A CONTRIBUTION TO THE SHORT-HORNED GRASSHOPPERS (ORTHOPTERA: ACRIDIDAE) FROM ARASBARAN AND VICINITY, NW IRAN


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ABSTRACT: During 2007–2010 several sampling was conducted to survey fauna of short–horned grasshoppers (Orthoptera: Acrididae) from Arasbaran area plus some regions at the West Azarbaijan, Ardabil and East Azarbaijan provinces (North western of Iran) are as neighbors of Arasbaran. Totally 26 species dependent 15 genera including Calliptamus, Dociostaurus, Notostaurus, Oedipoda, Acrotylus, Aiolopus, Hilethera, Pyrgodera, Oedaleus, Mecostethus, Chorthippus, Heteracris, Anacridium, Chrotogonus, Eyprepocnemis were determined. Among them Calliptamus italicus Linnaeus 1758 and Oedipoda miniata miniata Pallas, 1771 was the predominant species and Calliptamus italicus Linnaeus 1758 (Italian locusts) are exhibited gregarious and migratory behavior from Khodafarin County (at the Airybojagh, and daghlo moghadam deserts) of the Arasbaran.

KEY WORDS: Acrididae, Orthoptera, Iran.

Arasbaran is an important region which covers the area about 164 000 hectares in East Azarbaijan province (78560 hectares, was listed by UNESCO as a protected area and wildlife refuge since 1976). This biosphere reserve situated in the north west of Iran at the border to Armenia and Azerbaijan belongs to the Caucasus Iranian highlands, in between the Caspian, Caucasus and Mediterranean region (Fig. 1). The area covers mountains up to 2, 200 meters, high alpine meadows, semi-arid steppes, rangelands and forests, rivers and springs. The location of Arasbaran is 38°40’ to 39°08’N; 46°39’ to 47°02’E and its Altitude (meters above sea level) is +250 to +2,887. The climatic variation is resulted high diversity of flora and fauna specially insects as well as different kind of plants includes approximately more than 1000 species and among which 140 are woody plants in this protected area. The mentioned area is under influence of three different climatic zones: The southern part is cold and semi-arid [Irano-Turanian climate surrounds location of Varzegan in the Arasbaran], the central high mountains (Saigiram daq) and the eastern part are humid or sub-humid and relatively warm [subtropical climate of the southwest of the Caspian Sea and Hyrcanian belt, surrounds location of Kaleybar in the Arasbaran] and the western and northern parts are relatively cold and sub-humid, affected by the Caucasus
region and the Black Sea [Mediterranean climate, surrounds location of Jolfa, Khodafarin, Kayebar at the Arasbaran] (Sohrabi & Alstrup, 2007). Nowadays, this region in northwestern Iran is an important area for agriculture. Numerous grasshoppers are agricultural pests inflicting damage on crops and orchards specially Calliptamus italicus which exhibits gregarious from Ayribodjagh wilderness at the Khodafarin in the northern part of Arasbaran. The fauna of Orthoptera was not studied in this region.

The Orthoptera are common and well known group of insects includes four types of plant feeders (mostly), predaceous, scavengers, and a few are omnivorous. These insects can be found in various habitats, as well as the more familiar species found in grasslands and forests (Peveling et al. 1999). When populations of Grasshoppers (Orthoptera; Acrididae) build up, certain species exhibit gregarious and migratory behavior, leading to the formation of spectacular swarms (Lomer, 2001). In addition to the direct effect of reducing standing crop, they can influence ecosystem processes by increasing nutrient leaching from foliage, defecation, changing plant resource allocation, and plant community structure. (Badenhausser et al., 2007). Short–horned grasshoppers are easily recognized from other grasshoppers by their short antenna, wings and tympana nearly always present; tarsi 3 segmented; ovipositor is short; males with a file on third abdominal tergum; widely distributed and most the species pass the winter in the egg stage being laid in the grand, a few overwinters as nymph and very few as adult (Borror et al., 1989). The fauna of Orthoptera from Iran was so far studied by Alexandrov (1947a,b), Azemayeshfard (1974, 1975, 1983, 1990, 1991), Bey-Bienko (1948, 1957), Cejchan (1974), Descamps (1966), Dirsh & Mirzayans (1971), Dirsh & Uvarov (1957), Mirzayans (1951, 1959, 1991, 1998), Mirzayans & Agacino (1969), Modaress Awal (1997), Mofidi (2000), Popov (1951), Shumakov (1963), Uvarov (1933, 1938a,b, 1957). But the fauna of Grasshoppers from Arasbaran was not worked and the current research is thus focused on the mentioned area to determine species of Short–horned grasshoppers (Orth.: Acrididae) are in this region which has specific ecological characteristics for its diversity on climatic perspective with richly fauna and flora.

**MATERIAL AND METHOD**

The sampling of the material was conducted mainly by sweeping net 17" diameter and some specimens directly were grabbed. Specimens were collected from different localities at Khodafarin county includes Marzabad, Mardanaghum, Ebrahim sami, Ashegloo, Tatar, Toali, Jananlo, Khomarloo, Eskanlo, Airybojagh, Viang, Aynaloo, Larijan, and Gholibaghlo, also Ahar, Kaleybar, and Varzegan highlands plus some locations surrounding Arasbaran comprise in West Azarbaijan, Ardabil and East Azarbaijan provinces. After collecting the materials, they were killed by the cyanide, wings were spread, pinned and labeled (locality, date of collection). The system, nomenclature, followed on useful Web Site of Eades & Otte (2011) [http://orthoptera.speciesfile.org/Common/editTaxon/SearchForTaxon.aspx].

**RESULTS**

Totally 26 species depended 15 genera including Calliptamus (3 spec.), Dociostaurus (4 spec.), Notostaurus (2 spec.), Oedipoda (3 spec.), Acrotylus (3 spec.), Aiolopus (1 spec.), Hilethera (2 spec.), Pyrgodera (1 spec.), Oedaleus (1 spec.), Mecostethus (1 spec.), Chorthippus (1 spec.), Heteracris (1 spec.),
Anacridium (1 spec.), Chrotogonus (1 spec.), Eyprepocnemis (1 spec.) was identified and list of the species is below.

Family Acrididae Macleay, 1821
Subfamily Calliptaminae Tinkham, 1940
Tribe Calliptamini Tinkham, 1940
Genus Calliptamus Sertille, 1831

**Calliptamus barbarus** Costa, 1836

**Calliptamus coelesyriensis** Giglio-Tos, 1893

**Calliptamus italicus** (Linnaeus, 1758)

Subfamily Gomphocerinae Fieber, 1853
Tribe Dociostaurini Mishchenko, 1974
Genus Dociostaurus Fieber, 1853

**Dociostaurus hauensteini** Bolivar, 1893

**Dociostaurus marocceanus** (Thunberg, 1815)

**Dociostaurus tartarus** Stshelkanovtzev, 1921

**Dociostaurus kraussi** Ingenitskii, 1897

Genus Notostaurus Bei-Bienko, 1933

**Notostaurus albicornis** (Eversmann, 1848)
**Notostaurus anatolicus** (Krauss, 1896)


Subfamily Oedipodinae Walker, 1871
Tribe Oedipodini Walker, 1871
Genus *Oedipoda* Latreille, 1829

**Oedipoda caerulescens** (Linnaeus, 1758)


**Oedipoda schochi** Saussure, 1884


Genus *Acrotylus* Fieber, 1853

**Acrotylus humbertianus** Saussure, 1884


**Acrotylus insubricus insubricus** (Scopoli, 1786)


**Acrotylus patruelis** (Herrich-Schäffer, 1838)


Tribe Epacromiini Brunner von Wattenwyl, 1893
Genus *Aiolopus* Fieber, 1853

**Aiolopus strepens** (Latreille, 1804)


Genus *Hilethera* Uvarov, 1923

**Hilethera maculata** (Karny, 1907)


**Hilethera turanica** Uvarov, 1925

Tribe Locustini Kirby, 1825
Genus *Pyrgodera* Fischer von Waldheim, 1846

*Pyrgodera armata* Fischer von Waldheim, 1846


Genus *Oedaleus* Fieber, 1853

*Oedaleus decorus* (Germar, 1825)


Tribe Parapleurini Brunner von Wattenwyl, 1893
Genus *Mecostethus* Fieber, 1852

*Mecostethus parapleurus parapleurus* (Hagenbach, 1822)


Subfamily Gomphocerinae Fieber, 1853
Tribe Gomphocerini Fieber, 1853
Genus *Chorthippus* Fieber, 1852

*Chorthippus loratus* (Fischer von Waldheim, 1846)

**Material examined:** 1 specimen (1♀) Kaleybar, 15. August. 2007.

Subfamily Eyprepocnemidinae Brunner von Wattenwyl, 1893
Tribe Eyprepocnemidini Brunner von Wattenwyl, 1893
Genus *Heteracris* Walker, 1870 (Syn: *Thisioicetrinus* Uvarov, 1921)

*Heteracris pterosticha* (Fischer von Waldheim, 1833)

**Material examined:** 2 specimens (1♀, 1♂) Vinag, 4 & 5. June. 2009; 1 specimen (1♀) Varzeghan, 18. August. 2007.

Subfamily Cyrtacanthacridinae Kirby, 1902
Tribe Cyrtacanthacridini Kirby, 1902
Genus *Anacridium* Uvarov, 1923

*Anacridium aegyptium* (Linnaeus, 1764)


Subfamily Pyrgomorphinae Brunner von Wattenwyl, 1882
Tribe Chrotogonini Bolivar, 1904
Genus *Chrotogonus* Serville, 1838

*Chrotogonus trachypterus robertsi* Kirby, 1914

**Material examined:** 1 specimen (1♀) Miandoab (West Azarbaijan), 12 September 2007.

Subfamily Eyprepocnemidinae Brunner von Wattenwyl, 1893
Tribe Eyprepocnemidini Brunner von Wattenwyl, 1893
Genus *Eyprepocnemis* Fieber, 1853

*Eyprepocnemis plorans* (Charpentier, 1825)

**Material examined:** 2 specimens (1♀, 1♂) Kaleybar, 25. September. 2007.
DISCUSSION

Based on statistic computations performed in the current project Calliptamus italicus Linnaeus 1758 and Oedipoda miniata miniata Pallas, 1771 resulted as the predominant and prevalent species in the studied area. The Italian locust Calliptamus italicus Linnaeus 1758 can aggregate and its hopper bands and adult swarms invade agricultural crops such as cotton, corn, wheat, barley, alfalfa, etc in the khodafarin district of Arasbaran but controlling programs by plant protection unit (Agricultural Organization of East Azarbaijan) in the aggregation centers obstruct its drastic damages every year. Some aggregation centers in the Arasbaran occur at the khodafarin region such as Ayribojagh and moghadam deserts, Ghonghormaz, Kalaleh and Ghedayloo (Aslandoz portion of Ardabil province). However, some years Dociostaurus maroccanus Thunberg, 1815 (Moroccan locust) can be augmented and exhibits gregarious behavior.

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LITERATURE CITED


Figure 1. The map is from the studied regions including provinces of West Azarbaijan, East Azarbaijan (contain Arasbaran area) and Ardabil.