A STUDY ON THE FAUNA OF SCELIIONID WASPS
(HYMENOPTERA: PLATYGASTROIDEA: SCELIIONIDAE) IN THE ISFAHAN PROVINCE, IRAN

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Abstract - Scelionid wasps (Hymenoptera: Scelionidae) are powerful egg parasitoids which have an efficient role in the biological control of agricultural pests, especially pentatomids (Hemiptera: Pentatomidae). The species diversity of these beneficial insects from Isfahan province is studied in this paper. Twenty species from 2 subfamilies, Scelioninae and Telenominae, were collected and identified. In this paper, the hosts of reared parasitoids are introduced together with the synonyms of scelionid wasps.

Key words: Hymenoptera, Scelionidae, parasitoid, fauna, Isfahan, Iran

INTRODUCTION

The Scelionidae is a large family of parasitic Hymenoptera whose members specialize in egg parasitism of insects and arachnids (Masner, 1993, 1995). There are 3308 valid species of Scelionidae (Johnson, 2010). Scelionids have been used quite successfully in classic biological control programs directed principally against agricultural pests. They are virtually all solitary idiobiont primary parasitoids, and reports that diverge from this biology are rare and often unsubstantiated (Eberhard, 1975; Galloway and Austin, 1984; Dangerfield et al., 2001). Female scelionids have a hypodermic-like ovipositor that they use to pierce the chorion of a host egg (Austin, 1983) and lay their own single egg or sometimes several eggs. The wasp larva that hatches consumes the contents of the host egg and pupates within it. A wide range of taxa serve as hosts: in addition to spiders, insect hosts include the Odonata, Orthoptera, Mantodea, Embiida, Hemiptera, Neuroptera, Coleoptera, Diptera, and Lepidoptera (Masner, 1976; Austin and Field, 1997; Austin et al., 2005). Several biological studies have been undertaken on scelionids that are used as or have potential as biological control agents, for example, Trissolcus, Telenomus, and Scelio. Consequently, information is strongly biased toward the Telenominae, and care should be taken in extrapolating from these taxa to other members of the Scelionidae that are associated with different hosts (Austin et al., 2005). The aim of this research is a faunal study of the family Scelionidae in Isfahan province where the fauna of these beneficial insects has been poorly studied (Mehravar et al., 2000).

MATERIALS AND METHODS

The materials for this research were collected from different regions of Isfahan province located in central Iran. The main sampling method was rearing the eggs of Pentatomidae (Hemiptera) for the emergence of parasitoids inside the host. Egg masses of pentatomids were placed in plastic bags and in optimum condition (26±2°C, 65±5% RH, 14: 10 L: D) in an
incubator. Additionally, a sweeping net and the many specimens preserved in the personal collection of third author were used for obtaining the scelionids of Isfahan. Classification, nomenclature and synonyms of Scelionidae suggested by Kozlov (1978), Masner (1980), Kozlov and Kononova (1983), Kononova (1992), Johnson(1992, 2010), Kononova and Kozlov (2008) have been followed.

RESULTS

Twenty species of two subfamilies, Scelioninae and Telenominae, were collected from Isfahan province as given in the list below:

Family Scelionidae (Haliday 1840)

Subfamily Scelioninae Förster 1856

Genus Gryon Haliday 1833

Gryon monspeliense (Picard 1924)


Material examined: Chadegan (2111m), 2♀, 1♂, ex Dolycoris baccarum L. (Hemiptera: Pentatomidae), May 2001.

Gryon pedestre (Nees 1834)


Material examined: Kashan (938 m), ex Dolycoris penicillatus Horv. (Hemiptera: Pentatomidae), 14 October 2007.

Genus Scelio Latreille 1805

Scelio flavibarbis (Marshall 1874)

Synonym: Aleria flavibarbis Marshal 1874.

Material examined: Koohpayeh (1732 m), 1♀, 2♂, ex Locusta migratoria (L.) (Orthoptera, Acrididae), 12 April 2008.

Scelio remaudierei Ferrière 1952

Material examined: Ardestan (1242 m), 3♀ ex Locusta migratoria (L.) (Orthoptera, Acrididae), 24 July 2008.

Subfamily Telenominae Thomson 1860

Genus Psix Kozlov and Le 1976

Psix lacunatus Johnson and Masner 1985

Material examined: Koohpayeh (1755 m), 1♂, 12 April 2008.

Genus Telenomus Haliday, 1833

Telenomus acrobates Giard, 1895

Synonym: Phanurus acrobates Kieffer, 1926.

Material examined: Golpayegan (1814 m), 2♀, ex Chrysoperla carnea (Steph.) (Neuroptera: Chrysopidae), 10 April 2009.

Telenomus busseolae Gahan, 1922


Material examined: Najaf-Abad (1744 m), 3♀, 2♂, ex Sesamia nonagrioides Lefebvre (Lepidoptera, Noctuidae), 16 May 2009.

Telenomus chloropus (Thomson, 1861)
Synonyms: *Phanurus chloropus* Thomson, 1861; *Telenomus sokolowi* Mayr, 1897; *Telenomus mayri* Sokolov, 1904; *Prophanurus sokolowi* Kieffer, 1912; *Telenomus tischleri* Nixon, 1939; *Telenomus sokolovi* Meier, 1940.


*Telenomus heydeni* Mayr, 1879

Material examined: Kashan (1024 m), 1♀, 2♂, ex *Lixus incanescens* Boh. (Coleoptera: Curculionidae), 25 July 2005

*Telenomus politus* (Thomson, 1861)

Synonym: *Phanurus politus* Thomson, 1861.

Material examined: Khomeynishahr (1489m), 1♀, ex *Eurygaster integriceps* Put. (Hemiptera: Pentatomidae), 7 August 2001.

Genus *Trissolcus* Ashmead 1893

*Trissolcus basalis* (Wollaston 1858)


*Trissolcus djadetshko* (Ryakhovskii 1959)


Material examined: Isfahan (1563 m), 1♀, 3♂, ex *Eurydema ornatum* (L.) (Hemiptera: Pentatomidae), September 2006.

*Trissolcus dryope* (Kozlov et Le 1976)


Material examined: Koohpayeh (1755 m), 2♀, ex *Acrosternum* sp. (Hemiptera: Pentatomidae), 12 April 2008.

*Trissolcus esmailii* Radjabi 2001

Material examined: Najaf-Abad (1708 m), 1♀, ex *Dolycoris baccarum* L. (Hemiptera: Pentatomidae), 16 May 2009.

*Trissolcus festivae* (Viktorov 1964)


Material examined: Kashan (927 m), 2♀, 1♂, ex *Eurydema ornatum* L. (Hemiptera: Pentatomidae), 11 May 2006.

*Trissolcus grandis* (Thomson 1861)


**Trissolcus rufiventris** (Mayr 1908)


**Trissolcus semistriatus** (Nees 1834)


**Trissolcus simoni** (Mayr 1879)


**Trissolcus vassilievi** (Mayr 1903)


**CONCLUDING REMARKS**

As can be seen from the presented findings, the fauna of scelionid wasps is rather diverse in Isfahan province. Iran is a large country with a diverse insect fauna, and these faunistic researches will help in determining Iranian Scelionidae. Some valuable systematic studies have been conducted on Iranian Scelionidae in recent years (Asgari, 1995, 2001; Samin, 2010; Samin et al., 2010a, b; Ghahari et al., 2011) and must be continued in different regions of Iran. In light of the contribution of these beneficial insects to the biological control of pentatomid pests, their conservation is an important topic for successful and safe pest management.

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