



## Discovery of male of *Proconura persica* Delvare (Hymenoptera: Chalcididae), recently described from Iran

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**ABSTRACT.** *Proconura persica* Delvare, 2011 (Hymenoptera: Chalcididae) was originally described from Iran. Type materials of this species were include just female specimens. Recently we collected a population of this species from Shiraz in the south of Iran comprising males and females. The previously unknown male of *P. persica* is described for the first time and diagnostic characters are illustrated to differentiate this species from related species of the genus.

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### Introduction

Some chalcidid species in Iran has importance in economically important pests control (Lotfalizadeh & Khalghani, 2008; Lotfalizadeh et al., 2012) such as carob moth, *Apomyelois ceratoniae* (Zeller) (Lepidoptera: Pyralidae) (Delvare et al., 2011) and *Chrysobothris parvipunctata* Obenberger, 1914 (Coleoptera: Buprestidae) (Lotfalizadeh & Jafari-Nadushan, 2015).

Among 68 species in 18 genera reported from Iran (Falahatpisheh et al., 2018), *Proconura persica* Delvare, 2011 (Hymenoptera:

Chalcididae) was originally described as parasitoid of carob moth, *Apomyelois ceratoniae* (Delvare et al., 2011), that is a key pest of pomegranate trees *Punica granatum* (L.). This species known just from Isfahan province in the center of Iran but it may be distributed in the all over pomegranate growing area of the country. Recently we reared it in Fars province, in the south of Iran on the same host. Present article includes introduction of male of *P. persica*, which was not described previously (Delvare et al., 2011).

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## Material and methods

Collection of infested pomegranates by carob moths were done during 2017–2018 in Shiraz, Fars province, Iran. Infested fruits were transferred to Laboratory condition for rearing of the pests and possible parasitoids. These samples were daily surveyed. Obtained parasitoids were card-mounted and then identified in generic level using Delvare (2017). Specimens were morphologically compared with description of *Proconura persica* Delvare, 2011 and finally were compared with type materials at CBGP (Centre de Biologie pour la Gestion des Populations, Montferrier-sur-Lez, France). Photographs of the male specimens were taken using a Keyence VHX-5000 multiple-focus imaging system. The specimens were deposited in the insect collection of the Department of Plant Protection, East-Azarbaijan Research & Education Center for Agriculture and Natural Resources, Tabriz, Iran.

**Abbreviations:** F1, F2, etc., first funicle segment, second funicle segment, etc.; MT1, MT2, etc. first metasomal tergite, second metasomal tergite, etc.

## Results

This species known just from Isfahan province in the central part of Iran and our finding shows it is distributed in the southern Iran, as well. Male individuals of *Proconura persica* Delvare, 2011 (Hymenoptera: Chalcididae) were found for first time.

### *Proconura persica* Delvare, 2011

**Materials examined:** Iran, Fars province, Shiraz, October 2017, F. Ehteshami leg., 6♂♂ & 5♀♀.

1♂ & 1♀ deposited in insect collection of CBGP, France and the rests were deposited in the insect collection of the Department of Plant Protection, East-Azarbaijan Research & Education Center for Agriculture and Natural Resources, Tabriz, Iran.

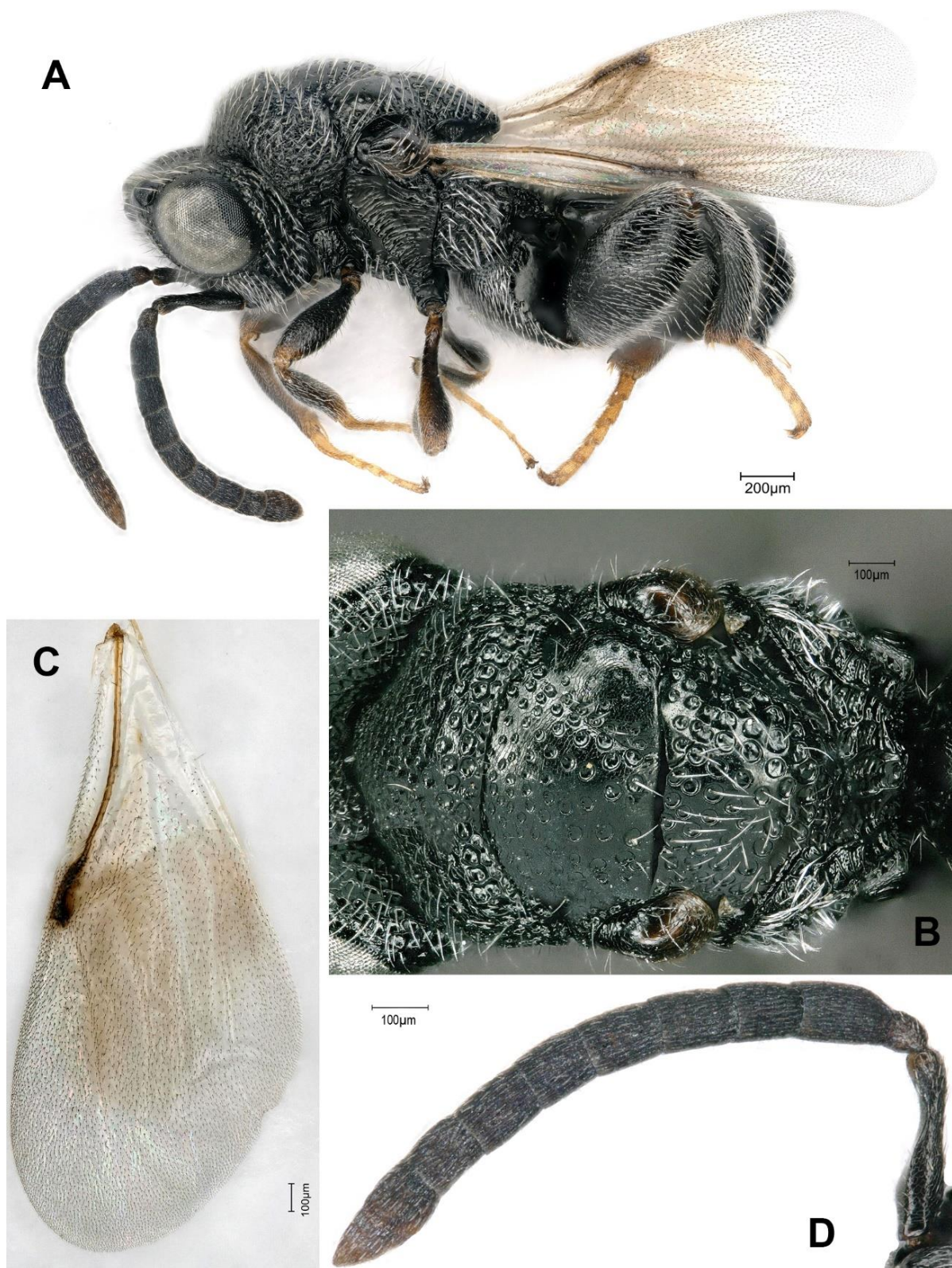
**Description of male:** Males similar to females (see Delvare et al. 2011: Figs 16–21) except for following characters: Body length 2.4–3.3mm, smaller than female (Fig. 1A); body much darker than female; antenna entirely black (Figs 1A, B); gena and frons (Figs 1A, 2A) densely punctured much denser than female (Delvare et al. 2011; see Fig. 17), interspaces between points much smaller than in female; antenna (Fig. 1B) different from female; scape slightly reticulate and emarginate at apex, 3.8 times as long as wide, pedicel distinctly short, as long as wide, shorter than F1; funicular segments length to width ratios as follow: F1 (1.41), F2 (1.09), F3 (1.19), F4 (1.25), F5 (1.09), F6 (1.19), F7 (1.09), Clava (2.03); clava shorter than F6 + F7 (0.89); puncturation of head and mesosoma denser and more regular than in female (Figs 1C, D). Metafemur (Fig. 2B) slightly slender than in female, 1.73 times as long as broad; fore wing (Fig. 1E) slightly shorter than in female, 2.05 times as long as wide; costal cell at least with four complete rows of setae on lower side; metasoma (Fig. 2C) short, oval, only 1.33 as long as broad, shorter than mesosoma. MT2 dorsally flat and its 1.17 punctulate, almost reaching 0.44 length of metasoma. MT3 well developed laterally; following tergites entirely reticulate.

## Discussion

*Proconura persica* is extremely close to *P. barbara* (Masi), the two species having the petiole with a triangular expansion. As for the female, the male of *P. persica* has the expansion on metafemur regularly rounded on top whereas it is sharp in *P. barbara*. A short diagnosis for the separation of the two species is as follow:

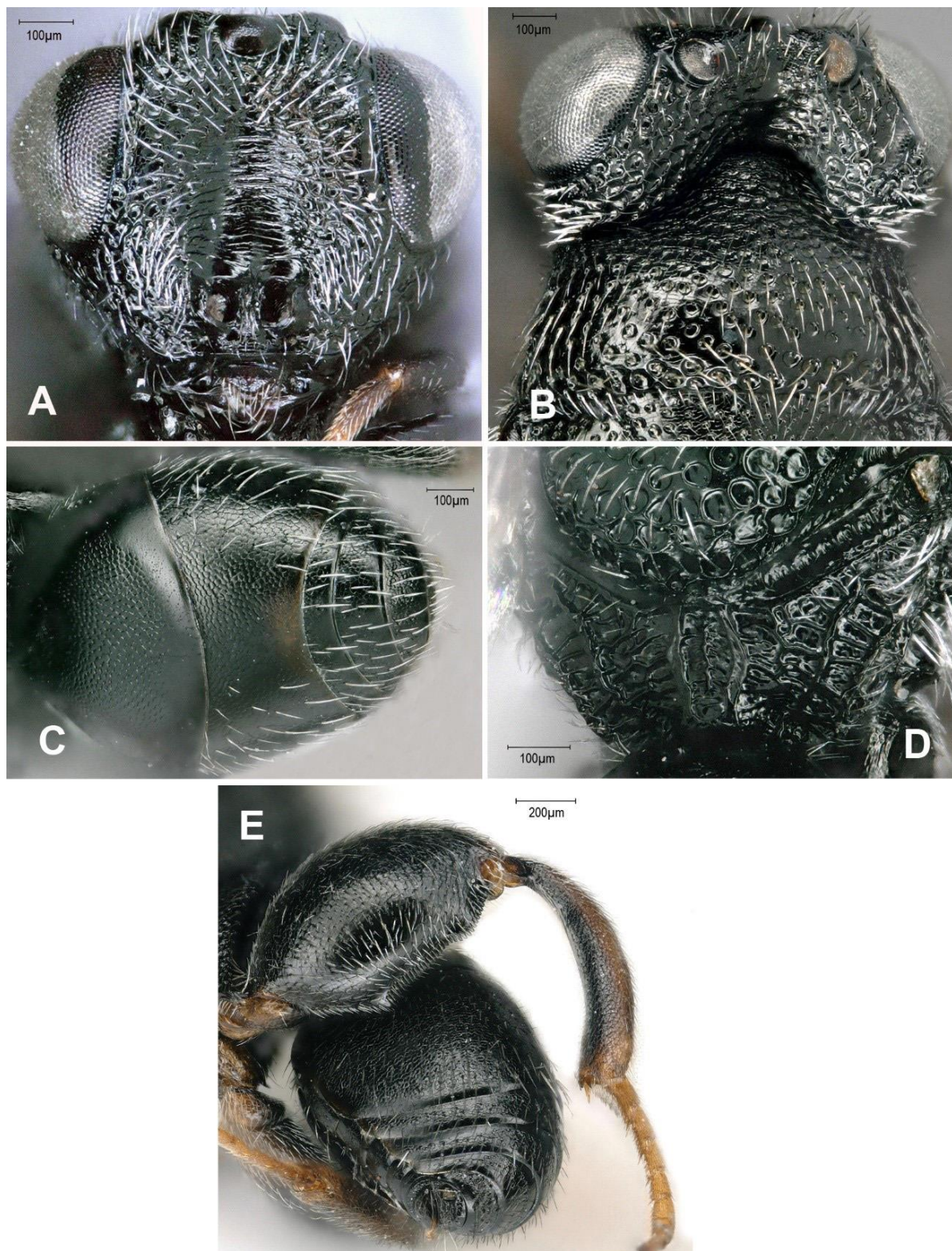
*Proconura barbara*: Basal tooth of metafemur sharp and projecting; ventral projection of petiole forming slightly acute angle and sharp; metapleuron and gena densely punctured; propodeum between submedian and sublateral carinae with numerous irregular rugulae forming delicate secondary areolation.





**Figure 1.** *Proconura persica* Delvare, 2011, male: **A.** Habitus in lateral view, **B.** Mesosoma in dorsal view, **C.** Fore wing, **D.** Antenna.





**Figure 2.** *Proconura persica* Delvare, 2011, male: **A.** Head in frontal view, **B.** Head and pronotum in dorsal view, **C.** Metasoma in dorsal view, **D.** Propodeum, **E.** Hind leg and metasoma in lateral view.

*Proconura persica*: Basal tooth of metafemur short and hardly protruding; ventral projection of petiole forming slightly obtuse angle and blunt; metapleuron and gena less densely punctured than in alternate; propodeum between submedian and sublateral carinae with numerous oblique rugulae, not areolate.

### Acknowledgments

We would like to thank Dr. J.-Y. Rasplus (Centre de Biologie pour la Gestion des Populations (CBGP), Montferrier-sur-Lez, France) for providing all the facilities to taking photographs of species.

### Conflict of Interests

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

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## کشف جنس نر زنبور (*Proconura persica* Delvare) (Hymenoptera: Chalcididae)، گونهٔ اخیراً توصیف شده از ایران

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**چکیده:** گونه *Proconura persica* Delvare, 2011 (Hymenoptera: )

Chalcididae) اولین بار از ایران توصیف شده است. نمونه‌های قبلی همگی ماده بودند. اخیراً جمعیتی از این گونه از شیراز در جنوب ایران جمع‌آوری شد که شامل افراد هر دو جنس ماده و نر بود. جنس نر گونه‌ی *P. persica* که قبلاً ناشناخته بود برای اولین بار توصیف شد و ویژگی‌های افتراقی برای تشخیص این گونه از گونه‌های نزدیک ارایه شد.

**واژگان کلیدی:** Chalcididae، پارازیتوئید، کرم گلوگاه انار