Article

A contribution key for the first recorded spider (Arachnidae: Aranae) fauna from Sheringal, Khyber Pakhtunkhwa, Pakistan

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Abstract

The spiders (Arthropoda: Arachnida) have a hard cephalothorax and soft abdomen. They are environmental indicators and play an important role in biological control of pests and vectors. The present study was conducted to prepare the key for the first recorded spider fauna during June 2013-July 2014 in 6 quadrates of Sheringal, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia-Sheringal, Dir Upper (DU), Khyber Pakhtunkhwa (KP), Pakistan. During the present research, 10 species belong to 7 families, and 10 genera were recorded. The family Sparassidae was the largest among collected families ($n_{Sparassidae}$=19), its body was larger than others, abdomen was narrow at posterior, cephalothorax region was broad and brown, chelicearae were forwarded, legs were strong, body have hairs grey to brown and they were harmless and speedy. Gnphosidae family was the smallest among collected families ($n_{Gnphosidae}$=3), their eyes were heterogeneous, their inner margin of chelicerae were with a wide serrated lamina, posterior row of eyes were much longer than anterior, with lateral rounded maxillae. While the family Hersiliidae was the unique in collected families ($n_{Hersiliidae}$=6), as they are known as two-tail spiders, they have enlarged spinnerets, their male grow up to 8 mm and female up to 10 mm, they have 2 tails and are mimic with host plants. It was concluded that the majority of the collected species belong to the family Sparassidae. It is recommended that further research may be conducted on arboreal and aquatic species of spiders in Sheringal, KP, Pakistan.

Keywords Arachnida; cephalothorax; Sheringal; Sparassidae; spider fauna.

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1 Introduction

The spiders differ physically from other arachnids in that their 2 body regions are joined by a thin stem-like connection. In contrast, the 2 body regions of ticks, scorpions, daddy longlegs and other non-spider arachnids are joined very broadly that their body appears as a single structure rather than as a distinct cephalothorax and abdomen (Riechert, 1984). The cephalothorax of all arachnids bears a pair of jaws called chelicerae attached to

the front of the head. The paired chelicerae are the main external mouthparts. In spiders, these jaws are sloped with hollow fangs that inject venom into their prey (Nieuwenhuys, 2008).

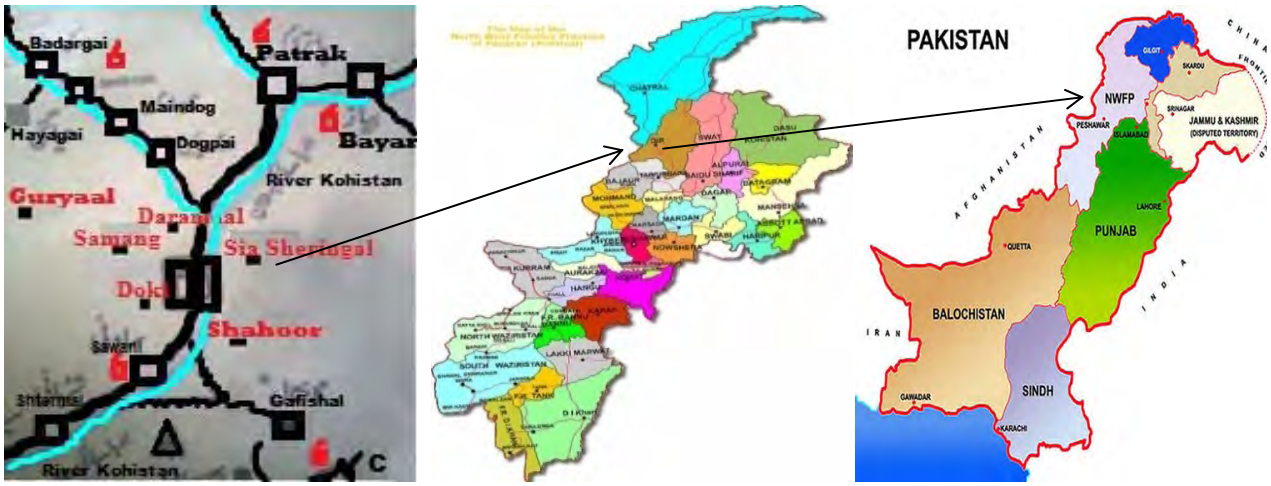
Spider silk is a liquid protein produced by internal abdominal glands and exuded from microscopic spigots at the tip of each spinneret. The liquid hardens into a thread by stretching rather than from exposure to air. The output from several spigots is interwoven to make a single silk thread. Spiders as a group make 6 different types of silk that vary in stickiness, but no single spider makes all 6 types (Davey, 1994).

Spiders grow from eggs into adults by gradually developing through a series of immature stages called spider-lings. They look like adult spiders but are smaller and having rudiments of reproductive system. Development from one life stage to the next occurs by molting, the spider-ling sheds its skin and grows to the next larger stage. The exact number of immature stages depends on the species and ranges from 5-10. Once they reach adulthood, the most spiders stop molting and do not grow to larger sizes. *Tarantulas* sp are exceptions, they continue to shed their skins and grow as adults (Fabre, 1999).

Web spinners and non-web spinners use silk as draglines, single threads that they trail behind them much like safety ropes used by a person climbing a mountain. When threatened, the spider quickly drops to the ground on the dragline and escapes danger. Draglines often become household nuisances, when the threads cover in dust and appear as cobwebs in corners and along ceilings. Female spiders protect their eggs by wrapping them into a case with a tough outer silk coat. The so-called eggs were seen on webs or attached to the tip of the female's abdomen are in fact egg cases or egg sacs containing dozens or hundreds of eggs. Spider-lings hatch from eggs, normally remain inside the egg case. Some spiders entangle prey in silk before they bite it, therefore, the spider is not injured by large, struggling prey. Spiders can only ingest liquid foods. Most spiders inject prey with digestive enzymes that dissolve body tissues, which then are sucked up as liquids into the stomach. Some spiders macerate prey between their chelicerae and then inject it with venom and ingest the fluids (Platnick, 1995). They inhabit on the ground, underground, tunnels systems, under stones and near water but habitually, they like moist places. Some spiders live on the seaside, where they are sunken into the sea twice a day. Fresh water is also the territory for many species including the water spiders, *Argyroneta aquatic* (Karren, 2002).

The Sheringal Valley is located between the lash green forested mountains in DU, KP, Pakistan. Altitude is approximately 2000 m above the sea level. It is a small valley situated the northern site of DU, KP, Pakistan. Bajauar Agency and Jandool is located toward the west, while it is surrounded by district Swat and Malakand Agency from the east and south, respectively. Total area covered by this hilly valley is 7993 hec. The northern part is generally covered with forests. The River Panjkora flows towards the north-south. The climate is somewhat cold in winter and warm in summer. The minimum and maximum temperatures in January have been recorded as -2.3 and 11.22 °C, respectively (Perveen and Khan, 2015 a; Fig. 1).

The Sheringal is home to a number of wildlife species including mammals and birds, such as snow leopard, *Panthera uncia* (Schereber, 1775); common leopard, *Panthera pardus* (L, 1758); Himalayan monal pheasant, *Lophophorus impejanus* (Latham, 1790); Himalayan snow cock, *Tetraoggallus himalayensis* (Gray, 1848) and snow partridge, *Lerwa lerwa* (Hodgson, 1837) are some of the key bird species found here (Hazrat et al., 2011; Perveen and Khan, 2015 b). The objective of the present research is to develop the key for spider fauna and to educate the people of Sheringal about them.



a **b** **c**

Fig. 1 The maps spiders fauna of Sheringal, Dir Upper, Khyber Pakhtunkhwa, Pakistan where the present research was conducted to prepared a dichotomous key: arrows show map of the study area, Sheringal (a) where the present research was conducted, it is located in the Khyber Pakhtunkhwa (b), which is one of the provinces of Pakistan (c) (Online, 2013; Perveen and Khan, 2015 a and b).

2 Materials and Methods

The people of Sheringal, Dir Upper (DU), Khyber Pakhtunkhwa (KP), Pakistan usually concern with agriculture. Total area covered by this hilly valley is 7992.7 acres. The population is about 20,000 and literacy rate is 51%. The present research was conducted during June 2013-August 2014 in 6 quadrates, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia Sheringal of the study area, Sheringal, KP, Pakistan (Fig. 1).

The spiders were collected from the study area of the quadrates by various methods like pitfall method and simply by hands picking etc (Buss et al., 2010; Perveen and Jamal, 2012 a, b and c) in plastic jars (length: 50 cm; dm: 10 cm). The captured spiders were brought to the laboratory, Department of Zoology (DOZ), Shaheed Benazir Bhutto University (SBBU), Sheringal, DU, KP, Pakistan. They were faint by mortin® (CIC Enterpriser, Lahore, Pakistan), then preserved in 90% of ethanol with few drops of glycerin. They were identified by using keys (Levi and Randolph, 1975; Namkung et al., 2002; Perveen et al., 2012), experts, pictorials, Internet and already preserved specimens. The dichotomous key was prepared for spider fauna of Sheringal (Table 1). They were labeled and submitted to Natural History Museum, DOZ, SBBU, Sheringal, Pakistan for record.

3 Results

During the present research, the first recorded spiders from 6 quadrates of Sheringal, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia-Sheringal, DU, KP belong to Phylum Arthropoda, class Arachnida and order Aranae. Their families with species are as follows: **Araneidae**: garden spider, *Araneus diadematus* (Clerk, 1757); **Gnaphosidae**: ground spider, *Gnaphosa eucalyptus* (Ghafoor and Beg, 2002); **Hersiliidae**: two-tail siders, *Hersilia savignyi* (Luca, 1836); **Lycosidae**: wolf spider, *Arctosa littoralis* (Simon, 1857); *Hippasa partita* (Takidar, 1970) and *Pardosa distincta* (Backwall, 1867); **Opilionidae**: harvestmen, *Handrobunus grandis* (Sundevall, 1833); **Pholcidae**: cellar spider, *Crossopriza lyoni* (Blackwall, 1867); **Sparassidae**: huntsman spiders, *Halconia insignis* (Thorell, 1836); *Isopeda tuhogniga* (Barrion and Litsinger, 1995).

Further, their families wise frequency distribution in descending order is as follows: Lycosidae (37.2%) > Sparassidae (22.1%) > Opilionidae (12.7%) > Pholcidae (12.0%) > Hersiliidae (7.0%) > Araneidae (5.8%) > Gnaphosidae (3.5%) (Fig. 2).

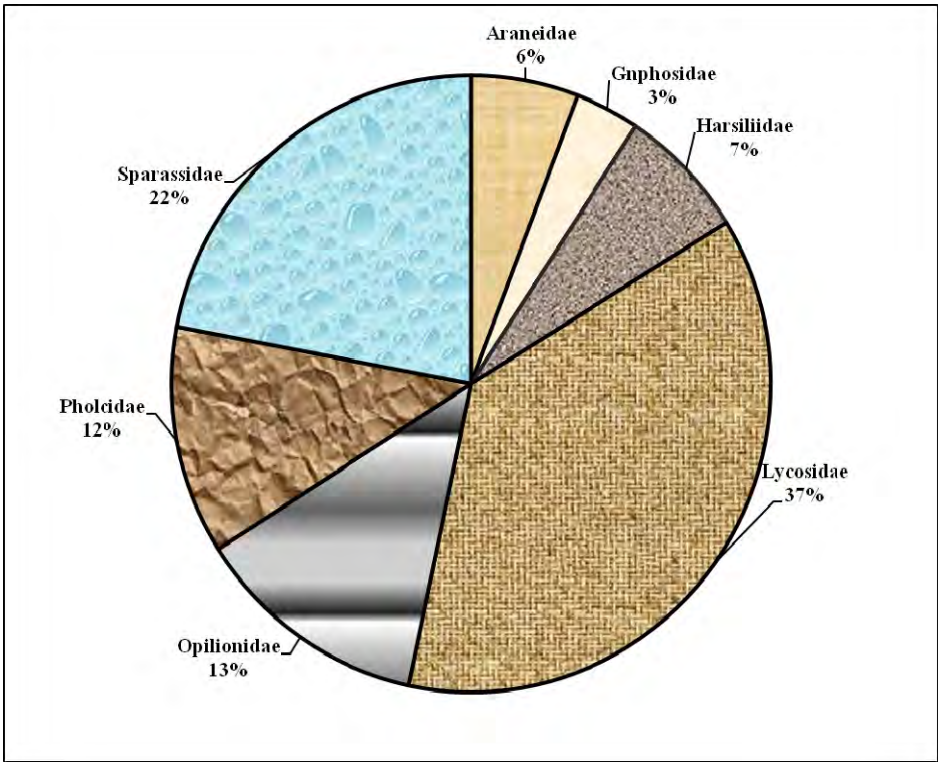


Fig. 2 Families wise frequency distribution of the first recorded spider (Arachnidae: Aranae) fauna idetified from 6 quadrates of Sheringal, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia-Sheringal, Dir Upper (DU), Khyber Pakhtunkhwa (KP), Pakistan; sample size: n=86

Furthermore, the same for species is as follows: *A. littoralis* (23.0%) > *H. grandis* **(**12.8%**)** > *C. lyoni* (11.6%) = *I. tuhogniga* (11.6%) > *H. insignis* (10.5%) > *H. partit* (7.0%) = *P. distincta* (7.0%) = *H. savignyi* (7.0%) > *A. diadematus* (6.1%) > *G. eucalyptus* (3.5%) (Fig. 3).

The present dichotomous key is a nontraditional key designed as a tool that helps to the user to identify spiders that found in the habitats of SBBU, Sheringal (Table 1). It provides a systematic (step-by-step) way to categorize spiders in the same area. A series of choices were made based on the spiders' characteristics to discover their distinctiveness. This spider key is based on body shape and physical features. It is prepared for the Phylum, Sub-phylum, Class, Sub-class and Super-order, Order, Family, Sub-family, Genus and species of spiders collected from SBBU at Sheringal, KP, Pakistan during June 2013-July 2014 (Table 1).

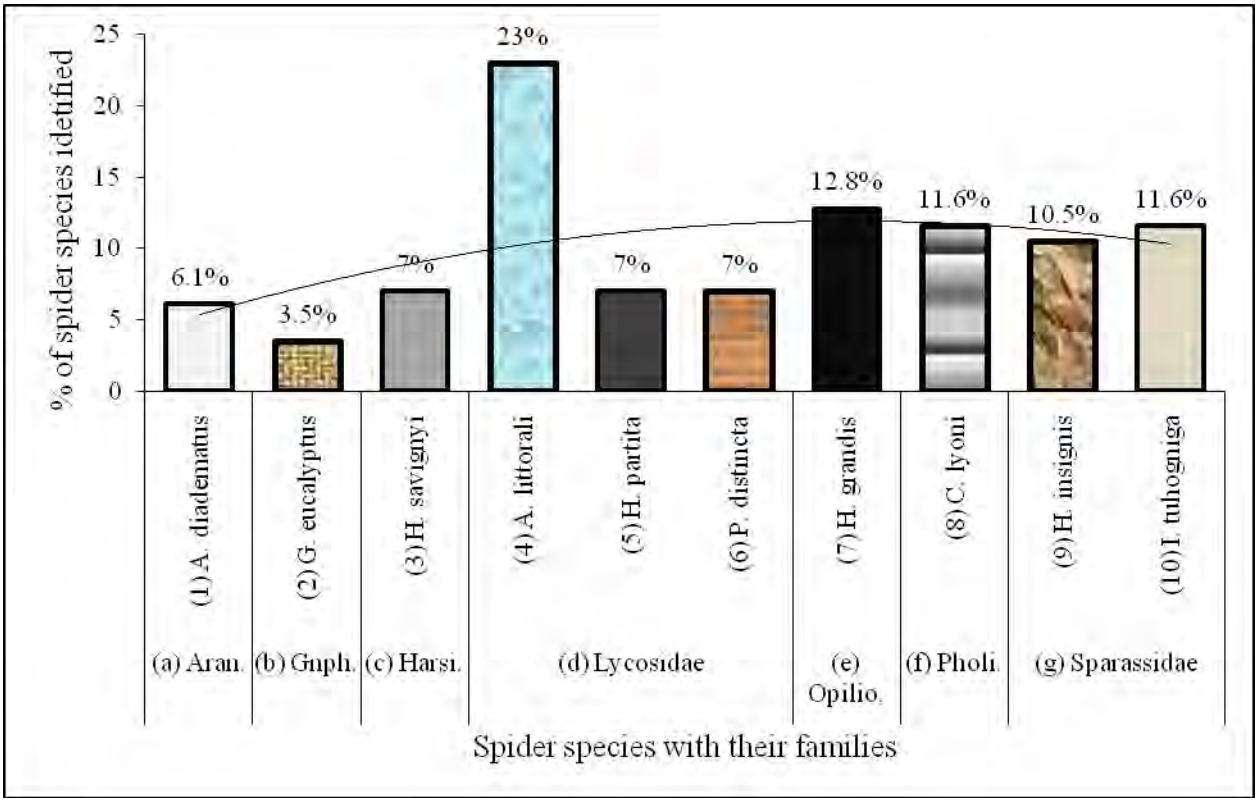


Fig. 3 Species wise % frequency distribution of the first recorded spider (Arachnidae: Aranae) fauna idetified from 6 quadrates of Sheringal, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia-Sheringal, Dir Upper (DU), Khyber Pakhtunkhwa (KP), Pakistan; numbering given in graph for both species and families for abbreviation are given in with the same on right side: (a) Araneidae with (1) garden spider, *Araneus diadematus* (Clerk, 1757); (b) Gnaphosidae with (2) ground spider, *Gnaphosa eucalyptus* (Ghafoor and Beg, 2002); (c) Hersiliidae with (3) two-tail siders, *Hersilia savignyi* (Luca, 1836); (d) Lycosidae with (4) wolf spider, *Arctosa littoralis* (Simon, 1857); (5) *Hippasa partita* (Takidar, 1970) and (6) *Pardosa distincta* (Backwall, 1867); (e) Opilionidae with (7) harvestmen, *Handrobunus grandis* (Sundevall, 1833); (f) Pholcidae with (8) cellar spider, *Crossopriza lyoni* (Blackwall, 1867); (g) Sparassidae with (9) huntsman spiders, *Halconia insignis* (Thorell, 1836); (10) *Isopeda tuhogniga* (Barrion and Litsinger, 1995); %: percentage; trend line: polygonial; sample size: n=86

Table 1 Key for the first recorded spider fauna collected from the 6 quadrates of Sheringal, i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia-Sheringal, Dir Upper, Khyber Pakhtunkhwa, Pakistan during June 2013-July 2014.

Key for the phylum, class and orders of spiders fauna of Sheringal, KP, Pakistan	
1a:	Chitineous exoskeleton, jointed legs, wings present or absent……..Phylum Arthropoda.
1b:	Skeleton not chitineous, legs are not jointed……...…….2
1a(i):	Cephalothorax present, 4 pairs of legs and un-segmented abdomen…….....Class Arachnidae.
1a(ii):	8 small eyes, wings absent, antennae absent and spinnerets present……...Order Aranae.
Key to the families of spiders Sheringal, KP, Pakistan	
1a:	Tarsal claws two…….....…2
1b:	Tarsal claws three…….....…..….5
2a(1a):	Legs without spines…….……...3
2b(1a):	Legs with spines……..…….……..……4
3a[2a(1a)]:	Posterior row of eyes not re-curved and not form two rows……..…….Araneidae.
3b[2a(1a)]:	Posterior row of eyes very strongly re-curved that it may be considered to form two rows……..……...Lycosidae.
4a[2b(1a)]:	Eyes heterogeneous ……..…..……..Gnaphosidae.
4b[2b(1a)]:	Tarsi long and flexible, labium broader than longer, legs very long and slender…...Pholicidae.
5b(1b)(i):	Enlarged spinnerets, male grows up to 8 mm and female up to 10 mm……Hersiliidae.
5b(1b)(ii)	Long, delicate legs and oval body…… Opilionidae.
5a(1b)	Cephalothorax as long as wide or slightly longer than wide, posterior row of eyes straight or

	slightly pro-curved, anterior row usually straight and sub-equal, lateral not larger than medians, apex of metatarsus with a soft tribute membrane……..Sparassidae.
	Key to genus of family Araneidae
1a:	Thoracic groove transverse, epigynal scape often wrinkled, not with any lateral lobes…….……*Araneus*.
1b:	Thoracic groove not transverse, epigynal scape not wrinkled and with any lateral lobes……..2
	Key to specie of genus *Araneus*
1a:	Abdomen with straight marking, light patches and not 3 pair of spinner……..2
1b:	Abdomen with cross marking, dark patches and 3 pair of spinnerets……..……..….*diadematus*.
1b(i):	Body length 10-13 mm…….……3a
1b(ii):	Body length 4-8 mm……..…….3b
3a[1b(i)]:	Large in size, legs smaller then male, abdomen broadly oval and taper towards spinnerets and epigynal plate present……..…...female.
3b[1b(ii)]:	Small in size, legs larger then female and with no epigynal plate……..……male.
	Key to genus of family Gnaphsidae
1a:	Inner margin of cheliceral fang furrow with a keeled lamina……..…….……2
1b:	Inner margin of cheliceral fang furrow smooth or with one or more district teeth or tentacles…….……..…3
2a(1a):	Inner margin of chelicerae with a wide serrated lamina, posterior row of eyes much longer than the anterior, with the laterals, maxillae rounded……..…….…….*Gnaphosa.*
	Key to specie of genus *Gnaphosa*
1a:	Dorsum of abdomen provided with white patches…….……2
1b:	Dorsum of abdomen not provided with white patches…….……..3
2a:	Dorsum of abdomen provided with a dagger shaped white patch at the anterior end up to the middle, abdomen having with tufts of hairs, labium very small, nearly one third the length of maxillae…….*eucalyptus.*
2a(i):	Female and male both are small in size……...…4a
2a(ii):	Female and male both are large in size……...4b
4a[2a(i)]:	Cephalothorax dark brown, carapace with marking and chelicera vertical…….Female.
4b[2a(ii)]:	Cephalothorax reddish brown, greenish abdomen and light yellow eggs…….Male.
	Key to Genus of family Hersiliidae
1a:	Enlarge spinnerets……2
1b:	It has 2 tails……..3
2a(1a):	Mimic with host plants…….*Hersilia.*
	Key to species of Genus *Hersilia*
1a:	Poisonous to human being……2
1b:	Insectivorous……..3
2a(1a):	Lazy and poor eyesight…….*savignyi.*
2a(1a)I:	Larger then male and grows up to 10 mm long……Female.
2a(1a)II:	Smaller then female and grows up to 8mm long……Male.
	Key to genus of Family Lycosidae
1a:	Posterior spinnerets distinctly longer than the anterior with apical segment conical and as long as the basal……..2
1b:	Posterior spinnerets distinctly shorter than the anterior with apical segment not conical as long as the basal……..3
2a(1a):	Anterior row of eyes little wider than the second row, sternum generally provided with mid longitudinal dark marking……..*Hippasa*.
2b(1a):	Cephalic region not much elevated from thoracic region, superior claws not long and slender and toothed all over the length of claw……..*Pardosa*.
2c(1a):	Carapace glabrous or nearly so and tarsus I with a dorso-basal bristle which is drawn out thin and fine at the end and is much longer than the hairs and trichobothria…….……*Arctosa*.
	Key to species of genus *Hippasa*
1a:	Anterior row of eyes not pro-curved and not broader than the second row of eyes……..2
1b:	Anterior row of eyes pro-curved and broader than the second row of eyes…….……...3
2a(1a):	Legs long and uniformly colored without markings……*partita*.
2a(1a)I:	Larger then male and cephalothorax is longer…….…..Female.

2a(1a)II:	Smaller then female and cephalothorax is high at interior and slightly lower at posterior....Male.
	Key to species *pardosa*
1a:	Spiders of bigger size with total length more than 8 mm……2
1b:	Spiders of smaller size with total length not more than 8 mm……...3
2a(1a):	Webbing is not used in prey capturing, but is used for draglines…….*distincta*.
2a(1a)I:	Larger then male and grow up to 5-7 mm long…….....Female.
2a(1a)II:	Smaller then female and grow up to 4-6 mm long……..Male.
	Key to species *arctosa*
1a:	Tibiae I and II each with 2 ventral spines……...2
1b:	Tibiae I and II each with no ventral spines……..3
2a(1a):	Tibiae I and II each with 2 ventral spines; carapace dark reddish brown and sub-globular abdomen gray-brown with yellow mottles and 2 dorsal pairs of spherical brown spots on more, epigynum with a longitudinal to oblique lateral margins of median septum, Y-shaped on both median ends.....*littoralis*.
2a(1a)I:	Larger then male and grow up to 11.2-14.7mm…….Female.
2a(1a)II:	Smaller then female and grow up to 9.6-12.8mm……..…Male.
	Key to Genus of family Opilionidae
1a:	Long delicate legs with oval body……2
1b:	Small stout legs with cylindrical body…….3
2a(1a):	Fused body that looks like single oval structure……*Handrobunus*.
	Key to species of Genus *Handrobunus*
1a:	Without silk glands and not create webs……...2
1b:	With silk glands and create webs……....…….3
2a(1a):	Most of them nocturnal and eat food in chunks……..*grandis*.
2a(1a)I:	Larger then male and grows up to 7.5 mm……..……....Female.
2a(1a)II:	Smaller then female and grows up to 6 mm……...Male.
	Key to genus of family Pholicidae
1a:	Legs not very long……..2
1b:	Legs very long, eyes arranged in flower like…….3
3a(1b):	Abdomen long and cylindrical with dorsal brown bands……..……4
3b(1b):	abdomen short round……..5
4a[3a(1b)]:	Legs very long, abdomen is humped, 6 eyes arranged in 2 flowers like appearance....*Crossopriza*.
	Key to specie of genus *Crossopriza*
1a:	Eyes with flower like in group of three, abdomen humped, Legs long, thin and delicate, joint with black color…….……2
1b:	Abdomen not humped and legs short and thick……..…….…….….3
2a(1a):	Eyes with flower like in group of 3, abdomen humped, legs long, thin and delicate, joint with black color……..……..……*lyoni*.
2a(1a)I:	Larger then male and abdomen is not pointed on the top of the back end…….….Female.
2a(1a)II:	Smaller then female and abdomen is pointed on the top of the back end…….….Male.
	Key to genus of family Sparassidae
1a:	Body large and abdomen narrow posteriorly…..…..……2
1b:	Cephalothorax region is broad and brown, chelicearae farward, legs strong and body have hairs…..…..…….……*Isopeda*.
2a(1a):	Grey to brown in color, harmless and speedy……*Heloconia*.
	Key to specie of genus *Isopeda*
1a:	Body yellow with hair……*tunigha*.
1a(I):	Larger then male and grow up to 2 cm……..…Female.
1a(II):	Smaller then female and grow up to 1.6 cm…….Male.
1b:	Body small and gray……...*insiginis*.
1b(I):	Larger then male and grow up to 22 mm……..……...Female.
1b(II):	Smaller then female and grow up to 18mm……Male.

4 Discussion

In the present study, collection and identification of the spiders of Sheringal, KP, Pakistan was conducted during June 2013-August 2014. From which key for different families were prepared. In the present research, 10 species under 10 genera and 7 families were recorded from Sheringal.

Levi and Randolph (1975) developed a simple key for identifying spiders of the genera of Theridiidae. A mimeographed version of the key has had a limited circulation for several years as a tryout. The limits of the family Theridiidae were arbitrary. Better knowledge of southern hemisphere spiders, especially Symphytognathidae, may make it possible to define the family better. Presently, a simple key for identifying spiders' fauna of Sheringal, DU, KP, Pakistan has been developed for the families: Sprassidae, Araneidae, Gnaphosidae, Pholicidae, Hersiilidae, pilionidae and Lycosidae but more studies are required to elaborate the families.

The biodiversity and grasping ability of the spiders in rice field were studied from central Punjab, Pakistan, and 44 spider species were recorded from a huge collection of 28000 specimens (Tahir and Butt, 2009). While, the present research was a general survey reported total 123 specimens and only 7 families. Therefore, one can argue that both studies have different biodiversity. Moreover, the geographical occurrence, temperature and food availability were the factors responsible for diversity differences in both studied areas. The present research was conducted in very short time, therefore, number of specimens collected was small.

Mukhtar (2004) charted the spider fauna of the plants from Punjab and reported 124 species belonging to 51 genera and 17 families and the most ruled family was Araneidae and the less number of species was reported from Corinnedae family. However, during the present research, 7 families were reported, where the largest family was Lycosidae with 3 species, while the smallest families were Opilionidae, Hersiliidae, Araneidae, and Gnphosidae each with only one species. Therefore, in both studies, the diversity differences were due to habitat, environmental and geographical differences of both areas. The present study area was more toward the northern pole and away from equator and the climatic conditions were little colder than Punjab, Pakistan.

Ursani and Soomro (2010) modernized the checklist of spider fauna from 16 districts of Sindh, province, Pakistan. A total of 132 species were recorded belonging to 24 families and 73 genera. Majority of these species were earlier defined, however, only the family Zodariidae for the first time was verified from Pakistan. In the present research, 10 species were recorded form Sheringal, KP, Pakistan range. As insects are the main source of food for spiders, and are abundant in the warm areas, therefore, the diversity in spider fauna in both studies was due to geographical and ecological differences.

Whitmore et al. (2014) reported that high number of spiders families were recorded in cultivated and open field habitats reflects vegetation complexity, which spider rely on for their life cycle, either for finding food, building retreats or for web building. During the present research, high number of the spiders' families was recorded from inside the buildings and close houses and old shops. The habitats of spiders for both researches were different.

Namkung et al. (2002) prepared a checklist of the spiders from Jeju Island, Korea with review of published reports during 1936-2001 and identified specimens collected from 1964-2001. Total of 36 families of spiders from which 166 genera and 347 species were classified from Jeju Island. In the present research, 10 genera and 10 species belonging to 7 families were reported during June 2013-August 2014 from Sheringal, KP, Pakistan. Hence the time period for both researches was different.

Sebata (2015) reported that spiders were collected during 10 weekly sessions, in which total of 663 individuals belonging to 28 species distributed among 11 families were found in the Hillside Dams Conservancy, Bulawayo, Zimbabwe. During the present research, the spiders were collected during 5 weeks,

in which total of 123 individuals belonging to 10 species distributed among 7 families are found, in which 77 were identified from 6 quadrates of Sheringal , i.e., Daramdala, Doki, Guryaal, Samang, Shahoor and Sia Sheringal. Difference in time period for the collection of the spiders was due to the extreme weather of the present study area.

Perveen and Numan (2015 a and b) collected spider fauna from Sheringal and reported family Opilionidae (n=12) with harvestmen spider, *Hadrobunus grandis* Sundevall, 1833; family, Hersiliidae (n=6) with two-tailed spider, *Harsilia savignyi* Lucas, 1836; family, Pholcidae (n=10) with cellar spider, *Crossopriza lyoni* Blackwall, 1867; family, Araneidae (n=5) with garden spider, *Araneus diadematus* Clerck, 1757; family, Gnaphosidae (n=3) with ground spider, *Gnaphosa eucalyptus* Ghafoor and Beg, 2002 were with one species; family, Sparassidae (n=19) with huntsman spider with 2 spp including Halconia *insignis* Thorell, 1836, and *Isopeda tuhogniga* Barrion and Litsinger, 1995; while the highest number of species caught from family Lycosidae (n=20) with wolf spider with 3 spp including *Arctosa littorali* Simon, 1897; *Hippasa partita* Takidar, 1970 and *Pardosa distincta* Backwall, 1867 were recorded. In the present study, a dichotomous key was prepared for identification of spiders fauna of Sheringal by the same authors.

The limitations encountered during the research were the extreme climatic conditions and illiterate people of the study area, shortage of time period for the collection, unawareness of the people about the importance of spiders and initially inexperience of proper collecting practices by authors. In 2010, the flood destructed the habitat of the spiders species in Sheringal, therefore, a lot of spiders were lost, which led lesser number of spider species were collected according to the expectation at the present. A detail study is required for further enhancing of the biodiversity of the spider fauna of Sheringal, KP, Pakistan for synthesis of the ethnozoopharmaco-products.

5 Conclusion

In the present research, it was concluded that the largest species, *H. insiginis* belongs to the family Sparassadae, which was also found in abundance as compared to others, while the smallest species, *G. eucalyptus* belongs to the family Gnphosidae, which was found in least abundance as compare to rest of the species. A detailed key is charted for 10 species belong to 7 families of Sheringal.

6 Recommendation

It is recommended that a detail and advance study is required for further exploration of spider fauna found on trees and river side of Sheringal with special reference to physiology and habitats. Seminars, symposiums, and workshops may be arranged for awareness of the community of Sheringal.

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