

GORTANIA - Atti Museo Friul. di Storia Nat.	24 (2002)	211-220	Udine, 30.IV.2003	ISSN: 0391-5859
---	-----------	---------	-------------------	-----------------

P. HUEMER, L. KAILA

***ELACHISTA (ELACHISTA) MORANDINII* SP. N., A NEW SPECIES FROM CENTRAL EUROPE (LEPIDOPTERA, ELACHISTIDAE)**

***ELACHISTA (ELACHISTA) MORANDINII* SP. N., UNA NUOVA SPECIE DALL'EUROPA CENTRALE (LEPIDOPTERA, ELACHISTIDAE)**

Abstract - *Elachista (Elachista) morandinii* sp. n. is described from Friuli-Venezia Giulia (Italy) and from Hungary. The new species is closely related to species with a more northern distribution, namely *E. (E.) eleochariella* STANTON, 1851 and *E. (E.) utonella* FREY, 1856. However, diagnostic characters are found in the male and female genitalia and the adult. *Elachista (E.) margaretae* (TRAUGOTT-OLSEN, 1994) is considered a junior synonym of *E. (E.) scirpi* STANTON, 1887, syn. n..

Key words: Lepidoptera, Elachistidae, *Elachista (Elachista) morandinii* sp. n., New species, New synonymy, Taxonomy, Italy, Hungary.

Riassunto breve - Viene descritta la nuova specie *Elachista (Elachista) morandinii* sp. n. dal Friuli-Venezia Giulia e Ungheria. La nuova entità è strettamente connessa a specie a distribuzione più settentrionale, quali *E. (E.) eleochariella* STANTON, 1851 e *E. (E.) utonella* FREY, 1856. Caratteri diagnostici, tuttavia, sono stati individuati sia nei genitali maschili che femminili e nell'adulto. La specie *Elachista (E.) margaretae* (TRAUGOTT-OLSEN, 1994) viene considerata un sinonimo inferiore di *E. (E.) scirpi* STANTON, 1887, syn. n..

Parole chiave: Lepidoptera, Elachistidae, *Elachista (Elachista) morandinii* sp. n., Specie nuova, Sinonimo nuovo, Tassonomia, Italia, Ungheria.

Introduction

Elachistidae are one of the notoriously difficult families of so-called microlepidoptera including about 500 species (KAILA, 1999), 212 of which are listed in the European catalogue (KARSHOLT & RAZOWSKI, 1996). While the phylogeny of the family is well-investigated (KAILA, 1999) the taxonomic situation is far worse, even in Europe. Numerous taxonomic problems have on the one hand resulted in descriptions of many new European species during recent decades (e.g. PARENTI, 1978; TRAUGOTT-OLSEN, 1985; 1988; 1990a; 1990b; 1992; 1994; 1995; 2000; and additional papers by various authors) and on the other hand in new synonymies (e.g. GAEDIKE, 1975; HUEMER, 2001; KAILA, 1999; KAILA et al., 2001; PARENTI, 1977; TRAUGOTT-

OLSEN & NIELSEN, 1977). However, some of the new taxa, particularly of the *E. biatomella*-, *E. triseriatella*-, *E. dispilella*- and *E. dispunctella*-complexes, remain doubtful and are frequently based on single specimens only. Faunistic papers, too, are obviously extremely faulty, sometimes with an error ratio of more than 50% as e.g. proved for the Bavarian fauna (KOLBECK & PRÖSE, 1997). To sum up, the European fauna is still far from satisfactorily revised and in the absence of a monographic work possibly unnamed species are to be treated with due suspicion.

Under these circumstances the description of a doubtful species from the southern Alps and the Hungarian plains, independently detected by both authors, would have been a long-term task in many species-complexes. However, the taxon in question belongs to the former genus *Biselachista* which was defined mainly by a bifurcate gnathos (TRAUGOTT-OLSEN & NIELSEN, 1977). More recently this group was regarded as synonym of *Elachista* (subgenus *Elachista*) (KAILA, 1996; 1999). It includes moderately few species, 12 of which are well defined and figured by TRAUGOTT-OLSEN & NIELSEN (1977). Additional taxa from the central and southern parts of Europe have been revised/described by PARENTI (1972; 1973; 1983), KLIMESCH (1990) and TRAUGOTT-OLSEN (1994), the last paper describing some taxonomically difficult and disputed taxa. Furthermore SRUOGA (1990), SINEV & SRUOGA (1995) and SUGISIMA (1999) have described additional species of '*Biselachista*' from Asia. However, the morphological characters of the species described below do not fit to any of the known taxa.

Taxonomic part

Abbreviations

- MFSN Museo Friulano di Storia Naturale, Udine, Italy.
 TLMF Tiroler Landesmuseum Ferdinandeum, Innsbruck, Austria.
 ZMH Zoological Museum, University of Helsinki, Finland.
 ZMUC Zoological Museum, University of Copenhagen, Denmark.

Elachista (Elachista) morandinii sp. n.

Holotype ♂. 'I-FRIULI V. GIULIA UM44 Biotopo Torbiera di Curiedi UD (Tolmezzo) mt. 870 11-VII-2001 G. Governatori leg.' (MFSN) ⁽¹⁾.

Paratypes. Italy: 2 ♂♂, 1 ♀, same data as holotype (MFSN); 10 ♂♂, ditto but leg. Huemer (TLMF; ZMH). Hungary: 3 ♂♂, Leanyfalva 5.-10.VII.1997, B. S. Larsen leg. (ZMUC, ZMH). Including 5 ♂♂, 1 ♀ genitalia slides.

(1) Researches carried out by the Museo Friulano di Storia Naturale in the natural Biotopes of the Friuli-Venezia Giulia Region according to an agreement with the Direzione Regionale dei Parchi, Servizio Conservazione della Natura.

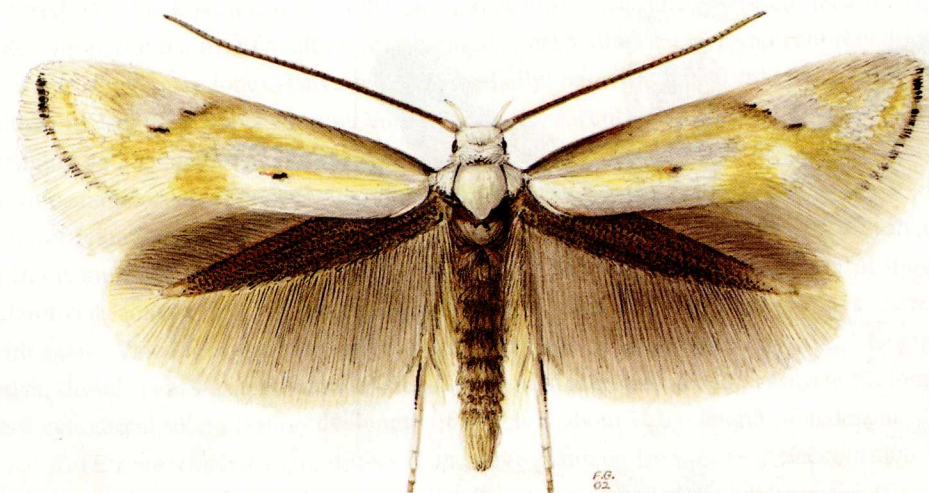


Fig. 1 - *Elachista morandinii* sp. n., adult (wingspan 8.5 mm) (aquarelle F. Gregor, Brno).
 - *Elachista morandinii* sp. n., adulto (apertura alare 8,5 mm) (acquarello di F. Gregor, Brno).

Diagnosis

Adult (fig. 1): Head white, thorax and tegulae plain white, sometimes with cream tinge basally; antenna with mid-brown scape and pedicel, occasionally whitish at base, and darker grey-brown flagellum; labial palpus white, second segment with some darker scales below, third segment long. Wingspan 7.5-9 mm (♂), 9 mm (♀); forewing ground colour white; basal 3/5 of costa dark brown; ochreous stripe in fold usually with a dark brown dot in middle of wing; broad ochreous subcostal stripe from base onwards, turning towards tornus at 3/5, outer margin delimited with dark brown scales; terminal third with ochreous suffusion; fringe scales ochreous with distinct dark brown fringe line from apex almost to tornus. Hindwing dark grey-brown with concolorous fringes. Underside of fore- and hindwing dark grey-brown with ochreous apices, particularly of forewing and fringe line in the latter. Abdomen grey. Legs grey.

E. (E.) morandinii sp. n. is similar to other taxa of the genus such as *E. (E.) scirpi* STANTON, 1887, *E. (E.) eleochariella* STANTON, 1851, *E. (E.) utonella* FREY, 1856, *E. (E.) albidella* NYLANDER, 1848 and *E. (E.) contaminatella* ZELLER, 1847. It is best characterized by the plain white labial palpi, head and thorax (only present in *E. (E.) contaminatella*) and the very dark hindwings.

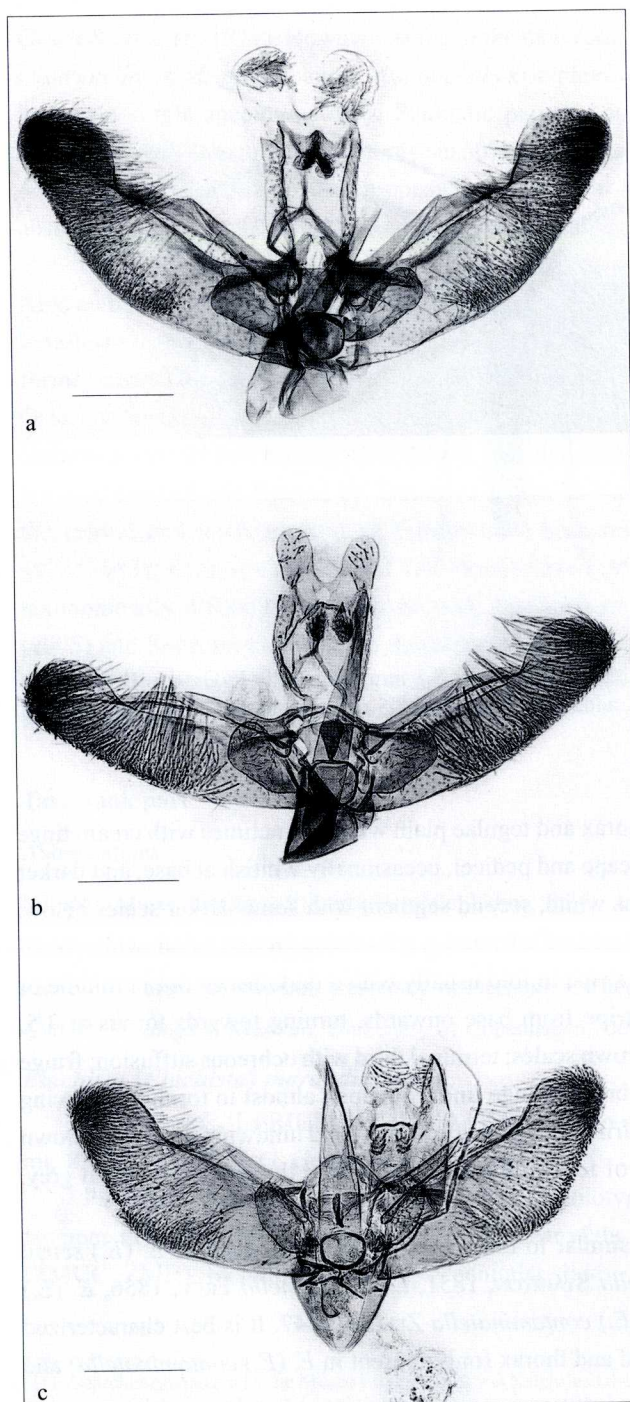


Fig. 2 - Male genitalic structures of: a) *Elachista morandinii* sp. n. (paratype); b) *Elachista eleochariella*; c) *Elachista utonella* (neotype). Scale bar: measure = mm 0.2.

- Apparato genitale maschile di: a) *Elachista morandinii* sp. n. (paratipo); b) *Elachista eleochariella*; c) *Elachista utonella* (neotipo). Scala: linea = mm 0,2.

Genitalia ♂ (fig. 2a). Uncus lobes nearly square with rounded corners, ventrally densely covered with thick scales; uncus lobes separated from each other by sclerotized u-shaped indentation. Basal arms of gnathos distally fused to each other, spinose knob entirely divided as a pair of elongate lobes. Valva broadest medially; basal and distal fold of costa meet at middle of length of valva forming an obtuse angle; sacculus basally and distally straight, medially with an obtuse angle; sacculus meets cucullus with right or somewhat sharp angle; cucullus more or less rounded with rather straight distal margin, bent towards costa. Median plate of juxta almost rounded, mesial margin of juxta lobes straight, meeting distal margin without angle; distal margin slightly convex, without setae or scales; lateral margin sclerotized, convex. Digitate process large, clavate, bent towards costa of valva, covered with setae. Vinculum v-shaped, without median ridge or saccus. Aedeagus 2/3 length of valva, slightly bent s-shaped, parallel-sided, with small rounded caecum, vesica with elongate bent cylindrical sclerotization the length of which is about 1/4 the length of aedeagus.

E. (E.) morandinii sp. n. differs in the male genitalia from *E. (E.) eleochariella* best by the uncus lobes which are longer and distally more rounded in the latter species (fig. 2b). The uncus lobes are densely covered with scales in *E. (E.) morandinii* sp. n. while only some 10-20 scales are present on the uncus lobes of *E. (E.) eleochariella*. The valva of *E. (E.) utonella* is medially considerably widened with a pronounced angle in the middle of the sacculus (fig. 2c). *E. (E.) scirpi* (= *margaretae* TRAUGOTT-OLSEN, 1994, **syn. n.**) has a considerably expanded cucullus of the valva. See 'Remarks' below.

Genitalia ♀ (fig. 3). Papillae anales relatively short, rounded, sparsely covered with elongate thin and short coarse setae. Apophyses posteriores somewhat longer than apophyses anteriores; apophyses anteriores distally bent. Ostium bursae incised into membrane between sternum 7 and 8, dorsal wall and antrum covered with small spines. Antrum bowl-shaped, twice as wide as deep, abruptly narrowed to ductus bursae; between antrum and colliculum narrow membranous zone; colliculum sclerotized, length 2/3 of apophyses posteriores. Ductus seminalis inserted in ductus bursae at posterior edge of colliculum. Ductus bursae otherwise membranous, broad, membranous part about four times as long as apophyses posteriores, gradually widened into corpus bursae. Corpus bursae oval, sparsely covered with very thin internal spines. Signum indistinctly delimited sclerotized plate with transverse median ridge consisting of small sclerotized blunt teeth.

The female genitalia of *E. (E.) albidella*, *E. (E.) scirpi*, *E. (E.) eleochariella* and *E. (E.) utonella* closely resemble each other. Of all these species *E. (E.) morandinii* sp. n. is best characterized by the short antrum (figs 5-6). It is twice as wide as deep in *E. (E.) morandinii* sp. n., about as deep as or deeper than wide in the other species. However, the shape of the antrum is somewhat variable in all the other species. Since only one female specimen of *E. (E.) morandinii* sp. n. is available to us, the range of possible variation with

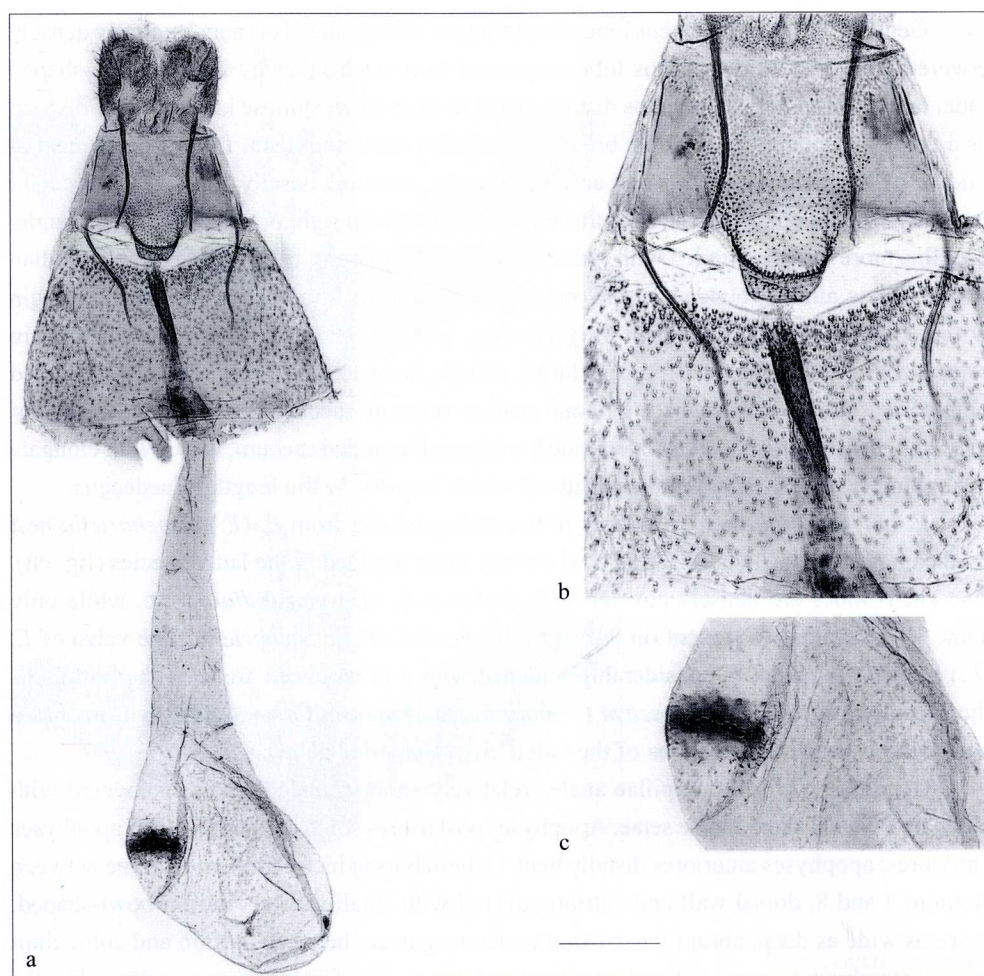


Fig. 3 - Female genitalic structures of *Elachista morandinii* sp. n.: a) genitalia; b) subgenital plate/ostium/ductus bursae enlarged; c) signum enlarged. Scale bar: measure = a) mm 0.2; b) and c) mm 0.1.

- Apparato genitale femminile di *Elachista morandinii* sp. n.: a) genitalia; b) ingrandimento della placca subgenitale/ostium/ductus bursae; c) ingrandimento del signum. Scala: linea = a) mm 0,2; b) e c) mm 0,1.

respect to this character cannot be estimated. The antrum is similarly wide in *E. (E.) contaminatella*, which, however, is easy to distinguish from *E. (E.) morandinii* sp. n. by its very short sclerotization in the colliculum.

Habitat/Biology. The type-locality Torbiera di Curedi (Tolmezzo) is a Natura 2000 site, protected by the EU. It is situated within an axial depression at an altitude of about 850 m in the south-eastern Alps (northern part of the province of Udine (Italy)). The entire area

is characterized by extremely high precipitation. However, due to calcareous soil the environmental conditions are dry with numerous xerophilous and orophilous floral and faunal elements. The type locality itself is split into two parts, one smaller in the west and a larger one in the east, altogether covering only about 13 ha of strongly isolated wetland with some extensive agriculture in the surroundings. The vegetation within the biotope varies from damp meadows and moors in the central part to mesophilous meadows at the margins. Within the wetland various species of *Carex* as well as *Eriophorum* occur which might be expected as possible host-plants of the new species. *E. (E.) morandinii* sp. n. has as yet only been observed in the adult stage. The moths were flying freely at dusk but they were not attracted by various light traps running in the biotope the same night. The flight period probably lasts for some weeks only and it is unlikely that more than one generation occurs due to the climatic conditions of the area. The type series which mainly consists of freshly emerged specimens was collected on 11th of July. At the same time additional interesting hygrophilous species were observed e.g. *Stenoptilia succisae* GIBEAUX & NEL, 1991, *Mythimna pudorina* (DENIS & SCHIFFERMÜLLER, 1775), *Photedes minima* (HAWORTH, 1809) and *Cybosia mesomella* (LINNAEUS, 1758).

Distribution: At present *E. (E.) morandinii* sp. n. is only known from two localities in the north-eastern part of Italy and southern Hungary. Probably the species can still be found in other relict wetland localities without strong human impact.

Diagnostic characters	<i>E. (E.) morandinii</i> sp. n.	<i>E. (E.) eleochariella</i>	<i>E. (E.) utonella</i>
head, thorax, tegulae	plain white	not plain white	not plain white
hindwing	dark brown	grey-brown	grey-brown
male genitalia: uncus	quadrangular, ventrally densely covered with thick scales	slightly longer than wide, distally rounded, with few thick scales	quadrangular, ventrally densely covered with thick scales
male genitalia: valva	width medially 1/3 of the length of valva, sacculus not angled	width medially 1/3 of the length of valva, sacculus not angled	width medially 1/2 of the length of valva, sacculus medially angled
female genitalia	antrum wider than deep	antrum at least as deep as wide	antrum at least as deep as wide

Table I- Important diagnostic characters of *E. (E.) morandinii* sp. n., *E. (E.) eleochariella* and *E. (E.) utonella*.

- Importanti caratteri diagnostici in *E. (E.) morandinii* sp. n., *E. (E.) eleochariella* e *E. (E.) utonella*.

Derivatio nominis: The new species is dedicated to Director Dr. Carlo Morandini (Udine), well known lepidopterist of North-eastern Italy, who has studied the regional fauna for many years and successfully established a scientific working group dealing with the fauna of Friuli-Venezia Giulia.

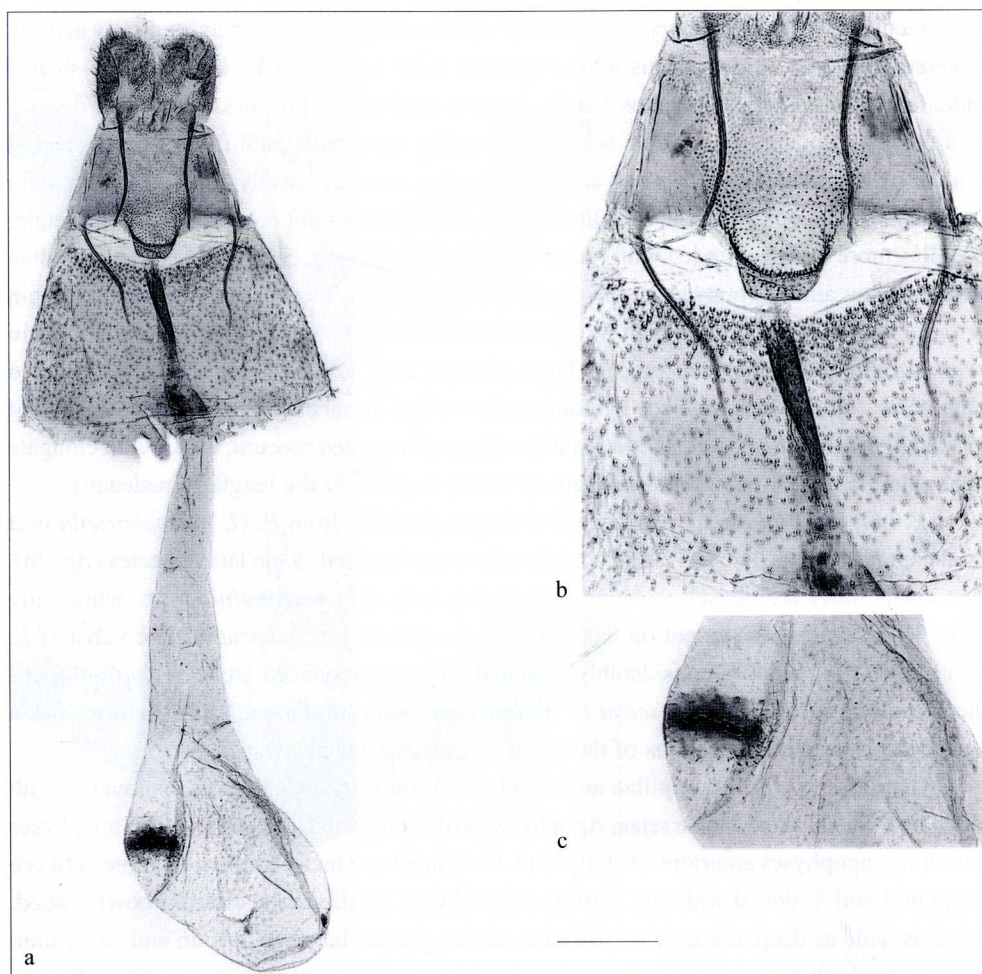


Fig. 3 - Female genitalic structures of *Elachista morandinii* sp. n.: a) genitalia; b) subgenital plate/ostium/ductus bursae enlarged; c) signum enlarged. Scale bar: measure = a) mm 0.2; b) and c) mm 0.1.

- Apparato genitale femminile di *Elachista morandinii* sp. n.: a) genitalia; b) ingrandimento della placca subgenitale/ostium/ductus bursae; c) ingrandimento del signum. Scala: linea = a) mm 0,2; b) e c) mm 0,1.

respect to this character cannot be estimated. The antrum is similarly wide in *E. (E.) contaminatella*, which, however, is easy to distinguish from *E. (E.) morandinii* sp. n. by its very short sclerotization in the colliculum.

Habitat/Biology. The type-locality Torbiera di Curiedi (Tolmezzo) is a Natura 2000 site, protected by the EU. It is situated within an axial depression at an altitude of about 850 m in the south-eastern Alps (northern part of the province of Udine (Italy)). The entire area

is characterized by extremely high precipitation. However, due to calcareous soil the environmental conditions are dry with numerous xerophilous and orophilous floral and faunal elements. The type locality itself is split into two parts, one smaller in the west and a larger one in the east, altogether covering only about 13 ha of strongly isolated wetland with some extensive agriculture in the surroundings. The vegetation within the biotope varies from damp meadows and moors in the central part to mesophilous meadows at the margins. Within the wetland various species of *Carex* as well as *Eriophorum* occur which might be expected as possible host-plants of the new species. *E. (E.) morandinii* sp. n. has as yet only been observed in the adult stage. The moths were flying freely at dusk but they were not attracted by various light traps running in the biotope the same night. The flight period probably lasts for some weeks only and it is unlikely that more than one generation occurs due to the climatic conditions of the area. The type series which mainly consists of freshly emerged specimens was collected on 11th of July. At the same time additional interesting hygrophilous species were observed e.g. *Stenoptilia succisae* GIBEAUX & NEL, 1991, *Mythimna pudorina* (DENIS & SCHIFFERMÜLLER, 1775), *Photedes minima* (HAWORTH, 1809) and *Cybosia mesomella* (LINNAEUS, 1758).

Distribution: At present *E. (E.) morandinii* sp. n. is only known from two localities in the north-eastern part of Italy and southern Hungary. Probably the species can still be found in other relict wetland localities without strong human impact.

Diagnostic characters	<i>E. (E.) morandinii</i> sp. n.	<i>E. (E.) eleochariella</i>	<i>E. (E.) utionella</i>
head, thorax, tegulae	plain white	not plain white	not plain white
hindwing	dark brown	grey-brown	grey-brown
male genitalia: uncus	quadrangular, ventrally densely covered with thick scales	slightly longer than wide, distally rounded, with few thick scales	quadrangular, ventrally densely covered with thick scales
male genitalia: valva	width medially 1/3 of the length of valva, sacculus not angled	width medially 1/3 of the length of valva, sacculus not angled	width medially 1/2 of the length of valva, sacculus medially angled
female genitalia	antrum wider than deep	antrum at least as deep as wide	antrum at least as deep as wide

Table 1- Important diagnostic characters of *E. (E.) morandinii* sp. n., *E. (E.) eleochariella* and *E. (E.) utionella*.

- Importanti caratteri diagnostici in *E. (E.) morandinii* sp. n., *E. (E.) eleochariella* e *E. (E.) utionella*.

Derivatio nominis: The new species is dedicated to Director Dr. Carlo Morandini (Udine), well known lepidopterist of North-eastern Italy, who has studied the regional fauna for many years and successfully established a scientific working group dealing with the fauna of Friuli-Venezia Giulia.

Remarks: As part of the taxonomic revision of this species complex that was undertaken to establish the identity of the taxon here described as *E. (E.) morandinii* sp. n. we examined a paratype of *Biselachista margaretae* TRAUGOTT-OLSEN, 1994. This species was described on the basis of three males collected in Italy, Toscana, Maremma, Principina a Mare. The original description does not mention any related species with which it could be confused. However, examination of the accurate drawings of external habitus (fig. 12 in TRAUGOTT-OLSEN, 1994) or male genitalia (figs. 30 and 38, loc. cit.), all drawn from the holotype, does not give any clue how to distinguish this taxon from *E. (E.) scirpi*. We dissected one paratype of *E. (E.) margaretae* deposited in Coll. TRAUGOTT-OLSEN, ZMUC, and compared the genitalia with those of *E. (E.) scirpi* collected in Finland, Denmark and Portugal, and found them indistinguishable. Since the external appearance of *E. (E.) margaretae* does not differ from *E. (E.) scirpi* we consider the former a junior synonym of the latter (**syn. n.**) *E. (E.) scirpi* is according to PARENTI (1996) widely distributed in Europe. In the Mediterranean region it is mentioned from Sardinia, the former Yugoslavia and Greece. Therefore the discovery of it in continental Italy is not surprising.

Discussion

E. (E.) morandinii sp. n. belongs to a group of species of the former genus *Biselachista* which is characterized by a combination of several male genitalic characters: uncus lobes distinct; valva widened medially, narrow distal part without apical spine; digitate process broad, club-shaped and short juxta-lobes without setae. This group includes three other species in Europe, namely *E. (E.) eleochariella*, *E. (E.) scirpi* and *E. (E.) utonella*. The identity of these taxa has been discussed in detail in earlier revisions (TRAUGOTT-OLSEN & NIELSEN, 1977; BLAND, 1996). However, in the absence of any figures of the neotype of *E. utonella*, designated by TRAUGOTT-OLSEN (1974), this specimen was taken on loan from the Natural History Museum in London and its genitalia are figured for the first time (fig. 4). Accordingly *E. (E.) utonella* fully agrees with specimens figured under that name e.g. by TRAUGOTT-OLSEN & NIELSEN (1977).

As far as known species of the former genus *Biselachista* feed on Cyperaceae (*Carex*, *Eriophorum*, *Scirpus*) and Juncaceae (*Juncus*) with many species restricted to wetland areas such as bogs and fens. Accordingly many taxa are distributed in the northern part of the Holarctic area. Both closest relatives of *E. (E.) morandinii* sp. n. have a more northern, boreomontane distribution: *E. (E.) eleochariella* only occurs north of the Alps (described from Scotland) and seems to be vicarious with the new taxon, but *E. (E.) utonella* is also mentioned from northern Italy which delimits its southern range (BALDIZZONE et al., 1995). *E. (E.) morandinii* sp. n. was not found in other wetland localities of the Friulian plains

which were intensively studied in 2001 and 2002. Probably it is a relict species of montane bogs with a colder climate.

Manoscritto pervenuto il 4.VII.2002.

Acknowledgements

P.H. is most grateful to Dr. Carlo Morandini, Director of the Museo Friulano di Storia Naturale (Udine) for his kind support and friendship during recent years. Kevin Tuck (London) kindly lent us the neotype of *E. (E.) utonella*, and Ole Karsholt (Copenhagen) unidentified samples among which the Hungarian specimens of *E. morandinii* were discovered. Furthermore help was received from Dr. Gianluca Governatori and Dr. Maria Manuela Giovannelli (Udine). Martin Corley (Faringdon) kindly corrected the manuscript linguistically. Last but not least we would like to thank Dr. Franta Gregor (Brno) for the marvellous artwork.

P.H. gratefully acknowledges the grants of Direzione Regionale dei Parchi, Servizio Conservazione della Natura (Udine), which enabled his studies in Friulian wetland localities.

Bibliography

- BALDIZZONE G. et al., 1995 - Lepidoptera Gelechioidea. In: MINELLI, A., RUFFO, S. & LA POSTA, S. (eds.) - Checklist delle specie della fauna italiana, 83. Ed. Calderini: 41, Bologna.
- BLAND K.P., 1996 - Elachistidae. In: EMMET, A. M. (ed.) - The Moths and Butterflies of Great Britain and Ireland, 3. *Harley Books*: 339-410, Colchester.
- GAEDIKE R., 1975 - Zum Status der von Rebel, Krone und Gozmány beschriebenen *Elachista*-Arten (Lepidoptera, Elachistidae). *Annls Hist.-nat. Mus. Nat. Hung.*, 65: 239-248, Budapest.
- HUEMER P., 2001 - Ergänzungen und Korrekturen zur Schmetterlingsfauna Österreichs (Lepidoptera). *Beitr. Entomofaunistik*, 1: 39-56, Wien.
- KAILA L., 1996 - Revision of the Nearctic species of *Elachista* I. The tetragonella group (Lepidoptera: Elachistidae). *Ent. Scand.*, 27: 217-238, Copenhagen.
- KAILA L., 1999 - Phylogeny and classification of the Elachistidae s. s. (Lepidoptera, Gelechioidea). *Syst. Ent.*, 24: 139-169, London.
- KAILA L., BENGTSSON B. A., SULCS I. & JUNNILAINEN J., 2001 - A revision of the *Elachista regificella* Sircom - complex (Lepidoptera: Elachistidae). *Entomol. Fenn.*, 12: 153-168, Helsinki.
- KARSHOLT O. & RAZOWSKI J., 1996 - The Lepidoptera of Europe. A Distributional Checklist. *Apollo Books*, pp. 380, Stenstrup.
- KLIMESCH J., 1990 - *Biselachista brachypterella* sp. n. (Lepidoptera, Elachistidae). *Nota Lepid.*, 13: 137-146, Basel.
- KOLBECK H. & PRÖSE H., 1997 - Revision der bayerischen Elachistiden in der Zoologischen Staatssammlung München mit einer Übersicht der derzeit aus Bayern bekannten Arten (Lepidoptera: Elachistidae). *Beitr. Bayer. Entomofaunistik*, 2: 155-176, Bamberg.
- PARENTI U., 1972 - Revisione degli Elachistidi (Lepidoptera, Elachistidae) palearctici. I. - I Tipi di Elachistidi del Museo di Storia naturale di Parigi. *Boll. Mus. Zool. Univ. Torino*, 2: 29-56, Torino.
- PARENTI U., 1973 - Revisione degli Elachistidi (Lepidoptera, Elachistidae) palearctici. III. - Le specie di Elachistidi descritte da H. G. Amsel e F. Hartig. *Boll. Mus. Zool. Univ. Torino*, 3: 41-58, Torino.
- PARENTI U., 1977 - Revisione degli Elachistidi (Lepidoptera, Elachistidae) palearctici. IV. - Le specie di Elachistidi descritte da H. Frey e P. C. Zeller. *Boll. Mus. Zool. Univ. Torino*, 3: 19-50, Torino.

- PARENTI U., 1983 - Elachistidi del Giappone (Lepidoptera, Elachistidae). *Boll. Mus. Reg. Sci. Nat. Torino*, 1: 1-20, Torino.
- SINEV S. & SRUOGA V. A., 1995 - New species of the mining moths (Lepidoptera, Elachistidae) from Russian Far East. *Ent. Obozr.*, 74: 120-137, St. Petersburg.
- SRUOGA V. A., 1990 - Seven new species of Elachistidae (Lepidoptera) from the USSR. *Tijdschr. Ent.*, 133: 75-84, Amsterdam.
- SUGISIMA K., 1999 - A new *Elachista* species, *E. kobomugi* sp. nov., and its close relatives (Lepidoptera, Elachistidae) from Japan. *Trans. Lepid. Soc. Japan*, 50: 247-263, Tokyo.
- TRAUGOTT-OLSEN E., 1974 - Description of three new *Elachista* species and nomenclatural remarks on other species of the Genus. *Entomologist's Gaz.*, 25: 259-268, London.
- TRAUGOTT-OLSEN E., 1985 - Three new *Elachista*-species & Supplement to the descriptions of the five n. sp. from Sierra Nevada: *Shilap Revta. lepid.*, Vol. 13, No. 49 (1985): 73-79. *SHILAP Revta. lepid.*, 13: 169-174, Madrid.
- TRAUGOTT-OLSEN E., 1988 - The *Elachista triseriatella* Stainton complex, with descriptions of eight new species (Lepidoptera: Elachistidae). *Entomologist's Gaz.*, 39: 293-311, London.
- TRAUGOTT-OLSEN E., 1990a - The *Elachista dispilella* Zeller-complex, with descriptions of ten new species (Lepidoptera: Elachistidae). *Entomologist's Gaz.*, 41: 35-68, London.
- TRAUGOTT-OLSEN E., 1990b - Description of four new species of Elachistidae (Lepidoptera) and diagnoses of *Elachista pollutella* Duponchel, 1843 and *Elachista constitella* Frey, 1859. *SHILAP Revta. lepid.*, 18: 273-285, Madrid.
- TRAUGOTT-OLSEN E., 1992 - The *Elachista dispunctella* (Duponchel, 1843) complex with of new taxa (Lepidoptera: Elachistidae). *SHILAP Revta. lepid.*, 20: 197-316, Madrid.
- TRAUGOTT-OLSEN E., 1994 - Identity of *Biselachista freyi* (Staudinger, 1870) and *Biselachista occidentalis* (Frey, 1882), description of five new species (Lepidoptera, Elachistidae). *SHILAP Revta. lepid.*, 22: 323-348, Madrid.
- TRAUGOTT-OLSEN E., 1995 - The *Elachista gleichenella* (Fabricius, 1781) group with descriptions of three new species (Lepidoptera: Elachistidae, Elachistinae). *SHILAP Revta. lepid.*, 23: 365-377, Madrid.
- TRAUGOTT-OLSEN E., 2000 - Variation in *Elachista biatomella* (Stainton, 1848). A review of the species-group, with description of four new species (Lepidoptera: Elachistidae). *SHILAP Revta. lepid.*, 28: 63-90, Madrid.
- TRAUGOTT-OLSEN E. & NIELSEN E. S., 1977 - The Elachistidae (Lepidoptera) of Fennoscandia and Denmark. *Fauna Entomologica Scandinavica*, 6, pp. 299, Klampenborg.

Authors' addresses - Indirizzi degli Autori:

- Dr. Peter HUEMER

Tiroler Landesmuseum Ferdinandeum

Naturwissenschaftliche Sammlungen

Feldstrasse 11a, A-6020 Innsbruck, AUSTRIA

e-mail: p.huemer@natur-tnmf.at

- Dr. Lauri KAILA

Finnish Museum of Natural History

P.O.Box 17, FIN-00014 University of Helsinki, FINLAND

e-mail: lkaila@mappi.helsinki.fi