Occurrence of Some Spider Species in Laymyethna Township , Ayeyawady Region

Naw Mae May Phaw[1], Aye Myat Mon[2], Mu Mu Aung Soe[3]

Abstract

Species occurrence of some spiders will be investigated in Laymyethna Township, Ayeyawady Region. The study period lasted from from March 2022 to August 2022. Study area contains five habitats such as building, wateredge, bushes, shrub and scattered trees. These five habitats will be recorded. The specimen collection was carried out monthly in study area and conducted by different ways. A total of 18 species of spider comprising 15 genera belonging to nine families under one were observed in the study area. A total of nine species were observed in family Araneidae.Two species were observed in family Sparassidae, one species were observed in family Lycosidae, Oxyopidae, Pholcidae, Salticidae, Tetragnathidae, Theraphosidae, Theridiidae. The most number of species were noted in family Araneidae (50%). Identification of some spider species will be done according to Mascord (1970) and Koh (2001).

Keywords: Species occurrence, Different habitats, Distinctive characters

INTRODUCTION

Spiders are members of the phylum Arthropoda, the large group of animals with jointed legs and a hard external body shell, the exoskeleton. Phylum Arthropoda includes five classes. (Koh, 2001).A spider's body consists of two main parts: an anterior portion the prosoma (cephalothorax), and a posterior part, the opisthosoma (or abdomen). These are connected by a narrow stalk, the pedicle. The prosoma is covered by a dorsal and a ventral plate, the carapace and the sternum, respectively (Bristowe, 1958).

It serves as the place of attachment for six pairs of extremities: one pair of biting chelicerae and one pair of leg like pedipalps are situated in front of four pairs of walking legs (Main, 1976).The head part of the prosoma bear the eyes and the chelicerae. Most spiders have eight eyes, which are arranged in specific patterns in the various families. All possess abdominal spinnerets, but not all construct webs.

Spiders belong to the actively poisonous animals (Foelix,1996). Growth of spider requires shedding in exoskeleton, usually 4 to 12 times before maturity (Main, 1976).Nocturnal species are dull or black in color, whereas diurnal ones are brightly colored. Spiders are the most interesting of all Arachnids .They are ecologically divided into two groups as web weavers and hunters.

Hunting spiders which are known to kill their vertebrate prey with their poison are obviously potentially dangerous to humans. Spiders are distributed all over the world and conquered all ecological environments. In the world, taxonomists recognize about 397525 spider species which they group into approximately 111 families (Plantick, 2006). The objectives of the present study are

- to record and identify the spider species
- to determine the occurrence and composition of spider species in Laymyethna Township

[1] Associate Professor, Dr, Department of Zoology, University of Hinthada
[2] Demonstrator, Department of Zoology, University of Hinthada
[3] Associate Professor, Dr, Department of Zoology, University of Hinthada

MATERIAL AND METHODS

Study area

Laymyethna Township was chosen as study area. It is situated between North Latitude 17 ˚ 35 ' 51 " and East Longitude 95 ˚ 10 ' 11 ".Spider samples were collected according to five habitats such as building, grassland, bushes, shrubs and scattered trees.

Study period

The study period was lasted from March, 2022 to August, 2022.

Samples collection methods

Specimen collection was carried out monthly. Specimens were visually searched and collected.

A plastic container can be used to collect spiders by the following method. When a spider was seen resting, the mouth of the plastic container washed directly below the spider. When the spider is disturbed it will drop into the plastic container. Web living spiders were collected into net placing below them as they tend to drop to the ground when they disturbed. In Order to identify and record the collected specimens, they were placed in plastic containers and taken to the laboratory of Zoology Department, Hinthada University.

Equipments

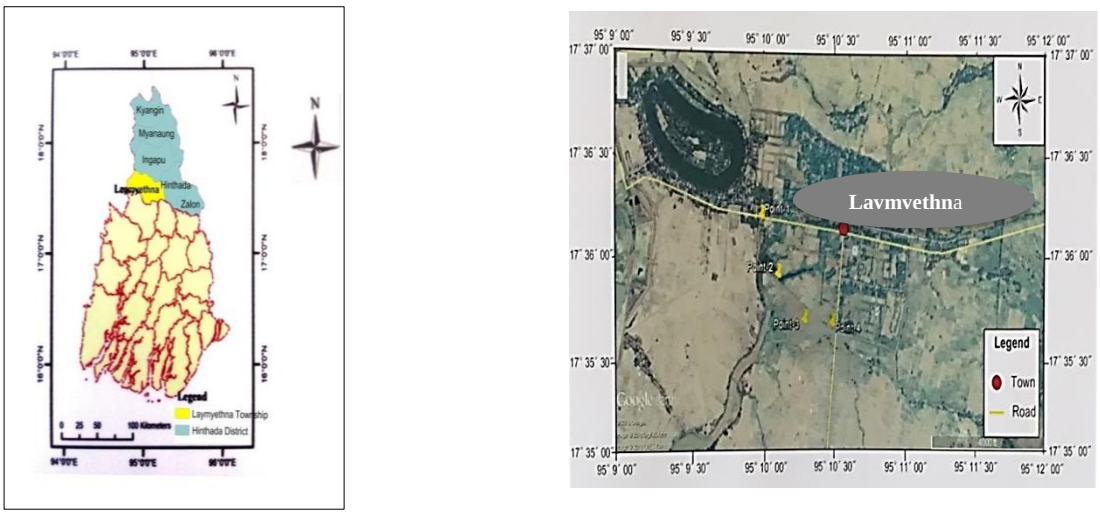
Hand lens with 10 magnifications was used for the identification of collected spiders. Plastic cups and hand net were used for holding spiders. Stereoscopic microscope and dissecting microscope were used for viewing the detail structure of the collected specimen. Digital camera (Conon) was used for taking photograph.

Identification

The collected spider species were identified according to Mascord (1970) and Koh (2001).

Preparation for taking photograph and preservation of spider

When spiders die, they soon shrink, shrived and lose their color and other characters, so they need to prevent from getting dry. The captured spiders were kept in plastic containers for about two minutes and anaesthetized by chloroform. Fresh specimens of spiders were photographed as soon as they were collected. Specimens were carefully placed in the bottles of sufficient size. Only me specimen were kept in each bottle for further study.



(Source: Department of Geography, Hinthada University)

Fig1. Map of study site


Laymyethna Township



Building Wateredge Bushes



Shrubs Scattered trees Grassland

Plate1. Study sites and different habitats of Spider species

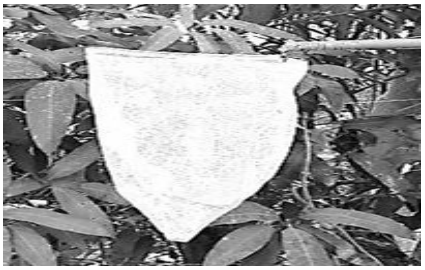

A. Plastic containers B. Digital camera (Canon)

Plate 2. Collection equipment

Plate 2. Continued

C. Dissecting microscope

D .Hand lens



E. Hand net

RESULTS

A total of 18 species of spider falling into 14 genera under nine families were recorded from Laymyethna Township, Ayeyawady Region during March 2022 to August 2022. Among them, family Aranidae was recorded as the highest species number (nine species), followed by two species by family Sparassidae and one species from family lycosidae, Oxyopidae, Pholcidae, Salticidae,Tetragnathidae, Theraphosidae, Theridiidae. Identification was followed after Mascord (1970) and Koh (2001).

Distinctive characters of spider species

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

Cephalothorax is flat. The abdomen is oval shape and longer than wide. Legs are long and slender, sharp at the tip. The spider is a very large and widely distributed group, and nearly all its members construct an orb web. (Plate 3.1, A)

***Argiope versicolor* (Doleschall, 1859)**

Cephalothorax is flat and much longer than its width. Legs are long and stout .Yellowish brown and black stripes are present on the abdomen. The females are usually larger than males. Orb weavers, easily recognized by the X - shaped on the web (Plate 3.1, B).

***Cyrtophora cicatrosa* Stoliczka,**

The carapace is triangular shape. Abdomen is oval shape, black and silver color. Black spots are found on the legs. It Builts the complex webs. The rolled leaves are in the center of web for hiding (Plate 3.1, C).

***Nephila antipodiana* (Walckenaer, 1842)**

Cephalothorax is wide as long, white in color with black spots are present. The abdomen is elongated or sub cylindrical. Legs are long. It makes huge webs. The sternum is decorated with seven yellow spots on the edge. It has a large and strong web with golden color. The female is much larger than male (Plate 3.1, D).

***Nephila kuhlii* Doleschall, 1859**

The cephalothorax is flat and dark in color. The abdomen is elongated and deeply black in color. A pair of longitudinal brilliant yellow line and a transverse band is found in the abdomen. The legs are very long; femurs of all the legs are red. Orb web spiders (Plate 3.1, E).

***Nephila.pilipes* (Fabricius) 1793**

The carapace is yellow.The abdomen is mostly dark brown color with yellow stripes. Legs are very long. The first, second and fourth pairs of legs of juvenile females have dense

hairy brushes, but these brushes disappear as the spider matures. Male have light brown legs, with some hairs, and construct golden orb web spiders (Plate 3.1, F).

***Neoscona crucifera* (Lucas, 1839)**

The carapace is triangular shape with numerous white hairs. The abdomen is mostly light brown with yellow stripes. Legs are long, black and yellow stripes are present (Plate 3.1, G).

***Neoscona nautica* (C.L.Koch) 1875**

The carapace is triangular shape. Abdomen is round and longer than its width. Black spots are found on the legs. Color can range from light brown to almost black (Plate 3.1, H).

***Macracantha hasselti* (C.L.Koch, 1837)**

Carapace is as long as its width. Abdomen is yellow color with black spots. And it has Small body and extremely short legs. Orb web spider (Plate 3.1, I).

***Hogna carolinensis* (Walckenaer, 1805)**

Carapace is flat and gray in color. Abdomen is an oval shape. Legs are long and slender. Orb web spider (Plate 3.2, A).

***Oxyopes aspirasi* Barrion &Litsinger, 1995**

Cephalothorax is roughly rectangular in shape. The legs have long and black erectile spines. Two thin dorsal lines run down the abdomen. They do not build webs. However, the females use the web to build a nursery for eggs. These spiders are day hunters and have eight eyes (Plate 3.2, B).

***Crossopriza lyoni* (Blackwall) 1867**

Carapace is as long its width. Abdomen is pale yellow in color. They are commonly found inside the houses. They hung upside down in the webs. Eggs are held together by a few strands of silk and carried by the mother (Plate 3.3, A).

***Phlegra davidi* Simon, 1876**

Carapace is rounded; black color and white stripe are present. Abdomen is tapering at the behind. Legs are short with deeply black in color (Plate 3.3, B).

***Heteropoda venatoria* (Linne) 1767**

Carapace is an oval shape. Abdomen is tapering behind. Legs are long, slender compared to the size of the body. Males have larger legs than females and they have a dark, longitudinal stripe on the abdomen (Plate 3.4, A).

***Plexippus paykulli* (Savingny and Audouin)1825**

Carapace is round, smooth and it has black color. Abdomen is deeply black with hairs. Legs are short, and have distinct black spot. The female is slightly larger than the male. This spider is mostly found on the wall of buildings. (Plate 3.4, B).

***Tetragnatha montana* Simon, 1874**

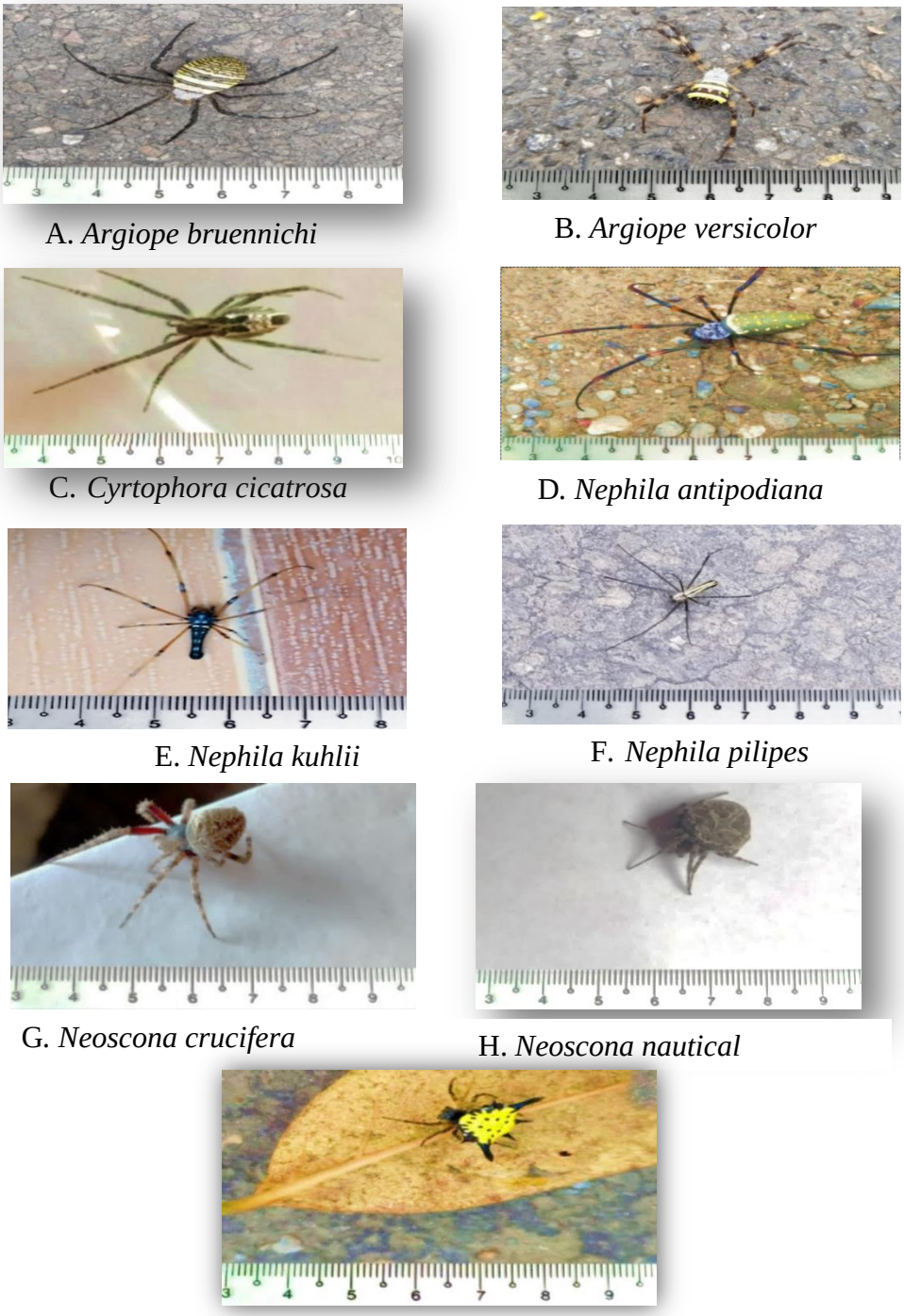
Carapace is quadrangle; with brown color. Abdomen is elongated and light brown color. Legs are long, with distinct black spot (Plate 3.5, A).

***Neoheterophrictus smithi Mirza* , Bhosale & Sanap, 2014**

Carapace is longer than its width. Abdomen is long and slender, posterior end tapering. Legs are long and stout. A long, thin spine on the base of the primary tibial apophysis is present (Plate 3.5, B).

***Enoplognatha ovata* (Clerck, 1757)**

Carapace is flat and brown in color. Abdomen is rounded, dark yellow color with black spots. Legs are long, slender, and sharp at the tip. These spiders spin irregular webs and their webs are messy. (Plate 3.6).



A. *Argiope bruennichi* B. *Argiope versicolor*

C. *Cyrtophora cicatrosa* D. *Nephila antipodiana*

E. *Nephila kuhlii* F. *Nephila pilipes*

G. *Neoscona crucifera* H. *Neoscona nautical*

I. *Macracantha hasselti*

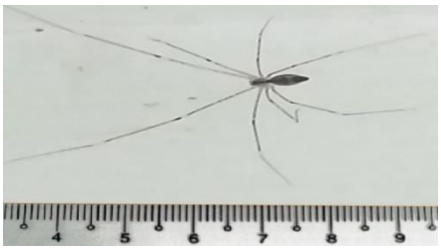
Plate 3.1 Recorded spider species under family Araneidae

Plate 3.1 Continued

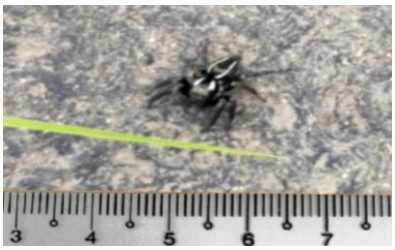
A.*Hogna carolinensis*

B.*Oxyopes aspirasi*

Plate 3.2 Recorded spider species under families lycosidae and Oxyopidae



A .*Crossopriza lyoni*



B. *Phlegra davidi*

Plate 3.3 Recorded spider species under families Pholcidae and Salticidae

A. *Heteropoda venatoria*

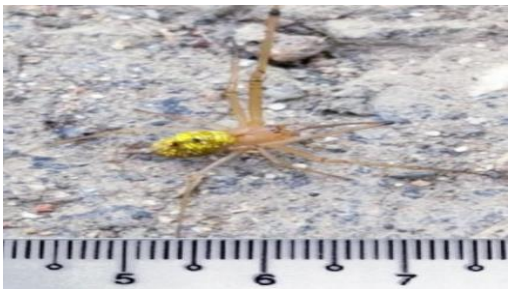
B. *Plexippus paykulli*

Plate 3.4 Recorded spider species under familily Sparassidae

A. *Teragnatha Montana*

B. *Neoheterophrictus smithi*

Plate 3.5 Recorded spider species under families Tetragnathidae and Theraphosidae



Enoplognatha ovata

Plate 3.6 Recorded spider species under family Theridiidae

Table 1. List of some spider species recorded in study area

Sr.no	Scientific name	Common name	Family
1.	*Argiope versicolor*	Multi-colored St. Andrew's Cross Spider	Araneidae
2.	*Argiope bruennichi*		
3.	*Cyrtophora cicatrosa*	Garden tent web spider	
4.	*Nephila antipodiana*	Batik Golden Web Spider	
5.	*Nephila kuhlii*	Black Wood Spider	
6.	*Nephila pilipes*	Golden Web Spider	
7.	*Neoscona crucifera*	Barn Spider	
8.	*Neoscona nautica*	Brown Sailor Spider	
9.	*Macracantha hasselti*		
10.	*Hogna carolinensis*		lycosidae
11.	*Oxyopes aspirasi*	Striped Lynx Spider	Oxyopidae
12.	*Crossopriza lyoni*	Tailed Daddy-Long-Leg Spider	Pholcidae
13.	*Phlegra davidi*		Salticidae
14.	*Heteropoda venatoria*	Domestic Huntsman Spider	Sparassidae
15.	*Plexippus paykulli*	Larger Housefly Catcher	
16.	*Tetragnatha montana*		Tetragnathidae
17.	*Neoheterophrictus smithi*	-	Theraphosidae
18	*Enoplognatha ovata*		Theridiidae

Table 2. Percentage (%) of recorded spider species composition by family

Sr.No	**Family**	**Genus**	**Number of species**	**Percentage (%)**
1	Araneidae	5	9	50
2	lycosidae	1	1	5.55
3	Oxyopidae	1	1	5.55
4	Pholcidae	1	1	5.55
5	Salticidae	1	1	5.55
6	Sparassidae	2	2	11.11
7	Tetragnathidae	1	1	5.55
8	Theraphosidae	1	1	5.55
9	Theridiidae	1	1	5.55
Total		14	18	100

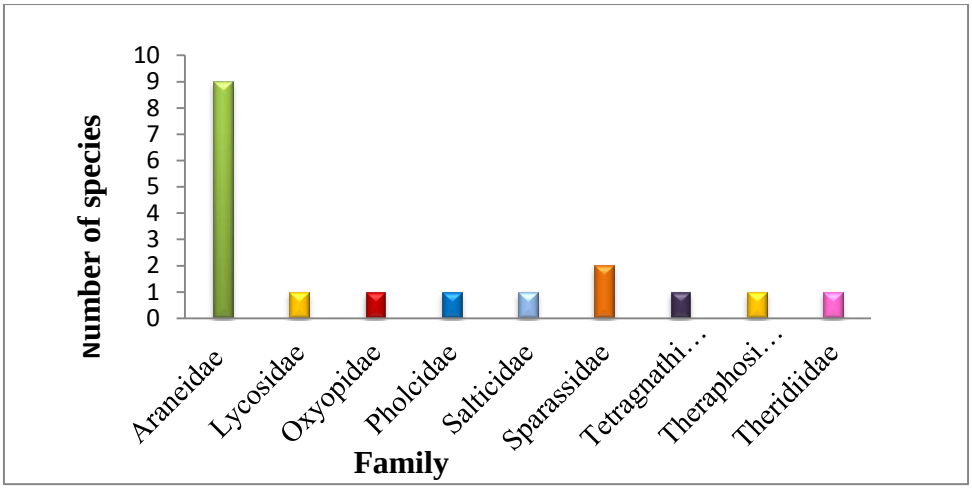


Fig 2. Species composition of different spider families in study area

Sr. No	Order	Family	Scientific Name	Mar	Apr	May	Jun	Jul	Aug
1	Araneae	Araneidae	*Argiope versicolor*	✓	✓	✓		✓	✓
2			*Argiope bruennichi*	✓	✓	✓	✓	✓	✓
3			*Cyrtophora cicatrosa*	✓	✓	✓	✓	✓	✓
4			*Nephila antipodiana*	✓	✓	✓	✓	✓	✓
5			*Nephila kuhlii*	✓	✓	✓		✓	✓
6			*Nephila pilipes*	✓	✓	✓		✓	✓
7			*Neoscona crucifera*	✓	✓	✓		✓	✓
8			*Neoscona nautica*	✓	✓	✓	✓	✓	✓
9			*Macracantha hasselti*	✓	✓	✓	✓	✓	✓
10		lycosidae	*Hogna carolinensis*	✓	✓	✓	✓	✓	✓
11		Oxyopidae	*Oxyopes aspirasi*	✓	✓	✓	✓	✓	✓
12		Pholcidae	*Crossopriza lyoni*	✓	✓	✓	✓	✓	✓
13		Salticidae	*Phlegra davidi*	✓	✓	✓	✓	✓	✓
14		Sparassidae	*Heteropoda venatoria*	✓	✓	✓	✓	✓	✓
15			*Plexippus paykulli*	✓	✓	✓	✓	✓	✓
16		Tetragnathidae	*Tetragnatha montana*	✓	✓	✓	✓	✓	✓
17		Theraphosidae	*Neoheterophrictus smithi*	✓	✓	✓	✓	✓	✓
18		Theridiidae	*Enoplognatha ovata*		✓	✓	✓	✓	✓

DISCUSSION

Spiders may also serve as bio control agent (Raghavendra,2001) Spiders have a very significant role to play in the ecology by being exclusively predatory. (Wise, 1993)

Observation on species composition of some spiders were conducted in Laymyethna Township, Ayeyawady Region.

In the present study, a total of 18 species belonging to 14 genera under nine family Araneidae, lycosidae,Oxyopidae, Pholcidae, Salticidae, Sparassidae, Tetragnathidae, Theraphosidae and Theridiidae were recorded during the study period.

Jue Jue May Maung (2019)studied some ecological aspects of spider species in two villages of Kangyidaunt Township, Ayeyawady region, a total of 20 species of spider falling into eighteen genera under eight families were recorded.

In the present study, four species were similar in Jue Jue May Maung. The species of *Argiope versicolor, Neoscona nautica, Crossopriza lyoni, Heteropoda venatoria* were recorded in study area.

Hnin Wai Htun, 2018 reported that a total of 17 species which comprise 15 genera belonging to seven families from Hinthada University. In the present study, six species were similar to Hnin Wai Htun, 2018 .

Naw Sa Eh Shel Ra, 2018 studied species composition and occurrence of some spider species in two villages of Pathein Township, Ayeyawady Region, a total of 27 species of spiders falling into nineteen genera under eight families. In the present study, six species were similar to Naw Sa Eh Shel Ra, 2018.

Men Zing Sang (2008) described 41 species of 27 genera belonging to 14 families of spider species in Kyaikhtiyo Wildlife Sanctuary, Mon State.Four species recorded from the present research were observed to similar in recorded species of Mon State.

Aye Aye Lwin (2009) recorded that she described 42 species of 32 genera belonging to 14 families of spider species in Yangon Environs, Yangon Township, Ayeyawady Region. Five species recorded from the present research were observed to similar in recorded species of Yangon.

Aye Thida (2017) studied on the occurrence and habitat preference of some spiders in Maubin Environs, Maubin Township, Ayeyawady Region. She recorded a total of 27 species of spider comprises in 22 genera under nine families in this area. In the present study; five species were similar to Aye Thida (2017).

Thazin Pwint Oo (2022) studied on the species occurrence and abundance of some spiders in two villages of Ingapu Township, Ayeyawady region, a total of 24 species of spider falling into 20 genera under nine families were recorded in this study area. Ten species recorded from the present were observed to similar in recorded species of Ingapu township.

In the present study , the data recorded on spider species in this area pointed that the changes of species composition and diversity of spider fauna is related to food availability, habitat utilization and seasonal changes.

Therefore, this survey should be conducted to get some knowledge on the status of the spiders present in the area.

CONCLUSION

This present work, the results showed that species occurrence of some spider species in Laymyethna Township, Ayeyawady Region. A total of 18 species of spider falling into 14 genera follow after nine families were recorded in study area. The largest numbers of spider species were observed in family Araneidae.Study area contains five habitats such as building, near water, bushes, shrubs, grassland and scattered trees will be recorded.

The study baseline data obtained the valuable information for conservation and also provide researchers in enhancement of further researchers.

Acknowledgements

We are greatly indebted to Dr Theingi Shwe Rector, Hinthada University, Dr Yee Yee Than, Pro-Rector, Hinthada University and Dr Cho Kyi Than, Pro-Rector, Hinthada University, for their permission to submit this paper. We are also thankful toProfessor Dr. Aye Aye Than (Head) and Professor, Dr Moe Moe Kyaw, Professor, Hinthada University for their guidance and suggestions.

References

Aye Aye Lwin, 2009. Community ecology of spiders around Yangon environs. *PhD Thesis*, Department of Zoology, Yangon University.

Aye Thida . 2017. Occurrence and habitat preference of some spiders in Maubin Environs, Maubin Township, Ayeyawady Region.*MRes Thesis*, Department of Zoology, Maubin University.

Bristowe, W.S., 1958. *The World of Spiders*. Collins, st, James's Place, London.52

Foelix, R.F., 1996. *Biology of spiders*. Oxford University Press. Geors Thieme Verlag, 276 pp.

Hnin Wai Htun , 2018.Seasonal abundance of some spiders in Hinthada University environs . *M .Sc Thesis*, Department of Zoology, Hinthada University.

Jue Jue May Maung,2019.Some ecological aspects of spider species in two villages of Kangyidaunt township, Ayeyarwady region. *M.Sc Thesis* , Department of Zoology, Pathein University.

Koh, K.H., 2001. A Guide to Common Singapore Spiders. BP Guides , Singapore Science Center.

Main. B. Y., 1976. *Spiders*. Collins, Sydney, London.

Mascord, R., 1970. *Australian spiders in color*. A.H. and A. W. Reed PTY LTD, 53 Myoora Road, Terrey Hills, Sydney. 65-67.

Men Zing Sang, 2008. Some ecological aspects of spider in Kyaikhtiyo Wildilife Sancutuary, Mon State. *PhD Thesis*, Department of Zoology, Yangon University. 100pp.

Naw Sa Eh Shel Ra ,2018.Species composition and occurrence of some spider specie in two villages of Pathein township, Ayeyawady region.*MRes Thesis*. Department of Zoology, Pathein University.

Plantick, N. I., 2006. *The world spider Catalogue,* Version 7.0. American Museum of Natural History.

Raghavendra, N., 2001. Deversity of arboreal spiders in Cashew orchards. *M.Sc.Thesis*, Department of Alied Zoology, Mangalore University.

Thazin Pwint Oo,2022 Species composition and abundance of some spiders in two villages of Ingabu Township , Ayeyawady Region. *M.Sc.Thesis*, Department of Zoology, HinthadaUniversity.

Wise, D. H., 1993. Spiders in Ecological Webs. Cambridge Univ. Press, London.342 pp.