

Some generic changes in Arctiinae from South Eurasia with the description of three new genera

(Lepidoptera, Arctiidae)

by

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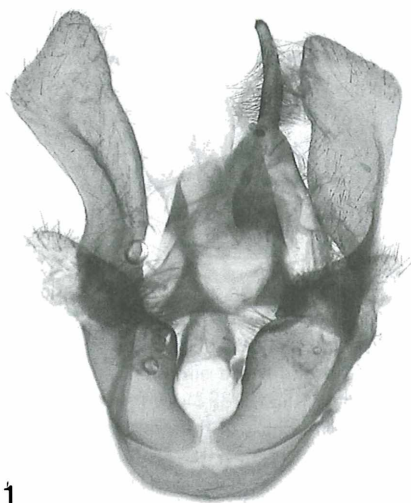
Summary: Three new genera are described. The first one, *Kishidaria* gen. nov. is proposed for *Calpenia khasiana* MOORE, 1878 (type species) and *C. zerenaria* (OBERTHÜR, 1886), occurring in South-East Himalaya to South China. Concerning wing pattern this genus is similar to *Calpenia* MOORE, 1872, but the genitalia are quite different, more similar to *Callimorpha* LATREILLE, 1809. The genera *Calpenia* MOORE and *Sebastia* KIRBY, 1892 are found to be very similar in male genitalia and should be considered as subgenera of the same genus. *Ebert-arctia* gen. nov. is described for *Ocnogyna nordstroemi* BRANDT, 1947 (type species) from Iranian Khorasan and *O. afghanicola* (EBERT, 1974) and *O. solitaria* (EBERT, 1974) from Afghanian Hindukush. According to the male genitalia structure, it does not belong to the *Ocnogyna*-genus group, but together with a sibling genus *Divarctia* DUBATOLOV, 1990, belongs to the tribe Micrarctiini. A member of the *Ocnogyna*-genus group, *Maurica bellieri* (LEDERER, 1855) should be transferred from this genus to *Ocnogyna* LEDERER, 1853 on the base of the fore legs and male genitalia structure. *O. parasita* (HÜBNER, 1790) and *O. anatolica* WITT, 1980, on the base of the male genitalia structure should be transferred to their own genus, *Somatruchia* KIRBY, 1892. The last new genus *Creataloum* gen. nov. is described for *Spilosoma arabicum* HAMPSON, 1896.

In the course of reviewing the male genitalia structure of tiger moths from the Palearctic and adjacent territories it was found that genera *Calpenia* MOORE, 1872, *Ocnogyna* LEDERER, 1853 and *Aloa* WALKER, 1855, are polymorphic, and some species seems to be not congeneric with the type species of these genera. Therefore descriptions of new genera are given below.

Kishidaria gen. nov.

Type species: *Calpenia khasiana* MOORE, 1878 (colour plate IVa, fig. 1).

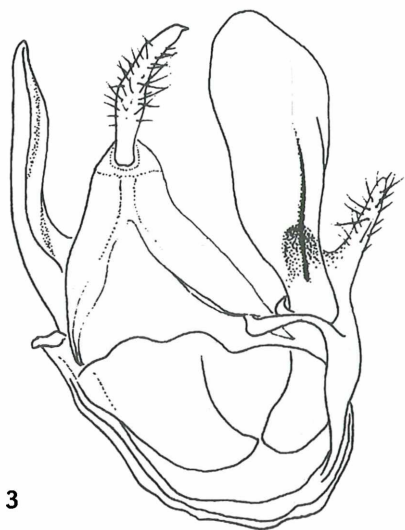
Antennae of males and females simple. Eyes large, hemispherical, naked. Proboscis thick and rather long. Fore tibia slightly shortened (not longer than a half of the femora length), triangularly pointed to apex. Thick epiphysys almost reaches the fore tibia apex. Middle tibia with one pair, hind tibiae with two slightly closed pairs of spurs. Claws with a slight incision at the middle. Vein R_1 not stalked with R_{2+5} (venation type C by SOTAVALTA, 1964), but slightly curved and touching R_{2+5} . Forewing pattern consists of a light stripe between stock Cu and vein A, a row of light postdiscal spots and two rows of small spots near external margin. Hindwings with



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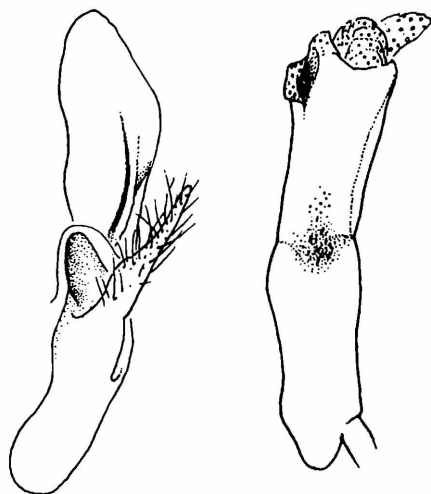


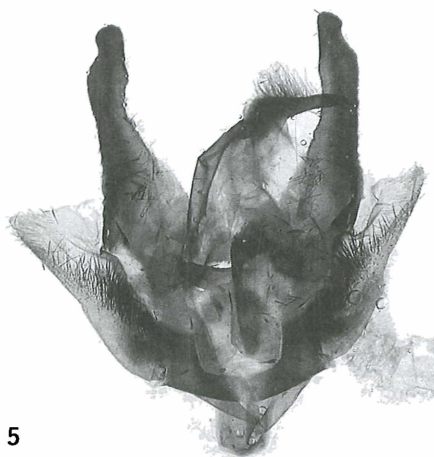
Fig. 1: Male genitalia of *Kishidaria khasiana* (MOORE, 1878), North Vietnam, Lao Cai, Sa Pa, VI.2000, native collector leg.

Fig. 2: Aedeagus of *Kishidaria khasiana* (MOORE, 1878), North Vietnam, Lao Cai, Sa Pa, VI.2000, native collector leg.

Fig. 3: Male genitalia of *Kishidaria zerenaria* (OBERTHÜR, 1886), from: FANG (2000).



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Figs. 4, 5. Male genitalia of *Calpenia saundersi* MOORE, 1872, North Laos, Xamneua, 24.IV.2000, native collector leg.

Fig. 6: Aedeagus of *Calpenia saundersi* MOORE, 1872, North Laos, Xamneua, 24.IV.2000, native collector leg.

5 rows of small dark spots in its fore half and 4 rows in its hind half, spots often fused to bands. Tympanum as a narrow fissure, covered with a convex fold behind it.

Male genitalia (figs. 1, 2). Uncus rather short, not very narrow, with short beak-like curved apex. Cucullus wide, broadened to apex. Membranose brachiolum free and long. Juxta small, sharply concave beneath. Vesica with a field of small and rare spine-like cornuti.

According to the male genitalia structure (fig. 3), the new genus includes also *C. zerenaria* (OBERTHÜR, 1886) (col. pl. IVa, fig. 2).

Distribution

From East India to South China and North Vietnam.

The genus is named in honour of Mr. YASUNORI KISHIDA (Tokyo, Japan).

Material studied

K. khasiana (MOORE, 1878). 7 ♂♂, North Vietnam, Lao Cai, Sa Pa, VI.2000, received from Y. KISHIDA.

Species of this genus formerly were placed into the genus *Calpenia* MOORE, 1872. Its type species, *C. saundersi* MOORE, 1872 (col. pl. IVa, fig. 3), has pale dark forewings with 5 rows of diffuse light spots, the outer part of hindwing is dark with two rows of light spots, and the basal half is light. The male genitalia (figs. 4–6) are quite different from all species of *Kishidaria* gen. nov.—cucullus is wide at base, curved upwards and narrowing to its apex (not widening as in *Kishidaria* gen. nov.), the brachiolum is wide at the base and triangularly narrowing to the apex (not oval as in *Kishidaria* gen. nov.), and moreover, it has a very long everting excretory gland on the valva outer side. Such an everting excretory gland on the valva outer side is found in the only other member of Callimorphini—*Sebastia argus* (WALKER, 1862) (figs. 7–9; col. pl. IVa, fig. 4); this abnormal synapomorphic character indicates a very strong affinity of *Sebastia* KIRBY, 1892 and *Calpenia* MOORE, 1872. The type species of these two monotypical taxa of generic level, have a very similar forewing venation: in *C. saundersi* MOORE vein R_1 departs from the cell apex, then is curved and touches vein R_{2+5} , while in *S. argus* WALKER (according to the wing venation published by HAMPSON, 1894), is connected at this place with vein R_{2+5} , forming the radial cell. I cannot consider such differences as those of a generic level. Nevertheless, the male genitalia structure are not very similar, *C. saundersi* MOORE has a cucullus tapering to the apex while *S. argus* WALKER has a curved cucullus with parallel sides and a bifid apex (fig. 7). The uncus structure is also different, in *C. saundersi* MOORE it is long and narrow while in *S. argus* WALKER (figs. 10, 11) it is broadened in its middle part, with a strong dorsal keel. On the other hand, the aedeagus structure is very similar in both species (figs. 6, 12): the vesica is dorsally directed and elongate, with one group of teeth-like cornuti on

Fig. 7: Male genitalia of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, lateral view; by courtesy of Dr. M. DaCOSTA.

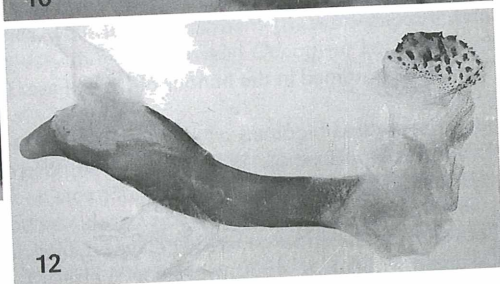
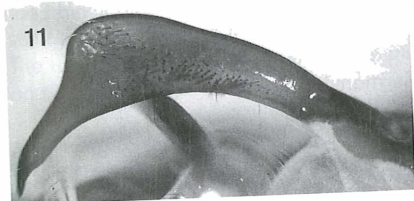
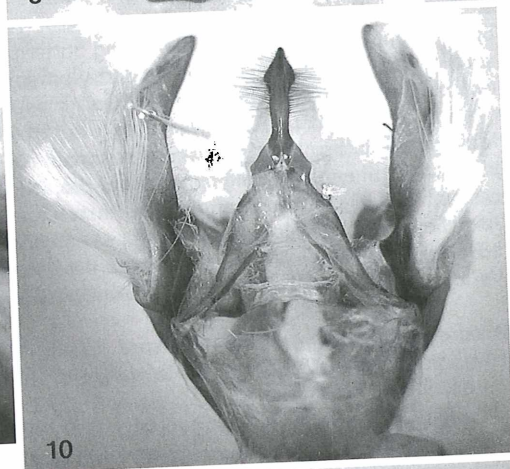
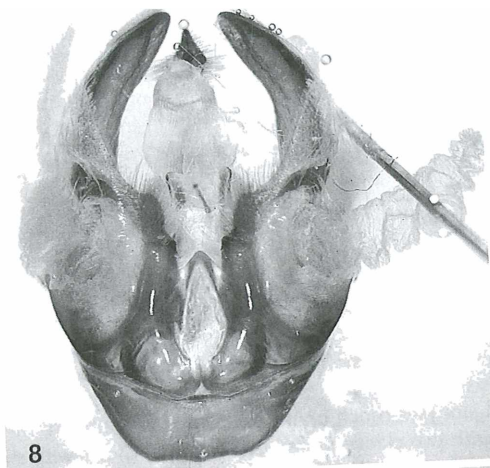
Fig. 8: Male genitalia of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, ventral view; by courtesy of Dr. M. DaCOSTA.

Fig. 9: Valva structure of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, inner side; by courtesy of Dr. M. DaCOSTA.

Fig. 10: Male genitalia of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, dorsal view; by courtesy of Dr. M. DaCOSTA.

Fig. 11: Uncus structure of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, lateral view; by courtesy of Dr. M. DaCOSTA.

Fig. 12: Aedeagus of *Calpenia (Sebastia) argus* (WALKER, 1862), India, Meghalaya, Khasi hills, lateral view; by courtesy of Dr. M. DaCOSTA.



the apex. Therefore these two taxa of generic level should be considered as subgenera of one genus, *Calpenia* MOORE. The position of *Calpenia takamukui* MATSUMURA, 1930 (col. pl. IVa, fig. 5) is not clear, because its genitalia are unknown. Nevertheless, by the wing pattern it is very similar to *S. argus* WALKER: both have many (6–8) rows of small dark spots (in *S. argus* WALKER with light nucleus) on both fore- and hindwings, so I prefer to leave this species in genus *Calpenia* MOORE, although its true position could be clear only after studying its male genitalia.

***Ebertarctia* gen. nov.**

Type species *Ocnogyna nordstroemi* BRANDT, 1947 (colour plate IVa, fig. 6).

Antennae of males bipectinate with long branches. Eyes oval, strongly convex, naked. Proboscis reduced. Fore tibia simple, not shortened, broadened to apex, without terminal spines. Epiphysys reach apical quarter of fore tibia. Middle tibia with one pair of spurs, hind tibia with two closed pairs of thick spurs. Claws with slight incision at the middle. In males vein R_2 stalked with R_{3+5} (venation type C by SOTAVALTA, 1964). Females probably with reduced wings, because only males are known. Forewing pattern consists of a big quadrangular dark discal spot, and traces of subbasal, medial and submarginal bands, which can be reduced. Tympanum with small flattened inflations.

Male genitalia (fig. 13). Uncus short, stumped at apex, sometimes slightly concave. Tegumen wide, with rather broad bulging subuncal projections. Valva with a well developed apical process; it is wide, not longer than its width, rounded at apex. Ventral edge of valva bent inside. Juxta long, noticeably longer than wide, its apical angles connected by sclerotized fasciae with bases of valval costae. Aedaeus with a field of small spines at lateral part of vesica base. Vesica with very small and slightly sclerotized spinules.

According to male genitalia structure (EBERT, 1974), the genus includes also *Ocnogyna afghanicola* EBERT, 1974 and *O. solitaria* EBERT, 1974 from Afghanistan.

Distribution

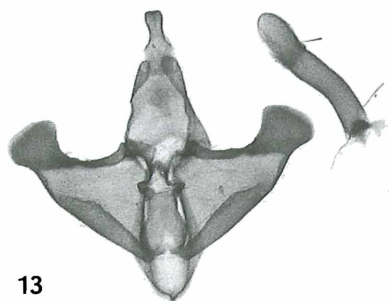
Iranian Khorasan: Binalud Range (*E. nordstroemi* BRANDT), Afghanistan (*E. afghanicola* EBERT and *E. solitaria* EBERT).

The genus is named in the honour of Dr. G. EBERT (Germany).

Material studied

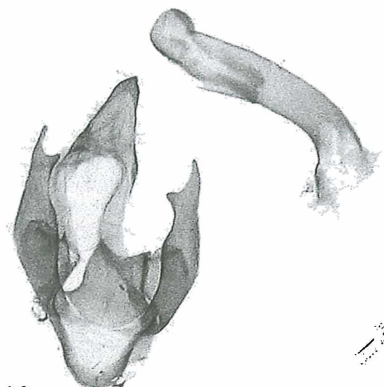
E. nordstroemi (BRANDT, 1947). 2 ♂♂, Iran, Khorassan, Kouh i Binaloud (Meched), 3300 m, 20.VII.1938, coll. BRANDT.

Between all Arctiinae genera, the new genus is mostly related to the monotypic genus *Divarctia* DUBATOLOV, 1990, with type species *D. diva* (STAUDINGER, 1887). Members of both genera have similar male genitalia (both have rhomboidal valva with a pronounced apex, the inner valva margin being bent inside), very similar body structure, and, most probably, fe-



13

Fig. 13: Male genitalia of *Ebertarctia nordstroemi* (BRANDT, 1947), Iran, Khorassan, Kouh i Binaloud (Meched), 3300 m, 20.VII.1938, BRANDT leg.



14

Fig. 14: Male genitalia of *Creataloum arabicum* (HAMPSON, 1896), Iran, Belouchistan, Bender Tchahbahar, 22.XII.1937, BRANDT leg.

males of *Ebertarctia* gen. nov. are brachypterous (because of absence of females), as well as in *D. diva* (STGR.). They differ by presence (*D. diva* STGR.) versus absence (*E. nordstroemi* BRANDT) of spines on unbroadened fore tibia, a more (*D. diva* STGR.) or less (*E. nordstroemi* BRANDT) pronounced forewing pattern, by a tapering (*D. diva* STGR.) or stumped (*E. nordstroemi* BRANDT) uncus apex, a narrow (*D. diva* STGR.) or broad (*E. nordstroemi* BRANDT) tegumen, a tapering (*D. diva* STGR.) or broadening (*E. nordstroemi* BRANDT) valva apex, absence (*D. diva* STGR.) or presence (*E. nordstroemi* BRANDT) of fasciae between juxta and valval costae, and by different juxta structure. Therefore *Ebertarctia* gen. nov. should be transferred to tribe Micrarctiini, where *Divarctia* DUBATOLOV was placed (DUBATOLOV, 1996).

The single species studied of *Ebertarctia* gen. nov., *E. nordstroemi* (BRANDT), is not a member of the *Ocnogyna*-like species. All members of *Ocnogyna* LEDERER, 1853 have fore tibiae short, very broadened toward apex and with strong naked apical spines. No such characters are found in *E. nordstroemi* (BRANDT). All *Ocnogyna* LED. species have the only one pair of spurs on the hind tibiae, while *E. nordstroemi* (BRANDT) has two pairs of spurs there. Moreover, the valvae of *Ocnogyna* are very narrow, stick-like, while in *E. nordstroemi* (BRANDT) they are wide. The tegumen and uncus structure are also very different between *Ocnogyna* LD. and *Ebertarctia* gen. nov. species.

According to the male genitalia structure, *Ocnogyna* LD. is not a homogenous genus, nevertheless many species of it have similar body and genitalia structure. Among all species studied by me, only the following set of species have an elongate valva without additional branch at its middle, and an aedeagus without sclerotized spinulose fields on vesica: *O. corsicum* (RAMBUR, 1832), *O. boeticum* (RAMBUR, 1836), *O. loewii* (ZELLER, 1846), *O. herrichi* STAUDINGER, [1879], *O. cyprica* O. BANG-HAAS, 1934, and *O. zoraida* (DE GRASLIN, [1837]). Unfortunately, two North African species—*O. pudens* (H. LUCAS, 1853) and *O. advena* (FABRICIUS, 1787), were not studied. Two other species—*O. parasita* (HÜBNER, 1790) and *O. anatolica* WITT, 1980, differ

well from the former group by a strong additional branch on the valva inner side and two fields of spinules on the vesica, and so should be transferred to their own genus, *Somatrachia* KIRBY, 1892 (= *Trichosoma* RAMBUR, 1832, nec RUDOLPH, 1819). On the other hand, *M. bellieri* (LEDERER, 1855), a species that was formerly treated as a member of the genus *Maurica* DE FREINA & WITT, 1984, exhibits strong differences from other *Maurica* species, *M. breveti* (OBERTHÜR, 1882) and *M. joiceyi* (TALBOT, 1928), in having fore tibia very short and strongly broadened towards the spine bearing apex (not simple as in other species), and having one pair (not two pairs) of spurs on hind tibia. All these characters are common with *Ocnogyna* LD. species, therefore *M. bellieri* (LEDERER, 1855) should be returned into the genus *Ocnogyna* LD.

***Creataloum* gen. nov.**

Type species: *Spilosoma arabicum* HAMPSON, 1896 (= *Spilosoma gracilis* STAUDINGER, 1899) (colour plate IVa, fig. 7).

Antennae of males biserrate. Eyes large, rounded, but not strongly convex, naked. Proboscis not long, slightly longer than head width. Fore tibia simple, not shortened and broadened to apex and without terminal spines. Epiphysys reach apical $\frac{1}{5}$ of tibium length. Middle tibia with one spur pair, hind tibia with two closed pairs of spurs. Vein R_2 stalked with R_{3+5} (venation type C by SOTAVALTA, 1964). Wings grey, forewings with small black dots forming medial, postdiscal and, partly, submarginal rows. Hindwing with few small dots. Tympanum with global inflation.

Male genitalia (fig. 14). Uncus broadly triangular. "Collar" of proximal part of tegumen poorly visible, if at all. Valvae broad at base, sharply narrowed to its middle part, its apex with two branches. Juxta not longer than its width, quadrangular, with a broadened base and concave upper edge. Aedeagus rather long, as well as vesica without any spines.

Distribution

The Near East.

The name of the genus was formed from parts of names *Cretonotos* and *Aloa*.

Material studied

1 ♂. Iran, Belouchistan, Bender Tchehbahar, 22.XII.1937 (coll. BRANDT, ZIN).

Although the species was described in the genus *Spilosoma* CURTIS, 1825 (WALSINGHAM & HAMPSON, 1896), later it was treated as a member of *Cretonotos* HÜBNER, [1819] (WILTSHIRE, 1980, 1990), and finally transferred to *Aloa* WALKER, 1855 (THOMAS & GOODGER, [1993]). Nevertheless, it differs strongly by the valva shape from species of both latter genera. In all the *Cretonotos* species the valva is very elongate, strongly curved, with a prominent apical processes of juxta, and strong teeth on aedeagus. Moreover, in *Cretonotos* species the hind tibia have only one pair of spurs, while *C. arabicum* (Hmps.) has two pairs. The valva structure of *Aloa* species is also very different: the type species, *A. lactinea* (CRAMER, 1777), has a very wide quadrangular valva with strong hairs on its inner margin. Moreover, the tympanum of this species has no such large global inflations, as in *C. arabicum* (Hmps.).

Acknowledgements

The author is very grateful to Mr. YASUNORI KISHIDA (Tokyo, Japan) for offering material *Calpenia saundersi* MOORE and *Kishidia khasiana* MOORE; to Dr. MICHELLE DACOSTA (USA) for a nice set of the male genitalia images of *Calpenia (Sebastia) argus* Wlk., to Dr. BERT GUSTAFSSON (Natural History Riksmuseet, Stockholm, Sweden) for the loan of the type specimens of *Ocnogyna nordstroemi* BRANDT, to Dr. A. L. LVOVSKY (Zoological Institute, St. Petersburg, Russia) for some information from old literature and the loan of a male specimen of *Crealoum arabicum* (Hmps.), to Dr. O. KOSTERIN (Novosibirsk, Russia) for correcting the language.

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Explanation of colour plate IVa (p. 159):

Fig. 1: *Kishidaria khasiana* (MOORE, 1878), North Vietnam, Lao Cai, Sa Pa, VI.2000, native collector leg.

Fig. 2: *Kishidaria zerenaria* (OBERTHÜR, 1886), from: FANG (1985).

Fig. 3: *Calpenia saundersi* MOORE, 1872, North Laos, Xamneua, 24.IV.2000, native collector leg.

Fig. 4: *Calpenia (Sebastia) argus* (WALKER, 1862), from: FANG (1985).

Fig. 5: *Calpenia takamukui* MATSUMURA, 1930, from: FANG (1985).

Fig. 6: *Ebertarctia nordstroemi* (BRANDT, 1947), Iran, Khorassan, Kouh i Binaloud (Meched), 3300 m, 20.VII.1938, BRANDT leg.

Fig. 7: *Creataloum arabicum* (HAMPSON, 1896), Iran, Beloutchistan, Bender Tchahbahar, 22.XII.1937, BRANDT leg.

1		2
3		4
6	7	5

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Colour plate IVa

DUBATOLOV, V. V. Some generic changes in Arctiinae from South Eurasia with the description of three new genera (Lepidoptera, Arctiidae). – *Atalanta* **35** (1/2): 73–83.

- Fig. 1: *Kishidaria khasiana* (MOORE, 1878), North Vietnam, Lao Cai, Sa Pa, VI.2000, native collector leg.
Fig. 2: *Kishidaria zerenaria* (OBERTHÜR, 1886), from: FANG (1985).
Fig. 3: *Calpenia saundersi* MOORE, 1872, North Laos, Xamneua, 24.IV.2000, native collector leg.
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Fig. 7: *Creataloum arabicum* (HAMPSON, 1896), Iran, Beloutchistan, Bender Tchehbahar, 22.XII.1937, BRANDT leg.

1		2
3		4
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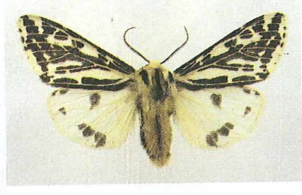
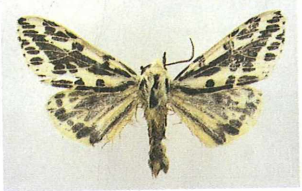
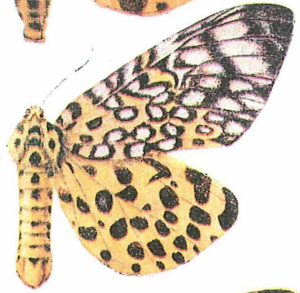
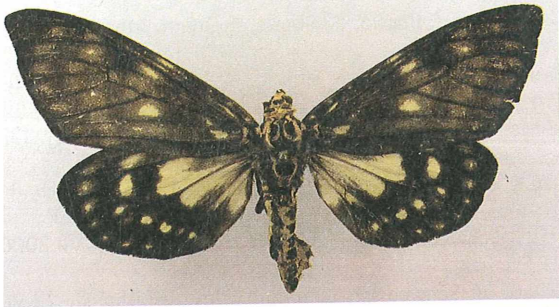
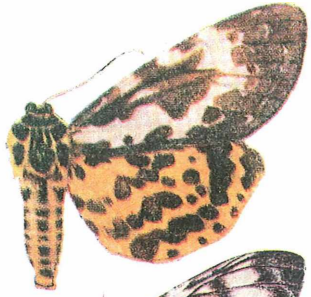
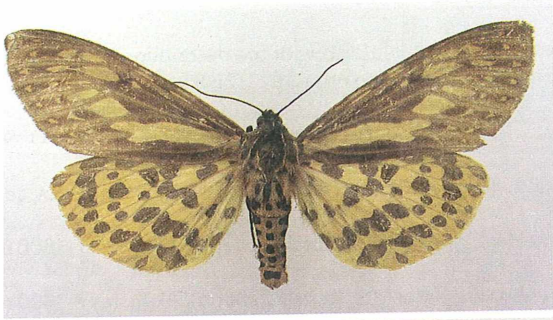
Colour plate IVb

DUBATOLOV, V. V. & V. O. GURKO: New Arctiinae species from Azad Kashmir, Pakistan (Lepidoptera, Arctiidae). – *Atalanta* **35** (1/2): 84–90.

- Fig. 1: *Oroncus (Arctoroncus) gurkoi* spec. nov., holotype ♂, Pakistan, prov. Azad Jammu & Kashmir, NW from Junkar [ca. 100 km NW from the Indian Kargil], 4400–4800 m, 10.–15.VIII.2003, V. GURKO & Co. leg.
Fig. 2: *Oroncus (Arctoroncus) gurkoi* spec. nov., paratype ♀, Pakistan, prov. Azad Jammu & Kashmir, NW from Junkar [ca. 100 km NW from the Indian Kargil], 4400–4800 m, 10.–15.VIII.2003, V. GURKO & Co. leg.
Fig. 3: *Oroncus (Arctoroncus) ladakensis* (O. BANG-HAAS, 1927), Indian Ladakh, Zanskar Range, Rangdum, 4000–5200, 21.–22.VII.2003, ♂ (leg. A. HELIA, coll. V. GURKO).
Fig. 4: *Oroncus (Arctoroncus)* spec. China, Tien Shan, river Aksu, VI.1912, RÜCKBEIL leg.
Fig. 5: *Spilarctia inayatullahi* spec. nov., holotype ♂, Pakistan, prov. Azad Jammu & Kashmir, NW from Junkar [ca. 100 km NW from the Indian Kargil], 3000–3400 m, 1.–10.VIII.2003, V. GURKO & Co. leg.
Fig. 6: *Spilarctia melanostigma* (ERSCHOFF, 1872). ♂, Kyrgyzstan, Alai Mountains, Dugoba near Jordan, 25.VI.1984, NEKRASOV leg.

1	2	5
3	4	6

Colour plate IVa/b



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