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Studies on Palaearctic Ethmia Hübner, 1819 (Lepidoptera: Elachistidae)

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Abstract – Descriptions of three new *Ethmia* species (*E. percisa* sp. n., *E. euphoria* sp. n. and *E. sattleri* sp. n.) from Eastern Asia (Anatolia, Iran), with additional distribution data and taxonomic notes of the relevant species groups are given. With 19 figures.

Key words – Ethmiinae, *Ethmia*, new species, Palaearctic.

INTRODUCTION

The most comprehensive work on *Ethmia* of the Palaearctic region (including some parts of Southeast Asia) was published by SATTLER (1967). This monograph contains 72 species recorded in this vast area. Subsequently, only a few new species and subspecies were described from the Western and Central Asian region, and these are as follows: *E. quadrinotella heratella* AMSEL, 1969, *E. lecmima amsel* KEMAL et KOÇAK, 2005, *E. kabulica* AMSEL, 1969, *E. defreinai* GANEV, 1984, *E. hakkarica* KOÇAK, 1986, and *E. turkmeniella* DUBATOLOV et USTJUZHANIN, 1997. Further new taxa were described in the territory of the former USSR: a new genus and species, *Dasyethmia hiemalis* DANILEVSKY, 1969, classified to the Ethmiinae by DANILEVSKY (1969), followed by *Ethmia elimatella* DANILEVSKY, 1975, *E. vidua flavilaterella* DANILEVSKY, 1975, *E. soljanikovi* DANILEVSKY et ZAGULAJEV, 1975 *E. sibirica* DANILEVSKY, 1975 and *E. comitella steppella* DUBATOLOV et USTJUZHANIN, 1997. A reassessment of accessory material from large museums and several private collections, as well as the revision of certain taxa, resulted in the discovery of three additional new species, the descriptions of which are given below.

MATERIAL

Most of the material examined in this study was either collected recently (since 2000) or since 1967, but has remained hidden as unidentified accessory material.

The following codens indicate collections in which the specimens investigated are deposited: BMNH = British Museum (Natural History), London; FMNH = Finnish Museum of Natural History, Helsinki; HNHM = Hungarian Natural History Museum, Budapest; Landesmuseum Karlsruhe; NRM = Swedish Museum of Natural History, Stockholm; MFN = Museum für Naturkunde, Berlin; MNHN = Muséum National d'Histoire Naturelle, Paris; NHMV = Naturhistorisches Museum, Wien; RMCA = Royal Museum for Central Africa, Tervuren; SMTK = Staatliches Museum für Tierkunde, Karlsruhe; ZMUC = The Natural History Museum of Denmark, Copenhagen; ZSM = Zoologische Staatssammlung, München.

TAXONOMIC PART

Ethmia persica sp. n.
(Figs 1–10, 12)

Type material – Holotype: male, "Iran, Prov. Büyer Ahmad, 3 km N of Sisaht, 2700 m, 51°23'21"E, 31°09'22" N, 10–12. V. 1998, leg. Gy. Fábián & K. Székely."; KUN Slide No. 200. The holotype is deposited in coll. HNHM. Paratypes, deposited in HNHM: 2 females, from the same locality as the holotype, KUN Slide Nos 202, 215. Paratypes, deposited in NRM: 1 male, "20/3", slide No. SATTLER 615b (E. M. slide No. 6414); 1 female, "20/3, Iran, Fars, 1937, Strasse Kazeroun-Bouchir, Tchouroum, 1000 m, leg. Brandt", KUN Slide No. 416.

Description – Habitus: Fig. 1. Wingspan 20–22 mm. Antenna filiform, scape and basal segments with white scales; flagellum white; maxillary palpus reduced. Labial palpus with white scales; base of proboscis with white scales; frons and vertex similarly white. Thorax bright grey with two pairs of black dots with one dot apical; tegulae greyish. Costal half of forewing suffused with darker grey; basal half overlaid with three black spots, both of them placed along borderline between darker costal and paler inner half of wing, black marginal dots present, tiny; cilia bright grey. Hindwing grey, with grey cilia; costal brushes absent. Forelegs, midlegs and hindlegs grey. Abdomen greyish white.

Male genitalia (Fig. 10): uncus developed, hood-like, apically pointed, with medial indenture. Posterior part of gnathos broad, anterior part modified, with two long processes bearing long bristles. The base of the anterior part of gnathos joined with anellus, anellus hardly visible, labis elongate with widened apical part. Valva long, pointed, with bristles; costal part sclerotized. Cucullus broad at base, tapering apically into pointed apex; covered with scattered, fine bristles. Sacculus with characteristic sclerotised basal fold. Vinculum V-shaped. Aedeagus gun-shaped, without cornuti.

Female genitalia (Fig. 12): ovipositor conical, papillae anales with sparse, fine setae and rounded apices. Apophyses posteriores half as long as papillae anales, apophyses anteriores absent. Ductus bursae long, membranous, tubular, with several coils.

Corpus bursae elliptical-ovoid, signum with rows of teeth of almost equal size, basal plate with deep, V-shaped emargination.

Diagnosis – The old and worn specimens of *Ethmia persica* sp. n. (Fig. 1) are difficult to distinguish from *E. infelix* MEYRICK, 1914 (Fig. 2), although there are some small but typical characters which could help in the identification of the two taxa. The costal area of the forewing of *E. infelix* is darker than in *E. persica*, rather black than grey, with less prominent costal markings. In general, *E. persica* is brighter in appearance and more fragile than its sister species. The wing pattern of the *E. derbendella* SATTLER, 1967 and *E. wursteri* are more different than the two species mentioned above (characteristic black dots, in a constant arrangement). The male genitalia of the new species (Fig. 10) differ strongly in the shape of the anterior part of the gnathos, make the separation from *E. infelix* (Fig. 11) (and the other species of the group) rather easy (with two long processes bearing long bristles). The female genitalia of *E. persica* (Fig. 12) can be compared only with *E. derbendella*, and they differ mostly by the dentation of the signum as the teeth of the new species are more equal in size, showing smaller variability than those of *E. derbendella*, which has some long, thorn-like teeth, their size could be comparable with the total width of the signum. The new species and *E. infelix* are also very similar to *E. similis* SATTLER, 1967 (Fig. 8) which belongs to the *suspecta* species group. The useful characters for their separation are the larger wingspan of *E. similis* (21–25 mm), the yellow abdomen and fine differences in the forewing pattern. It is worth mentioning that the externally, often confusingly, similar species of the three species groups (the *wurtseri*, the *suspecta* and the *bipunctella* groups) are similar in size, but display extremely different structures in their genitalia, thus representing a good example for the parallel evolution of wing pattern.

Distribution – The species occurs in Deh Bolorg-e Sisakht (Sisaht) in. Kohkiluyeh province (= Büyer Ahmad province on the labels) and in Fars province (MICROSOFT 2001).

Bionomics – The specimens were collected at high altitude (2700 m) among shrub and oak trees.

Etymology – The species name refers to the ancient Persian Empire.

Remarks – According to the study of the female genitalia slide of the paratype of *Ethmia kurdistanella* AMSEL, 1959 (in coll. LMK, June 24–27, 2001; considered and figured as *E. infelix* in the Microlepidoptera Palaearctica by SATTLER 1967: plate 93, fig. 45), the drawing of the adult (the same female

specimen is illustrated in plate 6, fig. 45, the specimen itself was not found in LNK) and the very little additional material available, the possibility cannot not be precluded that this female belongs to *Ethmia elimatella* DANILEVSKY 1975 or even *E. persica* sp. n. The *wurtseri* species group was proposed by SATTLER (1967) for a phyletic line containing three species, *Ethmia derbendella* SATTLER, 1967, *Ethmia infelix* MEYRICK, 1914 and *Ethmia wurtseri* AMSEL, 1956. In the following thirty years only one additional species was added to this species group, *Ethmia elimatella* DANILEVSKY, 1975 (Azerbaijan: Ordubad). In the original description of *E. elimatella* (DANILEVSKY 1975) only the male genitalia were figured, as in a subsequent paper (DANILEVSKY 1976). The first illustration of the moth itself (a drawing) appears in DANILEVSKY (1980), but under a different name, *E. simatalla* (which is considered, therefore, as nomen nudum). In the same paper, DANILEVSKY referred this figure under its correct name, *E. elimatella*, in the key of the species. The species is missing, however, from the publications of DUBATOLOV *et al.* (1997), SINEV (1997) and ZAGULAJEV (1990). The species *E. kabulica* AMSEL, 1969 is also placed in this species group, according to the available morphological information. The species was originally associated with the *distigmatella* species group by the author, but the description of the *wurtseri* species group presented by SATTLER (1967: 105) indicated the unique genitalia structures (apically pointed non-divided uncus, pointed valva and aedeagus without cornutus) by which the species appropriately fits into this latter species group, as does the newly described *E. persica* sp. n.

Ethmia euphoria sp. n.
(Figs 3, 9, 12)

Type material – Holotype: male, "TURKEY, Prov Agri, Karasu-Aras mts. 5 km SE of Sarican, 2000 m, 39°47'N, 42°28'E, 20.VI.2004, leg. B. Benedek & T. Csővári". The holotype is deposited in coll. HNHM. Paratypes: 3 females, 9 males with same label as the holotype; 1 female, "Zentralkaukasus, Itkol Umgeb. 2100–2300 m, 27. VI.–6. VII. 67, leg. Muche"; B.M. Genitalia Slide No. 14818 (KUN), in coll. BMNH; 2 females, "USSR, 43' 43E C. Caucasus, Kabardino-Balkarskij zap. 35 km SE Elburs, subalp. Meadows, 2300 m, 10.7.1990, J. Jalava leg.", in coll. FMNH and HNHM. 16 specimens, "Turkey Prov. Agri 15 km O of Horosan, Hyrangöl Köyü, 1500 m, 42°18'E, 40°05'N, 1991.VI.12,13,15. leg Szabóky", in coll. SZABÓKY. 5 males, "TURKEY Prov. Hakkari, 35 km E. of Hakkari, 1600 m, 14. VI. 2004, leg. B. Benedek & T. Csővári"; 12 males, 2 females, "TURKEY, Prov Agri, Karasu-Aras mts. 5 km SE of Sarican, 2000 m, 39°47'N, 42°28'E, 30. VI.–01.VII.2002, leg. B. Benedek & T. Csővári", KUN Slide Nos 283, 284; 1 female "TURKEY, Prov Agri, Karasu-Aras mts. 5 km SE of Sarican, 2000 m, 39°47'N, 42°28'E, 7–8.VII.2002, leg. B. Benedek & T.

Csővári"; 1 male, "TURKEY, Prov. Agri, Karasu-Aras Mts. 10 km E Aydintepe, 42°28'27"E, 39°47'4"N, 2100 m, 04.VII.2003, leg. Fábián, Szécsényi, Székely"; 1 female, "TURKEY, Prov. Agri, Karasu-Aras Mts. 9 km E Aydintepe, 42°28'27"E, 39°47'4"N, 2100 m, 04.VII.2003, leg. Fábián, Szécsényi, Székely"; 1 female, "TURKEY, Prov. Agri, Karasu-Aras Mts. 7 km E Aydintepe, 42°28'27"E, 39°47'4"N, 2100 m, 04.VII.2003, leg. Fábián, Szécsényi, Székely"; 3 males, 1 female, "TURKEY, Prov Agri, Karasu-Aras mts. 5 km SE of Sarican, 2000 m, 39°47'N, 42°28'E, 10.VII. 2002, leg. B. Benedek & T. Csővári"; 2 females, "TURKEY, Prov Agri, Karasu-Aras Mts. 5 km SE of Sarican, 2000 m, 39°47'N, 42° 28'E, 27.VII.2006, leg. T. Csővári", in coll. HNHM.

Description – Habitus: Fig. 3. Wingspan 27–30 mm. Antenna filiform, scape and basal segments with black scales; flagellum black; maxillary palpus visible, with white scales on tip. Labial palpus black, terminal segment white; base of proboscis with black scales; frons and vertex similarly black. Thorax dark grey with two pairs of black dots; tegulae dark grey with black scales at base. Costal half of forewing with black scales, basal half with an independent black dot placed below the borderline of darker costal and paler inner half of wing, black marginal dots (10) present; cilia grey. Hindwing dark grey with yellow base; costal brushes absent; cilia dark grey. Forelegs and midlegs black, hindlegs with yellow scales, tarsus with black scales. Abdomen yellow.

Male genitalia (Fig. 13.): uncus developed, hood-like apically. Posterior part of gnathos dentate, mushroom-shaped, anterior part dentate, with broad base. Anellus scelotized, with two processes. Labis long, geniculate. Valva elongate, costal part well-developed, sclerotized. Cucullus with broad base and hooked appendix, covered with scattered bristles. Distal edge of sacculus characteristically pointed, basal fold sclerotised, medial fold curved, sclerotized. Vinculum V-shaped. Aedeagus gun-shaped, with pointed cornutus.

Female genitalia (Figs 15, 16): ovipositor sclerotized; papillae anales conical, setose. Posterior apophyses thin, as long as papillae, anterior apophyses wedge-shaped, long and pointed. Antrum with sclerotized half-ring armed with strong thorns. Ductus bursae long, tubular. Corpus bursae rather big, spherical with small appendix; signum large, trilobate, covered with more or less uniform teeth.

Diagnosis – The new species is most closely related to *E. bipunctella* (FABRICIUS, 1775) (Fig. 4) and *E. pagiopa* SATTLER, 1967 (Fig. 5). In its external appearance, *E. euphoria* sp. n. is considerably larger than both related taxa (wingspan 27–30 mm, 18–28 mm, and 22–27 mm, respectively), the hindwings are darker grey, the base of proboscis is covered with black scales; and the frons and vertex are similarly black, while these parts are more whitish in the two allied taxa. The costal area of forewing is irrorated with black scales, being darker than in *E. pagiopa,* while the paler inner half of wing is darker than in *E. bipunctella*. The independent black dot below the borderline of darker costal and paler inner half of wing is very characteristic of *E. euphoria* sp. n., and has never been observed in *E. bipunctella*. This dot may appear sometimes in *E. pagiopa*, but is most often fused with dark upper part of wing. It should be noted that on a few occasions this dot may be joined with dark costal area by a thin neck. The male genitalia show a few but constant differences in the shape

of the valva and the cornutus. The cucullus of *E. euphoria* (Fig. 13) is less robust than in *E. bipunctella* (Fig. 14), but always wider than that of *E. pagiopa*. The saccular fold of the new species is less conspicuous and the median indentation is more rounded than in the other two species. The cornutus is pointed like in *E. pagiopa* (Fig. 17), but apically finer, less sclerotized. The antrum of the female genitalia is very similar to that of *E. pagiopa*, the sclerotization of the ring and the number and arrangement of the thorns are, however, remarkably different.

Distribution – The new species is distributed in the Pontus Mountains in Turkey and in the Caucasus range in Russia.

Bionomics – The species occurs at relatively high elevation (1600–2000 m) in subalpine habitats; the moths are on the wing in June and July. The three specimens found in Hakkari were collected at a lower altitude and in dry habitat.

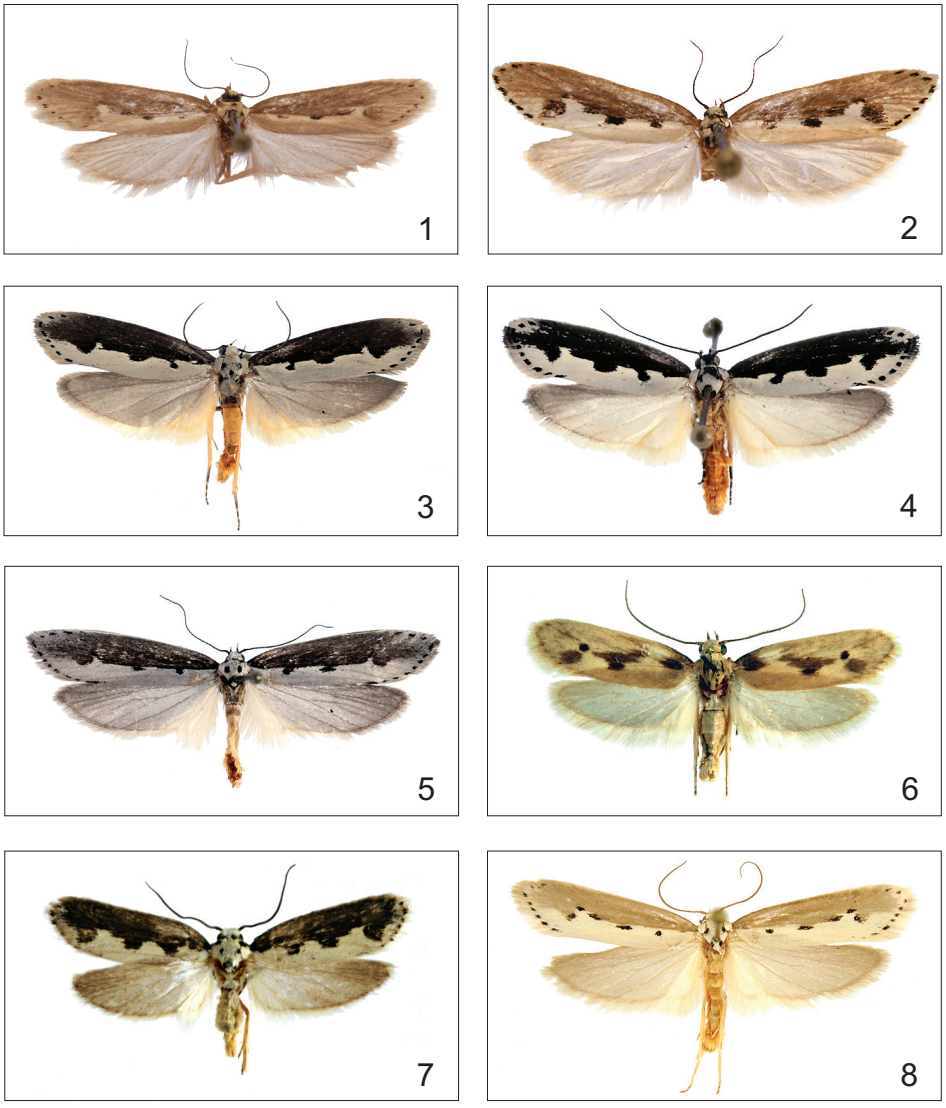
Etymology – The name immortalizes the joyful feeling of its discovery.

Remarks – The new species belongs to the *bipunctella* species group. This group contains several well-known and widely distributed European species, e.g. *E. bipunctella* (FABRICIUS, 1775), *E. iranella* (ZERNY, 1940), and the Palaearctic *E. cirrhocnemia* (LEDERER, 1870) (KUN 2002). The group is also represented in North America, e.g. the taxa of the *E. monticola* (WALSINGHAM, 1880) species complex (POWELL 1973), as is the introduced *E. bipunctella* (HEPPNER & POWELL 1974). According to my knowledge, this is the only species group with a Holarctic distribution. Hence, a comprehensive phylogenetic and biogeographic analysis could serve as basic information for the understanding of the evolution and dispersal of the entire genus.

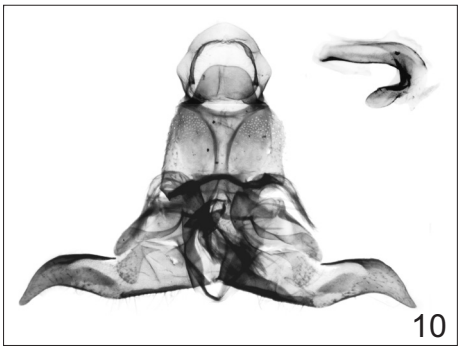
Ethmia sattleri sp. n.
(Figs 6, 18)

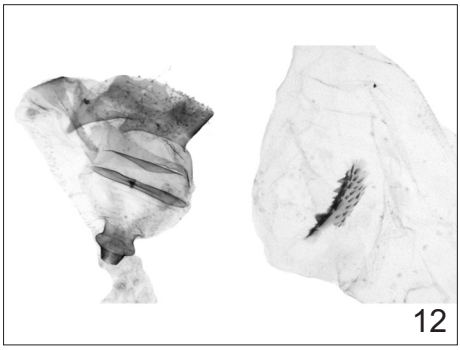
Type material – Holotype: male, "18.IV.1970, 100 m, westl. Shiraz, S-Iran, Exp. Mus.Vind". The holotype is deposited in coll. NHMV.

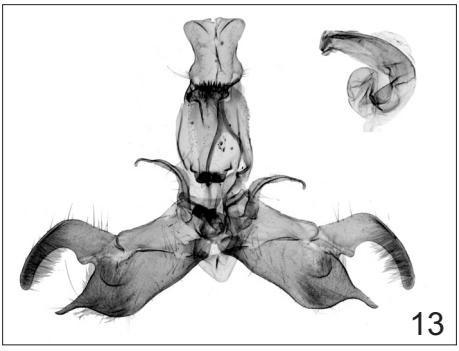
Description (Fig. 6) – Wingspan 17 mm. Antenna filiform, scape and basal segments with pale brown scales; flagellum pale brown; maxillary palpus reduced. Labial palpus pale brown; base of proboscis with pale brown scales; frons and vertex similarly colored. Thorax pale brown without clear dots; tegulae similarly coloured. Forewing background pale brown with characteristic brown pattern on the middle of longitudinal axis, one remarkable brown dot at the distal part of the cell, no expressed marginal dots present; cilia bright brown. Hindwing bright brown, with bright brown cilia; costal brushes absent. Forelegs, midlegs and hindlegs with bright brown scales. Abdomen bright brown.

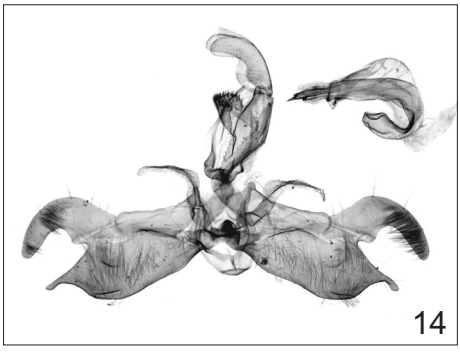


Figs 1–8. *Ethmia* species: 1 = holotype of *Ethmia persica* sp. n., 2 = *Ethmia infelix* MEYRICK, 1914 (Turkey), 3 = paratype of *Ethmia euphoria* sp. n., 4 = *Ethmia bipunctella* (FABRICIUS, 1775) (Hungary), 5 = *Ethmia pagiopa* SATTLER, 1967 (Pakistan), 6 = holotype of *Ethmia sattleri* sp. n., 7 = *Ethmia interposita* SATTLER, 1967 (Turkey), 8 = *Ethmia similis* SATTLER, 1967 (Iran)









Figs 9–14. *Ethmia* species: 9 = *Ethmia afghana* SATTLER, 1967 (Afghanistan), 10 = male genitalia of *Ethmia persica* sp. n. (holotype), 11 = male genitalia of *Ethmia infelix* MEYRICK, 1914 (Turkey), 12 = female genitalia of *Ethmia persica* sp. n. (paratype), 13 = male genitalia of *Ethmia euphoria* sp. n. (paratype), 14 = male genitalia of *Ethmia bipunctella* (FABRICIUS, 1775) (Spain)

Male genitalia (Fig. 18): Uncus developed, hood-like, apically pointed, with medial indenture into half of the uncus. Posterior part of gnathos dentate, extending, anterior part dentate, folded back and broken at middle. Anellus sclerotized, with two long extensions, labis short, longer than broad, sclerotized. Valva pointed, with bristles; costal part sclerotized. Cucullus rectangular, tapering into pointed tip; covered with scattered, fine bristles. Sacculus with pointed anterior margin. Vinculum rounded, without anterior extension. Aedeagus gun-shaped, without cornuti.

Diagnosis – The wing pattern of the *Ethmia sattleri* sp. n. (Fig. 16) is rather different from that of the other species in the group. The brown dot of the distal part of the cell on the forewing is very characteristic. The thorax is without dots. Because of its wingspan (17 mm), general appearance and characters of the male genitalia, the new species shows more similarity to *E. interposita* SATTLER, 1967 (Fig. 17) rather than the other species. The differences in genitalia within the group are not very prominent, *E interposita*, *E. similis* SATTLER, 1967 (Fig. 19) and *E. suspecta* SATTLER, 1967 have almost identical male genitalia structure, their external appearance are, however, constant and make the identification easy. The male genitalia of the new species differ remarkably from the other members of the group by its down-curved proximal part of the cucullus, stronger posterior part of the gnathos and the more widened anterior part.

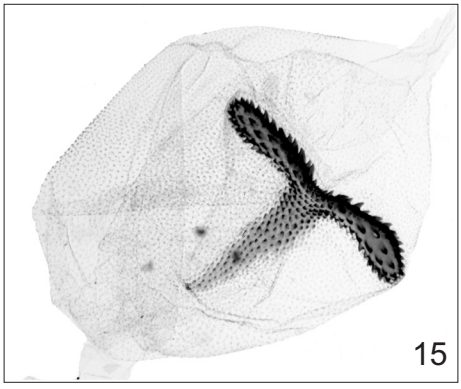
Distribution – Only know from the type locality: Iran (Shiraz).

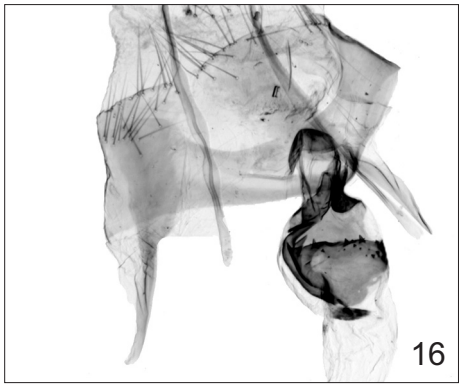
Bionomics – The sole specimen was collected in April, slightly above the sea level.

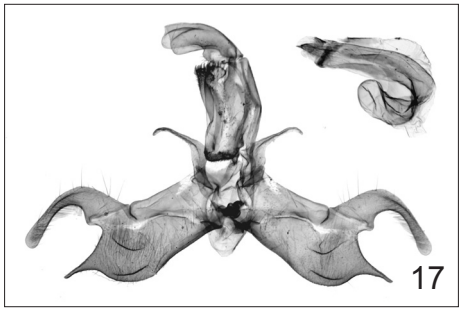
Etymology – The species is dedicated to Dr KLAUS SATTLER (BMNH), the author of the Ethmiidae volume of the Microlepidoptera Palaearctica series, which has proved to be the first and the most fundamental work on the Palaearctic Ethmiinae ever published.

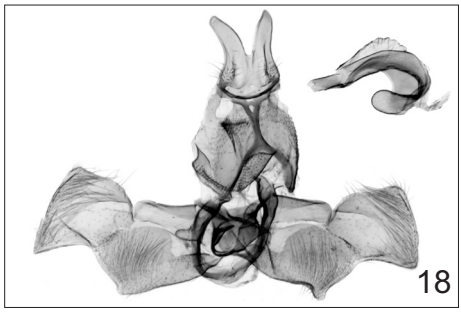
Remarks – The holotype specimen was found in excellent condition due to the extraordinary work of Dr. FRIEDRICH KASY, former curator of the Lepidoptera collection and RICHARD IMB, former technician in the NHMV. The specimen was collected by KASY during the Turkish-Iranian expedition of NHMV in 1970 (VIVES MORENO 1990). The new species belongs to the *suspecta* species group. The group was originally based on four taxa, all of which were described by SATTLER (1967): *E. suspecta* SATTLER, 1967, *E. similis* SATTLER, 1967 (Fig. 8), *E. interposita* SATTLER, 1967 (Fig. 7), and *E. afghana* SATTLER, 1967. Subsequently, a further species was described which could be placed in the *suspecta* species group, *E. defreinai* GANEV, 1984; the species was described on the basis of the single male holotype from Turkey. It is deposited in the private collection of JULIUS GANEV, and the author had no opportunity

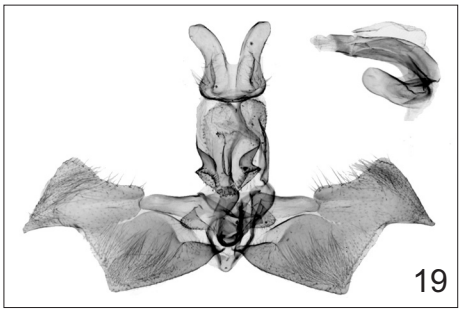
to examine it. Thus, although the taxonomic status of *E. defreinai* is debatable, the taxon is treated here as a valid species, with the note that a comprehensive research involving new material in good condition from various populations is required to solve the problem of the *E. similis-interposita* species complex.











Figs 15–19. *Ethmia* species: 15–16 = female genitalia of *Ethmia euphoria* sp. n (paratype), 17 = male genitalia of *Ethmia pagiopa* SATTLER, 1967 (Pakistan), 18 = male genitalia of *Ethmia sattleri* sp. n. (holotype), 19 = male genitalia of *Ethmia similis* SATTLER, 1967 (Iran)

COMPARATIVE MATERIAL EXAMINED

Ethmia afghana SATTLER, 1967: Holotype: 1 male: "1.VI.1965, 10 km, NW v. Kabul, 1900 m, Afghanistan, Kasy & Vartian". Paratypes: 1 male, 2 females, 21.VI.1965, 10 km, NW v. Kabul, 1900 m, Afghanistan, F. KASY & E. VARTIAN (Fig. 9); Paratypes: 1 male, 1 female, "2–18.VI.1965, Afgh. Kurd-Kabul, SO v. Kabul, 1900m, F. Kasy & A. Vartian" all in coll. NHMV; 1 female, "18.VI.1965, Afgh. Kurd-Kabul, SO v. Kabul, 1900 m, F. Kasy & A. Vartian" in coll. NHMV; 1 female, "o-afganistan" in coll. SMTK.

Ethmia bipunctella (FABRICIUS, 1775): 1 male, Iran, Derbend, 25 N of Teheran, 2000 m, 1–10.VII.1962, leg. E & A VARTIAN; 1 male, Syria, 25 km W. of Damaskus, 2–3.VI.1961, leg. F. KASY & E. VARTIAN all in coll. NHMV; 1 male, Uzbegistan, W. Tien-Shan, 1200 m, Tshatkal Reserve, Bash-Kizil-Say, 27.V–VI.3.1982, leg. L. PEREGOVITS; 1 male, Uzbekistan, Tien Shan, Forest Reserve of Tshatkal, 1200 m, 1–4.VI.1981, leg. O. MERKL & I. HAHN; 6 females, Turkey, Denizli county, 2 km W of Pamukkale, 8.X.1980, leg. L. PEREGOVITS; 1 female, Armenia, Idzhevan, 1700 m, No. 39a, 15.VIII.1976, leg. SIMON & T. VÁSÁRHELYI; 1 male, Iran, Kordestan, N Zagros Mts near Divandarre, 1500 m, 12–14.IX.1998, leg. M. SZATYOR; 1 male, Iran, Prov. Zanjan, Küh-e Sendan Dag, 20 km E of Zanjan, 1600 m 30.VI–1.VII.2000, leg B. BENEDEK, KUN Slide No. 241; 1 male, Iran, Zanjan Province, Sendan Mts, 30 km NE of Zanjan, 2200 m, 36°42'N, 48°45'E, 17.V.2001, leg. B. BENEDEK & G. CSORBA, 1 male "Hispania, Chiclana, 1912.VI–V. Korb" KUN Slide No. 207 all in coll. HNHM (Fig. 14); 1 male, Hungary, Telki, 20.VI.2004, ex larva, Leg. A. KUN, in coll. HNHM (Fig. 4).

Ethmia derbendella SATTLER, 1967: 1 male Paratype: "7.–15.1963 Iran, Derbend, 25 km N. v. Teheran, 2000 m Kasy & Vartian, Glaser collection"; 1 specimen, "n-iran"; 1 specimen, "Asia min, Turcia, Kizilcahamam, 925 m, 19.6–6.7. leg. M. u. W. Gläser", SATTLER Slide No. 628, in coll. SMTK; 1 male, "7.–156. 1963, Iran, Derbend, 25 km N v. Teheran, 2000 m, Kasy & Vartian" in coll. NHMV.

Ethmia infelix MEYRICK, 1914 (= *Ethmia kurdistanella* AMSEL, 1959): 1 male, lectotype of *Ethmia infelix*: "Mardin", "Ps. confusella Rbl. Type", "Origin", "Lectotypus, ♂, Psecadia confusella Rebel, Ethmia infelix Meyr. teste K. Sattler, 1964", "GENITALIA Sattler 588d" in coll. MFN; 1 male, Type of *Ethmia infelix*: "631", "Stgr. 900", "Mardin", "Ps. confusella Rbl. Type" "Ethmia infelix Meyr. ♂, teste K. Sattler, 1963" in coll. NHMV; 1 male, holotype of *Ethmia kurdistanella*: "2.–13.VI.56, 5000–6000 ft., Haj Omran, Rayat, Iraq, E. P. Wiltshire" Slide No. 3356 (Amsel), in coll. SMTK; 1 female paratype of *Ethmia kurdistanella*: "2–13.VI.56, 5000–6000 ft., Haj Omran, Rayat, Iraq, E. P. Wiltshire" Slide No. 4445 (AMSEL), Slide No. 610b (SATTLER), in SMTK; 1 male, "Turkey, Prov. Urfa, Halfeti valley of Euphrat, 500 m, 37°52.5E, 37°14,5N, 15–18.IV.1990, leg B. Herczig & G. Ronkay", KUN slide No. 360 in coll. HNHM (Fig. 2); 1 male, "Mardin, Taurus", KUN Slide No. 412; in coll. NRM (Fig. 11); 1 male "Mesopotamia, Mardin, Stgr." Slide No. 7490 in coll. BMNH.

Ethmia interposita SATTLER, 1967: Holotype male: "Georgskloster, Jericho, 30.6.1932, W. Einsler, Coll. H. Amsel", "coll. Osthelder", in coll. ZSM; 1 male, 1 female paratypes: "Jordan Valley, Zerqua R. Colony, c. 100 m below, S. L. 4.II.1953, Trevor Trought", SATTLER slide No. 566a, 615d (Gu 4432, 4438), in coll. LNK; 1 male paratype: "Jerusalem, 1890, Paul" SATTLER

slide 598b, in coll MFN; 1 specimen, "Georgskloster, Jericho, 16.6. 31, W. Einsler, Coll. H. Amsel", abdomen missing, in coll. HNHM; 1 male, 1 female, Turkey, Prov Mersin, 5 km NW of Erdenli, 200 m, 16.VII.1986, leg. M. FIBIGER, KUN Slide No. 458, in coll. ZMUC (Fig. 7).

Ethmia pagiopa SATTLER, 1967: 1 female, Holotype: "6000', Kashmir, CGN., 5. 01" in coll BMNH; 2 females, Afghanistan, Paghman, 30 km, NW v. Kabul, 2200 m, 20–22.VII.1963, leg. F. KASY & E. VARTIAN, in coll ZSM; 1 male Afghanistan, Paghman, 30 km, NW of Kabul, 2500 m, 19–31.V.1965, leg. F. KASY & E. VARTIAN; Afghanistan, Paghman, 30 km NW of Kabul, 2500 m, 20. u 24.VII.1965, leg. F. KASY & E. VARTIAN; 3 males, 3 females, Afghanistan, Paghman, 30 km NW of Kabul, 2500 m, 19–31.V.1965, leg. F. KASY & E. VARTIAN, NHMV Slide No. 3428 (SATTLER); 1 female, Afghanistan, Paghman, 30 km NW of. Kabul, 2100 m, 20–30.VII.1962, leg. E. & A. VARTIAN, NHMV Slide No. 3431 (SATTLER); 3 females, Afghanistan, Paghman, 30 km NW of Kabul, 2200 m, 20–22.VII.1963, leg. F. KASY & E. VARTIAN; 2 males, Afghanistan, Paghman, 30 km, NW of Kabul, 3–5.VI.1965, leg. F. KASY & A. VARTIAN; 1 male, 1 female, Afghanistan, Paghman, 30 km NW of Kabul, 2500 m, 27.VII.1965, F. KASY & E. VARTIAN, NHMV Slide No 3430 (SATTLER); Afghanistan, Paghman, 30km NW of Kabul, 12–15.VI. 1965, leg. F. KASY & E. VARTIAN; 1 specimen, Afghanistan, Paghman, 30 km NW of Kabul, 2500 m, 15–18.VII.1965, leg. F. KASY & E. VARTIAN, all in coll NHMV; 2 males, Pakistan, Hindukush Mts, Teru village, 3000 m, 72°40'E, 36°14', 28.VI.2000, leg. Z. VARGA & G. RONKAY; 6 females, 9 males, Pakistan, Hindukush Mts, 5 km E of Shandurpass, 6250 m, 72°38'E, 36°107', 24–25.VI.2000, leg. Z. VARGA & G. RONKAY, KUN Slide Nos, 205, 191 (Figs 5, 17); 1 male, Karakoram Mts, Naltar valley 2800 m, 74°12'E, 36°09', 18.VII.2000, leg. G. CSORBA & G. RONKAY.

Ethmia similis SATTLER, 1967: 1 male, Holotype: "Mardin 97. Man." in coll MFN; Paratype: "Mardin 97. Man." in coll. MFN; 1 male, 1 female paratypes: "3. a. Psecadia confusella, Mesopotamia, Stgr, 1900–1", "1923 coll. Jean Schlumberger, don de son fils M. Ernest. Schlumberger, Muséum Paris" Sattler Slide 596d, 596c; 1 male, "Mardin", "1920, 1932, coll. L & J. De Joannis, Muséum Paris", SATTLER Slide No. 587c, all in coll MNHN; 2 females, Turkey, Kars Mt. Ararat, 2 km Nord, Cilli pas, 1500 m, 6. IX. 1993, leg. M. FIBIGER, KUN Slide. No. 404 in coll. ZMUC; 1 male, "Mardin, Taurus" Kun Slide 415; 1 male, "Madrid (sic!), 331" KUN Slide 417. in coll. NRM; 1 male, "Stgr, Mesop", KUN Slide No. 201, in coll. SM; 1 male, "Mardin, Taurus", "Stgr, 16"; 1 male, "Mardin", "Stgr 16". "101" all in coll. NHMV; 15 males, 7 females, Iran, Prov Azerbaijan, Küh-Esehand, 10 km NE of Yengele, 200 m, 2. V. 2000, leg. B. BENEDEK, KUN Slide Nos 203, 192, 212, in coll. HNHM (Figs 8, 19).

Ethmia suspecta SATTLER, 1967: Holotype: "Kurdistan, Malatya, 5.V.1932, leg. Prof. De Ajtai Korvac, B. M. 1933–332" in coll. BMNH; Paratypes: 1 male, 1 female, Kurdistan, Malatya, 5.V.1932, leg. AJTAI-KOVÁCS, BMNH Slide Nos. 13915, 7442, in coll. BMNH; 1 male, Kurdistan, Malatya, 5.V.1932, leg. AJTAI-KOVÁCS, in coll. ZSM; 1 female paratype: Syria, 20 km N. from Damaskus, 16–28.V.1961, leg. F. KASY & E. VARTIAN, in coll NHMV. 1 specimen, Jordania, Zerqa Valley 15.III.1966, in coll. SMTK. 1 male, 1 female, Turkey, Prov. Urfa 2 km N of Halfeti, Valley of Euphrat, 37°35'E; 37°15'N, 6–7.V.1992, leg. CS. SZABÓKY.

Ethmia wursteri AMSEL, 1956: Holotype: "17.2.1953, Jordan Vaaley, Zerqa R. Colony, c. 100 m below S. L., at light, Trevor Trought" Slide No. 3180 (AMSEL) in coll. SMTK.

*

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