



University of Kentucky
UKnowledge

International Grassland Congress Proceedings

23rd International Grassland Congress

Study on the Community Structure and Diversity of Spiders in Alfalfa Fields and Natural Grassland

Yi Wu

Xinjiang Agricultural University, China

Yasen

Xinjiang Agricultural University, China

Li Zhao

Xinjiang Agricultural University, China

ShaLi Yasen

Xinjiang Agricultural University, China

Follow this and additional works at: <https://uknowledge.uky.edu/igc>



Part of the [Plant Sciences Commons](#), and the [Soil Science Commons](#)

This document is available at <https://uknowledge.uky.edu/igc/23/2-2-1/4>

The 23rd International Grassland Congress (Sustainable use of Grassland Resources for Forage Production, Biodiversity and Environmental Protection) took place in New Delhi, India from November 20 through November 24, 2015.

Proceedings Editors: M. M. Roy, D. R. Malaviya, V. K. Yadav, Tejveer Singh, R. P. Sah, D. Vijay, and A. Radhakrishna

Published by Range Management Society of India

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

Study on the community structure and diversity of spiders in Alfalfa fields and natural grassland**Yi Wu, Yasen, Li Zhao, SHaLi YaSen**

Department of Insects Institute of Agronomy of Xinjiang Agricultural University, Urumqi, Xinjiang Uyghur Autonomous Region, People's Republic of China

Corresponding author e-mail: 359749356@QQ.com**Keywords:** Alfalfa field, Community structure, Diversity, Dominant species, Natural grassland, Spider**Introduction**

Different regions, habitats spider community have different composition, quantity and dynamics. We selected alfalfa fields, forests grasslands and arid grasslands and where studied its spider community structure, characteristic parameters and dynamics by traps from April to October in 2012.

Materials and Methods

We selected alfalfa fields, forests grasslands and arid grasslands from Cattle Farm Ecological Station, HuTuBi, Xinjiang; Yashan, Urumqi, Xinjiang; Locust Observe and Predict Station and Nanshan, Manas County, Xinjiang. We collected trapping spiders per 10 days every regions and then statistics its species and numbers indoor.

Results and Discussion

There was a systematically investigated spider community of alfalfa fields in Xinjiang. This survey collected 1796 spider individuals (1269 in mowing field and 527 in seed fields). Those spiders were identified as 60 species in 35 genera of 13 families. In the desert natural pastures, we collected spider 1286 individuals (1140 in the Yashan and 146 in the Nanshan), which were identified as 42 species in 25 genera of 12 families. The dominant species in alfalfa field are *Pardosa falcata*, *P. astrigera*, and *Neoscona pseudoscylla*. Natural grassland's dominant species are *Alopecosa xinjiangensis*, *A. cursor*, *Pisaura mirabilis*, *Trochosa ruricola*, *Gnaphosa licenti*. The dominant species is different in different months and the type and quantity of the dominant species varies with vegetation growth.

Table 1: Spider quantity and community constitution of alfalfa field

Families	Alfalfa mowing field						Alfalfa seed field					
	Genera	%	Species	%	Numbers	%	Genera	%	Species	%	Numbers	%
Lycosidae	5	14.71	10	18.87	534	44.39	3	11.54	6	16.67	199	37.76
Linyphiidae	6	17.65	7	13.21	210	17.46	5	19.23	6	16.67	52	9.87
Thomisidae	3	8.82	5	9.43	235	17.04	2	7.69	3	8.33	88	16.7
Araneidae	5	14.71	5	9.43	63	5.24	3	11.54	3	8.33	116	22.01
Philodromidae	3	8.82	7	13.21	107	6.65	3	11.54	5	13.89	26	4.93
Philodromidae	4	11.76	7	13.21	51	4.24	5	19.23	8	22.22	34	6.45
Pisauridae	1	2.94	1	1.89	21	1.75						
Salticidae	2	5.88	4	7.55	18	1.5	1	3.85	1	2.78	2	0.38
Dictynidae	1	2.94	2	3.77	6	0.5	1	3.85	1	2.78	2	0.38
Oxyopidae	1	2.94	2	3.77	20	1.66	1	3.85	1	2.78	5	0.95
Theridiidae	1	2.94	1	1.89	2	0.17	1	3.85	1	2.78	2	0.38
Clubionidae	1	2.94	1	1.89	1	0.08	1	3.85	1	2.78	1	0.19
Tetragnathidae	1	2.94	1	1.89	1	0.08	-	-	-	-	-	-
Σ	34	100	53	100	1269	100	26	100	36	100	527	100

The richness (53), diversity index (2.4477) and evenness index (0.6165) of spider species were at a higher level in alfalfa mowing field than in alfalfa seed field. The influence of mowing was obvious at the beginning in alfalfa field, declining in all diversity parameters examined. In the desert grassland, the richness (31), diversity index (2.3253) and evenness (0.6650) of spider species were higher in forests than in desert.

The maximum value of spatial-temporary niche breadth in alfalfa fields is *Erigone dentipalpis* (0.4770). The niche overlap value of *Pardosa falcata* and *Pardosa astrigera* is the highest (0.1779). The maximum value of space-time dimensional niche breadth in natural grassland is *Pisaura mirabilis* (0.6483), the largest of niche overlap is *Gnaphosa licenti* and *Alopecosa cursor* (0.4355).

Conclusion

In the desert grassland, the richness, diversity index and evenness of spider species were higher in forests than in desert.