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Spiders of the Nevada Test Site

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SPIDERS OF THE NEVADA TEST SITE*

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Introduction

Since 1959, the Department of Zoology and Entomology of Brigham Young University, under contract with the U.S. Atomic Energy Commission, has conducted ecological studies at the Nevada Test Site. Primary objectives are to establish baseline data as a prerequisite for determining the effects of nuclear testing on native animals. Allred, Beck, and Jorgensen (1963) discussed the biotic communities of the test site, and summarized the initial collection data on some predominant species, including the spiders identified to that date.

No effort was made to specifically collect spiders in all of their habitats. However, those reported here were taken in connection with other studies, and reflect observations made on a daily basis for the collection methods applied. Principal methods of collecting were can pit-traps and berlese funnels (*ibid.*: 8-9; Allred and Beck, 1964), and a few were taken by hand. We feel the present listing is a good representation of the spiders which may be considered principally terrestrial in habit. Specialized collecting applied to all types of habitats would likely reveal many additional species. For example, the whole range of flower-inhabiting spiders was not investigated, nor the collection of specimens by net-sweeping of plants. A number of new species were taken, but these will be described in a subsequent paper by Dr. Willis J. Gertsch.

We are grateful to Dr. Willis J. Gertsch, American Museum of Natural History, New York, N.Y., for the identifications of the specimens and for checking the names used in this manuscript. Collection and identification of specimens, and analysis of data (in part) were accomplished under AEC research grants AT(11-1)-786, AT(11-1)-1326, AT(11-1)-1336, and AT(11-1)-1355.

In the following discussion a phylogenetic presentation has not been followed. Families and the species assigned to them are listed alphabetically for convenience. The total numbers of spiders collected are indicated, and the months in which they were taken are listed. Their relative abundance in each plant community is based on the number collected in relationship to the number of collecting attempts which varied between different communities (Table 1). Where sex is indicated, the specimens are adults. Sex determination was not made for the immature specimens in most cases.

Agelenidae

Agelenopsis aperta Gertsch. Three females were taken in July,

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October, and November, and four immatures from May through July. Two spiders were found adjacent to the pond at Cane Springs.

Calilena restricta Chamberlin and Ivie. Thirty-five males were taken from August through December and in February, mostly in October. Eighteen females were taken in April, August, and from October through February, mostly in November. Fifty-three immatures were taken from January through November except in February, and mostly during June, July, and August.

Circurina utahana Chamberlin. Four males were taken in November and December, two females in December and January, and one immature in August.

Argiopidae

Apollophanes texana Banks. One male was taken in May, and four females in June and July. One spider was taken adjacent to the pond at Cane Springs.

Metepeira gosga Chamberlin and Ivie. One male was taken in August, 15 females in June and August (mainly August), and 17 immatures in June, July and August. Five specimens were taken adjacent to the pond at Cane Springs.

Tetragnatha laboriosa Hentz. One immature was taken in March.

Caponiidae

Orthonops getrschi Chamberlin. Fifteen males were collected from April through December, except in August. Twenty-seven females were taken from March through September, mostly in May. Six immatures were collected in July, August, and October.

Tarsonops sp. One male was taken in September, and six females in July, August, and October.

Clubionidae

Anyphaena sp. One immature was taken in October.

Castianeira sp. One immature was collected in October.

Corinna bicalcarata Simon. Three males were taken in September and October, and three females in May, July, and August.

Micaria gosiuta Gertsch. Eleven males were taken in August and September (mostly in September), and one female in September.

Neoanagraphis chamberlini Gertsch. Seventy-six males were taken in August, September, and October (mostly in September); 12 females from February through October, except in May; and 66 immatures from April through October, mostly during June, July, and August. One spider was taken adjacent to the Cane Springs pond.

Neoanagraphis pearcei Gertsch. Forty-seven males were taken in September and October (mostly in October), one female in July, and nine immatures in June, August, September, and October.

Phrurotimpus sp. One male was taken in August.

Piabuna nanna Chamberlin and Ivie. One female was taken in September.

Syspira electica Chamberlin. A total of 113 males was taken from April through July and in October, mostly during May and June. Eighty-two females were collected from April through September, mostly in June and July. A total of 390 immatures was taken from April through October and in December, mostly during July and August. Two spiders were taken adjacent to the Cane Springs pond.

Dictynidae

Dictyna calcarata Banks. One male and seven females were taken in July, and seven immatures in July and August. One specimen was taken adjacent to the pond at Cane Springs.

Dictyna personata Gertsch and Mulaik. One male was collected in November, and two females in May and June.

Dictyna reticulata Gertsch and Ivie. Six males, 12 females, and seven immatures were taken in June and July, and one immature in October. Twenty-four of these were taken adjacent to the pond at Cane Springs.

Dictyna tucsona Chamberlin. Two immatures were taken in June and July.

Mallos mians Chamberlin. One male was collected in October.

Mallos pallidus Banks. Four males, three females, and eight immatures were taken in July, all adjacent to the pond at Cane Springs.

Diguetidae

Diguetia canities McCook. Three females were taken in May, July, and August, and one immature in June. One spider was taken adjacent to the pond at Cane Springs.

Diguetia signata Gertsch. One male was collected in June, and one female in May.

Filistatidae

Filistatt utahana Chamberlin and Ivie. Six males were taken in June and July, one female in September, and two immatures in June.

Gnaphosidae

Cesonia classica Chamberlin. Nineteen males were taken in June, July, and August (mostly July), 13 females from June through September, and 14 immatures in May, June, July, and October. One spider was taken adjacent to the Cane Springs pond.

Drassodes celes Chamberlin. One male was collected in April.

Drassyllus irritans Chamberlin. Thirty-one males were taken from February through June and in November (mostly in April), 47 females from April through August (mostly in June and July), and 47 immatures from February through December (except in April and June), mostly in August.

Drassyllus moronius Chamberlin. Four males were collected in May and November, four females in May, and four immatures in March, May, September, and October.

Gnaphosa californica Banks. One male was collected in November, nine females in June and November, and 11 immatures in July, August, and November.

Gnaphosa hirsutipes Banks. Twenty-four males were taken from March through July and in November, 17 females in February, May, and from July through November, and 34 immatures every month except April.

Hapuodrassus eunis Chamberlin. A total of 149 males was taken from October through May, mostly from February through April. Eighteen females were collected from January through June. A total of 204 immatures was collected, and every month was represented except May. Greatest numbers were found from October through January.

Herpyllus hesperolus Chamberlin. Sixteen males were taken during March, April, May, and December (mostly in April). Ten females were collected in April, June, and July. Forty-five immatures were taken representing every month except April. One specimen was taken adjacent to the Cane Springs pond.

Megamyrmecion naturalisticum Chamberlin. Nine males were collected from April through August, six females in June, July, August, and October, and six immatures from August through November.

Nodocion utus Chamberlin. A female was taken in July, and two immatures in July and September.

Zelotes monachus Chamberlin. Thirty-eight males were collected from April through October (except July), mostly during April, May, and June. Thirteen females were taken from March through July and in October. Twenty-six immatures were taken from March through October.

Zelotes nannodes Chamberlin. Two males and four females were collected in June.

Zelotes puritanus Chamberlin. One female was taken in May and an immature in July.

Heteropodidae

Olios fasciculatus Simon. One female was collected in September, and an immature in July.

Homalonychidae

Homalonychus theologus Chamberlin. Four males were collected in October, one female in April, and four immatures in April, June, and October.

Linyphiidae

Ceratinopsis sp. One male was collected in January.

Erigone dentosa Cambridge. Three males were collected in June and October, four females in January, March, and September, and three immatures in October. Nine of the specimens were taken adjacent to the Cane Springs pond.

Meioneta fillmorana Chamberlin. One male and one immature were taken in November.

Meioneta formica Emerton. Two females were taken in January and April.

Spirembolus sp. One female was taken in February.

Tapinocyba sp. One male was taken in November.

Lycosidae

Alopecosa kochi Keyserling. Two males were taken in March and April, and one female in May.

Geolycosa rafaelana Chamberlin. Three males were collected in June and July, and one immature in August.

Pardosa ramulosa McCook. Six males, two females, and five immatures were taken in March, all adjacent to the Cane Springs pond, and one male was collected in November.

Schizocosa sp. One immature was taken in June.

Tarentula kochi Keyserling. Eighty-seven males were taken from October through May, mostly from January through March. Forty-five females were taken every month except August, mostly from November through March. A total of 111 immatures was taken, representing all months except February.

Mimetidae

Mimetus eutypus Chamberlin and Ivie. One immature was taken in October adjacent to the Cane Springs pond.

Oxyopidae

Oxyopes tridens Brady. Fifty-two males were taken from May through August, 11 females from June through September, and 20 immatures from June through November. Greatest numbers of all stages were taken during July.

Pholcidae

Physocyclus tanneri Chamberlin. Three males were collected in August and November, and six females and five immatures in June,

July, and November. Seven spiders were taken adjacent to the Cane Springs pond.

Psilochorus papago Gertsch. Twelve males were taken from June through December, except in September. Seven females were taken in June, July, and October, and two immatures in June. One spider was taken adjacent to the pond at Cane Springs.

Psilochorus utahensis Chamberlin. A total of 450 males was taken representing every month of the year except February. They were most common during June, July, and August. A total of 499 females was collected over all the months of the year except March. They were most common also during June, July, and August. The total immatures collected was 1500, and they were found during every month of the year, mostly during the same months as the adults, as well as in September. Two specimens were taken adjacent to the pond at Cane Springs.

Plectreuridae

Kibramoa paiuta Gertsch. One male was collected in May.

Plectreurys tristis Simon. One male was taken in May, and seven immatures in January, April, June, July, and September.

Salticidae

Metacyrba arizonensis Barnes. Thirteen males were collected during May and June, seven females in May, July, and November, and 16 immatures from April through October. Two specimens were taken adjacent to the Cane Springs pond.

Metacyrba taeniola Hentz. One male was taken in June, and two immatures in September.

Pellenes brunneus Peckham. One male was collected in October.

Pellenes hirsutus Peckham and Peckham. One female was taken during July.

Pellenes limatus Peckham. One male was collected in June.

Pellenes oregonensis Peckham and Peckham. Three males were taken during July and August, and one female in July.

Phidippus apacheanus Chamberlin and Gertsch. One male was collected in September.

Phidippus formosus Peckham and Peckham. Three males were taken in March and June, one female in February, and seven immatures in July, August, and September. Two spiders were taken adjacent to the pond at Cane Springs.

Phidippus opifex McCook. One male was found in August.

Phidippus workmanni Peckham and Peckham. Twenty-seven immatures were taken during June, July, and August. Two were taken near the pond at Cane Springs.

Scytodidae

Loxosceles unicolor Keyserling. Twenty-one males were taken from April through August and in October. Twelve females were collected in July, August, September, and November. Twenty-seven immatures were taken from May through October. Four specimens were taken adjacent to the pond at Cane Springs.

Theraphosidae

Aphonopelma sp. Twenty-four males were taken from August through November, and two females in June.

Theridiidae

Enoplognatha joshua Chamberlin and Ivie. Twenty-nine males were collected in February and March; 21 females from February through May; and 15 immatures in January, February, March, and October. One specimen was taken near the pond at Cane Springs.

Euryopis scriptipes Banks. One female was found in June.

Euryopis spinigera Cambridge. Two females were taken in April and June.

Latrodectus mactans Fabricius. Four males were taken in April, May, July, and December; 10 females in April, June, July, and December; and 28 immatures from July through January.

Steatoda fulva Keyserling. Twelve males were found from May through September; five females in February, August, and September; and nine immatures from May through September.

Steatoda medialis (Banks). One female was taken in July, and one immature in June.

Steatoda washona Gertsch. Two females were found during August.

Theridion sp. One immature was taken in July.

Thomisidae

Ebo dispar Schick. Three males were taken in October and December, and five females during October, November, and December.

Ebo merkeli Schick. One female and two immatures were taken in July.

Ebo mexicanus Banks. One female was taken in May.

Misumenops desertus Schick. One male was taken in August, and six immatures in August and October. One spider was taken near the Cane Springs pond.

Misumenops rothi Schick. Eight males were collected in June and July, 13 females in May, June, and July, and 16 immatures in June, July, and October. Ten spiders were taken near the Cane Springs pond.

Philodromus infuscatus Keyserling. One immature was found in July.

Rhysodromus clarus Keyserling. Fifteen immatures were taken in July.

Thanatus texanus Banks. Fourteen males were found from April through August, eight females in May and from July through November, and eight immatures from June through November, except during September.

Xysticus californicus Keyserling. One male was taken in May.

Xysticus iviei Schick. One female was found in June.

Xysticus lassanus Chamberlin. Eight males were collected in January, March, April, May, and September. Nine females were taken in February, April, May, June, September, and December. Twenty-seven immatures were taken from May through November.

Uloboridae

Uloborus diversus Marx. Three females were taken in August.

Summary

During the years 1959-1965, more than 5600 spiders were collected in connection with other studies at the Nevada Test Site. These represent 94 species of 65 genera in 22 families, not counting approximately 17 new species not reported here. The greatest numbers of species were found during June and July (Fig. 1), and populations of spiders were highest from June through September (Fig. 2). The Coleogyne and Mixed communities supported the greatest numbers of species, and the Coleogyne and Salsola communities possessed the highest populations (Table 2). Fewest species were found in the

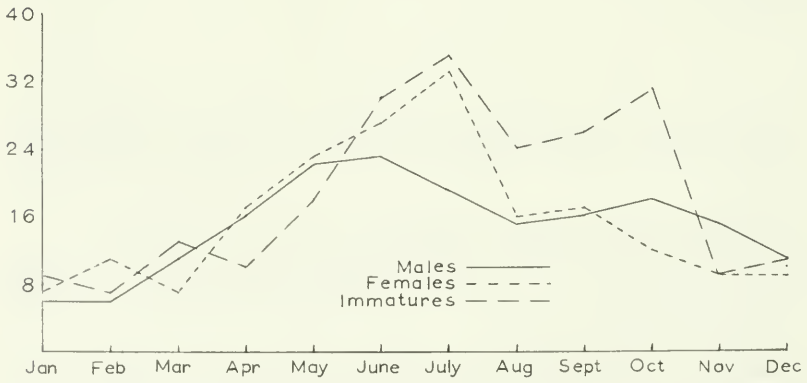

Fig. 1. Seasonal representation showing number of species present at the Nevada Test Site, 1959-1965.

Table 1. Frequency of occurrence[1] of spiders in seven plant communities and other habitats at the Nevada Test Site, 1959-1965.

Family and Species	Plant Community[2]								
	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa	Other & Unknown	C S Pond Veg.
Agelenidae									
Agelenopsis aperta		*	*		*			*	*
Calilena restricta	1	3	4	7	6	2	5	*	
Circurlina utahana			*		*	*			
Argiopidae									
Apollophanes texana				*			*	*	*
Metepeira gosoga		2	3	2	2	1		*	
Tetragnatha laboriosa								*	
Caponiidae									
Orthonops gertschi		1	3	4	3		2		
Tarsonops sp.		*			*				
Clubionidae									
Anyphaena sp.	*								
Castianeira sp.			*						
Corinna bicalcarata		*	*	*	*				
Micaria gosiuta	2	3	4				1		
Neoanagraphis chamberlini	4	1	6	3	7	5	2		*
N. pearcei		2	5	3	1		4		
Phrurtimpus sp.						*			
Piabuna nanna			*						
Syspira eclectica	5	2	7	1	3	4	6	*	*
Dictynidae									
Dictyna calcarata								*	*
D. personata			*			*		*	

Table 1, Continued

Family and Species	Plant Community								
	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa	Other & Unknown	C S Pond Veg.
D. reticulata					*	*			1
D. tucsona		*				*			
Mallos pallidus									*
Diguetidae									
Diguetia canities		*						*	*
D. signata				*					
Filistatidae									
Filistata utahana	*	*			*				
Gnaphosidae									
Cesonia classica		1		2	3				*
Drassodes celes	*								
Drassyllus fractus					*				
D. irritans	3	1	7	4	5	2	6		
D. moronius		*	*		*		*		
Gnaphosa californica	*	*			*	*	*		
G. hirsutipes	3	1	6	5	6	4	2		
Haplodrassus eunis	5	1	6	3	4	2	5		
Herpyllus hesperolus	4	1	6	5	3		2	*	*
Megamyrmecion naturalisticum		1		2	3				
Nodocion utus	*			*			*		
Zelotes monachus	5	1	4		3	2	6		
Z. nannodes	*								
Z. puritanus	*								

Table 1, Continued

Family and Species	Plant Community								
	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa	Other & Unknown	C S Pond Veg.
Heteropodidae									
Olios fasciculatus	*				*				
Homalonychidae									
Homalonychus theologus		*		*	*				
Linyphiidae									
Ceratinopsis sp.		*							
Cochlembolus sanctus		*						*	1
Erigone dentosa					*				
Meioneta fillmorana				*	*				
M. formica					*				
Meioneta sp. nr. *fratrella*		*	*						
Spirembolus sp.									*
Tapinocyba sp.					*				
Lycosidae									
Alopecosa kochi		*	*	*			*		
Geolycosa rafaelana							*		*
Pardosa ramulosa									
Schizocosa sp.									
Tarentula kochi	6	2	5	4	3	1	5		
Mimetidae									
Mimetus eutypus									*
Oxyopidae									
Oxyopes tridens		4	5	1	3	2			

Table 1, Continued

Family and Species	Plant Community								
	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa	Other & Unknown	C S Pond Veg.
Pholcidae									
Physocyclus tanneri	*	*	*		*				*
Psilochorus papago		2			3	1		*	*
P. utahensis	5	2	6	3	7	4	1	*	*
Plectreuridae									
Kibramoa paiuta					*				
Plectreurys tristis		*		*	*				
Salticidae									
Metacyrba arizonensis	3	2	3	2	3		1		*
M. taeniola		*					*		
Pellenes brunneus					*				
P. hirsutus		*							
P. limatus				*					
P. oregonensis						*			
Phidippus apacheanus		*							
P. formosus		1	3		2				*
P. opifex	*								
P. workmanni		2		1	2				*
Scytodidae									
Loxosceles unicolor		1	4	3	2			*	*
Theraphosidae									
Aphonopelma sp.	3	2	4	1	5		4		
Theridiidae									
Enophognatha joshua	3	1	6	4	2		5		*

Table 1, Continued

Family and Species	Plant Community								
	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa	Other & Unknown	C S Pond Veg.
Euryopis scriptipes						*			
E. spinigera					*				
Latrodectus mactans	2		4		3		1	*	
Steatoda fulva		3	4	4		2	1		
S. medialis				*					
S. washona		*							
Theridion sp.						*			
Thomisidae									
Ebo dispar		*	*		*				
E. merkeli					*				
E. mexicanus							*		
Misumenops desertus				*					*
M. rothi		3		2	4	1			*
Philodromus infuscatus						*			
Rhysodromus clarus		1		2					
Thanatus texanus	3	1	4	3	2				
Xysticus californicus							*		
X. iviei						*			
X. lassanus		1	4	1	3	2	4		
Uloboridae									
Uloborus diversus		*							

[1]One equals most frequent. Sequence based on number collected proportionate to number of collecting attempts. * = insufficient numbers to compare.

[2]At-Ko = *Atriplex confertifolia* and *Kochia americana*; Co = *Coleogyne ramosissima*; Gr-Ly = *Grayia spinosa* and *Lycium andersonii*; La-Fr = *Larrea divaricata* and *Franseria dumosa*; Mixed = A variety of plants which occur in amounts which make assignment to one of the major communities impractical; Pi-Ju = *Pinus monophylla* and *Juniperus osteosperma*; Sa = *Salsola kali*. CS Pond Veg. = Vegetation adjacent to pond at Cane Springs.

Table 2. Number of species and relative abundance[1] of spiders found in seven plant communities[2] at the Neveda Test Site, 1959-1965.

	At-Ko	Co	Gr-Ly	La-Fr	Mixed	Pi-Ju	Sa
Number of species	26	50	35	36	49	26	28
Relative abundance of individuals	2.56 X	10.34 X	1.00	4.53 X	2.29 X	5.6 X	10.94 X

[1]The number given is in proportion to the minimum number found in the Grayia-Lycium community.
[2]At-Ko = *Atriplex confertifolia* and *Kochia americana*; Co = *Coleogyne ramosissima*; Gr-Ly = *Grayia spinosa* and *Lycium andersonii*; La-Fr = *Larrea divaricata* and *Franseria dumosa*; Mixed = A variety of plants which occur in amounts which make assignment to one of the major communities impractical; Pi-Ju = *Pinus monophylla* and *Juniperus osteosperma*; Sa = *Salsola kali*.

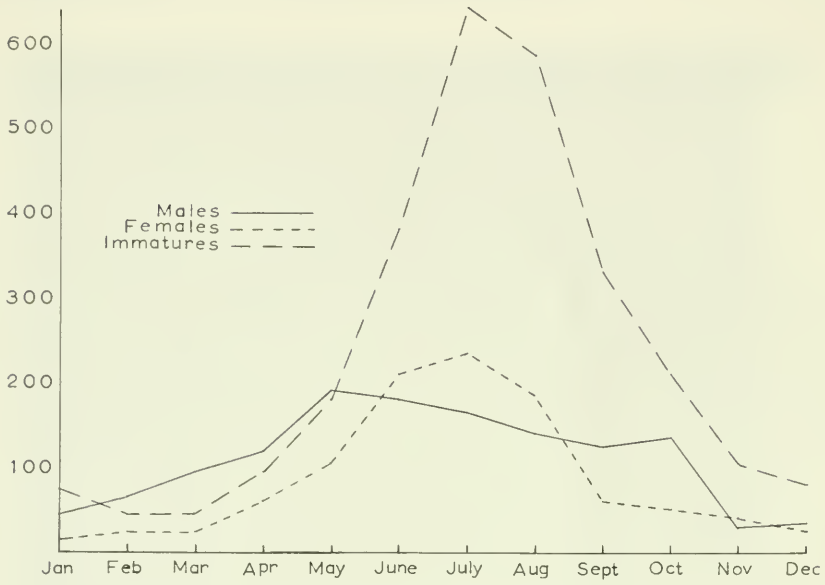

Fig. 2. Seasonal abundance of spiders (all species) at the Nevada Test Site, based on total numbers of individuals collected, 1959-1965.

Pinyon-Juniper community, and lowest populations in the Grayia-Lycium (Table 2).

Eight species were found in each of the seven plant communities, and were widely distributed at the test site. These are *Calilena restricta*, *Drassyllus irritans*, *Gnaphosa hirsutipes*, *Haplodrassus eunis*, *Neoanagraphis chamberlini*, *Psilochorus utahensis*, *Syspira eclectica*, and *Tarentula kochi*. *Psilochorus utahensis* was by far the most abundant in numbers of individuals, followed by *S. eclectica*, *H. eunis*, and *T. kochi*. *Haplocrassus eunis*, *P. utahensis*, and *T. kochi* were the most abundant in numbers of individuals during all 12 months of the year.

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