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Life History and Predatory Importance of the Striped Lynx Spider (Araneida: Oxyopidae)

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LIFE HISTORY AND PREDATORY IMPORTANCE OF THE STRIPED LYNX SPIDER (ARANEIDA: OXYOPIDAE)[1]

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In Arkansas, the striped lynx, **Oxyopes salticus** Hentz, is one of the most abundant spiders. It is found in pastures, cultivated fields, gardens, and forests and is the most numerous spider on many roadside weeds. On composites, it is second to the crab spiders, Thomisidae, in abundance. In cotton and soybean fields, it sometimes outnumbers all other spiders put together.

This spider does not use a web but pounces on its prey, capturing a wide range of insects including Thysanoptera, Orthoptera, Homoptera, Hemiptera, Neuroptera, Coleoptera, Lepidoptera, Diptera, and Hymenoptera. It attacks its own siblings as well as other species of arachnids. It feeds very freely on small lepidopterous larvae. In our laboratory tests, it consistently preferred larvae of the bollworm and fall armyworm to vinegar flies (**Drosophila**), house flies, and crickets. In experiments conducted in the cotton field under close observation in 1964, 11% of all arthropod predation on second-instar bollworm larvae was due to this single species of spider; in the 1965 experiments, this species accounted for 14% of such predation.

The life cycle of laboratory-reared specimens of **Oxyopes salticus** lasts from 5 to 12 months, with 73% maturing in eight to ten months.

Mating of this spider is not nearly as stylized as in the case of the green lynx. In laboratory observations, the male first acknowledged the presence of the female by turning in her direction, raising his cephalothorax, and drumming his palpi. He moved his first and second pairs of legs up and down. The female responded in several ways. In some case, she rejected the male. If she accepted him, she sometimes moved her palpi up and down alternately once, or possibly twice, in which case she jerkily moved one or two steps toward the male. He responded by moving one or two steps toward the female, and then, like a male wolf spider, he approached her directly. In other instances, the female's first response might be to turn and move several steps away from the male. As long as he followed, she took a few steps away from him, paused, and then took a few more steps. If he did not follow, she waited for a little while and then took several steps toward him. She turned again and walked away, alternately walking and pausing. This was repeated as many as six times by some females. After this, the female faced the male and waited. The male then approached close enough to exchange taps of the first and

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second pairs of legs. When the male tapped the female's forelegs with his tarsi, the female responded with her tarsi. The female often remained where she was, like a wolf spider, but with her legs close to her body, unlike a lycosid. Occasionally, the female dropped on a silken line like a green lynx female. The male then dropped beside the female and mated.

Approximately 75% of the males mounted females from the side but at an angle toward the anterior or posterior part of the female. However, males sometimes mounted from the front or directly from behind. Once the male was above the famale's cephalothorax, he tended to orient himself so that he faced in the opposite direction from that of the female, but sometimes, the male mated while facing in the same direction as the female. The male stretched his right palpus over the right side of the female to reach her right genital orifice. This was simple enough if male and female were facing in opposite directions. If they were facing in the same direction, it appeared quite awkward. On occasion, the male brought his entire body over the side of the female so the two were lying almost venter to venter. In all cases, the right male palpus was applied to the right female orifice, and the left palpus to the left orifice. Usually, the male remained on the same side of the female for one to four applications of the palpus. The male then dropped away from the female. Sometimes, the male changed to the other side and applied his other palpus to the other orifice of the female. Occasionally, when the male and female were almost venter to venter, the male applied one palpus to one orifice of the female and then immediately applied the other palpus to the other orifice, like a slow version of the mating of the green lynx spider.

Copulation was usually repeated from three to seven times. The repeated copulations were sometimes spaced over several hours. When the mating process was terminated, the female would not mate again. The male, on the other hand, would mate several times (with other females) after he had recharged his palpi.

An egg sac was constructed from 7 to 33 days after the female mated. She first spun a disk consisting of a soft, white wafer of silk ½ mm. thick and 5 mm. in diameter. She did this while hanging upside down with her body parallel to the ground. All spinning was done by movement of the abdomen without the help of forelegs or palpi. When the disk was finished, the female paused for a time and then forced her eggs upward against the disk. She then spun across the eggs and rapidly covered them, spinning back and forth with long, U-shaped strokes. The entire process took less than two hours.

As shown in Fig. 1, from one to five egg sacs were constructed in the laboratory by each female. There was an average of 47 eggs in the female's first egg sac, 33 in her second, 24 in her third, 12 in her fourth, and only 1 egg in her fifth. The total number of eggs produced by each female averaged 79. The eggs averaged 0.74 mm. long and 0.66 mm. wide.

The eggs required ten days to hatch into first-instar young, called postembryos, which remained in the egg sac. A transparent embryonic membrance covered the entire body of a postembryo like a sack. This membrance was shed from 2 to 12 hours after hatching, when a postembryo became a spiderling. The first true molt occurred approximately six days after hatching. The spiderlings remained in the egg sac an average of two days after the first true molt. The female opened one edge of the egg sac the day molting began. Spiderlings remained near the female for one to five days, until they dispersed by ballooning.

From emergence to maturity, the life cycle of the striped lynx spider lasted an average of nine months. As seen in Table 1, the spiderlings completed eight to ten stadia. Males and females took approximately the same length of time to mature.

Carapace measurements are also given in Table 1.

In Arkansas, these spiders overwinter as immatures in the second to seventh instars. The first mature specimens have been collected in southern Arkansas during the first week of April in crimson clover and alfalfa fields. Mating has been observed during the second week in April. The first egg sacs were constructed in early May, and the last egg sacs were made in early September. Individual females constructed as many as five egg sacs. The spiderlings that overwintered in the second instar did not appear to begin maturation until late June. One generation a year is apparently the rule. As shown in the results of field collections in Fig. 2, the steady increase in the percentage of adults to a single population peak followed by a consistent decrease would indicate one generation, not two. However, striped lynx spiders have matured in five months in the laboratory, and with higher temperatures and an abundant food supply, spiderlings which emerged from egg sacs in May could theoretically construct their own egg sacs the following September.

Table 1. Duration of each stadium and carapace width of **Oxyopes salticus,** Fayetteville, Arkansas, May, 1964, to June, 1965*

Stadium	Number of days		Width in mm.	
	Range	Avg.	Range	Avg.
1	4-7**	6	0.42 — 0.48***	0.45
2	25-35	28	0.46 — 0.54	0.50
3	8-64	26	0.51 — 0.62	0.58
4	5-85	49	0.59 — 0.69	0.64
5	22-107	58	0.67 — 0.85	0.74
6	12-75	41	0.77 — 1.00	0.86
7	10-103	39	0.87 — 1.21	1.01
8****	12-67	30	1.03 — 1.41	1.23
9	11-48	27	1.23 — 1.54	1.42
10	Matured		1.44 — 1.62	1.55

*Stadium duration was recorded for 23 individuals for the second stadium, 22 for the third through the seventh, 16 for the eighth, and 4 for the ninth. Carapace width was recorded for 20 individuals for the first instar, 27 for the second, 23 for the third, and 22 for the fourth through the eighth, 16 for the ninth, and 4 for the tenth.

**From 27 sacs.

***From two egg sacs from different females.

****Maturity reached by some individuals.

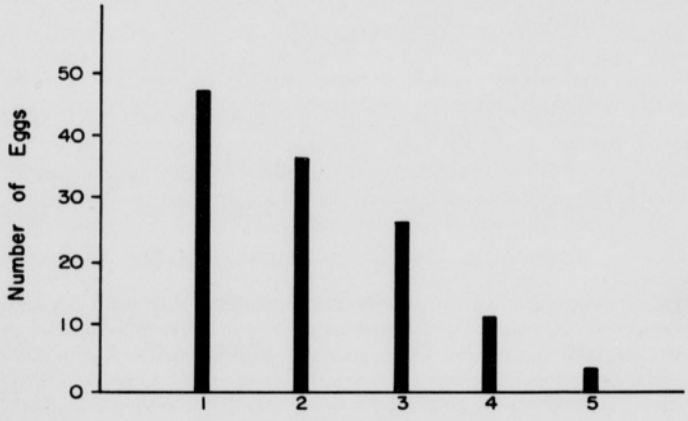

Fig. 1 Oxyopes salticus — Number of eggs per egg sac, 1965.

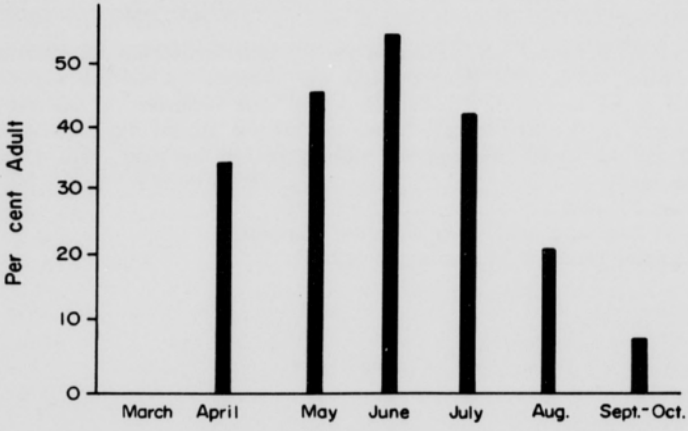

Fig. 2 Oxyopes salticus — Per cent adult in field collection by month — Arkansas, 1965.