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Study of the Family Dolichopodidae in Grasslands of Miandoab County, Iran

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During studies of Diptera in the grasslands of Miandoab County, West Azerbaijan province, Iran, during 2014-2015, 10 species of the family Dolichopodidae have been identified that among them *Hydrophorus callostomus* Loew, 1857 is recorded for the first time from Iran.

Keywords: Diptera, Dolichopodidae, Iran, Miandoab, new record.

Dolichopodidae has approximately 7500 described species and 250 genera in the world (Pape et al., 2009). Adults and larvae of this family are predators (except of *Thrypticus* spp.) of insects with soft bodies like aphids, cocccids and etc. (Pollet, 2001). Adults are found on the broad-leaved vegetation and humid areas, whereas larvae occur mostly in mud, humid soils and among leaf litter (Dyte, 1959; Pollet, 1992). Contrary to this pattern, most *Medetera* species are confined to vertical structures and tree trunks, larvae of many species live in the subcortical galleries of bark beetles and feed on all stages of these beetles, so they can be an important biological agent for controlling bark beetles (Bickel, 1985).

Body size of adult dolichopodids is various from about 1-9 mm in length and they can be identified by their elongate legs, reduced wing venation, aristate antennae, and relatively slender build. Most species are metallic greenish-blue to greenish-bronze. Males have various secondary sexual characteristics which can be important features for recognizing species. The male hypopygium is either somewhat small covered by abdominal segments, or large and pedunculated (Brooks, 2005).

The studies demonstrate that dolichopodids have very specific habitat requirements and react quickly to environmental alterations, making them potentially useful as bio-indicators for site quality assessment and conservation purposes (Pollet, 2001; Gelbič and Olejníček, 2010). The fauna of the family Dolichopodidae in Iran has not been fully studied until now. Recently the most important studies have been done by Kazerani et al. (2014, 2017) and Kazerani (2015) in a large scale from Northern west (including Arasbaran forests) to Northern (including Hyrcanian forests) of Iran that improved Iranian

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checklist to 136 species in 22 genera. As the Fauna of Dolichopodidae had not been investigated in Miandiab County, the objective of this study is to improve our knowledge about fauna of long-legged flies in the region.

Materials and Methods

Material for this study has been collected from Miandoab county in West Azerbaijan province, Iran during 2015–2016 using sweeping net, from March to September (Fig. 1 A-B). Miandoab is situated in a delta region of the two rivers Zarrineh-Rud and Simineh-Rud and located in the center of the plain that slopes down to Lake Urmia. This area has a

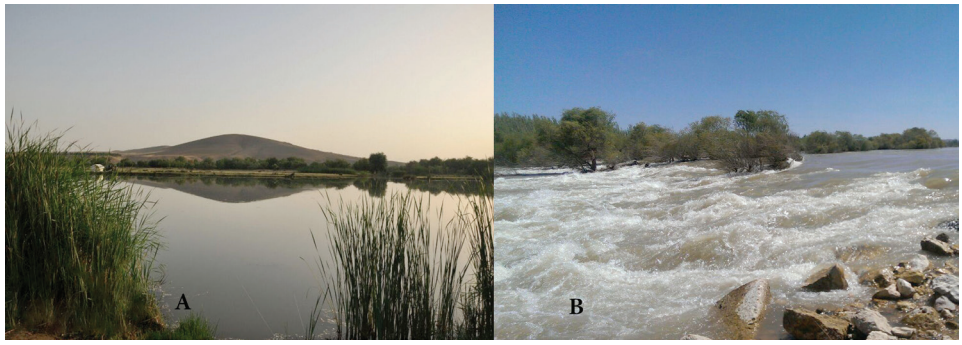

Fig. 1. A-B. Zarrineh-Rud and its surrounding area in Miandoab County, where the material for this study has been collected

very fertile soil and Mediterranean climate. This area has unique fauna and flora and significant diversity of native plant species. The material was preserved in 75% ethanol in glass vials. The specimens were identified using follows D'Assis Fonseca (1978), McAlpine (1981) and Cumming and Wood (2009). All the studied materials are deposited on insect collection of Prof. Hassan Maleki Milani (ICHMM), Tabriz university, Tabriz, Iran.

Results

In all 10 species have been collected and identified. List of the collected species are provided alphabetically.

1. Asyndetus latifrons *(Loew, 1857)*

Material examined: 1♀ and 2♂, West Azerbaijan province, Miandoab, Qare-varan (36°57'02.4"N 46°07'42.0"E, 1292 m), 20.IV.2016; 5♂, (36°56'44.0"N 46°07'57.5"E, 1296 m), 14.VI.2015, leg. E. Hamed.

2. Campsicnemus curvipes *(Fallén, 1823)*

Material examined: 1♂, West Azerbaijan province, Miandoab, Nasir Kandi (36°56'34.5"N 46°10'13.6"E, 1300 m.a.s.l.), 14.VI.2015; 1♂, (36°56'46.8"N 46°10'10.7"E, 1306 m.a.s.l.), 12.VI.2015, leg. E. Hamed.

3. *Chrysotus cilipes Meigen, 1824*

Material examined: 1♀ and 1♂, West Azerbaijan province, Miandoab, Heydar Abad (36°55'47.8"N, 46°09'08.0"E, 1295 m.a.s.l.) 10.V.2015; 4♂, (36°56'05.7"N 46°08'56.0"E, 1296 m.a.s.l.), 24. IV. 2015, leg. E. Hamed.

4. Dolichopus nubilus *Meigen, 1824*

Material examined: 3♂, West Azerbaijan province, Miandoab, Heydar Abad (36°56'05.7"N 46°08'56.0"E, 1296 m.a.s.l.), 24. IV. 2015, leg. E. Hamed.

5. Dolichopus simplex *Meigen, 1824*

Material examined: 3♀ and 1♂, West Azerbaijan province, Miandoab, Nowrouzlu (36°55'44.8"N 46°10'23.2"E, 1298 m.a.s.l.), 18. VI. 2016; 5♀ and 2♂, Nasir Kandi (36°56'34.5"N 46°10'13.6"E , 1300 m.a.s.l.), 14. VI. 2015; 4♀ and 3♂, (36°56'46.8"N 46°10'10.7"E , 1306 m.a.s.l.), 12.VI.2015, 2♂, Miandoab, Qare-varan (36°57'02.4"N 46°07'42.0"E, 1292 m), leg. E. Hamed.

6. Hydrophorus balticus *(Meigen, 1824)*

Material examined: 1♀ and 1♂, West Azerbaijan province, Miandoab, Nasir Kandi (36°56'34.5"N 46°10'13.6"E, 1300 m.a.s.l.), 14.VI.2015; 1♂, Nowrouzlu (36°55'44.8"N 46°10'23.2"E, 1298 m.a.s.l.), 18. VI. 2016, leg. E. Hamed.

7. Hydrophorus callostomus *Loew, 1857**

Material examined: 2♂, West Azerbaijan province, Miandoab, Heydar Abad (36°56'05.7"N 46°08'56.0"E, 1296 m.a.s.l.), 24. IV. 2015, leg. E. Hamed.

Diagnostic characters: face dichromatic: the colour of epistome strongly differs from colouring of clypeus (Fig. 2B); antenna black (Fig. 2C); Fore coxae with light hairs; wings hyaline (Fig. 2A); halter yellow (Fig. 2A); lateral lobe of surstylus narrow; hypandrium bandlike (Fig. 2D).

8. Medetera meridionalis *Negrobov, 1967*

Material examined: 2♀ and 3♂, West Azerbaijan province, Miandoab, Qare-varan (36°56'44.0"N 46°07'57.5"E, 1296 m), 14. VI. 2015, leg. E. Hamed.

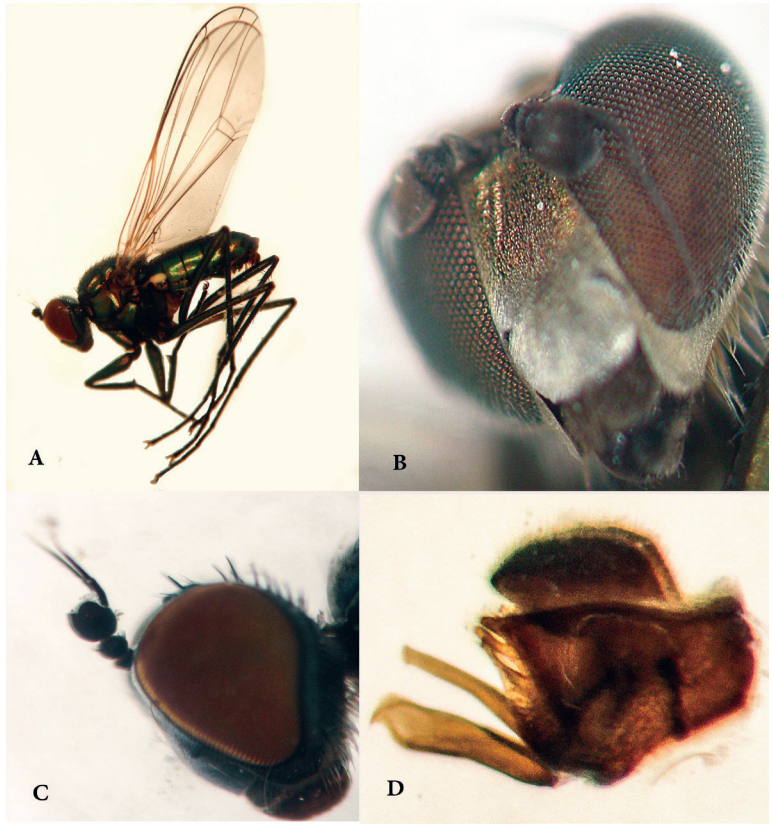

Fig. 2. *Hydrophorus callostomus* Loew, 1857: A) Male habitus lateral view, B) head in frontal (lower) view, C) head in lateral view, D) Genitalia in lateral view

9. Poecilobothrus armeniorum *(Stackelberg, 1934)*

Material examined: 1♂, West Azerbaijan province, Miandoab, Heydar Abad (36°56'05.7"N 46°08'56.0"E, 1296 m.a.s.l.), 24. IV. 2015, leg. E. Hamed.

10. Syntormon pallipes *(Fabricius, 1794)*

Material examined: 4♀ and 2♂, West Azerbaijan province, Miandoab, Nowrouzlu (36°55'44.8"N 46°10'23.2"E, 1298 m.a.s.l.), 18. VI. 2016; 3♀ and 2♂, Nasir Kandi (36°56'34.5"N 46°10'13.6"E, 1300 m.a.s.l.), 14. VI. 2015; 6♀, (36°56'46.8"N 46°10'10.7"E, 1306 m.a.s.l.), 12.VI.2015, 7♂, Miandoab, Qare-varan (36°57'02.4"N 46°07'42.0"E, 1292 m), leg. E. Hamed.

Discussion

In this study we found 10 species belong to 8 genera from Miandoab grasslands and the species *Hydrophorus callostomus* Loew, 1857 is newly recorded from Iran and distributed in North Europe and East Europe, Russia and Caucasus (Armenia, Turkey). Most studied species are distributed wildly in Europe and Asia. Some species like *P. armeniorum* is recorded just from South of Russia, Armenia and Iran (Khaghaninia et al., 2013; Negrobov (1991); Yang et al., 2006; Pollet, 2001).

Based on Kazerani (2015) the genera *Asyndetus* and *Syntormon* have the most frequency in north and northern-west of Iran, in this study *S. pallipes* and *A. latifrons* have the most frequency in the studied area. Totally 53 species have been identified 43 species from Palearctic region (Yang et al., 2006). By the present time only two species of the genus *Hydrophorus* Fallén, 1823 were recorded from Iran (Grichanov et al., 2010; Kazerani et al. 2014a), in this study it has increased to 3 species.

Larvae of Hydrophorinae are predators and thought to be aquatic (Hurley, 1985). Species of the genus *Hydrophorus* usually occur in littoral and coastal habitats or near waterfalls, and many species are seen skating on the water surface (Naglis, 2012). As Miandoab region is located between two rivers (Zarrineh-Rud and Simineh-Rud) and Urmia lake, so this area has humid wheatear, this condition is appropriate for development of hydrophilic species like *Hydrophorus* spp.

Due to special fauna and flora of Miandoab region, it is obvious that this area has good potential of fauna and flora, so further studies to know dolichopodids fauna is necessary in this region.

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