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Molur 2007).

Very little documentation has been done on spider diversity of Kerala. Some of the published studies on the spiders of Kerala are those by Sudhikumar et al. (2005a,b), Sebastian et al. (2005), and Jose et al. (2008). The present study was done on the spiders in the Kerala Agricultural University main campus in Kerala, southern India.

## Study Area

The Kerala Agricultural University (KAU) main campus is located at Vellanikkara, Thrissur District, Kerala (Fig.1). The area lies between 10°32'–10°33'N & 76°16'–76°17'E and is located very close to the Peechi-Vazhani Wildlife Sanctuary, Western Ghats. The campus has a total area of 391.44ha and the major habitats include garden lands, botanical garden, plantations of rubber, coconut, plantain, cocoa and orchards of mango, jack, sapota and guava. KAU campus enjoys a moderate climate. The 10-year mean minimum temperature is 23.3°C and 10-

Spiders are one of the most fascinating and diverse invertebrate animals in the world. A total of 44,540 species of spiders belonging to 3,924 genera of 112 families have been described all over the world (Platnick 2014). A total of 2,299 species of spiders under 67 families have been reported from South Asia (Siliwal et al. 2005), of which, from India 1,442 species in 59 families were reported (Siliwal &

## SPIDERS OF KERALA AGRICULTURAL UNIVERSITY CAMPUS, THRISSUR, KERALA, INDIA

C.K. Adarsh<sup>1</sup> & P.O. Nameer<sup>2</sup>

<sup>1,2</sup>Centre for Wildlife Sciences, College of Forestry, Kerala Agricultural University, Thrissur, Kerala 680656, India

<sup>1</sup>adarshckof09@gmail.com,

<sup>2</sup>nameer.po@kau.in (corresponding author)

year mean maximum is 31.8°C. The area receives both the south-west and north-east monsoons; the greater portion of the rainfall, however is received from the south-west monsoon between June and September. The mean annual rainfall is 2763mm. The mean number of rainy days per year is 110 days (KAU Weather Station 2010).

## Methods

The study was conducted from March 2012 to April 2013. The microhabitats that are likely to support the spiders in the study area such as ground, litter, undergrowth, bushes, tree trunks, foliage, and water bodies were searched for spiders. When a spider was located, it was photographed and collected by the hand picking method suggested by Tikader (1987). The identification of spiders was done with the help of Tikader (1970, 1977, 1980, 1982, 1987), Koh (1996), Murphy & Murphy (2000), and Sebastian & Peter (2009). The taxonomy and nomenclature followed is as per the world spider catalogue by Platnick (2014).

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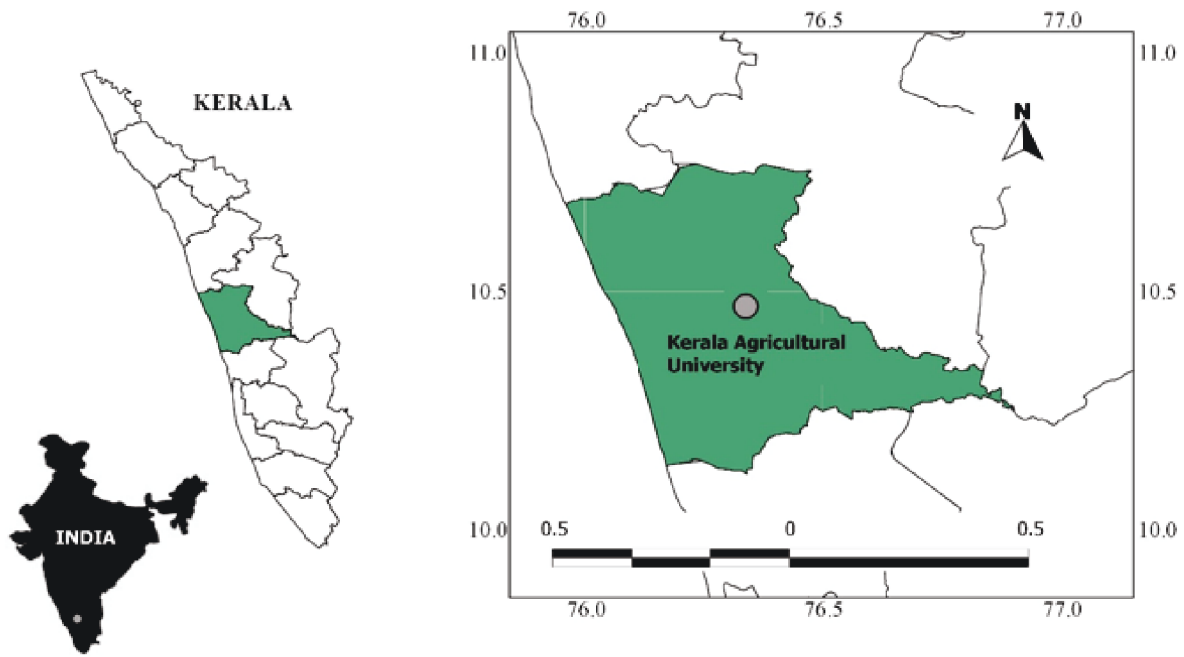


Figure 1. Location map of Kerala Agricultural University main campus, Vellanikkara, Thrissur, Kerala

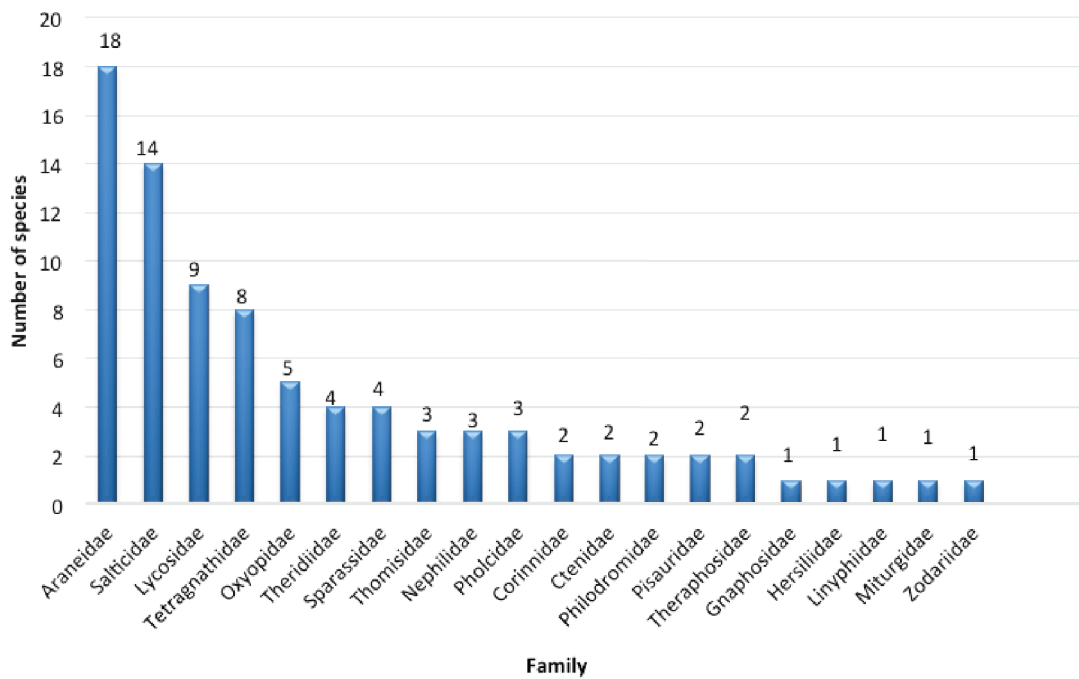


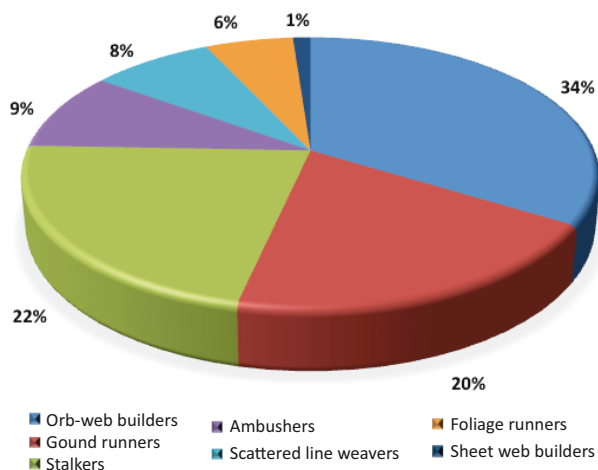
Figure 2. Family-wise distribution of spiders in the Kerala Agricultural University main campus, Thrissur

**Result and Discussion**

Eighty-six species, of 56 genera under 20 families of spiders were documented during the study (Table 1). Araneidae was the dominant family with 18 species from nine genera and was followed by the family Salticidae

which was represented by 14 species of 13 genera (Fig. 2). Out of 252 endemic species of spiders in India (Siliwal et al. 2005), 16 have been reported from the KAU campus.

The feeding guild structure analysis of the spiders



**Figure 3. Guild structure of the spiders in KAU main campus, Thrissur**

revealed seven types of feeding guilds (Uetz et al. 1999). Orb-web builders was the dominant feeding guild with 34% of the total reported spiders (Fig. 3), followed by stalkers (22%), ground runners (20%), ambushers (9%), scattered line weavers (8%), foliage runners (6%) and sheet-web builders (1%).

The present study reiterates the significance of KAU main campus in conserving the biodiversity of the region. Earlier studies on the fauna of KAU main campus had reported 135 species of birds (Nameer et al. 2000), 139 species of butterflies (Aneesh et al. 2013) and 52 species of odonates (Adarsh et al. 2014). This is quite significant and thus emphasizes the importance of university campuses in biodiversity conservation.

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Table 1. Checklist of spiders identified in Kerala Agricultural University main campus.

	Family / Species	Guild		Family / Species	Guild
	<b>Araneidae</b>			<b>Miturgidae</b>	
1.	<i>Arachnura angura</i> Tikader, 1970* (Image 1)	Orb-web builders	35.	<i>Cheiracanthium</i> sp. (Image 21)	Foliage runners
2.	<i>Araneus bilunifer</i> Pocock, 1900*	Orb-web builders		<b>Nephilidae</b>	
3.	<i>Araneus</i> sp. (Simon, 1886) (Image 2)	Orb-web builders	36.	<i>Herennia multipuncta</i> (Doleschall, 1859) (Image 22)	Orb-web builders
4.	<i>Neoscona</i> sp. (Image 3)	Orb-web builders	37.	<i>Nephila kuhlii</i> (Doleschall, 1859) (Image 23)	Orb-web builders
5.	<i>Argiope aemula</i> (Walckenaer, 1842)	Orb-web builders	38.	<i>Nephila pilipes</i> (Fabricius, 1793) (Image 24 & 25)	Orb-web builders
6.	<i>Argiope anasuja</i> Thorell, 1887 (Image 4)	Orb-web builders		<b>Oxyopidae</b>	
7.	<i>Argiope catenulata</i> (Doleschall, 1859) (Image 5)	Orb-web builders	39.	<i>Oxyopes birmanicus</i> Thorell, 1887 (Image 26)	Stalkers
8.	<i>Argiope pulchella</i> Thorell, 1881 (Image 6)	Orb-web builders	40.	<i>Oxyopes javanus</i> Thorell, 1887 (Image 27)	Stalkers
9.	<i>Cyrtophora citricola</i> (Forsskål, 1775)	Orb-web builders	41.	<i>Oxyopes shweta</i> Tikader, 1970	Stalkers
10.	<i>Cyrtophora unicolor</i> (Doleschall, 1857) (Image 7)	Orb-web builders	42.	<i>Oxyopes sunandae</i> Tikader, 1970* (Image 28)	Stalkers
11.	<i>Eriovixia laglaizei</i> (Simon, 1877) (Image 8)	Orb-web builders	43.	<i>Peucetia viridana</i> (Stoliczka, 1869) (Image 29)	Stalkers
12.	<i>Gasteracantha geminata</i> (Fabricius, 1798) (Image 9)	Orb-web builders		<b>Philodromidae</b>	
13.	<i>Gasteracantha hasselti</i> C.L. Koch, 1837 (Image 10)	Orb-web builders	44.	<i>Philodromus</i> sp.	Ambushers
14.	<i>Gasteracantha kuhli</i> C.L. Koch, 1837	Orb-web builders	45.	<i>Tibellus elongatus</i> Tikader, 1960*	Ambushers
15.	<i>Gea spinipes</i> C.L. Koch, 1843 (Image 11)	Orb-web builders		<b>Pholcidae</b>	
16.	<i>Neoscona mukerjei</i> Tikader, 1980* (Image 12)	Orb-web builders	46.	<i>Pholcus kapuri</i> Tikader, 1977 (Image 30)	Scattered line weavers
17.	<i>Neoscona</i> sp.	Orb-web builders	47.	<i>Pholcus phalangioides</i> (Fuesslin, 1775)	Scattered line weavers
18.	<i>Parawixia dehaani</i> (Doleschall, 1859) (Image 13)	Orb web builders	48.	<i>Pholcus</i> sp. (Image 31)	Scattered line weavers
	<b>Corinnidae</b>			<b>Pisauridae</b>	
19.	<i>Castianeira zetes</i> Simon, 1897 (Image 14)	Ground runners	49.	<i>Pisaura gitae</i> Tikader, 1970*	Ambushers
20.	<i>Oedignatha carli</i> Reimoser, 1934*	Ground runners	50.	<i>Thalassius</i> sp.	Ambushers
	<b>Ctenidae</b>			<b>Salticidae</b>	
21.	<i>Ctenus indicus</i> Gravely, 1931* (Image 15)	Ground runners	51.	<i>Asemonea tenuipes</i> (O.P. Cambridge, 1869) (Image 32)	Stalkers
22.	<i>Ctenus</i> sp. (Image 16)	Ground runners	52.	<i>Carrhotus viduus</i> (C.L. Koch, 1846) (Image 33)	Stalkers
	<b>Gnaphosidae</b>		53.	<i>Stenaelurillus</i> sp. (Image 34)	Stalkers
23.	<i>Drassodes</i> sp.	Ground runners	54.	<i>Epeus</i> sp.	Stalkers
	<b>Hersiliidae</b>		55.	<i>Hyllus semicupreus</i> (Simon, 1885) (Image 35)	Stalkers
24.	<i>Hersilia savignyi</i> Lucas, 1836 (Image 17)	Ambushers	56.	<i>Menemerus bivittatus</i> (Dufour, 1831) (Image 36)	Stalkers
	<b>Linyphiidae</b>		57.	<i>Myrmarachne plataleoides</i> (O.P. Cambridge, 1869) (Image 37)	Stalkers
25.	<i>Linyphia urbanasae</i> Tikader, 1970* (Image 18)	Sheet-web builders	58.	<i>Phintella vittata</i> (C.L. Koch, 1846) (Image 38)	Stalkers
	<b>Lycosidae</b>		59.	<i>Plexippus paykulli</i> (Audouin, 1826) (Image 39)	Stalkers
26.	<i>Lycosa tista</i> Tikader, 1970*	Ground runners	60.	<i>Plexippus petersi</i> (Karsch, 1878)	Stalkers
27.	<i>Pardosa birmanica</i> Simon, 1884	Ground runners	61.	<i>Rhene</i> sp.	Stalkers
28.	<i>Pardosa pseudoannulata</i> (Bösenberg & Strand, 1906)	Ground runners	62.	<i>Siler semiglaucus</i> (Simon, 1901) (Image 40)	Stalkers
29.	<i>Pardosa sumatrana</i> (Thorell, 1890)	Ground runners	63.	<i>Stenaelurillus</i> sp.	Stalkers
30.	<i>Pardosa</i> sp.	Ground runners	64.	<i>Telamonia dimidiata</i> (Simon, 1899) (Image 41)	Stalkers
31.	<i>Hippasa agelenoides</i> (Simon, 1884)	Ground runners		<b>Sparassidae</b>	
32.	<i>Hippasa greenalliae</i> (Blackwall, 1867) (Image 19)	Ground runners	65.	<i>Heteropoda lunula</i> (Doleschall, 1857)	Foliage runners
33.	<i>Hippasa pisaurina</i> Pocock, 1900 (Image 20)	Ground runners	66.	<i>Heteropoda venatoria</i> (Linnaeus, 1767) (Image 42)	Foliage runners
34.	<i>Trochosa</i> sp.	Ground runners			

	Family / Species	Guild
67.	<i>Heteropoda</i> sp.	Foliage runners
68.	<i>Olios milleti</i> (Pocock, 1901) (Image 43)	Foliage runners
	<b>Tetragnathidae</b>	
69.	<i>Leucauge decorata</i> (Blackwall, 1864) (Image 44)	Orb-web builders
70.	<i>Leucauge pondae</i> Tikader, 1970*	Orb-web builders
71.	<i>Leucauge dorsotuberculata</i> Tikader, 1982*	Orb-web builders
72.	<i>Opadometa fastigata</i> (Simon, 1877) (Image 45)	Orb-web builders
73.	<i>Tetragnatha cochiniensis</i> Gravely, 1921*	Orb-web builders
74.	<i>Tetragnatha maxillosa</i> Thorell, 1895 (Image 46)	Orb-web builders
75.	<i>Tetragnatha viridorufa</i> Gravely, 1921*	Orb-web builders
76.	<i>Tetragnatha</i> sp. (Image 47)	Orb-web builders
	<b>Theraphosidae</b>	
77.	<i>Plesiophrictus</i> sp. (Image 48)	Ground runners

	Family / Species	Guild
78.	<i>Chilobrachys</i> sp.	Ground runners
	<b>Theridiidae</b>	
79.	<i>Argyrodes gazedes</i> Tikader, 1970*	Scattered line weavers
80.	<i>Argyrodes</i> sp.	Scattered line weavers
81.	<i>Thwaitesia</i> sp. (Image 49)	Scattered line weavers
82.	<i>Theridion</i> sp.	Scattered line weavers
	<b>Thomisidae</b>	
83.	<i>Oxytate virens</i> (Thorell, 1891)	Ambushers
84.	<i>Thomisus lobosus</i> Tikader, 1965* (Image 50)	Ambushers
85.	<i>Xysticus</i> sp.	Ambushers
	<b>Zodariidae</b>	
86.	<i>Cryptothele</i> sp. (Image 51)	Ground runners

\* Endemic to India



Image 1. *Arachnura angura*



Image 2. *Araneus* sp.



Image 3. *Araneus* sp.



Image 4. *Argiope anasuja*



Image 5. *Argiope catenulata*



Image 6. *Argiope pulchella*



Image 7. *Cyrtophora unicolor*



Image 8. *Eriovixia laglaizei*

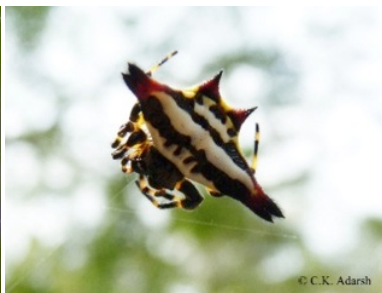


Image 9. *Gasteracantha geminate*



Image 10. *Gasteracantha hasselti*



Image 11. *Gea spinipes*



Image 12. *Neoscona mukerjei*



Image 13. *Parawixia dehaani*



Image 14. *Castianeira zetes*



Image 15. *Ctenus indicus*



Image 16. *Ctenus* sp.



Image 17. *Hersilia savignyi*



Image 18. *Linyphia urbanasae*



Image 19. *Hippasa greenalliae*



Image 20. *Hippasa pisaurina*



Image 21. *Cheiracanthium* sp.



Image 22. *Herennia multipuncta*

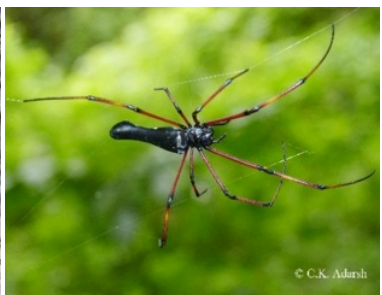


Image 23. *Nephila kuhlii* (female)



Image 24. *Nephila pilipes* (female)



Image 25. *Nephila pilipes* (male)



Image 26. *Oxyopes birmanicus*



Image 27. *Oxyopes javanus*



Image 28. *Oxyopes sunandae*



Image 29. *Peucetia viridana*



Image 30. *Pholcus kapuri*



Image 31. *Pholcus* sp.



Image 32. *Asemonea tenuipes*



Image 33. *Carrhotus viduus*



Image 34. *Stenaelurillus* sp.



Image 35. *Hyllus semicupreus*



Image 36. *Menemerus bivittatus*



Image 37. *Myrmarachne platealeoides*



Image 38. *Phintella vittata*



Image 39. *Plexippus paykulli*



Image 40. *Siler semiglaucus*



Image 41. *Telamonia dimidiata*



Image 42. *Heteropoda venatoria*



Image 43. *Olios milleti*



Image 44. *Leucauge decorata*



Image 45. *Opadometa fastigata*



Image 46. *Tetragnatha maxillosa*

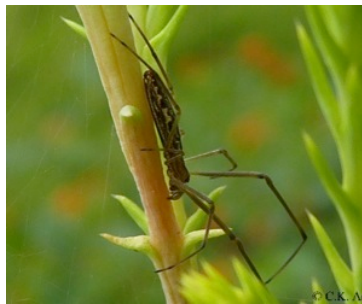


Image 47. *Tetragnatha* sp.



Image 48. *Plesiophrictus* sp.



Image 49. *Thwaitesia* sp.



Image 50. *Thomisus lobosus*



Image 51. *Cryptothela* sp.

