

New data on spider fauna from Golestan province, Iran (Arachnida, Araneae)

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Abstract

Spiders are poorly studied in Iran, based on the latest studies the spider fauna of Iran includes 394 species in 126 genera belonging to 36 families. Considering the climatic and geographical variation of Iran, it can be assumed that Iran has a rich spider fauna compared to the adjacent countries. The present study seeks to take a new step in the ongoing active research of Iranian spider fauna. Therefore, the spider fauna of Golestan Province were studied here. The main purpose of this study is to present new data on twenty-five new faunistic records for Golestan Province. According to previous studies 90 spider species were known in Golestan. This study was conducted during a period of two years. Samplings were performed using hand collecting and pitfall traps. As a result, twenty five species were identified as new records for Golestan Province, ten of which are new records for Iran including *Araneus marmoreus* Clerck, 1757, *Cyclosa sierra* Simon, 1870, *Gibbaranea* sp., *Singa semiatra* L. Koch, 1867, *Castianeira arnoldii* Charitonov, 1946, *Drassyllus praeficus* (L. Koch, 1866), *Drassodex* sp., *Alopecosa* cf. *albofasciata* (Brullé, 1832), *Metellina* cf. *mengei* (Blackwall, 1870), and *Parasteatoda lunata* (Clerck, 1757). Furthermore, the family Corinnidae and the genus *Castianeira*, were recorded for the first time from Iran.

Keywords: Araneae, Spider, New record, Fauna, Iran, Golestan

Introduction

The order Araneae comprises more than 44000 known species in 3800 genera and 111 families (1). According to Coddington & Levi (2) this order ranks seventh in global diversity after the five largest insect orders (Coleoptera, Hymenoptera, Lepidoptera, Diptera, Hemiptera) and Acari (Arachnida) in terms of the described species, but since the Acari has been considered as several distinct orders (3), the spiders occupy the sixth rank. The first spider collection in Iran was made by Keyserling and Bienert in 1859 and its material is stored in the Zoological Institute, St. Petersburg (ZISP), while the first published record of spiders from Iran was presented by Simon (1874) describing *Eusparassus doriae* from Tehran (4). The first checklist for Iranian spider fauna was published in 2001 and encompassed 144 species in 21 families (5). The Iranian spider checklist was

updated in 2006 and enhanced to 244 species in 33 families (6). Moreover, several papers were published on Iranian spiders and according to the available literature, the Iranian spider fauna includes 394 species in 126 genera and 36 families (4, 7-22), in which the Golestan spider fauna consisting 90 species in 63 genera and 21 families. In this study, the spider fauna of Golestan Province was studied. The study area is geographically limited to the north of Iran between the borders of Turkmenistan in the north and the Caspian Sea in the northwest. Previous researches on spiders of Golestan Province were conducted mainly by Ghavami (10, 11) and Ghavami et al. (12, 13). The main objective of this study is to provide new data on twenty-five new faunistic records for Golestan Province.

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Materials and methods

The materials used for this study was collected over a two-year period (2010-2011) at 30 localities in Golestan Province (Fig. 1, Table 1). Fieldworks were performed during daytime. The geographic distribution of each species in the study area is shown in Figures 2-6. Specimens were collected by hand collecting method and pitfall traps and were fixed in 96% alcohol, labeled, and transferred to

the laboratory for further studies. Species identifications were made following identification keys and other relevant papers such as Marusik (23), Marusik and Mikhailov (24), Levy (25). The specimens were photographed using an OLYMPUS DP-71 digital camera connected to OLYMPUS SZH-10 stereomicroscope. The specimens were housed in the Zoology Museum, Ferdowsi University of Mashhad, Iran (ZMFUM).

Table 1. List of geographic localities in the study area*

Map code*	Locality	Longitude	Latitude
1	Agh Ghala	E 54° 28' 9.2"	N 37° 4' 25.8"
2	Amir Abad	E 54° 25' 36.24"	N 36° 52' 44.58"
3	Anjugland	E 54° 35' 34.32"	N 36° 51' 31.38"
4	Basir Abad	E 54° 7' 24.1"	N 36° 59' 45"
5	Bala Jadeh	E 54° 9' 37.3"	N 36° 46' 39.5"
6	Bandar Gaz	E 53° 57' 1.04"	N 36° 45' 59.76"
7	Galoogah	E 53° 52' 14.7"	N 36° 44' 24.6"
8	Ghorogh	E 54° 35' 34.08"	N 36° 52' 32.7"
9	Gomish Tappeh	E 54° 4' 52.2"	N 36° 56' 48.2"
10	Gorgan	E 54° 26' 12"	N 36° 50' 17.52"
11	Heydar Abad	E 54° 17' 22.2"	N 36° 50' 6.8"
12	Jelin	E 54° 31' 47.34"	N 36° 50' 57.84"
13	Kafshgiri	E 54° 17' 19.5"	N 36° 47' 30.9"
14	Karim Abad	E 54° 24' 21"	N 36° 53' 21"
15	Marzan Kalateh	E 54° 35' 54.18"	N 36° 57' 45.84"
16	Mian Dareh	E 54° 17' 19.1"	N 36° 50' 27.6"
17	Nahar Khoran	E 54° 34' 11.64"	N 36° 46' 6.96"
18	Nochaman	E 54° 18' 40.4"	N 36° 46' 18.6"
19	Nokandeh	E 53° 54' 6.84"	N 36° 42' 51.48"
20	Road side (50km to Gorgan)	E 54° 0' 27.72"	N 37° 6' 44.28"
21	Road side (32km to Gorgan)	E 54° 28' 45.12"	N 36° 47' 24.36"
22	Sali Kandeheh	E 54° 4' 35.6"	N 36° 46' 33.5"
23	Seyed Miran	E 54° 16' 24"	N 36° 46' 16.8"
24	Shamooshak (Jungle)	E 54° 16' 29.5"	N 36° 45' 8.8"
25	Shamooshak Bala	E 54° 16' 23.88"	N 36° 46' 8.76"
26	Simin Shahr	E 54° 11' 39.84"	N 36° 46' 8.76"
27	Ulmagol Lake	E 54° 22' 58.8"	N 37° 21' 5.2"
28	Varsan	E 54° 19' 38.64"	N 36° 51' 5.76"
29	Vatna	E 53° 58' 21.72"	N 36° 44' 3.84"
30	Yesaghi	E 54° 14' 21.84"	N 36° 50' 12.84"

*Map codes correspond to the numbers presented in Figure 1.

Results

A total of 1012 specimens were collected, in which 49 species in 42 genera and 21 families were identified (Table 2). Dorsal and ventral habitus of each species is presented in Figures 7-12.

List of species

Family Agelenidae C. L. Koch, 1837

Agelena labyrinthica (Clerck, 1757)

Material examined

4♀, 1juvenile, Karim Abad, 2.IX.2010 (FZMUM-AR-1121, 1219); 2♀, Marzan Kalateh, 13.IX.2010

(FZMUM-AR-1122, 1124); 20♀, 2juvenile, Anjugland, 18.IX.2010 (FZMUM-AR-1123, 1218).

Distribution

Palaeartic. IRAN: Ardebil, Gilan, Golestan, Mazandaran.

Family Araneidae Clerck, 1757

***Agalenatea redii* (Scopoli, 1763)**

Material examined

1♀, Nokandeh, 7.IX.2011 (FZMUM-AR-1055); 1♀, Vatna, 7.IX.2011 (FZMUM-AR-1056); 1♀, Nochaman, 11.V.2011 (FZMUM-AR-1057); 2♀, Agh Ghala, 5.V.2011 (FZMUM-AR-1058); 1♀, Shamooshak e bala forest, 11.V.2011 (FZMUM-AR-1059).

Distribution

West Palaeartic to east Kazakhstan. IRAN: Golestan, Mazandaran.

***Araneus angulatus* Clerck, 1757**

Material examined

8♀, 2♂subadult, 4♀subadult, Gorgan, 19.VII.2011 (FZMUM-AR-1033, 1035, 1038); 1♀, Seyed Miran, 16.IX.2011 (FZMUM-AR-1032); 1♀, Nochaman, 11.V.2011 (FZMUM-AR-1036); 1♀, Nahar Khoran, 18.IX.2011 (FZMUM-AR-1037).

Distribution

West Palaeartic (first record for Golestan). IRAN: Esfahan, Gilan, Mazandaran, Semnan.

***Araneus marmoreus* Clerck, 1757**

Material examined

30♀, 4♀subadult, 1juvenile, Amir Abad, 25.VIII.2010 (FZMUM-AR-1077, 1023, 1021, 1027); 6♀, Jelin, 7.IX.2010 (FZMUM-AR-1015, 1022); 37♀, Karim Abad, 2.IX.2010 (FZMUM-AR-1016, 1019, 1024); 5♀, Bala Jadeh, 6.V.2011 (FZMUM-AR-1017); 30♀, 7♂subadult, Mian dareh, 6.V.2011 (FZMUM-AR-1018); 3♀, Seyed Miran, 16.IX.2010 (FZMUM-AR-1020); 6♀, Anjugland, 18.IX.2010 (FZMUM-AR-1025); 10♀, Marzan Kalateh, 18.IX.2010 (FZMUM-AR-1026).

Distribution

Holarctic (first record for Iran).

***Araniella cucurbitina* (Clerck, 1757)**

Material examined

1♀, Gorgan, 10.V.2011 (FZMUM-AR-1039); 1♀, Shamooshak e Bala, 11.V.2011 (FZMUM-AR-1030); 1♀, Nochaman, 11.V.2011 (FZMUM-AR-1028); 4♀, Heydar Abad, 8.V.2011 (FZMUM-AR-1029, 1179).

Distribution

West Palaeartic. IRAN: Gilan, Golestan, Mazandaran.

***Argiope bruennichi* (Scopoli, 1772)**

Material examined

1♂, 3♀subadult, 1juvenile, Karim Abad, 5.VI.2010 (FZMUM-AR-1166, 1012, 1120); 7♀, Amir Abad, 25.VIII.2010 (FZMUM-AR-1003, 1004, 1007); 19♀, Karim Abad, 14.IX.2010 (FZMUM-AR-1006); 12♀, 1juvenile, Marzan Kalateh, 13.IX.2011 (FZMUM-AR-1001, 1009, 1013); 6♀, Jelin, 9.IX.2010 (FZMUM-AR-1002); 4♀, Seyed Miran, 16.IX.2010 (FZMUM-AR-1005); 11♀, 1♀subadult, Anjugland, 18.IX.2010 (FZMUM-AR-1008); 1♀, Jelin, 7.IX.2010 (FZMUM-AR-1014).

Distribution

Palaeartic. IRAN: Chaharmahal and Bakhtiyari, Fars, Gilan, Golestan, Khorasan Razavi, Mazandaran, Qazvin, Zanjan.

***Argiope lobata* (Pallas, 1772)**

Material examined

1♀, Ulmagol Lake, 5.V.2011 (FZMUM-Ar-1010); 1♀, Karim Abad, 14.IX.2011 (FZMUM-Ar-1011).

Distribution

Old World. IRAN: Ardebil, Fars, Golestan, Kerman, Khorasan Razavi, Khorasan Razavi, Mazandaran, South Khorasan, Tehran, Zanjan.

***Cyclosa sierrae* Simon, 1870**

Material examined

7♀, Nokandeh, 6.V.2011 (FZMUM-Ar-1198).

Distribution

Europe to Iran (first record for Iran).

***Gibbaranea* sp.**

Material examined

1♀, Nokandeh, 6.V.2011 (FZMUM-Ar-1225).

Distribution

This genus is widely distributed in Palaeartic,

Iran. (first record for Iran). Epigyne of our specimen is similar to *G. gibbosa* (Walckenaer, 1802) from Azerbaijan, but, the characteristics of the opisthosoma did not correspond to *G. gibbosa*. In this case, a precise taxonomic decision on the specific status of this species prior to study of more adult male and female specimens is impossible.

***Larinioides cf. cornutus* (Clerck, 1757)**

Material examined

1♀, Karim Abad, 14.IX.2011 (FZMUM-Ar-1031).

Distribution

Holarctic. IRAN: Fars, Golestan, Kerman, Khorram-Abad, Mazandaran, West Azerbaijan.

***Mangora acalypha* (Walckenaer, 1802)**

Material examined

10♀, 2juvenile, Gorgan, 10.V.2011 (FZMUM-Ar-1070, 1072, 1075); 5♀, Bandar Gaz, 17.V.2010 (FZMUM-AR-1066, 1119); 4♀, 1♀subadult, Shamooshak e Bala, 11.V.2011 (FZMUM-AR-1137, 1064); 14♀, 5juvenile, Nokandeh, 6.V.2011 (FZMUM-AR-1061); 16♀, 8juvenile, Nochaman, 11.V.2011 (FZMUM-AR-1062, 1118); 11♀, 10juvenile, Shamooshak e bala (Jungle), 11.V.2011 (FZMUM-AR-1063); 4♀, 3juvenile, Salikandeh, 6.V.2011 (FZMUM-AR-1065); 6juvenile, Vatna, 6.V.2011 (FZMUM-AR-1067); 1♀, Heydar Abad, 8.V.2011 (FZMUM-AR-1068); 6juvenile, Yesaghi, 6.V.2011 (FZMUM-AR-1069); 12♀, Kafshgiri, 11.V.2011 (FZMUM-AR-1071); 1juvenile, Bala Jadeh, 6.V.2011 (FZMUM-AR-1103).

Distribution

West Palaearctic. IRAN: Fars, Gilan, Golestan, Mazandaran, Qazvin, Semnan, Tehran.

***Neoscona adianta* (Walckenaer, 1802)**

Material examined

10♀, 9♀subadult, Marzan Kalateh, 12.IX.2010 (FZMUM-AR-1114, 1040, 1041); 1juvenile, Salikandeh, 7.IX.2011 (FZMUM-AR-1073); 2♀, Bala Jadeh, 6.V.2011 (FZMUM-AR-1104); 2♀, 2♂, 1juvenile, Shamooshak e Bala, 6.V.2011 (FZMUM-AR-1115, 1168); 1♂subadult, 4juvenile, Nochaman, 11.V.2011 (FZMUM-AR-1116); 1♀, 2♂subadult, 1juvenile, Anjugland, 18.IX.2010 (FZMUM-AR-1047); 3♀, 1♀subadult, Seyed Miran, 16.IX.2010 (FZMUM-AR-1043);

2♀, Yesaghi, 6.V.2011 (FZMUM-AR-1042); 1♀, Gomish Tappeh, 5.V.2011 (FZMUM-AR-1044); 1♂subadult, Vatna, 6.V.2011 (FZMUM-AR-1045); 1juvenile, Heydar Abad, 8.V.2011 (FZMUM-AR-1046). 1♀, 1♂, 1juvenile, Galoogah, 11.V.2011 (FZMUM-AR-1048, 1117). 1♀, Shamooshak e bala (Jungle), 6.V.2011, leg. R. Kashefi, (FZMUM-AR-1169).

Distribution

Palaearctic. IRAN: Ardebil, Esfahan, Gilan, Golestan, Kordestan, Mazandaran, Qazvin.

***Neoscona subfusca* (C. L. Koch, 1837)**

Material examined

1♀, 3♂ subadult, 2♀subadult, 5juvenile, Heydar Abad, 8.V.2011 (FZMUM-AR-1049); 1♀, Marzan Kalateh, 18.IX.2011 (FZMUM-AR-1050); 2♀, Karim Abad, 2.IX.2010 (FZMUM-AR-1051, 1052); 2♀, Anjugland, 18.IX.2010 (FZMUM-AR-1053); 1♀, Amir Abad, 25.VIII.2010 (FZMUM-AR-1054).

Distribution

West Palaearctic. IRAN: Kerman, Mazandaran (first record for Golestan).

***Singa semiatra* L. Koch, 1867**

Material examined

1♀, ca. 50 km NW of Gorgan, 6.V.2011 (FZMUM-AR-1060); 1♀, Agh Ghala, 5.V.2011 (FZMUM-AR-1076).

Distribution

Mediterranean, Iran (first record for Iran).

Family Clubionidae Wagner, 1887

***Clubiona neglecta* O. P.-Cambridge, 1862**

Material examined

1♀, Karim Abad, 5.VII.2010 (FZMUM-AR-1167).

Distribution

Palaearctic. IRAN: Ardebil, Golestan, Kordestan.

Family Corinnidae Karsch, 1880

***Castianeira arnoldii* Charitonov, 1946**

Material examined

2♀subadult, Varsan, 8.V.2011 (FZMUM-AR-1079). 1♀subadult, Sali Kandeh, 6.V.2011 (FZMUM-AR-1125)

Distribution

Turkmenistan, Uzbekistan, Iran (first record for Iran). This is the first record of the family Corinnidae and the genus *Castianeira* from Iran.

Family Gnaphosidae Pocock, 1898***Drassyllus praeficus* (L. Koch, 1866)****Material examined**

1♀, Shamooshak e bala, 11.V.2011 (FZMUM-AR-1140); 3♀, Nochaman, 11.V.2011 (FZMUM-AR-1142); 12♀, Varsan, 8.V.2011 (FZMUM-AR-1141, 1177).

Distribution

Europe, Central Asia, Iran (first record for Iran).

Drassodex* sp.*Material examined**

1♀, Gorgan, 12.VII.2011 (FZMUM-AR-1173).

Distribution

This genus is distributed in Europe and Turkmenistan and reported for the first time from Iran. According to examination of a single female it is likely to be an undescribed species. Final taxonomic decision is impossible without male specimens.

Nomisia ripariensis* (O. P.-Cambridge, 1872)*Material examined**

1♀, Simin Shahr, 6.V.2011 (FZMUM-AR-1160).

Distribution: Eastern Europe to Iran. IRAN: Kerman, Mazandaran. (first record for Golestan).

Zelotes longipes* (L. Koch, 1866)*Material examined**

1♀, Gomish Tappeh, 5.V.2011 (FZMUM-AR-1220).

Distribution

Palaeartic (first record for Golestan). IRAN: Esfahan, Gilan, Mazandaran.

Family Linyphiidae Blackwall, 1859***Frontinellina frutetorum* (C. L. Koch, 1834)****Material examined**

1♀, Varsan, 8.V.2011 (FZMUM-AR-1203); 8♀, Bala Jadeh, 6.V.2011 (FZMUM-AR-1204); 5♀, 1♂, Baseer Abad, 5.V.2011 (FZMUM-AR-1205); 1♀, Heydar Abad, 8.V.2011 (FZMUM-AR-1206); 16♀, 3♂, 1juvenile, Gorgan, 10.V.2011 (FZMUM-AR-1207, 1209); 16♀, 1♀subadult, Gorgan,

31.VIII.2011 (FZMUM-AR-1208); 2♀, Yesaghi, 6.V.2011 (FZMUM-AR-1210); 4♀, Vatna, 6.V.2011 (FZMUM-AR-1211); 4♀, Nokandeh, 6.V.2011 (FZMUM-AR-1212); 8♀, Shamooshak e Bala, 11.V.2011 (FZMUM-AR-1213); 1♀subadult, Karim Abad, 14.IX.2010 (FZMUM-AR-1214); 4♀, 1♂, Kafshgeeri, 11.V.2011 (FZMUM-AR-1215).

Distribution

West Palaeartic. IRAN: Gilan, Golestan, Ilam, Mazandaran, North Khorasan, Qazvin, Tehran, Zanjan.

Family Lycosidae Sundevall, 1833***Alopecosa* cf. *albofasciata* (Brullé, 1832)****Material examined**

1♀, Agh Ghala, 5.V.2011 (FZMUM-AR-1217). 2♀, 1♂, Yesaghi, 6.V.2011 (FZMUM-AR-1221).

Distribution

Mediterranean to Central Asia, Iran (first record for Iran).

Arctosa tbilisiensis* Mcheidze, 1946*Material examined**

1♂ subadult, 15juvenile, Karim Abad, 2.IX.2010 (FZMUM-AR-1113, 1097); 5♂, 1juvenile, Agh Ghala, 5.V.2011 (FZMUM-AR-1098); 1♀subadult, Basir Abad, 5.V.2011 (FZMUM-AR-1096); 2♂, 4juvenile, Nochaman, 11.V.2011 (FZMUM-AR-1100, 1101); 1juvenile, Kafshgiri, 11.V.2011 (FZMUM-AR-1094); 1♀, 1♂, 2♀subadult, 1juvenile, Varsan, 8.V.2011 (FZMUM-AR-1099). 1♂, Karim Abad, 2.IX.2010 (FZMUM-AR-1095).

Distribution

Eastern Mediterranean, Central Asia, Iran. IRAN: Ilam (first record for Golestan).

Pardosa* sp.*Material examined**

4♀, 1♂, 1juvenile, Karim Abad, 2.IX.2010 (FZMUM-AR-1190); 3♀, 1♂, 3juvenile, Karim Abad, 5.VII.2010 (FZMUM-AR-1191); 4♀, 1♀subadult, 3juvenile, Karim Abad, 14.IX.2010 (FZMUM-AR-1192); 4♀, Anjugland, 18.IX.2010 (FZMUM-AR-1216); 22♂, 65♀, 1juvenile, Agh Ghala, 5.V.2011 (FZMUM-AR-1181, 1182, 1183, 1185); 1♀, Ghorogh Jungle, 17.IX.2010 (FZMUM-AR-1184); 1♀, Salikandeh, 6.V.2011

(FZMUM-AR-1186); 2♀, 1♂, Jelin, 7.IX.2011 (FZMUM-AR-1188); 10♀, Kafshgiri, 11.V.2011 (FZMUM-AR-1189,1197); 24♀, Varsan, 8.V.2011 (FZMUM-AR-1194). 10♀, Shamooshak e Bala, 6.V.2011 (FZMUM-AR-1196).

Comment: This species belongs to *Pardosa monticola*-species group, but, species determination requires further examinations.

***Pardosa pontica* (Thorell, 1875)**

Material examined

4♂, Karim Abad, 5.VII.2010 (FZMUM-AR-1244, 1245).

Distribution

East Mediterranean, Caucasus to Turkmenistan, Iran. IRAN: Golestan, Tehran.

***Pirata piraticus* (Clerck, 1757)**

Material examined

18♀, 1♂subadult, 1juvenile, Karim Abad, 5.VII.2010 (FZMUM-AR-1180).

Distribution

Holarctic. IRAN: Azerbaijan, Esfahan, Gilan, Golestan, Mazandaran.

***Trochosa* sp.**

Material examined

1♀, Karim Abad, 5.VII.2010 (FZMUM-AR-1245).

Distribution

This genus has wide global *distribution* and known in Iran by eight species namely, *T. austrocaspia* (Roewer, 1955), *T. flavichelis* Roewer, 1955, *T. nava* (Roewer, 1955), *T. persica* (Roewer, 1955), *T. urbana* (O.P.-Cambridge, 1876), *T. impercussa* Roewer, 1955, *T. loeffleri* (Roewer, 1955), *T. robusta* (Simon, 1876), *T. ruricola* (De Geer, 1778) and *T. terricola* (Torell, 1856). Species determination of Golestan Province records requires detailed morphological examinations. IRAN: this genus has been recorded from Esfahan, Fars, Kerman, Lorestan, Mazandaran, and Semnan (first record for Golestan)

Family Miturgidae Simon, 1886

***Chieracantium erraticum* (Walckenaer, 1802)**

Material examined

1♀, Varsan, 8.V.2011 (FZMUM-AR-1102).

Distribution

Palearctic. IRAN: Ardebil, Golestan, Mazandaran, Tehran.

Family Nemesiidae Simon, 1889

***Raveniola niedermeyeri* (Brignoli, 1972)**

Material examined

1juvenile, Gorgan, 12.V.2011 (FZMUM-AR-1222).

Distribution

This species is endemic to Iran (Zonstein & Marusik, 2010). IRAN: Esfahan, Golestan, Khorasan Razavi, Mazandaran, Tehran. The specimen was identified following Zonstein & Marusik (2010).

Family Oxyopidae Thorell, 1870

***Oxyopes lineatus* Latreille, 1806**

Material examined

1♀, Karim Abad, 5.VII.2010 (FZMUM-AR-1146); 1♀, Anjugland, 18.IX.2010 (FZMUM-AR-1144); 1♂, Agh Ghala, 5.V.2011 (FZMUM-AR-1143); 1♂, Road Side, ca. 50 km NW of Gorgan, 6.V.2011 (FZMUM-AR-1145).

Distribution

Western parts of Palearctic. IRAN: Azerbaijan, Golestan, Tehran.

Family Philodromidae Thorell, 1870

***Thanatus* cf. *vulgaris* Simon, 1870**

Material examined

1juvenile, ca. 32 km to Northwest of Gorgan, 5.V.2011 (FZMUM-AR-1152); 1♀, 2♂subadult, 2♀subadult, Varsan, 8.V.2011 (FZMUM-AR-1153).

Distribution

Holarctic. IRAN: Tehran (first record for Golestan)

***Tibellus oblongus* (Walckenaer, 1802)**

Material examined

1juvenile, Anjugland, 18.IX.2010 (FZMUM-AR-1139); 1♀, 1♂, 3♀subadult, 7♂subadult, Karim Abad, 5.VII.2010 (FZMUM-AR-1138).

Distribution

Holarctic. IRAN: Ardebil, Gilan, Golestan, Mazandaran, Semnan, Tehran.

Family Pholcidae C. L. Koch, 1850***Pholcus phalangioides* (Fuesslin, 1775)****Material examined**

5♀, 7juvenile, Gorgan, 31.VI.2010 (FZMUM-AR-1107, 1108).

Distribution

Cosmopolitan. IRAN: Gilan, Golestan.

Family Pisauridae Simon, 1890***Pisaura* sp.****Material examined**

2juvenile, Anjugland, 18.IX.2010 (FZMUM-AR-1158, 1176); 1juvenile, Agh Ghala, 5.V.2011 (FZMUM-AR-1159).

Distribution

This genus has wide *distribution* in Palaearctic. This family is known in Iran with one species, *Pisaura mirabilis* (Clerck, 1757), which has been recorded from Gilan, Ardebil, Semnan, Mazandaran and Fars. This record represents a new family and genus for Golestan Province.

Family Salticidae Blackwall, 1841***Aelurillus* sp.****Material examined**

1♀, Golestan Province, Gomish Tappeh, 5.V.2011, leg. R. Kashefi (FZMUM-AR-1136); 1♂, Golestan Province, Yesaghi, 6.V.2011, leg. R. Kashefi (FZMUM-AR-1156). 1♂subadult, Golestan Province, Nochaman, 11.V.2011, leg. R. Kashefi (FZMUM-AR-1157).

Distribution

Palaearctic. This genus is known in Iran by four species namely, *A. concolor* Kulezynski, 1901, *Aelurillus iranus* (Roewer, 1955), *A. marusiki* Azarkina, 2002 and *A. unitabilis* Azarkina, 2002. Species determination of Golestan records needs detailed morphological examinations. IRAN: Kerman, Khorasan Razavi, Shiraz, Tehran (first record for Golestan).

Cyrba algerina* (Lucas, 1846)*Material examined**

3juvenile, Gorgan, 12.IX.2011 (FZMUM-AR-1161).

Distribution

Central Asia, Iran. IRAN: Fars, Golestan, Kermanshah and Tehran.

Cyrba ocellata* (Kroneberg, 1876)*Material examined**

1♀, Gorgan, 15.VI.2011 (FZMUM-AR-1162).

Distribution

Somalia, Sudan to China, Central Asia, Australia, Iran. IRAN: Mazandaran, Tehran (first record for Golestan).

Phlegra fasciata* (Hahn, 1826)*Material examined**

1♀, Agh Ghala, 5.V.2011 (FZMUM-AR-1154).

Distribution

Palaearctic. IRAN: Mazandaran (first record for Golestan).

Plexippus paykulli* (Audouin, 1826)*Material examined**

1♀, Amir Abad, 5.IX.2010 (FZMUM-AR-1081); 2♂subadult, Karim Abad, 2.IX.2010 (FZMUM-AR-1080, 1172); 1♀, Jelin, 9.IX.2010 (FZMUM-AR-1082); 1♀, 1♂subadult, 2juvenile, Karim Abad, 14.IX.2010 (FZMUM-AR-1083, 1171); 1♀, Agh Ghala, 5.V.2011 (FZMUM-AR-1084); 1♀, Shamooshak e Bala, 11.V.2011 (FZMUM-AR-1085); 2♀, 1♀subadult, 3♂, 2juvenile, Gorgan, 31.VI.2010 (FZMUM-AR-1086); 5♀, 2♂, 1juvenile, Gorgan, 22.V.2011 (FZMUM-AR-1087); 1♀, 1♂, Gorgan, 10.V.2011 (FZMUM-AR-1088); 2♂subadult, Varsan, 8.V.2011 (FZMUM-AR-1089).

Distribution

Cosmopolitan. IRAN: Esfahan, Golestan, Khoozestan, Mazandaran.

Thyene imperialis* (Rossi, 1846)*Material examined**

1♀subadult, Karim Abad, 2.IX.2010 (FZMUM-AR-1078).

Distribution

Old World. IRAN: Ardebil, Fars, Gilan, Golestan, Khoozestan, Markazi, Mazandaran, Tehran, Zanjan.

Family Scytodidae Blackwall, 1864***Scytodes thoracica* (Latreille, 1802)****Material examined**

1♂, 1♀ subadult, 2juvenile, Gorgan, 12.VIII.2011 (FZMUM-AR-1106).

Distribution

Holarctic. IRAN: Gilan, Golestan, Khorasan Razavi, Mazandaran, Zanjan.

Family Sicariidae Keyserling, 1880***Loxosceles* sp.****Material examined**

1juvenile, Gorgan, 5.VI.2011 (FZMUM-AR-1105).

Comment: This family and genus has been recorded only from Tehran. This is first record of the family and genus in Golestan.

Family Tetragnathidae Menge, 1866

Metellina* cf. *mengeri* (Blackwall, 1870)*Material examined**

1♀, Salikandeh, 6.V.2011 (FZMUM-AR-1223).

Distribution

Europe to Georgia, Iran (first record for Iran).

Tetragnatha* *extensa* (Linnaeus, 1758)*Material examined**

50♀, 1♂, 13♀subadult, 4♂subadult, 22juvenile, Anjugland, 18.IX.2010 (FZMUM-AR-1090, 1092, 1163); 3juvenile, Karim Abad, 5.VII.2010 (FZMUM-AR-1091); 3♀subadult, Seyed Miran, 16.IX.2010 (FZMUM-AR-1093).

Distribution

Holarctic. IRAN: Gilan, Golestan, Mazandaran, Qazvin, West Azerbaijan.

Family Theridiidae Sundevall, 1833***Parasteatoda* *lunata* (Clerck, 1757)****Material examined**

2♀, Shamooshak e Bala, 11.V.2011 (FZMUM-AR-1201); 27♀, Nokandeh, 6.V.2011 (FZMUM-AR-1200).

Distribution

Palearctic (first record for Iran).

Steatoda* *paykulliana* (Walckenaer, 1805)*Material examined**

1♀, Karim Abad, 14.IX.2010 (FZMUM-AR-1149); 1♀subadult, Jelin, 15.IX.2010 (FZMUM-AR-1151); 1♂, 1♀, Gorgan, 16.IX.2011 (FZMUM-AR-1148).

Distribution

Mediterranean to Central Asia, Iran. IRAN: Ardebil, Fars, Golestan, Ilam, Khorasan Razavi,

Mazandaran, Semnan and Tehran.

Steatoda* *triangulosa* (Walckenaer, 1802)*Material examined**

1♀, Karim Abad, 5.VII.2010 (FZMUM-AR-1147); 1♀, Gorgan, 31.VI.2010 (FZMUM-AR-1150).

Distribution

Cosmopolitan. IRAN: Esfahan (first record for Golestan).

Family Thomisidae Sundevall, 1833***Xysticus* *kochi* Thorell, 1872****Material examined**

1♀, Yesaghi, 6.V.2011 (FZMUM-AR-1111).

Distribution

Europe, Mediterranean to Central Asia, Iran. IRAN: Azerbaijan, Gilan, Golestan, Khorasan Razavi, Mazandaran and Tehran.

Family Titanocidae Lehtinen, 1967***Nurscia* *albomaculata* (Lucas, 1846)****Material examined**

1♀juvenile, Agh Ghala, 5.V.2011 (FZMUM-AR-1127); 3♂juvenile, Kafshgiri, 11.V.2011 (FZMUM-AR-1164); 1♂juvenile, Varsan, 8.V.2011 (FZMUM-AR-1126); 2♂juvenile, Karim Abad, 14.IX.2010 (FZMUM-AR-1129).

Distribution

Europe, Egypt to Central Asia, Iran. IRAN: Mazandaran (first record for Golestan).

Family Uloboridae Thorell, 1869***Uloborus* *walckenaerius* Latreille, 1806****Material examined**

1juvenile, Bandar Gaz, 2.IX.2010 (FZMUM-AR-1132); 1♀, Anjugland, 18.IX.2010 (FZMUM-AR-1131); 1juvenile, Agh Ghala, 5.V.2011 (FZMUM-AR-1134); 1juvenile, Gomish Tappeh, 5.V.2011 (FZMUM-AR-1133); 1♀, 1juvenile, Yesaghi, 6.V.2011 (FZMUM-AR-1135); 1♀, ca. 32 km to NW of Gorgan, 5.V.2011 (FZMUM-AR-1130).

Distribution

Palearctic. IRAN: Khorasan Razavi, Lorestan and Tehran. This is the first record of this family from Golestan Province.

Discussion

A total of 1012 specimens were collected in this study, including 49 species in 42 genera and 21 families. Twenty five species were recorded for the first time from Golestan Province. Moreover, it was revealed that ten species were new to Iran. Families Pisauridae, Sicariidae, Uloboridae and Titanoecidae were recorded for the first time from Golestan Province and the family Corinnidae was recorded for the first time from Iran. Notably, *Drassodex* sp. from the family Gnaphosidae, is likely to be a new species based on the examination of a single adult female, however, due to lacking males its species status could not be determined precisely.

According to available checklists and recently published literature, Golestan Province spider fauna consists of 90 species in 63 genera and 21 families and the spider fauna of Iran comprises 394 species in 126 genera and 36 families (4, 7-9, 14-19, Ghavami, 2006). Furthermore, the genera *Gibbaraneae*, *Castianiera*, *Drassodex* and

Metellina are recorded for the first time from Iran. Considering the results of this study spider fauna of Iran is enhanced to 404 species in 130 genera and 37 families and the number of spider species of Golestan Province increased to 115 species in 70 genera and 25 families. The comparison of Golestan spider fauna with the spider fauna of Turkmenistan revealed also high similarity in family (100%), genus (87.14%) and species levels (40%). This finding confirms the importance of the northeastern parts of the Iranian Plateau as a zoogeographic transitional zone between the western Mediterranean/Iran and eastern mountains of Central Asia/Himalayas (15, 26).

The results of this study revealed the high species diversity in the spider fauna of Golestan Province. According to Ghahari & Marusik (15), the diversity of spiders in adjacent countries and results of the present study it seems likely that the real species diversity of spiders in Iran exceeds 900 species in more than 40 families.

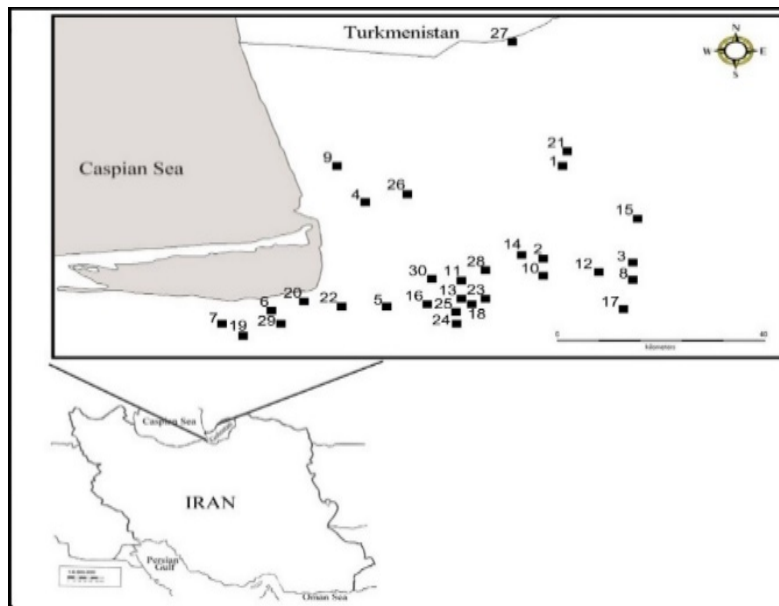


Figure 1. Distribution of sampling localities (The numbers correspond to map codes in Table 1).

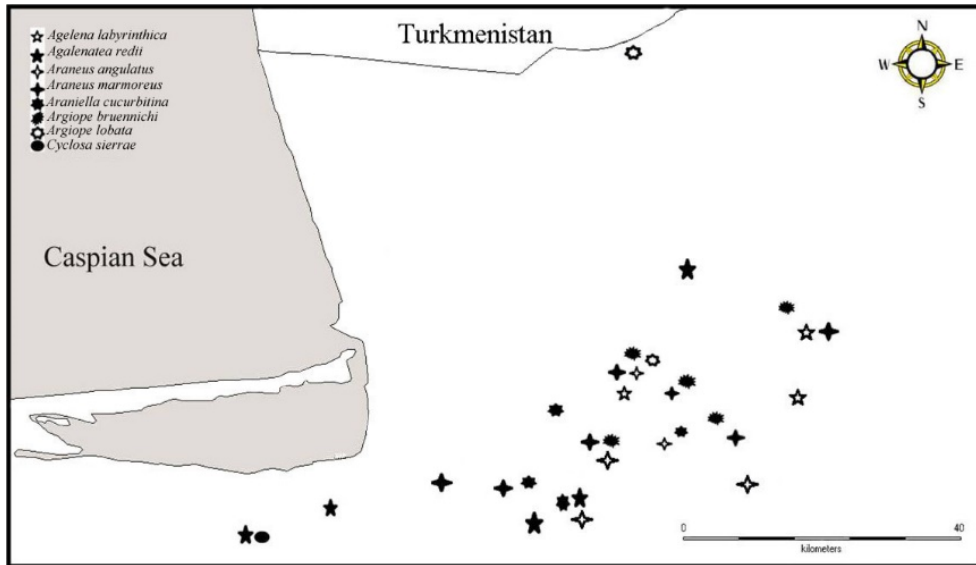


Figure 2. Geographic distribution of *Agelena labyrinthica*, *Agalenatea redii*, *Araneus angulatus*, *A. marmoreus*, *Araniella cucurbitina*, *Argiope lobata*, *A. bruennichi* and *Cyclosa sierrae* in the study area.

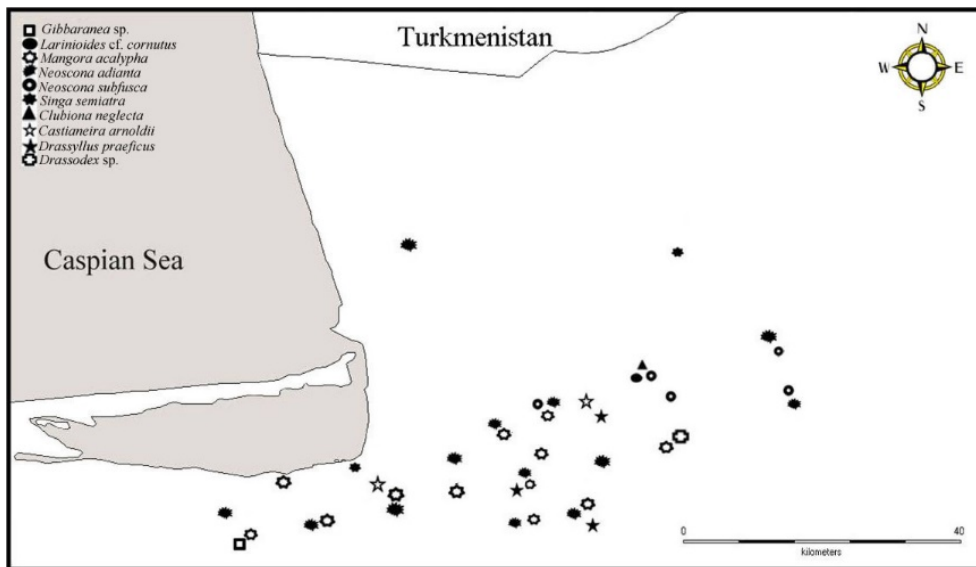


Figure 3. Geographic distribution of *Gibbaranea* sp., *Larinioides* cf. *cornutus*, *Mangora acalypha*, *Neoscona adianta*, *N. subfusca*, *Singa semiatra*, *Clubiona neglecta*, *Castianeira arnoldii*, *Drassyllus praeficus* and *Drassodex* sp. in the study area.

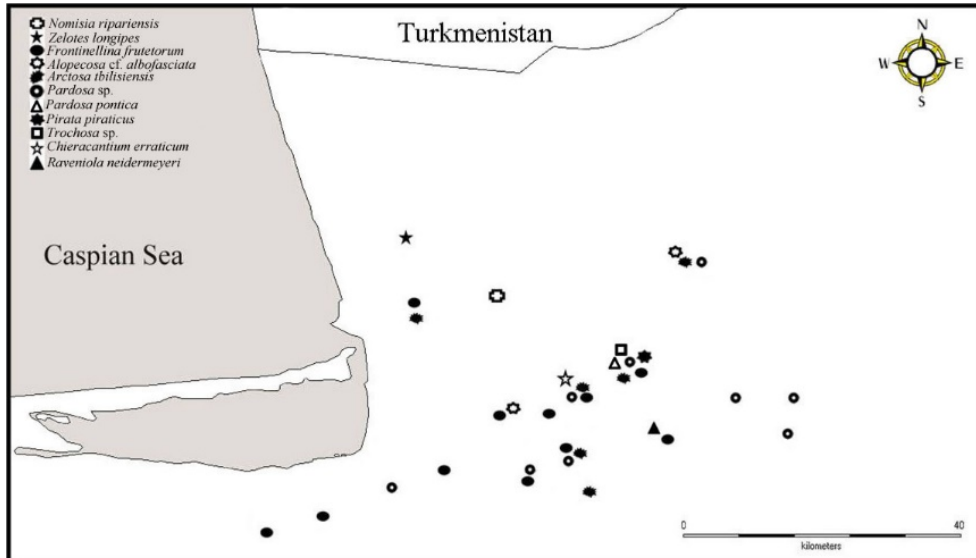


Figure 4. Geographic distribution of *Nomisnia ripariensis*, *Zelotes longipes*, *Frontinellina frutetorum*, *Alopecosa* cf. *albofasciata*, *Arctosa tbilisiensis*, *Pardosa* sp., *P. pontica*, *Pirata piraticus*, *Trochosa* sp., *Chieracanthium erraticum* and *Raveniola neidermeyeri* in the study area.

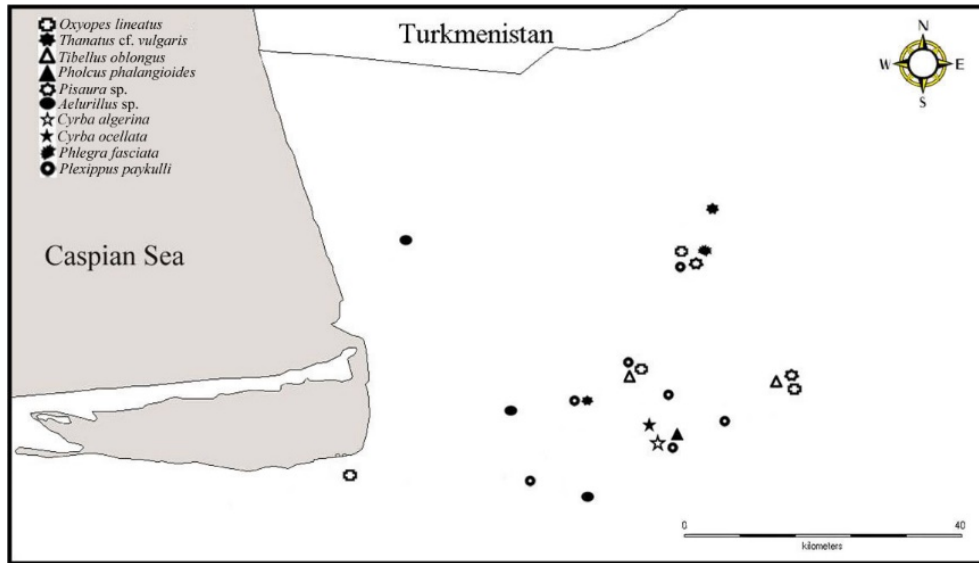


Figure 5. Geographic distribution of *Oxyopes lineatus*, *Thanatus cf. vulgaris*, *Tibellus oblongus*, *Pholcus phalangioides*, *Pisaura sp.*, *Aelurillus sp.*, *Cybra algerina*, *C. ocellata*, *Phlegra fasciata* and *Plexippus paykulli* in the study area.

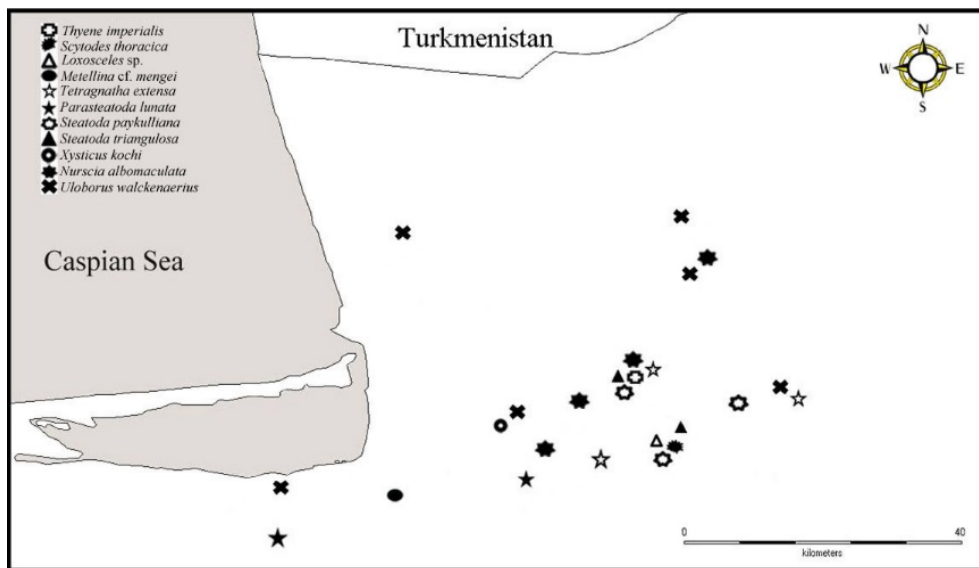


Figure 6. Geographic distribution of *Thyene imperialis*, *Scytodes thoracica*, *Loxosceles sp.*, *Metellina cf. mengei*, *Tetragnatha extensa*, *Parasteatoda lunata*, *Steatoda paykulliana*, *S. triangulosa*, *Xysticus kochi*, *Nurscia albomaculata* and *Uloborus walckenaerius* in the study area.



Figure 7. Dorsal and Ventral habitus of identified species in this study. (a, b) *Agelena labyrinthica*, (c, d) *Agalenatea redii*, (e, f) *Araneus angulatus*, (g, h) *Araneus marmoreus*, (i, j) *Araniella cucurbitina*, (k, l) *Argiope bruennichi*, (m, n) *Argiope lobata*, (o, p) *Cyclosa sierrae*.

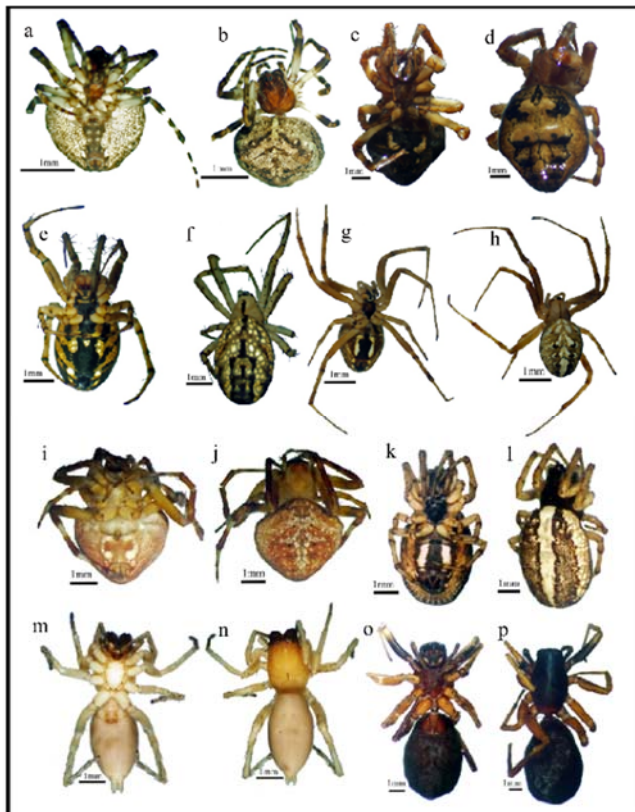


Figure 8. Dorsal and Ventral habitus of identified species in this study. (a, b) *Gibbaranea* sp., (c, d) *Larinioides* cf. *conutus*, (e, f) *Mangora acalypha* (g, h) *Neoscona adianta*, (i, j) *Neoscona subfusca*, (k, l) *singa semiatra*, (m, n) *Clubiona neglecta*, (o, p) *Castianeira arnoldii*

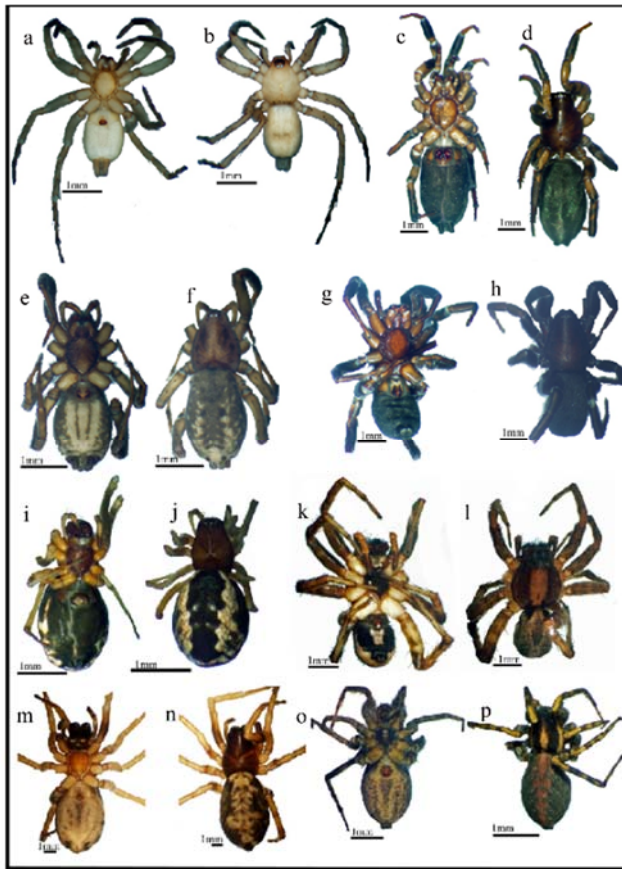


Figure 9. Dorsal and Ventral habitus of identified species in this study. (a, b) *Drassodex* sp., (c, d) *Drassyllus praeficus*, (e, f) *Nomisia ripariensis*, (g, h) *Zelotes longipes*, (i, j) *Frontinellina frutetorum*, (k, l) *Alopecosa* cf. *albofasciata*, (m, n) *Arctosa tbilisiensis*, (o, p) *Pardosa* sp.

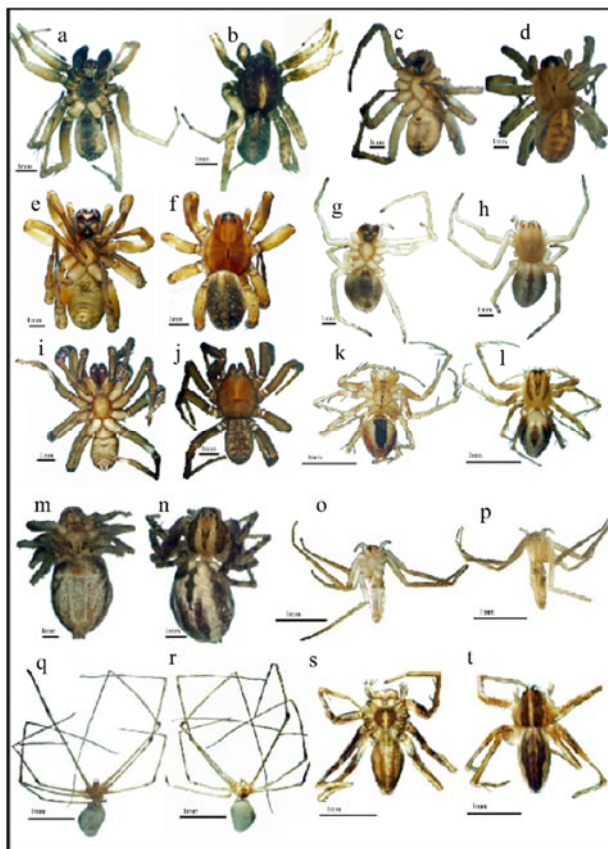


Figure 10. Dorsal and Ventral habitus of identified species in this study. (a, b) *Pardosa pontica*, (c, d) *Pirata piraticus*, (e, f) *Trochosa* sp., (g, h) *Chieracantium erraticum*, (i, j) *Raveniola niedermeyeri*, (k, l) *Oxyopes lineatus*, (m, n) *Thanatus* cf. *vulgaris*, (o, p) *Tibellus oblongus*, (q, r) *Pholcus phalangioides*, (s, t) *Pisaura* sp.

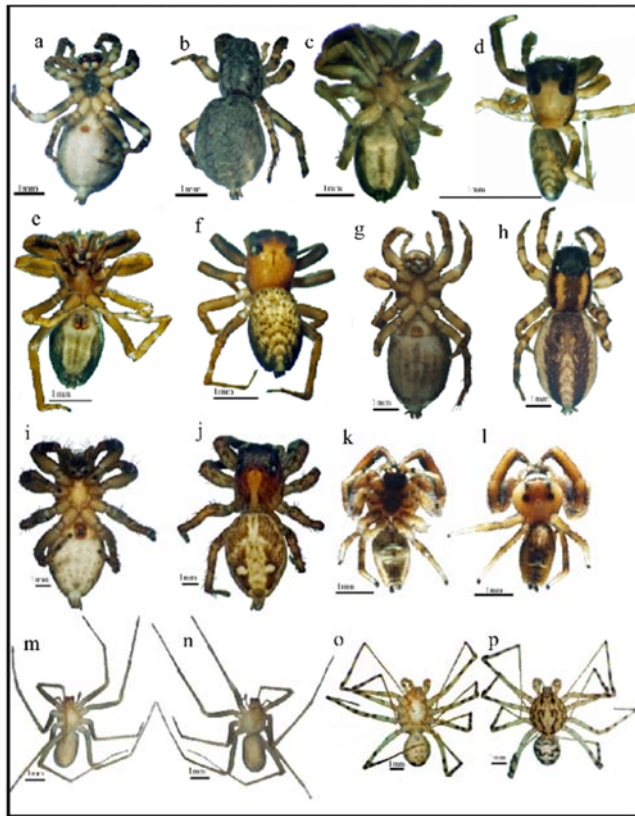


Figure 11. Dorsal and Ventral habitus of identified species in this study. (a, b) *Aelurillus* sp., (c, d) *Cyrba algerina*, (e, f) *Cyrda ocellata*, (g, h) *Phlegra fasciata*, (i, j) *Plexippus paykulli*, (k, l) *Thyene imperialis*, (m, n) *Loxosceles* sp., (o, p) *Scytodes thoracica*.

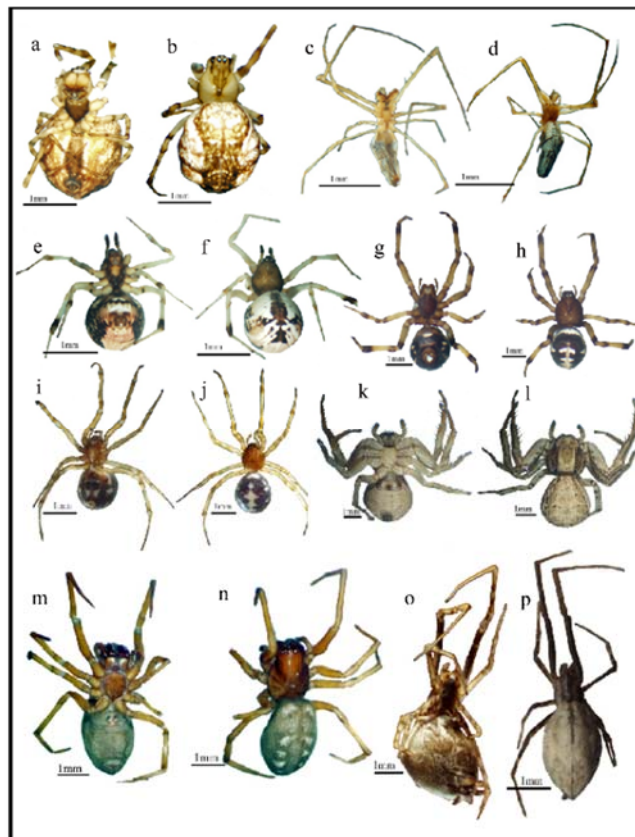


Figure 12. Dorsal and Ventral habitus of identified species in this study. (a, b) *Metellina* cf. *mengei*, (c, d) *Tetragnatha extensa*, (e, f) *Parasteatoda lunata*, (g, h) *Steatoda paykulliana*, (i, j) *Steatoda triangulosa*, (k, l) *Xysticus kochi*, (m, n) *Nurscia albomaculata*, (o, p) *Uloborus walckenaerius*.

Table 2. List of spiders of Golestan province.

Family	Species
Agelenidae C. L. Koch, 1837	<i>Agelena labyrinthica</i> (Clerck, 1757)
Araneidae Clerck, 1757	<i>Agalena redii</i> (Scopoli, 1763)
	<i>Araneus angulatus</i> Clerck, 1757
	<i>Araneus marmoreus</i> Clerck, 1757
	<i>Araniella cucurbitina</i> (Clerck, 1757)
	<i>Argiope bruennichi</i> (Scopoli, 1772)
	<i>Argiope lobata</i> (Pallas, 1772)
	<i>Cyclosa sierrae</i> Simon, 1870
	<i>Gibbaranea</i> sp.
	<i>Larinioides</i> cf. <i>cornutus</i> (Clerck, 1757)
	<i>Mangora acalypha</i> (Walckenaer, 1802)
	<i>Neoscona adianta</i> (Walckenaer, 1802)
	<i>Neoscona subfusca</i> (C. L. Koch, 1837)
	<i>Singa semiatra</i> L. Koch, 1867
Clubionidae Wagner, 1887	<i>Clubiona neglecta</i> O. P.-Cambridge, 1862
Corinnidae Karsch, 1880	<i>Castianeira arnoldii</i> Charitonov, 1946
Gnaphosidae Pocock, 1898	<i>Drassyllus praeficus</i> (L. Koch, 1866)
	<i>Drassodex</i> sp.
	<i>Nomisia ripariensis</i> (O. P.-Cambridge, 1872)
	<i>Zelotes longipes</i> (L. Koch, 1866)
Linyphiidae Blackwall, 1859	<i>Frontinellina frutetorum</i> (C. L. Koch, 1834)
Lycosidae Sundevall, 1833	<i>Alopecosa</i> cf. <i>albofasciata</i> (Brullé, 1832)
	<i>Arctosa tbilisiensis</i> Mcheidze, 1946
	<i>Pardosa</i> sp.
	<i>Pardosa pontica</i> (Thorell, 1875)
	<i>Pirata piraticus</i> (Clerck, 1757)
	<i>Trochosa</i> sp.
Miturgidae Simon, 1886	<i>Chieracantium erraticum</i> (Walckenaer, 1802)
Nemesiidae Simon, 1889	<i>Raveniola niedermeyeri</i> (Brignoli, 1972)
Oxyopidae Thorell, 1870	<i>Oxyopes lineatus</i> Latreille, 1806
Philodromidae Thorell, 1870	<i>Thanatus</i> cf. <i>vulgaris</i> Simon, 1870
	<i>Tibellus oblongus</i> (Walckenaer, 1802)
Pholcidae C. L. Koch, 1850	<i>Pholcus phalangioides</i> (Fuesslin, 1775)
Pisauridae Simon, 1890	<i>Pisaura</i> sp.
Salticidae Blackwall, 1841	<i>Aelurillus</i> sp.
	<i>Cyrba algerina</i> (Lucas, 1846)
	<i>Cyrba ocellata</i> (Kroneberg, 1876)
	<i>Phlegra fasciata</i> (Hahn, 1826)
	<i>Plexippus paykulli</i> (Audouin, 1826)
	<i>Thyene imperialis</i> (Rossi, 1846)
Scytodidae Blackwall, 1864	<i>Scytodes thoracica</i> (Latreille, 1802)
Sicariidae Keyserling, 1880	<i>Loxosceles</i> sp.
Tetragnathidae Menge, 1866	<i>Metellina</i> cf. <i>mengei</i> (Blackwall, 1870)
	<i>Tetragnatha extensa</i> (Linnaeus, 1758)
Theridiidae Sundevall, 1833	<i>Parasteatoda lunata</i> (Clerck, 1757)
	<i>Steatoda paykulliana</i> (Walckenaer, 1805)
	<i>Steatoda triangulosa</i> (Walckenaer, 1802)
Thomisidae Sundevall, 1833	<i>Xysticus kochi</i> Thorell, 1872
Titanoecidae Lehtinen, 1967	<i>Nurscia albomaculata</i> (Lucas, 1846)
Uloboridae Thorell, 1869	<i>Uloborus walckenaerius</i> Latreille, 1806

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Parasteatoda lunata and *Aellurilus* sp., respectively. Also, the first author would like to thanks all kind people of Golestan Province who helped for specimens' collecting, especially Mrs. Jalali, Mr. Tehrani, Mr. Hamzenejad, Mr. Shirangi, Mr. Tazikeh and Mr. Khorasani. The financial support was provided by office of research affairs, Ferdowsi University of Mashhad, Iran.

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