

Short communication

Scale insects (Hemiptera, Coccoomorpha) of *Ficus carica* L. (Moraceae), with a new record from Iran

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چکیده

مجموعاً ۱۳ گونه شپشک گیاهی Cocomorpha از سه خانواده، Coccidae (3)، Diaspididae (5) و Pseudococcidae (5) روی درخت انجیر در ایران مشخص شده‌اند. در این مقاله شپشک گیاهی (*Diaspidiotus branuschvigi* (Rung) (Diaspididae)) گزارش جدیدی از ایران است، که توصیف و ترسیم آن براساس ماده کامل بالغ انجام شده است. فهرست گونه‌های شپشک گیاهی روی درخت انجیر که تا کنون گزارش شده‌اند، همراه با پراکنش جغرافیایی در ایران و جهان ارائه شده است.

Iran is ranked as the world third largest fig producer after Egypt and Turkey, with 52000 hectares of fig orchards and an estimated production of 88000 tons of figs a year as Iranian Estahban region is the largest dried fig producer in the world (FAO, 2008). About 77 species of scale insects within the families Diaspididae, Pseudococcidae and Coccidae have been known to attack *Ficus carica* across the world (Garcia *et al.*, 2017), but little is known about the scale insects associated with fig in Iran. A total of 12 species of insect pests have been recorded to infest *F. carica* in Iran, including the scale insect species *Lepidosaphes conchiformis* (Gmelin), *Aonidiella orientalis* (Newstead) (Diaspididae), *Planococcus citri* (Risso) (Pseudococcidae) and *Ceroplastes rusci* (Linnaeus) (Coccidae) (Anonymous, 2010). Moghaddam (2013a) listed eight scale insects and the recently introduced mealybug species *Paracoccus ficus* (Moghaddam, 2014) which is thought to attack the figs in Iran (Moghaddam and Esfandiari, 2014).

Results.

(Family Coccidae):

***Ceroplastes rusci* (Linnaeus)**

Material examined. Hormozgan province, Bandar-Abbas, Geno, 4 adult , 24.iv.2006, 1834 m., 27°24'32.9 N 56°11'27.1 E, leg. S. Manzari & A. Haj-Esmailian; Kohgiluyeh & Boryerahmad province, Dehdasht, Choram, 4 adult , 17.iv.2008, 715 m., 30°43'15.7 N 50°44'44.8 E; Lorestan province, Pol -e Dokhtar, 7 adult , 21.iv.2002, 33°08'06.3 N

47°44'19.3 E, leg. M. Javad-zadeh; Sistan & Balouchestan province, Sarbaz, 1 adult , 12.viii.2002, 26°58'45.2 N 61°21'18.3 E, leg. Y. Achak.

Distribution. *C. rusci* occurs in 56 countries in Afrotropical, Nearctic, Neotropical and Oriental, Palaeartic regions (Garcia *et al.*, 2017).

***Coccus hesperidum* Linnaeus**

Material examined. Fars province, Shiraz, Bamou National Park, 3 adult , 23.ix.1996, 29°14'24.0 N 52°34'00.1 E, leg. M. Moghaddam.

Distribution. *C. hesperidum* occurs in 140 countries in Afrotropical, Australasian, Nearctic, Neotropical, Oriental and Palaeartic regions (Garcia *et al.*, 2017).

***Pulvinaria vitis* (Linnaeus)**

Material examined. Esfahan province, Naiin, Khour, Arousan, 3 adult , 11.iv.2010, 1024 m., 34°07'53.3 N 55°06'39.0 E, leg. M. Moghaddam.

Distribution. *P. vitis* occurs in 52 countries in Australasian, Nearctic and Palaeartic regions (Garcia *et al.*, 2017).

(Family Diaspididae)

***Lepidosaphes conchiformis* (Gmelin)**

Material examined Fars province, Shiraz, Perspolis, 14 adult , 29°41'24.0 N 52°34'00.1 E; Qazvin province, Qazvin, 3 adult , 36°15'21.1 N 50°00'24.4 E, leg. G. Farahbakhsh; Kerman province,

Kerman, Sirch, 5 adult , 7.vi.1950, 30°12'33.4 N 57°34'03.2 E; Shahdad, 18 adult , 25.v.1950, 30°15'15.8 N 57°28'15.0 E; Khorasan -e Razavi province, Gonabad, 2 adult , 34°20'02.2 N 58°39'43.4 E; Sistan & Balouchestan province, Khash, Taftan, 2 adult , 24.v.1955, 28°16'19.7 N 61°33'29.5 E, leg. G. Farahbakhsh.

Distribution. *L. conchiformis* occurs in 52 countries in Australasian, Nearctic and Palaearctic regions (Garcia *et al.*, 2017).

Lopholeucaspis japonica (Cockerell)

Material examined. Gilan province, Bandar Anzali, Mordab Anzali, 3 adult , 13.vii.2005, -15 m., 37°31'13.3 N 49°17'49.2 E, leg. M. Moghaddam.

Distribution. *L. japonica* occurs in 20 countries in Afrotropical, Australasian, Nearctic, Neotropical and Palaearctic regions (Garcia *et al.*, 2017).

Parlatoreopsis longispina (Newstead)

Material examined. Kerman province, Kerman, Shahdad, 3 adult , 15.vii.1950, 30°15'15.8 N 57°28'15.0 E, leg. Sarkissian.

Distribution. *P. longispina* occurs in nine countries in Palaearctic region (Garcia *et al.*, 2017).

Suturaspis davatchii (Balachowsky & Kaussari)

Material examined. Hormozgan province, Minab, Roodan, 4 adult , 13.ii.1953, 27°27'17.0 N 57°07'23.3 E, leg. G. Farahbakhsh.

Distribution. *S. davatchi* occurs in three countries in Palaearctic region (Garcia *et al.*, 2017).

(Family Pseudococcidae)

Ferrisia virgata (Cockerell)

Material examined. Sistan & Balouchestan province, Saravan- Nohook Rd., 2 adult , 27.xi.2011, 1157 m., 27°22'31.7 N 62°19'32.0 E, leg. M. Moghaddam.

Distribution. *F. virgata* occurs in 96 countries in Afrotropical, Australasian, Nearctic, Neotropical, Oriental and Palaearctic regions (Garcia *et al.*, 2017).

Paracoccus ficus Moghaddam

Material examined. Fars province, Estahban, 19 adult , 9.iv.2014, 29°13'22.4 N 54°06'22.2 E, leg. M.

Esfandiari; Neyriz, 11 adult , 10.x.2013, 29°22'47.6 N 54°31'11.6 E, leg. M. Esfandiari.

Distribution. *P. ficus* is known only from Iran (Moghaddam & Esfandiari, 2014).

Planococcus citri (Risso)

Material examined. Tehran province, Rey, 2 adult , 19.vi.2006, 35°38'46.0 N 51°27'25.4 E.

Distribution. *P. citri* occurs in 114 countries in Afrotropical, Australasian, Nearctic, Neotropical, Oriental and Palaearctic regions (Garcia *et al.*, 2017).

Planococcus ficus (Signoret)

Material examined. Elborz province, Karaj, Rajai-shahr, 3 adult , 11.i.2003, 35°52'08.8 N 50°58'34.0 E, leg. Rastegar; Fars province, Shiraz, Bajgah, 1 adult , 9.vi.2014, 29°39'47.7 N 52°33'14.5 E, leg. M. Esfandiari.

Distribution. *Pl. ficus* occurs in 43 countries in Nearctic, Neotropical, Oriental and Palaearctic regions (Garcia *et al.*, 2017).

Pseudococcus viburni (Signoret)

Material examined. Mazandaran province, Ramsar, 2 adult , 36°54'02.4 N 50°40'31.0 E, leg. M. Moradi.

Distribution. *P. viburni* occurs in 57 countries in Afrotropical, Australasian, Nearctic, Neotropical, Oriental and Palaearctic regions (Garcia *et al.*, 2017).

Diaspidiotus braunschvigi (Rung) (Figs. 1, 2)

Aspidiotus braunschvigi Rung, 1936.

D. braunschvigi was mistakenly identified as *D. lenticularis* Lindinger in the checklist of Iranian scale insects (Moghaddam, 2013). Therefore, the Iranian record of *D. lenticularis* Lindinger is nullified.

Material examined. Iran, Fars province, Estahban, 15 adult , 1987, 29°13' N, 54°06' E, on *Ficus carica* (Moraceae), leg. Fazeli; Estahban, 7 adult , 27.viii.2016, leg. H. Faghieh.

Diagnosis. *D. braunschvigi* was originally described by Rung (1936) based on the available specimens from Morocco on *Ficus carica*. This species and *Diaspidiotus zonatus* (Frauenfeld) are closely related, although *D. zonatus* differs in having pygidium rounded, median lobes parallel or slightly convergent and third

lobes reduced to a blunt prominence. *D. zonatus* attacks *Juglans regia* (Juglandaceae) and *Quercus* sp. (Fagaceae) in Iran (Moghaddam, 2013). Acute pygidium occurs in both Iranian specimens of *D. braunschvigi* and *D. zonatus*.

Some variations which exist between Iranian specimens of *D. braunschvigi* and the original description by Balachowsky (1950) are as follows (character states in brackets are from Balachowsky): (i) pygidium acute (not acute); (ii) median plates absent (present); (iii) 1 plate present between segments VII and VIII (2 plates); (v) paraphyses well developed (small, but distinct) (Fig 2).

This species has been recorded on dry fig trees in Fars province, Estahaban since 1987. In recent years, a severe and prolonged drought has persisted in this area forcing the fig farmers to abandon the traditional rain-fed harvests and manually irrigate their fig orchards leading to climatic changes and severity of infestation of fig trees by *D. braunschvigi*. This species occurs on leaves, twigs and fruits of fig.

Distribution. *D. braunschvigi* has been recorded from Morocco (Rung, 1937) and the U.S.A (Ferris, 1942).



Fig. 1. *Diaspidiotus braunschvigi* (Rung)

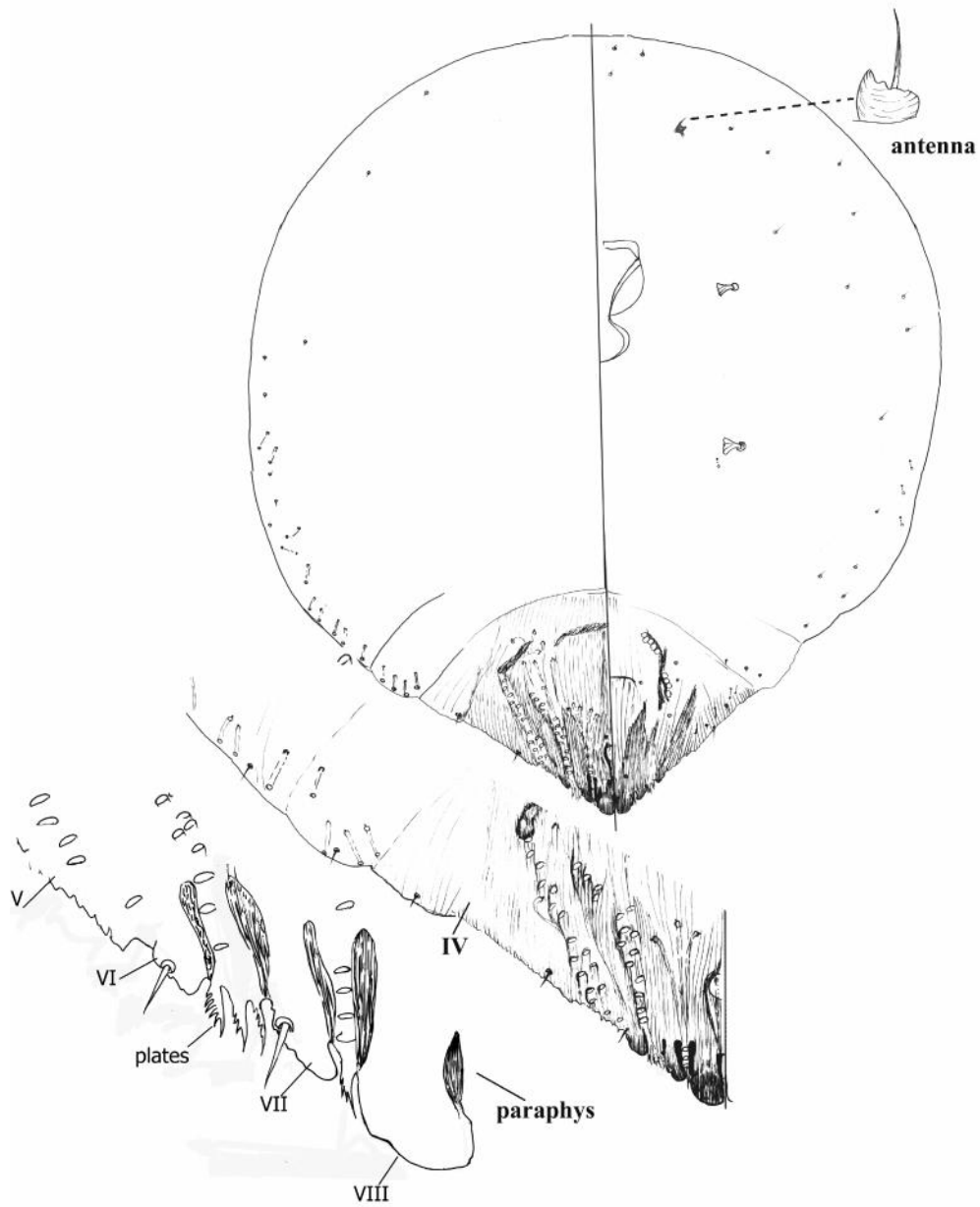


Fig. 2. *Diaspidiotus braunschvigi*, microscopic characters of adult female.

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