

**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*, *Doclostaurus*, *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 Varzeghan 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 overwinter 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 Gholibaghloo, 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.), *Doclostaurus* (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* Serville, 1831

***Calliptamus barbarus* Costa, 1836**

Material examined: 8 specimens (6♀♀, 2♂♂) Khomarloo, 16. August. 2010; 14 specimens (11♀♀, 3♂♂) Airybojagh, 25. September. 2008; 6 specimens (5♀♀, 1♂) Tatar & Toalii, 6. August. 2010 & 10. September. 2009; 5 specimens (4♀♀, 1♂) Kaleybar, 15. August. 2007 ; 2 specimens (2♀♀) Miandoab (West Azarbaijan province), 12. September. 2007.

***Calliptamus coelesyriensis* Giglio-Tos, 1893**

Material examined: 2 specimens (2♀♀) Aslandoz (Ardabil province), 2. September. 2008.

***Calliptamus italicus* (Linnaeus, 1758)**

Material examined: 21 specimen(18♀♀, 3♂♂) Gholibaghloo, 8 & 9 September. 2010; Many speciemens (♀♀, ♂♂) Khomarloo, 16. August. 2010; Many speciemens (♀♀, ♂♂) Airybojagh, 25. September, 2008; 14 speciemens (12♀♀, 2♂♂) Ashegloo, 14. September. 2009; 21 specimen(16♀♀, 5♂♂) Tatar & Toalii, 6. August. 2010 & 10. September. 2009; 12 speciemens (7♀♀, 5♂♂) Kaleybar, 15. August. 2007; 7 speciemens (5♀♀, 2♂♂) Ahar, 10. August. 2007; 2 speciemens (2♀♀) Ayanloo, 1. Septamber. 2010; 8 speciemens (7♀♀,1♂) Aslandoz (Ardabil province), 2. September, 2008; 3 speciemens (2♀♀, 1♂) Miandoab (West Azarbaijan province), 12. September. 2007.

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

***Dociostaurus hauensteini* Bolívar, 1893**

Material examined: 2 specimens (2♀♀) Tatar & Toali, September. 2009; 2 specimens (1♀, 1♂) Ashegloo, 14. September. 2009; 3 specimens (3♀♀) Janaloo, 2. July. 2007; 1 specimen (1♀) Aslandoz (Ardabil province), 16. August. 2008.

***Dociostaurus maroccanus* (Thunberg, 1815)**

Material examined: 2 specimens (2♀♀) Ahar, 10. August. 2007; 1 specimen (1♀) Daghlo Moghadam, 25. September, 2008.

***Dociostaurus tartarus* Stshelkanovtzev, 1921**

Material examined: 2 specimens (2♀♀) Khomarloo,16. August. 2010; 1 specimen (1♀) Ashegloo, 14. September. 2009; 1 specimen (1♀) Kaleybar, 15. August. 2007; 1 specimen (1♀) Aslandoz (Ardabil province), 16. August. 2008; 2 specimens (1♀, 1♂) Jolfa (East Azarbaijan Province), 5 September, 2010.

***Dociostaurus kraussi* Ingenitskii, 1897**

Material examined: 2 specimens (2♀♀) Ayanloo, 6. Agusut. 2007.

Genus *Notostaurus* Bei-Bienko, 1933

***Notostaurus albicornis* (Eversmann, 1848)**

Material examined: 3 specimens (2♀♀, 1♂) Kaleybar, 25. September. 2007 ; 4 specimens (2♀♀, 2♂♂) Ahar, 10. August. 2007; 5 specimens (2♀♀, 3♂♂) Parsabad (Ardabil province), 16. August. 2008.

***Notostaurus anaticus* (Krauss, 1896)**

Material examined: 5 specimens (2♀♀, 3♂♂) Larijan, 4. Septamber. 2010; 3 specimens (2♀♀, 1♂) Mardanaghum, 15. Septamber. 2010.

Subfamily Oedipodinae Walker, 1871**Tribe Oedipodini Walker, 1871****Genus *Oedipoda* Latreille, 1829*****Oedipoda caerulescens* (Linnaeus, 1758)**

Material examined: 5 specimens (5♀♀) Khomarloo, 14. July. 2008; 1 specimen (1♀) Jananloo, 18. August. 2009.

***Oedipoda schochi* Saussure, 1884**

Material examined: 1 specimen (1♀) Ashegloo, 14. September. 2009; 3 specimens (2♀♀, 1♂) Tatar & Toalii, 28. July. 2009.

***Oedipoda miniata miniata* (Pallas, 1771)**

Material examined: Many specimens (♀♀, ♂♂) Khomarloo, 16. August. 2010 & 24. July 2009; 12 specimens (7♀♀, 5♂♂) Airybojagh, 25. September. 2008; 9 specimens (6♀♀, 3♂♂) Tatar & Toalii, 6. August. 2010 & 10 specimens (8♀♀, 2♂♂) 10. September. 2009; 8 specimens (6♀♀, 2♂♂) Kaleybar, 15. August. 2007; 13 specimens (6♀♀, 7♂♂) Ashegloo, 14. September. 2009; 18 specimens (13♀♀, 5♂♂) Eskanloo, 28. July. 2009; 4 specimens (3♀♀, 1♂) Jananloo, 18. June. 2010; 5 specimens (4♀♀, 1♂) Mardanaghum, 20. August. 2009; 8 specimens (7♀♀, 1♂) MarzAbad, 15. September. 2009; 11 specimen(8♀♀, 3♂♂) Larijan, 27.July. 2009.

Genus *Acrotylus* Fieber, 1853***Acrotylus humbertianus* Saussure, 1884**

Material examined: 2 specimens (2♀♀) Ahar, 10. August. 2007; 1 specimen(1♀) Khomarloo, 8. August. 2007; 2 specimens (2♀♀) Jananloo, 20. September. 2009; 1 specimen(1♀) Larijan, 6. Septamber. 2010; 2 specimens (1♀, 1♂) Mardanaghum 7. September 2010.

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

Material examined: 2 specimens (2♀♀) Ahar, 10. August. 2007; 1 specimen (1♀) Mardanaghum, 7. September 2010; 1 specimen (1♀) Khomarloo, 8. August. 2007; 2 specimens (1♀, 1♂) Aslandoz (Ardabil province), 2. September, 2008.

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

Material examined: 2 specimens (2♀♀) Vinag, 14. June. 2007.

Tribe Epacromiini Brunner von Wattenwyl, 1893**Genus *Aiolopus* Fieber, 1853*****Aiolopus strepens* (Latreille, 1804)**

Material examined: 2 specimen (1♀♀) Varzeghan, 28. August. 2008.

Genus *Hilethera* Uvarov, 1923***Hilethera maculata* (Karny, 1907)**

Material examined: 1 specimen (1♀) Ayanloo, 6. Agusut. 2007.

***Hilethera turanica* Uvarov, 1925**

Material examined: 2 specimens (1♀,1♂) Varzeghan, 28. August. 2008.

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

Material examined: 2 specimens (1♀, 1♂) Khomarloo, 16. August. 2010; 1 specimen (1♀) Mardanaghum, 7. September 2010; 1 specimen (1♀) Miandoab (West Azarbaijan province), 12. September. 2007; 2 specimens (2♀♀) Aslandoz (Ardabil province), 16. August. 2008; 2 specimens (1♀, 1♂) Jolfa (East Azarbaijan Province), 5 September, 2010.

Genus *Oedaleus* Fieber, 1853***Oedaleus decorus* (Germar, 1825)**

Material examined: 2 specimens (2♂♂) Khomarloo, 24. August. 2007; 3 specimens (3♂♂) Jananloo, 20. September. 2009.

Tribe Parapleurini Brunner von Wattenwyl, 1893**Genus *Mecostethus* Fieber, 1852*****Mecostethus parapleurus parapleurus* (Hagenbach, 1822)**

Material examined: 1 specimen (1♀) Varzeghan, 12. August. 2007; 1 specimen (1♀) Khomarloo, 16. August. 2010; 2 specimens (2♀♀) Jananloo, 8. August. 2008.

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: *Thisoicetrinus* 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)**

Material examined: 2 specimens (1♀, 1♂) Varzeghan, 28. August. 2008. 3 specimens (2♀, 1♂) Khomarloo, 16. August. 2010; 2 specimens (2♀♀) Tatar & Toalii, 10. September. 2009; 1 specimen (1♂) Mardanaghum, 7. September 2010.

Subfamily Pyrgomorphae Brunner von Wattenwyl, 1882**Tribe Chrotogonini Bolívar, 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, ect 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, Ghongormaz, Khalabaghlllo, Gholibagloo-El, Kalaleh and Ghedayloo (Aslandoz portion of Ardabil province). However, some years *Docioctaurus maroccanus* Thunberg, 1815 (Moroccan locust) can be augmented and exhibits gregarious behavior.

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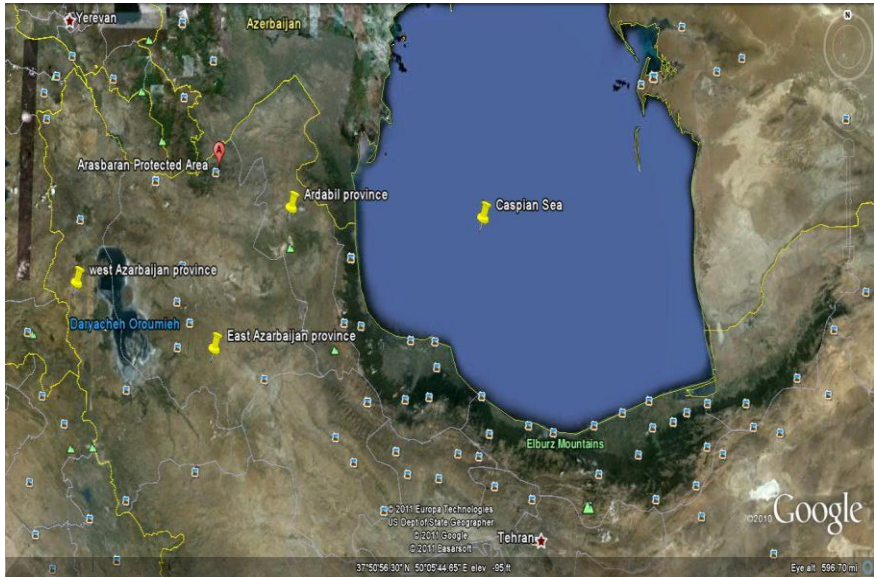


Figure 1. The map is from the studied regions including provinces of West Azarbaijan, East Azarbaijan (contain Arasbaran area) and Ardabil.