

Two new genera and species of the family Scathophagidae (Diptera) from the Palaearctic and Oriental Regions with additional faunistic records

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Abstract. A new genus of the family Scathophagidae from the Palaearctic Region is described: *Milania* gen. nov. with the type species *Norellisoma agrion* Séguy, 1948. *Milania agrion* (Séguy, 1948) comb. nov. from Japan and *Milania longi-abdomina* (Sun, 1992) comb. nov. from Japan and China are redescribed. New species *Miroslava knajfli* sp. nov. from Nepal is described. The new monotypic genus *Lubomyia* gen. nov. with the type species *Lubomyia orientalis* sp. nov. from Burma is described. Comments on generic classification and differential diagnoses of both new genera and all new species are given and essential diagnostic characters are illustrated. *Acanthocnema longispina* Suwa, 1986 is recorded for the first time from Burma.

Key words. Diptera, Scathophagidae, *Milania* gen. nov., *Lubomyia* gen. nov., new species, taxonomy, faunistics, Palaearctic Region, China, Japan, Nepal, Oriental Region, Burma, India

Introduction

The Palaearctic fauna of the family Scathophagidae contains 38 genera and 232 species (ŠIFNER 2008a,b, 2009a,b; OZEROV 2008, 2009a,b, 2010). The Oriental fauna is considerably less numerous, containing eight genera with five described and at least seven undescribed species (VOCKERTH 1977, OZEROV 2008, ŠIFNER 2009a). The main purpose of this paper is to establish two new genera, one from the Palaearctic Region and one from the Oriental Region, along with additional taxonomic and faunistic remarks.

One of the new genera is split away from the genus *Norellisoma* Wahlgren, 1917, which contains 25 Palaearctic species. Two of them, *N. agrion* Séguy, 1948 and *N. longiabdominum* (Sun, 1992), are considerably different from all remaining congeners. I redescribe these species with emphasis on characters on the genitalia of both sexes (so far unknown), and propose a new genus, *Milania* gen. nov., to accommodate them. Moreover, I have seen eight specimens collected in Nepal by the Canadian Nepal Expedition in 1967 and eight additional specimens of different origin, including four specimens considered by VOCKERTH (1977) as

unnamed species of the genera *Acerocnema* Becker, 1894, *Acanthocnema* Becker, 1894 and *Megaphthalmoides* Ringdahl, 1936 from the Oriental Region. Based on these 16 specimens, *Miroslava knajfli* sp. nov. (Nepal) and *Lubomyia orientalis* gen. nov. and sp. nov. (Burma) are described and several faunistic records are provided.

Material and methods

The specimens are deposited in the following collections:

- CNC Canadian National Collection, Ottawa, Canada;
 FSPC František Šifner collection, Praha, Czech Republic (to be deposited in the National Museum, Prague, Czech Republic);
 MNHN Musée National d'Histoire Naturelle, Paris, France.

Morphological terminology follows PAPP & DARVAS (2000). A slash (/) is used to separate data on different labels; all labels including my own identification label are cited for all specimens. Species in the faunistic part are arranged alphabetically.

The northern boundary of the Oriental Region is sometimes set at at 30°N (VOCKEROTH 1977) and sometimes at 25°N (ŠIFNER 2008); the southeastern lowland areas in China represent a transition area (ŠIFNER 2003).

Taxonomy

Genus *Milania* gen. nov.

Type species. *Norellisoma agrion* Séguéy, 1948, by present designation.

Diagnosis. Principal diagnostic characters of the new genus are as follows:

- i) ratio of the length of thorax to the length of abdomen equal to 1 : 2–2.2;
- ii) double rows of bristles on anterior femora and tibiae very weakly developed;
- iii) all legs covered with long hair-like bristles;
- iv) epiphallus straight and dilated apically;
- v) all abdominal sternites in both sexes weakly sclerotized;
- vi) sternites 8 in female weakly sclerotized, without thorns and only with short bristles.

Differential diagnosis. *Milania* gen. nov. can be separated from other genera of the tribe Cordilurini by characters summarized in the following key.

- 1 All bristles on thorax distinctly developed; ratio of length of thorax to length of abdomen equal to 1 : 1.5–1.7; all abdominal sclerites in both sexes distinctly sclerotized; epiphallus slightly arched and pointed. 2
- Bristles on thorax weakly developed; ratio of length of thorax to length of abdomen equal to 1 : 2–2.2; all abdominal sclerites in both sexes weakly sclerotized; epiphallus almost straight and dilated apically. Double row of bristles at inner side of anterior femur and tibia weakly developed, all femora and tibiae with long and fine hair-like bristles; palpi narrow with 1–2 weak apical or subapical bristles; sternite 7 of female long, sclerotized in lateral part and membranous only medially; sternites 8 distinctly prolonged, without thorns and only apically with short fine bristles. ***Milania* gen. nov.**

- 2 Double row of bristles at inner side of anterior femur and tibia strong; palpi uniformly narrow with 1–2 apical or subapical bristles; sternite 7 of female partly or entirely divided in two sclerites; sternites 8 of female with varying number of thorns. *Norellisoma* Wahlgren, 1917
- Double row of bristles at inner side of anterior femur and tibia not developed; palpi narrow and dilated in their median portion with 1–2 strong apical or subapical bristles; sternite 7 of female divided in three separate sclerites; sternites 8 of female with short and weak bristles.
- ... *Cordilura* Fallén, 1810, *Parallelomma* Becker, 1894 and *Scoliaphleps* Becker, 1894

Etymology. I dedicate this genus to the memory of my late son Milan. The gender is feminine.

Comments. HACKMAN (1956) was the first author to notice the differential characters of the Japanese species of *Norellisoma* (or the subfamily Norellinae). ŠIFNER (2003) considered the Japanese species as intermediate between the genera *Norellisoma* and *Cordilura*, probably representing a new genus. OZEROV (2008) placed the Japanese and Chinese species *Norellisoma longiabdominum* (Sun, 1992) in the genus *Cordilura* (subgenus *Cordilurina* James, 1955), citing the presence of rows of long anteroventral and posteroventral bristles on the fore femora and tibiae (*sic!*), a long apical seta on palpus, two pairs of setae on scutum and long hairs on arista. Based on the characters mentioned above under the generic diagnosis, I instead propose for *Norellisoma longiabdominum* and *N. agrion* Séguy, 1948 a new genus, *Milania* gen. nov., belonging to the tribe Cordilurini (cf. ŠIFNER 2003). Both included species are redescribed below with emphasis on the previously undescribed genitalia of both sexes.

Key to species of *Milania* gen. nov.

- 1 Frontal vitta completely yellow; discal and apical scutellar bristles of equal size; crossveins R-M and M-Cu transparent; pregonite widely dilated apically with two short subapical bristles (Fig. 4). *Milania agrion* (Séguy, 1948)
- Frontal vitta with median black stripe; discal scutellar bristles longer than apical ones; crossveins R-M and M-Cu darkened; pregonite straight with two long apical bristles (Fig. 9). *Milania longiabdomina* (Sun, 1992)

Milania agrion (Séguy, 1948) comb. nov.

(Figs. 1–5)

Norellisoma agrion Séguy, 1948: 169.

Norellisoma agrion: FUKUHARA & KARAHASHI (1966): 217; HIRONAGA & SUWA (2005): 207; ŠIFNER (2008a): 127.

Type material examined. HOLOTYPE: ♂, 'Japan, Chuzenji, 11.7.1917, Edme Gallois' [yellow label] / 'Type' [red label] / 'Museum Paris' / '*Norellisoma agrion*, ♂, Type, E. Séguy vid. 48' (MNHN). PARATYPES: ♂, 'Japan, Chuzenji, 12.9.1917' / 'Museum Paris, coll. J. Hervé – Bazin 1923' / 'Cotype *Norellisoma agrion* ♂, Cotyp., E. Séguy vid. 48'; ♀, 'Japan, Chuzenji, 29.7.1917, Edme Gallois' / 'Cotype Museum Paris, coll. J. Hervé – Bazin 1923' / '*Norellisoma agrion* ♀, Cotyp., E. Séguy vid. 48'; ♀, 'Japan, Chuzenji, 12.9.1917, Edme Gallois' / 'Museum Paris, coll. J. Hervé – Bazin 1923' (all MNHN).

Additional material examined. JAPAN: HONSHU: 1 ♂, 'Japan, Nagano, Ynago-yu, 1500–1600m, Mt. Yatsugatake, 28.vi.1989, M. Suwa leg.' / '*Norellisoma agrion* ♂, Det.M. Suwa 1994'; 1 ♂ 1 ♀, 'Japan, Iwate, Mt. Hayachine, 1000–1400m, 12.–13.vii.[19]80, Maasaki Suwa' / '*Norellisoma agrion* Séguy, 1948, ♂/♀, Det. T. Hironaga 1999' (FSPC).

Redescription. Body length 14–16 mm.

HEAD. Two orbital bristles, 2–3 frontal bristles, frontal vitta, parafacials, frons, genae and antennae completely yellow; arista plumose; vibrissal callus plain with one vibrissa; palpi yellow, narrow with one apical bristle; inner vertical bristles long, outer vertical bristles short.

THORAX. Setation consisting of 4–5 dorsocentral bristles (prescutellar pair very long), one short humeral bristle, two notopleural bristles, one prealar bristle, one supraalar and two postalar bristles, two pairs of scutellar bristles of equal size, one katapisternal bristle; all bristles conspicuously fine and acrostichal bristles very sparse. Wings with brown veins, legs completely yellow with long yellow hairs.

ABDOMEN. *Male.* Sternites 3 and 4 rectangular, with long yellow hairs; lobes of sternite 5 straight, narrowed apically, completely covered with long yellow hairs and with short thorns medially (Fig. 1); cerci fused medially, in posterior view arched, with black bristles, surstyli apically arched forward (Figs. 2 and 3). Epiphallus straight and dilated apically, pregonite basally very narrow, widely dilated apically with two short subapical bristles, postgonite very long and dilated apically (Fig. 4). *Female.* Sternites 5 and 6 long, with one pair of black bristles caudally; sternite 7 slightly dilated caudally, laterally sclerotized and membranous in middle; sternites 8 long, oval, narrowed apically, with short and fine apical setae (Fig. 5).

Distribution. Japan (SÉGUY 1948, FUKUHARA & KARAHASHI 1966, HIRONAGA & SUWA 2005, ŠIFNER 2008a).

***Milania longiabdomina* (Sun, 1992) comb. nov.**

(Figs. 6–10)

Norellia longiabdomina Sun, 1992: 336 (in Chinese), 338 (in English).

Norellisoma longiabdominum: ŠIFNER (2008a): 129 (new combination).

Cordilura (Cordilurina) longiabdomina: OZEROV (2008): 423 (new combination).

Material examined. JAPAN: HONSHU: ♂, 'Mt. Hakuchōzan, Izumi-mura (1300m), Kumamoto Pref., 5.vi.1979, N. Kōda leg.' / '*Norellisoma longiabdomina* Sun, 1992, Det. T. Hironaga 1999'; ♀, 'Mt. Hakuchōzan, Izumi-mura (1300m), Kumamoto Pref., 4.vii.1983, Kenji Ōhara leg.' (both FSPC).

Redescription. Body length 10–12 mm.

HEAD. Frontal vitta yellow with black median stripe, parafacials, face, genae and antennae completely yellow; two orbital bristles, 2–3 frontal bristles; arista plumose, vibrissal callus plain with one vibrisse, outer vertical bristles very short.

THORAX. Setation consisting of very weakly developed acrostichal and dorsocentral bristles (3+2), very long prescutellar pair of dorsocentrals, 3–4 short humeral bristles, two notopleural bristles, one prealar bristle, one supraalar and one postalar bristles, one pair of scutellar bristles and very short apical bristles. Wings with brown veins, crossveins R-M and M-Cu slightly but distinctly darkened, legs yellow and completely covered with yellow hairs.

ABDOMEN. *Male.* Sternite 3 rectangular, indented caudally; sternite 4 more or less square, proximally and caudally distinctly and deeply emarginate; lobes of sternite 5 short, narrow, with long hairs laterally and short black bristles medially (Fig. 6). Cerci fused and wide, surstyli slightly arched and pointed (Figs. 7 and 8). Epiphallus straight, slightly dilated apically; pregonite straight with two apical bristles; postgonite wide and slightly arched (Fig. 9). *Female.* Sternites 5 and 6 long, narrow and weakly sclerotized; sternite 7 caudally

enlarged, laterally slightly sclerotized and medially membranous; sternites 8 basally very narrow, caudally dilated with several very short apical setae (Fig. 10).

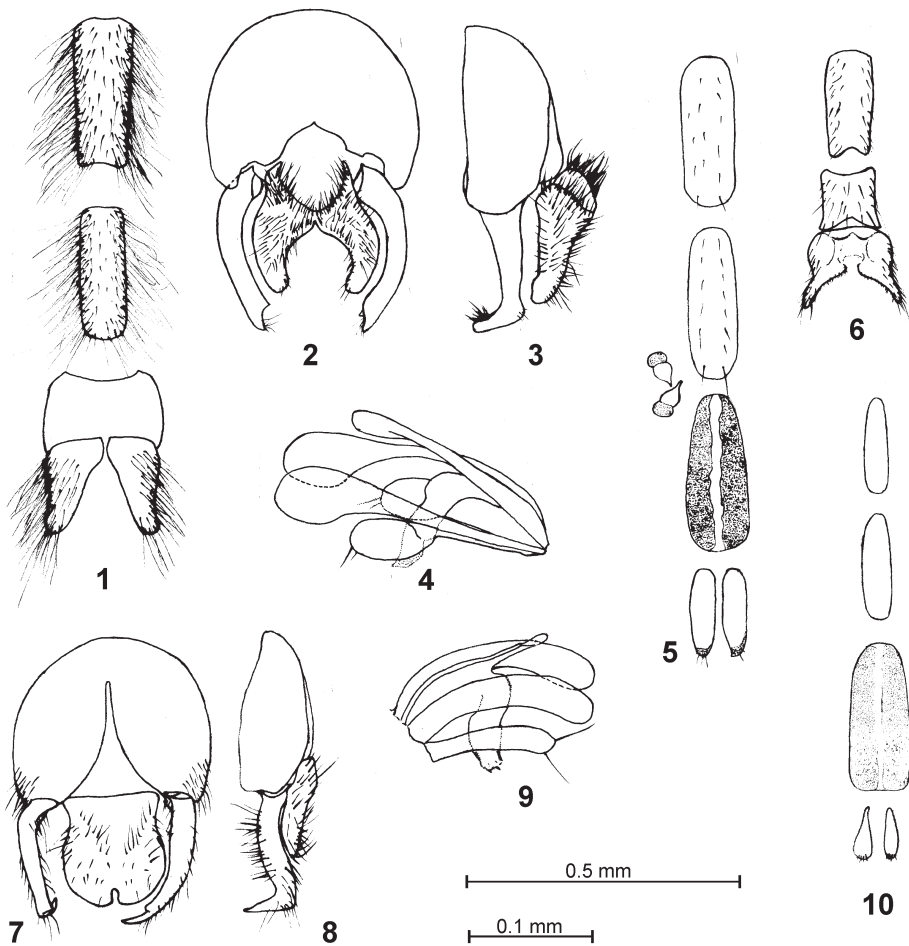
Distribution. China (SUN 1992) and Japan (OZEROV 2008).

Genus *Mirolava* Šifner, 1999

Mirolava knajfli sp. nov.

(Figs. 11–15)

Type material. HOLOTYPE: ♂, NEPAL: '27°57'N 84°59'E, Mal.tr.5 [Malaise trap No. 5], 10,000', 30 May 1967, Canad. Nepal Exped. [leg.] / '*Megaphthalmoides* sp. [det.?]'. ALLOTYPE: ♀, NEPAL: '27°58'N 85°00'E, Mal.tr.1 [Malaise trap No. 1], 11,100', 8–11 June 1967, Canad. Nepal. Exped. [leg.] / '*Megaphthalmoides* sp. [det.?]'. (CNC).



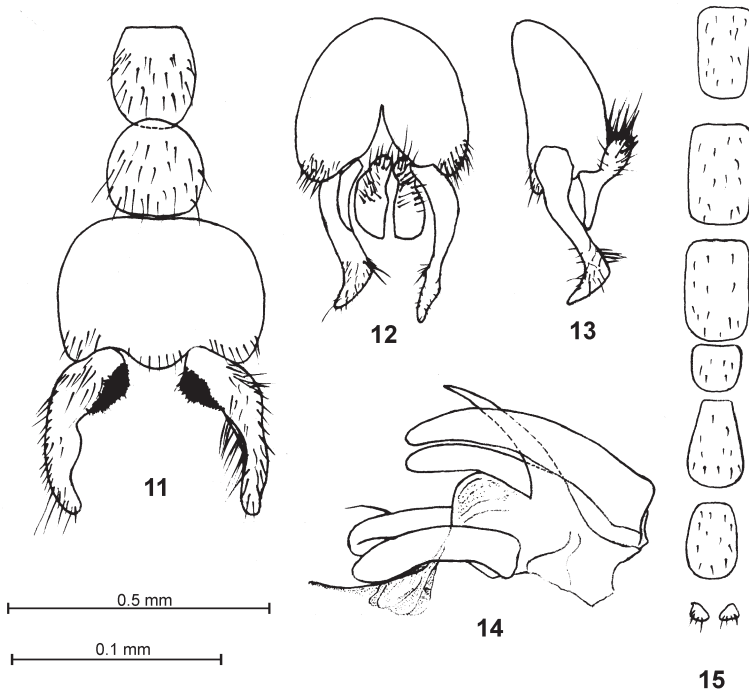
Figs. 1–10. 1–5 – *Milania agrion* (Séguy, 1948) comb. nov.; 6–10 – *Milania longiabdomina* (Sun, 1992) comb. nov. 1–4, 6–9 – ♂: 1, 6 – abdominal sternites 3 to 5; 2–3, 7–8 – cerci and surstyli (caudal and lateral views); 4, 9 – penis apparatus with pregonites and epiphallus; 5, 10 – ♀: abdominal sternites 5 to 8, with two spermathecae. Scale bars: 0.5 mm (Figs. 1–3, 6–8, 10); 0.1 mm (Figs. 4, 9).

Description. Body length 5 mm. Ground colour brown to yellow-brown.

HEAD. Three orbital bristles, 2–3 frontal bristles, frontal vitta, parafacials, face, genae yellow-brown, scapus, pedicellus and first flagellomere including arista black, arista bare and thickened basally, vibrissal callus with two bristles and together with 3–4 short bristles, palpi narrow, yellow-brown with 3–4 black bristles apically, one genal bristle.

THORAX. Setation consisting of few but distinct acrostichal bristles, 3+2 dorsocentral bristles, two humeral bristles, one intra-alar bristle, two supra-alar bristles, one postalar bristle, two notopleural bristles, one katapisternal bristle, two strong and 1–2 weak anepisternal bristles and one distinct anepimeral bristle in central part of anepimeron. Two pairs of scutellar bristles of equal size. Wing with vein M_{3+4} ending outside wing margin, vein A_1 reaching wing margin. Legs yellow-brown, covered with short black setae; six anterodorsal bristles present on anterior femora, those on posterior femora little distinct.

ABDOMEN. Male. Sternite 3 oval; sternite 4 more or less rounded; lobes of sternite 5 narrowed apically, slightly arched, basally dilated with short and dense short black bristles, sternite 5 between lobes prolonged. All sternites covered with distinct black bristles (Fig. 11). Cerci wide with long bristles, surstyli almost straight, apically arched forwards with distinct long bristles (Figs. 12 and 13). Epiphallus slightly arched and pointed; pregonite with one dorsal bristle; postgonite long, apically narrowed (Fig. 14). **Female.** Sternites 2–4



Figs. 11–15. *Miroszlava knajfli* sp. nov. 11–14 – ♂, holotype: 11 – abdominal sternites 3 to 5, 12–13 – cerci and surstyli (caudal and lateral views), 14 – penis apparatus with pregonites and epiphallus; 15 – ♀: abdominal sternites 2 to 8. Scale bars: 0.5 mm (Figs. 11–13 and 15); 0.1 mm (Fig. 14).

rectangular; sternite 5 very short; sternite 6 caudally dilated; sternite 7 oval; sternites 8 very small with several setae (Fig. 15).

Etymology. I dedicate this species to Ladislav Knajfl, an excellent surgeon working at the Hospital of the Faculty of Medicine, Praha – Motol, Czech Republic.

Distribution. Nepal.

Comments. Both type specimens were listed by Vocker oth (1977: 437) in the Catalog of Oriental Region as an unnamed species of the genus *Megaphthalmoides*. The differences between *Megaphthalmoides* and *Mirolava* can be summarized as follows:

- | | | |
|---|--|--|
| 1 | Palpi broadened; arista distinctly plumose; anepimeron without black bristle in its central part. | <i>Megaphthalmoides</i> Ringdahl, 1936 |
| – | Palpi narrow; arista bare; anepimeron with one black bristle in its central part. | <i>Mirolava</i> Šifner, 1999 |

Genus *Lubomyia* gen. nov.

(Figs. 16–19)

Type species. *Lubomyia orientalis* sp. nov., by present designation.

Diagnosis. This genus can be defined by the following combination of characters: palpi weakly dilated without apical bristle, flagellomere 1 wide, flagellomere 3 distinctly cylindrical, three times as long as wide, presence of only one proepisternal bristle, vein R_1 with seven setae in one row, and narrow and long epiphallus.

Differential diagnosis. *Lubomyia* gen. nov. differs from other genera by the following combination of characters:

- i) flagellomere 1 long and wide, reaching epistome;
- ii) vein R_1 with seven setae in one row;
- iii) epiphallus and pregonite straight and long;
- iv) sternites 3 and 4 of male weakly sclerotized, both without bristles or setae.

Etymology. I dedicate this genus to my friend, Czech and Canadian hymenopterologist Lubomír Masner (Invertebrate Biodiversity Agriculture and Agri-Food Canada, Ottawa, Canada). The gender is feminine.

Comment. I place this genus tentatively in the tribe Cleigastrini (cf. ŠIFNER 2003), given especially the presence of five fine setae on vein R_1 and the absence of long apical seta on the palpus.

Lubomyia orientalis sp. nov.

(Figs. 16–19)

Type material. HOLOTYPE: ♂, BURMA: ‘N.E.Burma, Kombaiti, 7000 n.[?], 9.v.1934, R. Malaise [leg.?’] (CNC).

The holotype is fixed and pinned on a triangular plexiglass label; the abdominal segments are dissected and stored in glycerine and pinned with the specimen. Condition of specimen: bristles on thorax badly abraded, right middle leg missing. Figures are based on the holotype. This specimen was originally listed by VOCKEROTH (1977: 436) as an unnamed species from Burma placed in the genus *Acerocnema*.

Description. Body length 4 mm. Ground colour brown to dark brown.

HEAD. Three orbital bristles, three frontal bristles, frontal vitta, parafacials, face and genae yellow-brown, scapus and pedicellus brown; flagellomere 1 dark, long and wide, flagellomere

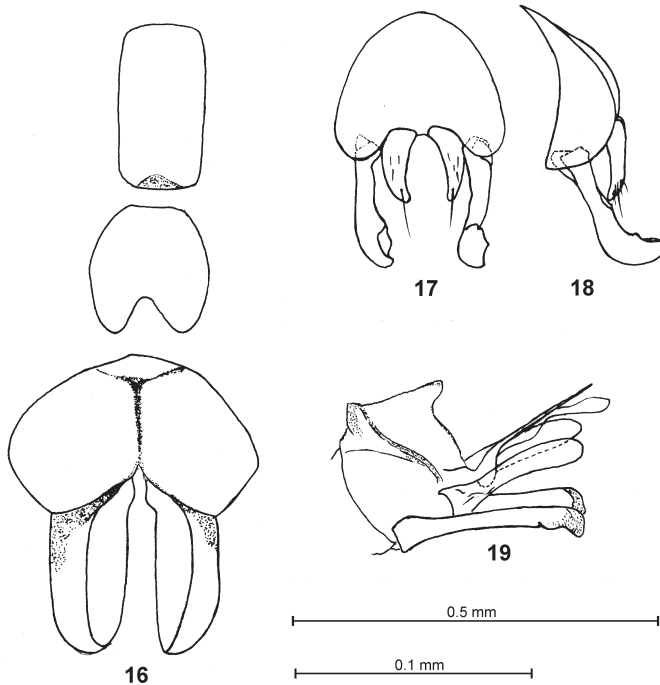
2 short; flagellomere 3 cylindrical, three times as long as wide; arista thickened basally, only sparsely and shortly bristled. Vibrissal callus conspicuous, with one long bristle and 3–4 short bristles. Palpi yellow, only weakly dilated, covered with short setae (visible at 80× magnification) and some short and weak bristles. Ocellar triangle and posterior portion of head dark.

THORAX. Setation consisting of very sparse acrostichal bristles, five dorsocentral bristles (3+2), one humeral bristle, one postalar bristle, two pairs of scutellar bristles of equal size, one proepisternal bristle and one katepisternal bristle. Wings with brown veins, vein R_1 with seven setae in one row, crossveins R-M and M-Cu transparent. Legs completely yellow to yellow-brown, fore femur with three anterodorsal black setae, fore and hind tibia with two rows of anterodorsal yellow setae. Hind femur with one row of posterodorsal fine bristles.

ABDOMEN. *Male.* Sternite 3 rectangular; sternite 4 caudally indented; lobes of sternite 5 wide and straight (Fig. 16). Cerci straight, apically pointed, with very long bristles including several fine ones; surstyli straight, partially sclerotized apically, dilated and arched backwards (Figs. 17 and 18). Pregonite straight, long, weakly arched apically and covered with very short and finely sclerotized setulae; postgonite straight; epiphallus narrow and long with distinct sclerotization (Fig. 19). *Female.* Unknown.

Etymology. *Orientalis* (Latin, adjective), meaning eastern.

Distribution. Burma.



Figs. 16–19. *Lubomyia orientalis* sp. nov. 16–19 – ♂, holotype: 16 – abdominal sternites 3 to 5, 17–18 – cerci and surstyli (caudal and lateral views), 19 – penis apparatus with pregonites and epiphallus. Scale bars: 0.5 mm (Figs. 16–18); 0.1 mm (Fig. 19).

Faunistics

Acanthocnema longispina Suwa, 1986

Material examined. BURMA: ♂, 'N.E.Burma, Kombaiti, 2000 m, 14.5.1934, Malaise [leg.] [violet label] / *Acanthocnema longispina* [det.?] [yellow label] / *Acanthocnema* sp. / *Acanthocnema longispina* Suwa, 1986, ♂, det. F. Šifner 2009' (CNC).

Distribution. Japan (SUWA 1986).

This species was originally listed from Burma by VOCKEROTH (1977) as an unnamed species of *Acanthocnema*. New species for the fauna of Burma.

Americina vittata (Meigen, 1826)

Material examined. NEPAL: ♂, '27°57'N, 84°59'E, Mal.tr.5 [Malaise trap No. 5], 30 May 1967, Can. Nepal Exped. / *Parallelomma paridis*'; ♂, '27°58'N, 85°00'E, 10.100ft., 18 June 1967, Can. Nepal Exped. / *Parallelomma paridis*'; ♂, '27°58'N, 85°00'E, Mal.tr.1 [Malaise trap No. 1], 10.100', 22 June 1967, Can. Nepal Exped. / *Parallelomma paridis*'; ♂, '28°00'N, 85°00'E, Mal.tr.7 [Malaise trap No. 7], 9.900', 26 May 1967, Can. Nepal Exped. / *Parallelomma paridis*'; ♀, '28°00'N, 85°00'E, Mal.tr.6 [Malaise trap No. 6], 1 June 1967, Can. Nepal Exped. / *Parallelomma paridis*'. All specimens also carry the identification label '*Americina vittata* (Meigen, 1826), det. F. Šifner 2009' (CNC).

Distribution. Widely distributed Holarctic species (ŠIFNER 2008a). The species was listed by VOCKEROTH (1977: 438) from Nepal under the junior synonym *Parallelomma paridis* Hering, 1923.

Scathophaga mellipes (Coquillett, 1898)

Material examined. CHINA: FUJIAN: ♂, 'Kuatun [= Guadun] (2300 m), 27.40n.Br. [N], 117.406 [E], L.J. Klapperich, 24.3.1938 (Fukien) / *Scopeuma chinense* Mall., det. 1953 J.R. Vockeroth / *Scathophaga mellipes* [det.?] / *Scathophaga mellipes* (Coquillett, 1899), ♂, det. F. Šifner 2009' (CNC). INDIA: WEST BENGAL: ♀, 'India: Darjeeling, 10.x.1920, E. Brunetti / Pres. by E. Brunetti B.M. 1927-184 / *Scathophaga mellipes*' [det.?] / *Scathophaga mellipes* (Coquillett, 1899), ♀, det. F. Šifner 2009' (CNC). NEPAL: ♂, 'Nepal, 27°58'N, 85°00'E, 11.100ft., 29 May, Can. Nepal Exped. / *Scathophaga mellipes* [det.?] / *Scathophaga mellipes* (Coquillett, 1899), ♂, det. F. Šifner 2009' (CNC).

Distribution. Palaearctic Region: China and Japan (ŠIFNER 2008a); Oriental Region: Burma, China, India and Nepal (VOCKEROTH 1977).

Scathophaga stercoraria (Linnaeus, 1758)

Material examined. CHINA: FUJIAN: ♀, 'Kuatun [= Guadun] (2300 m), 27.40n.Br. [N], 117.406 [E], J.L. Kapperich, 24.3.1938 (Fukien) [violet label] / *Scathophaga stercoraria* [det.?] / *Scathophaga stercoraria* (Lin., 1758), ♀, det. F. Šifner 2009' (CNC). JAPAN: KYUSHU: ♀, 'Kyushu, Wakasungiyaman Susaguri Fukuoka 1962 iv., T. Saigusa / *Scathophaga stercoraria* [det.?] / *Scathophaga stercoraria* (Lin., 1758), ♀, det. F. Šifner 2009' (CNC).

Distribution. Palaearctic, Nearctic (ŠIFNER 2008a), and Oriental Region: India (Himachal Pradesh, Kashmir, Sikkim, Uttar Pradesh) (VOCKEROTH 1977). Previous records from the Afrotropical Region belong to the revalidated *S. soror* (Wiedemann, 1818) (OZEROV 2009c, BERNASCONI et al. 2010)

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