

# First record of the genus *Etainia* Beirne from Central Asia with descriptions of two new species and some provisional notes on the world fauna (Lepidoptera: Nepticulidae)

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**Abstract.** The taxonomic status of the genus *Etainia* Beirne, 1945 is briefly discussed, and provisional notes on the relationships of the newly designated species-groups are provided. Two new species, *E. leptognathos* sp. n. and *E. obtusa* sp. n. are described from the Kopet Dag ridge (western Turkmenistan). The check-list of *Etainia* species of the World fauna is given.

**Samenvatting.** Eerste vermelding van het genus *Etainia* Beirne uit Centraal-Azië, beschrijving van twee nieuwe soorten en enkele voorlopige bemerkingen over de wereldfauna (Lepidoptera: Nepticulidae). De taxonomische status van het genus *Etainia* Beirne, 1945 wordt kort besproken en voorlopige bemerkingen over de relatie tussen de nieuw opgestelde soortengroepen worden gegeven. Twee nieuwe soorten worden beschreven uit het gebied van de Kopet Dag (West-Turkmenistan): *E. leptognathos* sp. n. en *E. obtusa* sp. n. Een check-list van de *Etainia*-soorten van de wereld wordt gegeven.

**Résumé.** Première observation du genre *Etainia* Beirne en Asie centrale, description de deux nouvelles espèces et quelques remarques provisoires sur la faune mondiale (Lepidoptera: Nepticulidae). Le statut taxonomique du genre *Etainia* Beirne, 1945 est discuté brièvement et quelques remarques provisoires sur la relation entre les groupes d'espèces récemment établies sont données. Deux espèces nouvelles sont décrites de la région du Kopet Dag (Turkmenistan occidentale): *E. leptognathos* sp. n. en *E. obtusa* sp. n. Une liste systématique de toutes les espèces du genre *Etainia* est donnée.

**Key words:** *Etainia* - *Etainia leptognathos* - *Etainia obtusa* - new species - Turkmenistan - Central Asia - Check-list.

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The genus *Etainia* Beirne, 1945 (= *Obrussa* Braun, 1915, preoccupied) is usually treated as a separate, well defined taxon (Wilkinson & Scoble 1979; Scoble 1983; Puplesis & Ivinskis 1985; Puplesis 1994, etc.). This monophyletic unit can be characterized by numerous rather outstanding apomorphies, like: (1) vinculum with U-shaped invagination posteriorly, (2) vesica with H-shaped sclerotization, (3) ductus bursae with a group of spines, (4) larvae mining in buds, shoots and fruits, and not in leaves (see Scoble 1983, van Nieukerken 1986, Puplesis 1994). Valva of all species (except *E. nigricapitella* (Jance)) with large basal apodeme(s), muscle  $m_3$  in male genitalia attached to lateral arms of transtilla, and not to inner side of valva as in other studied Nepticulidae (see Puplesis & Kozlov 1988). However, the taxon (together with few others) was sunk to subgenus rank in *Ectoedemia* Busck (van Nieukerken 1986) using two very weak and very doubtful apomorphies only: "abdominal sternum 2 with anterior plate almost triangular, lateral margins shortened";<sup>1</sup> 2) "sensillum vesiculocladum reduced in various ways from basic 5-

<sup>1</sup>) First, the anterior plate of the figured *Etainia decentella* (Herrich-Schäffer) is not triangular (like the anterior plate of *Fomoria weaveri* (Stainton) also). Secondly, this structure (the anterior plate), according the figures made by van Nieukerken (1986: figs. 32-55) varies very strongly from a taxon to taxon, and usually varies even within one single taxon (e.g. *Enteucha*, *Acalyptrix*, *Trifurcula*, *Bohemannia*, *Fomoria*, etc.). On the other hand, the very similar shape of the plate (resembling that of *Etainia*) is found in the other tribe (Nepticulini) or even in the Australian genus *Pectinivalva*.

branched pattern".<sup>2</sup> Thus, *Etainia* still must be regarded as the separate genus.

At present the genus comprises 16 species: 4 from Europe, 1 from the Caucasus, 4 from East Asia, 2 from North America (including one species with Euro-Nearctic distribution), and 4 species from South Africa (see check-list below). No previous records of *Etainia* species were available from Central Asia. However during field-work of 1993 in the western part of the Kopet Dag ridge (Turkmenistan, close to Iran border) two species of *Etainia* were collected: *E. leptognathos* sp. n. & *E. obtusa* sp. n. Both are described in the present paper.

### Check-list of species with some provisional notes on newly designated species-groups

*Etainia* Beirne, 1945: 208

#### *E. sericopeza* species-group

1. *E. ochrefasciella* (Chambers, 1873) comb. n.: N. America, on *Acer saccharum*<sup>3</sup>, for descriptions see Chambers, 1873: 128, Wilkinson & Scoble, 1979: 99-101; Wilkinson, 1988: 151-152.
2. *E. sericopeza* (Zeller, 1839): Europe, N. America, on *Acer platanoides*, for descriptions see Zeller 1839: 215, Jäckh 1951: 170-175, Emmet 1976: 206, Wilkinson & Scoble 1979: 101-105, Puplesis & Ivinskis 1985: 38-39, Johansson et al. 1990: 283-284, Puplesis 1994: 228-229.
3. *E. louisella* (Sircom, 1849): Europe (except the North) & Caucasus, on *Acer campestre*, for descriptions see Sircom 1849: XIII, Jäckh 1951: 170-178, Emmet 1976: 207, Johansson et al. 1990: 284-285, Puplesis 1994: 229-230.
4. *E. decentella* (Herrich-Schäffer, 1855): Europe (except the North), on *Acer pseudoplatanus* and *A. monspessulanum*, for descriptions see Herrich-Schäffer 1853-1855: 358, Jäckh 1951: 171, Emmet 1976: 206, Johansson et al. 1990: 285-286, Puplesis 1994: 230-231.
5. *E. leptognathos* sp. n.: Central Asia (Turkmenistan), probably on *Acer turcomanicum*<sup>4</sup>, described below.
6. *E. peterseni* (Puplesis, 1985): East Asia (Far-eastern Russia), likely on *Acer mono*, for descriptions see Puplesis & Ivinskis 1985: 41-43, Puplesis 1994: 231.
7. *E. sabina* (Puplesis, 1985): East Asia (Far-eastern Russia), probably on *Acer mono*, for descriptions see Puplesis & Ivinskis 1985: 43-44, Puplesis 1994: 231-232.
8. *E. tigrinella* (Puplesis, 1985): East Asia (Far-eastern Russia), probably on *Acer mono*, for descriptions see Puplesis & Ivinskis 1985: 40-41, Puplesis 1994: 232.
9. *E. capesella* (Puplesis, 1985): East Asia (Far-eastern Russia), probably on *Acer mono*, for descriptions see Puplesis & Ivinskis 1985: 39-40, Puplesis 1994: 232-233.
10. *E. crypsixantha* (Meyrick, 1918) comb. n.: South Africa, host plant unknown, for

2) The reduction, as such, is found independently in different taxa (c.f. reduction of wing venation). The structure "reduced in various (!) ways" is not adequate for making serious taxonomic changes, and it is a bit strange to see the enormously enlarged concept of *Ectoedemia* based on a reduction.

3) There are no rearing records, mines, nor references about the life of the larva. However, it is strongly suspected that *E. ochrefasciella* makes a carponome in *Acer* keys, like *E. sericopeza*; several adult specimens have been taken on *Acer saccharum* Marshall (Wilkinson 1988).

4) There are no rearing data. However, no other species of *Acer* (except *A. turcomanicum*) occur in the Kopet Dag ridge, from where the new species is described.

descriptions see Meyrick 1918: 43, Scoble 1983: 17-18.

11. *E. obtusa* sp. n.: Central Asia (Turkmenistan), probably on *Acer turcomanicum*<sup>5</sup>, described below.

12. *E. albibimaculella* (Larsen, 1927) comb. n.: Predominantly N. Europe, on *Arctostaphylos uva-ursi*, for descriptions see Larsen 1927: 5, Johansson et al. 1990: 287.

#### *E. biarmata* species-group

13. *E. biarmata* Puplesis, 1994: W. Caucasus, host plant unknown, for description see Puplesis 1994: 233.

#### *E. zimbabwiensis* species-group

14. *E. zimbabwiensis* (Scoble, 1983) comb. n.: Southern Africa, host plant unknown, for description see Scoble 1983: 18.

15. *E. krugerensis* (Scoble, 1983) comb. n.: Southern Africa, host plant unknown, for description see Scoble 1983: 19.

#### *E. nigricapitella* species-group

16. *E. nigricapitella* (Janse, 1948) comb. n.: Southern Africa, host plant unknown, for description see Janse 1948: 170; Scoble 1983: 18-19.

No species-groups were designated earlier. However some species of *Etainia* probably cluster into monophyletic units. Most of Holarctic species of the genus belong to the group which is called here as the *sericopeza*-group; at the moment the group comprises 12 species with well developed transtilla bar and one large basal apodeme of valva. Other three clades from the proposed cladogram (see fig. 1) are considered here as three species-groups also. The provisional phylogeny is based on few mostly distinctive apomorphies listed below:

1. Vinculum with U-shaped invagination posteriorly;

2. Vesica with H-shaped sclerotization;

3. Ductus bursae with a group of spines;

Note: It should also be pointed out that the muscle  $m_3$  in the male genitalia is attached to the lateral arms of transtilla, and not to the inner side of the valva, as in other studied Nepticulidae.

4. Larvae mine in buds, shoots and fruits (winged-seeds of *Acer*);

5. Valva deeply divided;

6. Gnathos with two large posterior processes;

7. Spines on ductus bursae enlarged;

Note: the clade 5-7 shares some distinct plesiomorphies, as the absence of basal apodeme of valva, the absence of transtilla, etc.

8. Basal apodeme of valva developed;

9. Valva weakly divided;

10. Strong reduction of wing venation;

Note: the clade 9-10 shares few plesiomorphies, as the absence of transtilla bar, ect.

11. Transtilla bar developed;

12. Second basal apodeme of valva developed.

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5) There are no rearing data. However, no other species of *Acer* (except *A. turcomanicum*) are known from from the Kopet Dag ridge, from where the new species is described.

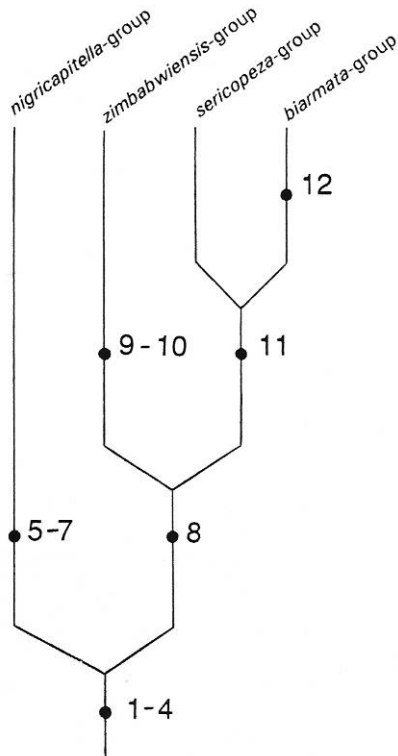


Fig. 1: Provisional cladogram of the genus *Etainia*, demonstrating the relationships between the species-groups. Numbers refer to apomorphies, listed in the text.

### Description of new species

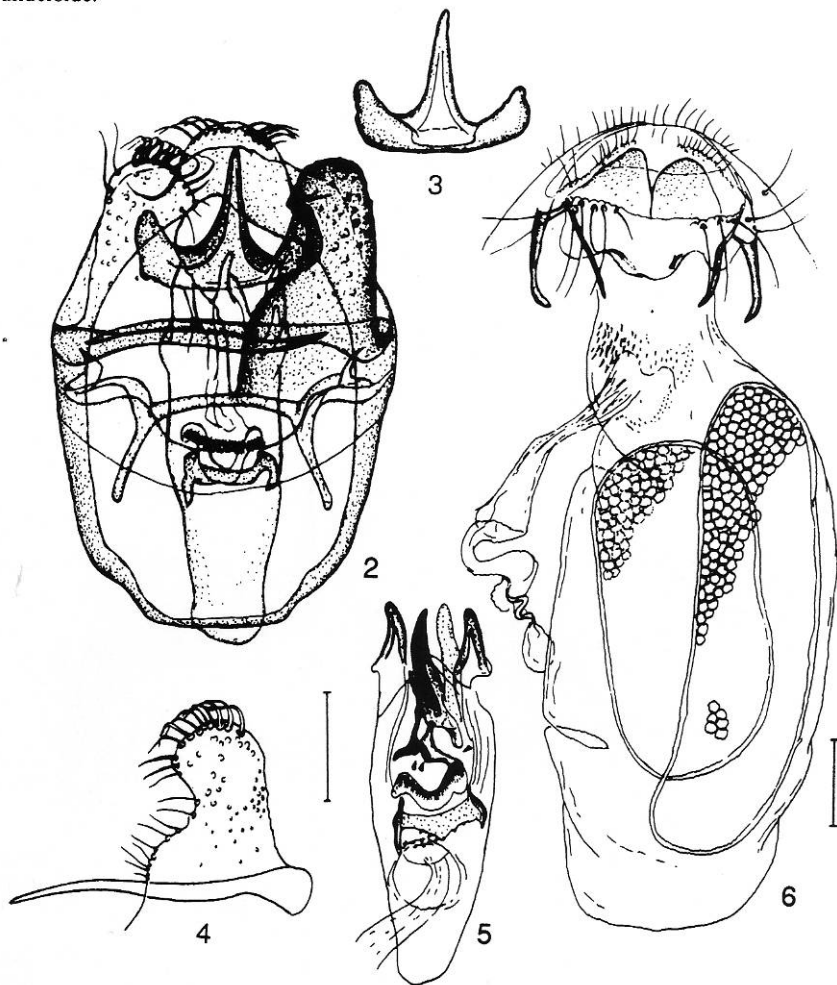
#### *Etainia leptognathos* sp. n.

Type material. Holotype: ♂, Turkmenistan, western Kopet Dag, 40 km E Kara Kala (=Garrygala), 29.VI.1993, leg. R. Puplesis & A. Diškus. Paratypes: 5♀, 22♂, the same locality, 15.V-07.VII.1993, leg. R. Puplesis & A. Diškus.

Diagnosis. Closely resembles *E. decentella* (Herrich-Schäffer), but can be recognised by the shape of the gnathos with the slender posterior process and by the brown or brownish frontal tuft (in *E. decentella* it is black).

Male. Forewing length: 2.4-2.7 mm. Head: frontal tuft brown to pale brownish (not black); eye-caps whitish creamy; collar pale brownish, indistinct; antenna brownish to brownish creamy. Thorax whitish creamy or creamy. Forewing pattern variable, generally

similar to *E. decentella*, but often the pale markings strongly dominant in the new species. Usually basal third of forewing generally pale, only area near costa with large zone irrorated by dark brown scales; very wide medial fascia also distinctly cream (or whitish cream); a costal and tornal spots at two thirds surrounded by dark brown scales, tending to form a second (apical) complete fascia. Underside of forewing with large basal patch of deep black androconial scales (leaving a scaleless area near retinaculum) and with a few brownish scales in centre. Cilia cream or pale brownish cream. Hindwing brownish, with basal patch of deep black androconial scales and a small patch on underside.



Figs 2-6: Genitalia of *Etainia leptognathos* sp. n.: 2. Male, holotype; 3. Gnathos, paratype 24.V.1993; 4. Valva, paratype, 25.V.1993; 5. Aedeagus, paratype, 25.V.1993; 6. Female genitalia, paratype, 18.V.1993 (scale 0,1 mm).

Female. Forewing length: 2.3-3.0 mm. Usually paler than male, but otherwise similar to male.

Male genitalia (figs 2-5). Valva tightly fused to vinculum, broad at base, slightly broadened apically and with a row of large setae; basal apodeme of valva slender (fig. 4). Transtilla with long sublateral processes. Tegumen produced into rounded pseuduncus. Uncus distinct only laterally. Gnathos with slender posterior process (=central element) (fig. 3). Aedeagus narrowed basally and with two lateral carinae. Vesica with large H-shaped sclerotization, some tiny cornuti and three large ones (fig. 5).

Female genitalia (fig. 6). Posterior apophyses just slightly shorter than anterior ones. Sclerotization of vestibulum large, bilobed. Vestibulum with tiny spines. Ductus spermataeae with 2 sclerotized convolutions. Corpus bursae oval, with two large, oval and distinctly dissimilar signa. Pappillae anales distinctly disjuncted.

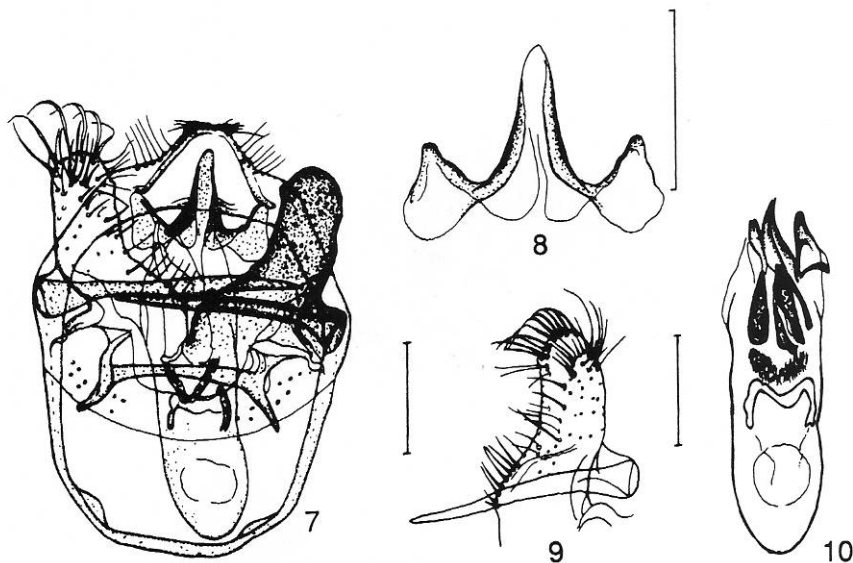
Biology. Adults fly in May - early July. Life history otherwise unknown, but probably host plant is *Acer turcomanicum*.

Distribution. Known from western part of the Kopet Dag ridge only.

### *Etainia obtusa* sp.n.

Type material. Holotype: ♂, Turkmenistan, western Kopet Dag, 40 km E Kara Kala (=Garrygala), 26.V.1993, leg. R. Puplesis & A. Diskus.

Diagnosis. Differs from all other *Etainia* by the truncated pseuduncus.



Figs. 7-10: Male genitalia of *Etainia obtusa* sp. n.: 7. Holotype, general view; 8. The same, gnathos; 9. The same, valva; 10. The same, aedeagus (scale 0,1 mm).

Male. Forewing length about 2.5 mm. Head: frontal tuft pale yellowish; collar paler; eye-caps whitish cream, antenna brownish cream. Thorax almost brown, with few cream scales. Forewing blackish fuscous with whitish cream pattern: a small basal spot, a fascia at one third and costal and tornal spots at two thirds. Underside of forewing brown, without androconial patch. Cilia greyish cream to greyish. Hindwing greyish to grey, without androconial patch.

Female. Unknown.

Male genitalia (figs 7-10). Valva slightly arcuate, without distinct broadening at apex (fig. 9) and tightly fused to vinculum. Basal apodeme of valva rather slender and long. Sublateral process of transtilla short, twice or more shorter than transverse bar. Pseuduncus broad, but distinctly truncated (see fig. 7). Uncus sclerotized only laterally. Gnathos with rather large posterior process (=central element) and large lateral arms (fig. 8). Vinculum large, almost rounded distally. Aedeagus with two lateral carinae, 2-3 large cornuti at apex and H-shaped sclerite on vesica (fig. 10).

Biology. Adults fly in May. Life history otherwise unknown, but probably host plant is *Acer turcomanicum*.

Distribution. Known from western part of the Kopet Dag ridge only.

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### Inhoud:

Bengtsson, B.Å. & Liska, J.: Notes on Asian scythridids with description of four new species (Lepidoptera: Scythrididae) . . . . .	33
Coutsis, J.G.: Additional butterfly records from the Greek islands of Santorini and Sifos (Lepidoptera: Papilionoidea) . . . . .	13
De Prins, W. & van der Poorten, D.: Additions and corrections to "Die Tagfalter der Türkei". 2. Interesting observations of butterflies in Turkey during the 38th expedition of the "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Lycaenidae) . . . . .	25
Henderickx, H.: <i>Microbisium brevifemoratum</i> (Ellingsen, 1903), een nieuwe soort voor de Belgische fauna (Arachnida, Pseudoscorpiones: Neobisidae) . . . . .	1
Olivier, A.: Notes on the taxonomic status and supposed biogeographic affinity of the <i>Pseudochazara anthelea</i> (Hübner, [1824]) populations from Kipros (Cyprus) and from the Greek island of Kós (Lepidoptera: Nymphalidae Satyrinae) . . . . .	5
Puplesis, R. & Diskus, A.: First records of the genus <i>Etainia</i> Beirne from Central Asia with descriptions of two new species and some provisional notes on the world fauna (Lepidoptera: Nepticulidae) . . . . .	41
van den Brink, H. & van Oorschot, H.: Additions and corrections to "Die Tagfalter der Türkei". 1. Interesting observations of butterflies in Turkey during the 37th expedition of the "Werkgroep Grieks-Turkse dagvlinders" (Lepidoptera: Hesperidae, Pieridae, Lycaenidae) . . . . .	19
Boekbesprekingen . . . . .	4, 17, 24, 40

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