

### Research article

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## The genus *Drymeia* Meigen, 1826 (Diptera: Muscidae) in Kyrgyzstan: new records and new species

Vera S. SOROKINA<sup>1,\*</sup> & Adrian C. PONT<sup>2</sup>

<sup>1</sup>Institute of Systematics and Ecology of Animals, Russian Academy of Sciences, Siberian Branch, Frunze Street 11, Novosibirsk 630091, Russia.

<sup>1</sup>Tomsk State University, Lenin Avenue 36, Tomsk 634050, Russia.

<sup>2</sup>Oxford University Museum of Natural History, Parks Road, Oxford OX1 3PW, UK.

\*Corresponding author: [sorokinavs@mail.ru](mailto:sorokinavs@mail.ru)

<sup>2</sup>Email: [muscidman2@gmail.com](mailto:muscidman2@gmail.com)

<sup>1</sup>urn:lsid:zoobank.org:author:394AB897-8128-49F4-806D-4DF36557C48A

<sup>2</sup>urn:lsid:zoobank.org:author:EA43FFB9-0860-4688-9D0E-C5E8838690BE

**Abstract.** The muscid genus *Drymeia* Meigen, 1826 in Kyrgyzstan has been studied. One new species is described: *Drymeia zieglerei* sp. nov. An annotated checklist and keys for each sex of the six named species of Kyrgyzstan *Drymeia* are provided. Five species are newly recorded from Kyrgyzstan. An image of the new species is given.

**Key words.** Flies, Palaearctic, Asian mountains, high altitudes, Kyrgyz Republic, Central Asia.

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### Introduction

The genus *Drymeia* Meigen, 1826 consists mostly of small to medium-sized, black, bristly flies, many of which are abundant in high altitude meadows and/or zonal tundra where they may commonly be found on open flowers (Figs 1–2). They feed on nectar and, probably, also on pollen, and by their foraging activities are responsible for the transfer of pollen from flower to flower. They can be considered as among the most important pollinators of wild flowers in the mountains of East Europe and Palaearctic Asia (Michelsen 2011; Sorokina & Pont 2015; pers. obs.).

A detailed review of this genus was made relatively recently for China (Fan 2008; Xue *et al.* 2008, 2009), Russia (Sorokina & Pont 2015), and the Nearctic region (Savage & Sorokina 2020). The latter two papers include a description of the genus *Drymeia* and its systematic position, an analysis of the Holarctic distribution with references, and also provide some DNA barcoding (Savage & Sorokina 2020). Currently the highest number of *Drymeia* species is known from the Palaearctic region (88 species), with far fewer from the Oriental region (34 species) and from the Nearctic region (21 species); only one species is known from the Neotropical region.

In the Palaearctic region the genus has radiated to an extraordinary extent in China, in particular in the Qinghai-Xizang (Tibetan) Plateau (56 species). In addition to Tibet, research into this genus has been carried out only in the Caucasus Mts (7 species), the European Alps (8 species), the Himalaya-Karakorum Mts (12 species) and the Altai-Sayan Mts (17 species).

Unfortunately, almost no studies of *Drymeia* have so far been carried out in the mountains of Central Asia (Pamirs, Tien Shan) although there may be a considerable diversity of this genus in these mountainous regions. Among all the countries of Central Asia, only four species of *Drymeia* have been recorded from Tajikistan (Pont 1986; Zielke 2016) and two from Kyrgyzstan (Pont 1986; Pek 1996), and these resulted in the main from dipterological surveys carried out in the 1960s by the late Dr Valentina Sychevskaya and her colleagues (Sychevskaya & Vtorov 1969; Sychevskaya 1970). The two Kyrgyzstan species listed by Pont (1986) and Pek (1996) were *Drymeia valentinae* Pont, 1975 and *Drymeia gymnophthalma* Hennig, 1963, which are discussed below. An unnamed but apparently new species was mentioned by Sychevskaya & Vtorov (1969) and is discussed below under *Drymeia valentinae*.

A series of German expeditions in 2009, 2011, 2012 and 2013 to the Tien Shan Mountains of Kyrgyzstan brought back a large collection of Muscidae, and some numbers of *Drymeia* have been found in this material, including a new species. These expeditions were the result of an initiative between the University of Greifswald, Germany, the Zoological Museum, Berlin, Germany, and the Institute of Biology and Pedology of the Kyrgyzstan Academy of Sciences, Bishkek, Kyrgyzstan. The dipterists on these expeditions were Dr Joachim Ziegler (all four) and Dr Doreen Werner (2009).



**Fig. 1.** *Drymeia* sp., ♀. Photo: W. Wiehe (Waren, Germany).



The aim of the present paper is to report on this material, to provide an annotated species list of Kyrgyzstan *Drymeia* and to describe the new species.

## Material and methods

### Institutional abbreviations

BMNH = Natural History Museum (NHMUK), London, UK (former British Museum of Natural History)

OUMNH = Oxford University Museum of Natural History, Oxford, England

SDEI = Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany

ZMHU = Museum für Naturkunde, Berlin, Germany

ZMUM = Zoological Museum of Moscow State University, Moscow, Russia

Specimens were examined using an Altami PSO745-T microscope for external morphological features. Illustrations were made with a Canon EOS 600D camera mounted on a Zeiss Stemi 2000-C stereo microscope and processed using Adobe Photoshop CS.



**Fig. 2.** *Angelica brevicaulis* (Rupr.) covered with muscoid flies at Kalmak-Anshun Pass, Kyrgyzstan. Photo: J. Ziegler (Berlin, Germany).



Body length was measured in millimetres (mm) from the anterior margin of the head without antennae to the apex of the abdomen. Morphological terms follow Cumming & Wood (2017).

## Results

### Taxonomy

Class Insecta Linnaeus, 1758  
 Order Diptera Linnaeus, 1758  
 Superfamily Muscoidea Latreille, 1802  
 Family Muscidae Latreille, 1802  
 Subfamily Azeliinae Robineau-Desvoidy, 1830  
 Tribe Azeliini Robineau-Desvoidy, 1830  
 Genus *Drymeia* Meigen, 1826

*Drymeia fasciculata* (Stein, 1916)

Fig. 3

*Pogonomyia fasciculata* Stein, 1916: 46.

### Material examined

KYRGYZSTAN • 1 ♂; “Khr., Issyk-Ata” [Chuy Province, Issyk-Ata; 42°35'52" N, 74°54'26" E; 1700 m a.s.l.]; 23 May 1951; Zhelokhovtsev leg.; ZMUM • 1 ♂; “Issyk-Kul: Sary-Bulak” [Issyk-Kul Oblast, Tyupskii region, Balbai; 42°47'06" N, 78°17'11" E; 2200 m a.s.l.]; 1 Jun. 1989; Gurkin leg.; ZMUM.

### Distribution

Palearctic: Armenia, ?Austria, Bulgaria, China (Shanxi Province), France, Georgia, Italy, Kyrgyzstan, Turkey, Russia (Altai Mts).



Fig. 3. The distribution of the species of *Drymeia* Meigen, 1826 in Kyrgyzstan.

*Drymeia firthiana* (Huckett, 1965)

Fig. 3

*Pogonomyia firthiana* Huckett, 1965: 298.

**Material examined**

KYRGYZSTAN • 17 ♂♂, 2 ♀♀; Naryn Oblast, Inner Tien Shan, Moldo-Too Range, Kadzhurty River valley, SE of Lake Song-köl; 41°40'08" N, 75°30'58" E; 2470 m a.s.l.; 30 Jul. 2009; J. Ziegler leg.; ZMHU • 4 ♂♂, 1 ♀; same collection data as for preceding; BMNH • 4 ♂♂; same collection data as for preceding; OUMNH • 1 ♂; Naryn Oblast, Inner Tien Shan, Terskey-Alatoo, Karakujur Valley, E of Sary Bulak; 41°56'38" N, 75°49'34" E; 2330 m a.s.l.; 1 Aug. 2009; J. Ziegler leg.; ZMHU • 2 ♂♂; Naryn Oblast, Inner Tien Shan, Kakshaal-Too Range, Kiokkyia Mts, SE of Chatyr-Tash; 40°52'44" N, 76°29'26" E; 3340 m a.s.l.; 19 Jul. 2009; J. Ziegler leg.; ZMHU • 1 ♀; Naryn Oblast, Kynda Pass, pass S of Besh Bel-Chir; 41°09'028" N, 76°26'406" E; 3414 m a.s.l.; 18 Jul. 2009; D. Werner leg.; SDEI • 1 ♀; same collection data as for preceding; BMNH • 1 ♂, 2 ♀♀; Naryn Oblast, Kiokkyia Valley; 40°45'869" N, 76°22'631" E; 3373 m a.s.l.; 20 Jul. 2009; D. Werner leg.; SDEI • 1 ♂, 1 ♀; same collection data as for preceding; BMNH • 1 ♂, 2 ♀♀; same collection data as for preceding; OUMNH • 2 ♂♂, 1 ♀; Naryn Oblast, Kiokkyia Mts; 40°52'591" N, 76°29'631" E; 3286 m a.s.l.; 20 Jul. 2009; D. Werner leg.; SDEI • 2 ♂♂, 1 ♀; same collection data as for preceding; BMNH • 1 ♂; same collection data as for preceding; OUMNH • 1 ♂; Naryn Oblast, Ak-Say Valley; 41°52'951" N, 76°27'258" E; 3111 m a.s.l.; 19 Jul. 2009; D. Werner leg.; SDEI • 1 ♀; Naryn Oblast, Chon-Kuldya; 40°46'535" N, 76°17'313" E; 3340 m a.s.l.; 22 Jul. 2009; D. Werner leg.; SDEI • 1 ♂; Issyk-Kul Oblast, Tien Shan, Terskey-Alatoo Mts, S slope of Bugutu Mtn, E of Bökönbaev; 42°04'33" N, 77°18'16" E; 2450 m a.s.l.; 23 Jun. 2011; J. Ziegler leg.; ZMHU • 2 ♂♂; Issyk-Kul Oblast, Tien Shan, Terskey-Alatoo Mts, Tuura-Suu Valley, 10 km SW of Kara-Talaa; 42°14'05" N, 76°19'43" E; 1890 m a.s.l.; 20 Jun 2011; J. Ziegler leg.; ZMHU • 1 ♂; “Sr. tech. r. Sary-Dzhaz” [Issyk-Kul Oblast, Inner Tien Shan, middle course of River Sary-Dzhaz, ~ 42°14' N, 79°07' E]; 20 Jul. 1962; R. Zlotin leg.; BMNH • 1 ♂; Talas Oblast, Tien Shan, Talas Alatau Mts, Chychkan Valley, N of Toktogul, Dang Sidevalley; 42°09'36.0" N, 73°50'59.6" E; 1920 m a.s.l.; 16 May 2013; C. Lange and J. Ziegler leg.; ZMHU • 1 ♂; Talas Oblast, Tien Shan, Talas Alatau Mts, Upper Chychkan Valley, southwest of Ala-Bel Pass; 42°14'47" N, 72°59'55" E; 2740 m a.s.l.; 3 Jul. 2012; J. Ziegler leg.; ZMHU • 2 ♂♂, 2 ♀♀; Chuy Province, Kirgiz. Alatau, Tien-Shan, Ala-Arča River; [~ 43.0623" N, 74.6382" E]; 2700–2800 m a.s.l.; 22 Jun. 1982; M. Chvála leg.; BMNH.

**Distribution**

Palaeartic: Kyrgyzstan, Russia (Altai Mts, Khakasiya, Tyva). Nearctic: Canada (Yukon).

*Drymeia gymnophthalma* (Hennig, 1963)

*Trichopticoides gymnophthalma* Hennig, 1963: 55.

**Remarks**

This species was described from Tajikistan and was subsequently recorded from Kyrgyzstan in the subalpine (2555 m) and alpine (3207 m) zones (Sychevskaya & Vtorov 1969: 821; Sychevskaya 1970: 827; Pont 1986: 71). These identifications, made by ACP over fifty years ago and before the radiation of this genus in Asia was even suspected, and almost certainly based only on females, are very probably incorrect. Males of this group of species from Kyrgyzstan are needed before a definitive name can be provided for these females.

### Distribution

Palaeartic: Tajikistan, ?Kyrgyzstan.

### *Drymeia setibasis* (Huckett, 1965)

Fig. 3

*Eupogonomyia setibasis* Huckett, 1965: 301.

### Material examined

KYRGYZSTAN • 1 ♂; Naryn Oblast, Inner Tien Shan, Baidui Mtn Range, slope N of Kalmak-Anshun Pass, NE of Lake Song Köl; 41°54'53" N, 75°25'40" E; 3420 m a.s.l.; 31 Jul. 2009; J. Ziegler leg.; ZMHU • 8 ♂♂, 4 ♀♀; Naryn Oblast, Kalmak-Anshun; 41°54'823" N, 75°25'716" E; 3430 m a.s.l.; 31 Jul. 2009; D. Werner leg.; BMNH • 8 ♂♂, 4 ♀♀; same collection data as for preceding; OUMNH • 7 ♂♂, 4 ♀♀; same collection data as for preceding; SDEI • 1♂; Naryn Oblast, Kynda Pass, pass S of Besh Bel-Chir; 41°09'028" N, 76°26'406" E; 3414 m a.s.l.; 18 Jul. 2009; D. Werner leg.; SDEI.

### Distribution

Palaeartic: Kyrgyzstan, Russia (Altai Mts, Tyva, Taymyr Peninsula, Chukotka). Nearctic: Canada (Yukon, Northwest Territories), USA (Alaska).

### *Drymeia valentinae* (Pont, 1975)

Fig. 3

*Pogonomyia valentinae* Pont, 1975: 193.

### Material examined

KYRGYZSTAN • 2 ♂♂; Naryn Oblast, Inner Tien Shan, Baybiche-Too Range, Kalakashu Pass, SW of Naryn; 40°58'57" N, 75°10'14" E [40.9825" N, 75.17056" E]; 3400 m a.s.l.; 25 Jul. 2009; J. Ziegler leg.; ZMHU • 1 ♂, 1 ♀; Naryn Oblast, Inner Tien Shan, At Bashi Mts, Kynda Pass, S of Besh Bel-Chir; 41°09'00" N, 76°26'41" E; 3400 m a.s.l.; 18 Jul. 2009; J. Ziegler leg.; ZMHU • 1 ♂, 2 ♀♀; Naryn Oblast, Kynda Pass, S of Besh Bel-Chir; 41°09'028" N, 76°26'406" E; 3414 m a.s.l.; 18 Jul. 2009; D. Werner leg.; SDEI • 1 ♂, 3 ♀♀; same collection data as for preceding; OUMNH • 2 ♂♂, 2 ♀♀; same collection data as for preceding; BMNH • 1♂; Naryn Oblast, Kiokkyia Valley; 40°42'603" N, 76°23'620" E; 3410 m a.s.l.; 20 Jul. 2009; D. Werner leg.; SDEI • 1 ♂; Issyk-Kul Oblast, Tien Shan, Terskey-Alatoo Mts, Upper Ak-Terek Valley (Tash-Tar-Ata Mts), SE of Bökönbaev; 42°04'22" N, 77°08'02" E; 2620 m a.s.l.; 22 Jun. 2011; J. Ziegler leg.; ZMHU • 1 ♂; same collection data as for preceding; OUMNH.

### Remarks

This species was described from Kyrgyzstan but has not yet been found in other neighbouring mountain ranges, although we have seen it from Kazakhstan (Almaty env., Zailiysky alatau). It is similar to *D. fasciculata*, but differs by the presence of only 3 postsutural dorsocentrals and the different conformation and armature of the ♂ mid femur: mid femur curved, with 2–3 stout anteroventral setae on third quarter, much longer than depth of femur, and, opposite them, on posteroventral surface with several shorter fine setae; basal half of femur bare on anteroventral and posteroventral surfaces. ♂ hind femur with strong anteroventrals in apical half, weaker setae in basal half where they are more anterior than anteroventral; without posteroventral setae. ♀ frons relatively narrow, in frontal view and at middle appearing much narrower than an eye-width; mid femur with 2 anteroventrals in apical third, otherwise without anteroventrals or posteroventrals; mid tibia with 2 anterodorsals.

This is very probably the species listed as “*Pogonomyia*, sp. n.” by Sychevskaya & Vtorov (1969: 828), who collected it in association with the Altay marmot, *Marmota baibacina baibacina* Kastschenko, 1899, either on droppings or in the burrows or on both. The type-series of *Drymeia valentinae* included some paratypes collected by P.P. Vtorov in the Chon Kyzyl-Su valley in the Terskey Alatau range in 1964, 1965 and 1966 and by R.I. Zlotin in the upper reaches of the River Naryn in 1965, some of which could be those which Sychevskaya & Vtorov listed as “*Pogonomyia*, sp. n.” which was also listed from the upper reaches of the River Naryn.

### Distribution

Palaeartic: Kyrgyzstan, Kazakhstan.

### *Drymeia* sp.

### Material examined

KYRGYZSTAN • 1 ♀; Issyk-Kul Oblast, Tien Shan, Terskey-Alatau Mts, upper Ak-Terek valley (Tash-Tar-Ata Mts), SE of Bökönbaev; 42°04'22" N, 77°08'02" E; 2620 m a.s.l.; 22 Jun. 2011; J. Ziegler leg.; ZMHU.

### Remarks

In Sorokina & Pont (2015) this female keyed out as the species currently known as *Drymeia grandis* Sorokina & Pont, 2015. The specimen has 4 postsutural dorsocentrals, prealar seta absent, anepimeron setulose, body whitish-grey dusted, scutum with two narrow vittae along dorsocentrals, and it agreed well with the original description of *D. grandis*. However, we cannot name this specimen as *D. grandis* because it might also be *D. cilitarsis* Sorokina & Pont, 2015. As shown by recent DNA barcoding (Savage & Sorokina 2020), the paratype series of females of *D. grandis* (BIN BOLD:ACT1697) is mixed and contains correctly identified females as well as some belonging to *D. cilitarsis* (BIN BOLD:ACT1698). *D. cilitarsis* was described only from males, and this species, like *D. grandis*, has a setulose anepimeron, prealar seta absent, and 4 postsutural dorsocentrals. The female of *D. cilitarsis* is currently undescribed. A re-examination of the paratypes from BOLD:ACT1697 (*D. grandis*) and BOLD:ACT1698 (*D. cilitarsis*) did not provide any good diagnostic characters to distinguish between the females of the two species. All specimens of the paratype series are very similar and at present the females of *D. cilitarsis* and *D. grandis* cannot be differentiated and run to the same couplet in the identification key.

### *Drymeia ziegleri* sp. nov.

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Figs 2–5

### Diagnosis

The new species is close to *Drymeia vicana* (Harris, 1780), which also has 4 postsutural dorsocentral setae, prealar absent and densely long-haired eyes. However, *D. ziegleri* is a larger black species with thin, elongate proboscis, mid femur slightly curved ventrally and with 3 short ventral spines closer to the middle, a row of long anteroventral setae on the apical  $\frac{2}{3}$  and a row of very long posteroventral setae; the male has the anepimeron and katepimeron bare; hind femur without long and strong posteroventrals; hind tibia with a small ventral apical prong, without apical posteroventral seta.

### Etymology

The species epithet is a patronym in honour of the dipterist Dr Joachim Ziegler (Berlin) who collected the holotype.





**Fig. 4.** *Drymeia ziegleri* sp. nov., ♂, holotype (ZMHU), lateral view. Photo: K. Child (UK, formerly OUMNH).



## Type material

### Holotype

KYRGYZSTAN • ♂; Naryn Oblast, Inner Tien Shan, Baidui Mtn Range, slope N of Kalmak-Anshun Pass, NE of Lake Song Köl (Сон Кёль); 41°54'53" N, 75°25'40" E; 3420 m a.s.l.; 31 Jul. 2009; J. Ziegler leg.; ZMHU.

### Paratypes

KYRGYZSTAN • 1 ♂; same collection data as for holotype; ZMHU • 1 ♂; “Tien-Shan, verkh. r. B. Naryn” [Tien-Shan, upper reaches of B. Naryn River, ~ 41°44' N, 77°53' E, 3500 m a.s.l.]; 27 Aug. 1964; R. Zlotin leg.; ZMUM.

## Description

### Male

MEASUREMENTS. Body length 6.8–8.2 mm; wing length 5.4–6.5 mm.

HEAD. Ground-colour black. Eye densely long-haired. Fronto-orbital plate and parafacial, face, gena and lower occiput brownish-grey pruinose. Fronto-orbital plates not touching, separated by a narrow frontal vitta. Frons at narrowest point 3 × as wide as diameter of anterior ocellus. 16–18 pairs of frontal setae, including interstitials, reaching almost to anterior ocellus. Antenna black, postpedicel 1.5 × as long as wide. Arista appearing almost bare, longest hairs much shorter than its basal diameter. Parafacial at level of insertion of arista slightly wider than or equal to width of postpedicel, hardly narrowing below. In lateral view, lower facial margin not projecting forward beyond level of antennal base. Gena broad,



**Fig. 5.** The type-locality of *Drymeia ziegleri* sp. nov. (Kyrgyzstan, Kalmak-Anshun Pass). Photo: J. Ziegler (Berlin, Germany).

depth below lowest eye-margin equal to or slightly broader than length of postpedicel, densely setose and with a group of upcurved setae on anterior part of genal dilation. Palpus black. Proboscis thin, elongate, prementum dusted but subshining.

THORAX. Ground-colour black. Scutum matt, black, brownish-grey dusted. Ground-setulae long and dense. Pleura black, subshining. Acrostichals indistinct, the presutural setulae in 4–5 irregular rows. Dorsocentrals 2+4. Prealar seta absent. Notopleuron densely setulose. Prosternum bare. Anepimeron and katepimeron bare. Scutellum black and dusted in anterior view.

LEGS. Black. Fore tibia with 0–1 posterodorsal and 2–3 posteroventral setae in middle. Fore tarsomere 1 with a row of posteroventral setulae on apical third. Mid femur slightly curved ventrally, with a row of long anteroventral setae on apical  $\frac{2}{3}$ , the setae in middle part of femur directed upwards and slightly shifted on to anterior surface, apical setae directed downwards; with 3 short ventral spines closer to middle; with a row of very long posteroventral setae, 2.3–2.5 × as long as diameter of femur, except in apical and basal quarters where long setae are absent. Mid tibia without long strong anterior setae; 6–7 posterodorsals; 4–5 posteroventrals. Hind femur without posteroventrals but with a tuft of fine long setae on basal half of posterior surface; with a row of anteroventral setae that become longer and stronger on apical third. Hind tibia with a row of long, strong posterodorsals on basal half; with a row of anterodorsals, strong and long on basal half, short and erect on apical half; 4–6 anteroventrals and 4–5 posteroventrals in middle; without preapical setae, except 1 short anteroventral seta on small ventral apical prong. Hind tarsomere 1 with 2 short ventral setae at base.

WING. Brown, blackish at base. Basicosta and tegula black. Costa with weak spinules, without costal spine. Calypters and margins light yellow. Knob of haltere black.

ABDOMEN. Ground-colour black. When viewed from behind, tergites 3–5 with brown dusted lateral spots. Sternite 1 bare.

TERMINALIA. Not dissected.

#### Female

Unknown.

#### Distribution

Palaeartic: Kyrgyzstan.

#### *Key to the Kyrgyzstan species of Drymeia Meigen, 1826*

Males of *D. cilitarsis* Sorokina & Pont, 2015 and *D. grandis* Sorokina & Pont, 2015 have not yet been found in Kyrgyzstan, but they are included in the key, since, according to the unidentified female, one of them may belong to the Kyrgyzstan fauna.

#### Males

1. 3 pairs of postsutural dorsocentral setae ..... 2
  - 4 pairs of postsutural dorsocentral setae ..... 3
2. Mid femur curved, with 2 strong anteroventral setae on apical half, basal half of femur bare on anteroventral and posteroventral surfaces ..... *D. valentinae* (Pont, 1975)
  - Mid femur with rows of anteroventral and posteroventral setae, strong setae absent ..... *D. firthiana* (Huckett, 1965)



3. Prealar seta strong. Mid tibia usually with 3–4 anterodorsal setae, rarely with 1–2 ..... 4  
 – Prealar seta absent. Mid tibia without or with 1–2 short anterodorsal setae ..... 5
4. Mid femur with anteroventral setae restricted to a group of 5–6 setae on apical fifth, and with a row of long posteroventral setae on basal  $\frac{2}{3}$  which at base are twice as long as diameter of femur. Hind femur without posteroventrals, only with fine posterior setae at base ... *D. fasciculata* (Stein, 1916)  
 – Mid femur with rows of fine anteroventral and posteroventral setae, with fine and dense posterior to posteroventral setae which are as long as diameter of femur. Hind femur with a dense row of posteroventrals ..... *D. gymnophthalma* (Hennig, 1963)
5. Eye densely long-haired. Mid femur with a row of very long posteroventral setae, 2.3–2.5 × as long as diameter of femur. Black species ..... *D. zieglerei* sp. nov.  
 – Eye bare or with very short hairs. Mid femur without or with only short, fine posteroventral setae. Grey species ..... 6
6. Anepimeron bare. Mid femur with a group of slender curved setae at extreme base of anteroventral surface and with 1–2 short ventral spinules on basal third ..... *D. setibasis* (Huckett, 1965)  
 – Anepimeron setulose. Mid femur different ..... 7
7. Tip of abdomen with a dense brush of slender black setae and setulae, caudally directed. Mid tibia without anterodorsals. Eye very short haired ..... *D. cilitarsis* Sorokina & Pont, 2015  
 – Tip of abdomen without such a brush of setae and setulae, at most with several caudally directed setulae on hypopygium. Mid tibia with 1–2 anterodorsals. Eye bare ..... *D. grandis* Sorokina & Pont, 2015

#### Females

The female of *D. zieglerei* sp. nov. is not known, but we have included it in the key based on the male characters.

1. Prealar seta present and strong ..... 2  
 – Prealar seta absent or weak, shorter than 2<sup>nd</sup> notopleural seta ..... 5
2. 4 postsutural dorsocentral setae; parafacial with an undusted shining patch near base of antenna .. 3  
 – 3 postsutural dorsocentral setae; parafacial entirely dusted ..... 4
3. Arista appearing almost bare, the longest hairs shorter than its basal diameter; body grey, subshining; proboscis long, labella small; hind femur only with 1 weak posteroventral seta at base; fore tarsomere 5 normal, not flattened ..... *D. fasciculata* (Stein, 1916)  
 – Arista pubescent, longest arista hairs twice as long as its basal diameter; body black, shining; proboscis short and thick, labella large; hind femur with 1 weak posteroventral seta at base and with 2–3 posteroventral setae on basal third; fore tarsomere 5 moderately flattened ..... *D. gymnophthalma* (Hennig, 1963)
4. Mid femur with 2 anteroventrals on apical third, with 1 anteroventral and 1 posteroventral setae on basal third. Body brownish-grey dusted, sometimes with an olive tinge. Wing yellow at base. Lower facial margin projecting slightly forward beyond level of antennal base ..... *D. firthiana* (Huckett, 1965)  
 – Mid femur only with 2 anteroventrals on apical third, otherwise without anteroventrals or posteroventrals. Body black, subshining. Wing black at base. Lower facial margin projecting well beyond level of antennal base ..... *D. valentinae* (Pont, 1975)

5. Anepimeron setulose. Body whitish-grey dusted; thorax with 2–3 narrow brown vittae, sometimes indistinct. Lower facial margin not projecting slightly forward beyond level of antennal base. Mid femur with 1–2 fine anteroventrals on basal quarter .....  
 ..... *D. grandis* Sorokina & Pont, 2015; *D. cilitarsis* Sorokina & Pont, 2015
- Anepimeron bare. Body yellowish-grey dusted, with an olive tinge. Lower facial margin projecting slightly forward beyond level of antennal base. Mid femur with 3–4 strong anteroventrals on basal third ..... *D. setibasis* (Huckett, 1965)

### Remark

The unknown female of *D. zieglerei* sp. nov. will probably key out to couplet 5 (with *D. setibasis*) and will be recognised by the very black body.

### Discussion

Flies of the family Muscidae are the dominant insects at extreme high altitude and at high latitude, both in numbers of species and in numbers of individuals (Danks 1981, 1990; Chernov 1995; Barkalov 2012). Whilst the genus *Spilogona* Schnabl, 1911 is dominant in arctic environments, the genus *Drymeia* Meigen is dominant in high mountains such as the European Alps, the Caucasus and the Siberian Altai (Sorokina 2013a, 2013b). However, knowledge of this genus in the high mountains of Central Asia (Pamirs, Tien Shan, Himalaya-Karakorum) is in its infancy. As a result of the present investigation, Kyrgyzstan is the best studied country of Central Asia, where seven species (including an unnamed one) have been recorded. Two species are known from Tajikistan (Pont 1986; Zielke 2016); there is no information about this genus in other countries of Central Asia, except *D. valentinae* from Kazakhstan.

However, in view of the distribution of the genus *Drymeia*, a significantly higher number of species can be expected in these mountains and further collecting at high altitude in Kyrgyzstan will certainly lead to the discovery of additional species. Recent studies of this genus in Europe (Michelsen 2011), Russia (Sorokina & Pont 2015), China (Fan 2008; Xue *et al.* 2008, 2009), and North America (Savage & Sorokina 2020) have shown that this genus is essentially montane in origin despite its current arcto-alpine distribution.

In some cases, very high numbers of individuals are found in the Arctic, and species of *Drymeia* constitute one of the dominant elements of these biota (Sorokina & Khruleva 2012). However, the species diversity of the genus in the Arctic is low. For example, six species are known in the Taimyr Peninsula (Sorokina 2012a, 2017), three species are known in Wrangel Island (Sorokina & Khruleva 2012), 10 species in Chukotka (Sorokina & Tridrikh 2021), eight species in Alaska (Savage & Sorokina 2020), 10 species in Northern Canada (Savage & Sorokina 2020), and two species in Greenland (Michelsen 2015).

The genus *Drymeia* is most speciose in the Asian mountains. The epicentre of species diversity is located on the Tibetan Plateau, where 56 species have now been found (Fan 2008; Xue *et al.* 2008, 2009). In other mountain systems that have been studied, the diversity is an order of magnitude lower. For example, seven species are known from the Caucasus Mts (Pont 2022), eight species are known from the European Alps (Michelsen 2011), 17 species from the Altai-Sayan Mts (Sorokina & Pont 2015) and 12 species from the Himalaya-Karakorum Mts (Pont 1981; Shinonaga & Singh 1994; Shinonaga 2007). Each of these mountain systems has its own endemic species. It should be noted that the greatest diversity of the genus is at high altitudes (Sorokina 2012b), so the low number of species in the mountain systems listed above compared to the Tibetan Plateau could be explained by the lack of collecting at high altitude.

Unfortunately, at the present time there is little data on the Pamirs and Tien Shan, but these mountain systems may also be centres of species diversity of the genus *Drymeia*. Additional studies of this genus



in the mountains of Central Asia will not only reveal additional new endemic species but will also clarify the distribution of some species and also identify the centre of origin of the genus.

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