

Far Eastern Entomologist

Дальневосточный энтомолог

Journal published by Far East Branch
of the Russian Entomological Society
and Laboratory of Entomology, Federal
Scientific Center of the East Asia
Terrestrial Biodiversity, Vladivostok

Number 353: 1-16

ISSN 1026-051X

March 2018

<https://doi.org/10.25221/fee.353.1>

<http://urn:lsid:zoobank.org:pub:4D623BD9-77AD-47FA-80AC-2D54F865D3AF>

TO THE KNOWLEDGE OF THE GENUS *SCATOMYZA* FALLÉN, 1810 (DIPTERA: SCATHOPHAGIDAE) OF NEPAL

A. L. Ozerov¹⁾, M. G. Krivosheina²⁾

1) Zoological Museum, Moscow Lomonosov State University, Bol'shaya Nikitskaya 2, Moscow 125009, Russia. E-mail: ozerov2455@rambler.ru

2) A.N. Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky prospect, 33, Moscow 119071, Russia. E-mail: dipteramarina@rambler.ru

Summary. Five species of the genus *Scatomyza* Fallén, 1810 from Nepal are reviewed. Generic and species descriptions and key to species are given, and data on distributions and biology are summarized. New synonymy is proposed: *Scatomyza sinensis* (Sun, 1996) = *Scatomyza calceata* (Ozerov, 2009), **syn. n.** Two species, *Scatomyza nigrolineata* Ozerov et Krivosheina, **sp. n.** and *Scatomyza medvedevi* Ozerov et Krivosheina, **sp. n.**, are described. *Scatomyza curtipilata* Feng, 2002 is recorded from Nepal for the first time.

Key words: Diptera, Scathophagidae, *Scatomyza*, taxonomy, new species, new synonymy, fauna, Nepal.

А. Л. Озеров, М. Г. Кривошеина. К познанию рода *Scatomyza* Fallén, 1810 (Diptera: Scathophagidae) Непала // Дальневосточный энтомолог. 2018. N 353. С. 1-16.

Резюме. Дан обзор 5 видов двукрылых рода *Scatomyza* Fallén, 1810 фауны Непала. Приведены диагнозы рода, описания видов и определительная таблица видов из Непала, а также обобщены данные по биологии и распространению

этих видов. Установлен один новый синоним: *Scatomyza sinensis* (Sun, 1996) = *Scatomyza calceata* (Ozerov, 2009), **syn. n.** Описаны два новых для науки вида: *Scatomyza nigrolineata* Ozerov et Krivosheina, **sp. n.** и *Scatomyza medvedevi* Ozerov et Krivosheina, **sp. n.** Впервые для Непала указывается *Scatomyza curtipilata* Feng, 2002.

INTRODUCTION

Scatomyza Fallén, 1810 is one of the small genera within the family Scathophagidae, which until the present time has comprised not less than 10 species in the world, the majority of which are registered in Asia. Two species, *S. mellipes* (Coquillett, 1899) and *S. calceata* Ozerov, 2009 (now *S. sinensis* Sun, 1996, see below) were known from Nepal (Vockeroth, 1977; Ozerov, 2009). Three more species of the genus *Scatomyza*, two of which proved to be new to science, were discovered as a result of the determination of dung flies collected in Nepal in 2016–2017. The descriptions of the new species are given below. Holotypes and paratypes of the new species are kept in the collection of Zoological Museum of Moscow State University (ZMUM).

The terminology used for the description of the new species follows McAlpine (1981), Cumming *et al.* (2009), and Stuckenberg (1999).

TAXONOMY

Genus *Scatomyza* Fallén, 1810

Scatomyza Fallén, 1810: 15. Gender: feminine. Type-species: *Musca scybalaria* Linnaeus, by designation of Lucas *in d'Orbigny*, 1848.

Heteroterma Wei, 2006: 531. Gender: feminine. Type-species: *Heteroterma fanjingensis* Wei, 2006, by original designation. [The genus was described in the family Anthomyiidae, removed to the family Scathophagidae by Wang *et al.* (2014) and synonymized with the genus *Scathophaga* Meigen, 1803; preoccupied by *Heteroterma* Gabb, 1869 in Tudicliidae, a fossil gastropod family].

NOTES. *Scatomyza* species are slender, medium to large sized flies (5–17 mm long). Proepisternum is covered with hairs at middle or in anterior part. Anepisternum is covered with hairs completely or almost completely, with hairs posterior to anterior spiracle. Postmetacoxal bridge present. Scutellum with 2–3 pairs of strong setae.

The presence of postmetacoxal bridge is a unique characteristic for the genus.

Scatomyza curtipilata (Feng, 2002)

Figs 1–4

Scathophaga curtipilata Feng, 2002: 365. Type-locality: Mt. Emei (Taiziping, 2858 m; 29.983°N, 103.700°E) (China).

Scatomyza fansipanicola Ozerov in Ozerov et Krivosheina, 2011: 5. Type-locality: road to Mt. Fansipan, 2055 m, (22.3358°N 103.7842°E) (Vietnam).

Heteroterma fanjingensis Wei, 2006: 531. Type-locality: Guizhou (China).

MATERIAL EXAMINED. **Nepal:** Rasuwa Distr., Sing Gompa env. (ca. 28.1108°N, 85.3391°E), 3250–4000 m, 10–16.VI 2017, 18 ♂, coll. A. Medvedev, A. Ozerov (ZMUM); Rasuwa Distr., Deurali env. (28.1069°N, 85.3290°E), 2955 m, 24.V 2016, 6 ♂, 2 ♀, coll. A. Medvedev (ZMUM); Rasuwa Distr., Lauribina env. (ca. 28.0926°N, 85.7996°E), 3910 m, 12.VI 2017, 1 ♂, coll. A. Medvedev (ZMUM).



Figs 1–4. *Scatomyza curtipilata* (Feng, 2002), ♂. 1 – habitus, lateral view; 2 – sternites 4 (lower) and 5 (upper); 3 – epandrium, cerci and surstyli, lateral view; 4 – same, dorsal view. (Figs 2, 3, 4 – after Ozerov & Krivosheina, 2011).

DESCRIPTION. MALE (Fig. 1) and FEMALE. *Head*. Frontal vitta matt, reddish yellow; fronto-orbital plate black, greyish dusted. Face, parafacial and gena yellow. Postcranium black, grey dusted, covered with black hairs and setae in upper part and yellow hairs in lower part. Setae: 3 orbitals, 4–5 frontals, 1 ocellar, 1 inner vertical, 1 outer vertical, 1 small postocellar; usually 4 pairs of vibrissae present. Scapus and pedicel yellowish, postpedicel black. Postpedicel rounded apically, about 2.5 times as long as wide. Arista black, pubescent throughout its length. Palpus slender, yellow.

Thorax black, greyish dusted. Scutum with four indistinct brownish stripes. Acrostichals as hairs in two rows, dorsocentrals 2+3, intra-alars (0–1)+2, supra-alars 1+2, postpronotals 2, notopleurals 2, postalars 2. Proepisternum and proepimeron covered with hairs, proepisternum with 1 strong seta near lower margin. Anepisternum covered with whitish hairs almost completely and with 2–3 black setae along posterior margin. Katepisternum covered with short whitish hairs and 1 strong seta in posterodorsal corner. Anepimeron bare. Postmetacoxal bridge present. Scutellum black, greyish dusted; a pair of strong basal scutellar and a pair of small apical scutellar setae present.

Legs yellow, but fore femur in several specimens partly blackish dorsally, also coxae and tarsomere 5 of all legs blackish. Fore femur with a row of posterodorsal setae. Fore tibia with 3 dorsal, 1–2 posterior at middle, 1 preapical dorsal and 1 apical posterior setae. Mid femur with a row of anterodorsal setae, additionally with 1 preapical posterior and 1 preapical posterodorsal setae. Mid tibia with 3 posterodorsal, 2 anterodorsal, 1 posterior setae, and a ring of apicals. Hind femur with a row of anterodorsal setae, 1 apical posterior seta, also with 1 anteroventral seta in apical third. Hind tibia with 3 posterodorsal, 3 anterodorsal, 1 preapical posterodorsal, 1 preapical anterodorsal, 1 apical anteroventral setae.

Wing tinged with brownish, without clouding on crossveins; veins blackish. Calypters, margins of calypters, and halteres brownish.

Abdomen elongate-cylindrical, black, greyish dusted, covered with yellow short hairs, tergites 2–6 with a row of marginal setae. Male sternites 4 and 5 as in Fig. 2. Cerci and surstyli as in Figs. 3, 4.

MEASUREMENTS. Length of body 5.2–6.4 mm. Length of wing 5.5–6.7 mm.

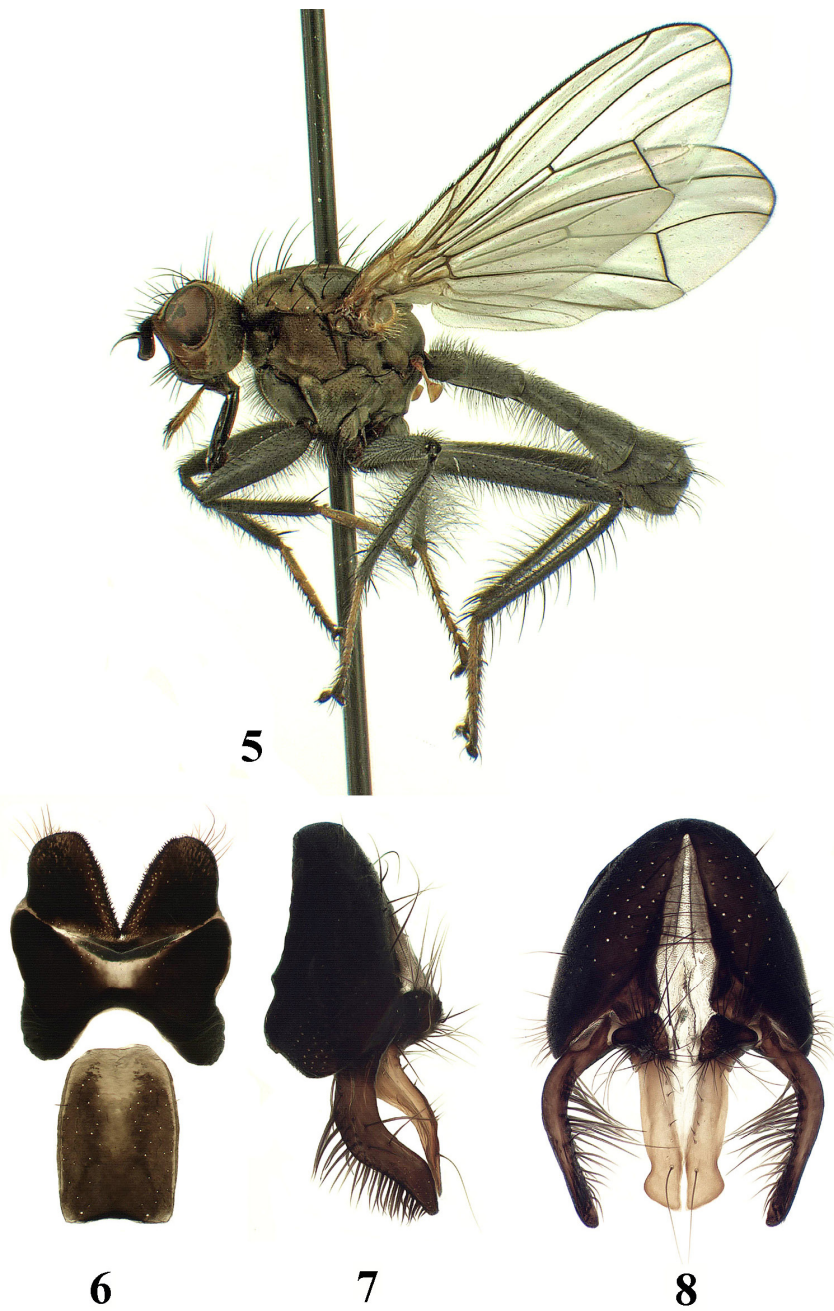
BIOLOGY AND HABITAT. Adult flies were collected on dung of domestic Asian water buffalo (*Bubalus bubalis* (Linnaeus, 1758), fam. Bovidae), domestic donkey (*Equus asinus* (Linnaeus, 1758), fam. Equidae) and domestic horse (*Equus ferus* (Boddaert, 1785), fam. Equidae) at the height 2600–3300 m a.s.l. The females of *S. curtipilata* are larviparous.

DISTRIBUTION. Nepal: Rasuwa Distr. (first record). – China, Vietnam.

***Scatomyza medvedevi* Ozerov et Krivosheina, sp. n.**

Figs 5–8

MATERIAL. Holotype – ♂, **Nepal**: Rasuwa Distr., Buddha mandir env. (28.0879°N, 85.3900°E), 4215 m, 13–14.VI 2017, coll. A. Medvedev (ZMUM).



Figs 5–8. *Scatomyza medvedevi* sp. n., holotype ♂. 5 – habitus before the abdomen is removed, lateral view; 6 – sternites 4 (lower) and 5 (upper); 7 – epandrium, cerci and surstyli, lateral view; 8 – same, dorsal view.

DESCRIPTION. MALE (Fig. 5). *Head*. Frontal vitta matt, reddish black; fronto-orbital plate black, grey dusted. Face black, greyish dusted. Parafacial and gena reddish yellow. Postcranium black, densely grey dusted, covered with whitish and black hairs. Setae: 3 orbitals, 4 frontals, 1 ocellar, 1 inner vertical, 1 small outer vertical, 1 small postocellar; 4–5 pairs of vibrissae present. Antenna black. Postpedicel rounded apically, about 2.5 times as long as wide. Arista black, pubescent throughout its length. Palpus slender, yellow.

Thorax. Scutum grey dusted, with dark markings as follows: a pair of paramedian vittae between the acrostichal and dorsocentral rows; a patch between presutural dorsocentrals and supra-alars; and postsuturally a vitta between dorsocentrals and intra-alars. Pleura grey dusted. Acrostichals absent, dorsocentrals 3+3 (first presutural short and directed anteriorly), intra-alars 0+2, supra-alars 1+2, postpronotals 2, notopleurals 2, postalaris 2. Proepisternum with hairs, also with 1 slender seta near lower margin. Proepimeron with hairs. Anepisternum covered with blackish hairs almost completely, with hairs adjacent to anterior thoracic spiracle and with 2 black setae along posterior margin. Katepisternum covered with blackish hairs in posterior half and 1 strong seta in posterodorsal corner. Anepimeron bare. Postmetacoxal bridge present. Scutellum black, densely grey dusted; a pair of strong basal scutellar and a pair of strong apical scutellar setae present.

Legs. Coxae, femora and tibiae black, grey dusted; tarsi yellow, but tarsomere 4 dorsally, tarsomere 5 and pulvillae blackish. Fore femur covered with hairs, but without conspicuous setae. Fore tibia with a row of slender anterodorsal setae, 2 slender posterior, 1 strong apical ventral and 1 apical anteroventral setae. Mid femur covered with hairs, with a row of slender posteroventral setae, and 1 long basal hair posteriorly. Mid tibia covered with long straight hairs, also with 1 posterodorsal, 2 anterodorsal, 1 anteroventral setae, and a ring of apicals. Hind femur covered with moderate hairs, with 4–5 anterodorsal setae in apical quarter. Hind tibia with long hairs anteroventrally, 3–4 anterodorsal, 4 posterodorsal, 1 anteroventral setae, and a ring of apicals; apical posteroventral seta absent.

Wing clear; veins blackish, vein R_1 bare. Calypters, margins of calypters, and halteres pale yellowish.

Abdomen elongate-cylindrical, black, greyish dusted, covered with hairs. Male sternite 4 simple, about 1.5 times as long as wide (Fig. 6). Male sternite 5 with a pair of wide lateral lobes (Fig. 6). Cerci and surstyli as in Figs. 7, 8.

MEASUREMENTS. Length of body 7.0 mm, length of wing 5.9 mm.

Female unknown.

BIOLOGY AND HABITAT. Single male was collected on dung of domestic yak (*Bos grunniens* (Linnaeus, 1766), fam. Bovidae) at the height 4215 m a.s.l.

DISTRIBUTION. Nepal: Rasuwa Distr.

ETYMOLOGY. The new species is named after the collector, Andrey Medvedev.

***Scatomyza mellipes* (Coquillett, 1899)**

Figs 9–11

Scatophaga mellipes Coquillett, 1899: 335. Type-locality: locality not stated (Japan).

Scatophaga chinensis Malloch, 1935: 260. Type-locality: "Suifu, Szechuen, China".

Scathophaga eoa Ozerov, 2007: 2. Type-locality: "environs of Lazo (43.3806°N, 133.8951°E)" (Russia, Primorskiy kray).

MATERIAL EXAMINED. **Nepal:** Mustang Distr., Muktinath env. (ca. 28.8201°N, 83.8565°E), ~ 3600 m, 25–30.VI and 1–9.VII 2017, 37 ♂♂, 10 ♀♀, coll. A. Medvedev (ZMUM); Rasuwa Distr., Sing Gompa env. (ca. 28.1108°N, 85.3391°E), 3250–4000 m, 25.V 2016, 10–16.VI 2017, 3 ♂♂, 2 ♀♀, coll. A. Medvedev, A. Ozerov (ZMUM); Rasuwa Distr., Cholang Pati env. (28.0971°N, 85.3734°E), 3700 m, 28.V 2016, 4 ♂♂, coll. A. Medvedev (ZMUM).

DESCRIPTION. MALE, FEMALE. *Head.* Frontal vitta matt, reddish yellow; fronto-orbital plate black, greyish dusted. Face, parafacial and gena yellow. Post-cranium black, grey dusted, covered with black hairs and setae in upper part and yellow hairs in lower part. Setae: 3 orbitals, 3–5 frontals, 1 ocellar, 1 inner vertical, 1 outer vertical, 1 small postocellar; 4–5 pairs of vibrissae present. Scapus and pedicel yellowish, postpedicel black. Postpedicel rounded apically, about 2 times as long as wide. Arista black, pubescent throughout its length. Palpus slender, yellow.

Thorax black, greyish dusted. Scutum with four indistinctly brownish stripes. Acrostichals as hairs in two rows, but prescutellar pair stronger, approximately as long as postocellar setae, dorsocentrals 2+3, intra-alars 1+2, supra-alars 1+(2–3), postpronotals 2, notopleurals 2, postalars 2. Proepisternum and proepimeron covered with yellow hairs. Anepisternum covered with yellow and black hairs almost completely, with hairs adjacent to anterior thoracic spiracle and with 3–4 black setae along posterior margin. Katepisternum covered with yellow hairs and 1 strong seta in posterodorsal corner. Anepimeron bare. Postmetacoxal bridge present. Scutellum black, greyish dusted; a pair of strong basal scutellar and a pair of strong apical scutellar setae present.

Legs yellow, but first femur in several specimens partly blackish dorsally and tarsomere 5 of all legs blackish apically. Fore femur covered with yellow hairs, but without conspicuous setae in male, additionally with a row of posterodorsal setae in female. Fore tibia in male covered with yellow hairs posteroventrally and ventrally, usually without conspicuous setae. Fore tibia in female, with 3 dorsal, 1–2 posterior, 1 preapical dorsal and 1 apical posterior setae. Mid femur covered with hairs, without anterodorsal setae in male and with a row of anterodorsal setae in female, additionally with 1 preapical posterior and 1 preapical posterodorsal setae in both sexes. Mid tibia covered with straight blackish hairs in male, also with 3 posterodorsal, 2 anterodorsal, and a ring of apicals. Mid tibia in female without straight hairs, with 3–4 posterodorsal, 2 anterodorsal, 1 ventral setae, and a ring of apicals. Hind femur covered with moderate yellow hairs, but without conspicuous setae in male. Hind femur in female without moderate yellow hairs, but with a row of anterodorsal setae and 2 anteroventral setae in apical third. Hind tibia covered with straight blackish

hairs in male, but without such hairs in female, also with 3 posterodorsal, 3 anterodorsal, 1 preapical posterodorsal, 1 preapical anterodorsal, 1 apical anteroventral setae in both sexes.

Wing tinged with brownish, without clouding on crossveins; veins blackish. Calypters, margins of calypters, and halteres yellowish.

Abdomen elongate-cylindrical, black, greyish dusted, covered with yellow (male) or black (female) hairs, in female additionally tergites 2–6 with a row of marginal setae. Male sternites 4 and 5 as in Fig. 9. Cerci and surstyli as in Figs. 10, 11.



Figs. 9–11. *Scatomyza mellipes* (Coquillett, 1889), ♂. 9 – sternites 4 (lower) and 5 (upper); 10 – epandrium, cerci and surstyli, lateral view; 11 – same, dorsal view.

MEASUREMENTS. Length of body 5.1–11.0 mm, length of wing 5.0–10.0 mm.

BIOLOGY AND HABITAT. Adult flies were collected on dung of domestic Asian water buffalo, domestic donkey, domestic horse, also on human excrements at the height 2600–3300 m a.s.l. in Rasuwa province, and on human excrements at the height 3600 m a.s.l. in Mustang province. The females of *S. mellipes* are egg-laying.

DISTRIBUTION. Nepal: Mustang Distr., Rasuwa Distr. – Russia (south of Far East), Korea, Japan, China, India, Vietnam.

NOTES. The species was recorded from Nepal by Vockeroth (1977).

***Scatomyza nigrolineata* Ozerov et Krivosheina, sp. n.**

Figs 12–17

MATERIAL. Holotype – ♂, **Nepal:** Rasuwa Distr., Buddha mandir env. (28.0879°N 85.3900°E), 4215 m, 13–14.VI 2017, coll. A. Medvedev (ZMUM). Paratypes: 29 ♂♂, 10 ♀♀, same labels as holotype (ZMUM).



Figs 12–13. *Scatomyza nigrolineata* sp. n., ♂. 12 – habitus, dorsolateral view; 13 – same, dorsal view.

DESCRIPTION. MALE (Figs 12, 13), FEMALE. *Head*. Frontal vitta matt, with whitish reflections, reddish, but often blackish in central part; fronto-orbital plate black, grey dusted. Face blackish, greyish dusted. Parafacial reddish. Gena pale blackish, with whitish reflections. Postcranium black, densely grey dusted, covered with whitish and black hairs. Setae: 3 orbitals, 4–5 frontals, 1 ocellar, 1 inner vertical, 1 small outer vertical, postocellar as hairs; 4 pairs of vibrissae present. Antenna black. Postpedicel rounded apically, about 2.5 times as long as wide. Arista black, pubescent throughout its length. Palpus slender, yellow.



Figs 14–17. *Scatomyza nigrolineata* sp. n., ♂. 14 – habitat; 15 – sternites 4 (lower) and 5 (upper); 16 – epandrium, cerci and surstyli, lateral view; 17– same, dorsal view.

Thorax black, densely grey dusted. Scutum with densely black stripe between dorsocentral rows (Figs 12, 13). Acrostichals short in two rows, prescutellar pair not differentiated or only slightly longer than the other acrostichals, dorsocentrals 3+3, intra-alars 0+2, supra-alars 1+2, postpronotals 2, notopleurals 2, postalars 2. Proepisternum with hairs, also usually with 2 slender setae near lower margin. Propimeron with hairs. Anepisternum covered with long blackish hairs completely or almost completely, with hairs adjacent to anterior thoracic spiracle and with 2–3 black setae along posterior margin. Katepisternum covered with long yellowish hairs and 1 strong seta in posterodorsal corner. Anepimeron bare. Postmetacoxal bridge present. Scutellum black, densely grey dusted and with blackish spot laterally (Fig. 13); a pair of strong basal scutellar and a pair of strong apical scutellar setae present.

Legs. Coxae and femora black, densely grey dusted; tibiae yellow; tarsi yellow, but tarsomere 5 blackish; pulvillae blackish. Fore femur with long hairs, but without conspicuous setae. Fore tibia without conspicuous setae in male, with 2 dorsal (anterodorsal), 1 posterior setae, 1 preapical dorsal and 1 apical posterior setae in female. Mid femur covered with hairs, with 1 long basal hair posteriorly. Mid tibia with 2 posterodorsal, 2 anterodorsal, 1 posterior, 1 ventral setae, and a ring of apicals. Hind femur covered with hairs, without conspicuous setae in male, with a row of anterodorsal setae in female. Hind tibia with 3 anterodorsal, 2–3 posterodorsal, 1 anteroventral setae, and a ring of apicals; apical posteroventral seta absent.

Wing clear; veins blackish, vein R_1 bare. Calypters, margins of calypters, and halteres yellowish.

Abdomen elongate-cylindrical, black, greyish dusted, covered with hairs. Male sternite 4 simple, about 1.5 times as wide as long (Fig. 15). Male sternite 5 with a pair of submedian processes and a pair of lateral lobes on posterior margin (Fig. 15). Cerci and surstyli as in Figs. 16, 17. Ovipositor short, cylindrical; sclerites of ovipositor shining.

MEASUREMENTS. Length of body 5.2–8.5 mm, length of wing 6.8–8.4 mm.

BIOLOGY AND HABITAT. Imago were registered on stones and on vegetation near dung of domestic horse and domestic yak at the height 4200 m (Figs 12–14).

DISTRIBUTION. Nepal: Rasuwa Distr.

***Scatomyza sinensis* (Sun, 1996)**

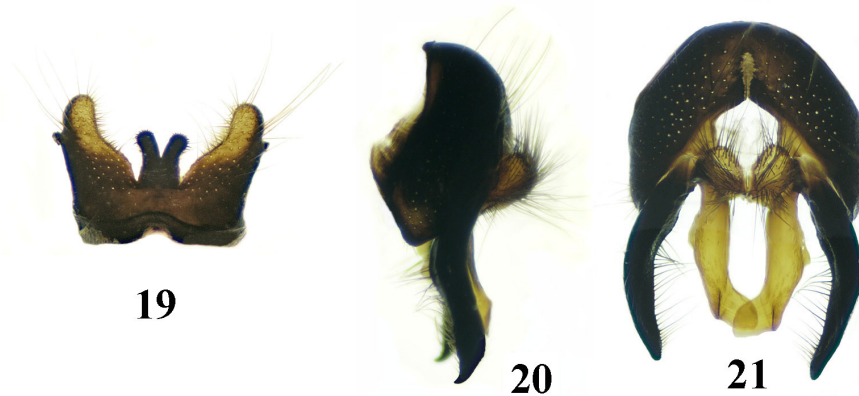
Figs 18–21

Scathophaga sinensis Sun, 1996: 630. Type-locality: Mts. Emei, 1800 m–2000 m (Sichuan, China)

Scathophaga calceata Ozerov, 2009: 425. Type-locality: Annapurna Conservat, Area Bagarchhap (Nepal), **syn. n.**

MATERIAL EXAMINED. **Nepal:** Rasuwa Distr., Sing Gompa env. (ca. 28.1108°N 85.3391°E), 3250–4000 m, 10–16.VI 2017, 52 ♂♂, 19 ♀♀, coll. A. Medvedev, A. Ozerov (ZMUM); Rasuwa Distr., Lauribina env. (ca. 28.0926°N 85.7996°E), 3910 m, 12.VI 2017, 1 ♀, coll. A. Medvedev (ZMUM).

DESCRIPTION. MALE (Fig. 18), FEMALE. *Head*. Frontal vitta matt, reddish yellow; fronto-orbital plate black, golden dusted. Face, parafacial and gena reddish yellow. Postcranium black in upper part and yellow in lower part, grey dusted, covered with black hairs and setae in upper part and long yellow hairs in lower part.



Figs 18–21. *Scatomyza sinensis* (Sun, 1996), ♂: 18) habitus, lateral view; 19) sternite 5; 20) epandrium, cerci and surstyli, lateral view; 21) same, dorsal view. 19–21 after Ozerov, 2009, Figs 26–28 (as *S. calceata*). (Figs 19–21 – after Ozerov, 2009).

Setae: 3 orbitals, 4–7 frontals, 1 ocellar, 1 small inner vertical, 1 small outer vertical, 1 small postocellar; 4–5 pairs of vibrissae present. Scapus and pedicel yellowish, postpedicel black. Postpedicel rounded apically, about 2.5 times as long as wide. Arista black, pubescent throughout its length. Palpus slender, yellow.

Thorax. Scutum greyish dusted, with dark markings as follows: a pair of paramedian vittae between the acrostichal and dorsocentral rows; a patch between presutural dorsocentrals and supra-alars; and postsuturally a vitta between dorsocentrals and intra-alars. Pleura greyish dusted. Acrostichals as hairs in two rows, but prescutellar pair stronger, approximately as long as postocellar setae, dorsocentrals 2+3, intra-alars 1+2, supra-alars 1+2, postpronotals 2, notopleurals 2, postalaris 2. Proepisternum and proepimeron covered with yellow hairs. Anepisternum covered with long yellow hairs almost completely, with hairs adjacent to anterior thoracic spiracle and with 3–4 black setae along posterior margin. Katepisternum covered with long yellow hairs and 1 strong seta in posterodorsal corner. Anepimeron bare. Postmetacoxal bridge present. Scutellum black, greyish dusted; a pair of strong basal scutellar and a pair of strong apical scutellar setae present.

Legs. Coxae of all legs black, grey dusted; femora, tibiae and tarsi yellow, only tarsomere 5 blackish apically. Fore femur covered with yellow hairs, but without conspicuous setae in male, additionally with a row of posterodorsal setae in female. Fore tibia in male covered with yellow hairs posteroventrally and ventrally, but without conspicuous setae or with 1 dorsal seta at middle and 1 preapical dorsal seta. Fore tibia in female with 3 dorsal, 1–2 posterior, 1 preapical dorsal and 1 apical posterior setae. Mid femur covered with hairs, with 3–4 anterodorsal, 1 preapical posterior and 1 preapical posterodorsal setae. Mid tibia covered with long straight yellow hairs in male, also with 1 posterodorsal, 2 anterodorsal setae, and a ring of apicals. Mid tibia in female without long straight yellow hairs, with 3 posterodorsal, 2 anterodorsal setae, and a ring of apicals. Hind femur covered with moderate yellow hairs in male, also with 4 anterodorsal setae. Hind femur in female without moderate yellow hairs, with a row of anterodorsal setae. Hind tibia covered with long straight yellow hairs in male, also with 3 long posterodorsal, 3 long anterodorsal, 1 preapical posterodorsal, 1 preapical anterodorsal, 1 apical anteroventral setae. Hind tibia in female without long straight yellow hairs, with 3 anterodorsal, 3–4 posterodorsal, 1 preapical posterodorsal, 1 preapical anterodorsal, 1 apical anteroventral setae.

Wing tinged with brownish, without clouding on crossveins; veins blackish. Calypters, margins of calypters, and halteres yellowish.

Abdomen elongate-cylindrical, black, shining or subshining, covered with yellow hairs, in female additionally tergites 2–6 with a row of marginal setae. Male sternite 5 as in Fig. 19. Cerci and surstyli as in Figs. 20, 21.

MEASUREMENTS. Length of body 6.5–14.0 mm, length of wing 6.8–12.0 mm.

BIOLOGY AND HABITAT. Adult flies were captured on dung of domestic Asian water buffalo, domestic donkey and domestic horse at the height 3300–4000 m a.s.l. The females of *S. sinensis* are egg-laying.

DISTRIBUTION. Nepal: Manang Distr., Rasuwa Distr. – China, India.

NOTES. The species was known from Nepal under the name of *Scathophaga calceata* Ozerov, 2009, described by male from Bagarchhap (Manang Distr., 2160 m) (Ozerov, 2009), a female was registered in India (state Meghalaya, pine forest, 1700 m, in same paper).

Owing to the help of Dr. Kuiyan Zhang (National Zoological Museum of China, Institute of Zoology, Chinese Academy of Science, Beijing, China), who kindly sent us the photos of holotypes of several *Scathophaga* species described from China, including *S. sinensis* Sun, 1996, we establish that *S. sinensis* Sun and *S. calceata* Ozerov are conspecific.

Key to species of the genus *Scatomyza* of Nepal

1. Scutellum with a pair of strong basal setae and a pair of small apical scutellar setae. Proepisternum with 1 strong seta. Male sternites 4 and 5 (Fig. 2). Cerci and surstyli (Figs 3, 4) *S. curtipilata* Feng
- Scutellum with two pairs of strong setae, basal and apical. Proepisternum covered with hairs near lower margin, without strong seta 2
2. Abdomen shining or subshining, without grey dust. Male sternite 5 (Fig. 19). Cerci and surstyli (Figs 20, 21) *S. sinensis* Sun
- Abdomen densely grey dusted 3
3. Tibiae of all legs black, grey dusted. Male sternites 4 and 5 (Fig. 6). Cerci and surstyli (Figs 7, 8) *S. medvedevi* sp. n.
- Tibiae of all legs yellow 4
4. Mid and hind femora black, grey dusted. Scutum with densely black stripe between dorsocentral rows (Figs 12, 13). Male sternites 4 and 5 (Fig. 15). Cerci and surstyli (Figs 16, 17) *S. nigrolineata* sp. n.
- Mid and hind femora yellow. Scutum more or less unicolor, with four indistinctly brownish stripes. Male sternites 4 and 5 (Fig. 9). Cerci and surstyli (Figs 10, 11) *S. mellipes* Coquillett

DISCUSSION

In Rasuwa province of Nepal *S. curtipilata*, *S. mellipes* and *S. sinensis* were registered in the zone of Temperate Evergreen Forest at the height 2600–4000 m.

Two species, *S. curtipilata* and *S. mellipes*, are common in the lower part of forest zone (2600–3000 m), where the major forest components found were *Pinus wallichiana* and *Dodecadenia grandiflora*. A forest of *Quercus semecarpifolia*, mixed with *Rhododendron arboreum*, appeared from 2500 m and *Tsuga dumosa* after 2700 m which are also intermixed with *Pinus wallichiana* and *Rhododendron arboreum* still dominant up to 3000 m.

Abies spectabilis forest started from 3000 m, *Rhododendron arboreum* and *Juniperus recurva* were often found growing together with *Abies* and continue up to Cholang Pati (3500 m). *S. sinensis* was the dominant species of *Scatomyza* here although single specimens of *S. mellipes* were captured in Sing Gompa (3250 m), and *S. curtipilata* was collected even in alpine zone in Lauribina suburbs (3910 m).

Alpine zone where trees are absent starts approximately at 4000 m. Shrubs of *Rhododendron* spp. (Fig. 14) and *Juniperus* sp. grow in the lower part of the zone. There are relatively many specimens of *S. sinensis* at the height to 4000 m a.s.l., but no specimens of *S. sinensis* and *S. curtipilata* were noticed above this height. Both of registered here species, *S. nigrolineata*, sp.n. and *S. medvedevi*, sp.n. were captured at the height 4215 m a.s.l.

In Mustang province *S. mellipes* was registered at 3600 m a.s.l. in forest belt with predomination of *Populus* sp. (Mr. Medvedev, per. comm., 2017).

In India (state Meghalaya) *S. sinensis* was registered at the height 1700 m a.s.l. in pine forest (Ozerov, 2009); in China in Sichuan province – at the height 1800–2000 m a.s.l., and in Xinang province – at the height 3390–3700 m a.s.l. (Sun, 1996).

Adults of *Scatomyza* have been recorded congregating in swarms on the cattle dung and human excrements. In Rasuwa province *S. curtipilata*, *S. mellipes* and *S. sinensis* were registered on dung of domestic Asian water buffalo, domestic donkey and domestic horse; *S. curtipilata*, *S. mellipes* also on human excrements. Adults of *S. nigrolineata* were captured on stones and vegetation near dung of domestic horse and domestic yak. Single male of *S. medvedevi* was collected on dung of domestic yak.

We reported earlier that females of some species of *Scatomyza* (for example *S. curtipilata*) are larviparous (Ozerov & Krivosheina, 2011) and extrapolated this capacity on all *Scatomyza* species. Our new observations in Rasuwa province demonstrated that females of *S. mellipes* and *S. sinensis* are egg-laying.

ACKNOWLEDGEMENTS

We are very grateful to Dr. Kuiyan Zhang (National Zoological Museum of China, Institute of Zoology, Chinese Academy of Science, Beijing, China) for the help in examination of the holotype of *S. sinensis* Sun, 1996.

The work was conducted within the state project No AAAA-A16-116021660077-3. Morphological studies and illustrations for this work were made on equipment purchased with the support of RSF, research project No.14-50-00029.

REFERENCES

- Coquillett, D.W. 1899. Report on a collection of Japanese Diptera, presented to the U.S. National Museum by the Imperial University of Tokyo. *Proceedings of the United States National Museum*, 21: 301–340.
- Cumming, J.M. & Wood, D.M. 2009. Adult morphology and terminology. P. 9–50. In: Brown, B.V., Borkent, A., Cumming, J.M., Wood, D.M., Woodley, N.E. & Zumbado, M. (Eds.). *Manual of Central American Diptera*. Vol. 1. National Research Council Press, Ottawa. 714 pp.
- Fallén, C.F. 1810. Specimen entomologicum novam Diptera disponendi methodum exhibens. *Litteris Berlingianis*, Lundae. 26 pp + 1 Tafel.

- Feng, Y. 2002. One new species of *Scathophaga* from Western Sichuan, China (Diptera: Scathophagidae). *China Journal of Vector Biology and Control*, 13: 365–366. [In Chinese and English]
- Malloch, J.R. 1935. Exotic Muscaridae (Diptera). – XXXVIII. *Annals and Magazine of Natural History*, (10), 15: 242–266.
- McAlpine, J.F. 1981. Morphology and terminology-adults. Pp. 9–63. In: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vokeroth, J.R., and Wood, D.M. (coordinators). *Manual of Nearctic Diptera*. Vol. 1. Research Branch, Agriculture Canada. Monograph 27, Ottawa, vi+674 pp.
- Ozerov, A.L. 2007. New species of the genus *Scathophaga* Meigen (Diptera, Scathophagidae) from the Russian Far East. *Far Eastern Entomologist*, 107: 1–4.
- Ozerov, A.L. 2009. New species of Scathophagidae (Diptera). *Russian Entomological Journal*, [2008], 17(4): 419–427.
- Ozerov, A.L. & Krivosheina, M.G. 2011. To the knowledge of dung flies (Diptera, Scathophagidae) of Vietnam, with the description of a new species. *Far Eastern Entomologist*, 228: 1–10.
- Stuckenberg, B.R. 1999. Antennal evolution in the Brachycera (Diptera), with a reassessment of terminology relating to the flagellum. *Studia Dipterologica*, 6: 33–48.
- Sun, X. 1996. Scathophagidae. P. 622–633. In: Xue Wanqi (Hsue Wan-chi) & Chao Chienming (Eds). *Flies of China*. Vol. 1. Liaoning Science and Technology Press. Shenyang. 1365 pp.
- Vockeroth, J.R. 1977. Family Scathophagidae. P. 436–438. In: Delfinado, M.D., Hardy, D.E. (Eds). *A Catalog of the Diptera of the Oriental Region*. Vol. 8. suborder Cyclorrhapha. The Univ. Press of Hawaii, Honolulu. 854 pp.
- Wang, M., Michelsen, V., Li, K. & Zhu, W. 2014. Supplementary catalogue of the Anthomyiidae (Diptera) of China. *ZooKeys*, 453: 71–109.
- Wei, L.M. 2006. Anthomyiidae. P. 525–541. In: Li, Z.Z. & Jin, D.C. (Eds). *Insects from Fanjingshan landscape*. Guizhou Science and Technology Publishing House, Guiyang. [In Chinese with English summary]