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New taxa of Autophila Hübner, 1823 from Central Asia. Studies on the genus Autophila Hübner, 1823, part VI (Lepidoptera: Noctuidae, Catocalinae)

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Abstract – Autophila turcomana sp. n. (Turkmenistan), Autophila gabrieli sp. n. (Pakistan) and Autophila asiatica megasiatica ssp. n. (Pakistan) are described. With 34 figures.

Key words - Autophila, new species, taxonomy, Central Asia.

INTRODUCTION

The basic knowledge about the species richness of the genus *Autophila* HÜB-NER, [1823] was established principally by the fundamental works of BOURSIN (1940, 1947, 1955*a*, *b*, 1963, 1967), WILTSHIRE (1952, 1975) and by the descriptions of the author of the present paper and his co-authors (RONKAY 1986, 1989, BENEDEK & RONKAY 2001, FIBIGER & RONKAY 1991, HACKER & RONKAY 1990, RONKAY & TARMANN 1988). The taxonomic placement and the phylogenetic relationships of the genus was discussed by BOURSIN (1955), DUFAY (1976) and RONKAY (1986); the modern view on the phylogenetic connections of the *Autophila-Apopestes-Lygephila* generic complex is provided in detail by GOATER *et al.* (2003). This last monographic work summarised the taxonomic and biogeographical information known about the European species of the genus and published an account of the described taxa.

The studies on the new *Autophila* material produced by the intensive collecting of the last fifteen years in the arid regions of the Palaearctic resulted in a considerable increase of our knowledge on the real distribution of several poorly known species (e.g. *A. hirsutula* (ALPHÉRAKY, 1893), *A. himalayica* (HAMPSON,

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1894), A. eremochroa BOURSIN, 1940, A. afghana RONKAY, 1986, etc.; these species have been formerly recorded by their type-specimens only). The new discoveries sometimes extended radically the known range of certain phyletic lines, for instance, the A. hirsutula line has long been considered as a stenochorous group, being typical of the Karakoram-Hindukush-NW Himalayas mountain system, until the surprising discovery of a third species of the species complex in the Elburs Mts (A. deleta BENEDEK et RONKAY, 2001). Most of these less known species proved, however, to be rare and only a few of them were found in larger numbers in one or more localities (e.g. A. vespertalis STAUDINGER, 1896, A. laetifica (STAU-DINGER, 1888), A. chamaephanes BOURSIN, 1940, etc.). On the other hand, the increase in the numbers of the formerly unknown taxa has been considerably declined, and only two undescribed species were discovered in the newly collected material (both belong to the A. limbata species group); this fact would indicate the limits of the species diversity of the genus. One can conclude that the true majority of the existing Autophila species has been already discovered and only a few additional taxa may be hidden in the highest ranges of the Himalayan-Tibetan range, and in the inner areas of the vast, but very poorly explored desert areas like the Takla-Makan or Baluchistan. Thus, the available taxonomic, morphological and biogeographical information about the taxa of the genus became sufficient for the general revision of Autophila, including a thorough cladistic analysis. The rather poor knowledge on the bionomy of practically all non-European species and the complete lack of molecular taxonomic data require, however, further studies before this monographic treatment.

The present paper contains, therefore, the description of two new species and a new subspecies with the systematic account of the *A. limbata* species group, while the monograph of the genus is postponed for a hopefully not very far future, and will be published after finishing the above-mentioned studies.

SYSTEMATICS

The rather diverse clade of *Autophila* s. str. called as *A. limbata* species group can be characterised by the more or less uniform external appearance of the species and certain features of the genitalia of both sexes. It comprises three larger lines (the *limbata*, the *luxuriosa*, and the *subfusca* lines), which are easily distinguished by certain apomorphic features of the male genitalia.

The adults have slender, relatively long body and broad, apically finely rounded wings; the forewing ground colour is ochreous, yellowish-grey or ochreous-grey, rarely orange-brownish, with the characteristic wing pattern consisting of more or less conspicuous, strongly sinuous dark crosslines, lunulate or discoidal reniform stigma and variably strongly darkened marginal area. The hindwings are whitish- or ochreous-grey with strong(er) and wide dark marginal suffusion and usually weaker basal dark irroration, recognisable, although usually diffuse crossline and often with weak but visible discal spot. The brilliantly shining underside of both wings is ochreous or orange-ochreous with most often broad and dark marginal area, and with clearly visible discal spots; the hindwing discal spot may be reduced.

The diagnostic features of the genitalia are the 1) long, slender, dorsally not cristate uncus; 2) long, narrow tegumen; 3) presence of falcate or bar-shaped penicular lobes (in two of the three subgroups, fully reduced in the subfusca line; it is a synapomorphy of the *limbata* and the *libanotica* groups); 4) sacculus narrow, sclerotised, extending distally towards apical section of valva; 5) basal (proximal) ampullar process ("editum") large, triangular or lobate, directed backwards to tegumen and most often surpassing costal margin of valva (autapomorphy of the species group); 6) sclerotised distal part of ampulla-harpe complex flattened, rounded or slightly bilobate with fine medial (medio-lateral) fold; symmetrical (*limbata* line) or variably strongly asymmetrical (*luxuriosa* line and certain species of the subfusca line); 7) aedeagus shortened, with sclerotised, rather beak- or wedge-shaped ventral plate of carina penis (autapomorphy of the species group); 8) vesica multidiverticulate, everted dorsally (or dorso-laterally), main part of vesica with largest diverticula recurved dorsad towards sinus penis; 9) ostium bursae with sclerotised plate and/or with drop-shaped or pendulous sclerotised dorsal appendix ("ligula"); 10) ductus bursae not or only partly sclerotised; 11) corpus bursae elliptical-ovoid; with well-developed, sclerotised, ribbon-like or falciform signum.

The distinctive features of the three lineages are the presence or reduction of the peniculi and the dyssymmetrisation of the dorso-apical part of the ampulla-harpe complex. The *limbata*-, and the *luxuriosa* lines have penicular lobes, the peniculi are fully reduced in the species of the *subfusca* line. The distal sclerotised (erect) part of the ampulla-harpe complex of the *limbata* line is entirely symmetrical (or only slightly asymmetrical), those are conspicuously asymmetrical in the *luxuriosa* line. It is worth mentioning that all but one species of the *subfusca* line have also symmetrical or weakly asymmetrical distal processi, the only exception is *A. laetifica* (see the Figs 27–28).

The female genitalia of the *limbata* and the *luxuriosa* lines can be distinguished by the structure of the proximal third of the ductus bursae: this part of the ductus is broader and more sclerotised in the species of the *limbata* line while the entire ductus of the members of the *luxuriosa* line is mainly membranous, with fine

scobination at the proximal half only. Moreover, the signum of the taxa of the *luxuriosa* line is remarkably stronger, broader and falciform than most species of the *limbata* line.

The female genitalia of the *luxuriosa* and the *subfusca* lines are hardly separable at subgroup level, due to the remarkable differences between the shape and size of the signum of *A. subfusca* and the other members of the *subfusca* line: the signum of the species of the *luxuriosa* line and *A. subfusca* is broad and rather short, falcate or arcuate, that of the other members of the *subfusca* line is much longer and narrower, ribbon-like.

The basic configuration of the genitalia is rather homogeneous within the actual lineages, the specific differences are found in the shape and size of the penicular lobes, the harpe-ampulla-complex, the carina penis and the diverticula of the vesica (males); the shape and size of the ostial ligula and the signum and the sclerotisation of the proximal part of the ductus bursae.

The two newly discovered species belong to two different subgroups: *A. gabrieli* is the largest, easternmost member of the *luxuriosa* line, while *A. turcomana* is a close relative of *A. subfusca*. Thus, their diagnoses contain the detailed comparison of the new taxa with the other species of the given line. The revised list of the *A. limbata* species group is presented below:

A. limbata line

banghaasi banghaasi BOURSIN, 1940 banghaasi geghardica RONKAY, 1989 sinesafida WILTSHIRE, 1952 iranica iranica RONKAY, 1989 iranica xanthozona FIBIGER et RONKAY, 1991 limbata limbata (STAUDINGER, 1871) limbata lydia FIBIGER et RONKAY, 1991

A. luxuriosa line

luxuriosa luxuriosa ZERNY, 1933 (= syn. einsleri AMSEL, 1935)
luxuriosa. cyprogena BOURSIN, 1940
luxuriosa taurica BOURSIN, 1940
luxuriosa nigromarginata SCHWINGENSCHUSS, 1939 (= syn. elbursica BOURSIN, 1940)
luxuriosa clara WILTSHIRE, 1952
luxuriosa hormuza WILTSHIRE, 1977
luxuriosa. arnyekolta RONKAY, VARGA et HREBLAY, 1998

eurytaenia BOURSIN, 1963 *gabrieli* **sp. n.**

A. subfusca line

eremochroa BOURSIN, 1940 xena RONKAY, 1986 xenomima RONKAY, 1989 subfusca subfusca (CHRISTOPH, 1893) subfusca latistria RONKAY, 1989 subfusca brandti RONKAY, 1989 turcomana **sp. n.** laetifica (STAUDINGER, 1888) cryptica RONKAY, 1986

DESCRIPTIONS OF THE NEW TAXA

Autophila gabrieli sp. n.

(Figs 1–2, 11–12)

Type material – Holotype: male, "Pakistan, Hindukush Mts, Darkot, 2700 m, 73°25'E, 36°39,6'N, 9–10.VIII.1998, leg. G. Ronkay & Z. Varga"; slide No. RL6745 RONKAY (coll. G. RONKAY, deposited in the HNHM, Budapest). Paratypes. Pakistan: 1 female, "Karakoram Mts, Naltar valley, 5 km E of Naltar village, 2300 m, 19.IV.1999, leg. B. Benedek & A. Szabó", slide No. RL8543 (coll. HNHM, Budapest); 1 female, "Karakoram Mts, Naltar valley, 2800 m, 74°12'E, 36°09,6'N, 14.VIII.1998, leg. G. Ronkay & Z. Varga" (coll. G. RONKAY, Budapest).

Diagnosis – The new species is the largest member of the *luxuriosa* line and one of the largest (if not the largest) taxa of the entire *limbata*-group. It is most similar externally to the dark specimens of *A. iranica* and *A. eurytaenia*, but is in general remarkably darker and the forewing pattern is more contrasting on both surfaces.

The male genitalia are characterised by the strongly asymmetrical apical processi of the ampulla-harpe complex, the short, broad-based peniculi, the shortened and recurved basal ampullar extension (editum), the well-developed, strongly dentate dorso-lateral plate of the carina penis at right side and the large posterior diverticulum of the vesica with large dorsal field of cornuti consisting of small but strong, pyramidal teeth. The specific features of the female genitalia are the large, button-like sclerotised dorsal plate (ligula) of the ostium bursae, the relatively strongly sclerotised and wrinkled-rugose appendix bursae and the medium-long and strong, only slightly arched signum of the corpus bursae.



Figs 1–8. *Autophila* imagoes. 1-2 = A. *gabrieli* sp. n., 1 = holotype, male, 2 = paratype, female; both from Pakistan. 3-4 = A. *xena* RONKAY, 1986, 3 = male, Tadjikistan, 4 = female, Afghanistan. 5 = A. *turcomana* sp. n., holotype male, Turkmenistan. 6 = A. *cryptica* RONKAY, 1986, female, Turkmenistan. 7-8 = A. *asiatica megasiatica* ssp. n., 7 = holotype male, 8 = paratype female; both from Pakistan.



Figs 9–12. 9-10 = Autophila asiatica (STAUDINGER, 1888), 9 = male, 10 = female; both from Turkmenistan. 11 = A. gabrieli sp. n., holotype. Male genitalia (a, b) and abdominal segments (c), 12 = paratype. Female genitalia (a) and abdominal segments (b)

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The male genitalia of *A. gabrieli* (Fig. 11) differ from those of *A. luxuriosa* (Fig. 13) and *A. eurytaenia* (Fig. 15) by their more asymmetrical apical processi, the left process is fused into a large, apically pointed half-cone while the right one is small, flattened, more or less M-shaped, without markedly longer inner lobe; the apically strongly pointed and finely curved editum, the rather triangular, straight penicular lobes and the presence of the dorso-lateral dentated plate of the carina. These are the main differences, but the valval shape and the diverticula-complex of the vesica are also different (see the Figs 11, 13, 15). The male genitalia of the externally most similar *A. iranica* (with its subspecies *xanthozona*, Figs 16, 18) have more or less symmetrical and remarkably larger apical processi, much longer, arcuate peniculi, shorter, straight triangular editum and the dentation of the carina is more extensive, covering a broad zone of the ventral and lateral surfaces.

The main distinctive feature of the female genitalia of *A. gabrieli* (Fig. 12) is the shape of the signum, which is medium-sized and only slightly arcuate, while those of *A. luxuriosa* (Fig. 14) and *A. eurytaenia* are remarkably larger and thicker, much more falcate. The proximal portion of the ductus bursae of the new species is less sclerotised, than in the related two species and the appendix bursae is somewhat larger, more intensely scobinate-granulate and more wrinkled-rugose. The female genitalia of *A. iranica* (Fig. 17) differ from the three above-mentioned species by the lack of the ligula, it is substituted by a flat, sclerotised lamina, the sclerotisation of the ductus bursae is much stronger than in the members of the *luxuriosa* line, while the shape of the signum is similar to that of *A. gabrieli*, but is shorter and weaker in sclerotisation.

Description - Sexes similar. Wingspan 44-46 mm, length of forewing 20-21 mm. Head and thorax ochreous-grey, irrorated with dark blackish-grey hair-scales; abdomen much paler, shiny whitish olive-grey, with a few darker hairs only. Forewing elongated, relatively broad, with apex finely pointed, outer margin strongly arcuate. Ground colour bright greyish-ochreous, basal and median fields irrorated strongly with dark olive-grey, outer two-thirds of marginal area suffused with blackish-brown. Subbasal, antemedial and postmedial crosslines well-developed and conspicuous, but partially diffuse, strongly sinuous, dark brown-grey; median fascia similarly dark and sinuous, interrupted, missing from inner part of cell. Orbicular stigma a minute dark dot, reniform stigma large, more or less lunulate. Inner third of marginal field bright ochreous, palest part of wing; subterminal line poorly visible, fine, interrupted, waved ochreous-white line. Apical patch and terminal line ochreous with a fine orange shade, former small, quadrangular, latter fine, continuous; cilia also ochreous, chequered with dark brown. Hindwing rounded, ground colour shining ochreous-white, irrorated strongly with dark olive-grey and brown scales. Discal spot tiny, shadow-like; transverse line broad, diffuse, angled inwards at anal vein forming a dark streak along anal vein. Marginal suffusion broad, dark greyish brown; cilia ochreous-yellow, chequered with dark grey-brown. Underside of both wings brilliant milky-ochreous, inner area of forewing irrorated by brown scales. Transverse lines present on both wings but diffuse and interrupted; discal spots present, small; marginal suffusion very broad and dense, blackish-brown.



Figs 13–15. 13–14 = *Autophila luxuriosa arnyekolta* RONKAY, VARGA et HREBLAY, 1998, paratype, Turkmenistan: 13a–b = male genitalia, 14 = female genitalia. 15a–b = *Autophila eurytaenia* BOURSIN, 1963, Iran. Male genitalia



Figs 16–18. *Autophila iranica* RONKAY, 1989, paratype, Iran. 16a–b = Male genitalia, 17 = Female genitalia. 18a–b = *A. iranica xanthozona* FIBIGER & RONKAY, 1991, holotype, Turkey. Male genitalia

Male genitalia (Fig. 12). Uncus medium-long, strong, curved near base, then nearly straight, and tapered towards finely hooked apex. Tegumen long, narrow, peniculi well-developed but short, rather triangular with broad base and straight distal extension; vinculum short, wide quadrangular. Valvae with apical processi strongly asymmetrical; valva elongated, distally rather quadrangular with rounded apex, narrowed towards base; sacculus long, narrow, sclerotised, with short and fine medial crest at base of editum. Editum broadly triangular, its apex somewhat recurved and pointed, densely covered with sensory setae. Left valva with broad and relatively short, pointed, more or less half-cone-like apical process of ampulla-harpe complex, this process is considerably smaller, almost flattened (only slightly arched) and rather quadrangular with fine, short postero-apical extensions producing an M-shaped contour. Aedeagus long, tubular, slightly constricted at middle; sinus penis elongated, basally rounded. Ventral edge of carina penis rather beak-shaped, with a few minute teeth at middle. Vesica everted dorsally, composed from four variably shaped basal and medial diverticula and a large posterior diverticulum; two of the basal diverticula covered by numerous fine spiculi, dorsal surface of large diverticulum by a large number of stronger, pointed teeth.

Female genitalia (Fig. 17). Ovipositor medium-long, broad, rather weakly sclerotised; papillae anales densely hairy; apophyses slender, straight, long. Antrum shortly funnel-shaped, membranous; ostium bursae with broad, rounded, button- (or lentil-) shaped, sclerotised dorsal plate (ligula). Ductus bursae wide and short, somewhat tapering posteriorly, most parts soft and membranous, anterior section of ventral surface with fine sclerotised patches fused into a larger but diffuse plate. Ap pendix bursae lerge, subconical, strongly folded-rugose, with fine but clearly recognisably sclerotisation; corpus bursae subspherical-ovoid, membranous. Signum medium-long, strong, crescentic, only slightly arcuate, situated ventrally at two-thirds. Eighth sternite with bilobed lodix plate, its sinus widely U-shaped; eighth tergite broadly calyculate with straight posterior margin and very fine median suture.

Bionomics – Poorly known. Two freshly emerged specimens were found in the midsummer period, the third, similarly fresh-looking female was collected just after the melting of the snow in April. According to the bionomic data of the other members of the genus, the moth appears at the early summer, but aestivates and becomes active in the second part of the summer, then hibernates and re-emerges in early spring. They inhabit the medium-high, xerotherm rocky slopes; the moths were collected at light. Nothing is known about the early stages, the supposed foodplants are *Astragalus* species growing densely at the collecting sites.

Distribution – The species is found in the eastern part of the Pakistani Hindukush (close to the Wakhan area) and the Naltar valley in the western Karakoram.

Autophila turcomana sp. n. (Figs 5, 19)

Type material – Holotype: male, "Turkmenistan, Kugitang-Tau Mts, 500–600 m, 6 km SW of Bazar-Tepe, 66°30'E, 37°50'N, 16–19.V.1991, No. L22, leg. M. Hreblay & G. Ronkay", slide No. RL5962 RONKAY (coll. G. RONKAY, deposited in the HNHM, Budapest).

Diagnosis – The new species resembles externally mostly to a pale *A*. *laetifica*, or a distinctly marked *A*. *cryptica*. *Autophila turcomana* is smaller and more narrow-winged than *A*. *xena* and *A*. *xenomima*, and the postmedial line is remarkably more sinuous; it is somewhat larger than *A*. *eremochroa* with less contrasting forewing markings.

The male genitalia show easily recognisable differences when compared with those of the other members of the *subfusca* line. The specific autapomorphy of *A*. *turcomana* (Fig. 19) is the virtually symmetrical, very long, reversed triangular



Figs 19–20. 19a–b = *Autophila turcomana* sp. n., holotype. Male genitalia. 20a–b = *A. subfusca* (CHRISTOPH, 1893), Turkmenistan. Male genitalia

and partly folded apical process of the ampulla-harpe complex, no other species of the *subfusca* line have similar structure. These processi are similar to those of *A*. *iranica* (but are considerably slenderer and longer) and *A*. *luxuriosa*, but they are



Figs 21–22. *Autophila subfusca brandti* RONKAY, 1989, Iran: 21a–b = Male genitalia, 22a–b = Female genitalia

conspicuously asymmetrical in the latter species. The members of the *subfusca* line have either symmetrical but much shorter and narrowly bar-like or strongly asymmetrical and large, heavily sclerotised processi (see Figs 20–21, 23, 25, 27–28).

Description – Wingspan 34 mm, length of forewing 17 mm. Head and thorax olive-ochreous, irrorated with a few dark blackish-grey hair-scales. Forewing elongated, relatively narrow, with apex finely pointed, outer margin strongly arcuate. Ground colour bright sandy ochreous, basal and me-



Figs 23–24. *Autophila xena* RONKAY, 1986 23 = Tadjikistan. Male genitalia (a, b) and abdominal segments (c), 24 = Afghanistan. Female genitalia (a) and abdominal segments (b)

dian fields sparsely irrorated with dark grey, outer half of marginal area partly suffused with dark grey-brown. Subbasal, antemedial and postmedial crosslines conspicuous, relatively sharply defined, strongly sinuous, dark brown; median fascia represented by dark costal patch and a fine shadow be-low cell. Orbicular stigma minute; reniform stigma large, more or less lunulate with drop-shaped lower half. Inner third of marginal field bright ochreous; subterminal line strongly sinuous, defined mostly by its conspicuous dark brown definition at inner side. Apical patch very small, ochreous; terminal line and cilia orange-ochreous, latter chequered with dark brown. Hindwing rounded, ground colour shiny ochreous-white, irrorated with dark olive-grey and brown; discal spot absent; transverse line diffuse, shadow-like. Marginal suffusion broad, dark greyish brown; cilia ochreous-orange, with a few dark grey-brown hair-scales. Underside of both wings brilliant orange-ochreous, forewing with transverse line represented by its costal patch; discal spot very pale, shadow-like; marginal suffusion



Fig. 25. Autophila cryptica RONKAY, 1986, Turkmenistan. Male genitalia and abdominal segments

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Figs 26–27. 26 = *Autophila cryptica* RONKAY, 1986, Turkmenistan. Female genitalia and abdominal segments. 27 = *A. laetifica* (STAUDINGER, 1888), Turkmenistan. Male genitalia (a–b) and abdominal segments (c)

very broad and dense, blackish-brown. Hindwing with relatively broad dark marginal area; discal spot and transverse line absent.

Male genitalia (Fig. 19). Uncus long, strong, curved near base, then nearly straight, somewhat thickened distally then tapered towards finely hooked apex. Tegumen long, narrow, peniculi absent;



Figs 28–29. *Autophila laetifica* (STAUDINGER, 1888), Turkmenistan. 28a–b = Male genitalia. 29 = Female genitalia (a–b) and abdominal segments (c)



Figs 30–31. *Autophila asiatica* (STAUDINGER, 1888): 30a–c = Kazakhstan. Male genitalia, 31a–c = Turkmenistan. Female genitalia

vinculum medium-long, quadrangular. Valvae with processi almost symmetrical; elongated, distally rounded, narrowed towards base by inward curvature of costa; sacculus long, narrow, sclerotised, with short medial crest at base of editum. Basal ampullar process (editum) long, narrow triangular with pointed apex, apical process of ampulla-harpe complex large, elongated and medially slightly folded, its apical section enlarged forming triangular plate. Aedeagus tubular, slightly constricted at middle; sinus penis rounded, ventral edge of carina penis rather beak-shaped, with a few minute teeth at middle. Vesica everted dorsally, consists of six diverticula, three smaller ones (a subbasal and two subapical) and the large posterior diverticulum covered with a large number of fine, pointed teeth.

Bionomics – Poorly known. The unique type specimen is supposedly freshly emerged, collected at the middle of May at a rather low altitude of the Kugitang-Tau Mts, this period is the beginning of the summer in that area. The moth was found, together with some hundreds of specimens of *A. asiatica* (STAUDINGER, 1888) and *A. cerealis amseli* DRAUDT, 1936 inside a large shed-like house during the day. Nothing is known about the early stages and the larval food plant.

Distribution – The species is known from the Kugitang-Tau Mts, eastern Turkmenistan.

Autophila asiatica megasiatica ssp. n.

(Figs 7, 8, 32-33)

Type material – Holotype: male, "Pakistan, Himalaya Mts, Kaghan valley, Saiful Muluk, 3110 m, 73°42'E, 34°54'N, 24.VIII.1997, leg. Gy. Fábián & G. Ronkay" (coll. G. RONKAY, deposited in the HNHM, Budapest). Paratypes. Pakistan: a series of specimens from the following localities: "Himalaya Mts, Kaghan valley, Saiful Muluk, 3110 m, 73°42'E, 34°54'N, 24.VIII.1997, leg. Gy. Fábián & G. Ronkay"; "Himalaya Mts, Kaghan valley, 12 km E of Naran, Battakundi, 3200 m, 73°40'E, 34°57'N, 26.VII.1994, leg. B. Herczig, Gy. M. László & G. Ronkay"; "Himalaya Mts, Kaghan valley, 30 km S of Babusar Pass, 3500 m, 73°51'E, 35°02'N, 27.VII.1994, leg. B. Herczig, Gy. M. László & G. Ronkay"; "15 km SE of Karimabad, at Hopar glacier, 2700 m, 74°46'E, 36°11'N, 14.VI.1992, leg. M. Hreblay & G. Csorba"; "5 km E of Chorit, 2400 m, 74°46'E, 35°14'N, 2.VI.1992, leg. M. Hreblay & G. Csorba"; "5 km S of Rattu, 2550 m, 74°48'E, 35°06'N, 3–4.VI.1992, leg. M. Hreblay & G. Csorba" (coll. HNHM, Budapest). Slide Nos RL4552, RL8547 (males), RL8544, RL8548 (females).

Diagnosis – The Pakistani populations differ for the first sight from the other known *A. asiatica* populations by their very large size and broad wings (wingspan 37–45 mm, length of forewing 17–20 mm): the small specimens of *A. asiatica megasiatica* are as large or even slightly larger than the largest examples of the other Asian *A. asiatica* and the majority of the known specimens (more than 30 moths) are larger than 40 mm. The forewing pattern is generally less conspicuous than in the nominotypical *A. asiatica asiatica* (see Figs 7–10). It is important to

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note that the new subspecies is represented by two more or less isolated populations, which are easily distinguishable by their forewing colouration and pattern. The Kaghan population has even broader forewings, all known specimens are large or very large, the ground colour is typically dark olive-grey and the forewing pattern is uniformly diffuse and pale. The populations occurring in the upper part of the Indus valley and the southern Karakoram are smaller, somewhat more narrow-winged, the forewing ground colour is somewhat more brownish and the elements of the wing pattern are stronger although broadly diffuse. The genitalia of both sexes (Figs 32–33) show no remarkable differences when compared with those of the nominotypical *A. asiatica asiatica* (Figs 30–31).



Figs 32–33. Autophila asiatica megasiatica ssp. n., paratype, Pakistan. 32a–b = Male genitalia, 33 = Female genitalia



Fig. 34. Autophila cerealis amseli DRAUDT, 1936, Turkmenistan. Female genitalia

Bionomics – The Pakistani subspecies inhabits dry, hot, often prominently xerothermic rocky slopes at medium-high altitudes of the larger stream valleys of the northern and north-western Himalayas and the southern part of the Karakoram Mts. The freshly emerged moths were found in July-August while the over wintering, usually rather worn moths were collected from mid-April to mid-June. The moths are attracted to light and were collected at an illuminated white screen with portable UV-traps; no specimen was found on the sugar baits.

Distribution – The new subspecies is found along the higher areas of the Kaghan valley (a wide and long valley system in the south-western Himalayas in Pakistan) and the upper stream of the Indus (Scind) valley.

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