


New records of Bibionidae (Diptera) from Azerbaijan and Georgia Новые находки Bibionidae (Diptera) из Азербайджана и Грузии

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Abstract. New records of eight species in the family Bibionidae are presented based on the material collected in Azerbaijan and Georgia in 2019. Six species were recorded for the first time for Transcaucasia, five species for Azerbaijan, and eight species for Georgia. In addition, the first checklist of Transcaucasian bibionids is given.

Резюме. В статье представлены новые находки восьми видов из семейства Bibionidae, основанные на материалах, собранных в Азербайджане и Грузии в 2019 г. Шесть видов впервые отмечены в Закавказье, пять видов – в Азербайджане, и восемь видов – в Грузии. Впервые приводится список видов бибионид Закавказья.

Key words: Caucasus, Transcaucasia, checklist, Bibionidae, new records

Ключевые слова: Кавказ, Закавказье, список видов, Bibionidae, новые находки

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Introduction

Bibionidae are small to moderately large (3–15 mm) nematocerous flies with a strong sexual dimorphism, which is evident in both colour and morphology (eyes holoptic in males, broadly separated in females of the genera *Bibio* Geoffroy, 1762 and *Dilophus* Meigen, 1803). The Palaearctic members of Bibionidae are robust flies with setose body, swollen fore femur, and fore tibia armed with a series of spines (*Dilophus*) or

strong apical spurs (*Bibio*). The larvae are phytosaprophagous; they develop in decaying vegetable matter or leaf litter, and some species may become pests of crops while feeding on the roots of grasses and the subterranean parts of other plants (e.g. Duda, 1930; Krivosheina, 1986; Haenni, 2015).

Altogether 49 species of Bibionidae are known from Europe, including the Russian parts of the Caucasus (Krivosheina, 1969, 1986; Skartveit, 2013). Neither Krivosheina (1969) nor Skartveit (2013) considered the Transcaucasia (Armenia, Azerbaijan and Georgia) as a part of Europe,

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as distinct from the Russian parts of the Caucasus (mostly, the North Caucasus), which was included in the European part of the former Soviet Union. Krivosheina (1969) listed only four species of Bibionidae from the Russian parts of the Caucasus: *Bibio consanguineus* Loew, 1869, *B. hortulanus* (Linnaeus, 1758), *B. marci* (Linnaeus, 1758), and *Dilophus febrilis* (Linnaeus, 1758). The same author (Krivosheina, 1986) listed from Transcaucasia *B. caucasicus* Duda, 1930 and *B. siculus* Loew, 1846, which was synonymised with *B. hortulanus* by Haenni (2009). Of the recent publications, only Oboňa et al. (2017a) have reported from Armenia *B. consanguineus*, *D. febrilis* and *D. bispinosus* Lundström, 1913, as new species for Transcaucasia. To the authors' knowledge, no checklists of Bibionidae in Azerbaijan and Georgia were published.

Similar to our previous publications (e.g. Oboňa et al., 2017a, 2019; Dvořák et al., 2020; etc.), this study aims to present new faunistic data and to continue contributing to the biodiversity of the little-known Diptera families of the Caucasus.

Material and methods

Dipterans were collected by L. Dvořák, J. Oboňa, P. Manko, T. Kovács, D. Murányi, and G. Vinçon in April–May, July and September–October (all in 2019) by sweep-netting from vegetation growing along watercourses and lakes. The photos of some collecting sites are given as Electronic supplementary material 1 (see Addenda section). The captured specimens were preserved in 75% ethanol in a field. In a laboratory, specimens of Bibionidae were identified by L. Dvořák and J. Skartveit, mainly using Krivosheina (1969). The material is deposited at the private collection of L. Dvořák and at the collection of NLA University College, Bergen, Norway.

We use the term “Transcaucasia” (Armenia, Azerbaijan and Georgia) according to the Catalogue of Palaearctic Diptera. For further details, see Soós & Papp (1990).

In the list of material, the names of collectors and determiners are abbreviated as follows: DM – Dávid Murányi, GV – Giles Vinçon, JO – Jozef Oboňa, JS – John Skartveit, LD – Libor Dvořák, PM – Peter Manko, TK – Tibor Kovács.

Results

Order Diptera

Family Bibionidae

Genus *Bibio* Geoffroy, 1762

Bibio clavipes Meigen, 1818

Material examined. **Azerbaijan:** Göygöl, Göygöl National Park, forest brook below Maralgöl Lake, 1875 m a.s.l., 40°22'51.3"N 46°18'30.4"E, 30.IX.2019, 3 males, PM, LD, JO, DM leg., LD det.; *Daşkəsən:* open brook S of Xoşbulaq Vill., 1710 m a.s.l., 40°26'01.2"N 46°02'46.6"E, 2.X.2019, 2 males, 1 female, PM, LD, JO, DM leg., LD det.; Xoşbulaq Vill., open stream and wetlands above reservoir, 1635 m a.s.l., 40°26'31.4"N 46°02'45.6"E, 2.X.2019, 2 males, 2 females, PM, LD, JO, DM leg., LD det. **Georgia:** *Samegrelo-Zemo Svaneti,* Mestia Distr., valley of Nakra River (Utviri tributary), steep brook and spring, 2200 m a.s.l., 43°04'37"N 42°20'25"E, 23.IX.2019, 6 males, 1 female, GV leg., JS det.; *Adjara,* Kintrishi Nature Reserve: valley of Kintrishi River above Khino Vill., spring and springbrook, 2300 m a.s.l., 41°45'31"N 42°06'50"E, 26.IX.2019, 1 female, GV leg., JS det.; sidebrook of Cherulisghele Stream, 1040 m a.s.l., 41°44'00.2"N 42°04'55.3"E, 26.IX.2019, 2 males, 2 females, PM, LD, JO, DM leg., LD det.; brook in open spruce forest W of Goderdzi Pass, 1850 m a.s.l., 41°37'58.3"N 42°29'54.7"E, 27.IX.2019, 3 males, 2 females, PM, LD, JO, DM leg., LD det.; open brook in village E of Goderdzi Pass, 1850 m a.s.l., 41°38'03.4"N 42°32'48.6"E, 27.IX.2019, 3 males, 2 females, PM, LD, JO, DM leg., LD det.; *Mtskheta-Mtianeti:* above Juta Vill., Chaukhistskali River and its small tributaries, 2400 m a.s.l., 42°34'04"N 44°45'28"E, 30.IX.2019, 1 male, GV leg., JS det.; Dariali, Khde River valley above dam, large lateral resurgence, 1610 m a.s.l., 42°43'54"N 44°38'40"E, 2.X.2019, 1 male, 1 female, GV leg., JS det.

Bionomics. This autumn-active species occurs mainly in woodlands but may also be found in meadows and heathlands. It is a partly nocturnal species. Populations of *B. clavipes* show marked fluctuations (Skartveit et al., 2005).

Notes. In northwestern Europe, this species and *Bibio longipes* Loew, 1864 are clearly separate species, obviously different both concerning morphology and ecology (Skartveit, 1995; Zeeegers, 2017). However, *B. clavipes* and *B. longipes* are intergrading into each other to the south, and it is not possible to distinguish them in central Europe (Duda, 1930).

Distribution. Almost the entire Europe from France to Croatia, Romania, Bulgaria and Greece, east to central European Russia; Mongolia, Russian Far East (Krivosheina, 1986; Skartveit, 2013; Haenni & Ramel, 2017; Hubenov, 2021). Recorded for the first time from Transcaucasia (Azerbaijan and Georgia).

Bibio hortulanus (Linnaeus, 1758)

Bibio siculus Loew, 1846.

Material examined. Georgia: Kvemo Kartli: Kola-giri Vill., Khrami River and channel, floodplain forest, 420 m a.s.l., 41°28'49.7"N 44°41'40.3"E, 29.IV.2019, 2 males, JO, LD, PM, DM leg., LD det.; Bolnisiskskali River valley nr. Vanati (Migirlo) Vill., forest and sidespring, 490 m a.s.l., 41°25'13.3"N 44°34'55.3"E, 29.IV.2019, 2 males, 1 female, JO, LD, PM, DM leg., LD det.; Bolnisiskskali (Poladauri) River nr. Poladauri Vill. and Samtsevrissi Vill., 665 m a.s.l., 41°20'17.2"N 44°30'16.3"E, 29.IV.2019, 1 male, 1 female, JO, LD, PM, DM leg., LD det.; **Kakheti:** Telavi, Bucha's guest-house garden, 655 m a.s.l., 41°55'04.4"N 45°29'23.2"E, 30.IV.2019, 1 male, JO, LD, PM, DM leg., LD det.; Kisiskhevi Vill., Kisiskhevi River, channel and ruderal grassland, 560 m a.s.l., 41°54'13.4"N 45°33'51.1"E, 30.IV.2019, 2 males, JO, LD, PM, DM leg., LD det.; Khornabuji Vill., Mazovkis Tskali spring and brook, 750 m a.s.l., 41°28'40.0"N 46°05'41.5"E, 4.V.2019, 1 male, JO, LD, PM, DM leg., LD det.

Bionomics. *Bibio hortulanus* is a relatively thermophilic species found mainly in agricultural environments. It was an occasional pest during periods of large population sizes, but not in recent decades (D'Arcy Burt & Blackshaw, 1991). This species seems to have a higher tolerance of dry conditions than most other bibionids, e.g. it is the only *Bibio* species in lowland habitats in Israel (Skartveit & Kaplan, 1996).

Distribution. Europe from Sweden to Greece and from Portugal to Latvia, central and southern parts of European Russia including the Urals; Caucasus, North Africa, Middle East, Turkey, Iran, northern Kazakhstan, mountains of Middle Asia (Krivosheina, 1969; Skartveit & Koç, 2007; Koçak & Kemal, 2013; Skartveit, 2013; Alikhani & Arkani, 2016; Kornev et al., 2016; Tolga & Yoldaş, 2020); recorded from Azerbaijan under the name *B. hortulanus* var. *siculus* (Duda, 1930). Recorded for the first time from Georgia.

Bibio johannis (Linnaeus, 1767)

Material examined. Azerbaijan: *Qəbələ*, Laza Vill., springs and brooks on opposite slope, 1435 m a.s.l., 41°02'23.9"N 47°55'53.5"E, 10.V.2019, 1 male, JO, LD, PM, DM leg., LD det. **Georgia, Mtskheta-Mtianeti,** nr. Tsinamkhari Vill. and Mejilaurni Vill.: stream and swampy sidebrook, 1180 m a.s.l., 42°19'28.7"N 44°38'55.1"E, 28.IV.2019, 1 male, JO, LD, PM, DM leg., LD det.; forest stream, 1165 m a.s.l., 42°19'29.9"N 44°39'08.1"E, 28.IV.2019, 1 male, JO, LD, PM, DM leg., LD det.

Bionomics. This is a common species in agricultural habitats and pastures. It is usually one of the first bibionids to swarm in spring, and it may be partly overlooked for this reason. Adults do not feed and live only 2–3 days; swarming at any given point tends to last only about a week (Skartveit, 2001).

Distribution. Almost the entire Europe, including forest and steppe zones of the former USSR; Algeria (Krivosheina, 1969; Skartveit, 2013; Haenni & Ramel, 2017; Ghobrini & Bendifallah, 2018; Hubenov, 2021). Recorded for the first time from Transcaucasia (Azerbaijan and Georgia).

Bibio marci (Linnaeus, 1758)

Material examined. Azerbaijan: *Şəki*, Kiş Vill.: hotel garden, 905 m a.s.l., 41°14'39.9"N 47°11'22.6"E, 5.V.2019, 1 male, JO, LD, PM, DM leg., LD det.; forest beneath Galarsan ruin, 1190 m a.s.l., 41°15'44.6"N 47°13'37.0"E, 5.V.2019, 2 males, 2 females, JO, LD, PM, DM leg., LD det.; forest brook above village, 1050 m a.s.l., 41°15'36.3"N 47°11'08.6"E, 8.V.2019, 1 male, 1 female, JO, LD, PM, DM leg., LD det.; *Oğuz*, Baş Daşağıl Vill., waterfall and brook in deciduous forest, 1325 m a.s.l., 41°10'55.0"N 47°23'43.0"E, 6.V.2019, 3 males, JO, LD, PM, DM leg., LD det.; *Qəbələ*, Laza Vill., springs and brooks on opposite slope, 1435 m a.s.l., 41°02'23.9"N 47°55'53.5"E, 10.V.2019, 1 male, JO, LD, PM, DM leg., LD det. **Georgia: Mtskheta-Mtianeti:** Kharkheti (Nadibani) Vill., Aragvi River and its sidestream, 1235 m a.s.l., 42°24'57.7"N 44°36'15.2"E, 27.IV.2019, 2 females, JO, LD, PM, DM leg., LD det.; Mejilaurni Vill., forest and bushy springs, 1270 m a.s.l., 42°19'25.4"N 44°38'43.9"E, 28.IV.2019, 7 males, JO, LD, PM, DM leg., LD det.; *Kvemo Kartli*, Poladauri (Chatakh) Vill., Pernenjançhai River, 700 m a.s.l., 41°19'42.7"N 44°30'31.7"E, 29.IV.2019, 1 male, 1 female, JO, LD, PM, DM leg., LD det.; *Kakheti*, Karajala Vill., marsh and grassland by Turdo River, 630 m a.s.l., 41°56'28.2"N 45°25'47.6"E, 2.V.2019, 1 female, JO, LD, PM, DM leg., LD det.

Bionomics. *Bibio marci* is a quite eurytopic species in central Europe, though it is found mainly in warm microhabitats towards the north. The species has been expanding rapidly in northern Europe in recent years, probably in response to global warming (MacDonald, 2015).

Distribution. Almost the entire Europe south to Greece; North Caucasus; Turkey; Kazakhstan; North Africa (Krivosheina, 1969, 1986; Koçak & Kemal, 2013; Skartveit, 2013; Skartveit et al., 2013; Kornev et al., 2016; Haenni & Ramel, 2017; Hubenov, 2021; Tezcan et al., 2021). Recorded for the first time from Transcaucasia (Azerbaijan and Georgia).

Bibio nigriventris Haliday, 1833

Material examined. Georgia, Mtskheta-Mtianeti: sidebrook of Chkheri River, crossing forest road, 2050 m a.s.l., 42°40'12"N 44°36'37"E, 4.VII.2019, 1 male, 2 females; PM, DM leg., JS det.; deciduous forest, 2020 m a.s.l., 42°39'52"N 44°36'39"E, 4.VII.2019, 1 male, PM, DM leg., JS det.; forest meadow, 2000 m a.s.l., 42°39'52"N 44°37'27"E, 4.VII.2019, 1 male, 1 female, PM, DM leg., JS det.; below Juta Vill., tributary of Snostskali River, 1870 m a.s.l., 42°33'48"N 44°42'28"E, 5.VII.2019, 1 female, PM, DM leg., JS det.; above Archangel Monastery complex, Khde River, 1450 m a.s.l., 42°44'8"N 44°38'19"E, 6.VII.2019, 1 male, PM, DM leg., LD det.; Kharkheti (Nadibani) Vill., Aragvi River and its sidestream and sidesprings, 1235 m a.s.l., 42°24'57.7"N 44°36'15.2"E, 9.VII.2019, 1 male, TK, PM, DM, GV leg., LD det.; open temporary brook on SE slope of Mt. Kazbek, 2715 m a.s.l., 42°39'37.3"N 44°35'00.2"E, 10.VII.2019, 6 males, 2 females, TK, PM, DM, GV leg., JS det.; sidespring of Chkheri River beneath AltiHut 3.14 mountain shelter, 2960 m a.s.l., 42°39'32.0"N 44°33'39.9"E, 10.VII.2019, 4 males, TK, PM, DM leg., JS det.; rocky area by Gergeti Glacier of Mt. Kazbek, 3235 m a.s.l., 42°40'07.0"N 44°33'00.7"E, 10.VII.2019, 5 males, 1 female; TK, PM, DM leg., JS det.; sidespring of Chkheri River, 2940 m a.s.l., 42°39'35.8"N 44°33'47.8"E, 10.VII.2019, 2 males, 6 females, TK, PM, DM leg., JS det.; open springbrooks above (E of) Juta Vill., 2340 m a.s.l., 42°34'28.4"N 44°45'14.9"E, 11.VII.2019, 2 females, TK, PM, DM, GV leg., JS det.; Chaukhistskali River above (E of) Juta Vill., 2385 m a.s.l., 42°33'52.1"N 44°45'41.3"E, 11.VII.2019, 2 females, TK, PM, DM, GV leg., JS det.; springbrooks in Chaukhistskali River valley nr. Juta Vill., 2600 m a.s.l., 42°33'13.6"N 44°46'22.0"E, 11.VII.2019, 1 female, TK, PM, DM, GV leg., JS det.; springbrook of Chaukhistskali River towards pass,

2855 m a.s.l., 42°33'25.9"N 44°47'29.6"E, 11.VII.2019, 3 females, TK, PM, DM, GV leg., JS det.; upper course of Chaukhistskali Stream and its sideseep, 2645 m a.s.l., 42°33'19.2"N 44°46'37.5"E, 11.VII.2019, 1 male, 1 female, TK, PM, DM, GV leg., JS det.

Bionomics. A common and rather eurytopic species in northern Europe, particularly numerous in woodlands. In Scandinavia, it is abundant up to the timberline but uncommon above it (Skartveit, 1995). The larvae sometimes develop in damp decaying wood (Gorban & Podéniene, 2021). A large outbreak of the species was recently recorded in Moscow, Russia (Krivosheina et al., 2019).

Distribution. *Bibio nigriventris* is known from northern, western and central Europe east to central European Russia, from West Siberia and Kamchatka (Krivosheina, 1969, 1986; Skartveit, 2013; Krivosheina & Khruleva, 2015). Recorded for the first time from Transcaucasia (Georgia).

Bibio varipes Meigen, 1830

Material examined. Azerbaijan: Şəki, Kiş Vill.: hotel garden, 905 m a.s.l., 41°14'39.9"N 47°11'22.6"E, 5.V.2019, 2 females, JO, LD, PM, DM leg., LD det.; forest brook above village, 1050 m a.s.l., 41°15'36.3"N 47°11'08.6"E, 8.V.2019, 3 females, JO, LD, PM, DM leg., LD det.; Qəbələ, Laza Vill., springs and brooks on the opposite slope, 1435 m a.s.l., 41°02'23.9"N 47°55'53.5"E, 10.V.2019, 1 male, JO, LD, PM, DM leg., LD det. **Georgia: Mtskheta-Mtianeti:** nr. Tsinamkhari Vill. and Mejilauri Vill., stream and swampy sidebrook, 1180 m a.s.l., 42°19'28.7"N 44°38'55.1"E, 28.IV.2019, 1 female, JO, LD, PM, DM leg., LD det.; Chaukhistskali River above (E of) Juta Vill., 2385 m a.s.l., 42°33'52.1"N 44°45'41.3"E, 11.VII.2019, 1 female, TK, PM, DM, GV leg., LD det.; *Kakheti*, Karajala, marsh and grassland by Turdo River, 630 m a.s.l., 41°56'28.2"N 45°25'47.6"E, 2.V.2019, 1 female, JO, LD, PM, DM leg., LD det.

Bionomics. The species is common in woodlands and somewhat thermophilic. In the north, it is a coastal species (Skartveit, 1995) but occurs also in inland areas in central Europe.

Distribution. Almost the entire Europe including the Great Britain; Mongolia (Krivosheina, 1969; 1986; Skartveit, 2013; Skartveit et al., 2013; Haenni & Ramel, 2017; Oboňa et al., 2017b; Hubenov, 2021). Recorded for the first time from Transcaucasia (Azerbaijan and Georgia).

Genus *Dilophus* Meigen, 1803

Dilophus febrilis (Linnaeus, 1758)

Material examined. **Azerbaijan:** Şəki: Kiş Vill., hotel garden, 905 m a.s.l., 41°14'39.9"N 47°11'22.6"E, 5.V.2019, 7 males, JO, LD, PM, DM leg., LD det.; Kiş Vill., forest beneath Galarsan ruin, 1190 m a.s.l., 41°15'44.6"N 47°13'37.0"E, 5.V.2019, 2 females, JO, LD, PM, DM leg., LD det.; Quirxbulaq Vill., karst brook in deciduous forest, 595 m a.s.l., 41°08'47.2"N 47°15'31.9"E, 6.V.2019, 1 male, JO, LD, PM, DM leg., LD det.; forest brook above Kiş Vill., 1050 m a.s.l., 41°15'36.3"N 47°11'08.6"E, 8.V.2019, 2 males, 5 females, JO, LD, PM, DM leg., LD det.; Qax, Qax Vill., school garden, 41°25'12.0"N 46°54'35.8"E, 7.V.2019, 1 female, JO, LD, PM, DM leg., LD det. **Georgia:** *Mtskheta-Mtianeti*, Tsinamkhari Vill., forest edge swamp, 1150 m a.s.l., 42°19'26.5"N 44°39'11.8"E, 28.IV.2019, 1 female, JO, LD, PM, DM leg., LD det.; *Samtskhe-Javakheti*, Utkisubani Vill., waterfall towards Goderdzi Pass, 1660 m a.s.l., 41°38'20.7"N 42°34'58.6"E, 27.IX.2019, 9 males, 3 females, PM, LD, JO, DM leg., LD det.; *Adjara*, Mtsvane Tba (Green) Lake N of Goderdzi Pass, 2075 m a.s.l., 41°40'28.1"N 42°29'53.5"E, 27.IX.2019, 1 female, PM, LD, JO, DM leg., LD det.

Bionomics. This eurytopic and widely distributed species has two annual flight periods, sometimes with mass occurrence (Stuke, 2014).

Distribution. Europe east to Ukraine and south to Greece; Transcaucasia, former Soviet Middle Asia, Iran (Krivosheina, 1969; Skartveit, 2013; Alikhani & Arkani, 2016; Haenni & Ramel, 2017; Oboňa et al., 2017a; Hubenov, 2021). Recorded for the first time from Azerbaijan and Georgia.

Dilophus femoratus Meigen, 1804

Material examined. **Georgia, Mtskheta-Mtianeti:** sidebrook of Chkheri River, crossing forest road, 2050 m a.s.l., 42°40'12"N 44°36'37"E, 4.VII.2019, 1 male, 9 females, PM, DM leg., JS det.; steep sidestream of Snostskali River above Karkucha Vill., cascades, 1890 m a.s.l., 42°34'32"N 44°41'15"E, 5.VII.2019, 1 female, PM, DM leg., JS det.; springs and their outlet brooks N of Jvari Pass, 2380 m a.s.l., 42°31'07.4"N 44°27'52.3"E, 9.VII.2019, 12 females, TK, PM, DM, GV leg., JS det.; open temporary brook on SE slope of Mt. Kazbek, 2715 m a.s.l., 42°39'37.3"N 44°35'00.2"E, 10.VII.2019, 12 males, 1 female, TK, PM, DM, GV leg., JS det.; sidespring of Chkheri River nr. mountain shelter, 2960 m a.s.l., 42°39'32.0"N 44°33'39.9"E, 10.VII.2019, 26 males, 7 females, TK, PM, DM leg., JS det.; rocky area by Gergeti Glacier of Mt. Kazbek, 3235 m a.s.l., 42°40'07.0"N 44°33'00.7"E,

10.VII.2019, 3 males, 1 female, TK, PM, DM leg., JS det.; sidespring of Chkheri River beneath AltiHut 3.14 mountain shelter, 2940 m a.s.l., 42°39'35.8"N 44°33'47.8"E, 10.VII.2019, 3 males, 8 females, TK, PM, DM leg., JS det.; open springbrooks above (E of) Juta Vill., 2340 m a.s.l., 42°34'28.4"N 44°45'14.9"E, 11.VII.2019, 1 female, TK, PM, DM, GV leg., JS det.; springbrooks in Chaukhistskali River valley nr. Juta Vill., 2600 m a.s.l., 42°33'13.6"N 44°46'22.0"E, 11.VII.2019, 3 males, 2 females, TK, PM, DM, GV leg., JS det.; springbrook of Chaukhistskali River towards pass, 2855 m a.s.l., 42°33'25.9"N 44°47'29.6"E, 11.VII.2019, 2 females, TK, PM, DM, GV leg., JS det.; sidebrook of Chaukhistskali Stream, 2700 m a.s.l., 42°33'25.1"N 44°46'56.9"E, 11.VII.2019, 16 males, 2 females, TK, PM, DM, GV leg., JS det.; upper course of Chaukhistskali Stream and its sideseep, 2645 m a.s.l., 42°33'19.2"N 44°46'37.5"E, 11.VII.2019, 5 males, 1 female, TK, PM, DM, GV leg., JS det.; upper brook towards pass, 2900 m a.s.l., 42°33'34.9"N 44°47'47.0"E, 11.VII.2019, 2 males, 2 females, TK, PM, DM, GV leg., JS det.; Gudauri, open brook along military road, 2250 m a.s.l., 42°29'31.3"N 44°28'02.2"E, 13.VII.2019, 1 female, TK, PM, DM, GV leg., JS det.

Bionomics. This is a widespread and eurytopic species apparently throughout the northern part of the Holarctic. Unlike *D. febrilis* it has only one annual activity period. It occurs up to the timberline, rarely above it in Scandinavia but records from Greenland (Haenni, 2015) and our data prove that this species can also live in treeless areas, including localities at an altitude above 3000 m, where we found it on very poor vegetation in a rocky landscape near snow fields below the Gergeti Glacier.

Distribution. Most of Europe north to Iceland, Greenland and northern European Russia, and southeast to southern European Russia and Bulgaria; Urals, Siberia, Mongolia, Morocco, Canary Islands, Madeira (Krivosheina, 1969; Skartveit, 2013; Haenni, 2015; Hubenov, 2021). Recent DNA barcode investigations have revealed that the species is also widespread in northern North America (Ratnasingham & Hebert, 2007; Taxonomy..., 2022). Recorded for the first time from Transcaucasia (Georgia).

Conclusion

A total of eight species of the family Bibionidae were recorded from Azerbaijan and Georgia during three sampling periods in 2019 (April–May,

July and September–October). Of these, six species were recorded for the first time for Transcaucasia, five species for Azerbaijan, and eight species for Georgia. Based on the results of this study and the publication of Oboňa et al. (2017a), 22% (11 species) of all known bibionids species of Europe and the Caucasus (see Krivosheina, 1969; Skartveit, 2013) are known from Transcaucasia (Armenia, Azerbaijan and Georgia).

Checklist of Bibionidae of Transcaucasia

Abbreviations: Armenia – Arm, Azerbaijan – Aze, Georgia – Geo. Species new for Transcaucasia are marked with a plus sign (+). Species new for the relevant country are marked with an asterisk (*).

<i>Bibio caucasicus</i> Duda, 1930	Aze
+ <i>Bibio clavipes</i> Meigen, 1818	Aze*, Geo*
<i>Bibio consanguineus</i> Loew, 1869	Arm
<i>Bibio hortulanus</i> (Linnaeus, 1758)	Aze, Geo*
+ <i>Bibio johannis</i> (Linnaeus, 1767)	Aze*, Geo*
+ <i>Bibio marci</i> (Linnaeus, 1758)	Aze*, Geo*
+ <i>Bibio nigriventris</i> Haliday, 1833	Geo*
+ <i>Bibio varipes</i> Meigen, 1830	Aze*, Geo*
<i>Dilophus bispinosus</i> Lundström, 1913	Arm
<i>Dilophus febrilis</i> (Linnaeus, 1758)	Arm, Aze*, Geo*
+ <i>Dilophus femoratus</i> Meigen, 1804	Geo*

Addenda

Electronic supplementary material 1.

Fig. 1. Collecting sites of Bibionidae in Azerbaijan and Georgia. **A**, Azerbaijan, Şəki District: hotel garden in the Kiş Village, where *Bibio marci*, *B. varipes* and *Dilophus febrilis* were collected from a wall during the night using a head lamp (photo by Jozef Oboňa); **B**, Azerbaijan, Şəki District: forest brook at the Kiş Village, where *Bibio marci*, *B. varipes* and *Dilophus febrilis* were swept from vegetation (photo by Levan Mumladze); **C**, Georgia, Mtskheta-Mtianeti Region: open, temporary brook on the southeastern slope of Kazbek Mountain, where *Bibio nigriventris* and *Dilophus femoratus* were collected by sweeping and individual collecting from flowers using entomological tweezers (photo by Peter Manko); **D**, Georgia, Mtskheta-Mtianeti Region (same locality as in Fig. 1C): Bibionidae on a flower of *Bistorta* sp. (Polygonaceae) (photo by Peter Man-

ko); **E**, Georgia, Mtskheta-Mtianeti Region: rocky area by the Gergeti Glacier of Kazbek Mountain, where *Bibio nigriventris* and *Dilophus femoratus* were swept from vegetation (location of collecting site indicated by red arrow) (photo by Peter Manko).

File format: JPEG. Available from: <https://doi.org/10.31610/zsr/2022.31.2.182>

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