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Study on the community structure and diversity of spiders in Alfalfa fields and natural grassland

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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

	Alfalfa mowing field						**Alfalfa seed field**					
Families	**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	-	-	-	-	-	-
∑	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 valuer 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.