

Additions to the crab spider fauna of Iran (Araneae: Thomisidae)

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Abstract. In this study, the crab spider (Thomisidae) fauna of Fars Province in Iran is investigated and some additional new records are given for both the country and the province. The species *Monaeses israeliensis* Levy, 1973, *Synema anatolica* Demir, Aktas & Topçu, 2009, *Thomisus unidentatus* Dippenaar-Schoeman & van Harten, 2007 and *Xysticus abramovi* Marusik & Logunov, 1995 are new records for Iran, while *Heriaeus spinipalpus* Loerbros, 1983, *Ozyptila tricoloripes* Strand, 1913, *Runcinia grammica* (C. L. Koch, 1837), *Synema globosum* (Fabricius, 1775), *Thomisus zyuzini* Marusik & Logunov, 1990, *Xysticus kaznakovi* Utochkin, 1968, *X. loeffleri* Roewer, 1955 and *X. striatipes* L. Koch, 1870 are new to the fauna of Fars Province.

Keywords: Fars, faunistic study, new records

Zusammenfassung. Ergänzungen zur Krabbenspinnenfauna des Iran (Araneae: Thomisidae). Im Rahmen dieser Studie wurden die Krabbenspinnen (Thomisidae) der Fars Provinz im Iran erfasst. Die Arten *Monaeses israeliensis* Levy, 1973, *Synema anatolica* Demir, Aktas & Topçu, 2009, *Thomisus unidentatus* Dippenaar-Schoeman & van Harten, 2007 und *Xysticus abramovi* Marusik & Logunov, 1995 sind Neunachweise für den Iran, während *Heriaeus spinipalpus* Loerbros, 1983, *Ozyptila tricoloripes* Strand, 1913, *Runcinia grammica* (C. L. Koch, 1837), *Synema globosum* (Fabricius, 1775), *Thomisus zyuzini* Marusik & Logunov, 1990, *Xysticus kaznakovi* Utochkin, 1968, *X. loeffleri* Roewer, 1955 und *X. striatipes* L. Koch, 1870 erstmals für die Fars Provinz nachgewiesen werden konnten.

In spite of recent increases in the faunistic data on Thomisidae in Iran, the family must be considered as poorly studied in this country (Zamani et al. 2014). The number of known Iranian species exceed 51 species in 14 genera (Zamani 2016, Zamani et al. 2016a) which is less than what is known in some of the neighbouring countries e.g. 88 species for Turkey (Bayram et al. 2016) and 57 species for Azerbaijan (Otto 2016). The present study was designed to gather more data on the thomisid fauna of Fars Province in southern Iran.

Material and methods

The spiders were collected from different localities in the province during 2015–2016, using various collecting methods, e.g. hand collecting, sweeping, beating and litter sampling. Specimens were preserved in 80% ethyl alcohol in the field and deposited in the Zoological Museum of the Department of Biology, Shiraz University (ZM-CBSU, curators: Dr. H.R. Esmailie and Dr. S. Sadeghi). Global distributions follow the World Spider Catalog (WSC 2016), and data on the local distributions mostly follow Zamani et al. (2016a). Identifications were mostly based on available references such as Levy (1973, 1985), Dippenaar-Schoeman (1989), Marusik & Logunov (1990, 1995), Roberts (1993), Dippenaar-Schoeman & van Harten (2007) and Nentwig et al. (2016). Digital photographs were obtained using a Canon EOS 7D camera attached to an Olympus CH-2 stereomicroscope. The images were stacked using Helicon Focus 5.3.

Abbreviations

RTA = retrolateral tibial apophysis

VTa = ventral tibial apophysis

ITA = intermediate tibial apophysis

Results

A total number of 14 species from seven genera were identified, including four new records for Iran and eight new records for the province.

Genus *Heriaeus* Simon, 1875

Heriaeus spinipalpus Loerbros, 1983 (Fig. 1)

Determination. Loerbros (1983), Ono & Martens (2005).

Material examined. IRAN, Fars Province: 1♂, 4♀♀ (#3386), Lar-Jahrom Rd., near Nasiri Amin village (28°21'56.70"N, 53°58'09.85"E), 1171.5 m, 6.5.2016 (N. Kiany); 2♂♂ (#3402), Kazeroon, Bishapoor, Tang-e Chovgan (29°47'1.50"N, 51°35'10.37"E), 708.5 m, 20.4.2016 (N. Kiany); 1♀ (#3414), Kavar-Firoozabad Rd, Mook (29°9'41.60"N, 52°38'6.35"E), 1918 m, 3.5.2016 (N. Kiany); 1♀ (#3415), Beyza, Maloosjan, Industrial zone (29°52'11.23"N, 52°27'16.44"E), 1787 m, 12.4.2016 (N. Kiany).

This species can be distinguished from others by having a distinct spike from the basal part of the male palpal tibia and an epigynum which is characterized by a large central hood (Loerbros 1983, Ono & Martens 2005).

Habitat. The specimens were collected by hand and beating nets from bushes and shrubs.

Global distribution. Eastern Mediterranean (WSC 2016), in detail: Turkey, Syria, Turkmenistan, Caucasus, Iran (Zamani et al. 2016a).

Distribution in Iran. Tehran, Fars (new province record, southernmost known locality across its entire range).

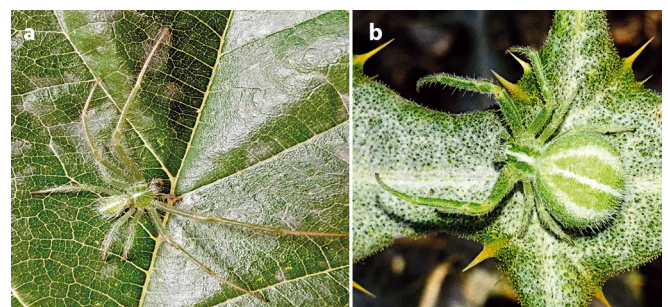


Fig. 1: *Heriaeus spinipalpus*; a. Habitus of male, dorsal view; b. Habitus of female, dorsal view

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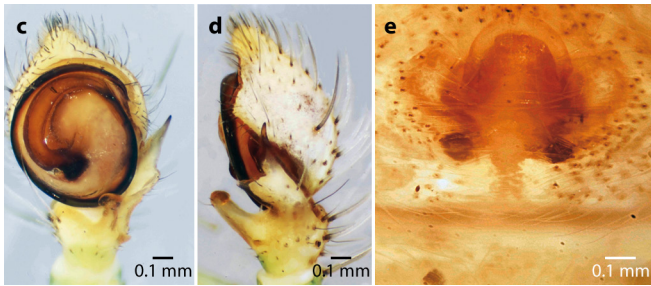


Fig. 1: *Heriaeus spinipalpus*; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Genus *Monaeses* Thorell, 1869

Monaeses israeliensis Levy, 1973 (Fig. 2)

Determination. Levy (1973), Bayram et al. (2007).

Material examined. IRAN, Fars Province: 1♂, 1♀ (#3411), Kazeroon, Qaemie Rd, Dehnovenghelab, Tang-e Kaviri village (29°47'18.13"N, 51°34'33.44"E), 816 m, 21.4.2016 (N. Kiany).

This species is closely related to *M. paradoxus* (Lucas, 1846), but can be easily distinguished by the form of the VTA which is inclined in *M. israeliensis*. They also differ in the form of the RTA (*M. paradoxus* does not have star-shaped RTA). The epigynum is also different; the sclerotized areas in *M. paradoxus* are far from each other and do not touch, and also the shape of intromittent orifice is different between these species (Levy 1973).

Habitat. The specimens were found in meadows and were collected using sweep nets.

Global distribution. Greece, Turkey, Israel, Lebanon, Central Asia (WSC 2016), Iran (new record).

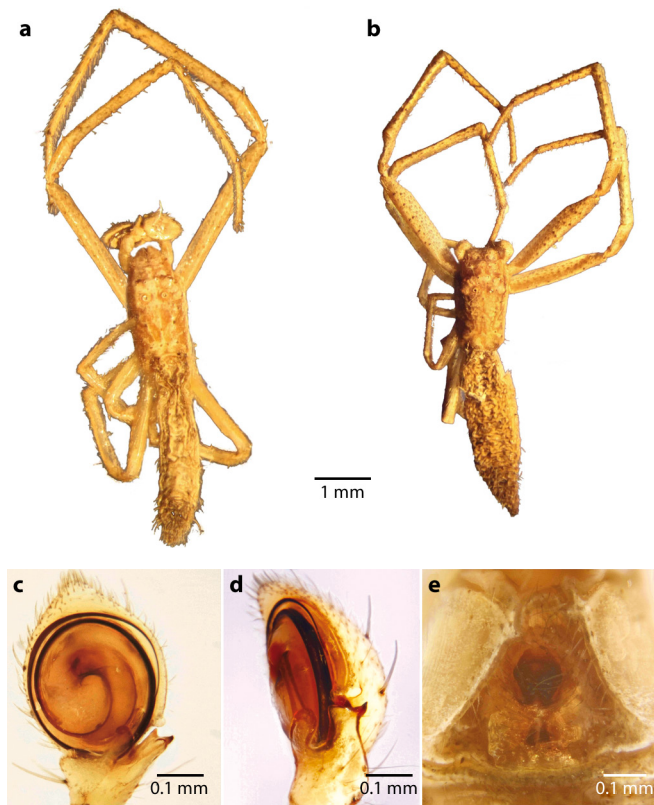


Fig. 2: *Monaeses israeliensis*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Distribution in Iran. Fars (new record, southernmost known locality across its entire range).

Comments. Compared to the figures provided by Levy (1973) and Bayram et al. (2007), in the absence of more material our identification in this case should be considered as provisional. In comparison to Levy (1973), our male specimen has a more oblique VTA, and although RTA has a stellate tip, one of its arms does not have a pointed and dentate tip. Furthermore, the tutacular apophysis is rounded and not narrowing.

Genus *Ozyptila* Simon, 1864

Ozyptila tricoloripes Strand, 1913 (Fig. 3)

Determination. Levy (1985).

Material examined. IRAN, Fars Province: 4♂♂ (#3348), Beyza, Maloosjan gardens (29°51'27.35"N, 52°29'6.32"E), 1723 m, 18.9.2015 (N. Kiany); 1♂ (#3347), Bavanaat, Haraat (30°12'28.41"N, 54° 0'51.60"E), 1800 m, 30.9.2015 (S. Sadeghi); 1♂ (#3346), Bavanat, Soryan (30°26'49.50"N, 53°39'25.74"E), 2172 m, 3.9.2015 (M. Hakimara).

This species can be distinguished from other *Ozyptila* species by having a tegulum with three crescentic folds and a forked embolic tip. The epigynum is characterised by its hood-like structure on the epigynal plate, which distinguishes it from *O. confluens* (C. L. Koch, 1845) which has no hood, but has a large downward-projecting septum (Levy 1975).

Habitat. The specimens were found on the soil and decomposing leaves and were collected by hand and with a Berlese funnel.

Global distribution. Turkey, Israel, Azerbaijan, Turkmenistan, Kazakhstan (WSC 2016), Iran (Zamani et al. 2016a).

Distribution in Iran. Golestan, Fars (new province record, southernmost known locality across its entire range).

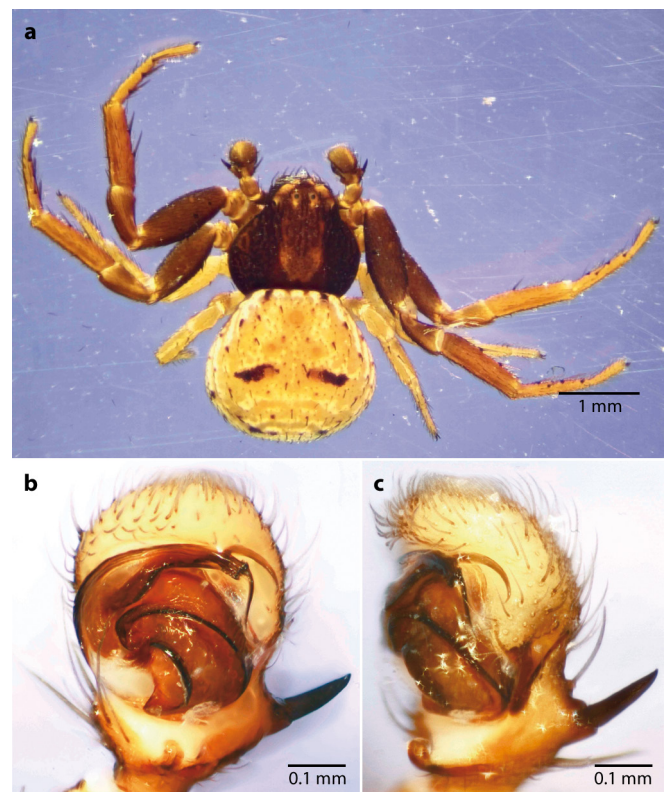


Fig. 3: *Ozyptila tricoloripes*; **a.** Habitus of male, dorsal view; **b.** Male palp, ventral view; **c.** Male palp, retrolateral view

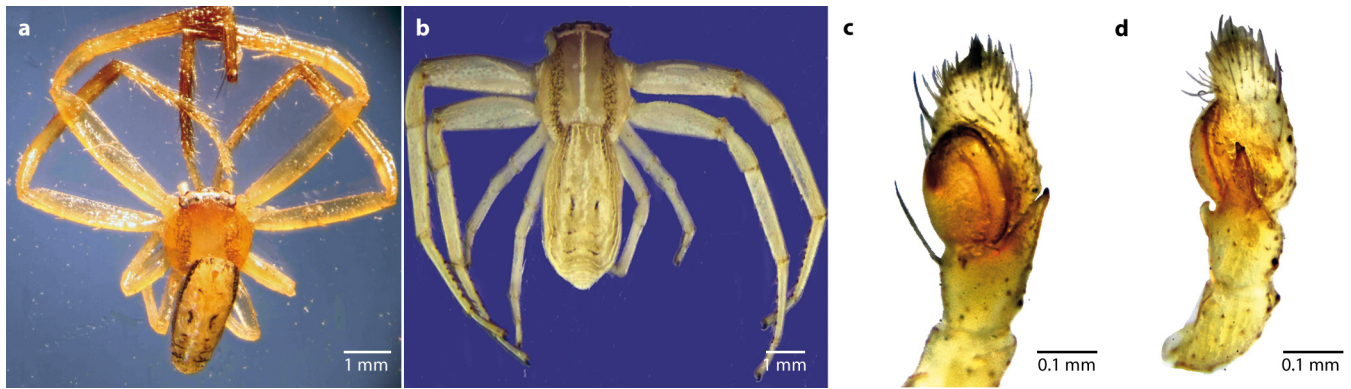


Fig. 4: *Runcinia grammica*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view

Genus *Runcinia* Simon, 1875

Runcinia grammica (C. L. Koch, 1837) (Fig. 4)

Determination. Levy (1973), Ono & Martens (2005).

Material examined. IRAN, Fars Province: 1♂, 2♀♀ (#3375), Kazeroon, Qaemie Rd, Dehnovenghelab, Tang-e Kaviri village (29°47'18.13"N, 51°34'33.44"E), 816 m, 21.4.2016 (N. Kiany).

This species can be distinguished from others by having a very short VTA and a cone-shaped RTA. The epigynum is characterised by its transparent central hood with its opening directed towards the epigastric furrow, and two dark sclerotic rings (Levy 1973).

Habitat. The specimens were found in meadows and were collected using sweeping and beating nets.

Global distribution. Palaearctic, St. Helena, South Africa, Lesotho (WSC 2016).

Distribution in Iran. Khuzestan, Mazandaran, Tehran, Fars (new province record).

Genus *Synema* Simon, 1864

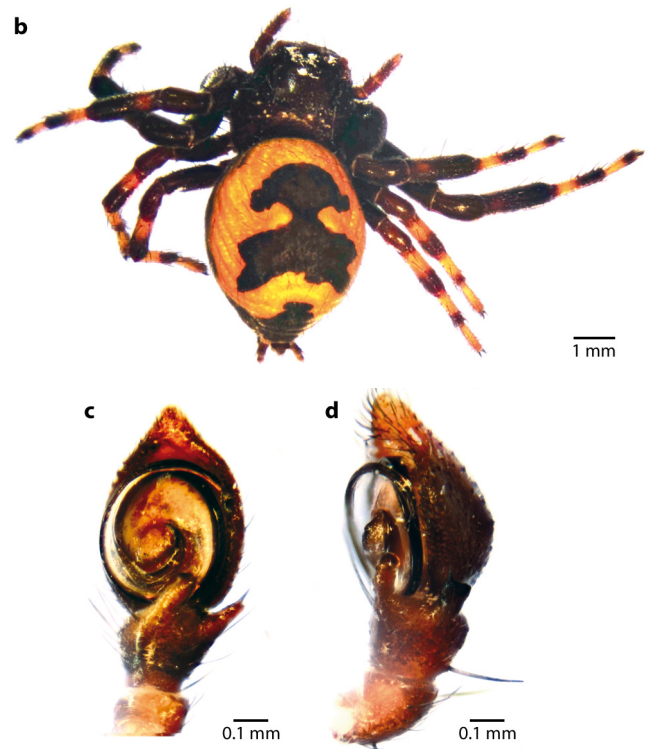
Synema anatolica Demir, Aktas & Topçu, 2009 (Fig. 5)

Determination. Demir et al. (2009).

Material examined. IRAN, Fars Province: 1♂ (#3388), Sepidan, Roodbal village (30°06'08.96"N, 52°01'54.80"E), 1884 m, 7.10.2015, maturation date, 3.4.2016 (N. Kiany); 4♂♂, 3 subadult ♀♀ (#3387), Kavar-Firoozabad Rd, Mook (29°9'41.60"N, 52°38'6.35"E), 1918 m, 3.5.2016; 1♂ (#3390), Arjan, Khanzenian Rd, Haft Barm, Balezar village (29°50'26.72"N, 52°1'23.63"E), 2189.5 m, 21.5.2016 (N. Kiany).



Fig. 5: *Synema anatolica*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view



This species can be distinguished from *S. plorator* (O. P.-Cambridge, 1872) by its unique embolic tip shape and its RTA structure. The epigynum is also different in the shape of the spermathecae, which are reniform (Demir et al. 2009). **Habitat.** The specimens were collected by hand from milk-vetch plants (*Astragalus* spp.) and spurges (*Euphorbia* spp.). **Global distribution.** Turkey (WSC 2016), Iran (new record). **Distribution in Iran.** Fars (new record, south-easternmost across its entire range).

Synema globosum (Fabricius, 1775) (Fig. 6)

Determination. Levy (1975), Ono (1988), Kim & Lee (2012).

Material examined. IRAN, Fars Province: 1♂ (#3399), Estahbaan, Abshar (29°6'27.83"N, 54°1'34.71"E), 1940.5 m, 17.5.2016 (N. Kiany).

This species can be distinguished from *S. plorator* by having a small palp, with its tibia distinctly longer than wide, its spiniform RTA and thinner embolic tip. The epigynum is characterised by the form of the spermathecae and their accompanying structures (Levy 1975).

Habitat. The single specimen was found using beating nets, while it hunted on spurges (*Euphorbia* sp.).

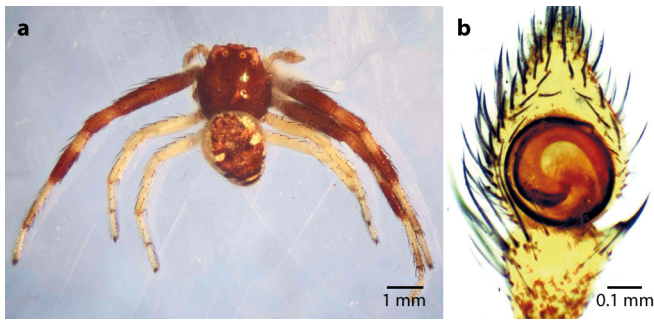


Fig. 6: *Synema globosum*: **a.** Habitus of male, dorsal view; **b.** Male palp, ventral view

Global distribution. Palaearctic (WSC 2016).

Distribution in Iran. Gilan, Golestan, Mazandaran, Zanjan, Fars (new province record).

Genus *Thomisus* Walckenaer, 1805

Thomisus onustus O. Pickard-Cambridge, 1885 (Fig. 7)

Determination. Roberts (1998), Almquist (2006), Kim & Lee (2012).

Material examined. IRAN, Fars Province: 2♂♂ (#3394), Beyza, Hoseinabad (29°58'08.37"N, 52°22'03.38"E), 1659.5 m, 11.8.2015 (N. Kiany); 2♂♂ (#3395), Beyza, Maloosjan, Industrial zone (29°52'11.23"N, 52°27'16.44"E), 1787 m, 12.4.2016 (N. Kiany); 1♀ (#3396), Eghlid-Marvdasht Rd, near Igder village (30°27'19.79"N, 52°17'17.03"E), 2168 m, 3.9.2016 (N. Kiany); 4♂♂ (#3391), Arjan, Khanzenian Rd, Haft Barm, Balezar village (29°50'26.72"N, 52°1'23.63"E), 2189.5 m, 21.5.2016 (N. Kiany); 1♀ (#3372), Kavar-Firoozabad Rd, Mook (29°9'41.60"N, 52°38'6.35"E), 1918 m, 3.5.2016 (N. Kiany); 1♀ (#3397), Shiraz, Ghalat, Shabshotori (29°49'3.97"N, 52°18'8.79"E), 2130 m, 12.8.2015 (N. Kiany); 1♀ (#3409), Shiraz, Chamran (29°41'4.62"N, 52°28'47.54"E), 1658 m, 13.4.2016 (M. Kiany); 1♀ (#3389), Shiraz, Derak (29°40'30.27"N, 52°26'34.73"E), 1722 m, 28.4.2016 (M. Kiany).

This species can be distinguished from *T. zyuzini* Marusik & Logunov, 1990 by its long VTA and RTA and the arrangement of the basal tibia tubercle on the male palp, and the circular shape of intromittent orifice which is directed anteriad in the epigynum (Marusik & Logunov 1990, 1995).

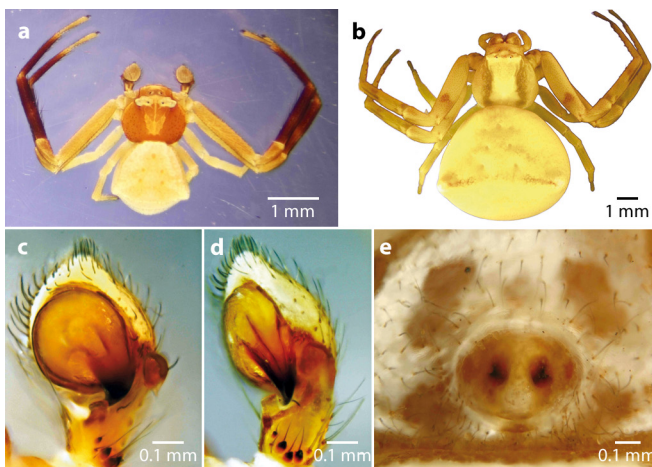


Fig. 7: *Thomisus onustus*: **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Habitat. The specimens were found on a variety of flowers and herbs, usually at their flowering peak. They were collected by hand and by using sweeping and beating nets.

Global distribution. Palaearctic (WSC 2016).

Distribution in Iran. Ardebil, Fars, Gilan, Golestan, Mazandaran, Razavi Khorasan, South Khorasan, Tehran, Zanjan.

Thomisus unidentatus Dippenaar-Schoeman & van Harten, 2007 (Fig. 8)

Determination. Dippenaar-Schoeman & van Harten (2007).

Material examined. IRAN, Fars Province: 4♂♂, 2♀♀ (#3374), Darab, Hasan abad Qanat (28°47'43.10"N, 54°18'02.92"E), 1085.5 m, 14.9.2015 (N. Kiany, M. Kiany); 3♂♂, (3377), Darab, Cheshme Golabi (28°47'15.14"N, 54°22'18.60"E), 1103 m, 14.9.2015 (N. Kiany, M. Kiany); 1♀ (#3371), Sepidan, Roodbal village (30°06'08.96", 52°01'54.80"E), 1884 m, 7.10.2015 (N. Kiany); 1♂ (#3370), Jahrom, simakaan-ghir Rd, Date gardens (28°28'45.68"N, 53°30'7.71"E), 1097 m, 8.10.2015, maturation date 3.4.2016 (N. Kiany); 3♂ (#3369), Ghir-Firoozabad Rd, Rikan village (28°34'48.54"N, 52°58'14.65"E), 1119 m, 5.5.2016 (N. Kiany); 8♂♂, 1♀ (#3378), Kazeroon, Bishapoor, Tang-e Chovgan (29°47'1.50"N, 51°35'10.37"E), 708.5 m, 20.4.2016 (N. Kiany); 2♂♂ (#3368), Lamerd-Lar Rd, Gardaneh Hesham, Chahshoor (27°26'25.22"N, 53°19'21.38"E), 908 m, 6.5.2016 (N. Kiany); 1♂, 1♀ (#3382), Lamerd, Velayat Blvd (27°20'35.58"N, 53°10'26.46"E), 416.5 m, 6.5.2016 (N. Kiany); 1♂ (#3379), Farashband-Firoozabad Rd., Khargheh (28°53'42.30"N, 52°22'39.48"E), 4.5.2016 (N. Kiany); 1♂ (#3380), Khonj, near Eshkaft-e Khan (27°44'45.42"N, 53°21'19.60"E), 560 m, 27.5.2016 (N. Kiany); 2♂♂ (#3384), Lar, Lar-Jahrom Rd (27°41'49.50"N, 54°20'15.80"E), 844 m, 6.5.2016 (N. Kiany); 2♂♂ (#3376), Shiraz, Poleghadir, 1528.5 m, 9.5.2016 (N. Kiany); 1♂ (#3383), Lamerd Rd, Alamarvdasht, near Aboohana village (27°42'31"N, 53°2'42"E), 482 m, 5.5.2016 (N. Kiany, M. Kiany); 7♂♂, 1♀ (#3373), Kazeroon, Qaemie Rd, Dehnovenghelab, Tangekaviri village (29°47'18.13"N, 51°34'33.44"E), 816 m, 21.4.2016 (N. Kiany); 1♂, 1♀ (#3413), Gerash-Evaz Rd, Nowrouz Park (27°45'26.46"N, 54°1'51.64"E), 1000 m, 5.6.2016 (N. Kiany).

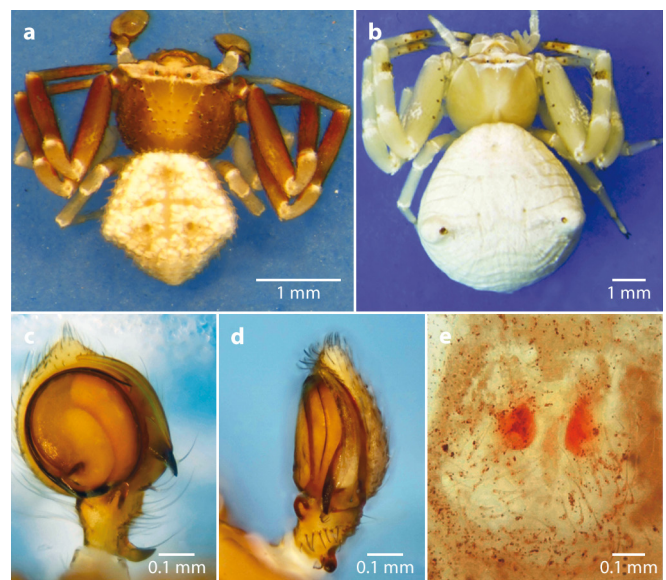


Fig. 8: *Thomisus unidentatus*: **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

This species closely resemble *T. citrinellus* Simon 1875, but can be distinguished by its single crescent-shaped RTA in the male palp and two crescent-shaped intromittent orifices in the epigynum.

Habitat. The specimens were found on a variety of flowers and flowering trees and were collected by hand and by using sweeping and beating nets.

Global distribution. Yemen (WSC 2016), Iran (new record). Distribution in Iran: Fars (new record, northernmost across its entire range).

***Thomisus zyuzini* Marusik & Logunov, 1990 (Fig. 9)**

Determination. Marusik & Logunov (1990, 1995), Demir et al. (2008).

Material examined. IRAN, Fars Province: 1♂ (#3363), Beyza, Hosein abad (29°58'08.37"N, 52°22'03.38"E), 1659.5 m, 11.8.2015 (N. Kiany); 1♂ (#3364), Shiraz, Chamran (29°41'4.62"N, 52°28'47.54"E), 1658 m, 13.4.2016 (M. Kiany); 2♂♂ (#3365), Lamerd-Lar Rd, Gardaneh Hesham, Chahshoor 27°26'25.22"N, 53°19'21.38"E), 908 m, 5.6.2016 (N. Kiany); 1♀, (3367), Izadkhast, near gas station, (31°31'29.63"N, 52°7'43.40"E), 3.9.2015 (M. Kiany); 2♂♂ (#3366), Shiraz, Kaftarak village, near Sardkhaneh (29°34'55.60"N 52°41'03.26"E), 1462 m, 25.3.2016 (N. Kiany); 4♂♂ (#3353), Darab, Hasan Abad Qanat (28°47'43.10"N, 54°18'02.92"E), 1085.5 m, 14.9.2015 (N. Kiany); 1♀ (#3354), Sepidan, Roodbal village (30°06'08.96", 52°01'54.80"E), 1884 m, 11.9.2015 (N. Kiany); 1♀ (#3355), Jahrom, simakaan-ghir Rd, Date gardens (28°28'45.68"N, 53°30'7.71"E), 1097 m, 8.10.2015 (M. Kiany); 1♂, 1♀ (#3356), Izadkhast, shahre makhroobeh, (31°30'38.23"N, 52°7'58.48"E), 2198 m, 3.9.2015 (N. Kiany); 1♂ (#3357) Farashband-Firoozabad Rd., Khargheh (28°53'42.30"N, 52°22'39.48"E), 4.5.2016 (N. Kiany); 2♂♂ (#3360), Khonj, near Eshkaft-e Khan (27°44'45.42"N, 53°21'19.60"E), 560 m, 27.5.2016 (N. Kiany); 2♂♂, 1♀ (#3385), Lamerd Rd, Alamarvdasht, near Aboohana village (27°42'31"N, 53°2'42"E), 482 m, 5.5.2016 (N. Kiany); 1♂ (#3359), Eghlid-Sedeh Rd, near Timarjan village (30°27'19.79"N, 52°17'17.03"E), 4.9.2015 (N. Kiany); 1♂ (#3351), Shiraz, near Adabiat (29°37'18.73"N, 52°33'43.85"E), 1534 m, 14.3.2016 (N. Kiany); 2♂♂, 1♀ (#3352), Safashahr, Ghasre Yaghub (30°30'34.50"N, 53°7'50.90"E), 2160 m, 24.8.2015 (N. Kiany, Z. Khazaei); 1♀ (#3358), Shiraz, Ghalat, Shabshotori (29°49'3.97"N, 52°18'8.79"E), 2130 m, 12.8.2015 (N. Kiany); 2♂♂, 1♀ (#3361), Neiriz, Dareye Palangan (29°6'23.61"N, 54°20'59.03"E), 1909 m, 17.5.2016 (N. Kiany); 1♀ (#3381), Kazeroon, Qaemie Rd, Dehnovenghelab, Tangekaviri village (29°47'18.13"N 51°34'33.44"E), 816 m, 21.4.2016 (N. Kiany); 1♂, 2♀♀ (#3393), Lar, Lar-Jahrom Rd (27°41'49.50"N, 54°20'15.80"E), 844 m, 6.5.2016 (N. Kiany); 10♂♂ (#3398), Estahbaan, Abshar (29°6'27.83"N, 54°1'34.71"), 1940.5 m, 17.5.2016 (N. Kiany); 1♂ (#3401), Lamerd, Velayat Blvd (27°20'35.58"N, 53°10'26.46"E), 416.5 m, 6.5.2016 (N. Kiany, M. Kiany).

This species can be distinguished from *T. onustus* by its short VTA and RTA and basal tibia tubercle arrangement on the male palp, and a circular-shaped intromittent orifice which is directed downwards in the epigynum (Marusik & Logunov 1990, 1995).

Habitat. Same as *T. onustus*, this species is quiet common on flowers and were collected by hand, and by using sweeping and beating nets.

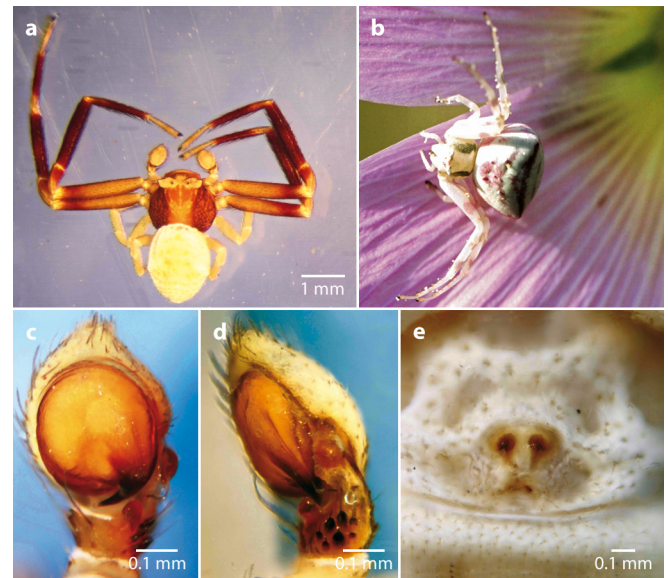


Fig. 9: *Thomisus zyuzini*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Global distribution. Turkey, Saudi Arabia to Central Asia, Iran.

Distribution in Iran. Alborz, Isfahan, Razavi Khorasan, Fars (new province record).

Genus *Xysticus* C. L. Koch, 1835

***Xysticus abramovi* Marusik & Logunov, 1995 (Fig. 10)**

Determination. Marusik & Logunov (1995), Demir et al. (2010).

Material examined. IRAN, Fars Province: 1♂ (#3343), Shiraz, Sadra, Ghasre Sabz (29°46'47.86"N 52°28'57.22"E),

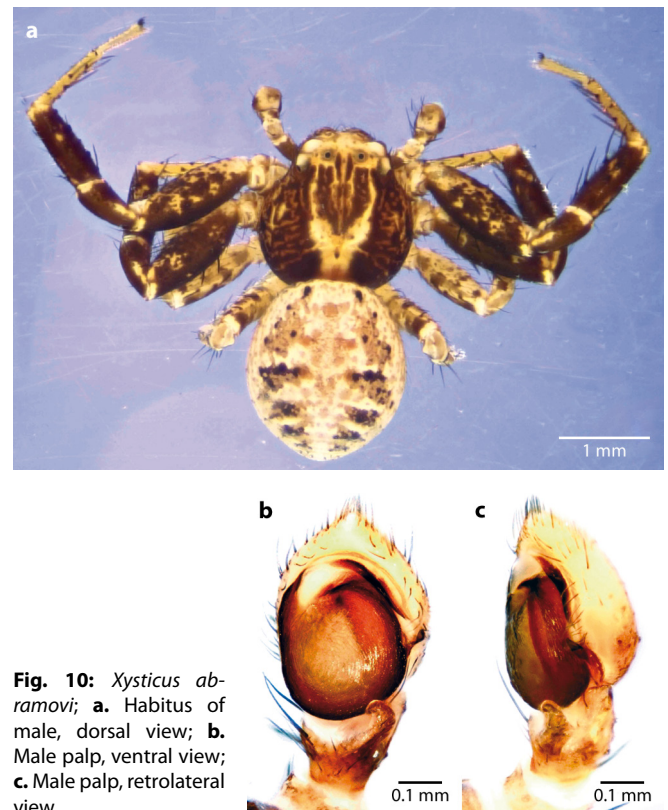


Fig. 10: *Xysticus abramovi*; **a.** Habitus of male, dorsal view; **b.** Male palp, ventral view; **c.** Male palp, retrolateral view

1782 m, 14.9.2015; 1♂ (#3344), Sepidan, Roodbal village (30°06'08.96", 52°01'54.80"E), 1884 m, 14.9. 2015; 1♂ (#3345), Shiraz, Kaftarak village, near Sardkhaneh (29°34'55.60"N, 52°41'03.26"E), 1462 m, 10.10. 2015. All collected by the first author.

This species can be distinguished from other *Xysticus* species by having the characteristic embolic tip which is situated at the backside of the tutaculum and distal part of the tegulum, which is not visible in ventral view, and by the form of the spermathecal structures of the female (Demir et al. 2010).

Habitat. The specimens were found on shrubs and on the ground and were collected by hand.

Global distribution. Tajikistan, Turkey (WSC 2016), Iran (new record).

Distribution in Iran. Fars (new record, southernmost locality across its entire range).

Comments. Identification of the male specimens was based on the figures provided by Demir et al. (2010). Because of minor differences of the specimens in comparison to the figures in the two mentioned references, it is possible that these populations could belong to different species.

Xysticus kaznakovi Utochkin, 1968 (Fig. 11)

Determination. Utochkin (1968), Marusik & Logunov (1990), Demir (2015).

Material examined. IRAN, Fars Province: 2♂♂ (#3341), Arjan protected area, Dasht-e Barm, Kotal-e Pirezan (29°32'33.35"N, 51°55'33.84"E), 1728 m, 28.4.2015; 1♂, 1♀ (#3342), Shiraz, Sadra, Ghasre Sabz (29°46'47.86"N, 52°28'57.22"E), 1782 m, 31.3.2016; 1♂ (#3340), Mamasani, Noorabad, Payam-e noor University (30° 5'12.85"N, 51°34'39.26"E), 1067 m, 20.4.2016. All collected by the first author.

This species can be distinguished from *X. bicolor* L. Koch, 1867 by its characteristic RTA and the shape of the embolic tip. Females also have characteristic furrowed and reniform spermathecae which separate them from *X. soderbomi* Schenkel, 1936 (see Demir 2015).

Habitat. The specimens were found on the ground and in meadows and were collected by hand.

Global distribution. Macedonia to Central Asia (WSC 2016).

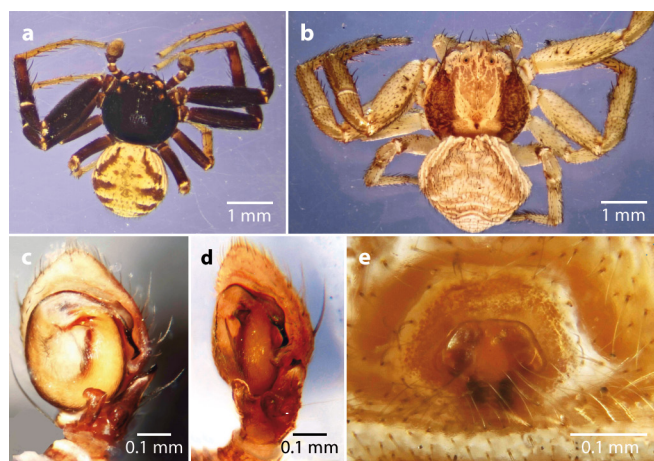


Fig. 11: *Xysticus kaznakovi*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Distribution in Iran. Razavi Khorasan, Fars (new province record, southernmost known locality across its entire range).

Xysticus loeffleri Roewer, 1955 (Fig. 12)

Determination. Charitonov (1969), Marusik & Logunov (1995).

Material examined. IRAN, Fars Province: 6♀♀ (#3405), Shiraz, Kaftarak village, near Sardkhaneh (29°34'55.60"N, 52°41'03.26"E), 1462 m, 25.3.2016 (N. Kiany, M. Kiany); 1♀ (#3351), Shiraz, near Adabiat (29°37'18.73"N, 52°33'43.85"E), 1534 m, 14.3.2016 (N. Kiany, M. Kiany); 2♀♀ (#3406), Kavar-Firoozabad Rd, Gardaneh Mook (29°9'41.60"N, 52°38'6.35"E), 1853 m, 23.3.2016 (M. Kiany); 1♀ (#3408), Kavar-Firoozabad Rd, Mook (29°9'41.60"N, 52°38'6.35"E), 1918 m, 3.5.2016 (N. Kiany); 1♀ (#3410), Shiraz, Kaftarak village, near Sardkhaneh (29°34'55.60"N, 52°41'03.26"E), 1462 m, 10.10.2015 (N. Kiany); 2♀♀ (#3412), Mamasani, Noorabad, Payamenoor University (30° 5'12.85"N, 51°34'39.26"E), 1067 m, 20.4.2016 (N. Kiany, Y. Bakhshi).

This species closely resemble *X. tristrami* (O. Pickard-Cambridge, 1872) and can be distinguished by a wider VTA and the shape of the epigynum (Marusik & Logunov 1990).

Habitat. Specimens were found under stones while guarding their eggs or under bushes, and were collected by hand.

Global distribution. Greece, Turkey, Iran, Central Asia.

Distribution in Iran. Gilan, Fars (new province record, southernmost known locality across its entire range).

Comments. In the absence of male specimens this identification should be considered provisional.

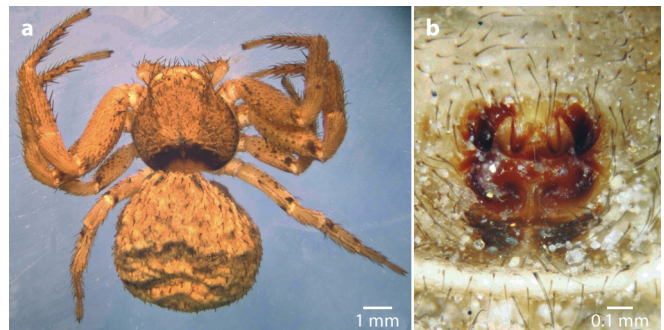


Fig. 12: *Xysticus loeffleri*; **a.** Habitus of female, dorsal view; **b.** Epigynum, ventral view

Xysticus striatipes L. Koch, 1870 (Fig. 13)

Determination. Utochkin (1968), Roberts (1998), Mcheidze (2014), Tabrizi et al. (2014).

Material examined. IRAN, Fars Province: 3♂♂, 3♂♂ immature (# 3337), Kohmaresorkhi (29°23'35.83"N, 52°09'40.23"E), 1280.5 m 16.9.2015; 2♂♂ (#3339), Sepidan, Roodbal village (30°06'08.96"N, 52°01'54.80"E), 1884 m, 7.10.2015; 1♀ (#3338), Beyza, Maloosjan gardens (29°51'27.35"N, 52°29'6.32"E), 1723 m, 18.9.2015. All collected by the first author.

This species can be distinguished by its claw-like RTA and embolus with a frizzy tip. The epigynal structure is very characteristic with its longitudinal cylinder.

Habitat. The specimens were found in habitats with no or low vegetation cover and were collected by hand, sweeping and beating nets.

Global distribution. Palaearctic.

Distribution in Iran. Mazandaran, Tehran, Fars (new province record).

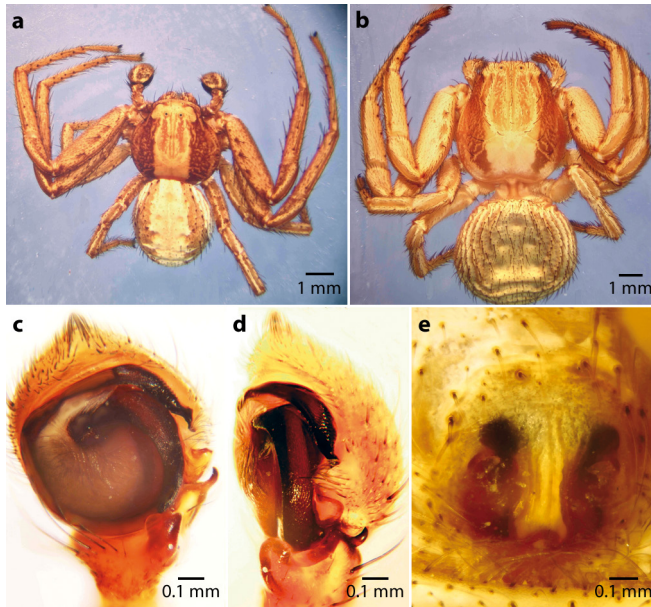


Fig. 13: *Xysticus striatipes*; **a.** Habitus of male, dorsal view; **b.** Habitus of female, dorsal view; **c.** Male palp, ventral view; **d.** Male palp, retrolateral view; **e.** Epigynum, ventral view

Xysticus tristrami (O. Pickard-Cambridge, 1872) (Fig. 14)

Determination. Levy (1976), Dippenaar-Schoeman (1989).

Material examined. IRAN, Fars Province: 1♂ (#3349), Kharameh Rd., Bamoo national park (29°37'57.05", 52°40'54.05"E), 5.4.2016 (M. Kiany); 1♂ (#3350), Shiraz, Sadra, Ghasre Sabz (29°46'47.86"N 52°28'57.22"E), 1782 m, 14.10.2015 (N. Kiany); maturation date: 23.4.2016, 1♂ (#3400), Farashband-

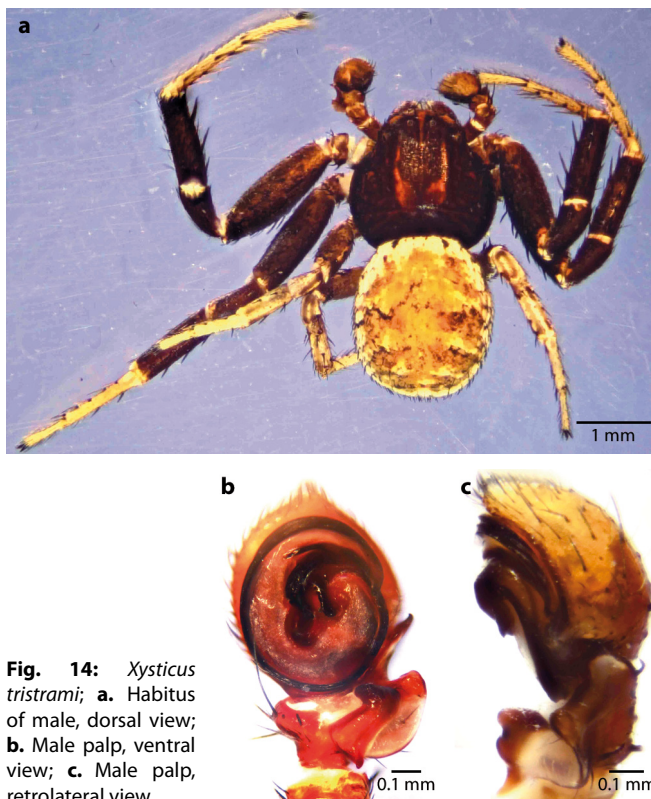


Fig. 14: *Xysticus tristrami*; **a.** Habitus of male, dorsal view; **b.** Male palp, ventral view; **c.** Male palp, retrolateral view

Firoozabad Rd., Khargheh (28°53'42.30"N, 52°22'39.48"E) 4.5.2016 (N. Kiany).

This species can be distinguished by its oval-shaped embolus and body setae which are blunt and thick. Females are often confused with *X. ferus* O. Pickard-Cambridge, 1876 and *X. rectilineus* (O. Pickard-Cambridge, 1872), but can be separated by different spermathecal structures (Levy 1976). Habitat: The specimens were found under stones and were collected by hand.

Global distribution. Crete, Turkey, Saudi Arabia to Central Asia.

Distribution in Iran. Fars.

Conclusions

Until recently, 51 species of Thomisidae have been recorded from Iran, but a higher number is still expected (about 60–65) (Zamani et al. 2016b). Only a few studies have been conducted exclusively on this family in Iran during the last decade. For example Mirshamsi et al. (2000) identified five thomisid species in four genera from the Khorasan region, Ono & Martens (2005) based on their expedition to Alborz Mountains in the northern and north-western Iran collected 18 species in nine genera, and Zamani et al. (2014) recorded seven species for Iran, mostly from northern and eastern parts of the country. During the present study, 14 thomisid species were collected with four new records for Iran, increasing the number of known Iranian thomisid species to 55. Because of the seasonal nature of the spider sampling, their camouflage in their natural habitats and our time constraints, it is assumed that further sampling could potentially lead to the discovery of more species in this province. Finding male specimens is practically very difficult outside their mating periods, whereas the biology of crab spiders in Iran has not been studied so far and their phenology is not well-known; partly due to different climatic variabilities within this country.

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