



Occurrence of true spiders associated with some fruit trees at Sohag governorate, Egypt

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Abstract

This study was carried out to determine the frequency of occurrence and the presence of true spider associated with banana, citrus, grape and guava fruit trees. This study was conducted at El-Menshah and Tahta districts at sohag governorate, Egypt during two successive years 2018/2019 and 2019/2020. A total of specimens belonging to 75 species, 48 genera and 32 families were collected. The most dominant family with the largest number of species were Lycosidae, Philodromidae, Theridiidae, Cheiracanthiidae, Salticidae, Gnaphosidae and Thomisidae. While, the families Titanocidae, Dictynidae, Scytodidae, Hersiliidae, Sparassidae, Corinnidae, Oonopidae, Eresidae, Liocranidae, Pisauridae, Agelenidae and Tetragnathidae including few species. As spiders are potential biological control agents of fruit orchard's pests, so any practice that may disrupt this group should be avoided by the farmers.

Keywords: true spiders, fruit trees, Sohag, Egypt.

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1. Introduction

Spiders are one of the more diverse arthropod taxa, ranking in global diversity, which makes them a fascinating group to study (Coddington and Levi, 1991). True spiders are worldwide distributed and occupy many ecological environments through agroecosystems. True spiders are one of the most abundance predatory groups in terrestrial ecosystems spiders have proved to be beneficial in regulation of agricultural pests and their role as natural enemies has recently been more and more stressed (Ghabbor *et al.*, 1999). All spiders are considered as biocontrol agents, they attack most of pests infesting crops, vegetables, ornamental and orchard fruit trees (Ghavani, 2006; Luczak, 1979). On the other hand, spiders feed and consume phytophagous mites also, they can feed and consume usefully lepidopteran insect larvae. Ecological parameters and taxonomic importance of different species of spiders from some, fruit orchards (i.e., apple, citrus, grape, guava, fig, and mango fruit gardens were investigated by many researchers (Abo-Zaed Amal and Mansour, 2019; Metwally, 2012; Mohafez, 2000; Sallam, 1996). The aim of this work is to study the occurrence and distribution of the most common families and species of spiders associated with four fruit trees orchards (banana, citrus, grape, guava trees). In two districts El-Menshah and Tahta at Sohag governorate, Egypt during two successive years (2018/2019 and 2019/2020).

2. Materials and methods

This study was conducted in old areas at two districts (El-Menshah and Tahta) at sohag governorate, Egypt during two successive years (2018/2019 and 2019/2020), respectively. Individuals of the true spiders were randomly collected from four fruit orchards banana (*Musa* sp.), citrus (*Citrus medica*), grape (*Vitis vinifera*) and guava (*Psidium guajava*). In the fields by tree methods as follow: (1) Pitfall traps: The pitfall traps consist of plastic bowls (6 cm diameter and 8 cm depth). Into which 6 ml of foamy soup solution was added. Traps were set at different sampling sits on 5 meters distance of each other (Southwood, 1987). (2) Branch shaking: For citrus trees, 6-8 branches were chosen randomly and shacked for each sample. For branches were 100-125 cm. large number of leaves was shacked over the shaking cloth. After shacking specimens were individually picked up in a plastic vial (2×5 cm); while larger ones kept in vial (2×5 cm); and transferred to the laboratory for counting and identification. Individual adult males and females were isolated for ecological studies. The collected spiders were preserved in 70% alcohol and transferred to laboratory for classification. Locality, habitat, date of collected samples and other information were recorded attached to each specimen in the side of tube.

(3) Hand sorting: Spiders were picked handily, the big individuals kept in tubes and small ones collected by gimel's hairbrush and kept into the plastic tubes (1×4 cm). Samples were collected monthly for one hour from 11-12 am in the winter and 10-11 am in the summer.

2.1 Classification studies

All specimens after transfer to laboratory, examined and kept in petri dish of 10 cm diameter, the individual examined using a stereoscopic binocular microscope. Each specimen was individually kept in a large tube containing 70% alcohol; date of collection, locality, host plant and other information were recorded in the side of each tube. Samples of spiders were identified according to nomenclatures of Petrunkevitch (1939) and Kaston (1978).

2.2 Statistical analysis

Population density and frequency of occurrence of spider families and species were determined according to their localities and sort of fruit trees using to the following equations: all obtained data were statistically analyzed according to Duncan (1955).

$$\text{Population density (P.D.)} = \frac{\text{Total number of family or species individuals}}{\text{Number of samples containing this family or species}}$$

$$\text{Frequency of occurrence (F.O.) \%} = \frac{\text{Number of samples containing a species}}{\text{Total number of collected samples}} \times 100$$

3. Results and Discussion

Data presented in Table (1) showed the seventy-five spider species, forty-eight genera and thirty-two families. All collected spiders belonging to Suborder Araneomorphae (Labidognatha), this group are usually referred to as true spiders. These families were Agelenidae, Araneidae, Cheiracanthiidae, Clubionidae, Corinnidae, Dictynidae, Dysderidae, Eresidae, Filistatidae, Gnaphosidae, Hersiliidae, Linyphiidae, Liocranidae, Lycosidae, Mimetidae, Oecobiidae, Oonopidae, Oxyopidae, Philodromidae, Pholcidae, Pisauridae, Prodidomidae, Salticidae, Scytodidae, Sparassidae, Sicariidae, Tetragnathidae, Theridiidae, Thomisidae, Titanoecidae, Trachelidae and Uloboridae. These spiders varied greatly in their population densities and frequencies of occurrence according to the type of locality. However, the families Lycosidae, Philodromidae, Theridiidae, Cheiracanthiidae, Salticidae, Gnaphosidae and Thomisidae were found with relatively highly population densities and frequencies of occurrence during the two years (2018/2019 and 2019/2020), respectively.

Table (1): Population density and frequency of occurrence of spider families and species associated with fruit Orchard in tow locations in Sohag governorate, Egypt.

Spider families & species	Districts				Total individuals of families or species	Total No. of samples containing families or Species	PD	FO (%)
	Al-Minshah		Tahta					
	PD	FO	PD	FO				
Agelenidae (Koch, 1837)	1.50	8.33	2.00	4.17	7	3	2.33	6.25
Araneidae (Clerck, 1757)	3.60	83.33	5.00	66.67	171	36	4.75	75.00
<i>Argiope</i> sp.	2.00	4.17	3.00	4.17	5	2	2.50	4.17
<i>Cyrtophora citricola</i>	1.43	29.17	1.50	25.00	19	13	1.46	27.08
Unidentified species	1.00	16.67	1.00	16.67	8	8	1.00	16.67
Cheiracanthiidae (Wagner, 1887)	6.21	100.00	6.95	91.67	392	46	8.52	95.83
<i>Cheiracanthium isiacum</i>	1.33	25.00	1.33	37.50	20	15	1.33	31.25
<i>Cheiracanthium sivi</i>	2.00	16.67	1.00	12.50	11	7	1.57	14.58
<i>Cheiracanthium</i> sp.	1.00	12.50	1.00	4.17	4	4	1.00	8.33
Clubionidae (Wagner, 1887)	0.00	0.00	4.00	8.33	8	2	4.00	4.17
Corinnidae (Karsch, 1880)	1.75	16.67	1.60	20.83	16	9	1.78	18.75
<i>Castianeira</i> sp.	1.00	4.17	0.00	0.00	1	1	1.00	2.08
Unidentified species	0.00	0.00	1.00	4.17	1	1	1.00	2.08
Diptynidae (Cambridge, 1871)	1.70	41.67	4.67	25.00	36	16	2.25	33.33
<i>Dictyna</i> sp.	1.00	8.33	1.00	8.33	4	4	1.00	8.33
Dysderidae (Koch, 1837)	1.47	70.83	2.42	50.00	64	29	2.21	60.42
Eresidae (Koch, 1845)	1.75	16.67	1.33	12.50	11	7	1.57	14.58
Filistatidae (Ausserer, 1867)	1.63	79.17	2.57	58.33	66	33	2.00	68.75
<i>Filistata insidiatrix</i>	1.00	12.50	1.00	12.50	6	6	1.00	12.50
Gnaphosidae (Pocock, 1898)	5.45	91.67	6.39	95.83	317	45	7.04	93.75
<i>Drassodes alexandrinus</i>	1.00	8.33	1.00	4.17	3	3	1.00	6.25
<i>Drassyllus depressus</i>	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Micaria dives</i>	1.50	8.33	2.13	33.33	20	10	2.00	20.83
<i>Micaria</i> sp.	1.00	4.17	1.00	4.17	2	2	1.00	4.17
<i>Poecilochroa pugnax</i>	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Setaphis subtilis</i>	1.00	16.67	1.33	12.50	8	7	1.14	14.58
<i>Trachyzelotes jaxartensis</i>	1.00	16.67	1.33	37.50	16	13	1.23	27.08
<i>Trachyzelotes</i> sp.	0.00	0.00	1.00	16.67	0	7	0.00	14.58
<i>Zelotes</i> sp.	1.33	25.00	1.75	16.67	15	10	1.50	20.83
Unidentified species	1.00	8.33	0.00	0.00	2	2	1.00	4.17
Hersiliidae (Thorell, 1870)	1.67	25.00	2.75	33.33	35	14	2.29	29.17
<i>Hersilia</i> sp.	1.00	4.17	1.00	4.17	2	2	1.00	4.17
Linyphiidae (Blackwall, 1859)	2.45	83.33	3.38	66.67	134	36	3.72	75.00
<i>Erigone dentipalpis</i>	1.00	16.67	1.00	4.17	5	5	1.00	10.42
<i>Erigone</i> sp.	1.00	4.17	1.00	8.33	3	3	1.00	6.25
<i>Gnathonarium</i> sp.	1.00	8.33	0.00	0.00	2	2	1.00	4.17
<i>Mermessus denticulatus</i>	1.00	8.33	1.00	8.33	4	4	1.00	8.33
<i>Prinerigone vagans</i>	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Sengletus extricatus</i>	1.50	16.67	1.00	8.33	8	6	1.33	12.50
<i>Sengletus</i> sp.	1.00	8.33	1.00	4.17	3	3	1.00	6.25
Unidentified species	1.00	4.17	0.00	0.00	1	1	1.00	2.08
Liocranidae (Simon, 1897)	1.00	12.50	1.67	12.50	11	6	5.33	12.50
Lycosidae (Sundevall, 1833)	9.50	100.00	9.14	91.67	476	46	10.35	95.83
<i>Hogna ferox</i>	2.00	4.17	1.50	8.33	5	3	1.67	6.25
<i>Hogna</i> sp.	2.00	4.17	1.00	12.50	5	4	1.25	8.33
<i>Lycosa</i> sp.	0.00	0.00	1.67	12.50	5	3	1.67	6.25
<i>Pardosa inquieta</i>	1.00	4.17	1.00	4.17	2	2	1.00	4.17
<i>Pardosa</i> sp.	1.60	20.83	1.25	33.33	18	13	1.38	27.08
<i>Trochosa urbana</i>	2.33	25.00	1.14	29.17	22	13	1.69	27.08
<i>Trochosa</i> sp.	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Wadicosa fidelis</i>	1.60	20.83	2.00	12.50	14	8	1.75	16.67
Unidentified species	1.00	8.33	1.00	4.17	3	3	1.00	6.25
Mimetidae (Simon, 1881)	4.00	4.17	0.00	0.00	4	1	4.00	2.08
Oecobiidae (Blackwall, 1862)	2.56	37.50	1.75	50.00	56	21	2.67	43.75
<i>Oecobius navus</i>	2.00	4.17	2.00	4.17	4	2	2.00	4.17
<i>Oecobius putus</i>	1.00	4.17	3.00	4.17	4	2	2.00	4.17
<i>Oecobius</i> sp.	1.33	12.50	1.33	12.50	8	6	1.33	12.50
<i>Oecobius templi</i>	0.00	0.00	1.00	4.17	1	1	1.00	2.08
Oonopidae (Simon, 1890)	1.00	16.67	0.50	25.00	16	10	1.60	20.83
Oxyopidae (Thorell, 1870)	0.00	0.00	3.00	4.17	3	1	3.00	2.08

Table (1): Continued

Spider families & species	Districts				Total individuals of families or species	Total No. of samples containing families or Species	PD	FO (%)
	Al-Minshah		Tahta					
	PD	FO	PD	FO				
Philodromidae (Thorell, 1870)	7.33	100.00	6.04	100.00	472	48	9.83	100.00
<i>Philodromus</i> sp.	1.29	29.17	1.33	37.50	21	16	1.31	33.33
<i>Thanatus albini</i>	2.25	33.33	2.25	66.67	54	24	2.25	50.00
Pholcidae (Koch, 1850)	1.93	58.33	2.12	70.83	124	31	4.00	64.58
<i>Artema</i> sp.	2.00	4.17	2.50	8.33	7	3	2.33	6.25
<i>Micropholcus fauroti</i>	2.00	8.33	1.67	12.50	9	5	1.80	10.42
<i>Micropholcus</i> sp.	1.33	12.50	1.33	12.50	8	6	1.33	12.50
<i>Pholcus</i> sp.	1.00	8.33	1.00	8.33	4	4	1.00	8.33
Pisauridae (Simon, 1890)	1.20	20.83	1.00	8.33	8	7	1.14	14.58
Unidentified species	1.00	8.33	1.00	4.17	3	3	1.00	6.25
Prodromidae (Simon, 1884)	0.00	0.00	6.50	8.33	13	2	6.50	4.17
Salticidae (Blackwall, 1841)	7.10	83.33	7.92	100.00	373	44	8.48	91.67
<i>Bianor albobimaculatus</i>	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Hasarius</i> sp.	0.00	0.00	1.00	4.17	1	1	1.00	2.08
<i>Heliophanus edentulus</i>	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Heliophanus</i> sp.	2.00	12.50	2.00	12.50	12	6	2.00	12.50
<i>Plexippus paykulli</i>	1.50	16.67	1.57	29.17	17	11	1.55	22.92
<i>Plexippus</i> sp.	1.00	4.17	1.50	8.33	4	3	1.33	6.25
<i>Pseudiculus spiniger</i>	2.00	4.17	2.00	12.50	8	4	2.00	8.33
<i>Synageles dalmaticus</i>	3.00	4.17	1.50	8.33	6	3	2.00	6.25
<i>Synageles</i> sp.	1.00	4.17	0.00	0.00	1	1	1.00	2.08
<i>Thyene imperialis</i>	2.00	8.33	1.80	41.67	22	12	1.83	25.00
Unidentified species	1.50	16.67	1.00	8.33	8	6	1.33	12.50
Scytodidae (Blackwall, 1864)	1.45	45.83	3.71	29.17	33	18	1.83	37.50
<i>Scytodes</i> sp.	1.00	8.33	0.00	0.00	2	2	1.00	4.17
Sciaridae (Keyserling, 1880)	0.00	0.00	6.00	4.17	6	1	6.00	2.08
Sparassidae (Bertkau, 1872)	1.33	25.00	1.40	20.83	17	11	1.55	22.92
<i>Eusparassus walckenaeri</i>	1.00	12.50	2.00	4.17	5	4	1.25	8.33
Tetragnathidae (Menge, 1866)	2.00	4.17	1.67	12.50	7	4	1.75	8.33
Theridiidae (Sundevall, 1833)	6.29	100.00	7.92	100.00	397	48	8.27	100.00
<i>Kochiura aulica</i>	1.00	8.33	2.00	4.17	4	3	1.33	6.25
<i>Steatoda erigoniformis</i>	1.50	33.33	1.00	12.50	15	11	1.36	22.92
<i>Steatoda</i> sp.	2.33	25.00	1.75	33.33	28	14	2.00	29.17
<i>Steatoda triangulosa</i>	2.14	29.17	1.33	37.50	27	16	1.69	33.33
<i>Theridion incanescens</i>	1.20	20.83	2.50	8.33	11	7	1.57	14.58
<i>Theridion jordanense</i>	1.33	12.50	4.00	4.17	8	4	2.00	8.33
<i>Theridion melanostictum</i>	1.20	20.83	1.20	20.83	12	10	1.20	20.83
<i>Theridion</i> sp.	1.40	20.83	1.78	37.50	23	14	1.64	29.17
<i>Theridion spinitarise</i>	1.00	12.50	1.33	12.50	7	6	1.17	12.50
<i>Theridion varians</i>	1.67	12.50	1.00	12.50	5	6	0.83	12.50
Unidentified species	1.00	25.00	1.00	4.17	7	7	1.00	14.58
Thomisidae (Sundevall, 1833)	2.36	91.67	3.61	75.00	186	40	4.65	83.33
<i>Synema</i> sp.	1.00	8.33	3.00	4.17	5	3	1.67	6.25
<i>Thomisus</i> sp.	0.00	0.00	1.00	4.17	1	1	1.00	2.08
<i>Thomisus spinifer</i>	1.00	4.17	1.45	45.83	17	12	1.42	25.00
<i>Xysticus</i> sp.	1.00	29.17	1.14	29.17	15	14	1.07	29.17
Unidentified species	1.50	16.67	1.20	20.83	12	9	1.33	18.75
Titanosocidae (Lehtinen, 1967)	1.50	16.67	1.20	20.83	40	9	4.44	18.75
<i>Nurscia albomaculata</i>	0.00	0.00	1.50	33.33	3	2	1.50	4.17
<i>Nurscia</i> sp.	1.25	16.67	2.00	16.67	3	2	1.50	4.17
Unidentified species	2.00	50.00	2.00	33.33	6	3	2.00	6.25
Trachelidae (Simon, 1890)	0.00	0.00	1.50	8.33	8	2	4.00	4.17
Uloboridae (Thorell, 1869)	1.67	50.00	1.63	66.67	46	28	1.64	58.33
<i>Uloborus</i> sp.	1.00	8.33	1.00	4.17	3	3	1.00	6.25
<i>Uloborus walckenaerius</i>	1.25	16.67	1.33	25.00	8	2	4.00	4.17
Unidentified species	1.50	8.33	1.00	8.33	69	28	2.46	58.33

Total No. of collected samples = 48

PD = Population densities

FO%= Frequency of occurrence

3.1 Population density and frequency of occurrence of spider families and species associated with fruit Orchard in tow locations in Sohag governorate, Egypt

Data in Table (1) indicated that the members of families Lycosidae, Philodromidae, Theridiidae, Cheiracanthiidae, Salticidae, Gnaphosidae and Thomisidae were represented in most surveyed spiders in the two districts (El-Menshah and Tahta) with highly total individuals reached (476, 472, 397, 392, 373, 317 and 186 individuals), whereas population density and frequency of occurrence (10.35 and 95.83%), (9.83 and 100%), (8.27 and 100%), (8.52 and 95.83%), (8.48 and 91.67%), (7.04 and 93.75%) and (4.65 and 83.33%), respectively during years (2018/2019 and 2019/2020). The families Araneidae, Linyphiidae, Pholcidae, Uloboridae, Filistatidae, Dysderidae and Oecobiidae were found in three localities with moderately total individuals reached (171, 134, 124, 69, 66, 64 and 56 individuals) with population density and frequency of occurrence (4.75 and 75.00%), (3.72 and 75.00%), (4.00 and 64.58%), (2.46 and 58.33%), (2.00 and 68.75%), (2.21 and 60.42%) and (2.67 and 43.75%), respectively. Whereas the other families of spiders were recorded in lowest population densities and frequencies of occurrence. The families of Titanoecidae, Dictynidae, Scytodidae, Hersiliidae, Sparassidae, Corinnidae, Oonopidae, Eresidae, Liocranidae, Pisauridae, Agelenidae and Tetragnath-

idae. were found in all localities with lower total individuals reached (40, 36, 33, 32, 17, 16, 16, 11, 8, 8, 7 and 7) with averaged lower values of their P.D. and F.O. % they averaged (4.44 and 18.75%), (2.25 and 33.33%), (1.83 and 37.50%), (2.29 and 29.17%), (1.55 and 22.92%), (1.78 and 18.75%), (1.60 and 20.83%), (1.57 and 14.58%), (1.33 and 12.50%), (1.14 and 14.58%), (2.33 and 6.55%) and (1.75 and 8.33%), respectively. On the other hand, individuals of family Mimetidae were recorded only in El-Menshah with population density and frequency of occurrence averaged (4.00 and 2.08%). Also, individuals of families Clubionidae, Oxyopidae, Prodidomidae, Sicariidae and Trachelidae. were recorded only in Tahta with population density and frequency of occurrence averaged (4.00 and 4.17%), (3.00 and 2.08%), (2.60 and 10.42%), (6.00 and 2.08%) and (4.00 and 4.17%), respectively. Population of spider families associated with different fruit orchard in El-Menshah districts, Sohag governorate during two successive years, 2018/2019 and 2019/2020 (Table 1). The members of families Thomisidae, Araneidae, Linyphiidae and Pholcidae were represented in most surveyed samples in El-Menshah locality with moderately total reached (92, 91, 76 and 64 individuals), respectively, while, the families Lycosidae, Philodromidae, Cheiracanthiidae, Theridiidae, Salticidae and Gnaphosidae were found with highly total individuals reached (228, 222, 212, 204, 173 and 170 individuals),

respectively, whereas, the other families of spiders were recorded in lowest total numbers. The variation in population densities and frequency of occurrence of spider families and species in all collected samples could be related to different environmental condition, *i.e.* temperature, moisture and the abundance of the kind fruit in the two districts at Sohag governorate. This is in accordance with the previous data obtained by several investigators (Baert *et al.*, 1997; El-Erksousy, 2000; Mohafez, 2004; Sallam, 1996).

3.2 Population density and frequency of occurrence the spider species in relation to the tow localities

Concerning of the distribution of the true spider species also they varied in their population densities and frequencies of occurrence according to the tow surveyed districts El-Menshah, Tahta at Sohag Governorate are presented in Table (1). *Thanatus albini*, *Steatoda* sp., *Steatoda triangulosa*, *Theridion* sp., *Trochosa urbana* and *Thyene imperialis* were found in almost surveyed localities with total individuals, highly total individuals reached (54, 28, 27, 23,22 and 22 individuals), also the average population densities and frequencies of occurrence were average (2.25 and 50.00%), (2.00 and 29.17%), (1.69 and 33.33%), (1.64 and 27.17%), (1.69 and 27.08) and (1.92 and 16.67%) respectively. On the other hand, *Philodromus* sp., *Cheiracanthium isiacum*, *Micaria dives*, *Cyrtophora*

citricola, *Pardosa* sp., *Plexippus paykulli*, *Thomisus spinifer* and *Trachyzelotes jaxartensis* were found in three surveyed localities with moderately population densities and frequencies of occurrence. Therefore, the calculated of total individuals reached 21, (20, 20, 19, 18, 17, 17 and 16 individuals), also the average population densities and frequencies of occurrence were (1.31 and 33.33%), (1.33 and 31.25%), (2.00 and 20.83%), (1.46 and 27.08%), (1.38 and 27.08%), (1.55 and 22.92%), (1.42 and 25.00%) and (1.23 and 27.08%) respectively. Whereas the other spider species were recorded in lowest population densities and frequencies of occurrence. The distribution of spider species associated with some fruit orchard in tow location (El-Menshah, Tahta in Sohag governorate is presented in Table (1). In El-Menshah district, seven spider species were recorded. The species were *Thanatus albini*, *Steatoda triangulosa*, *Trochosa urbana*, *Steatoda* sp., *Steatoda erigoniformis*, *Cyrtophora citricola* and *Philodromus* sp. were recorded with highly numbers reached (18, 15, 14, 14, 12, 10 and 9 individuals), also average population densities and frequencies of occurrence were (2.25 and 33.33%),(1.50 and 33.33%), (2.33 and 25.00%), (2.33 and 25.00%), (1.50 and 33.33%), (1.43 and 29.17%) and (1.29 and 29.17%), respectively, while members of species *Cheiracanthium isiacum*, *Cheiracanthium siwi*, and *Zelotes* sp. were recorded in moderate numbers 8 individuals for each of them.

Also, the average population density and frequency of occurrence were (1.33 and 25.00%), (2.00 and 16.67%) and (1.33 and 25.00%), respectively, while the other spider species recorded in lowest individuals (Table 1). In Tahta district, five spider species were recorded. The species were *Thanatus albini*, *Thyene imperialis*, *Micaria dives*, *Theridion* sp. and *Thomisus spinifer*. were recorded with highly numbers reached (36, 18, 17, 16 and 16 individuals), Also the average population densities and frequencies of occurrence were (2.25 and 66.67%), (1.80 and 41.67%), (2.13 and 33.33%), (1.78 and 37.50%) and (1.45 and 45.83%) respectively, while members of species *Steatoda* sp., *Cheiracanthium isiacum*, *Trachyzelotes jaxartensis*, *Philodromus* sp., *Steatoda triangulosa* and *Plexippus paykulli* were recorded in moderate numbers 12 individuals for each of them. Also, average population density and frequency of occurrence were (1.33 and 37.50%) for each of them, while the other spider species recorded the lowest individuals (Table 1).

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