

Reviewing the African tiger-moth genera

1. New genera from the late Prof. V. S. MURZIN's collection

(Lepidoptera, Arctiidae)

by

VLADIMIR V. DUBATOLOV & PATRICK G. HAYNES

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Abstract: Based on the Arctiinae collection from the late Prof. V. S. MURZIN, and taking into account ♂ genitalia structure, three new genera and one subgenus are described.

***Monstruncusarctia* gen. nov.**, with the type species *Alpenus aurantiaca* HOLLAND, 1893, and *M. decemmaculata* (ROTHSCHILD, 1916). Monotypic ***Pareyralpenus* subgen. nov.** is established within *Eyralpenus* BUTLER, 1875 for *E. (P.) quadrilunata* (HAMPSON, 1901), formerly the genus *Spilosoma* CURTIS, 1825. ***Afromurzinia* gen. nov.**, with the type species *Spilosoma lutescens* WALKER, includes *A. sublutescens* (KIRIAKOFF, 1958) and *A. fletcheri* (KIRIAKOFF, 1958), **stat. nov., rev.** *Spilosoma semihyalina* BARTEL, 1903 is also a member of this genus, but its true status should be clarified by a more detailed study of the genitalia and examination of more specimens. ***Toulgarctia* gen. nov.**, with the type species *Diacrisia madagascariensis luteoradians* DE TOULGOËT, 1954 includes the Madagascan species: *T. vieui* (DE TOULGOËT, 1956), *T. milloti* (DE TOULGOËT, 1954), *T. vietiei* (DE TOULGOËT, 1954), *T. griveaudi* (DE TOULGOËT, 1956), *T. luteoradians* (DE TOULGOËT, 1954) with two subspecies: *T. l. jugicola* (DE TOULGOËT, 1976) and *T. l. monochroma* DE TOULGOËT, 1984. A key to the *Toulgarctia* species is given.

Following the publication of the Afrotropical Arctiinae catalogue by GOODGER & WATSON (1995), it became clear that the generic position of many species should be reviewed. DUBATOLOV (2006 a, b) described several additional new genera for the Afrotropical tiger-moths, and a continuation of this work is currently in preparation. In 2007, during the last visit to Prof. V. S. MURZIN (Moscow, Russia), the owner of one of the best Arctiinae collections in Russia, he kindly donated a number of specimens from Guinea and Madagascar for taxonomic studies. Based on ♂ genitalia structure, several species from his collection are found to be members of new genera; descriptions of them are given below.

Abbreviations for material deposited and studied:

BMNH: The Natural History Museum (London, U.K.).

MRAC: Musée Royal de l'Afrique Centrale (Tervuren, Belgium).

PGH: Mr. P. G. HAYNES' personal collection (London, U.K.).

SZMN: Siberian Zoological Museum of the Institute of Animal Systematics and Ecology, Siberian Branch of the Russian Academy of Sciences (Novosibirsk, Russia).

***Monstruncusarctia* gen. nov.**

Type species: *Alpenus aurantiaca* HOLLAND, 1893 (colour plate 15: A).

Gender: Feminine.

Etymology: The generic name consists of: „monstr“, “uncus” (referring to the monstrous structure of the uncus) and the generic name Arctia.

Description: ♂ antennae bipectinate. Eyes large, hemispherical, naked. Palpi short, porrect. Proboscis short. Foretibiae simple, narrow; middle tibiae with an apical pair, hind tibiae with two pairs of spurs equal in length to tibiae diameter. Vein R_2 of forewings is stalked with R_{3+5} (venation type C, by SOTAVALTA, 1964). Forewings yellowish or light brown, with brown spots or fasciae. Hindwings pale yellow. Tympanum with a small flattened inflation.

♂ **genitalia** (fig. 1-2): Uncus long, more or less narrow, straight, apically bifurcate, sometimes with additional arming. Valvae divided into separate sclerotized cucullus and membranous sacculus. Cucullus with a complicated widening apically, sacculus oval or crescent shape. Saccus short and broad. Aedeagus simple, without spines, straight or slightly curved. Vesica bag-like, covered by small spiniculi.

Remarks: Aside from the West African type species, the new genus also includes *Diacrisia decemmaculata* ROTHSCILD, 1916 from Zaire. Despite a difference in wing pattern, this species has very similar ♂ genitalia (see GOODGER & WATSON, 1995, figs. 139-140). It differs only by the absence of additional hooks apically on the bifurcated uncus [the uncus in the related *Eyralpenus* (fig. 4-6) is not bifurcate], by a wider cucullus with more complicated apex and a slightly curved aedeagus. The new genus has very unusual ♂ genitalia structure compared to known Arctiinae genera; only *Eyralpenus* BUTLER, 1875 might be considered as related. It also has valvae divided into cucullus and sacculus components, but the sacculus is sclerotized (apomorphic character), and the cucullus apex is not widened. Several characters might be considered as autapomorphies for the new genus: straight uncus apically bifurcate, wide and complex apical structure of the cucullus, secondary membranous sacculus. Valvae divided into cucullus and sacculus components appears to be a synapomorphy with *Eyralpenus* BTL.

Composition: *M. aurantiaca* (HOLLAND, 1893) **comb. nov.**, *M. decemmaculata* (ROTHSCILD, 1916) **comb. nov.**

Material: *Monstruncus arctia aurantiaca* HOLL. Guinée: 1 ♂, Kindia, river Tabuka, 7.X.1982, S. MURZIN leg. (SZMN); Cameroons: 1 ♂, Bitji Ja River, 2000 ft, IX-XI.[19]11, "1332 / ROTHSCILD Bequest B.M. 1939-1" (BMNH).

Eyralpenus BUTLER, 1875

Type species: *Spilosoma testacea* WALKER, 1855

Pareyralpenus **subgen. nov.**

Type species: *Spilosoma quadrilunata* HAMPSON, 1901 (colour plate 15: B).

Gender: Masculine.

Etymology: The generic name consists of two parts: the Latin word „par“ meaning equal, and the generic name *Eyralpenus* BTL.

Description: ♂ antennae bipectinate. Eyes large, hemispherical, naked. Palpi short, porrect. Proboscis twice the length of palpi. Foretibiae narrow, with two small apical spines; middle tibiae with an apical pair, hind tibiae with two pairs of spurs shorter in length than the tibiae diameter. Vein R_2 of forewings is stalked with R_{3+5} (venation type C, by SOTAVALTA, 1964). Forewings yellowish white, with black discal spots. Hindwings whitish or pale yellow. Tympanum with a small flattened inflation.

♂ genitalia (fig. 3): Uncus narrow, apically hook-like, S-shaped. Valvae divided into two parts, cucullus complicated, consisting of several ribs and a separate processus. Sacculus elongate, moderately sclerotized. Saccus broad. Aedeagus straight. Vesica bag-like, with spiniculi.

Remarks: The new subgenus belongs to the *Eyralpenus-Monstruncusarctia* genus group and is characterized by a long narrow uncus slightly widening apically, and valva divided into a separate cucullus and sacculus. It could be combined with *Eyralpenus* s. str. - not by bifurcated uncus - but by the wide apex and curved tip, a synapomorphic character, and by a broad sclerotized sacculus. Nevertheless, the cucullus structure of the new subgenus is very complicated (considered an autapomorphic character) consisting of ribs and separate processus, while in the *Eyralpenus* species (fig. 4-5) the cucullus is elongate, narrow, with a more or less curved tip. The two forms of cucullus structure appear to be different apomorphic conditions. Sacculus structure is also different in both taxa: it is broadly elongate in the new subgenus and *E. sublutea* (BARTEL, 1903) (fig. 6), and like a narrow processus in the type species and its relatives. It is likely that additional subgenera might be separated in *Eyralpenus* after studying the ♂ genitalia of other species.

Composition: *Eyralpenus* (*Pareyralpenus*) *quadrilunata* (HAMPSON, 1901) **comb. nov.**

Material: *E. (Pareyralpenus) quadrilunata* HMPs. Guinée: 2 ♂♂, 1 ♀, Kindia, river Tabuka, 26.V.1983, 3.IX.1983, 29.X.1984, S. MURZIN leg. (SZMN). *E. (Eyralpenus) testacea* Wlk. (colour plate 15: C) South Africa, KwaZulu-Natal Prov.: 1 ♂, Vernon Crookes National Reserve, 60 km SW of Durban, 23.-25.I.2008, P. USTJUZHANIN leg. (SZMN); 1 ♂, Pietermaritzburg, Ferncliff, 24.XII.2007, V. KOVTUNOVICH & P. USTJUZHANIN leg. (SZMN); 2 ♂♂, 1 ♀, Pietermaritzburg, Winterskloof, 19.I.2008, P. USTJUZHANIN leg. (SZMN); 2 ♂♂, 15 km NE of Pietermaritzburg, Cumberland National Reserve, 2.XII.2004, 20.-21.I.2008, P. USTJUZHANIN leg. (SZMN); 1 ♂, North Drakensberg, Royal Natal National Reserve, 10.XII.2004, P. USTJUZHANIN leg. (SZMN). *E. (Eyralpenus) scioana* OBTH. (colour plate 15: D) Rwanda: 10 ♂♂, 3 ♀♀, Butare, 20.XII.1975, XII.1976, I.1977, II.1977, IV.1977, XI.1977, II.1978, V.1978, VI.1978, A. POPOUDINA leg. (SZMN); 1 ♂, Kigali, IV.1977, A. POPOUDINA leg. (SZMN); South Africa, KwaZulu-Natal Prov: 2 ♂♂, Drakensberg, Giant's Castle National Reserve, 8.XII.2004, P. USTJUZHANIN leg. (SZMN); 1 ♂, North Drakensberg, Royal Natal Nat. Res., 10.XII.2004, P. USTJUZHANIN leg. (SZMN).

Afromurzinia gen. nov.

Type species: *Spilosoma lutescens* WALKER, 1855 (colour plate 15: E, F).

Gender: Feminine.

Etymology: The generic name combines „Afro“, referring to Africa, and the name of the late Prof. V. S. MURZIN (Moscow, Russia).

Description: On external characters, it is similar to species of *Radiarctia* DUBATOLOV, 2006b. ♂ antennae bipectinate. Eyes large, oval, strongly convex, naked. Palpi porrect, stout, slightly longer than the dense hair-like setae on the frons. Proboscis longer than the width of head. Foretibiae simple, narrow. Middle tibiae with an apical pair of spurs, hind tibiae with two pairs of very short spurs, about 0.3-0.5 of the tibia diameter, and closely aligned to the tibia. Forewing vein R₂ stalked with R₃₊₅ (venation type C, by SOTAVALTA, 1964). Forewings pale buff-yellow, often with faint grey interneural patches. Wings more or less semihyaline. Tympanum with a small flattened inflation.

♂ **genitalia** (fig. 7-16): Uncus broad, swollen mediolaterally, hooked terminally and finely setose. Valva weakly bifid terminally with a digitus ventral subterminal process directed medially. A U-shaped ventral-costal part of valva, separated from the rest by a membrane, has proximal branch more or less fused with vinculum. Another branch forms a spine-bearing processus (so called 'valvar peniculi') of a specifically different shape. Juxta slightly transversal, weakly concave posteriorly. Saccus broad, rounded. Aedeagus wide with one or two sclerotized apical spines; vesica bag like with several patches of small spine-like cornuti. Posterior margin of eighth abdominal segment with a small flat tergal medial lobe; medial sternite concave apically; lateral sclerites strongly sinuate, partially convolute, bearing two sclerotized apical lobes. Coremata present.

Remarks: The ♂ genitalia of this genus differ noticeably from other Arctiinae genera. The transformation of the costal-basal part of valva (basally from a membranose kink) into a single or bifurcate serrate processus appears to be the most clear autapomorphic character of the genus. From the valva shape and forewing pattern, it might be related to *Radiarctia* DUBATOLOV, 2006b, but species of the latter genus have strongly bifurcate valva (in *Afromurzinia* costal processus is own slightly bifurcate). However, the very characteristic cornuti structure of *Radiarctia*, absence of basal valva processes, and presence of apical spines on aedeagus, show that these genera are clearly different.

Composition: *A. lutescens* (WALKER, 1855) **comb. nov.**, *A. sublutescens* (KIRIAKOFF, 1958) **comb. nov.** (colour plate 15: G), *A. fletcheri* (KIRIAKOFF, 1958) **comb. nov. et stat. nov.**

Remarks: *A. fletcheri* (KIR.) was described as a subspecies of *A. sublutescens* (KIR.) A study of the ♂ genitalia showed that the latter has straight and long basal-costal valva processes (so called 'valvar peniculi'), about 7 times longer than width at the base and tapering to the apex. All other specimens examined have these processes noticeably shorter, about 3-4.5 times longer than the base width, and often curved - features characteristic of *A. fletcheri* (KIR.). KÜHNE (2005) synonymized *Spilosoma semihyalina* BARTEL, 1903 with *A. lutescens* (WLK.). We accept that this name should be included in *Afromurzinia*, but its correct status should be clarified by further detailed study of the type ♂ genitalia and additional specimens. This taxon might be a junior synonym of *A. lutescens* (WLK.) or a senior synonym of *A. fletcheri* (KIR.).

Material: *A. lutescens* (WLK.). Sierra Leone: 1 ♂, syntype, **LECTOTYPE** designated here, "1156 / 16. *Spilosoma lutescens*" / Arctiidae genitalia slide No. 81 (BMNH); Guinée: 1 ♂, Kindia, Pastoria, 20.XI.1983, S. MURZIN leg. (SZMN); 1 ♂, Kindia, river Tabuna, 12.V.1984, S. MURZIN leg. (SZMN); Ghana: 1 ♂, Coomasie [Kumasij], H. WHITESIDE, 1906-289 (BMNH); 1 ♂, W. Africa, G. C. DUDGEON leg. (BMNH). *A. sublutescens* (KIR.). Uganda: holotype ♂, [Ankole Prov.]; Ruwenzori Range, Ibanda, 4700 ft., 4.-12.IX.1952, D. S. FLETCHER leg., Arctiidae genitalia slide No. 80 (BMNH). *A. fletcheri* (KIR.). Tanzania: holotype ♂, Arusha District, Lieut. M. J. MOORE leg./ Arctiidae genitalia slide No. 132 (BMNH); Uganda: 1 ♂, Kivu: Ngoma, 4.X.1932, L. BURGEON leg. (MRAC); Burundi: 1 ♂, Gitega, 30.V.1969, Dr. M. FONTAINE leg. (MRAC); Zaire: 1 ♂, Uele: Paulis (now – Isiro), 12.VII.1958, Dr. M. FONTAINE leg. (MRAC); 1 ♂, [Kasai Or.]; Lusambo, 29.V.1950, Dr. FONTAINE leg.; Cameroon: 1 ♂, Bitje, Ja River, 2000 ft., Dry SEASON, G.L. BATES leg. (PGH).

***Toulgarctia* gen. nov.**

Type species: *Diacrisia madagascariensis luteoradians* DE TOULGOËT, 1954 (colour plate 15: H).

Gender: Feminine.

Etymology: The generic name combines “Toulg”, referring to Dr. H. DE TOULGOËT (France, Paris), and the genus name *Arctia*.

Description: ♂ antennae bipectinate. Eyes large, strongly convex, naked. Palpi porrect, slightly longer than the hair-like setae on the frons. Proboscis not reduced. Foretibiae simple, narrow. Middle tibiae with an apical pair of spurs, hind tibiae with two pairs of spurs, equal to the tibia diameter. Forewing vein R_2 stalked with R_{3+5} (venation type C, by SOTAVALTA, 1964). According to the species descriptions (DE TOULGOËT, 1954, 1956, 1976) and material studied, wings are orange or yellow, often with darker interneural patches or strokes. Tympanum with a small flattened inflation.

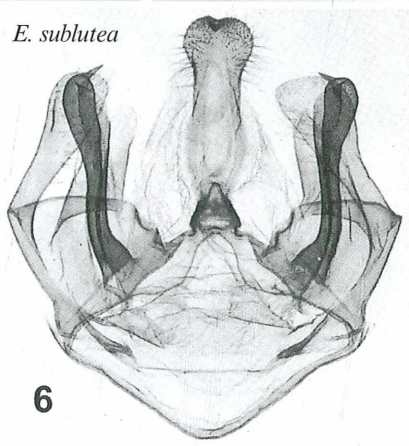
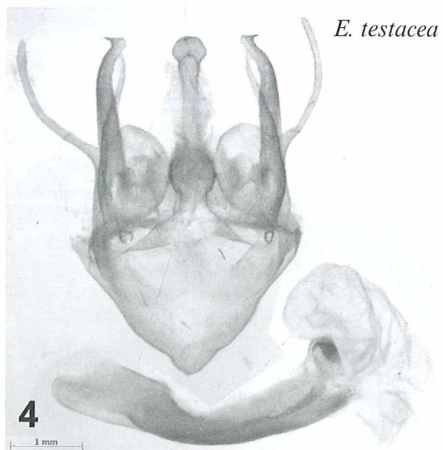
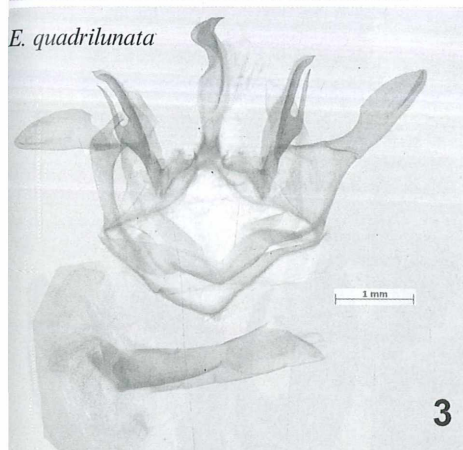
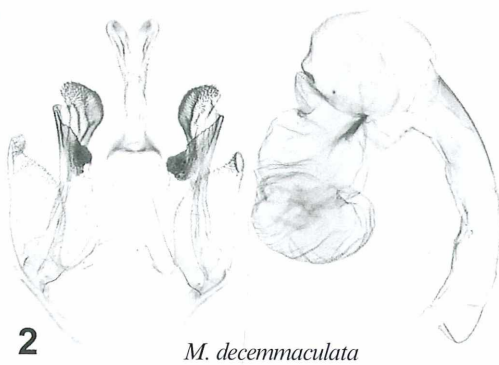
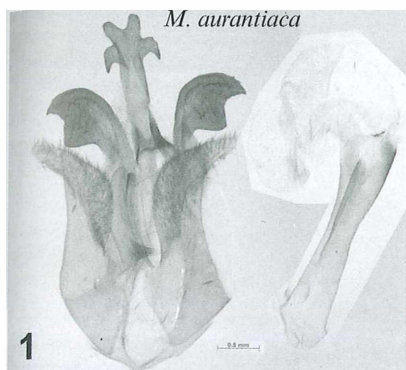
♂ **genitalia** (fig. 17-19): are most characteristic. Uncus broadly triangular, narrowing towards the base. Valvae broad, spatulate, with a wavy costal margin (sometimes appearing as irregular indentations), and with a short and broad triangular projection on the ventral edge. Juxta transversal. Saccus broadly rounded. Aedeagus always with one or two long apical spines.

Remarks: The main autapomorphic character of the new genus is the valva shape, with a wavy costal edge and a short and broad triangular projection on the ventral margin. Presence of apical spines on the aedeagus appears to be an apomorphy, although this character is present in a few other unrelated taxa.

The new genus is related to *Madagascartia* DUBATOLOV, 2006b. The latter has short and broad valvae (fig. 20), with a long spine-like on the ventral margin (homologous to the same projection on the valva of *Toulgarcia* species), but not with a wavy costal margin. The presence of a similar apical spine on the aedeagus also indicates the two genera might be related. Nevertheless, species of both genera differs significantly by the wing pattern: members of the new genus mostly have light veins and lack spots on the forewings, while the *Madagascartia* species have whitish forewings with an irregular pattern of small dark dots.

Composition: *T. vieui* (DE TOULGOËT, 1956) **comb. nov.**, *T. griveaudi* (DE TOULGOËT, 1956) **comb. nov.**, *T. milloti* (DE TOULGOËT, 1954) **comb. nov.**, *T. viettei* (DE TOULGOËT, 1954) **comb. nov.**, *T. luteoradians* (DE TOULGOËT, 1954) **comb. nov.**, with two subspecies: *T. l. jugicola* (DE TOULGOËT, 1976) **comb. nov.** and *T. l. monochroma* (DE TOULGOËT, 1984) **comb. nov.** (= *madagascariensis* ROTHSCCHILD, 1933, nec BUTLER, 1882).

Material: *T. luteoradians* (DE TOULGOËT). Madagascar: 1 ♂, Antananarivo, 1200 m, 17.-19.XII.2000, S. MURZIN leg. (SZMN); paratype ♂, Madagascar Centr., Massif de l'Ankaratra, Manjakatomp, Forêt d'Ambahona, Alt. 1850 m, P. VIETTE, Chasse No 66 du 27.XI.1951; paratype ♂, (same data), 18.XII.1951; paratype ♂, [same data], 26.XI.1951, (BMNH); 1 ♂, Madagascar Centre, massif de l'Ankaratra, forêt d'Antarivady, (Ambitsika), 2130 m, 4/7.I.1972, P. GRIVEAUD leg. (BMNH). *T. l. monochroma* (DE TOULGOËT). 1 ♂, Sahambavy, nr. Fanarantsoa, 1010-1180 m, I.[19]34, R. CATALA leg. (BMNH). *T. viettei* (DE TOULGOËT) (data as *luteoradians luteoradians* paratypes), paratype ♂, chasse No. 37, 23.X.1951; paratype ♂, chasse No. 63, 29.XI.1951; 1 ♂, chasse No. 78, 17.XII.1951; 1 ♂, chasse No. 60, 26.XI.1951 (BMNH). *T. vieui* (DE TOULGOËT). 1 ♂, Ampitameloka, 840 m, sud Moramanga, 1.VIII.[19]56, P. GRIV. leg. (BMNH). *T. griveaudi* (DE TOULGOËT). 2 ♂♂, Madagascar Est, route de Lakato Km 15, Ankasuka, 1100m, 17/21.X.1963, P. VIETTE leg. (BMNH); 1 ♂, Ampitameloka, 840m, sud Moramanga, 4.VIII.[19]56, P. GRIV. leg. (BMNH). *T. milloti* (DE TOULGOËT). 3 ♂, Station Perinet, 149 Km east of Tananarivo, 20.X-10.XI.1930, Mme N. D'OLSOUFIEFF leg. (BMNH); 1 ♂, Lac Aloatra, E. Madagascar, I-II.1925 (BMNH).

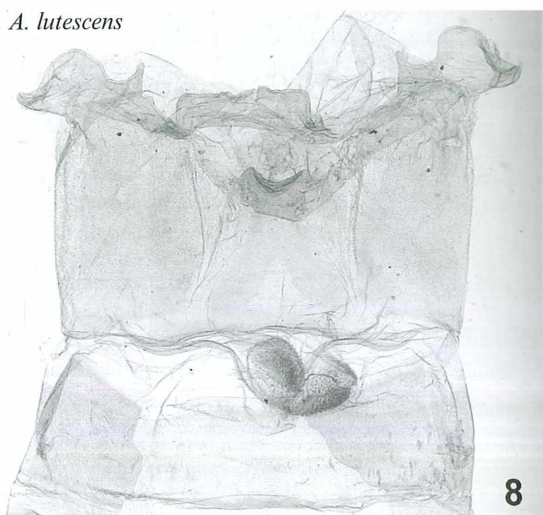


A. lutescens

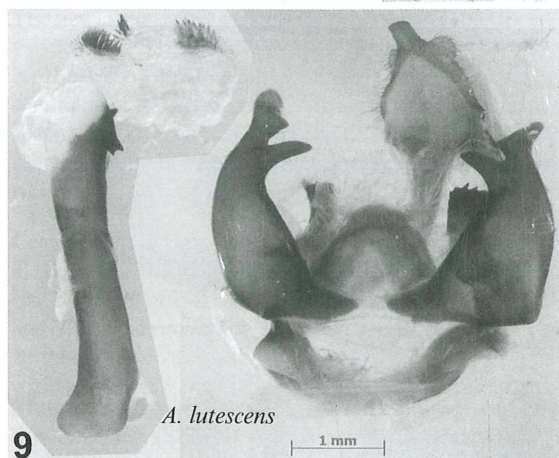


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A. lutescens



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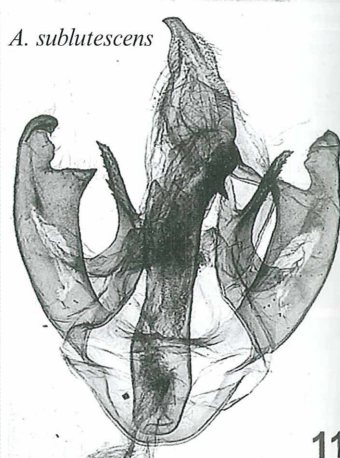


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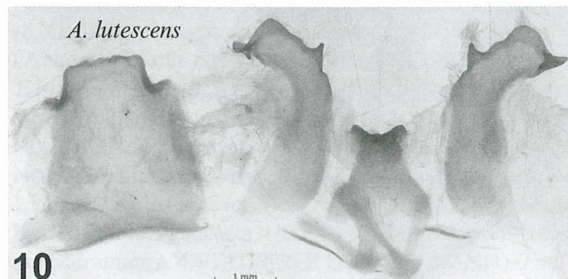
A. lutescens

1 mm

A. sublutescens



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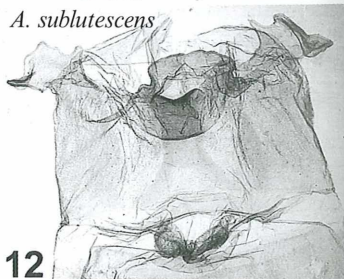


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A. lutescens

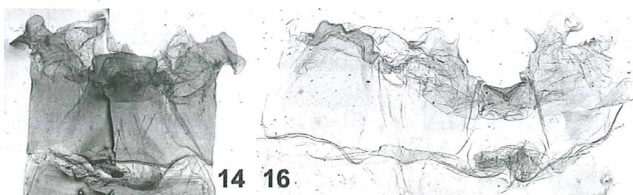
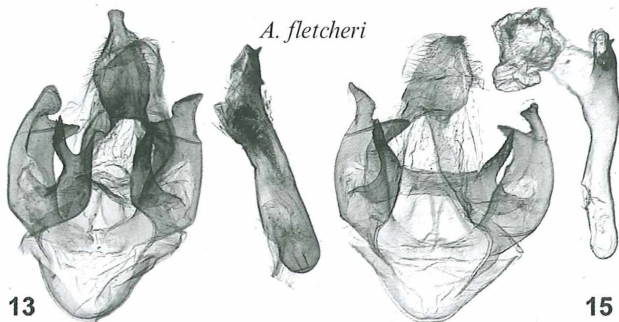
1 mm

A. sublutescens



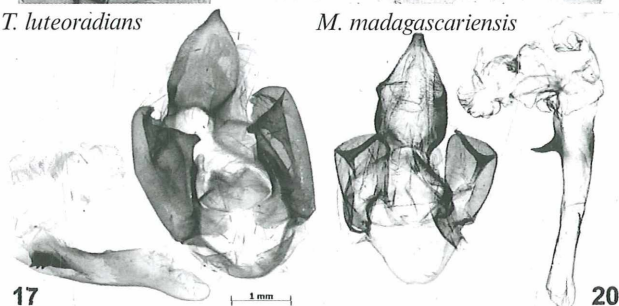
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A. fletcheri



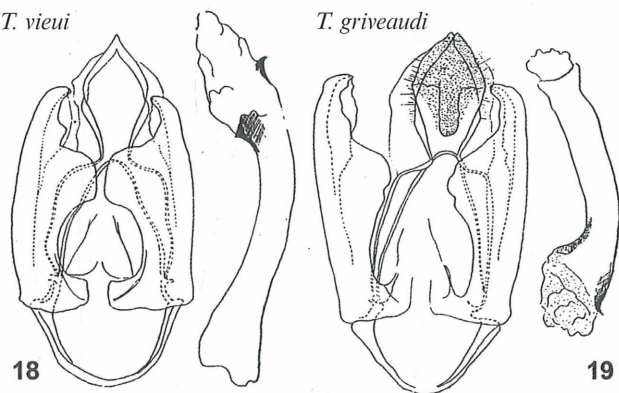
T. luteoradians

M. madagascariensis



T. vieui

T. griveaudi



- Fig. 1: ♂ genitalia of *Monstruncusarctia aurantiaca* (HOLLAND, 1893), Guinée, Kindia, river Tabuka, 7.X.1982, S. MURZIN leg. (SZMN).
- Fig. 2: ♂ genitalia of *Monstruncusarctia decemmaculata* (ROTHSCHILD, 1916), Zaire, Ituri Forest, BMNH slide 3628; from: GOODGER & WATSON (1995: 41, Fig. 139-140). By the courtesy of Apollo Books.
- Fig. 3: ♂ genitalia of *Eyrалpenus* (*Pareyралpenus*) *quadrilunata* (HAMPSON, 1901), Guinée, Kindia, river Tabuka, 26.V.1983, S. MURZIN leg. (SZMN).
- Fig. 4: ♂ genitalia of *Eyrалpenus* (*Eyrалpenus*) *testacea* (WALKER, 1855), South Africa, KwaZulu-Natal Prov., 15 km NE of Pietermaritzburg, Cumberland National Reserve, 2.XII.2004, P. USTJUZHANIN leg. (SZMN).
- Fig. 5: ♂ genitalia of *Eyrалpenus* (*Eyrалpenus*) *scioana* (OBERTHÜR, 1879 [1880]), Rwanda, Butare, V.1978, A. POPOUDINA leg. (SZMN).
- Fig. 6: ♂ genitalia of *Eyrалpenus* (*Eyrалpenus*) *sublutea* (BARTEL, 1903), syntype slide (Berlin), Tanzania, Bagamoyo; from: GOODGER & WATSON (1995: 38, fig. 108). By the courtesy of Apollo Books.
- Fig. 7, 8: Lectotype ♂ genitalia (7) with VIII abdominal sternite (8) of *Afromurzinia lutescens* (WALKER, 1855), Sierra Leone, "1156 / 16. *Spilosoma lutescens*" / Arctiidae genitalia slide No. 81 (BMNH).
- Fig. 9, 10: ♂ genitalia (9) with VIII abdominal segment (10) of *Afromurzinia lutescens* (WALKER, 1855), Guinée Kindia, river Tabuna, 12.V.1984, S. MURZIN leg. (SZMN).
- Fig. 11, 12: Holotype ♂ genitalia (11) with VIII abdominal segment (12) of *Afromurzinia sublutescens* (KIRIAKOFF, 1958), Uganda, [Ankole Prov.], Ruwenzori Range, Ibanda, 4700 ft., 4.-12.IX.1952, D. S. FLETCHER leg., Arctiidae genitalia slide No. 80 (BMNH).
- Fig. 13, 14: Holotype ♂ genitalia (13) with VIII abdominal segment (14) of *Afromurzinia fletcheri* (KIRIAKOFF, 1958), Tanzania, Arusha District, Lieut. M. J. MOORE leg. / Arctiidae genitalia slide No. 132 (BMNH).
- Fig. 15, 16: ♂ genitalia (15) with VIII abdominal segment (16) of *Afromurzinia fletcheri* (KIRIAKOFF, 1958), Uganda, Kivu: Ngoma, 4.X.1932, L. BURGEON leg. (MRAC).
- Fig. 17: ♂ genitalia of *Toulgarctia luteoradians* (DE TOULGOËT, 1954), Madagascar, Antananarivo, 1200 m, 17.-19.XII.2000, S. MURZIN leg. (SZMN).
- Fig. 18: Holotype ♂ genitalia of *Toulgarctia vieui* (DE TOULGOËT, 1956); from DE TOULGOËT (1956: Fig. 1).
- Fig. 19: Holotype ♂ genitalia of *Toulgarctia griveaudi* (DE TOULGOËT, 1956); from DE TOULGOËT (1956: Fig. 2).
- Fig. 20: ♂ genitalia of *Madagascarcctia madagascariensis* (BUTLER, 1882), Madagascar, BMNH Arctiidae slide 3624; from: GOODGER & WATSON (1995: 39, Fig. 124-125). By the courtesy of Apollo Books.

Key to *Toulgarcia* gen. nov. species

1. Forewing (=FW) without any pattern between veins, ventral processus on valva short and narrowly triangular . 2
- FW with light veins or dark streaks between light veins, ventral processus on valva broad . 3
2. Both FW and hindwings are similar in colouration, silky light-yellow. Broad, dark transversal streaks on abdominal tergites. Processus on ventral margin of valva located close to apex .

T. milloti

- FW bright yellow, hindwing orange-yellow and clearly darker than forewing. Narrow dark transversal streaks on abdominal tergites – if visible. Processus on ventral margin of valva located at 1/3 valva length from apex

T. viettei

3. FW narrow, elongate at apex, 1.5 or more times longer than hindwing costa length. Ventral processus on valva nearly trapezoid, occupies not more than 1/3 of its ventral edge . 4

- FW broad and short, not more than 1.3 times longer than hindwing costa length. FWs usually with dark, sometimes broad streaks between veins. Ventral processus on valva very broad, rounded or broadly triangular shape and occupying almost entire ventral edge .

T. luteoradians

(Three subspecies were separated: nominotypical specimens are bright orange along the veins contrasting with a very pale ground colour, *T. l. monochroma* is smaller size (forewing 17 mm) and variable forewing pattern, grey brown interneural spaces less contrasting with ground colour; some specimens are unicolorous, *T. l. jugicola* is larger (forewing 20 mm), orange ground colour along veins lighter than in the former subspecies, interneural spaces dark grey.)

4. FW light brownish, semitransparent, veins light yellow. Hindwing pale yellow with an orange tint. Ventral processus on valva smooth at apical edge .

T. griveaudi

- FW rufous-brown, not semitransparent, veins light yellow. Hindwing rufous orange. Ventral processus on valva sinuous on apical edge .

T. vieui

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Addresses of the authors

VLADIMIR V. DUBATOLOV

Siberian Zoological Museum, Institute of Animal Systematics and Ecology,
Siberian Branch of Russian Academy of Sciences,

Frunze street, 11
630091, Novosibirsk, 91, Russia

PATRICK G. HAYNES

12 Bridge Road
Hounslow, TW3 1SG, U.K.

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