

**PREY OF THE STRIPED LYNX SPIDER  
*OXYOPES SALTICUS* (ARANEAE, OXYOPIDAE),  
 ON COTTON IN THE DELTA AREA OF MISSISSIPPI**

Spiders have received considerable attention as potentially important predators of arthropod pests in agroecosystems (Riechert and Lockley 1984). Much of this attention has been focused on the striped lynx spider, *Oxyopes salticus* Hentz (Young and Lockley 1985). This species is particularly abundant in cotton, to the extent that it is often the most abundant beneficial predator (e.g., Laster and Brazzel 1968, Dean et al. 1982). The known prey of *O. salticus* in cotton include such economically important pests as the tobacco budworm and bollworm (*Heliothis* spp.) (Whitcomb 1967, McDaniel et al. 1981), and the mirid plant bugs *Lygus lineolaris* (P. de B.) (tarnished plant bug) (Whitcomb and Bell 1964), *Adelphocoris rapidus* (Say) (rapid plant bug) (Kagan 1943), and *Pseudatomoscelis seriatus* (Reuter) (cotton fleahopper) (Almand 1974). A survey of the literature has made it quite clear, however, that very little is known about the prey of *O. salticus* in cotton, particularly the proportion of harmful and beneficial insects in its diet (Young and Lockley 1985).

Observations and collections were conducted on a farm in Sunflower County, Mississippi, during June-July, 1983. A 16.4 ha field planted in "Stoneville 213" cotton was subdivided into forty 0.41 ha plots as a part of a long-term experiment involving aldicarb treatments (Scott et al. 1985). Eight untreated check plots were randomly distributed in this field and were the sites for the research reported herein.

Field observations were conducted one day each week for five consecutive weeks during the hours of ca. 0730-1030, a period of maximal *O. salticus* activity (pers. obs.). Cotton plants were examined until an individual *O. salticus* was discovered. It was then observed ( $\leq 15$  minutes) until a prey was captured, whereupon the spider was disturbed and forced to release its prey. Field identification of the prey was then attempted, but if unsuccessful the specimen was brought back to the lab for examination under magnification. Approximate body length measurements of the predator and prey were obtained in the field.

During 11 h 15 min of field observations over a five week period, 48 *O. salticus* were detected capturing or already in possession of prey (Table 1). These prey included adult and/or immature forms of 14 insect species in five orders. Eight of these species represent new feeding records for *O. salticus*, and significantly increase the previous total of 33 species of prey (Young and Lockley 1985). Seventy-one percent of the 48 prey items were in the orders Hemiptera and Homoptera, with nymphs of the tarnished plant bug representing the most frequently captured prey (35%). Of the 14 species of prey, five can be considered beneficial, eight harmful, and one (*Aedes* sp.) neutral. The five beneficial species, however, represent only 10% of the prey items. Thus *O. salticus* may have minimal direct impact on the beneficial arthropod population.

The mean body lengths of each instar of *O. salticus* ranged from 3.1 to 6.0 mm with a mean sample length of 4.85 mm. Eighty-one percent of the spiders were  $\geq 4.3$  mm and 7th instar or older. The body length of the prey ranged from 2 to 7 mm with a mean of 4.19 mm. Twenty-one percent of the prey were  $\geq 6.0$  mm, the maximum size of the predator. Although the frequency distribution of the various sizes of prey is unknown, these data indicate that most captured

Table 1.—Prey of *Oxyopes salticus* observed in cotton, Sunflower County, Mississippi. H = harmful, B = beneficial, N = neutral.

Taxon	Prey Stage	No. of Observations	Length of Prey (mm)	Economic Status
Orthoptera				
Tettigoniidae				
<i>Neoconocephalus</i> sp.	nymph	2	5, 6	H
Hemiptera				
Anthocoridae				
<i>Orius insidiosus</i> (Say)	adult	1	3	B
Lygaeidae				
<i>Geocoris punctipes</i> (Say)	nymph	1	3	B
Miridae				
<i>Lygus lineolaris</i> (P. de B.)	nymph	17	3 (8 obs.), 4 (7 obs.), 5, 6	H
" "	adult	2	6	H
<i>Pseudatomoscelis seriatus</i> (Reuter)	nymph	1	3	H
" "	adult	3	4	H
Pentatomidae				
<i>Podisus maculiventris</i> (Say)	nymph	1	2	B
Homoptera				
Cicadellidae				
<i>Chlorotettix viridus</i> (V.D.)	nymph	2	4	H
" "	adult	1	6	H
<i>Empoasca fabae</i> (Harris)	nymph	3	3	H
" "	adult	1	5	H
<i>Graphocephala versuta</i> (say)	adult	1	6	H
Lepidoptera				
Noctuidae				
<i>Trichoplusia ni</i> (Hubner)	larva	2	6, 7	H
<i>Spodoptera ornithogalli</i> (Guenee)	larva	1	6	H
Diptera				
Culicidae				
<i>Aedes</i> sp.	adult	7	3 (3 obs.), 5 (4 obs.)	N
Dolichopodidae				
<i>Condylostylus</i> sp.	adult	1	4	B
Syrphidae				
<i>Syritta pipiens</i> L.	adult	1	5	B

prey were about the same length as the predator. This may be a result, however, of the preponderance of relatively large *O. salticus* in the sample. Previous research has indicated that small and young *O. salticus* may have difficulty capturing prey as large or larger than itself, but that large and mature *O. salticus* are quite capable of obtaining as large/larger prey (Young and Lockley 1986).

The absence of evidence for *O. salticus* predation on conspecifics or any other spider is noteworthy. Most spiders will feed on almost any suitable-sized animal that they may encounter, including spiders (Turnbull 1960). Studies of ground-foraging spiders in agricultural situations have demonstrated substantial predation on spiders, including cannibalism (Edgar 1969, Kiritani et al. 1972). Since almost all spiders can be considered beneficial in that they frequently feed on pest species, a low predation rate on spiders by *O. salticus* is a very significant characteristic for the most abundant spider in a cotton field.

## LITERATURE CITED

- Almand, L. K. 1974. Seasonal abundance, dispersal, and control of the cotton fleahopper on certain host plants. Ph.D. Thesis, Texas A&M Univ., College Station. 67 pp.
- Dean, D. A., W. L. Sterling, and N. V. Horner. 1982. Spiders in eastern Texas cotton fields. *J. Arachnol.*, 10:251-260.
- Edgar, W. D. 1969. Prey and predators of the wolf spider *Lycosa lugubris*. *J. Zool.*, 159:405-411.
- Kagan, M. 1943. The Araneida found on cotton in central Texas. *Ann. Entomol. Soc. Amer.*, 36:257-258.
- Kiritani, K., S. Kawahara, T. Sasaba, and F. Nakasuji. 1972. Quantitative evaluation of predation by spiders on the green rice leafhopper, *Nephotettix cincticeps*, by a sight-count method. *Res. Popul. Ecol.*, 13:187-200.
- Laster, M. L., and J. R. Brazzel. 1968. A comparison of predator populations in cotton under different control programs in Mississippi. *J. Econ. Entomol.*, 61:714-719.
- McDaniel, S. G., W. L. Sterling, and D. A. Dean. 1981. Predators of tobacco budworm larvae in Texas cotton Southw. *Entomol.*, 6:102-108.
- Riechert, S. E., and T. C. Lockley. 1984. Spiders as biological control agents. *Ann. Rev. Entomol.*, 29:299-320.
- Scott, W. P., J. W. Smith, and G. L. Snodgrass. 1985. Response of cotton arthropod populations in cotton to various dosages of aldicarb applied in the furrow at planting time. *J. Econ. Entomol.*, 78:249-257.
- Turnbull, A. L. 1960. The prey of the spider *Linyphia triangularis* (Clerck) (Araneae, Linyphiidae). *Canadian J. Zool.*, 38:859-873.
- Whitcomb, W. H. 1967. Field studies of predators of the second-instar bollworm, *Heliothis zea* (Boddie) (Lepidoptera: Noctuidae). *J. Georgia Entomol. Soc.*, 2:113-118.
- Whitcomb, W. H., and K. Bell. 1964. Predaceous insects, spiders, and mites of Arkansas cotton fields. *Arkansas Agric. Exp. Sta., Bull.*, 690:1-84.
- Young, O. P., and T. C. Lockley. 1985. The striped lynx spider, *Oxyopes salticus* (Araneae: Oxyopidae), in agroecosystems. *Entomophaga*, 30:329-346.
- Young, O. P. and T. C. Lockley. 1986. Predation of striped lynx spider, *Oxyopes salticus* (Araneae: Oxyopidae), on tarnished plant bug, *Lygus lineolaris* (Heteroptera: Miridae): a laboratory evaluation. *Ann. Entomol. Soc. America.*, 79:879-883.

**Timothy C. Lockley and Orrey P. Young.** P.O. Box 3, Stoneville, Mississippi 38776.

*Manuscript received December 1985, revised February 1986.*