

A revision of the genus *Mustilia* WALKER, 1865, with descriptions of new taxa

(Lepidoptera, Bombycidae)

by

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Abstract: The genus *Mustilia* WALKER, 1865 is revised. It is divided into three separate genera: *Mustilia* s. str., *Mustilizans* YANG, 1995, and *Falcogona* gen. nov. (type species *F. gryphea* spec. nov., as originally designated). The genus *Mustilia* s. str. is divided into two further groups considered here as separate subgenera, one of them is established here as new: *Smerkata* subgen. nov. in *Mustilia* s. str., with the type species *Mustilia phaeopera* HAMPSON, 1910, as originally designated. The genus *Mustilizans* is also divided into two further groups considered here as separate subgenera. One of these is also established here as new: *Promustilia* subgen. nov. with the type species *Mustilizans (Promustilia) andracoides* spec. nov., as originally designated.

The following new species are described: *Mustilia (M.) lobata* spec. nov. (type locality: Thailand, Changwat Chiang Mai, Doi Phahompok, 16 km NW of Fang, 2050 m); *Mustilia (M.) sabriformis* spec. nov. (type locality: China, Yunnan, Dali Bai aut. pref., Yunlong county, Fengshuining Mts, 2460 m, 13 km N of Caojian, 25°46'N, 99°06'E); *Mustilia (M.) attacina* spec. nov. (type locality: China, Sichuan, Gongga Shan, 2600-3200 m, 23.IV-15.V 2001, 29°41'N, 101°58'E); *Mustilia (M.) pai* spec. nov. (type locality: China, Tapaishan im Tsinling, Süd-Shensi); *Mustilia (Smerkata) craptalis* spec. nov. (type locality: China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m); *Mustilia (S.) soosi* spec. nov. (type locality: Thailand, Changwat Chiang Mai, 20 km NW of Mae Ai, 1650 m); *Mustilia (S.) brechlini* spec. nov. (type locality: Thailand, Changwat Nan, 30 km E of Pua, 1700 m); *Mustilia (S.) ulliae* spec. nov. (type locality: China, Shaanxi, Taibaishan, Tsinling Mt., 1900 m); *Mustilizans (M.) predicta* spec. nov. (type locality: Java or., Mt. Bahrn, 600-1000 m); *Mustilizans (M.) eitschbergeri* spec. nov. (type locality: China, Shaanxi prov., South Tai bai shan, Tsinling Mts., Houzbenzi, 33°53'N, 107°49'E, 1500 m); *Mustilizans (M.) capella* spec. nov. (type locality: China, Shaanxi prov., Ning Shan, 1500m, near Ningshan town, 33°44'N, 108°26'E); *Mustilizans (M.) lepusa* spec. nov. (type locality: northern Vietnam, Cuc Phuong Nat. Park, 120 km SW Hanoi, 20°15'N, 105°20'E, 400 m); *Mustilizans (M.) sinjaevi* spec. nov. (with type locality: Nord Vietnam, Mt. Fan-si-pan, Cha-pa, 2400 m, 22°15'N; 103°46'E); *Mustilizans (Promustilia) andracoides* spec. nov. (type locality: China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m.); *Falcogona gryphea* spec. nov. (type locality: Northern Vietnam, Mt. Fan-si-pan, Cha-pa, 22°17'N, 103°44'E, 1600 m).

The following new subspecies are described: *Mustilizans (M.) hepatica aeola* subspec. nov. (type locality: Thailand, Changwat Nan, 30 km E of Pua, 1700 m); *Mustilizans (M.) dierli refugialis* subspec. nov. (type locality: Yunnan, Simao-district, Mangxi Ba Mts, 18 km S of Simao, 1280 m).

Mustilia gerontica WEST is now considered to be of subspecific rank, *Mustilia (M.) sphingiformis gerontica* (WEST, 1932) stat. nov. New combinations are established for *Mustilizans hepatica* (MOORE, 1879) comb. nov. and *Mustilizans dierli* (HOLLOWAY, 1987) comb. nov. Therefore, the group under consideration consists of 27 species which join the *Dalailama* STAUDINGER, 1896 and *Oberthueria* KIRBY, 1892, in the subfamily Prismostictinae FORBES, 1955.

This article is devoted to the study of the genus *Mustilia* WALKER, 1865, which is clearly differentiated from related genera of the Bombycidae by their larger size, falcate forewings, and genitalia. The systematic position of the genus is still unknown, although the structure of the ♂ genitalia, the venation and shape of the wings, and their antenna are similar to *Mustilia* WALKER, 1865 (at least with *sphingiformis* MOORE, 1879, *falcipennis* WLK., 1865 and *phaeopera* HAMPSON, 1910-lineages), the *Dalailama* STAUDINGER, 1896, and *Oberthueria* KIRBY, 1892. Therefore the genus should be placed in the subfamily Prismostictinae FORBES, 1955 (=Oberthuerinae KUZNETZOV & STEKOL'NIKOV, 1985). At the same time, their relationship with the type genus *Prismosticta* BUTLER, 1880, is more distant.

Taking into consideration the configuration of the ♂ genitalia in all of the genera mentioned above, the polyphyletic origin of the *Mustilia* WLK. is pointed out. The genus divides into two natural groups - of *falcipennis* WLK.-lineage and of *hepatica* MOORE-lineage, these sub-dividing into smaller groups. It is suggested here that both of these lineages should be ranked as separate genera; their diagnosis and phylogenetic analysis are given below. The name available for the second group of species is *Mustilizans* YANG, 1995.

For ease of use the text is arranged in several parts, separating specific groups. These sections are based on constant differences within the ♂ genitalia, so some groups of species have been raised here to the rank of subgenera.

The moth specimens existing in a number of institutions were investigated, and the following abbreviations for these sources have been used in the text.

- BMNH: The Natural History Museum (formerly The British Museum of Natural History – London, Great Britain).
 CAHU: Collection of ARMIN HAUSTEIN (Untermühleim, Germany).
 CBAP: Collection of BRO AMNUAY PINRATANA (Bangkok, Thailand).
 CMSW: Collection of MANFRED STRÖHLE (Weiden, Germany).
 CVM: Collection of VIKTOR SINJAEV (Moscow, Russia).
 MWM: Etomological Museum of THOMAS J. WITT (Munich, Germany).

NHMB: Naturhistorisches Museum Brussel (Belgia).

NHML: Naturhistorisches Museum Leiden (Netherland).

ZFM: Zoologisches Forschungsinstitut und Museum Alexander Koenig (Bonn, Germany).

ZMHUB: Zoologisches Museum der Humboldt Universität zu Berlin (Germany).

A systematic account of species

Mustilia (*Mustilia*) *falcipennis* WALKER, 1865
Mustilia (*M.*) *lobata* spec. nov.
Mustilia (*M.*) *castanea* MOORE, 1879
Mustilia (*M.*) *sabiriformis* spec. nov.
Mustilia (*M.*) *attacina* spec. nov.
Mustilia (*M.*) *pai* spec. nov.
Mustilia (*M.*) *orthocosta* YANG, 1995
Mustilia (*M.*) *sphingiformis* MOORE, 1879
Mustilia (*M.*) *sphingiformis gerontica* (WEST, 1932) stat. nov.
Mustilia (*M.*) *lieftincki* ROEPKE, 1948
Mustilia (*Smerkata* subgen. nov.) *phaeopera* HAMPSON, 1910
Mustilia (*S.*) *fusca* KISHIDA, 1993
Mustilia (*S.*) *craptalis* spec. nov.
Mustilia (*S.*) *soosi* spec. nov.
Mustilia (*S.*) *brechlini* spec. nov.
Mustilia (*S.*) *tzarica* spec. nov.
Mustilia (*S.*) *ulliae* spec. nov.
Mustilizans (*Mustilizans*) *drepaniformis* YANG, 1995
Mustilizans (*M.*) *hepatica* MOORE, 1879
Mustilizans (*M.*) *hepatica aeola* subspec. nov.
Mustilizans (*M.*) *dierli* HOLLOWAY, 1987
Mustilizans (*M.*) *dierli refugialis* subspec. nov.
Mustilizans (*M.*) *predicta* spec. nov.
Mustilizans (*M.*) *eitschbergeri* spec. nov.
Mustilizans (*M.*) *capella* spec. nov.
Mustilizans (*M.*) *lepusa* spec. nov.
Mustilizans (*M.*) *sinjaevi* spec. nov.
Mustilizans (*M.*) *baishanzuna* YANG, 1995
Mustilizans (*Promustilia* subgen. nov.) *andracoides* spec. nov.
Falcogona *gryphea* gen. et spec. nov.

Genus *Mustilia* WALKER, 1865 sensu stricto

Mustilia WALKER, 1865, List Lep. Heter. Brit. Mus. 32: 580.

Type species: *Mustilia falcipennis* Wlk., 1865, ibid. 32: 580, by monotypy.

Diagnosis: Mostly dark coloured moths with a slightly variable wing pattern; both medial fasciae are present on the fore wings, the postmedia alone sometimes being oblique; both fascia are largely parallel, lunated or sinuous.

In the ♂ genitalia the uncus is bilobed, and the gnathos is always present as two arm-shaped branches. Valvae with basal cuiller¹ and harpal projections on the inner surface. Aedeagus tubular, with numerous, fine, hair-like setae in the basal half of the vesica. The genus consists of 17 species which are distributed from the Himalayas over China (incl. Taiwan), Thailand, Vietnam, Myanmar, and the Malasian Peninsular to Sumatra.

The genus naturally divides into smaller sections, some of which are raised here to the rank of subgenera. These separations are based on both external characters as well as differences within the ♂ genitalia.

The following specific groups are considered in the text: *falcipennis* WALKER, 1865-specific group
phaeopera HAMPSON, 1910-specific group
sphingiformis MOORE, 1879-specific group

1. *Mustilia falcipennis* WALKER, 1865-specific group

This group includes two closely related species, *M. falcipennis* WALKER, 1865, and *M. castanea* MOORE, 1879; four more species are described here as new to science.

Diagnosis: A well known medium-sized species with narrow falcate forewings. All wings are usually of a reddish-brown or bright-yellow coloration with a violet-brown tint, with a darker pattern and sometimes with silver shading near the apex; the external field is usually very dark. The wing pattern is well developed, although in dark specimens the pattern is hardly visible, and consists of two more or less parallel medial fasciae; the postmedia of the forewings angles back to the costa near the apex.

In the ♂ genitalia the uncus is short and broad without any basal narrowing, and it divides apically into two triangular lobes; the gnathos is represented as two long and narrow, and sometimes dentated, hooks; the valvae are flat, narrowing to an apex, with long cuiller-bearing, long to very long, well developed chetae, with a small, distinct costal appendage in the middle of the valva; the band-shaped juxta forms membranous lobes from both sides of the aedeagus; aedeagus short, tubular with numerous needle or spine-like cornuti in the basal zone of the vesica; sternite with a characteristic narrow cut on the cranial edge.

Remark: Both external characters and the ♂ genitalia easily differentiate this group within the genus but, after examining further external characters, the group can be separated into the two following subgroups, of *falcipennis* and *castanea*. Further determination down to specific species should involve genital features more than external ones.

¹ I use this term for designation of a „diagnostic setose furca at the base of the sacculus“ sensu HOLLOWAY (1987: 87) according the designation of homological appendix in some species of Depressariidae (Microlepidoptera). In the members of this specific group its shape and chaetal equipment is especially important for identification.

All members of this group seems to be polyvoltine.

The range of the *falcipennis*-group is restricted to the Himalayas (India, Pakistan, Nepal), southern and central China, Vietnam, Thailand and Myanmar. This group includes six species, four of which are described here as new.

***Mustilia falcipennis* WALKER, 1865** (colour pl. 27: 1, 2)

List Spec. lepid. Heter. Colln Brit. Mus. **32**: 581. Type locality: Darjeeling. Holotype ♂ (ZMHUB, in coll. ATKINSON).

Male: A medium sized species (wingspan 42–46 mm, forewing length 21–24 mm) with narrow and strongly falcate forewings, acutely angled at the apex. Both wings are usually of a dark brownish-yellow ground colour, with a blackish-blue apical streak, a darker wavy pattern, and a blackish discal dot. The hind wings are of a triangular shape, with bright yellow costal and medial fields, browner in the anal field; two wavy brown transversal fasciae are also present.

♂ **genitalia** (fig. 1): Diagnosed by the shape of the uncus, which has almost parallel sides and a triangular lobe separated by a triangular cut. The branches of the gnathos are narrow and distinctly angled at the middle. Valva narrow, without any inner lobe. Cuiller short, with long, almost straight, setae. Aedeagus with fine, spine-like cornuti, which densely cover the ventral third of the base of the vesica, together with a transverse row above; vesica short.

♀♀ much larger (wingspan 47–50 mm, forewing 27–29 mm), robust, with less falcate wings and more dusty coloured wings; hind wings with a rounded outer margin.

The caterpillars are noted from *Symplocos lucida*, Symplocaceae (ROBINSON et al., 2001).

Diagnosis: No problems with the determination of the species but see also under *M. lobata* spec. nov.

Distribution: The Himalaya range [northern and north-eastern India, Nepal, Bhutan (1 ♂, Thimphu, 14.-19.V 1972, NHMB), and southern China, Yunnan: Yunlong, Fengshuining and Caojian].

***Mustilia lobata* spec. nov.** (colour pl. 27: 3, 4)

Holotype ♂: Thailand, Changwat Chiang Mai, Doi Phahompok, 16 km NW of Fang, 2050 m, 31.I 2000, leg. M. HREBLAY (MWM).

Paratypes: 45 ♂♂, 3 ♀♀, Thailand, Chiang Mai, Doi Phahompok, diverse dates and diverse collectors (MWM); ♂, Thailand, Changwat Chiang Mai, Doi Inthanon NP, 2300 m, 19.I 2004, leg. A. SZABO (MWM); 35 ♂♂, 1 ♀, Thailand, Changwat Chiang Mai, Doi Inthanon NP, 1730–2300 m, diverse dates and diverse collectors (MWM); ♂, Thailand, Chiang Mai, 20 km NW of Sop Kha, 2 km S of Kop Dong, 1800 m, 13.IX 1998, leg. A. SZABO & Z. CZERE (MWM); ♂, Thailand, Chiang Mai, 20 km NW of Mae Ai, 1650 m, 17.I 1999, leg. A. SZABO & Z. CZERE (MWM); 2 ♂♂, Thailand, Chiang Mai, 2–3 km S Kop Dong, 1650–1800 m, 8.I 1999 & 1.IV 1998 (MWM); ♂, Thailand, Changwat Nan, 30 km E Pua, 1700 m, 20.I 2004, leg. P. HENTSCHEL & A. CZABO (MWM); ♂, the same data but 12.II 2000, leg. M. HREBLAY (MWM); 2 ♂♂, Thailand, Changwat Nan, 22 km N of Bo Luang, 1120 m, 15.I 1999, leg. A. SZABO & Z. CZERE (MWM); 3 ♂♂, Thailand, Changwat Nan, 25 km N of Bo Luang, 1150 m, 14.I 1999, leg. SZABO & Z. CZERE (MWM); 109 ♂♂, 6 ♀♀, northern Vietnam, Mt. Fan-si-pan, Cha-pa, diverse dates and diverse collectors (MWM); 4 ♂♂, Vietnam, prov. Lao Cai, 1900–2000 m, Fan-si-pan Mts, 14 km NW Sa Pa, 103°46'06"E, 22°20'09"N, 26–29.I 1999, leg. PEREGOVITS, G. & L. RONKAY (MWM); 10 ♂♂, northern Vietnam, Tam Dao, 60 km NW Hanoi, 950 m, 21°34'N, 105°20'E, IV 1995 and 1.–5.V 1993, leg. V. SINJAEV & E. SMONOV (MWM); ♂, China, prov. Yunnan, Yunlong, Fengshuining Mts, 13 km N Caojian, 2460 m, 20.V –9.VI 1999, leg. R. BRECHLIN (MWM); ♂, China, W. Yunnan, Changning, 2875 m, Songzhishanding, VI 2000, leg. native collector (MWM); male, China, C. Sichuan, Xiling Snow Mts, 1300–2100 m, 29–31.VII 1998, leg. S. KASANTSEV (MWM); 4 ♂♂, Myanmar, Chin-Hills, Natma Taung N.P., Area of Mt Victoria, 8 miles Camp, 2500m, 3–8.x 2002, LF, leg. W. MEY (ZMHUB); ♂, China, Tibet, Tomi, Tangmai, 2200 m, 1–5.VII 1996, leg. PAULUS (CMSW); ♂, China, SE Sichuan, Gaomushan, about 1900 m, Guling, near west Guizhou border, VII 2002, leg. YING & al. (GU 2005-04: CAHU); ♂, China, W-Guangxi, Doukongpo, 1700 m, Xiling county, VII 2002, leg. LI & al. (GU 2005-05: CAHU); ♂, China, Yunnan, Mojiang, Dajishan, 2500 m, III 2001, leg. native collector (GU 2005-02: CAHU); 2 ♂♂, China, NE Guizhou, Fangjinshan, 1600 m, Jianghou, VIII 2002, leg. LI & al. (GU 2005-01: CAHU).

Male: A medium sized species (wingspan 37–47 mm, the forewing length 21–25 mm) with narrow and strongly falcate forewings, acutely angular at the apex, this being more pronounced than in the related *falcipennis*. Both wings are usually of brownish-yellow to rosy-yellow ground colour and have a prominent and long blackish-blue apical streak (much longer than in *M. falcipennis* Wlk.), a darker wavy pattern, and a blackish discal dot. The hind wings are triangular, with bright yellow costal and medial fields, darker in the anal field; two wavy brown transversal fasciae are also present.

♂ **genitalia** (fig. 2): Diagnosed by very broad and rounded lobes on the uncus, with a narrow distance between them. Branches of gnathos narrow, distinctly angled at the middle, much longer than in *falcipennis*. Valva short, with two small sclerotized folds on the costal and ventral margins. Cuiller distinct, with long well-marked almost straight setae at the longitudinal axis of the valva. Aedeagus with fine, spine-like cornuti, densely covering the base of the ventral third of the vesica; they are more compact than in *M. falcipennis* Wlk.; vesica short.

♀♀ large (wingspan 45–61 mm, forewing 26–30 mm), robust, of the same ground colour; similar to those of *M. falcipennis* Wlk. but with more a contrasting coloration.

Diagnosis: Very similar in appearance to *M. falcipennis* Wlk. but somewhat larger, with brighter and more contrasting coloration; on average, more robust with a larger thorax; forewings more falcate. Dark coloured specimens are extremely rare. For most specimens the prominent apical streak is very typical. In doubtful cases a genitalic preparation identifies the species; the shape of the uncus is clearly diagnostic.

Biology: All specimens were collected at light in Thailand at altitudes from 1150 to 2500 m, mainly from late October to February, although single specimens have also been collected in April, August and September; there are therefore probably two generations per year. In Vietnam the moth is known from altitudes ranging from 950 to 2240 m and is on the wing from March to July, ♀♀ to August, and again in October and November. In China it seems to be rare and very local, where it is known from a higher altitude of about 1300 m, mainly above of 2460-2875 m, and flies in March, late May-June and in July-August; in Myanmar, all known fresh specimens were collected from higher altitudes, of about 2500 m, in early October. It is therefore suggested here that there are two or three generations. The pre-imaginal stages and host plants are unknown.

Distribution: Southern China, northern Myanmar, northern Thailand and northern Vietnam, where there is a vicariant of *M. falcipennis* Wlk.

Mustilia castanea MOORE, 1879 (colour pl. 27: 5, 6)

In HEWITSON & MOORE, Lep. ATKINSON: 82. Type locality: [India, Darjeeling] Darjiling. Holotype ♂ (ZMHUB).

Mustilia phaeopera, KISHIDA 1992, Moths Nepal 1: 81, pl. 20, fig. 13.

Male. Significantly differing from *M. falcipennis* Wlk. by the smaller apex and less concave external edge to the forewing, by a darker background (sometimes almost blackish-brown), and especially by the number of rami on the segments of the flagellum - these range from 21 to 23 in *M. falcipennis* Wlk. but exceed 25 (usually 27-29) in *M. castanea* MOORE. In most dark coloured specimens, numerous silver-blue scales are typical in the external field of the forewing.

♂ **genitalia** (fig. 3): Diagnosed by very narrow similar-sized lobes on the uncus, with a broad triangular cut between them. The branches on the gnathos are narrow, distinctly angled at a middle, and are short. The valva are narrow, elongated, and are without sclerotized folds and lobes on the inner surface. Cuiller distinct, with a few long, well developed, and curved, setae. Aedeagus with fine, hair-like, abundant cornuti, densely covering the basal half of a short vesica.

Distribution: India (Sikkim, Darjeeling), Nepal, Bhutan (1 male, Thimphu, 25.V-5.VI 1972 - NHMB). This species flies together with *falciformis* but prefers the higher altitudes.

Mustilia sabriformis spec. nov. (colour pl. 27: 7, 8)

Mustilia falcipennis, CHU & WANG 1996, Fauna Sinica 5: pl. 2, fig. 6.

Holotype ♂: China, Yunnan (NW), Dali Bai aut. pref., Yunlong county, Fengshuining Mts, 2460 m, 13 km N of Caojian, 10-20.V 1999, 25°46'N, 99°06'E, leg. R. BRECHLIN (MWM).

Paratypes: 7 ♂♂, the same data (MWM); 3 ♂♂, the same data but 10-23.VI 1999 (MWM); ♂, the same but 20.V-9.VI 1999 (GU-7930-MWM); 2 ♂♂, the same but 25.VII-8.VIII 1999 (MWM); ♂, China, Yunnan, 20 km Dali, Yunlong, 2570 m, 30.VIII 1998, leg. R. BRECHLIN (MWM); ♂, China, Sichuan, Daxue Shan Mts, 80 km W Mianning, 28°34'N, 102°00'E, 2750 m, 7-8.VII 1999, leg. SINJAEV & PLUTENKO (MWM); ♂, Yunnan, Dali Bai aut. Pref., Yunlong, 13 km N of Caojian, Fengshuining Mts., 2460 m, 10-23.VI 1999 (MWM); 3 ♂♂, China, Sichuan, Erlangshan Mts, E Luding, 2560 m, 19-23.VII 2004, leg. S. MURZIN (MWM); 3 ♂♂, China, Tapaishan im Tsinling, Süd-Shensi, ca 1700 m, 26.VI 1936, leg. H. HÖNE (ZFMK); ♀, China, Yunnan, Diancangshan, 1500 m, 25°41'N, 100°05'E, 15-30.VII 2004, leg. V. SINJAEV & his team (MWM).

Male: The smallest species of the genus (wingspan 25-44 mm, the forewing length 19-22 mm) and very similar in appearance to *M. castanea* MOORE, but lighter with broader and shorter wings, and a more smooth but prominent reddish-brown pattern on a brownish-rose ground colour. The bluish apical streak at the outer hollow of the postmedia and the dark brown triangular shading in the external field of the wing is very typical.

♂ **genitalia** (fig. 4). Uncus with broad base and slender lobes; the lobes are close together and of a similar size; a cut between them is very narrow. The branches of the gnathos are narrow and short. Valva broad in the basal half, with apical narrowing, and a few long well developed curved setae. Aedeagus with fine, hair-like, abundant cornuti, densely covering the basal half of a short vesica; a small area on ventral surface of vesica is hairless. The eighth sternite has quadrangular lobes and a rectangular cut between them.

♀ larger (wingspan 49 mm, the forewing length 26 mm), with a bland ground colour, a remarkable reduction in the dark triangular external shading, and with a glistening through the wings.

Biology: This species seems to be very rare and very local, and is only known from a few specimens collected at light at altitudes ranging from 1500 to 2750 m from May to August; it is probably univoltine with a prolonged flight period. The pre-imaginal stages and host plants are unknown.

Distribution: China Southern (prov. Yunnan, Sichuan) and Central (prov. Shaanxi).

Mustilia attaccina spec. nov. (colour pl. 27: 9)

Holotype ♂: China, Sichuan, Gongga Shan, 2600-3200 m, 23.IV-15.V 2001, 29°41'N, 101°58'E, leg. V. SINJAEV & E. PLUTENKO (MWM). Paratypes: ♂, the same labels data (MWM); 2 ♂♂, A-tun-tse (Nord Yunnan), Obere Höhe (ca 4500 m), 27.VI 1937 & 9.VII 1936.

leg. H. HÖNE (coll. F. DANIEL in MWM-GU 7936); ♂, China, Sichuan, Qiongsan Mts, 3000 m, 20 km W of Qiao Qi, 55 km N of Baoxing, 8-10.VII 2003, leg. S. MURZIN (MWM); ♂, A-tun-tse (Nord Yunnan), Talsohle, ca 3000 m, 4.VII 1937, leg. H. HÖNE (ZFMK).

Male: Similar in appearance to *M. falcipennis* Wlk. but somewhat larger, with a darker background and a very contrasting brown pattern. A concave external margin to the forewing in the Cu zone and very dark external shading are very typical.

♂ **genitalia** (fig. 5): Diagnosed by very broad rounded caudal lobes to the uncus, with a narrow triangular cut between them. The branches of the gnathos are narrow, distinctly angled at the middle, and much shorter than in *lobata*. Valva short, without sclerotized folds and lobes on the inner surface. Cuiller distinct, with short, distinctly curved setae. Aedeagus similar to that of *M. falcipennis* Wlk., with fine, spine-like cornuti, densely covering the base of the ventral third of the vesica, together with a transversal row above it; vesica short.

Diagnosis: This species is more easily diagnosed by its external characteristics rather than by its genitalia. Its dark coloration, well developed wing pattern, and falcate wings, distinguish the moth from all congeners. The ♂ genitalia has a short valva with a slender apical field, very broad lobes on the uncus, and short chetal processes on the cuiller, which are typical.

Distribution: Southern China (Yunan: A-tun-tse; Sichuan: Gongga Shan, Qiongsan Mts.).

Mustilia pai spec. nov. (colour pl. 27: 10)

Holotype ♂: China, Tapaishan im Tsinling, Süd-Shensi, 26.VI 1935, leg. H. HÖNE (GU BMB-019 in ZFMK).

Male: Similar in appearance to *M. attacina* spec. nov. but somewhat larger, with more falcate wings and a darker patterning.

♂ **genitalia** (fig. 6): Uncus with a broad base and well developed triangular lobes with a rounded apex; the cut between them is narrow. The branches of the gnathos are narrow and short. Valva broad in the basal half, with apical narrowing, without any sclerotized folds and lobes on the inner surface. Cuiller distinct, with numerous, relatively short, well developed, and curved, setae. Aedeagus with fine, hair-like, abundant cornuti, densely covering the basal half of the short vesica. The eighth sternite has short rounded lobes.

Diagnosis: The species is easily diagnosed both by its external characters and by its genitalia. The dark coloration, the well developed wing pattern, and strongly falcate wings, differentiate the species from all congeners.

Distribution: Central China (Shaanxi: Tapaishan Mts.).

2. *Mustilia sphingiformis* MOORE, 1879-specific group

This group includes four closely related species so far, *M. sphingiformis* MOORE, 1879, *M. lieftincki* ROEPKE, 1948, *M. orthocosta* YANG, 1995, and *M. gerontica* WEST, 1932².

Diagnosis: A large species with strongly falcate forewings, sometimes having an enlarged and curved apex. Both wings are usually of a reddish-brown to castanea-violet coloration with a darker pattern and silver shading, the external field usually with blackish or dark brown scales. The wing pattern consists of two more or less parallel medias, the postmedia on the forewings angling back to the costa near the apex; often the pattern is weak. In the ♂ genitalia the uncus is elongated with basal narrowing, is apically divided, short, and divided into two rounded lobes; the gnathos has two long and narrow hooks, sometimes dentated; the valvae are flat, with a small cuiller which bears very long, well developed, chetae; there is a distinct costal appendage in the apical third covered with numerous very small cone-shaped chetae; a band-shaped juxta forms membranous lobes from both side of aedeagus; aedeagus short, tubular with numerous needle-shaped cornuti in the basal zone of spiral vesica, the most distal cornuti form a very diagnostic broken ring; sternite eight with a characteristic cut or notch on the cranial edge accompanied with two rounded projections.

Remark: Both external characters and the male genitalia easily separate this group within the genus but have a very limited significance for a specific diagnosis within the group. Therefore, it is possible that more species are concealed under the name "*sphingiformis*". Perhaps their real taxonomic status should be determined by their non-traditional characteristics, such as pupal or larval chaetotaxy, DNA-analysis, or chromosomal research. Continental *M. sphingiformis* MOORE are treated as one species which indistinctly divides into regional races here.

All members of this group seems to be polivoltine.

The range of the *sphingiformis*-group extends to the Himalayas (India, Pakistan, Nepal), southern China, Vietnam, Thailand, Myanmar and Taiwan; a very peculiar species is known from the mountains of Sumatra. This group consists of three species.

Mustilia sphingiformis MOORE, 1879 (colour pl. 27: 11-13)

Proc. Zool. Soc. London **1879**: 407, pl. 33, fig. 4. Type locality: Masuri, N.W. Himalaya. Types: ♂, ♀♀ (BMNH).

Male: Unmistakably diagnosed by external characters, it having narrow falcate wings with a reddish brown coloration and strong silky glistening; hind wings distinctly pale yellowish in the costal region. Discal spot small, blackish, and not prominent. The outer margin of the fore wing is only slightly concave. Wingspan 45-53 mm, forewing length 24-27 mm.

♂ **genitalia** (fig. 7): Diagnosed first of all by the shape of the uncus, which is distinctly angled at the sides; the lobes of the uncus are short, triangular, acute, and often slightly curved. The shape of the uncus varies depending upon individual localities but are always characterized by the more or less distinct lateral prominences. The branches of the gnathos are long, slender, and sickle-shaped. Valva narrow, elongated, with a characteristic lobe on the inner surface, covered with minute setae and with a concave costal margin. Cuiller distinct, slender, with a few well developed, straight to slightly curved, setae. Cucullus distinct. Aedeagus short, vesica long, widening in the basal half and densely covered with fine hair-like cornuti; this zone is limited at the top by a crop of well developed spine-like cornuti and a scobinated zone at the apex of the aedeagus. The eighth sternite has rounded lobes.

² Species of this group are similar in appearance to some members of the related genus *Andraca* Wlk. In doubtful cases it belonging can be proved by peculiarities of flagellum with ramiless tip short and distinctly pectinated in *Andraca* Wlk. but long and almost filiform or slightly dentate in *Mustilia* Wlk.

♀ much larger (wingspan 53–60 mm, forewing length 33–37 mm), with the same kind of the pattern and colouration but with less falcate forewings; their outer margin is broadly rounded.

Caterpillars have been identified as feeding on *Hibiscus rosa-sinensis* (Malvaceae), *Ficus retusa* and *Morus* sp. (Moraceae), and *Fraxinus penssylvanica* (Oleaceae) (ROBINSON et al., 2001; CHU & WANG, 1996).

Distribution: From the Himalayas (northern and north-eastern India and Nepal) to southern and south-eastern China (Prov. Yunnan, Fujian), Myanmar, northern Thailand, northern Vietnam and Malaysia. The population in Taiwan, known as *Mustilia gerontica* WEST, 1932, has no real diagnostic characters separating the taxon from *M. sphingiformis* MOORE, so I have considered it here on a subspecific level.

Mustilia sphingiformis gerontica (WEST, 1932) **stat. nov.** (colour pl. 27: 14)

Mustilia gerontica WEST, 1932, Novit. Zool. 37: 216. Type locality: [Taiwan] Formosa, Rantaizan, 7.500 ft. Holotype ♂ (BMNH).

Male: With the characters of the nominate subspecies; just slightly smaller than average (wingspan 42–54 mm, forewings length 23–29 mm).

♂ **genitalia** (fig. 8): The shape of the uncus is the diagnostic feature: it is pronounced, the lateral sides are almost parallel, and its prominences are missing or at most indistinct. The branches of the gnathos are long, slender, sickle-shaped, and more distinctly toothed in the distal third. Cuiller distinct, slender, with straight to slightly curved setae; their number varies significantly from three in an insular population to more in the continental population of eastern China. Aedeagus of the same shape and process, but the zone is covered with hair-like cornuti, these being smaller, as are those at the crown. The lobes on the eighth sternite are comparatively acute.

♀ of the same kind of pattern and coloration but it varies significantly in size (wingspan 51–65 mm, forewing length 27–34 mm).

Distribution: Taiwan and eastern China (Fujian: Kuatun, ca 2300 m).

Mustilia orthocosta YANG, 1995 (colour pl. 29: 47, 48)

Ins. Baishanzu Mt.: 355, figs 4, 9. Type locality: Zhenjan, Mt. Baishanzu. Holotype ♂, said to be in coll. Beijing Agricultural University but in fact missing (Dr. WANG XINLI, pers. comm.³).

The species is only known to me from the original description and poor quality photographs, so the status of the taxon is not clear.

According to the original description the species is visually similar to *M. sphingiformis* MOORE; this is also proved by the figure of the ♂ genitalia (p. 355, fig. 9). However, the species has the outer margin of the fore wing almost straight, and not curved as in *M. sphingiformis* MOORE and related species. The shape of the forewing is certainly different from that of species already discussed so the taxon probably does represent a separate species within this group, it having a close relationship to *M. sphingiformis* MOORE.

Distribution: Only known from China: Zhejiang, Mt. Baishanzu, 600 m (the only ♂ was collected at 23.IV.1994). I attribute here to this taxon the moths from the following localities: eastern China, Fujian, Dai Mao Shan, 60 km NW of Longyan; Guangxi, Dayao-Shan, 100 km SE of Liuzhou, numerous specimens of both sexes in MWM. In the last locality the species flies sympatrically with typical *M. sphingiformis* MOORE, although the latest is very rare. More specimens were also collected from Sichuan (Qingchenghoushan Mts., 70 km NW Chengdu, 1400 m, V 2005); the characters of the ♂ genitalia have some deviations from those of Zhejiang and Fujian, as figured (figs 32, 33). Further study of type material is necessary to define the status of these populations more precisely.

Mustilia lieftincki ROEPKE, 1948 (colour pl. 27: 15, 16)

Tidschr. Ent. 89: 213, fig. 4. Type locality: Z. Sumatra, Top Tangamoes, 2100 m. Type ♂ (NHML).

Male: The species is of medium size (wingspan 44–48 mm, forewing length 24–26 mm). The ground colour is a dark rosy brown with an abundance of an olive-green suffusion in the external and central fields of the fore wing. The wing pattern is smooth but distinct, consisting of three transversal fasciae. The external field has a triangular dark brown to red-brown shade. Discal spot blackish. Hind wing of the same ground colour but with a pale yellow costal zone; two brownish transversal fasciae are also present. In spite of being atypical compared to the group's general appearance, the male genitalia correspond completely to the ground scheme.

♂ **genitalia** (fig. 9): Diagnosed by the long, flat, narrow, triangular, and slightly curved lobes of the uncus. Valva narrow, elongated. with a characteristic lobe on the inner surface, covered with minute setae. Cuiller distinct but slender, with three or four well developed, straight, setae. Aedeagus slightly curved, vesica long. The basal third of the vesica is densely covered with fine hair-like cornuti: this zone is limited above by a ring of well developed but short spine-like cornuti interrupted on the ventral surface of the vesica.

♀ larger (wingspan 58 mm, forewings length 31 mm), with a predominance of reddish-brown colours. Hind wings with pale yellow costal and medial zones.

Distribution: Mountains of Sumatra.

3. *Mustilia phaeopera* HAMPSON, 1910-specific group

This part deals with members of *M. phaeopera* HAMPSON, 1910 specific group. It has included so far two closely related species. *M. phaeopera* HAMPSON, 1910 and *M. fusca* KISHIDA, 1993.

³ „I am very sorry I haven't found the specimens which you need, in despite of I checked all specimens from professor Yang" (Dr. WANG XINLI, Beijing Agricultural University, pers. comm.)

The wing shape and colour pattern, as well as the ♂ genitalia, clearly differentiate this group from related species, which allows me to hereby erect a new subgenus.

***Smerkata* subgen. nov. in *Mustilia* WALKER, 1865**

Type-species: *Mustilia phaeopera* HAMPSON, 1910, here designated.

Diagnosis: A large species with strongly falcate forewings, these sometimes being shorter and distinctly broader than other species of the genus. The wing pattern consists of two more or less parallel medias, and the postmedia on the forewings angles back to the costa near the apex. Well diagnosed by wing coloration: forewings dark, often with blackish-shading on the external field; hind wings with radio-costal lightening. In most species the head contrasts, being white or yellowish coloured. In ♂ genitalia (figs 10-15) the uncus is very short in comparison with other specific groups; it is bilobed, the gnathos is also shorter, and has two hooks; the valvae have a small cuiller and a small but distinct costal appendage in the apical third; a band-shaped juxta forms membranous lobes, covered with thin setae, from both sides of the aedeagus; aedeagus short, tubular, with numerous needle-shaped cornuti in the basal zone of a spiral vesica; sternite eight with a characteristic cut or notch on the cranial edge.

Remark: The ♂ genitalia easily separate this group within the genus but have a very limited significance for a species-specific diagnosis. Any determination down to species level should involve external features more than the genitalia. All members of this group seems to be winter fliers and are often known from high altitudes of mountain ranges. The range of the *phaeopera*-group is limited to the Himalayas (Assam, Nepal), northern Vietnam, northern Thailand, Taiwan, and the mountains of southern and eastern China. This group consists of six species, four of which are described here as new; another belonging to this group is described below in the Taxonomic appendix.

***Mustilia (Smerkata) phaeopera* HAMPSON, 1910 (colour pl. 28: 21-23)**

J. Bomb. Nat. Hist. Soc. **20**: 83, pl. F, fig. 1. Type locality: Assam, Khasis. Types: ♂, ♀ in BMNH (the ♂ is designated here to be a lectotype; a pencil drawing of its genitalia is kept in Dr. W. DIERL's archive in MWM).

Male: A relatively large species (wingspan 47-52 mm, forewing length 26-28 mm) with a characteristic appearance. The forewings are of a dark brown ground colour, with blackish in the outer third and a dark grey wavy pattern; hind wings with yellowish costal and central zones. The colour saturation on both wings varies from dark brown to greyish-brown. The antennal flagellum contrasts with a covering of white scales.

♂ genitalia (fig. 10): Diagnosed by a narrow valva with indistinct inner lobe, this being exhibited in most specimens as a tooth shape, with an absence of setae. Cuiller short, with short, slightly curved setae. Aedeagus with fine, spine- to hair-like cornuti, which densely cover the basal third of the vesica.

♀ larger than the ♂ (wingspan 55-61 mm, forewing length 29-32 mm), with a lighter and smoother wing pattern.

Biology: An autumnal flier on the wing in October-November. In Nepal, the moth inhabits higher altitudes of about 2000-3200 m, although it is more numerous at about 2300-2560 m. It develops one generation per year. The caterpillars have been found from *Camellia caudata* (Theaceae) (ROBINSON et al., 2001).

Distribution: Described from Assam, this species is also known from Nepal where it is relatively common. Two specimens are also known from Northern Vietnam (Mt. Fan-si-pan, Cha-pa, 1600-1800 m, X and XI 1994, GU 8013, both in MWM).

***Mustilia (Smerkata) fusca* KISHIDA, 1993 (col. pl. 28: 25, 26)**

Japan Heterocerist's J. **173**: 407, figs 1-3. Type locality: Taiwan, Taoyuan Hsien, Lalashan, 1500 m. Holotype ♂ (NSMT, Japan).

Male: Smaller than the previous species (wingspan 46-50 mm), and darker, without the distinct wing pattern. Some specimens have numerous silver scales covering the basal and central fields of the forewings.

♂ genitalia (fig. 11): Diagnosed by a narrow valva with a distinct inner lobe which is covered with short setae. Cuiller small, with short, very slightly curved setae. The aedeagus with fine, spine-like cornuti, covering the ventral third of a spiralled vesica.

♀♀ as illustrated. Lighter and with very smooth medias. Wingspan 47-53 mm, forewing length 24-29 mm.

Biology: An autumnal flier, the moth is on the wing in late October-December. It inhabits higher altitudes of about 1470-2520 m; darker specimens are known from lower altitudes of about 900-1160 m. There is one generation per year.

Distribution: Taiwan.

***Mustilia (Smerkata) craptalis* spec. nov. (colour pl. 28: 29-31)**

Holotype ♂: China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m, 9.IX 1935, leg. H. HÖNE (ZFMK).
Paratypes: 12 ♂♂, China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m, 4.IX-16.IX 1935, leg. H. HÖNE (GU BMB-020 - ZFMK); 1 ♂, the same data but 6.IX 1935, leg. H. HÖNE (ZMHUB); ♀, A-tun-tse (Nord Yunnan), obere Höhe (ca 4500 m), 3.III 1937, leg. H. HÖNE (ZFMK); ♂, Northern Vietnam, 1600-1800 m, Mt. Fan-si-pan (West), Cha-pa, XI 1994, Sekund. Wald / Kulturland, leg. SINJAEV & einh. Sammler (GU 7908 - MWM).

Male: A relatively small species (wingspan 42-43 mm, forewing length 21-22 mm), similar in appearance to *sphingiformis* but with less falcate fore wings and a paler ground colour. The outer margin of the fore wing is straight, the colour being of a light brownish-rose with

a distinct silk tint and a bluish suffusion along the costa. The wing patterning is vague, and consists of darker wavy medial fasciae and a strongly curved submarginal fascia. The discal spot is small and blackish. Hind wings with a pale yellowish costal field.

♂ **genitalia** (fig. 12): Diagnosed well by a broad valva with apical narrowing, and by the presence of a distinct inner lobe which is covered with short setae. Cuiller short, with relatively long and well developed, slightly curved, setae. Aedeagus with hair- to spine-like cornuti, densely covering the basal half of the vesica and forming an additional semi-circle on its ventral surface. The shape of the eight sternite is as illustrated; the acute medial lobes are typical.

♀ larger (wingspan 49 mm, forewing length 26 mm) but with the same wing pattern and shape of the wing as in the ♂; the outer margin of the fore wing is rounded.

Biology: An autumnal flier which is on the wing in September-November. Inhabits altitudes from 1670 to 4000 m and probably develops one generation per year. The preimaginal instars and host plants are still unknown.

Distribution: Southern China (Yunnan), northern Vietnam (Mt. Fan-si-pan).

Mustilia (Smerkata) soosi spec. nov. (colour pl. 28: 24)

Holotype ♂: Thailand, Changwat Chiang Mai, 20 km NW of Mae Ai, 1650 m, 6.XII 1998, leg. M. HREBLAY, Y. SHERPA & I. SOOS (MWM). Paratypes: ♂, the same; 8 ♂♂, Thailand, Changwat Chiang Mai, Doi Inthanon, 16 km NW of Fang, 2000 m, 8 & 18.XII 1998, leg. M. HREBLAY, Y. SHERPA & I. SOOS; 6 ♂♂, Thailand, Changwat Chiang Mai, Doi Inthanon, 18 km NW of Fang, 2100 m, 7 & 17.XII 1998, leg. M. HREBLAY, Y. SHERPA & I. SOOS; ♂, Thailand, Changwat Chiang Mai, Doi Inthanon, 18 km NW of Fang, 2100 m, 8.XI 1999, leg. M. HREBLAY; ♂, Thailand, Changwat Chiang Mai, Doi Inthanon, 18 km NW of Fang, 2100 m, 15.XI 1999, leg. M. HREBLAY (all in MWM).

Male: Wingspan 43-47 mm, forewing length 23-25 mm. The ground colour of the wings is blackish-brown. The forewings have a distinct, wavy to lunate transverse pattern, have a dark chocolate-brown outer shading, and is pale yellowish in the tornal fields. The hind wings are more yellowish, with dark grey transversal irregular lunate medias and a brown darkness on the tornal external field. The head is reddish-brown with a greyish-rose vertex that is visible only in fresh specimens and completely disguised by grease in collections.

♂ **genitalia** (fig. 13). Diagnosed by a broad valva with an indistinct inner lobe which is covered with minute setae. Cuiller very short, with short, slightly curved setae. The aedeagus with fine, spine-like cornuti, densely covering the ventral third of the base of the vesica and in a longitudinal row on the dorsal surface of the vesica.

♀ unknown.

Diagnosis: A dark coloured species with shorter forewings and a strongly developed lunular dark pattern.

Biology: An autumnal flier, with a flight period from October to late December. The moth was collected on higher altitudes (2000-2100 m). There is a high probability that there is one generation per year.

Distribution: Is known only from northern Thailand (Chiang Mai) so far.

Mustilia (Smerkata) brechlini spec. nov. (colour pl. 28: 27)

Holotype ♂: Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 10.XI 1999, leg. M. HREBLAY (MWM). Paratypes: 2 ♂♂, Thailand, Changwat Chiang Mai, Doi Inthanon, 18 km NW of Fang, 2100 m, 15.XI 1999, leg. M. HREBLAY; 6 ♂♂, Thailand, Changwat Chiang Mai, Doi Inthanon, NP, 2300 m, 19-20.XI 1998, leg. T. CSOVARI & L. MIKUS; 14 ♂♂, Thailand, Chiang Mai prov., Doi Inthanon National Park, km 43,5 road (N of) Chom Thong-summit 5,5 km above checkpoint 2, 2050 m, lower montane forest, 15-21. XI 1998, leg. Dr R. BRECHLIN; 17 ♂♂, Thailand, Chiang Mai prov., Doi Inthanon National Park, km 37,3 road (N of) Chom Thong, near/around checkpoint 2, 1730 m, lower montane forest, 28-31. XI 1998, leg. Dr R. BRECHLIN; 2 ♂♂, Thailand, Chiang Mai prov., Doi Inthanon National Park, km 37-38 road (N of) Chom Thong, near/around checkpoint 2, 1730 m, lower montane forest, 12-22. XI 1998, leg. Dr R. BRECHLIN; 8 ♂♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 10.XI 1999, leg. M. HREBLAY; 2 ♂♂, Thailand, Changwat Nan, 25 km N of Bo Luang, 1150 m, 11.XI 1999, leg. M. HREBLAY; ♂, Thailand, Changwat Chiang Mai, Doi Phahompok, 16 km NW of Fang, 2050 m, 16.XI 1999, leg. M. HREBLAY (all MWM); 6 ♂♂, Thailand, Chiang Maim Doi Inthanon, 24.X 1985, 5.XI 1986, 10.XII 1988, 10.XI 1985, 23.XI 1997, 20.XI 1998 (CBAP); ♀, the same data but 12.XII 1988 (CBAP).

Male: Wingspan 45-50 mm, forewing length 25.5-27 mm. Ground colour of the wings dark chocolate-brown. Forewings with a smooth wavy pattern, as in its congeners, with dark blackish external shading and silver to bluish suffusion in central field of the forewing. Hind wings with two vague dark brown transversal fasciae and dark yellow radio-costal lightening. Head reddish-brown with a white vertex.

♂ **genitalia** (fig. 14): Diagnosed by a narrower valva with a distinct inner lobe, and covered with short setae. Cuiller short, covered with slightly curved setae. Aedeagus with fine, spine-like cornuti, which densely cover the ventral third of the vesica, these being more abundant on the dorsal surface.

♀ with the same kind of wing pattern and coloration but larger and more robust.

Diagnosis: The darkest species of the group, with abundant bluish suffusion on the wings. In external characters the moth is similar to *M. fusca* KISHIDA, which is limited to Taiwan, but it can be separated by its slender valvae, longer chaetae on the cuiller,

and more abundant and larger cornuti on the vesica.

Biology: An autumnal flier, it was collected at higher altitudes (1150-2300, more common on those of 1730-2050 m) in late

October- December. There is a high probability that there is just one generation per year.

Distribution: Only known from Northern Thailand (Chiang Mai, Nan) so far.

***Mustilia (Smerkata) tzarica spec. nov.* (colour pl. 28: 28)**

Holotype ♂: Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 18.XI 1998, leg. T. CŠOVARI & L. MIKUS (MWM).

Paratypes: 9 ♂♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 16-18.XI 1998, leg. T. CŠOVARI & L. MIKUS; 11 ♂♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 10-13.XI 1999, leg. M. HREBLAY (all MWM).

Male: A large and very robust species (wingspan 58-61 mm, forewings length 29-31 mm). Forewings diagnostically acute and very richly coloured, with dark chocolate-brown external shading, a rosy-brownish tornal field, and a blackish streak crossing the wing in the M-field. Medial field with abundant bluish suffusion. Wing pattern distinct but smooth, dark grey, and contrasting; antemedial prominent and oblique. Hind wings of a light brownish-yellow colour, with brown outer margin and dark grey wavy transversal medial fasciae. Head reddish-brown with a greyish vertex.

♂ genitalia (fig. 15): Diagnosed well by its larger size, and a broader valva with its distinct inner lobe which are covered with short setae. Cuiller short, with relatively long and strong, slightly curved, setae. Aedeagus with hair- to spine-like cornuti, densely covering the basal third of the vesica.

♀ unknown.

Diagnosis: The largest and most robust species of the Thai *Mustilia*, with a rich and complex wing pattern. The moth cannot be confused with its congeners because of its size and very bright colouration.

Biology: Autumnal flier (November). Inhabits middle altitudes of about 1700 m.

Distribution: The species is known only from Changwat Nan of northern Thailand.

4. *Mustilia hepatica* MOORE, 1879-specific group

So far the specific group includes just two closely related species, *M. hepatica* MOORE, 1879 and *M. dierli* HOLLOWAY, 1987. The wing-shape and colour pattern, as well as the ♂ genitalia, differentiate this group amongst related species so significantly that it suggests that the group may be a separate genus. The valid name introduced is *Mustilizans* YANG, 1995.

Mustilizans YANG, 1995, Insects of Baishanzu Mountain: 355.

Type-species: *Mustilizans drepaniformis* YANG, 1995, Insects of Baishanzu Mountain: 356, by original designation

Diagnosis: A large and robust species with falcate forewings, which are sometimes shorter and distinctly broader than in other species of the genus. Both wings are usually of a sandy-grey to rosy-grey coloration with yellowish markings. The wing pattern consists of two more or less parallel medias, while the postmedia of the forewings angles back to the costa near the apex. In the male genitalia the uncus is short and divided into two rounded lobes, and the gnathos is completely reduced; valvae broad, sclerotized with a distinct, flat cuiller, which is covered with numerous spines, without any costal appendage; a band-shaped juxta without distal membranous lobes; aedeagus elongated, tubular, with needle-shaped cornuti grouped in separated clusters; vesica long; the eighth sternite is well sclerotized, with a characteristic cut or notch on the cranial edge.

Remark: The *hepatica* group is divided into two further phenotypic subgroups based on the shape of the postmedia on the forewing, which can be straight or wavy; the male genitalia easily separate this group within the related genera and differentiate all species well. All members of this group seem to be polivoltine. The range of the genus is limited to the Himalayas (India, Pakistan, Nepal), China (without Taiwan), Vietnam, Thailand, Myanmar, Laos and Sundaland (Sumatra, Borneo, Java).

Taxonomic comments: The genus is not closely related to *Mustilia* s. str. and probably forms a separate group in a rank or tribe in the Bombycidae.

This group consists of nine species, five of them being described here as new.

***Mustilizans drepaniformis* YANG, 1995**

Insects of Baishanzu Mountain: 356, figs 5, 11. LT: [China] Zhejiang Prov., Mt. Baishanzu, 1600 m. Holotype ♂ (said to be in the coll. of Beijing Agricultural University but in fact missing according to a pers. comm. from Dr. WANG XINLI).

After the original description: The wingspan of the ♂ is 54-55 mm; a greyish yellow species with a distinctive dark maculation on the wings. Somewhat similar to *M. hepatica* MOORE, although this has a different wing pattern.

Diagnosis (after the original description): “labial palpi long, their 2nd segment 4 times longer its width; R2 in forewing very short and obliquely from R3 ending to costal margin; frenulum presented; in ♂ genitalia lateral processes of tegumen [probably, the branches of gnathos are mean - VZ] absent and valvae simple, without longitudinal suture, as in the original and tubercles at the middle portion”.

Comments: The short description, combined with very poor quality photographs of the moth and its genitalia, is insufficient to determine identification down to species level. Type material was not made available, in spite of special searches and requests³. In any event, the species belongs to the complex under consideration and the main features of the genitalia are typical for a genus that is separate from *Mustilia* s. str.

³see page. 216

***Mustilizans hepatica* (MOORE, 1879) comb. nov. (colour pl. 28: 32-34)**

Mustilia hepatica MOORE, 1879, Lep. coll. late Mr ATKINSON: 82, pl. 3: fig. 18. Type locality: [Darjeeling] Darjiling. Holotypus ♂ in coll. ATKINSON in ZMHUB.

= *Mustilia columbaris* BUTLER, 1886, Proc. Zool. Soc. London 1886: 387, pl. 35: fig. 7. Type locality: W. India, Murree. Holotype ♂ (BMNH).

Male: In external characters it is diagnosed by a wavy postmedia (especially in its basal third), a triangular discal spot that is smaller than in *dierli* Holloway, and the rounded edge of the hind wings. The moth is not of a reddish colour. Wingspan 45-55 mm, forewing length 24-29 mm.

♂ genitalia (figs 17, 18): The uncus is bifurcated with short rounded lobes; valva flat, with apical narrowing; sacculus with a smooth inner edge. No sclerotized folds on the inner surface of the valva present. Cuiller with numerous, thin, straight setae, which often look like scales. The vesica consists of three rows of strong needle-shaped cornuti, one transversally basal and two laterally longitudinal.

♀♀ larger (wingspan 64-72 mm, forewing length 35-39 mm), with much lighter coloration and a significant reduction in dark patterning.

Caterpillars were collected from *Quercus incana* (Fagaceae) (ROBINSON et al., 2001) and *Broussonetia papyrifera* (L.) VENT. (Leguminosae) (CHU & WANG, 1996).

Distribution: From the Himalayas (Pakistan, northern India, Nepal) eastwards (in southern and eastern China, northern Vietnam, Thailand, Laos, and northern Malaysia), where the moth is represented by a somewhat smaller separate subspecies that can only be identified by the ♂ genitalia. This subspecies is hereby named

***Mustilizans hepatica aeola* subspec. nov. (colour pl. 28: 35)**

Holotype ♂: Thailand, Changwat Nan, 30 km E of Pua, 1700 m, I.III 1998, leg. M. HREBLAY & C. SZABOKY (MWM).

Paratypes: ♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 14-15.IX 1999, leg. A. SZABO & Z. CZERE; ♂, Thailand, Changwat Nan, 30 km E of Pua, 1700 m, 17.VIII 1999, leg. T. CSOVARI & L. MIKUS (GU 8003 - MWM); 2 ♂♂, Thailand, Changwat Nan, 5 km N of Bo Luang, 1000 m, 18.VIII 1999, leg. T. CSOVARI & L. MIKUS; ♂, Thailand, Changwat Chiang Mai, Doi Phahompokm 17 km NW Fang, 2100 m, 15.VIII 1999, leg. T. CSOVARI & L. MIKUS; ♂, Thailand, Changwat Phayao, 15 km W Huai Fuang, 740 m, 9.VIII 1999, leg. T. CSOVARI & L. MIKUS; ♂, Thailand, Chiang Mai, Dai Inthanon Nat. P., 37,5 km road N of chong Thong, 1730 m, lower mont. forest, 28-31.XI 1998, leg. Dr. R. BRECHLIN (GU 8002 - MWM); 16 ♂♂, N. Vietnam, Mt. Fan-si-pan, Cha-pa, different data, V. SINJAEV et local collector leg.; ♂, Nord Vietnam, Tam Dao, Sek. Wald, 60 km NW Hanoi, 950 m, 21°34'N, 105°20'E, IV 1995, leg. V. SINJAEV; 6 ♂♂, Vietnam sept., Plato TayNguen, Mt. NgoLinh, 900-1400 m, 15°02'N, 107°59'E, 10-25.VIII 1996, leg. SINJAEV & AFONIN (all in MWM).

Wingspan 44-54 mm, forewings length 23-27 mm.

♂ genitalia (fig. 19): The diagnostic features are the shape of the cuiller, which bear hair-like setae, and a lack or distinct reduction (both in number and size) of a lateral row of needle-shaped cornuti on the vesica.

***Mustilizans dierli* (Holloway, 1987) comb. nov. (colour pl. 28: 37, 38)**

Mustilia dierli HOLLOWAY, 1987, Moths Borneo 3: 88, pl. 9, fig. 120. Type locality: [Borneo] E[asterm] Saban: Brumas. Holotype ♂ (BMNH).

Male: Identified in external characteristics by the straight postmedia, elongated discal spot, and often by its reddish ground colour, especially in ♀♀. Wingspan 45-53 mm, forewing length 24-27 mm.

♂ genitalia (figs 21, 22): The uncus is bilobed with long lobes, much longer and slender than in *hepatica*; the valva is flat, broad, with distinct narrowing to the apex; sacculus with more or less distinct teeth shapes on the inner edge; cuiller with numerous, thin, short, curved setae of about equal size. The vesica consists of needle-shaped cornuti forming three longitudinal rows; a further group can be attached to the apex of the aedeagus.

♀ much larger (wingspan 70-71 mm, forewing length 37-38 mm), with a deep violet-brown ground colour, an abundant silver-bluish suffusion, and an absence of a dark discal spot.

Distribution: Sundaland (Sumatra, Borneo, and the Malaysian Peninsular) up to central Thailand, Vietnam and southern Myanmar. Northernmost examples (in Yunnan, northern Thailand and northern Vietnam: Mts. Fan-si-pan) are represented by a separate subspecies, that is smaller, somewhat darker, with a vaguer wing pattern, while the discal spot is reduced to a small point. This subspecies is hereby named

***Mustilizans dierli refugialis* subspec. nov.**

Holotype ♂: China, Yunnan, Simao-district, Mangxi Ba Mts, 18 km S of Simao, 1280 m, 26.II-20.III 1999, leg. Dr. R. BRECHLIN (GU 7976 - MWM).

Paratypes: ♂, the same data; 7 ♂♂, China, Shaanxi, Daba Shan 1800 m, 15 km S Shou-Man vill., 32°08'N, 108°37'E, 25.V-14.VI 2000, leg. SINJAEV & PLUTENKO; 17 ♂♂, China, Hainan isl., Wuzhi-Shan Mts, 18°53'N, 109°43'E, 1500 m, 20.II - 10.IV 2001, leg. local collector; 3 ♂♂, China, Prov. W-Yunnan, Xishuangbanna Dai aut. Pref., Puwen, 30 km SSW Simao, 900 m, 22°30'N, 100°02'E, 10-30.IV 2000, leg. BRECHLIN's collector; 7 ♂♂, China, Prov. W-Yunnan, Xishuangbanna Dai aut. Pref., Puwen, 30 km SSW Simao, 900 m, 22°30'N, 100°02'E, 16.III-10.IV 2000, leg. BRECHLIN's collector (all in MWM).

Wingspan 42-47 mm, forewing length 25-26 mm (pl. 00, fig. 36).

♂ **genitalia** (fig. 20): The uncus is bilobed with short rounded lobes similar those of *hepatica*; the sacculus has distinctly stronger teeth shapes on the inner edge; cuiller with numerous, thin, short, curved setae of about equal size, smaller than in the nominate subspecies; cornuti smaller and in smaller numbers, forming the basal groups and one longitudinal row.

Mustilizans eitschbergeri spec. nov. (colour pl. 29: 45, 46)

Holotype ♂: China, Shaanxi prov., South Tai bai shan, Tsinling Mts., Houzbenzi, 33°53'N, 107°49'E, 1500 m, 5-10.V 2000, leg. SINIAEV & PLUTENKO (MWM).

Paratypes: 6 ♂♂, China, Shaanxi prov., Tai bai shan Mts. (S), Tsinling Mts., Houzbenzi, 33°53'N, 107°49'E, 1800 m, VI 1999, leg. local collector; ♂, the same data, but VII 2001; 3 ♂♂, the same data but Sommer 1999; 9 ♂♂, China, Shaanxi prov., South Tai bai shan, Tsinling Mts., Houzbenzi, 33°53'N, 107°49'E, 1500 m, 5-10.V 2000, leg. SINIAEV & PLUTENKO; 6 ♂♂, China, Shaanxi prov., Tai bai shan Mts. (S), Tsinling Mts., Houzbenzi, 33°51'N, 107°49'E, 1600 m, 27.V-8.VI 1999, leg. local collector; 12 ♂♂, the same data but 1-12.VIII 1999, leg. Dr. R. BRECHLIN; 2 ♂♂, the same data but 1500 m, IX 2000, leg. local collector; 44 ♂♂, the same data but 33°51'N, 107°57'E, 1500 m, 20.IV-11.V 1999, leg. SINIAEV & PLUTENKO; 3 ♂♂, the same data but 6-20.IV 1999, leg. V. SINIAEV & A. PLUTENKO; ♂, China, Shaanxi prov., Tapa Shan, 32°56'N, 109°25'E, 900-1000 m, 20-24.V 2001, leg. V. SINIAEV & local collector; 7 ♂♂, China, Shaanxi prov., Ning Shan, 1500m, near Ningshan town, 33°44'N, 108°26'E, VI 2001, leg. local collector; ♀, C. China, 1600 m, Panda area, Shaanxi prov., Foping Natur. Reserve, 33°45'N, 107°48'E, 6-11.IV 1999, leg. V. SINIAEV & E. PLUTENKO; ♂, China, Jiangxi-Fujian border, 50 km SE of Yingtan, 27°56'N, 117°25'E, 1600 m, V 2002, leg. SINIAEV & local coll. (all in MWM); 18 ♂♂, Tapaishan im Tsinling, Süd-Shensi, ca 1700 m, 12-17.V 1936, H. HÖNE (ZFMK).

Male: A small species (wingspan 44-50 mm, forewing length 23-25 mm) with the postmedia not running to the apex of the wing but roundly curved in the apical quarter; discal spot large and rounded. The ground colour of both wings is reddish-brown; specimens exhibiting a spotted yellowish pattern in the submarginal zone are typical. There are no greyish or bluish suffusions. The external margin of the fore wing is distinctly acute with a rounded apex; the hind wing is distinctly angled at the middle.

♂ **genitalia** (fig. 23): Uncus bifid, with slender, long, and slightly curved lobes, with a distinct cut between them; valvae elongated, curved, and acute; sacculus with small but distinct teeth shapes on the distal edge; cuiller large, covered with numerous, strong, long, and very slightly curved, chetae. The vesica consists of a basal transversal semicircle of strong needle-shaped cornuti of different sizes and two longitudinal rows of about equal size. The eighth sternite has a triangular cut.

♀ larger (wingspan 62 mm, fore wing length 31 mm), with more slender and elongated wings of a richer reddish ground colour, with a lack of a spotted pattern and weak development of the transversal fasciae. Discal spot absent; the outer margin of the hind wing is not angled but is broadly rounded.

Biology: The species inhabits altitudes from 900 to 1800 m. There are two generations per year with flight activity in April-June and again in August. Preimaginal instars and host plants are unknown.

Distribution: China: Shaanxi, Jiangxi, Fujian.

Ethymology: The species is named in a honour of my friend, Dr. ULF EITSCHBERGER (Marktleuthen, Germany), for his great contribution to lepidopterological research and for his constant support in my own investigations.

Mustilizans capella spec. nov. (colour pl. 29: 44)

Holotype ♂: China, Shaanxi prov., Ning Shan, 1500m, near Ningshan town, 33°44'N, 108°26'E, VI 2001, leg. local collector (MWM).

Paratypes: 3 ♂♂, China, Shaanxi prov., Ning Shan, 1500m, near Ningshan town, 33°44'N, 108°26'E, VI 2001, leg. local collector; 8 ♂♂, China, Shaanxi prov., Tai bai shan Mts. (S), Tsinling Mts., Houzbenzi, 33°53'N, 107°49'E, 1500-2200 m, V-VI 1999-2001, leg. local collector; 19 ♂♂ China, Shaanxi prov., Daba Shan, 1800 m, 15 km S Shou-Man vill., 32°08'N, 108°37'E, 25.V-14.VI 2000, leg. SINIAEV & PLUTENKO; 3 ♂♂, China, Shaanxi prov., Taibaishan Mts (S), Tsinling Mts, Foping NT, 33°51'N, 107°57'E, 1500 m, 20.IV-11.V 1999, leg. SINIAEV & PLUTENKO; ♂, China, Sichuan, Gongga Shan, 2200 m, 29°41'N, 101°58'E, 25.V-8.VI 2001, leg. SINIAEV & local collector (all in MWM).

Male: Wingspan 42-47 mm, forewing length 25-27 mm. Similar in appearance to the preceding species but of an olive-grey ground colour with a lack of reddish-brown colours; it has greyish or bluish suffusions which are distinct. Specific identifications can also be made from the shape of the forewing, where the outer margin is only slightly concave and the apex is less falcate than in *eitschbergeri* sp. nov. Hindwings without a triangular protuberance at the middle of outer margin.

♂ **genitalia** (fig. 24). As in *M. eitschbergeri spec. nov.* Valvae somewhat stronger and cuiller more prominent; cornuti of aedeagus finer.

Biology: The species inhabits altitudes from 1500 to 2200 m. All moths were collected just in May-June, although it is not clear if the species really develops only one generation. The female, preimaginal instars, and host plants, are unknown.

Distribution: China: Shaanxi, Sichuan.

Mustilizans predicta spec. nov. (colour pl. 29: 39, 40)

Mustilia hepatica, VAN EECHE (1929), Zool. Mededeel. 12: 64.

Holotype ♂: Java or., Mt. Bahran, 600-1000 m, IV 1996 (MWM).

Paratypes: 132 ♂♂, 2 ♀♀ from different localities of Java (MWM).

Male: A small insular species of a light olive-grey ground colour, with a greyish suffusion, a very small triangular or rounded discal spot, and a straight postmedia. Wingspan 42-46 mm, forewing length 22-24 mm.

♂ **genitalia** (fig. 25): Identified by the elongated valva, the loss of teeth-like shapes on the sacculus, lateral projections on tegumen (“shoulders to the tegumen”), and by the shape of the cuiller with long, slightly curved, chetae of different sizes. The vesica consists of a few strong needle-shaped cornuti arranged into three small patches, mostly oriented along the longitudinal axe.

♀ larger, with a wingspan of 64-65 mm, forewing length 34 mm. Similar in appearance to that of *M. dierli* HOLLOWAY, but lighter.

Biology: A mountain species, although it occurs in the lower altitudes (600 m to 1620 m). There are at least two generations per year with flight activity in February-April and again in July; in nature the flight period of all generations probably overlaps, the species flying throughout the year.

Distribution: Only known from Java (Mt. Salak, Gede, Mt. Bahran, Mt. Pangrange).

Remarks: This taxon was included by HOLLOWAY (1987: 88) under *Mustilia dierli* HOLLOWAY, with the comment that “the Javan male ... has prominent lobed shoulders to the tegumen and reduced spining in the aedeagus vesica”.

Mustilizans lepusa spec. nov. (colour pl. 29: . 41)

Holotype ♂: Northern Vietnam, Cuc Phuong Nat. Park, 120 km SW Hanoi, 20°15'N, 105°20'E, 400 m, 1-2.IV 1995, leg. SINJAEV & SCHINTLMEISTER (GU-7973 in MWM).

Male: A small species (wingspan 47 mm, forewing length 25 mm) very similar in appearance to *M. dierli refugialis* subspec. nov. but with a greatly reduced discal spot. Postmedia not serrated but very slightly concave.

♂ **genitalia** (fig. 26): Very characteristic. Uncus bifid, with broad, cone-shaped lobes with a short cut between them; valvae almost parallel, acutely apically rounded; sacculus with small but distinct teeth; cuiller with numerous, strong, straight chetae, quite different from those of *M. dierli* HOLLOWAY. The vesica consists of a basal transversal semicircle of strong needle-shaped cornuti of different sizes, together with two more longitudinal rows, one of which is much smaller than the other. The eighth sternite has a rectangular cut.

Distribution: Northern Vietnam, prov. Cuc Phuong. Seems to be rare. Only the male is known.

Mustilizans sinjaevi spec. nov. (colourpl. 29: 42)

Holotype ♂: Nord Vietnam, Mt. Fan-si-pan, Cha-pa, 2400 m, 22°15'N; 103°46'E, 8-29.V 1993, leg. SINJAEV & SIMONOV (MWM). Paratypes: 38 ♂♂, the same locality but collected on different dates (GU 7998, 8000, 8001 - MWM); ♂, China, Yunnan, 5 km N Hutioxia, 220 km N Dali, 2200 m, 23-27.IV 1998; ♂, China, S. Yunnan, N-Changyuan county, IX 1999, Guokandashan, leg. WANG & LI; 3 ♂♂, China, prov. Yunnan, Yunlong, Fengshuining Mts, 13 km N Caojian, 25°46'N, 99°06'E, 2460 m, 10-20.V 1999, leg. R. BRECHLIN; ♂, China, prov. Yunnan, Yunlong, Fengshuining Mts, 13 km N Caojian, 2460 m, 20.V – 9.VI 1999, leg. R. BRECHLIN (all in MWM); ♂, Tibet, brigde to Yarlung Tsampo, road Pome-Nyigtri, 2200 m, 30°01'15"N, 95°00'15"E, 28.V 2001, leg. G. C. BOZANO (ZFMK).

Male: The largest species of this group (wingspan 50-58 mm, forewing length 27-31 mm), with a light coloration and a very characteristic large, more or less rounded, discal spot.

♂ **genitalia** (fig. 27): The uncus is long, narrow, with wrinkled lobes, this being much longer and slender than in hepatica; the valva is flat, broad, with distinct narrowing to the apex and costal loop; sacculus without teeth; cuiller with numerous, thin, long, almost straight, setae. The vesica consists of needle-shaped cornuti arranged into indistinct clusters and rows. The eighth sternite has a triangular cut.

Distribution: The species is known from northern Vietnam (Mt. Fan-si-pan) and China (Sichuan, Yunnan and Tibet).

Ethymology: The species is named after the famous Russian collector Mr. VIKTOR SINJAEV (Moscow, Russia), in recognition of his contribution to entomology.

Mustilizans baishanzuna YANG, 1995

Mustilizans baishanzuna Yang, 1995, Insects of Baishanzu Mountain: 356, figs 6, 10. Type locality: [China] Zhejiang Prov., Mt. Baishanzu, 1500 m. Holotype ♂ (said to be in coll. of Beijing Agricultural University but missing accordingly the pers. comm. of Dr. WANG XINLI).

To quote the original description: “the expanse male 53-56 mm, closely allied to *drepaniformis* but distinctly brown in coloration, and the maculation indistinct. The male genitalia differs by the tegumen without an excision on the middle of antemargin (???), and the basal furca of valva much broader and densely covered with stout spines”.

Comments: The species was illustrated with photos of a very poor quality so it is impossible to define its status more precisely. On a whole the general appearance of the ♂ genitalia is similar to that of the taxon distributed in southern China, Myanmar and eastern India; this probably means that the species is *M. baishanzuna* YANG. That attributed to this species (col. pl. 29: 43), and its genitalia (fig. 28), are illustrated here.

In a sample of *Mustilia* s. lat. from southern China, one more new species belonging to *Mustilizans* was found. Its external characters cannot be associated with *Mustilia* because the moth does not possess the hooked apex to the wing, so it therefore looks like a member of the *Andraca* Wlk. which is obviously related with *Mustilizans*. The moth occupies an isolated position in the genus because of modified structures within the genitalia, the lack of the falcate apex to forewings, and simple wing pattern. I consider this species to be a member of a new subgenus, *Promustilia* subgen. nov.

***Promustilia* subgen. nov. in *Mustilizans* YANG, 1995**

Type-species: *Mustilizans* (*Promustilia*) *andracoides* spec. nov., here designated.

Diagnosis: A medium sized species with broad but not falcate forewings. Both wings are sandy-grey with an unmodified pattern of yellowish spots. In the ♂ genitalia (fig. 29) the uncus is slender, bifid, with long and narrow lobes with a narrow cut between them; the valvae is flat, narrow, almost parallel, and apically broadly rounded; sacculus large, with small distal prominence, without teeth; cuiller small, with numerous, short, slightly curved chaetae. The vesica is arranged with an almost spiral row of needle-shaped cornuti of similar size. The eighth sternite has a small quadrangular cut.

Only the typical species is included.

***Mustilizans* (*Promustilia*) *andracoides* spec. nov. (colour pl. 27: 17-19)**

Andraca gracilis, CHU & WANG (1996), Fauna Sinica 6: 57, text-fig. 41, pl. 3, fig. 9.

Holotype ♂: China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m, 7.VII 1935, leg. H. HÖNE (ZFMK).

Paratypes: 2 ♂♂, A-tun-tse (Nord Yunnan), Obere Höhe (ca 4500m), 9.VII 1936, leg. H. HÖNE (coll. F. DANIEL in MWM – GU 7927); 7 ♂♂, China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m, from 27.IV to 31.V 1934 & 1935, also 1 ex. 24.VII 1935, leg. H. HÖNE (ZFMK); ♂, Thibet, Ta-tsien-lou (GU 2005-13 - ZMHUB); ♂, China, Northern Yunnan, Haba Mts., Bailakou Pass, H=3900-4100 m, 12.VII 2002, leg. S. MURZIN & I. SHOKHIN (CVSM); ♀, China, Quinghai, Huangyuan, 2700 m, 5-9.VII 1922, leg. P. SALK (CMSW).

Male: Wingspan 40-44 mm, forewing length 21-22 mm, and atypical in appearance for the genus. Forewings not falcate, with rounded external margin and only slightly acute at the apex. The ground colour is yellowish or rosy-grey, without distinct shading. Forewings with two lunated grey medias outlined with lighter scales, a distinct blackish discal dot, and a small brownish spot on the costa about two-thirds from the wing base. Hind wings with a dark transversal media, lunate in Cu and A zones, and outlined exteriorly with yellowish scales.

♂ **genitalia** (fig. 29): See subgeneric account.

♀ larger, wingspan 47 mm, forewing length 26,5 mm, with the same kind of wing pattern but somewhat lighter.

Biology: A high mountain flier that is known from the highest altitudes of about 3900-4500 m, where it is on the wing in April-May and July. In spite of that prolonged flight period, the moth probably only develops a single generation each year. CHU & WANG (1996: 18) recorded *Stewartia pseudocamellia* MAXIM. (Ternstroemiaceae) as a larval host plant for *Andraca gracilis* [a misidentification].

Distribution: So far the moth is known only from China: Yunnan and Quinghai. The data on specific distribution was probably determined by CHU & WANG, 1996: 57 under *Andraca gracilis* BUTLER.

In a sample of *Mustilia* s. lat. from Vietnam, one more new species has been found. It can be hardly be included as a member of any genus under consideration because of its strongly modified genitalia. I consider this species to be a member of a new genus, ***Falcogona* gen. nov.**

***Falcogona* gen. nov.**

Type-species: *Falcogona gryphea* spec. nov., here designated.

Diagnosis: A medium sized species with broad falcate forewings. Both wings are deep brown with reduced patterning.

In the ♂ genitalia (fig. 16) the uncus is bilobed, both lobes being short, cone-shaped, and densely covered by setae; gnathos short, presented as two broad hooks; valvae sclerotized, and flat; cuiller transformed into very long, flat, stiletto-shaped appendages, with a loss of chaeta and bearing small thorns distally; the costal appendage at the apex of the valva is a flat bifurcated thorn; aedeagus short, tubular, with numerous needle-shaped to hair-like cornuti in the basal zone of a three-lobed vesica as well as on the shorter apical lobe; sternite eight with a characteristic cut/notch on the cranial edge. Only the typical species is included.

***Falcogona gryphea* spec. nov. (colour pl. 27: 20)**

Holotype ♂: Northern Vietnam, Mt. Fan-si-pan, Cha-pa, 22°17'N, 103°44'E, 1600 m, 20-30.III 1995, leg. SINJAEV & Sammler (MWM).

Paratype: ♂, Northern Vietnam, Mt. Fan-si-pan, Cha-pa, 22°17'N, 103°44'E, 1600 m, 20-30.IV 1995, leg. SINJAEV & Sammler (GU 972 MWM).

Male: Wingspan 43 mm, forewing length 23 mm. The ground colour of the wings is a plain dark chocolate-brown. Forewings with very indistinct patterning consisting of an oblique, thin postmedia, a dark point-like discal dot, and sparse bluish suffusion on the costal and anal edges of the wing. Hind wings of the same coloration, slightly lighter in the costal half. Head reddish-brown.

♂ **genitalia** (fig. 16): See subgeneric account. ♀ unknown.

Diagnosis: There are no similar species throughout the range. This is the darkest species of the group, with an abundant bluish suffusion on the wings. The ♂ genitalia are very characteristic because of the very long and strongly modified cuiller which is not present in any related species.

Biology: A spring flier, as slightly worn moths were collected at middle altitudes (of about 1600 m) in late March-April. The moth probably develops one generation per year.

Distribution: So far is known only from the type locality.

Taxonomic appendix

Just before this article was sent for publication, another new species within the genus was discovered amongst material collected by VIKTOR SINIAEV in China. A description of the new species is given below to avoid any possible mistakes in the main text.

Mustilia (Smerkata) ulliae spec. nov. (colour pl. 29: 47, 48)

Holotype ♂: China, Shaanxi, Taibaishan, Tsinling Mt., 1900 m, X 2004, leg. SINIAEV & his team (MWM).

Paratype: ♂, China, Hunan, Nanling Mts., 1500 m, Shikengkong Mt., 24°54'N, 112°57'E, 25.X – 7.XI 2003, leg. SINIAEV & Team (GU 10977 - MWM).

Male: A medium sized species, with a wingspan of 39-42 mm, forewing length 19-21 mm. Fore wings not falcate, but with a slightly sharpened apex and broadly rounded external margin. Ground colour of the forewing a dark brownish-yellow; three transverse irregularly lunate dark grey fasciae, a very small light grey discal spot, triangular brownish-grey external shading, and three white subspical streaks, are typical. Hindwings with a rounded margin, of the same ground colour but with a distinct dark yellow costal field. Body covered with dark brownish-yellow hairs. Front yellow, vertex with white scales.

♂ **genitalia** (fig. 30): Diagnosed by a broad valva with an indistinct inner lobe, covered with minute setae. Cuiller short, with long, straight setae. Aedeagus with very fine, almost minute, spine-like cornuti, which densely cover the ventral part of the vesica basally. The eighth sternite with a very characteristic caudal projection, without any cut.

Diagnosis: The species cannot be confused with any known species of the genus because of its fasciated appearance. An examination of the vesica can help to identify the species in worn specimens.

Biology: An autumnal flier which inhabits middle altitudes (of about 1500-1900 m). The moth probably develops a single generation each year. Nothing is known about the ♀, nor the preimaginal instars.

Distribution: The species is known from central China (Shaanxi and Hunan).

Ethimology: "Ulliae" originates from Russian woman name Ulya = Uljana, the youngest daughter of VIKTOR SINIAEV.

Remarks: The species is attributed here to the subgenus *Smerkata* based on the characters of the male genitalia, with the very typical shape of the tegumen, and the characteristic shape of the valva and vesica. At the same time, the moth has no direct affinities with any of the other species included and occupies an isolated position in the subgenus.

Thus, the genus *Mustilia* WALKER, 1865, is divided into three separate genera: *Mustilia* s. str., *Mustilizans* YANG, 1995, and *Falcogona* gen. nov. The genus *Mustilia* s. str. is divided into two further groups considered here to be separate subgenera, one of which is established here as new: *Smerkata* subgen. nov. in *Mustilia* s. str. with type species *Mustilia phaeopera* HAMPSON, 1910. The genus *Mustilizans* YANG, 1995, is also divided into two further groups considered here as separate subgenera. One of them is established here as new: *Promustilia* subgen. nov. with type species *Mustilizans (Promustilia) andracoides* spec. nov. 16 new species and two new subspecies are described and three new combinations are established. Therefore, the group under consideration consists of 27 species and is joined with *Dalailama* STGR., 1896, and *Oberthueria* KIRBY, 1892, in the subfamily Prismostictinae FORBES, 1955 (=Oberthuerinae KUZNETZOV & STEKOL'NIKOV, 1985).

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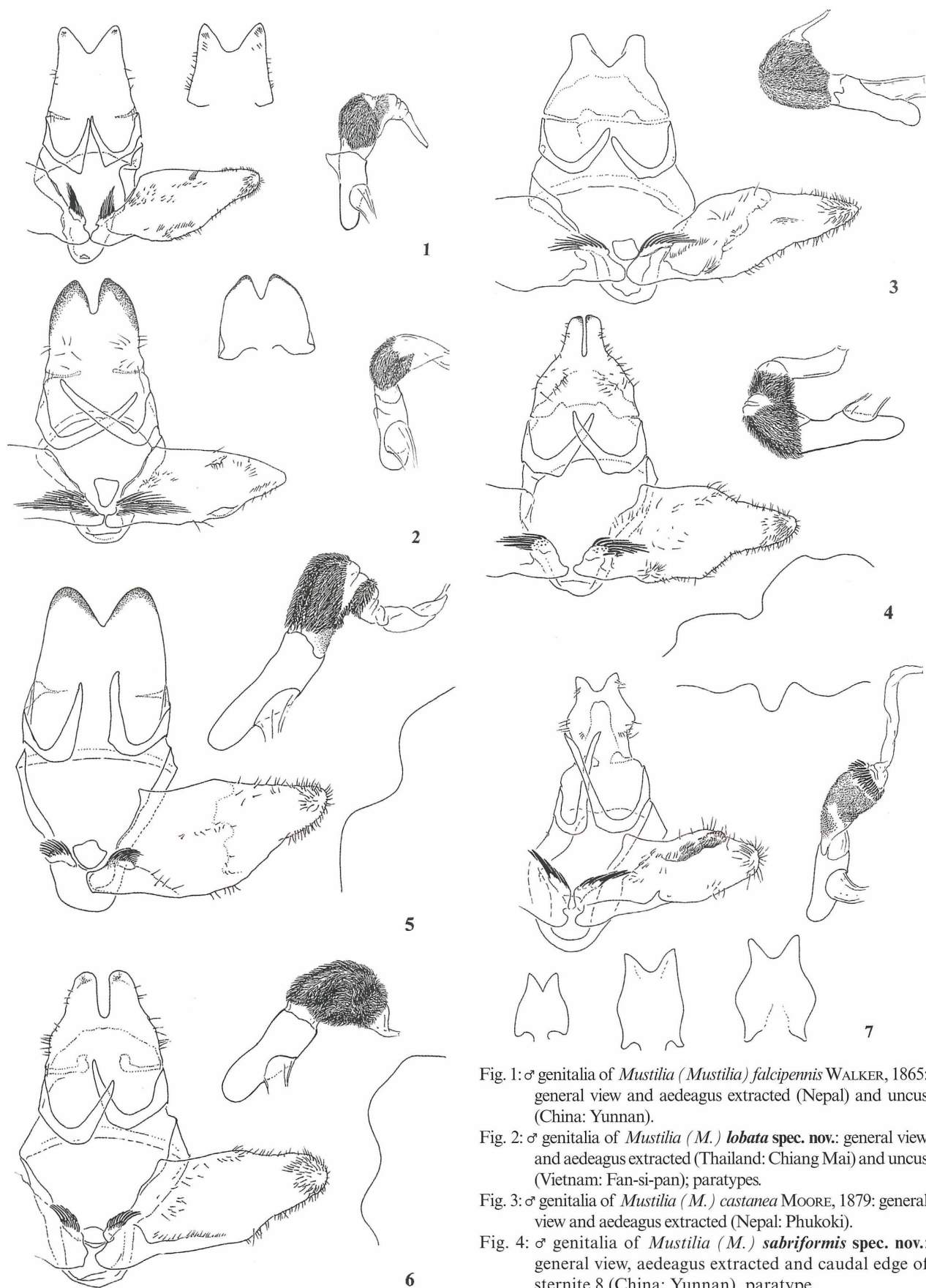


Fig. 1: ♂ genitalia of *Mustilia (Mustilia) falcipennis* WALKER, 1865: general view and aedeagus extracted (Nepal) and uncus (China: Yunnan).

Fig. 2: ♂ genitalia of *Mustilia (M.) lobata* spec. nov.: general view and aedeagus extracted (Thailand: Chiang Mai) and uncus (Vietnam: Fan-si-pan); paratypes.

Fig. 3: ♂ genitalia of *Mustilia (M.) castanea* MOORE, 1879: general view and aedeagus extracted (Nepal: Phukoki).

Fig. 4: ♂ genitalia of *Mustilia (M.) sabriformis* spec. nov.: general view, aedeagus extracted and caudal edge of sternite 8 (China: Yunnan), paratype.

Fig. 5: ♂ genitalia of *Mustilia (M.) attacina* spec. nov.: general view, aedeagus extracted and caudal edge of sternite 8 (China: Yunnan, A-tun-tse).

Fig. 6: ♂ genitalia of *Mustilia (M.) pai* spec. nov.: general view, aedeagus extracted and caudal edge of sternite 8 (China: S. Shensi, Tapaishan), holotype.

Fig. 7: ♂ genitalia of *Mustilia (M.) sphingiformis* MOORE, 1879: general view, aedeagus extracted and caudal edge of sternite 8 (India: Sikkim) and different shapes of uncus, from the left: India sept., Kumaon; Vietnam, Fan-si-pan and Malaysia, Pahang.



Fig. 8: ♂ genitalia of *Mustilia* (*M.*) *sphingiformis gerontica* (WEST, 1932) **stat. nov.**: general view, aedeagus extracted and caudal edge of sternite 8 (Taiwan: Tao yuan) and shapes of uncus and cuiller: China, Kuatun.

Fig. 9: ♂ genitalia of *Mustilia* (*M.*) *lieftincki* ROEPKE, 1948: general view, aedeagus extracted and caudal edge of sternite 8 (Sumatra).

Fig. 10: ♂ genitalia of *Mustilia* (*Smerkata* subgen. nov.) *phaeopera* HAMPSON, 1910: general view and aedeagus extracted (East Nepal).

Fig. 11: ♂ genitalia of *Mustilia* (*S.*) *fusca* KISHIDA, 1993: general view and aedeagus extracted (Taiwan).

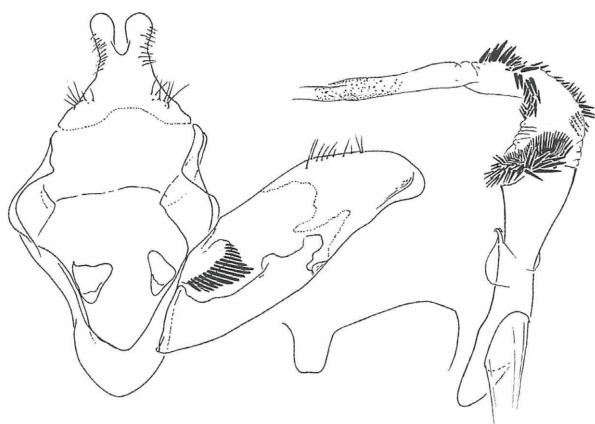
Fig. 12: ♂ genitalia of *Mustilia* (*S.*) *craptalis* **spec. nov.**: general view, aedeagus extracted and sternite 8 (China: Yunnan, Li-kiang), paratype.

Fig. 13: ♂ genitalia of *Mustilia* (*S.*) *soosi* **spec. nov.**: general view and aedeagus extracted (Thailand: Chiang Mai), paratype.

Fig. 14: ♂ genitalia of *Mustilia* (*S.*) *brechlini* **spec. nov.**: general view and aedeagus extracted (Thailand: Doi Inthanon), paratype.

Fig. 15: ♂ genitalia of *Mustilia* (*S.*) *tzarica* **spec. nov.**: general view and aedeagus extracted (Thailand: Changwat Nan), paratype.

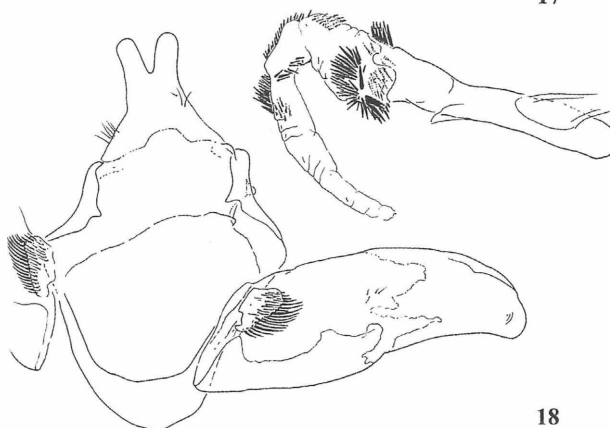
Fig. 16: ♂ genitalia of *Falcogona gryphea* **gen. et spec. nov.**: general view and aedeagus extracted (Vietnam, Fan-si-pan), paratype.



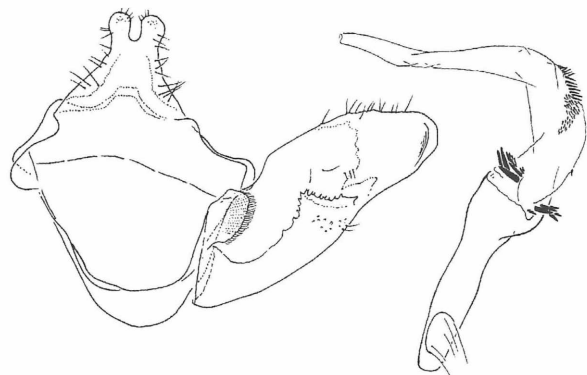
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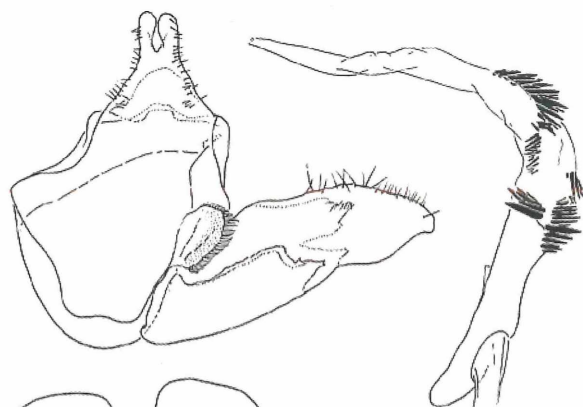
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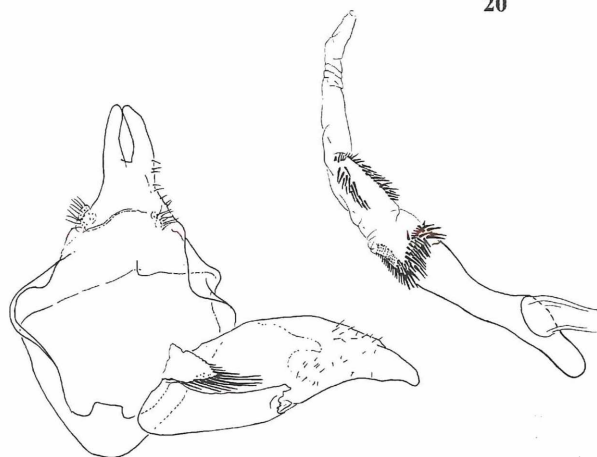
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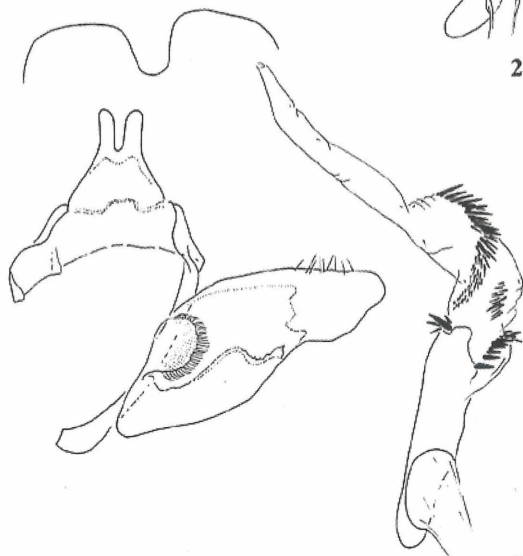
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Fig. 17: ♂ genitalia of *Mustilizans (M.) hepatica* MOORE, 1879: general view, aedeagus extracted and caudal edge of sternite 8 (Eastern Nepal).

Fig. 18: ♂ genitalia of *Mustilizans (M.) hepatica* MOORE, 1879: general view and aedeagus extracted (India, Sikkim).

Fig. 19: ♂ genitalia of *Mustilizans (M.) hepatica aeola* subspec. nov.: general view and aedeagus extracted (Thailand), paratype.

Fig. 20: ♂ genitalia of *Mustilizans (M.) dierli refugialis* subspec. nov.: general view and aedeagus extracted (China: Yunnan), holotype.

Fig. 21: ♂ genitalia of *Mustilizans (M.) dierli* HOLLOWAY, 1987: general view, aedeagus extracted and caudal edge of sternite 8 (Sumatra, SW Aceh).

Fig. 22: ♂ genitalia of *Mustilizans (M.) dierli* HOLLOWAY, 1987: general view and aedeagus extracted (Borneo).

Fig. 23: ♂ genitalia of *Mustilizans (M.) eitschbergeri* spec. nov.: general view and aedeagus extracted (China: Shaanxi), paratype.

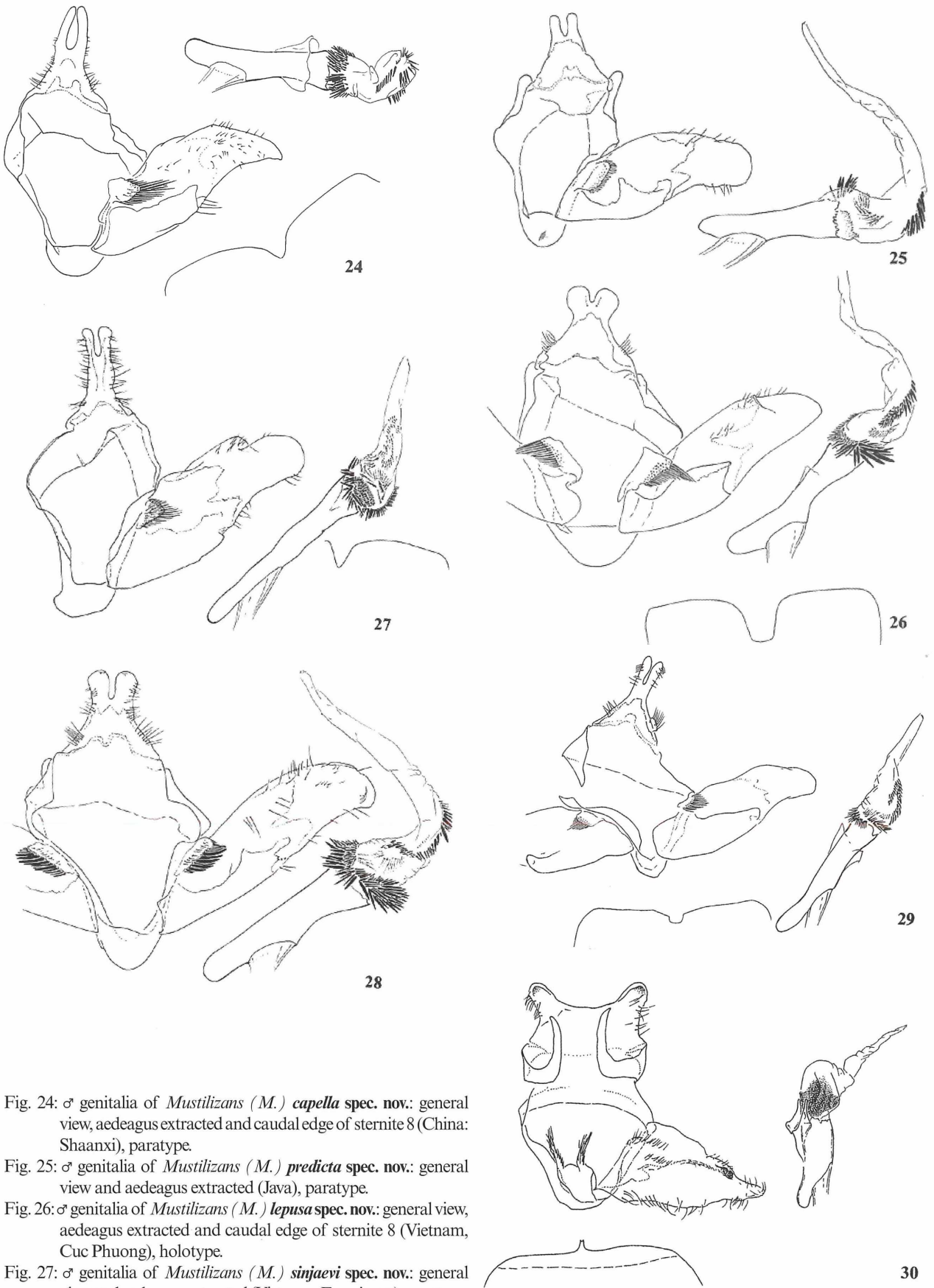


Fig. 24: ♂ genitalia of *Mustilizans* (*M.*) ***capella spec. nov.***: general view, aedeagus extracted and caudal edge of sternite 8 (China: Shaanxi), paratype.

Fig. 25: ♂ genitalia of *Mustilizans* (*M.*) ***predicta spec. nov.***: general view and aedeagus extracted (Java), paratype.

Fig. 26: ♂ genitalia of *Mustilizans* (*M.*) ***lepusa spec. nov.***: general view, aedeagus extracted and caudal edge of sternite 8 (Vietnam, Cuc Phuong), holotype.

Fig. 27: ♂ genitalia of *Mustilizans* (*M.*) ***sinjaevi spec. nov.***: general view and aedeagus extracted (Vietnam: Fan-si-pan), paratype.

Fig. 28: ♂ genitalia of *Mustilizans* (*M.*) (?) ***baishanzuna* YANG, 1995**: general view and aedeagus extracted (Myanmar).

Fig. 29: ♂ genitalia of *Mustilizans* (***Promustilia* subgen. nov.**) ***andracooides spec. nov.***: general view, aedeagus extracted and caudal edge of sternite 8 (China: Yunnan, A-tun-tse), paratype.

Fig. 30: ♂ genitalia of *Mustilia* (*S.*) ***ulliae spec. nov.***: general view, aedeagus extracted and caudal edge of sternite 8 (China: Hunan, Nanling Mts.), paratype.

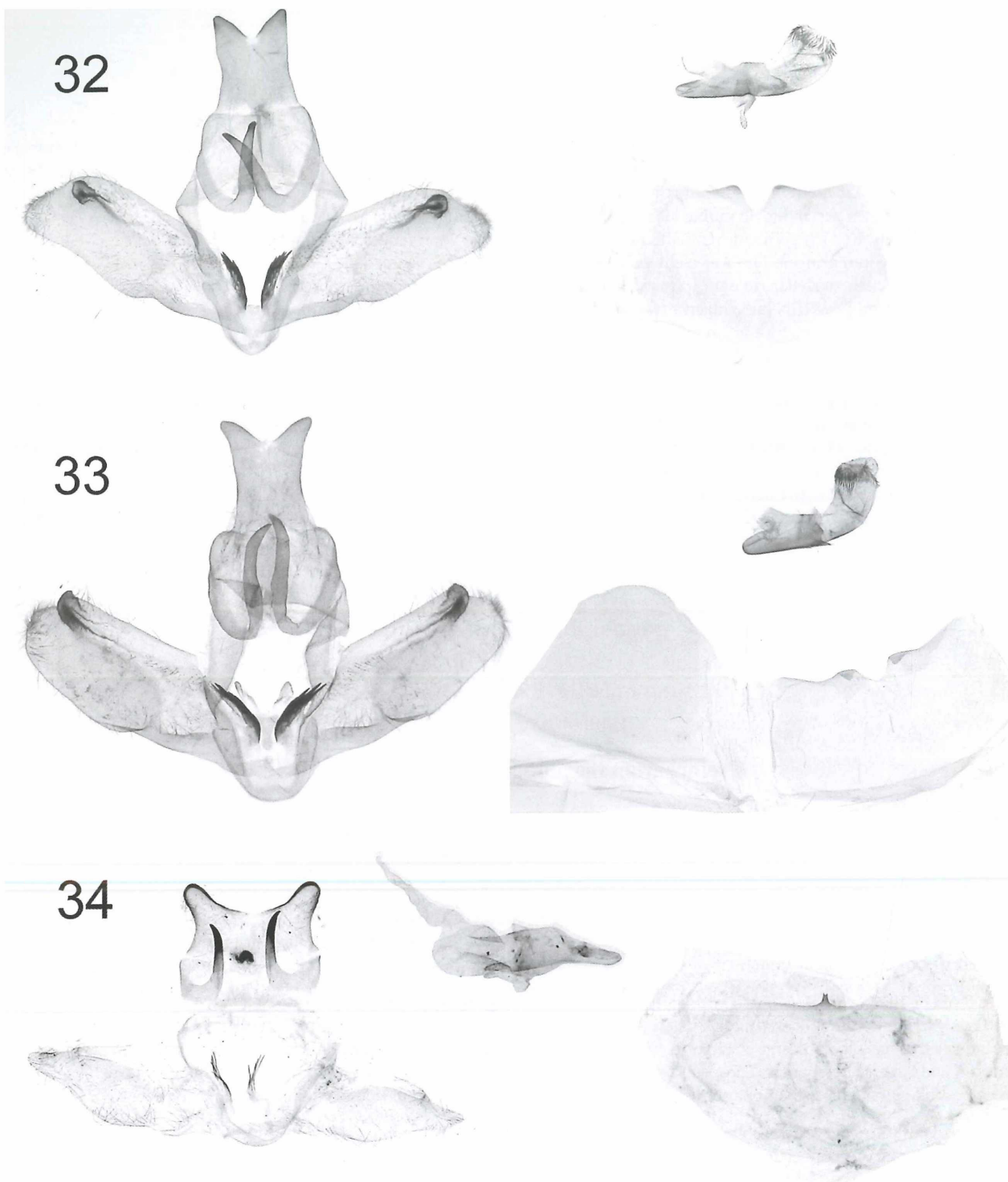


Fig. 32: ♂ genitalia of *Mustilia (M.) orthocosta* YANG, 1995: general view, aedeagus extracted and caudal edge of sternite 8 (China, Fujian, Dai Mao Shan, 60 km NW of Longyan - MWM).

Fig. 33: ♂ genitalia of *Mustilia (M.) orthocosta* YANG, 1995, general view, aedeagus extracted and caudal edge of sternite 8 (China, Sichuan, Qingchenghoushan Mts., 70 km NW Chengdu, 1400 m, 15-22.V 2005, leg. S., V., M. Murzin - MWM).

Fig. 34: ♂ genitalia of *Mustilia (S.) ulliae* spec. nov.: general view, aedeagus extracted and caudal edge of sternite 8 (China: Hunan, Nanling Mts.), paratype.

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