

The distribution of genus *Hippobosca* in Transcaucasia

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Abstract: The unpublished zoogeographical views of louse flies from genus *Hippobosca* deposited in Collection of the Zoological institute of Russian Academy of Sciences in St. Petersburg, Russia from Transcaucasia are summarized. A total 248 deposited samples and one recent sample belonging to species *Hippobosca equina* Linnaeus, 1758 and *Hippobosca longipennis* Fabricius, 1805 from Armenia, Azerbaijan, Georgia, Southern Caucasus and north-western Iran are presented.

Key words: Hippoboscidae, *Hippobosca equina*, *Hippobosca longipennis*, Armenia, Azerbaijan, Georgia, Russia, Southern Caucasus, Iran

Introduction

Hippobosca is a genus of family Hippoboscidae with seven described species. All species occur in Africa and the Middle East with the ranges of three species extending into the Oriental region and southeast Asia (Hutson 1984). The global distribution can be found in Maa (1962, 1969), distribution for the Palaearctic region in Theodor & Oldroyd (1964) or Doszhanov (2003). Very common and most frequently studied Palaearctic and West Oriental species of this genus is *Hippobosca equina* Linnaeus, 1758. It is a ectoparasite of livestock, preferably horses, donkeys, cows and dogs, but occasionally parasitizing also humans (Krištofik 1998, Halos *et al.* 2004, Oboňa *et al.* 2019a). In Western Europe it recent occurrence is strongly affected by a decline of traditional horse and sheep farming (e.g. Bezák & Petrovič 2006). All species of this genus are bloodsucking ectoparasites, which are also known as possible vectors of various diseases (Baker 1967, Oyieke & Reid 2003, Halos *et al.* 2004, Zabashta *et al.* 2017).

Transcaucasia is known with a persisting of traditional domestic's animals farming (Fig. 1). This situation creates suitable conditions for the survival of many species, with are almost extinct in other countries (e.g. Western Europe). The good example can be also species *H. equina*. On the other hand, it must be emphasized, that precisely those areas are insufficiently investigated particularly in terms of biodiversity of selected Diptera families (e.g. Oboňa *et al.* 2016, 2017) and published data about the family Hippoboscidae are also poorly.

From territory of Armenia are available records of *Melophagus ovinus* (Linnaeus, 1758) (Movsessyan *et al.* 2013), *Ornithophila gestroi* (Rondani 1878) (Nartshuk & Matyukhin 2019) and *Icosta ardeae* (Macquart, 1835) (Matyukhin *et al.* 2016). Maa (1962) mentioned occurrence of species *Hippobosca longipennis* Fabricius, 1805 from Georgia (no other data) and Maa (1969) mentioned occurrence of species *H. equina* from Transcaucasia. From territory of whole Iran are recently published species *Ornithophila metallica* (Schiner, 1864), and *Pseudolynchia canariensis* (Macquart in Webb & Berthelot, 1839) (Pirali-Kheirabadi *et al.* 2016, Araghi *et al.* 2017). Older papers published species *Hippobosca variegata* Megerle, 1803, *Icosta ardeae* (Macquart, 1835) - as *Lynchia albipennis* Say, 1823 (Theodor & Oldroyd 1964) and *Ornithoica bistativa* Maa, 1966, *H. equina*, *H. longipennis*, *H. camelina* Leach, 1817, *Lipoptena capreoli* Rondani, 1878, and *Lipoptena arianae* Maa, 1969 in Maa (1969).

Therefore, the main objective of this paper is to publish unpublished data of genus *Hippobosca* from Transcaucasia.

Material and methods

The material of 248 studied specimens, as a part of the louse flies collection, is deposited in the Zoological institute of Russian Academy of Sciences, St. Petersburg, Russia (ZISP). Dry and pinned flies were re-examined by the first author (Note: some old labels before 1917 are now difficult to interpret). The one recently captured specimen (hand collecting from cow by Libor Dvořák) is preserved in ethanol, identified by the second author, and it is deposited in ethanol collection in the Laboratory and Museum of Evolutionary Ecology, Department of Ecology, University of Prešov (LMEE).

The following abbreviations are used: sp. – sample; sps. – samples; Mts. – mountains; coll. – collector.

Results

A total 194 specimens of *H. equina* from Transcaucasia are deposited in ZISP and one female is deposited in LMEE.

Hippobosca equina Linnaeus, 1758

Material

- Armenia:** Aragatsotn, Byurakan village, canyon of river Amberd, 9.vii.1957, coll. V. Rikhter, 1 sp.; Syunik, Meghri village, near the river Aras, 17.iv.1960, coll. V. Rikhter, 1 sp.
- Azerbaijan:** “Geoktepe (Ağdaş), Elisavetinskaya gubernia (Gəncə), Areshkinsky uesg.”, 26.vi.1901, coll. P. Shmit, 1 sp.; Elisavetinskaya gubernia”, 14. - 19.v.1909, coll. Bebedurashipe, 1 sp.; “Dokeforkan”, 21.v.1923, coll. Lukyanovich, 1 sp.; “Alerseevka, 12 km SW Lankaran, 5.vii.1932, coll. Znoiko, 1 sp.; Lerik, Lyulyakeran, Zuvand, 2.viii.1932, coll. Znoiko, 1 sp.; Lyulyakeran, Zuvant, 2.viii.1932, Znoiko, 1 sp.; Nakhichevan, Tyllyakh on river Gilanchai, 4.viii.1933, coll. Znoiko, 2 sps.; Nakhichevan, Chagla-dora near Kaputzhukh (Ordubad rayon, near Parağa), 1933, coll. Znoiko, 1 sp.; Ordubad, valley of river Aras, 15.vii.1933, coll. Znoiko, 3 sps.; Ordubad, Duchar near Ordubad, 23.vii.1933, Znoiko, 1 sp.; Nakhichevan region, 31.v.1934, Kirshenblat, 4 sps.; Ordubad, viii.1902, coll. Satunin, 1 sp.; 5.vi.1934, coll. Kirshenblat, 6 sps.; Astara, river Talysh, on horse, 8-9.viii.1938, Veltishchev, 7 sps.; Lerik, Astarin on river Talysh, 8-9.viii.1938, coll. Veltishchev, 7 sps.; Ordubad, 7.v.1939, coll. Gauser, 10 sps., 2.viii.1939, coll. Bogachev, 1 sp.; Ordubad, 9.viii.1939, coll. Bogachev, 1 sp.; Ordubad, 7.v.1939, coll. Gauser, 10 sps.; Ordubad on river Ayaks, 22.-24.vi.1955, coll. Zagulyaev, 2 sps.; Ordubad; Bilav, 25.vi.1967, coll. V. Rikhter, 2 sps.; Kosmolyan Lerik, Talysh, 22.v.1969, coll. Tanasijtshuk, 1 sp.; Lerik, Gosmalijion, Talysh, 22.v.1969, coll. Tanasijtshuk, 1 sp.; Ordubad, Nusnus, near Ordubad, 3.vi.1974, coll. Volkovich, 1 sp.; Kakhi, 18.v.1978, coll. V. Rikhter, 1 sp.; Zaqatala, tributary of the Talacaj (Talachay) above Car, forest at riverbanks, on cow, 9.v.2019, 41°40'40.7"N 46°41'57.9"E, coll. Dvořák, 1 female (fig. 2).
- Georgia:** Tbilisi, 1862, coll. Satunin, 1 sp.; Kutais (= Kutaisi), 1875, Il'in coll., 1 sp.; Kakheti, vicinity of Lagodekhi, 10.x.1896 and 6.vii.1916, coll. Mlokosevich, 28 sps.; S slope of the Main Ridge near Lagodekhi, 26.vii.1913, coll. Mlokosevich, 1 sp.; Murguz, mountain ridge in Malyi Caucasus, N-W from Lake Sevan, 13.viii.1915, coll. Satunin, 1 sp.
- Adjara:** Adjara, 29.vii.1909, coll. Satunin, 1 sp.; Kobuleti, 7-9.vii.1910, coll. Satunin, 2 sps.; Chakvistavi, 22-23.vii.1971, Zagulyaev, 3 sps.; Kintrishi Nature Reserve, 25.vi.1974, coll. Zagulyaev, 1 sp.
- Abkhazia:** Abkhazia, Gagra, 2.vii.1900, coll. Bykov, 15 sps.; Marukh Mts. near Chkhalta, 1400 m a.s.l., 7.viii.1905, coll. Kalishevski, 1 sp.; Suchumi, 2.viii.1928, coll. Gudim, 23 sps.; Bzybysky Mts., NE slope of Tshipshira Mts., 2200 m a.s.l., 10-30.viii.2010, coll. Gobunova and Spodobin, 1 sp.
- Daghestan (Russia):** Kayakent, 31.vii.1910, coll. Satunin, 1 sp.; Alesandronevskaya near Kizljar, 17.vi.1913, coll. Mlokosevich, 1 sp.; the same, 9.vi. and 9.vii.1927, coll. Olsufiev, 2 sps.; the same, 2.vi.1927, coll. Popova, 1 sp.; Derbent, iv.1917, coll. Olsufiev, 1 sp.; Kurush, 24.viii.1924, coll. Pyabov, 2 sps.; Gunib, 1800 m a.s.l., 1.x.1976, coll. Zaitzev, 1 sp.
- Krasnodar Krai (Russia):** vicinity of Sochi, 1900, coll. Stark, 3 sps.; the same 16.vi.1927, coll. Gudim, 1 sp.; Gelendzhik, 25.viii.1908. coll. Vorobiev, 1 sp.; between Nizhnegorskoi and Guamski karaul, 10.viii.1910, coll. Birulya, 9 sps.; Nebut vicinity of Tuapse, 13.viii.1912, coll. Gitterman, 2 sps.; Ashe near Sochi, 11.vii.1913, coll. Nasonov, 1 sp.; Tuapse, river Shapsi, on horse, (no date), coll. Gorchakovski, 10 sps.; Golovinka, river Bsyb, on men, 16.vii.1950, coll. Gussakovski, 1 sp.
- Iran (north-western):** Vic Agar', north-western Persia, 12.vi.1914, von Wick, 5 sps.; Gasan-beglyu-Saroga-darya, Karag, 8.vi.1914, von Wick, 3 sps.

A total 54 specimens of *H. longipennis* from Transcaucasia are deposited in ZISP.

Hippobosca longipennis Fabricius, 1805

Material

Armenia: Yerevan, 7.vi.1921, coll. Popov, 4 sps.

Azerbaijan: Baku, 1863, coll. Gebel, 6 sps.; Boradigah, NW of Lankaran, 4.vii.1910, coll. Satunin, 1 sp.; Aghstafa, 7.vii. and 5.ix.1915, coll. Satunin, 2 sps.; Near Karamaryan, Geokch, uezg. (Geokchaisky rayon with center Geokchay), 19.vi-1.vii.1923, coll. Gorchakovsky, 8 sps.; Dzhaffarkhan, 2.viii.1927, coll. Bocharnikov, 2 sps.; Ordubad, valley of river Aras, 6.vii.1933, coll. Znoilo, 1 sp.; Ordubad, 5.vi.1934, coll. Kirshenblat, 4 sps.; Nakhichevan, 4.viii.1961, on man, without collector, 1 sp.; Shaki, Nukha env. of Sheki, 1600 m a.s.l., 27.vii. and 12.viii.1966, on horse and cow, coll. Amirkhanov, 5 sps.

Georgia: Tbilisi, 1802, coll. Satunin, 1 sp.

Abkhazia: Abkhazia, Kobuleti, 8-30.vi.1909, 24.vii. and 5.viii.1910, coll. Satunin, 8 sps.

Daghestan (Russia): Derbent, 28.vii.1910, coll. Satunin, 1 sp.; Alesandronevskaya near Kizljar, 22.viii.1922, 22-24.v and 2-3.vi.1927, coll. Olsufiev, 7 sps.

Krasnodar Krai (Russia): Khutor Sosnovka, 19.v. without year, coll. Filipchenko, 2 sps.; Sochi, 1900, coll. Stark, 1 sp.

Conclusion

As mentioned above, *H. equina* is very common and most frequently species of genus *Hippobosca* (e.g. Krištofik 1998), which would also be confirmed by samples deposited in ZISP from Transcaucasia. The lack of current findings, may be caused, by among other factors, that standard collection methods e.g. sweep netting, light trapping etc. (see e.g. Oboňa *et al.* 2016, 2017, 2019b) are not suitable for capture these ectoparasites. The best collection method seems to be hand collecting from their hosts. The second species *H. longipennis* is less numerous in this area according the samples deposited in ZISP. We assume, that *H. longipennis* has a boundary of northern distribution here.



Fig 1: The traditional domestic's animals farming in Transcaucasia (photo P. Manko).



Fig 2: The specimen of *Hippobosca equina* Linnaeus, 1758 from Azerbaijan (Zaqatala, above Car village, from cow (photo P. Manko).

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