

Taxonomic and faunistic studies on Turkmenian Sterrhinae (Lepidoptera: Geometridae)

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Taxonomic and faunistic studies on Turkmenian Sterrhinae (Lepidoptera: Geometridae) — Twenty-nine species belonging to the subfamily Sterrhinae (Geometridae) are recorded from Central and North-west Turkmenistan. The description of a new species *Idaea laszloi* Hausmann is given. *I. peluraria* (Reisser 1939) proved to be new for the Turkmenian fauna. *Brachyglossina chaspia turkmenica* Viidalepp, 1992, comb. n., combined with the species *Brachyglossina chaspia* Brandt, 1938. *B. chaspia talvei* Viidalepp, 1988, comb. et stat. n., and *B. chaspia vartianae* Wiltshire, 1966, comb. et stat. n., are both downgraded from species to subspecies rank and transferred from *Idaea* to *Brachyglossina*. Both sexes of *Pseudocinglis eurata* (Prout, 1939) are (re)described. Until now only the male holotype was known. *Pseudocinglis benigna amseli* Wiltshire, 1967, comb. et stat. n. is transferred from *Scopula* and downgraded from species to subspecies rank. *Pseudocinglis falcovitshi* Viidalepp, 1992, is transferred from *Scopula* (comb. n.). *Scopula ansulata eberti* Wiltshire, 1967, stat. n., is downgraded from species to subspecies rank. *Scopula transcaspica* Prout, 1939, is raised to species rank from subspecies of *Scopula submutata* (Treitschke, 1828) and reported for the first time for Turkey.

INTRODUCTION

Within the cooperative framework of the Ecological Centre of the Municipality of Ashkhabad (Turkmenistan) and the Department of Zoology of the Hungarian Natural History Museum (Budapest) six Hungarian entomological expeditions were carried out in Turkmenistan between 1991 and 1993. The expeditions returned with about 30 000 macrolepidopterans. This material contains several undescribed and interesting taxa from taxonomical and zoogeographical point of view. The study of the Macrolepidoptera material is still in progress. The present paper is the first comprehensive study on the Geometridae of this material. The primary aim of the expeditions was to collect in as many vegetation and habitat types as possible.

Abbreviations: B, M, E = first, second and third decade of the given month, ZSM = Zoologische Staatssammlung, München, HNHM = Hungarian Natural History Museum, Budapest.

SYSTEMATIC PART

***Idaea rufaria* (Hübner, [1799])**

Material examined — Sayvana, Aidere, Ipay-Kala (35 males and females; 600–1800 m; E6–B7)

Remarks — Male genitalia: aedeagus with basal chitinisation around cornutus, longer than in the European populations (length about half of cornutus).

Female genitalia: ductus bursae longer than in the European populations, corpus bursae more rounded. Detailed study of the Asian populations is required to clarify the sub-specific division of the species.

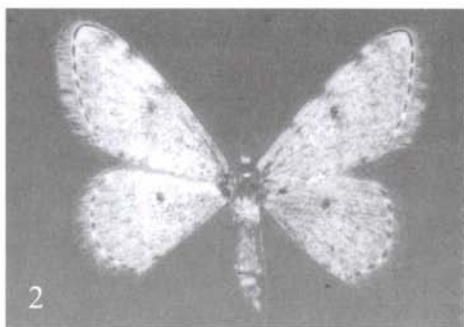
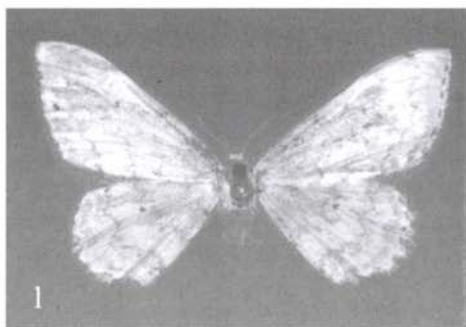
***Idaea laszloi* Hausmann, sp. n.**
(Figs 1, 3, 5)

Holotype — Male, “Turkmenistan, Kopet-Dagh Mts, 800 m, valley of Ipay-Kala, 15 km SW Nochur, 26.VI.1992, leg. Fábíán, Herczig, Podlussány and Varga”. Deposited in ZSM.

Paratypes — “Turkmenistan, Kopet-Dagh Mts., 800–1500 m, valley of the rivers Ipay-Kala and Point-Kala, 30.VI.–4.VII.1992, leg. Fábíán, Herczig, Podlussány and Varga”. Deposited in collections of ZSM, Gy. M. László, HNHM.

Description (Fig. 1) — Wing colour dirty whitish, median shadow and postmedian line of all wings dark grey, strongly dentate, postmedian line distally accompanied by dark shadow. Termen of fore wing not angled at CuA_1 . Median shadow and postmedian line of fore wing underside usually distinctly dark brown, the whole underside of wings getting darker (brown) towards costa. Frons flat, black. Vertex white. Palpi with dark brown scales, brighter than frons. Measurements: Length of fore wing 9.7 to 10.6 mm. Proboscis strongly developed, length about 2.5 to 3.0 mm. Palpi short and slender, length about 0.8 to 1.0 times eye diameter. Male antennae dentate, teeth with tufts of cilia, length of cilia about twice the thickness of filament. Female antennae scarcely ciliate, length of cilia about half the thickness of filament. Male hind tibia strongly dilated, with whitish hair pencil, tibia:tarsus ratio is 2.5:0.8. Female hind tibia not dilated, with two spurs.

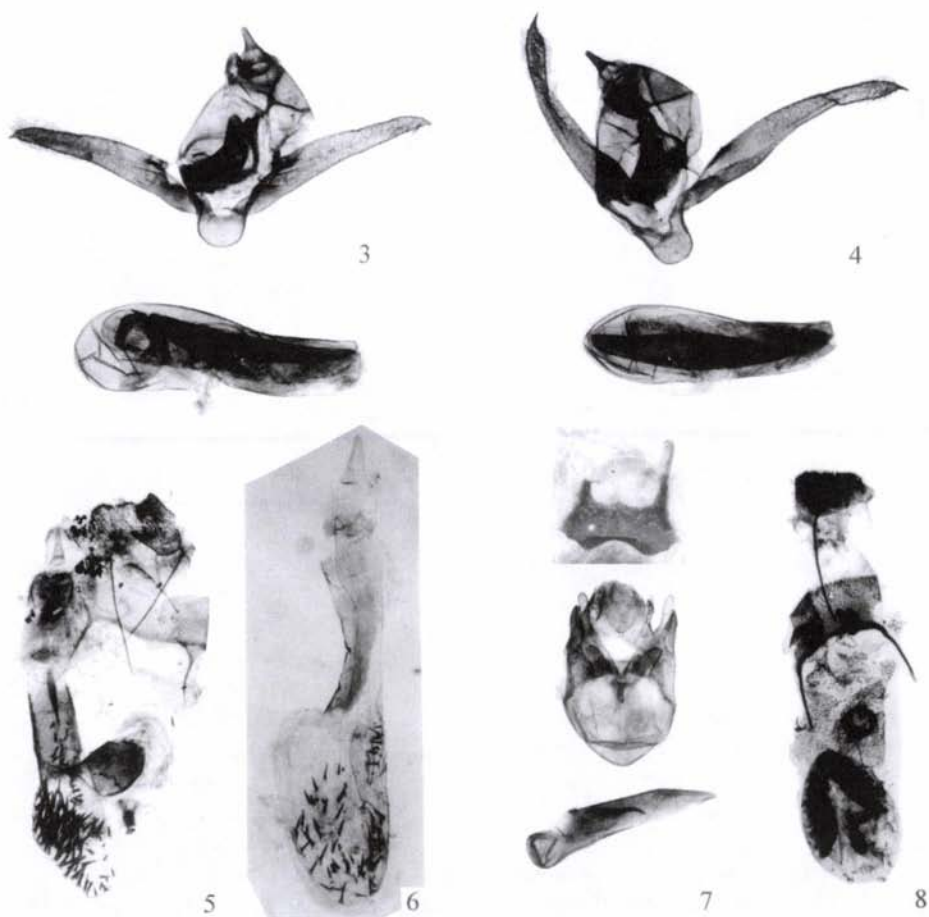
Male genitalia (Fig. 3): Valvae terminally tapering, tip of valva comparatively short. Juxta crescent-shaped, forming two lobes, caudally with two dentate projections, terminally tapering. Length of aedeagus 1.6 mm, with long and slender cornutus (length 1.1–1.2 mm; width 0.12 mm). Base of cornutus with a semicircular ring of small cornuti.



Figs 1–2. 1: *Idaea laszloi* Hausmann, sp. n. ♂; 2: *Pseudocinglis eurata* (Prout, 1913) ♂

Female genitalia (Fig. 5): Length of apophyses posteriores 0.9, anteriores 0.4 mm. Length of ductus bursae 0.8, width 0.3 mm, strongly chitinised; angle between ductus bursae and upper margin of corpus bursae is about 90°. Projection of corpus bursae towards the ductus seminalis strongly chitinised. Corpus bursae with about 60 stout spines.

Diagnosis — Habitus easily distinguishable from the other *Idaea* species except for *I. textaria* Lederer, 1861. Wing pattern very similar. Wing colour of *I. textaria* snow-white, slightly lustrous, termen of forewing slightly angled at CuA_1 . Differences in genitalia of male and female (see also Figs 4 and 6) are as follows: tip of valva in *I. textaria* much longer, aedeagus shorter (1.3–1.4 mm), length of cornutus corresponding to that of the new species but twice as thick: 0.22–0.27 mm, basal cornuti lacking. Ductus bursae more slender (about 0.2 mm), projection of corpus bursae towards ductus seminalis only poorly chitinised, corpus bursae with a comparatively small number (about 30–40) of small and weak spines.



Figs 3–8. 3: Male genitalia of *Idaea laszloi* Hausmann, sp. n.; 4: Male genitalia of *I. textaria* (Lederer, 1861); 5: Female genitalia of *I. laszloi* Hausmann, sp. n.; 6: Female genitalia of *I. textaria* (Lederer, 1861); 7: Male genitalia and 8th sternite of *Pseudocinglis eurata* (Prout, 1913); 8: Female genitalia of *P. eurata* (Prout, 1913)

The genitalia of the Armenian specimens figured by Vardikian (1970: 68; 1971: 45; 1985: 45, 99) seem to be identical with the new species. Dissected specimens from the Taurus Mts (S Turkey) and from Cyprus clearly belong to *Idaea textaria* (locus typicus: Antiochia, S Turkey).

Idaea laszloi sp. n. has to be inserted in the system of Sterneck (1940) into the 12th group after *Idaea textaria*.

Etymology — The species is dedicated to Gy. M. László, Budapest, a specialist of Palaearctic Geometridae.

***Brachyglossina chaspia turkmenica* Viidalepp, 1992, comb. n.**

Material examined — 21 males and females; 400–1600 m; M4–B5, Chuli, Firyuza, Ipay-Kala.

Hereto the taxa *B. turkmenica* Viidalepp, 1992, *talvei* Viidalepp, 1988 and *vartianae* Wiltshire, 1966, have always been combined with the genus *Idaea* Treitschke, 1825. Nevertheless, the genitalia of both sexes, the external morphology (e.g. the reduced proboscis), wing colour and pattern are very similar to *Brachyglossina chaspia* Brandt, 1938. Therefore these taxa are transferred to *Brachyglossina* and downgraded as a subspecies of *Brachyglossina chaspia*: *Brachyglossina chaspia vartianae* Wiltshire, 1966, comb. n., stat. n.; *Brachyglossina chaspia talvei* Viidalepp, 1988, comb. n., stat. n., *Brachyglossina chaspia turkmenica* Viidalepp, 1992, comb. n.

Brachyglossina chaspia talvei and *vartianae* seem to be very closely related to each other, since the male genital apparatuses are identical. *B. c. turkmenica* differs from both by the bright orange wing colour, which is more whitish of *talvei* and *vartianae*. The aedeagus of *B. c. turkmenica* has four cornuti, only exceptionally three. *B. c. vartianae* and *B. c. talvei* have only two cornuti in the aedeagus. There is no further remarkable differences in male genitalia. One couple of *Brachyglossina chaspia* from the original material of Brandt has been also examined: the wing pattern, which is much vaguer in the nominate subspecies, seem to be the only constant differential feature to *B. c. turkmenica*. Aedeagus with three cornuti. There is no constant difference in the female genitalia features. Further studies on more extensive material are necessary to verify the variability of the nominate subspecies.

***Pseudocinglis eurata* (Prout, 1913)**

(Figs 2, 7–8)

Material examined — Firyuza (9 males and females; 400–800 m; E6; B–E8)

Hitherto only the holotype (♂) was known (deposited in the "Zoological Museum of Humboldt University, Berlin". Its morphology has been extensively discussed by Hausmann (1994: 206f). The diagnosis completed as follows: habitus – wing colour white while in *Pseudocinglis benigna* Brandt, 1941 sandy coloured). Forewing with three distinct costal spots (in *P. benigna* vague), marginal area of female forewings brighter than in the female of *P. benigna*. On the Turkmenian specimens the black spot of the antemedian line at the inner margin of the forewing is absent (in *P. b. nigromaculata* Hausmann, 1994 distinct). The underside of wings white, lustrous; median shadow, postmedian line, marginal area and costal spots strongly marked, veins darker. The underside of wings in *P. benigna* and its subspecies sandy coloured, slightly lustrous, pattern weakly contrasted only.

Description — Male genitalia (Fig. 7): Right lateral processus (ceras) of sternite 8 well-developed, however, missing in one of the three dissected males. Sacculus tapering. Cornutus terminally slightly curved. Sternite 8 in *P. benigna* broader.

Female genitalia (Fig. 8): Chitinisation of lamella antevaginalis ("vaginal plate") circular. Caudal chitinisation of corpus bursae covering upper half of corpus bursae (in *P. benigna* less than 1/2). In addition there is a chitinous arrow-head shaped ribbon (signum) in the oral part of corpus bursae, this plate is lacking in all other taxa of the genus.

Remarks — A female paratype of *Scopula amseli* Wiltshire, 1967 (genitalia: pl. VII, figs 11, 11a) has been examined. This taxon has to be transferred to the genus *Pseudocinglis*. Habitus strikingly similar to *Pseudocinglis benigna benigna* from Baluchistan. Shape of wings a little bit more rounded, patterns on the underside of wings slightly more contrasted. Subject to further investigations on the base of more extensive material better to be downgraded to subspecies rank: *Pseudocinglis benigna amseli* (Wiltshire, 1967), comb. n., stat. n.

Pseudocinglis falcovitshi Viidalepp, 1992, comb. n. ("*falcovitzi*" and "*falcovitshi*" = incorrect subsequent spellings in Viidalepp *et al.* 1992) belongs to the genus *Pseudocinglis*. Its justification as a separate species with regard to *Pseudocinglis eurata* needs confirmation.

***Scopula ansulata* (Lederer, 1871)**

Material examined — Chuli, Firyuza, Ipay-Kala (14 males and females; 400–800 m; E4–E5, E6)

The locus typicus of *Scopula ansulata* is Astrabad, NE Iran, only about 200 km from the above-mentioned Turkmenian localities. *Scopula eberti* Wiltshire, 1967 has been described from Sarobi, Eastern Afghanistan. To date both taxa have been considered as separate species. The diagnosis in Viidalepp *et al.* (1992: 101) was based mainly on structural differences of the male sternite 8. According to Viidalepp *et al.* (l. c.) both "species" occur sympatrically in Turkmenistan.

The specimens from Turkmenistan show remarkable diversity in wing pattern and colour: Sometimes wing colour is brown instead of grey, sometimes the cell spot of the forewing is broadly encircled. In male genitalia both "types" mentioned by Viidalepp *et al.* (l. c.) have been found: in three out of five dissected males right lateral processus ("ceras") of sternite 8 slightly curved inwards in distal part, length about 1.2 mm. In both other males strongly curved inwards (at an angle of about 90°) over the margin of the caudal chitinous lobe of sternite 8 ("mappa"), length about 0.8 mm only. There is however no correlation between this feature and any other differential feature in habitus, in external or genital morphology. In case of the species of the closely related genera *Scopula* and *Glossotrophia* there are nearly 20 taxa known with polymorphisms within the populations in the structure of sternite 8 (Hausmann 1997b). Therefore, the structural differences in sternite 8 are not indicating a different taxon, but rather a polymorphism within the population. In the Turkmenian populations the right ceras always broad and strongly spinulous.

A series of dissected specimens from Central and Eastern Afghanistan with sternite 8 has long straight right cerata without exceptions. Furthermore, these cerata are more slender and distally less spinulous than in the typical *Scopula ansulata*. In external morphology there are no constant differences. The above mentioned characteristics concerning the right ceras of sternite 8 are sufficient to define taxonomic diversity. Since the

structure of sternite 8 is the only valuable diagnostic feature one should not consider *Scopula eberti* from Afghanistan as a separate species but rather subspecies of *Scopula ansulata*: *Scopula ansulata eberti* Wiltshire, 1967, stat. n. *Scopula eberti* has to be cancelled from the fauna of Turkmenistan.

***Scopula transcaspica* Prout, 1939, stat. n.**

Material examined — Ipay-Kala, Firyuza, Germob (28 males and females; 400–1600 m; E4–E5; E6–B7, M–E8)

Viidalepp *et al.* (1992: 103) considered it as a subspecies of *Scopula submutata* (Treitschke, 1828). Since there are remarkable diagnostic features in habitus (see Prout 1939) and in genitalia, species rank has to be postulated for *transcaspica*. Left ceras of *Scopula submutata* is always rudimentary (no polymorphism!), in *Scopula transcaspica* never. In the latter, the caudal margin of mappa and the basis of sternite 8 are much more rounded. Within the population the polymorphism of cerata is characteristic for the Turkmenian populations of *Scopula transcaspica*. Eight out of the 12 dissected males the left ceras of sternite 8 is shortened by about 1/4 of total length and distinctly curved inwards. Sternite 8 in the case of the other four specimens is symmetrical, with two long, only slightly curved cerata. This polymorphism is extensively discussed by Hausmann (1997b). Vardikian (1970: pl. 2 fig. 3) demonstrated the asymmetrical type of genitalia (erroneously) under the name "*Scopula submutata* Tr.". In the female the genitalia differ from *Scopula submutata* in the shape of the vaginal plate (in *Scopula transcaspica* smoothly bordered, round, concave only caudally).

Fifty-four Turkish specimens of *Scopula transcaspica* have been examined from Elazig and Gürün (Central Turkey), Hakkari (Eastern Turkey), and Urfa (Southern Turkey). New for the fauna of Turkey.

***Scopula beckeraria* (Lederer, 1853)**

Material examined — Chuli, Dushak, Ipay-Kala, Sayvana, Ashkhabad, Firyuza, Nochur, Germob, Parkhay (73 males and females; 100–1600 m; M–E4, E6–B7, B–E8, E9–B10)

Clearly different from *S. b. assimilaria* Staudinger, 1901 (see also Viidalepp *et al.* 1992: 104). Male genitalia well correspond to those of the nominate subspecies. Cerata of sternite 8 slightly shorter, in *S. b. assimilaria* both fairly short (rudimentary). In specimens from Central Turkmenistan cerata are usually somewhat shorter and more strongly curved than in NW Turkmenistan. Furthermore, the Central Turkmenian specimens are usually darker with stronger marked forewing pattern.

FAUNISTICAL DATA

***Idaea lucellata* (Püngeler, 1892)** — Dushak, Ipay-Kala (23 males and females; 1500–1600 m; B–E8)

***Idaea ossiculata* (Lederer, 1871)** — Dushak, Ipay-Kala (13 males and females; 1500–2300 m; E6–B7)

***Idaea ochrata* (Scopoli, 1763)** — Sayvana (1 male; 1000 m; E6)

Idaea rusticata ([Denis et Schiffermüller], 1775) — Firyuza, Ipay-Kala (3 males and females; 400–1500 m; E6–B7)

Idaea moniliata ([Denis et Schiffermüller], 1775) — Ipay-Kala, Sayvana (23 males and females; 800–1800 m; E6–B7)

Idaea elongaria (Rambur, 1833) — Dushak, Ipay-Kala, Chuli (10 males and females; 700–1600 m; B8–E8)

Idaea peluraria (Reisser, 1939) — Chuli, Firyuza (29 males and females; 400–800 m; E6–B7), Dushak (1 male; 1500 m; B8). New for the fauna of Turkmenistan, see also Hausmann (1995: 86).

Idaea obsoletaria rufularia (Herrich-Schäffer, 1847) — Ipay-Kala, Chuli, Sayvana (38 males and females; 700–1500 m; E6–B7)

Idaea descitaria (Christoph, 1893) — Dushak, Sayvana (4 males and females; 1800–2300 m; E6–B7)

Idaea mancipiata repagulata (Prout, 1913) — Ashkhabad (1 male; 100 m; B8)

Idaea camparia (Herrich-Schäffer, 1852) — Nochur, Firyuza (3 males and females; 400–800 m; E5; B10)

Idaea degeneraria erschoffi (Christoph, 1872) — Ipay-Kala (1 male; 1600 m; M–E8)

Idaea deversaria (Herrich-Schäffer, 1847) — Ipay-Kala (3 males and females; 800–1500 m; E6–B7)

Scopula ornata (Scopoli, 1763) — Ipay-Kala (5 males and females; 1600 m; M–E8)

Scopula turbidaria (Hübner, [1819]) — Ashkhabad (1 male; 100 m; B8)

Scopula marginepunctata (Goeze, 1781) — Dushak, Ipay-Kala, Firyuza, Aldere, Germob (90 males and females; 1000–2300 m; M4, E5, E6–B7, M–E8)

Glossotrophia semitata ariana Ebert, 1965 — Chuli, Firyuza, Sayvana, Ipay-Kala, Parkhay (31 males and females; 400–1800 m; E6–B7, M–E8, B10)

Rhodostrophia terrestraria pellationaria (Christoph, 1885) — Dushak (10 males and females; 2300 m; B7)

Rhodostrophia praecisaria (Staudinger, 1892) — Ipay-Kala, Dushak, Sayvana (15 males and females; 1000–2300 m; E6–B7, M–E8)

Rhodostrophia cuprinaria (Christoph, 1887) — Chuli, Ipay-Kala, Firyuza (10 males and females; 400–1600 m; E6–B7, M–E8). Remarks: Some specimens habitually resembling *Rhodostrophia peripheres* Prout, 1938, their genitalia, however, clearly showing conspecificity with *Rhodostrophia cuprinaria*.

Cyclophora albiocellaria (Hübner, 1789) — Chuli, Ipay-Kala (9 males and females; 700–1600 m; M–E8)

Rhodometra sacraria (Linnaeus, 1767) — Chuli (2 male and female; 700–800 m; B8)

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