaila & Kerppola (Gen prep. No. 875 ZMO) (same individual as in Fig. 1).

*Diagnosis.* The female of *Elachista leifi* resembles large females of the close relatives *E. eskoi*, *E. excelsicola* and *E. alpinella* Stainton, 1854. The female of *E. eskoi* lacks the small creamy white area at the tip of forewing characteristic of the female of *E. leifi*. In addition, *E. eskoi* has a light head, while the head of *E. leifi* is grey with only faint light mottling. The size and wing pattern of *E. excelsicola* females vary widely,

but the main colour of the species is greyish, whereas the female of *E. leifi* is almost black. The bluish lustre typical of *E. leifi* is best seen on the underside of the thorax. The costa of *E. alpinella* female typically bends forward, but it also differs in wing pattern by usually having a lighter basal part of the forewing compared to the remaining part and by lacking the creamy white fringe at the wing apex present in the *E. leifi* female. Frons and especially the inner side of the labial palp of *E. alpinella* are creamy white, while that of *E. leifi* is almost grey. The tornal spot of *E. alpinella* is small and triangular.

The closest relative of *E. leifi* is *E. kilmunella*. As far as we can see, the most distinct external differences between the females of these species are the large size and the bluish lustre of *E. leifi*. *E. kilmunella* has a light-coloured base in the dark scales of its forewing, which gives the wing a restless or mottled impression. This is most clearly seen in the basal part of the wing. The labial palps also seem to be lighter in *E. kilmunella*. The scales on the head between the bases of the antennae are dirty whitish with a narrow grey tip in *E. kilmunella*, while those of *E. leifi* have a much wider grey tip, which gives the whole head a greyish tint. However, our material is too limited to warrant any discussion of the amplitude of variation in *E. leifi*. It is therefore difficult to specify exact and reliable external characteristics.

The female genitalia of *E. leifi* are easy to tell apart from those of *E. alpinella*, which has funnel-shaped antrum, short colliculum and no signum (e.g. Traugott-Olsen & Nielsen 1977). The female of *E. leifi* can be told from *E. eskoi* (see Kyrki & Karvonen 1984) based on different shape of the antrum, which in *E. eskoi* has parallel sides in the posterior part and is funnel-shaped in the anterior part. *E. excelsicola* has a signum about one and a half times as long as that of *E. leifi*, and it can be easily separated by this feature. The most difficult task is to distinguish the female genitalia of *E. leifi* from those of *E. kilmunella*. The antrum seems to be quite similar in these species. We found variation in the number of teeth in the ductus bursae and the size and shape of the signum. Some *E. kilmunella* specimens have hardly any teeth in the ductus bursae. The signum is somewhat smaller and more rounded in *E. leifi* compared to that of *E. kilmunella*. Due to the lim-

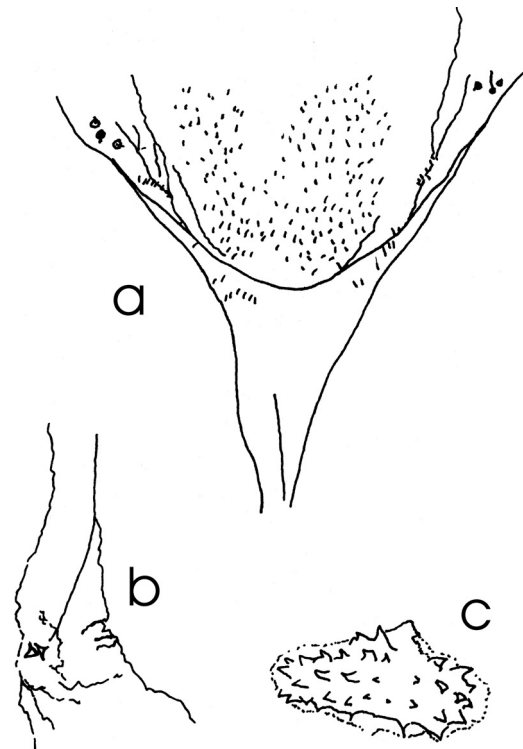


Fig. 3. *Elachista leifi* Kaila & Kerppola (Gen prep. No. 875 ZMO) (same specimen as in Fig. 1). — a. Antrum. — b. Ductus bursae. — c. Signum.

ited material of *E. leifi*, no reliable features by which the female could always be definitely identified can be given.

#### 4. Discussion

The species *E. kilmunella*, *E. excelsicola* and *E. leifi* constitute a complex of morphologically similar and very closely related taxa, and the existence of one or more undescribed species is possible. Especially *E. excelsicola* may include several different taxa in the different parts of northern Scandinavia. The specific status of *E. leifi* is also questioned by some lepidopterologists (personal communications), but the different external appearance, the unequal distribution and behaviour different from those of *E. kilmunella* suggest the existence of two separate species. The latter difference relates to the many observations showing that *E. leifi* almost exclusively flies at dawn,

whereas *E. kilmunella* is active all through the day and evening but very seldom at dawn. Despite the sympatric distributions of these species in Finnish Lapland, they seem to keep separate. This strongly advocates the possibility of genetic isolation between these species.

More material is needed to find out the extent of intraspecific variation of *E. leifi*. On the other hand, clarification of the ecology might shed light on the identification. We only know the host plant of *E. kilmunella*, which bores in stems of *Eriophorum vaginatum* (Buhl *et al.* 1991). Some hints exist that *E. leifi* might live on *Eriophorum angustifolium*, because many adults have been swept on or close to this plant.

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