



Israelius carthami Richards, 1952 (Hym.: Bethyridae): A rarely found species in the Palaearctic region

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ABSTRACT. *Israelius carthami* Richards, 1952 was recorded for the first time from Iran, based on reared specimens from three Asteraceae capitulum: *Cirsium congestum* Fisch. & C.A.Mey., *Carthamus lanatus* L. and *Xeranthemum quarrosum* Boiss. In our rearing, a fruit fly species [*Terellia nigripalpis* Hendel (Diptera: Tephritidae)] was obtained on *C. congestum*. All host-plant associations are newly established to the science. General distribution of this parasitoid and their biological associations were discussed.

Key words: Host, distribution, new record, Chrysoidea, Sclerodermini

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Introduction

Bethyridae (Hymenoptera: Chrysoidea) are a cosmopolitan family including about 2,600 species classified in six subfamilies (Azevedo *et al.*, 2015). Bethyrids are ectoparasitoids of larvae and occasionally pupae of Coleoptera and Lepidoptera, mostly in concealed situations (Terayama, 2003, 2006). The host may be paralysed or killed with single or multiple sting of the female. Poison of bethyrids has high efficiency and a sting of some species can be painful as well for man (Macek *et al.*, 2007).

The tribe Sclerodermini currently has 13 genera and 114 species that are distributed throughout the world (Lanes and Azevedo,

2008). The genus *Israelius* with two species is a small genus in this tribe (Barbosa *et al.*, 2014).

The family Bethyridae was studied poorly in Iran and it was presented by Samadi-Afshar *et al.* (2012, 2013), who recorded eight species of genus *Epyris* in the northwestern of Iran. So far, 28 species belonging to 13 genera reported from Iran which 10 genera and 19 species recorded from East and West Azarbaijan (Samadi-Afshar *et al.*, 2013).

During our recent laboratory rearing fruit flies associated with Asteraceae, we obtained some bethyrid wasps that are object of this paper.

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Material and methods

This study was carried out in the northwest of Iran including East and West-Azarbaijan provinces in 2013 (Fig. 2). In order to rearing the fruit flies and their associated parasitoids, flower heads of different species of Asteraceae were collected and kept in cylindrical plastic boxes (9R and 13H cm) at 25±2°C until the adults of fruit flies and parasitoids wasp were emerged. Several bethylid wasps were obtained in our laboratory rearing that were collected from three localities.

External morphology was illustrated using an Olympus™ SZH, equipped with a Canon™ A720 digital camera. The specimens were identified according to the reliable keys and descriptions (Richards, 1952, 1956; Terayama, 2003, 2006; Barbosa *et al.*, 2014). Specimens were deposited in the insect collection of the Department of Plant Protection, East-Azarbaijan Agricultural and Natural Resources Research and Education Center, Tabriz, Iran. The sample coordinates are shown in decimal degree format.

Results

Our reared bethylid specimens were belong to the genus *Israelius* Richards (Bethylidae, Scleroderminae) that its characteristic is dilation of the forewing basal vein (Fig. 1A) (Lanes and Azevedo, 2008; Barbosa *et al.*, 2014). It was identified as *Israelius carthami* Richards that is new record for Iranian fauna. It was obtained from three asteraceous plants: *Cirsium congestum* Fisch. & C. A. Mey., *Carthamus lanatus* L. and *Xeranthemum squarrosum* Boiss.

Israelius carthami Richards, 1952

(Fig. 1A - C)

Material examined: IRAN, East Azarbaijan province, Ahar (38°11'45"N, 47°17'47"E, 1462m), 30 September 2013, 1♀, 1♂; ex *Carthamus lanatus*, Aras (38°40'59"N,

45°39'19"E, 1435m) 29 October 2013, 1♀, 1♂; ex *Xeranthemum squarrosum*, Shibli hill (37°57'52"N, 46°15'45"E, 1959m), 15 September 2013, 1♀, 1♂; ex *Cirsium congestum*, leg.: A.R. Pourhaji.

Diagnosis: Our studied specimens have all of morphological characters of *I. carthami* described by Richards (1952) and Barbosa *et al.* (2014).

Female and male, length of body 1.8-2.2 mm: the head as long as wide (Fig. 1C); mandible with two apical teeth; the clypeus with median lobe fused with lateral lobe, the median clypeal carina arched; the frontal angle of ocellar triangle right, the ocelli and oculi small; the mesoscutum without notaulus and as long as mesoscutellum (Fig. 1B); the parapsidal-signum inconspicuous; the mesoscutellum with sulcus narrow and with lateral pit; the propodeal disc with posterior half part strigate, without median emargination at anterior margin, the median carina absent, the lateral carina inconspicuous, the posterior carina absent; the mesopleuron without foveae; forewing without vein C (Fig. 1A), with r-rs & Rs vein short; hind wing without hamuli.

Geographical distribution: This species was known only from Israel (Richards, 1952; Barbosa *et al.*, 2014) while, it was recorded from former Czechoslovakia and Greece by Strejcek (1989). It is new record to fauna of Iran. Its distribution in the northwest of Iran was presented in Fig. 2.

Host association: We bred this species for the first time on *Cirsium congestum*, *Carthamus lanatus* and *Xeranthemum squarrosum*. On *C. congestum*, it was bred with *Terellia nigripalpis* Hendel (Diptera: Tephritidae). Also type-series was reared by Dr. H. Bytinski-Salz from larvae of *Lasioderma serricorne* (Fabricius, 1792) (Coleoptera: Anobiidae) from safflower, *Carthamus tinctorius* L. Therefore, the association of *I. carthami* with *L. serricorne* and *T. nigripalpis* needs further studies.

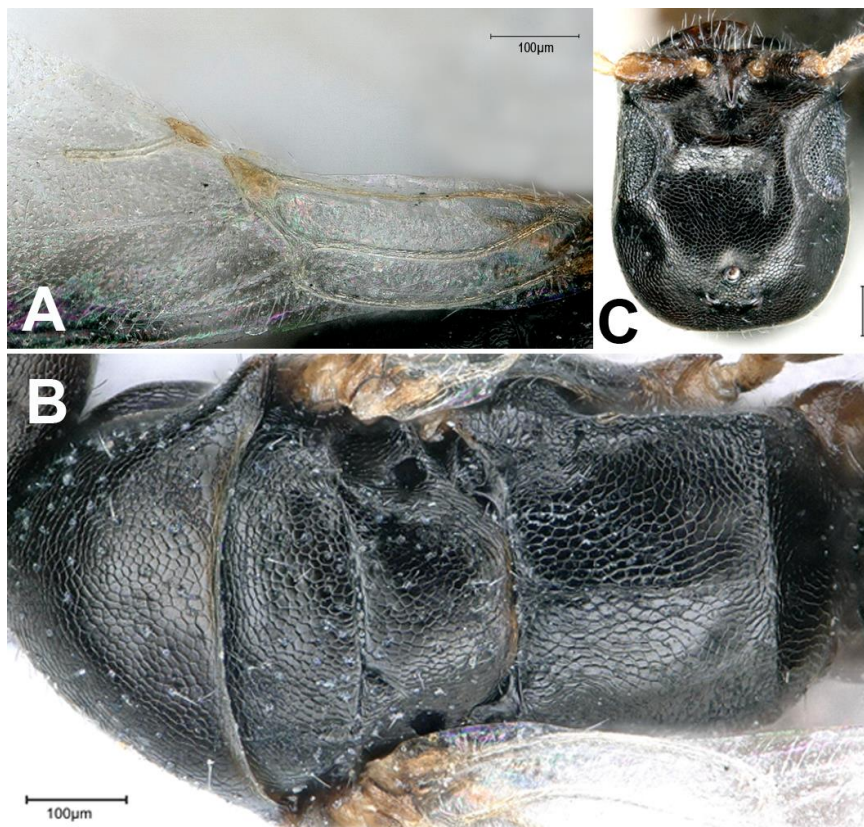


Figure 1. Female of *Israelius carthami*: **A.** Fore wing; **B.** Mesosoma in dorsal view; **C.** Head in dorsal view.



Figure 2. Distribution map of *Israelius carthami* in the northwest of Iran.

Discussion

This report confirms association of *I. carthami* with Asteraceae. With this new record, Iranian species of the family Bethylidae reach 29 species in 14 genera. Only one species of the genus *Glesonema* has been reported from Iran that includes *Sclerodermini* (Samadi-Afshar *et al.*, 2013), therefore, *Israelius* is the second one.

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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زنبور (Hym.: Bethylidae) *Israelius carthami* Richards, 1952 یک گونه نادر در منطقه پالئارکتیک

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چکیده: گونه *Israelius carthami* Richards, 1952 برای نخستین بار در ایران از روی سه گونه گیاهی از تیره مرکبان (Asteraceae) با اسامی علمی *Cirsium Xeranthemums* و *Carthamus lanatus* L. *congestum* Fisch. & C.A. Mey. گزارش می‌شود. در پرورش‌های آزمایشگاهی، همزمان با این زنبور، یک گونه مگس میوه به نام *Terellia nigripalpis* Hendel (Diptera: Tephritidae) نیز از روی گیاه *C. congestum* بدست آمد. براساس اطلاعات موجود تمامی روابط میزبانی گیاهان فوق با این زنبور، جدید می‌باشند. پراکنش عمومی و روابط زیستی این گونه مورد بحث قرار گرفت.

واژگان کلیدی: میزبان، پراکنش، گزارش جدید، Sclerodermini, Chrysoidea.