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## Expanding the geographical distribution of two *Pseudotorymus* Masi (Hymenoptera: Torymidae)

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**ABSTRACT.** We present two new distribution records which add information about the presence of *Pseudotorymus ispirlii* Doğanlar and *P. pulchellus* Masi (Hymenoptera: Chalcidoidea, Torymidae) in the northwest of Iran. Based on present records, both species were found for second times after type localities.

**Key words:** Toryminae, Torymoidini, Iran, parasitoid, record

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### Introduction

The genus *Pseudotorymus* Masi (Hymenoptera: Chalcidoidea, Torymidae) within the subfamily Toryminae and tribe Torymoidini, is well-represented in the Palaearctic region with 58 species (Doğanlar, 2016). Eleven species have hitherto been reported from Iran (see Table 1). Based on the new definition of Jansta et al. (2017), excluding Megastiminae as an independent family (Megastigmidae), about 55 species in 17 genera of the family Torymidae have been recorded from Iran (Lotfalizadeh & Gharali, 2005; Fallahzadeh et al., 2009, 2015; Lotfalizadeh et al., 2020a, 2020b; Pourhaji et al., 2020), of which 20% belongs to the genus *Pseudotorymus*. Different insect orders i.e. Coleoptera, Diptera, Hymenoptera, Lepidoptera and Hemiptera have been cited as host of the genus *Pseudotorymus* (Narendran, 1994; Grissell, 1995; Zerova & Seryogina, 1999; Askew, 2002; Xiao et al., 2007; Doğanlar, 2016). Askew (2002) believes host range of this genus is mostly based on host food plants than an insect species. Main diagnostic characters of the genus are as follow: distinct occipital carina; antenna with a single anellus; notauli complete and distinct; hind femur mainly with distinct small tooth; marginal vein long about 3-7 and 6 times as long as postmarginal and stigmal veins, respectively; gateral tergites 1 & 2 in female at most somewhat emerginate medially. In the present study, we deal with the genus *Pseudotorymus* in Iran recording two rare species as new for the country.

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## Material and methods

The specimens were collected by the first author (A.P.), using Malaise traps in East and West Azarbaijan provinces, in the northwest of Iran in 2013. The specimens were stored in ethanol 75% after collection. These specimens were mounted on a rectangular card. The identification was initially carried out by the second author (H.L.) using [Doğanlar \(2016\)](#) and [Zerova and Seryogina \(1999\)](#). Morphological terminology follows [Grissell \(1995\)](#) and [Jansta et al. \(2017\)](#). External morphology was illustrated using an Olympus™ SZH, equipped with a Canon™ A720 digital camera. The specimens were deposited in the insect collection of Plant Protection Research Department, East-Azarbaijan Agricultural and Natural Resources Research & Education Center.

## Results

### *Pseudotorymus ispirlii* Doğanlar, 2016 (Fig. 1)

**Material examined:** Iran, West-Azarbaijan, Safaieh (38°50'45" N, 44°27'10" E, 1760m a.s.l.), 7.vi.2013, Malaise trap, A. Pourhaji leg., 1 female.

**Remarks.** This species was known only from its type locality in Turkey ([Doğanlar, 2016](#)) and this is the first record from Iran

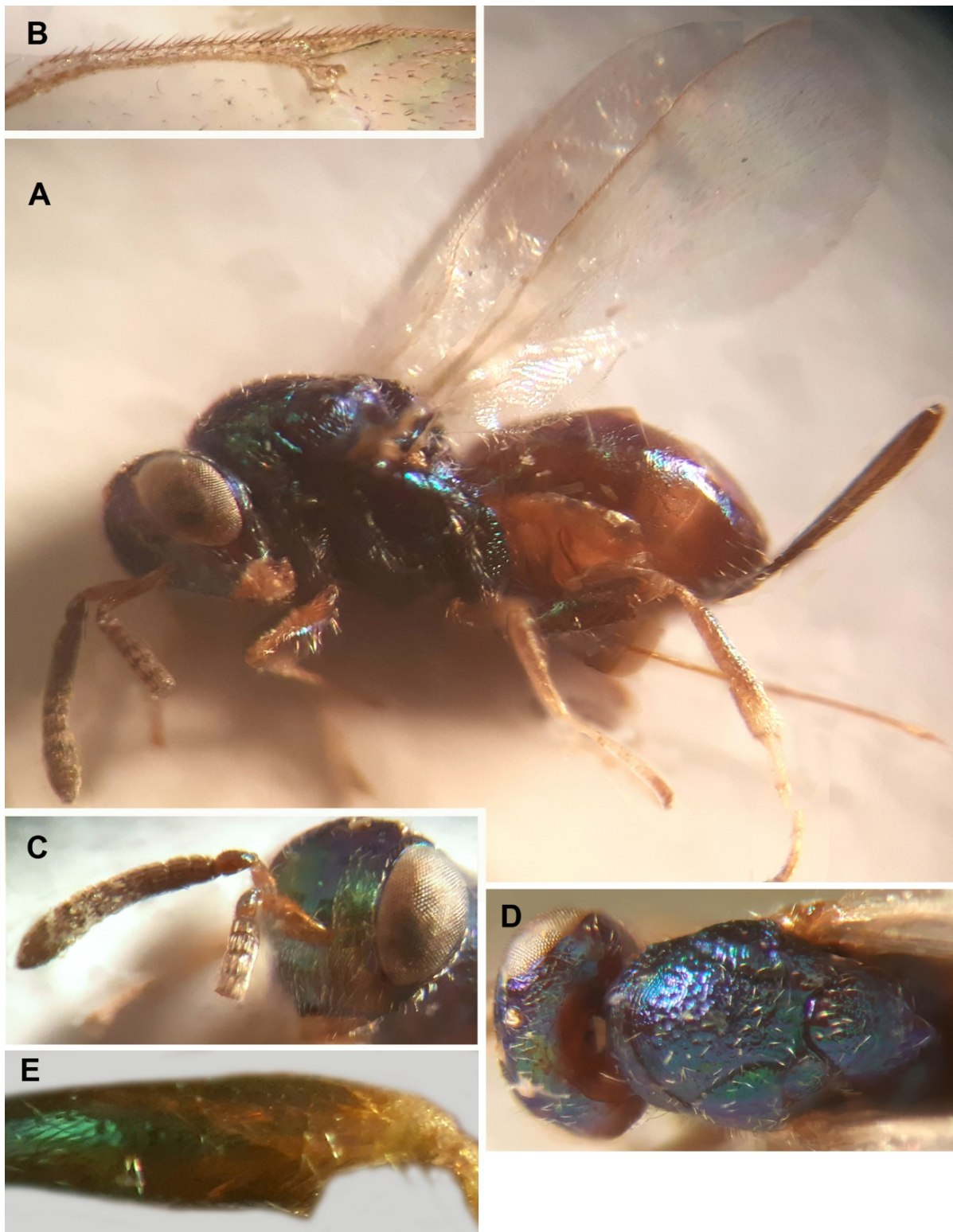
**Morphological characters** (Fig. 1). Antenna with scape yellowish brown (yellow in type) (Fig. 1C), funiculars with one row of dense sensillae, pedicel 1.5 times longer than wide, anellus more than 2 times wider than long, funiculars distinctly widening towards clava, Fu7 about 0.9 times as wide as Fu1, club 1.4 times as long as wide, scape equal to pedicel + anellus + Fu1-Fu2 +  $\frac{1}{3}$  Fu3 combined. Mesonotum (Fig. 1D) distinctly wrinkled, with deep notauli, propodeum medially smooth, laterally with fine reticulation. Forewing with marginal vein 8.3 and 2.3 times as long as postmarginal and stigmal veins (Fig. 1B), respectively. Hind femora with distinct tooth (Fig. 1E). Ovipositor index: 1.2, shorter than gaster, about 0.7 times as long as gaster (Fig. 1A).

### *Pseudotorymus pulchellus* Masi, 1929 (Fig. 2)

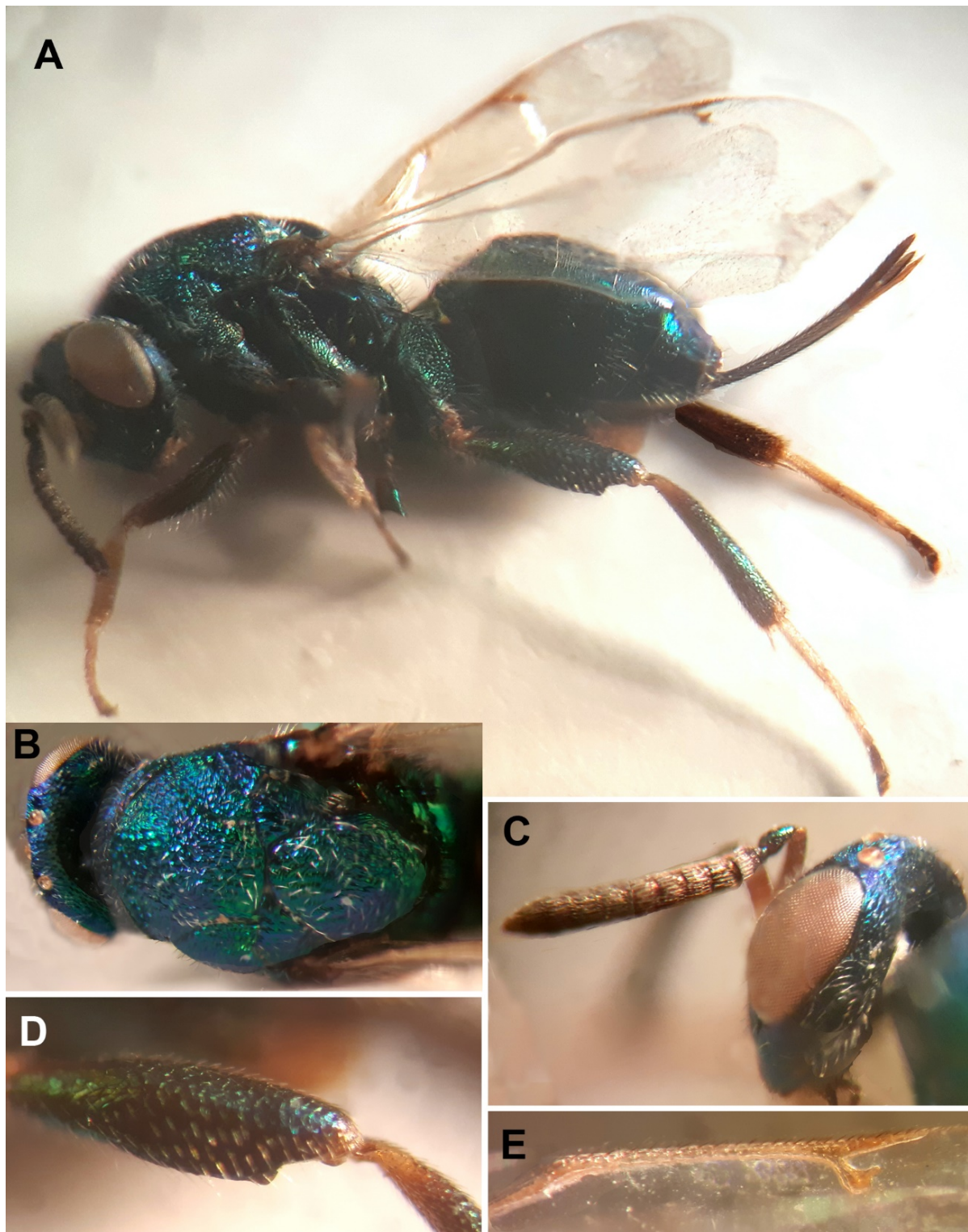
**Material examined:** Iran, East-Azarbaijan, Kandovan (37°46'48" N, 46°15'00" E, 2349 m a.s.l.), 25.vi.2013, Malaise trap, A. Pourhaji leg., 1 female.

**Remarks.** *Pseudotorymus pulchellus* is first record for Iran and just known from Libya ([Noyes, 2020](#)).

**Morphological characters** (Fig. 2). Body greenish-bronze, partly coppery and golden green (Fig. 2A), scape basally yellow, flagellum brown (Fig. 2C). Antenna with pedicel 1.3 times as long as width, funiculars distinctly transverse, 1.4 times as wide as long, gradually widening towards tip. Propodeum smooth, laterally with fine reticulation. Hind femora with distinct tooth, its width of femora at level of tooth 1.32 times to space between tooth and its apical tip (Fig. 2D). Forewing with marginal vein 3.5 and 6 times as long as postmarginal and stigmal veins (Fig. 2E), respectively, postmarginal vein 1.7 times as long as stigmal vein, stigmal vein and stigma broad, with short uncus, width of stigma equal as long as space between uncus and postmarginal vein. Ovipositor almost as long as gaster (Fig. 2A).



**Figure 1.** *Pseudotorymus ispirlii*: **A.** female in lateral view, **B.** Fore wing venation, **C.** Head and antenna in fronto-lateral view, **D.** Head and mesosoma in dorsal view, **E.** Hind femur in lateral view



**Figure 2.** *Pseudotorymus pulchellus*: **A.** Female in lateral view, **B.** Head and mesosoma in dorsal view, **C.** Head and antenna in lateral view, **D.** Hind femur in lateral view, **E.** Fore wing venation.

## Discussion

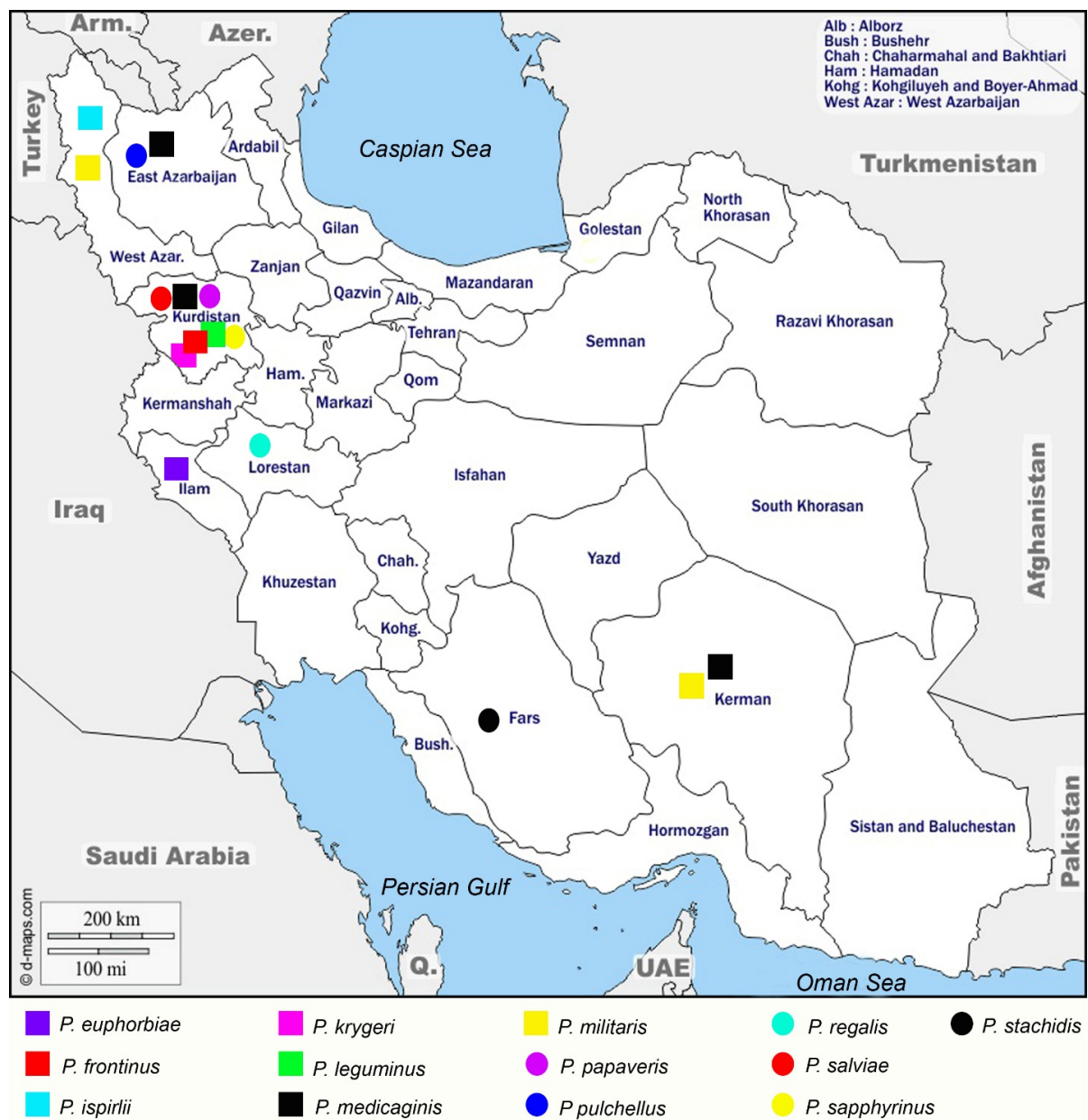
The updated distribution of *Pseudotorymus* species in Iran (e.g., Fallahzadeh et al., 2009; Madjdzadeh et al., 2013; Fallahzadeh et al., 2015) shows that the absence of records could be more due to inadequate sampling surveys. Our efforts to the collection of Chalcidoidea in the northwest of Iran lead us to add two new records of *Pseudotorymus*, which were only known from their type localities in Libya and Turkey. Furthermore, known species of the genus and family in Iran reach up to 13 (Table 1) and 57, respectively. The genus *Pseudotorymus* has 25 known species in Turkey (Doğanlar, 2016; Noyes, 2020).

Main biological association of the genus *Pseudotorymus* species in Iran refer to the gall-maker insects of the families Cynipidae (Hymenoptera) (Askew et al., 2006) and Cecidomyiidae (Diptera) (Fallahzadeh et al., 2009).

**Table 1.** *Pseudotorymus* species of Iran and their distribution and biological data (MT, collected with Malaise trap).

Species	Distribution in Iran	Biological association	References
<i>P. euphorbiae</i> Zerova and Seryogina 1999	Ilam	ex <i>Euphorbia boissieriana</i> (Woron.)	Lotfalizadeh & Gharali (2005), Fallahzadeh et al. (2009)
<i>P. frontinus</i> (Walker, 1851)	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. ispirlii</i> Doğanlar, 2016	West Azarbaijan	MT, Unknown	<b>New record</b>
<i>P. krygeri</i> Hoffmeyer, 1931	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. leguminus</i> Ruschka, 1923	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. medicaginis</i> (Mayr, 1874)	East Azarbaijan, Kerman, Kordestan	on <i>Medicago sativae</i> L.	Lotfalizadeh and Gharali (2005), Fallahzadeh et al. (2009), Madjdzadeh et al. (2013), Nazemi Rafie & Lotfalizadeh (2012)
<i>P. militaris</i> (Boheman, 1834)	Kerman, West-Azarbaijan	ex seeds of <i>Hedysarum</i> sp. (Fabaceae)	Madjdzadeh et al. (2013), Zerova et al. (2008), Fallahzadeh et al. (2009)
<i>P. papaveris</i> (Thomson, 1876)	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. pulchellus</i> Masi, 1929	East Azarbaijan	MT, Unknown	<b>New record</b>
<i>P. regalis</i> Askew, 2006	Lorestan	ex <i>Diplolepis rosae</i> (L.) (Hym. : Cynipidae)	Askew et al. (2006), Fallahzadeh et al. (2009)
<i>P. salviae</i> Ruschka, 1923	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. sapphyrinus</i> (Fonscolombe, 1832)	Kordestan	MT, Unknown	Nazemi Rafie & Lotfalizadeh (2012)
<i>P. stachidis</i> (Mayr, 1874)	Fars	ex <i>Dicrodiplosis manihoti</i> Harris (Dipt.: Cecidomyiidae)	Fallahzadeh et al. (2008), Fallahzadeh et al. (2009)

Considering the geographical situation of Iran (Fig. 3), there is a high possibility of the presence of undescribed species and new records (Lotfalizadeh et al., 2020a) within the genus that need to increase the sampling and collecting efforts in the region. Most of the reported species have been recorded from the west of Iran (Table 1). Therefore, to assist in filling information gaps about this family in Iran, complementary sampling can be recommended, especially in the southern and eastern parts of Iran.



**Figure 3.** Geographical distribution of *Pseudotorymus* species in Iran.

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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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## گسترش پراکنش جغرافیایی دو گونه *Pseudotorymus* Masi (Hymenoptera: Torymidae)

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**چکیده:** گزارش جدید دو گونه از خانواده Torymidae تحت عناوین *Pseudotorymus ispirlii* Doğanlar و *P. pulchellus* Masi از شمال غرب ایران انجام گرفت. بر این اساس این دو گونه برای نخستین بار پس از محل جمع‌آوری نمونه‌های تایپ، مجدداً یافت می‌شوند.

**واژگان کلیدی:** زیرخانواده Toryminae، قبیله Torymoidini، ایران، پارازیتوئید، گزارش