

## ANNUAL AERIAL DISPERSAL OF JUMPING SPIDERS IN OKLAHOMA (ARANEAE, SALTICIDAE)<sup>1</sup>

Norman V. Horner

Department of Biology  
Midwestern University  
Wichita Falls, Texas 76308

### ABSTRACT

An annual dispersal study of jumping spiders (Araneae: Salticidae) was conducted at Oklahoma State University, Stillwater. A total of 215 spiders, representing 12 genera, were collected from two Johnson-Taylor suction traps. Of these, 190 (ca. 88%) were immature. The remainder included 18 males and seven females. Dispersal was detected each month of the year except January.

### INTRODUCTION

Available information on spider dispersal includes data on the process of ballooning (Blackwall, 1827, and McCook, 1877), climatic conditions (Emerton, 1908; Bristowe, 1929; Freeman, 1946), height records, (Crosby and Bishop, 1936; Glick, 1939, 1960), and dispersal of known spider populations (Duffey, 1956). Little information is available on the seasonal dispersal of given families. The present study was designed to determine the dispersal trends, monthly dispersal rate, and identification of ballooning spiders in the family Salticidae during one year. At least seven other families were collected but the individuals have not been identified.

### MATERIALS AND METHODS

Aerial dispersal of salticids was studied by collecting immature and adult forms in two Johnson-Taylor suction traps. The suction traps were capable of pulling air into the trap from several feet above and around the opening. A fine mesh funnel screen terminated in a one-pint jar. Specimens were trapped, killed and preserved in the jar which contained 80% ethyl alcohol.

Trap No. 1 was located on top of a building (ca. 50 ft.) on the main campus at Oklahoma State University, Stillwater. The surrounding area consisted of streets parking lots and campus buildings. Vegetation in the area was that of the landscaped campus (shrubs, trees, and grass). The second trap, No. 2, was on a 10 ft. roof of the Insectary. This placed the opening about 17 ft. above ground level. The Insectary is one mile west of the main campus. Vegetation to the south and east consisted of experimental station test crops of sorghum, small grain, etc. Southeast and west of the trap stretched pecan orchards, catalpa grove, and native vegetation. To the north, most of the vegetation was native grass.

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Salticids were separated from other spiders and insects in the trap samples, then stored in 70% ethyl alcohol. Samples were made daily during late spring, summer, and early fall due to rapid rate of alcohol evaporation and heavy insect populations. During the remainder of the year, samples were taken every 3 or 4 days. During times of heavy rainfall, some samples were lost when the alcohol was diluted to the point that preservation did not occur.

## RESULTS AND DISCUSSION

Table 1 presents the taxa, number and ontogenetic stage of salticids collected from each of the two traps. The traps yielded 215 specimens, of which 190 were immature and of indeterminate sex, 18 were mature males and 7 mature females. The vast majority of the immatures were very early instar (probably second). This was expected since, early instars are the common ballooners. Although the number of adults taken was small, the data show that some adults of the smaller salticids do use ballooning as a means of dispersal.

Table 1.—Number and ontogenetic stage of salticids collected from Johnson-Taylor suction traps.

Taxa	Trap No. 1			Trap No. 2			Total Specimens
	Immature	Mature Male	Female	Immature	Mature Male	Female	
<i>Icius</i> sp.	19			5			5
<i>Hentzia ambigua</i> (Walckenaer)	10	3	2	5	4		9
<i>Marpissa pikei</i> (Peckham)	1	2					3
<i>Habronattus</i> sp.	10			15			15
<i>Metaphidippus</i> sp.	13			7			7
<i>Phidippus</i> sp.	41			26			26
<i>Metaphidippus</i> unknown sp.		1					1
<i>Metaphidippus galathea</i> (Walckenaer)	12	6	3	6	2	1	9
<i>Eris</i> sp.	2			2			2
<i>Eris marginatus</i> (Walckenaer)			1				1
<i>Tutelina</i> sp.	6			2			2
<i>Salticus</i> sp.	1			5			5
<i>Peckhamia</i> sp.				1			1
<i>Gertschia</i>				1			1
GRAND TOTAL							133

The genus *Phidippus* was represented by a total of 67 specimens, followed by 50 for *Metaphidippus*, 25 for *Habronattus* and 24 for *Hentzia*. Species of *Peckhamia* and *Gertschia* were each collected once. These latter two were only collected in the higher trap.

Of the total spiders collected in the traps 13.5% of those in trap No. 1 were adults compared to 8.5% in trap No. 2. This is probably due to the difference in height of the traps. The adults are heavier and may not drift so high as the spiderlings.

Table 2 shows ontogenetic stage and number of each taxon for each month. July had the greatest number with 62 individuals, followed by November with 31. June, August

and October had 28, 29 and 29 respectively. Winter and early spring months yielded fewer than 10 each month, and January yielded none.

Table 2.—Taxa of salticids collected monthly from Johnson-Taylor suction, traps, Stillwater, Oklahoma. I = Immature, F = Female, M = Male

Month	Taxon	Stage	Number Collected	Monthly Total
January 1971	(None Collected)			0
February 1971	<i>Phidippus</i> sp.	I	3	3
March 1971	<i>Hentzia ambigua</i> (Walckenaer)	M	1	1
April 1971	<i>H. ambigua</i>	I	1	
	<i>Phidippus</i> sp.	I	2	3
May 1971	<i>Metaphidippus galathea</i> (Walckenaer)	I	2	
	<i>Tutelina elegans</i> (Hentz)	I	2	
	<i>Habronattus</i> sp.	I	1	
	<i>H. ambigua</i>	I	1	
	<i>Phidippus</i> sp.	I	2	8
June 1970	<i>Icius</i> sp.	I	9	
	<i>H. ambigua</i>	F	1	
	<i>H. ambigua</i>	M	1	
	<i>Marpissa pikei</i> (Peckham)	M	1	
	<i>Habronattus</i> sp.	I	4	
	<i>Metaphidippus</i> sp.	I	4	
	<i>Phidippus</i> sp.	I	4	
	<i>M. galathea</i>	I	1	
	<i>Eris</i> sp.	I	1	
	<i>M. galathea</i>	M	1	
	<i>T. elegans</i>	I	1	28
July 1970	<i>Icius</i> sp.	I	7	
	<i>Phidippus</i> sp.	I	35	
	<i>Habronattus</i> sp.	I	7	
	<i>Metaphidippus</i> sp.	I	7	
	<i>Peckhamia</i> sp.	I	1	
	<i>Salticus</i> sp.	I	1	
	<i>M. pikei</i>	M	1	
	<i>Hentzia</i> sp.	I	1	
	<i>M. galathea</i>	M	1	
	<i>Metaphidippus</i> sp.	M	1	62
August 1970	<i>Phidippus</i> sp.	I	7	
	<i>M. galathea</i>	I	5	
	<i>Metaphidippus</i> sp.	I	2	
	<i>M. galathea</i>	M	4	
	<i>M. galathea</i>	F	2	
	<i>Habronattus</i>	I	4	
	<i>Icius</i> sp.	I	4	
	<i>Eris</i> sp.	I	1	29

Table 2.-Continued

Month	Taxon	Stage	Number Collected	Monthly Total
September 1970	<i>Icius</i> sp.	I	2	
	<i>Phidippus</i> sp.	I	2	
	<i>Metaphidippus</i> sp.	I	3	
	<i>M. galathea</i>	F	2	
	<i>M. galathea</i>	I	2	
	<i>H. ambigua</i>	F	1	
	<i>Hentzia</i>	I	1	
	<i>Habronattus</i> sp.	I	3	
	<i>Gertschia</i> sp.	I	1	17
October 1970	<i>Habronattus</i> sp.	I	5	
	<i>Metaphidippus</i> sp.	I	1	
	<i>M. pikei</i>	I	1	
	<i>Icius</i> sp.	I	2	
	<i>Phidippus</i> sp.	I	6	
	<i>Eris</i> sp.	I	1	
	<i>E. marginatus</i> (Walckenaer)	F	1	
	<i>Hentzia</i> sp.	I	3	
	<i>H. ambigua</i>	M	4	
	<i>Tutelina</i> sp.	I	2	
	<i>M. galathea</i>	I	2	
	<i>Salticus</i> sp.	I	1	29
November 1970	<i>Hentzia</i> sp.	I	6	
	<i>H. ambigua</i>	M	1	
	<i>Salticus</i> sp.	I	3	
	<i>Phidippus</i> sp.	I	6	
	<i>Metaphidippus</i> sp.	I	3	
	<i>M. galathea</i>	I	6	
	<i>M. galathea</i>	M	2	
	<i>Eris</i> sp.	I	1	
	<i>Tutelina</i> sp.	I	2	
	<i>Habronattus</i> sp.	I	1	31
December 1970	<i>Hentzia</i> sp.	I	3	
	<i>Tutelina</i> sp.	I	1	4

It is difficult to establish specific trends for the species listed. In general it seems that salticids are active annually, at least under climatic conditions present in this area of Oklahoma. Through no salticids were collected in January, some dispersal probably occurs then since a few were collected in December and February.

The Johnson-Taylor suction traps are well adapted to this type of survey. Some spiders may have been overlooked in the sorting process and some samples were lost to spoilage during periods of heavy precipitation. Further study of aerial dispersal is desired. Needed information about the relationship between specific climatic conditions and individual species dispersal habits can be obtained with the suction traps.

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