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Title : Ecological and taxonomical studies on terrestrial spiders at Qena city.

Degree : M.sc. (Zoology)

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Summary:-

Belonging to Phylum Arthropoda, Class Arachnida, Spiders are a widespread and abundant group. Their bodies consist of the cephalothorax and abdomen. The cephalothorax supports the eyes, mouthparts, and legs while the abdomen bears the genital structures, spiracles, anus and spinnerets. Most spiders have eight or fewer eyes and all of them are simple. Although all spiders have venomous glands, they are rarely harmful to humans. Spiders are found all over the world, from the tropics to the Arctic, living underwater in silken domes they supply with air, and on the tops of mountains. Spiders are carnivorous arthropods; they mainly prey on insects, although they may also feed on various other kinds of prey.
Spiders (order Araneae) are one of the most species rich groups of terrestrial animals, with more than 40,000 species described so far and many thousands still awaiting discovery and description (Platnick, 2009).

As spiders form a significant proportion of the litter and soil fauna, their distribution and relationships with other animals in the same habitat is important. It is becoming more and more evident that ecological study of spiders can increase our knowledge of the pattern of food chain (maturational web) and other problems connected with the environment.

The study of terrestrial spider in Egypt began in the first and middle parts of the nineteenth century, but since then it passed through a long dormant stage. The initial works on the Egyptian species consisted almost exclusively of the identification of the species and building up a relatively large faunal list. Little is known of distribution, habitat preferences and abundance of spiders. So, the present study was designed to fulfill the gap.

1- The study was aimed towards surveying terrestrial spiders in different Habitats at Qena city
2- Identify the common species of terrestrial spider.
3- Design a preliminary key for identification of common terrestrial spider species investigated.
4- Study the seasonal and horizontal distribution of different collected species.
5- Study the effect of some physical factors including (temperature, relative humidity, and wind velocity) on the density of collected

For quantitative study, biweekly samples were collected for a period of one year (extending from June, 2008 till May, 2009) from five different
sites at Qena city by using sweep net with a known volume. For qualitative, the hand pick up was also used for collection.

Specimens of collected spiders were put in a 10 centimeters diameter Petri-dish filled with 70% ethyl alcohol. Examination was carried out with the aid of stereomicroscopic.

To test the present data, statistical analysis were performed by using SPSS soft ware package (version 16) (SYSTAT statistical program).

21 species of spiders were collected quantitative namely: Argiope trifasciata, Hypsosinga sp, Larinia sp, (sp.), Dictyna sp, Erigone dentipalpis, Pardosa sp, Cheiracanthium isiacum, Cheiracanthium siwi, Peucetia sp, Thanatus albini, Heliophanus sp, Plexippus paykulli, Thynne imperialis, Loxosceles rufescens, Eusparassus sp, Tetragnatha sp, Kochiura aulica, Theridion sp, Runcinia grammica, Thomisus spinifer.

Also, 8 species of spider were collected qualitative namely: Zelotus sp, Hersilia caudate, Gnathonarium sp, Wadicosa fidelis, Oecobius putus, Uroctea limbata, Artema atlanta and Scytodes thoracica.

From the results of the study, the total elative density of all species collected during the year of investigation was 1314. The maximum number was collected during Autumn (367 specimens, constituting 27.93% from the total number), and the minimum number was collected during Winter (282 specimens, constituting 21.46% from the total number). The maximum mean relative density was collected from site II (321 specimens, consisting 24.43% from the total number), and the minimum number was collected from site III (219 specimens, constituting 16.67% from the total number).

The collected 21 species were arranged according to their degree of dominancy as follow:
1- Thanatus albini is abundant species, since (310 specimens), consisting 23.59 % of the total number.
2- Dictyna sp, consisting 11.34 % of the total number.
3- Thyene imperialis, 10.43 % of the total number.
4- Kochiura aulica, consisting 7.84 % of the total number.
5- Cheiracanthium siwi, consisting 6.47 % of the total number.
6- (sp.), consisting 5.94 % of the total number.
7- Heliophanus sp, consisting 5.56 % of the total number.
8- Thomisus spinifer, consisting 5.25 % of the total number.
9- Plexippus paykulli, consisting 4.11 % of the total number.
10- Theridion sp, consisting 4.03 % of the total number.
11- Pardosa sp, consisting 3.50 % of the total number.
12- Loxosceles rufescens, consisting 2.28 % of the total number.
13- Hypsosinga sp, consisting 1.83 % of the total number.
14- Argiope trifasciata, consisting 1.67 % of the total number.
15- Eusparassus Sp, consisting 1.29 % of the total number.
16- Runcinia grammica, consisting 1.22 % of the total number.
17- Cheiracanthium isiacum, consisting 0.91 % of the total number.
18- Peucetia sp, consisting 0.84 % of the total number.
19- Erigone dentipalpis, consisting 0.68 % of the total number.
20- Larinia sp, consisting 0.61 % of the total number.
21- Tetragnatha sp, consisting 0.61 % of the total number.

For studying the effects of environmental factors on the relative density of different species collected, stepwise multiple regressions was applied to select a model in which all variable are significant. The relative density of Argiope trifasciata was affected by maximum temperature. The model equation is:
Relative density of animal in 54000 cm$^3$ =

\[ 1.438 - 0.032 \text{ Max.Temp} \]

The relative density of Hypsosinga sp was affected by minimum temperature. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ 1.247 - 0.046 \text{ Min.Temp.} \]

The relative density of Oxyopes heterophalmus affected by minimum temperature. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ 0.671 - 0.027 \text{ Min.Temp.} \]

The relative density of Thanatus albini was affected by minimum temperature and maximum relative humidity. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ -16.786 + 0.675 \text{ Min.Temp} + 0.209 \text{ Max.R.H} \]

The relative density of Tetragnatha sp was affected by maximum relative humidity. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ -0.450 + 0.013 \text{ Max.R.H} \]

The relative density of Runcinia relitalis was affected by minimum relative humidity. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ 0.725 - 0.032 \text{ Min.R.H} \]

The relative humidity of Thomisus spinifer was affected by minimum relative humidity. The model equation is:

Relative density of animal in 54000 cm$^3$ =

\[ 2.447 - 0.090 \text{ Min.R.H} \]