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PREY RECORDS OF THE GREEN LYNX SPIDER, *PEUCETIA VIRIDANS* (HENTZ) (ARANEAE, OXYOPIDAE)

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ABSTRACT

Sixty-six prey items representing six orders, 24 families and 30+ species were collected directly from feeding green lynx spiders, *Peucetia viridans* (Hentz). Prey items were identified and subjectively evaluated as to their harmful to beneficial effects in order to gauge the impact of *P. viridans* as a predator in the agroecosystem.

INTRODUCTION

The role spiders play in the natural biological control of agricultural pests has received limited investigation (Huffaker and Messenger 1976). The four important roles of spiders in the agroecosystem were outlined by Whitcomb (1973) and include: a) spiders prey on destructive insects; b) spiders serve as food for other predators; c) since spiders tend to be general feeders, they are enemies of beneficial insects; and d) spiders compete with insect predators for prey. Dondale (1958) and Putman (1967) reported, that in orchards, members of the Salticidae, Thomisidae and Theridiidae were the most numerous spider species. Yeargan and Cothran (19 4) indicated that in alfalfa the Lycosidae, Erigonidae, and Tetragnathidae were the dominant spider families.

Prey records are necessary in analyzing the importance of spiders as predators in an agroecosystem. Previous prey investigations have indicated only that spiders are polyphagous and that many different insects make up the spider's diet. Prey investigations under natural conditions (Robinson and Robinson 1970) and laboratory conditions (Eason and Whitcomb 1965, Peck and Whitcomb 1970, Turnbull 1965, Whitcomb and Eason 1967) have not been able to prove or disprove that spiders regulate prey populations, or that they would be effective biological control agents.

Turner (1979) collected 189 prey items of *Peucetia viridans* in a dry coastal sagescrub area of California and reported species of Hymenoptera, particularly *Apis mellifera* Latreille, represented the greatest number of prey items, 41% of the prey collected. The second most numerous prey species belonged to the Diptera (15%) followed by the

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Lepidoptera (15%), Hemiptera (9%), Orthoptera (8%), Araneae (7%) and Coleoptera (4%). Whitcomb (1966) also reported that in Arkansas *P. viridans* seized large numbers of *A. mellifera* as well as other hymenopterous species.

Unlike web-weavers, hunting spiders like the green lynx are not restricted to prey that become tangled in a snare. *P. viridans* builds no snare and can be found moving about on vegetation ready to pounce on its prey.

This investigation was conducted not only to add to the list of known prey of the green lynx spider, but to evaluate how harmful or beneficial those prey were thereby documenting the effect this spider may have as an economically important predator.

METHODS

Green lynx spiders were observed in the field from March 1974 to September 1977 at incidental locations throughout Florida. Sixty-six specimens with prey in their grasp were collected. Whether prey was actually consumed by the spiders was not documented since that information was irrelevant to this investigation. Prey specimens were preserved in alcohol prior to being sent to staff entomologists at the Florida Division of Plant Industry (D.P.I.), Gainesville, Florida for identification. The D.P.I. entomologists later subjectively evaluated the prey specimens they had identified by qualifying them as harmful or beneficial on a scale of -3 (most harmful) to +3 (most beneficial).

RESULTS AND DISCUSSION

Results of the identification and evaluation of the 66 prey items collected from *P. viridans* (representing six orders, 24 families and 30+ species) are presented in Table 1.

Whitcomb, et al. (1963) reported observing the green lynx spider feeding on many species of Noctuidae, Geometridae and Phyralidae as well as *Heliothis zea* (Boddie), *Alabama agrillacea* (Hübner) and *Trichoplusia ni* (Hübner) in Arkansas cotton fields. In addition to those harmful insects, Whitcomb reported *P. viridans* feeding on *A. mellifera*, sphecid wasps, vespids of the genus *Polistes* and Dipternas, including syrphids and tachinids. Referring to the green lynx spider Weems and Whitcomb (1977) stated, "Judging from their local abundance, the lynx spiders are among the major predators of insects occurring in the low shrubs and herbaceous vegetation." They go on to state, however, ". . .their (*P. viridans*) usefulness in the control of insect pests is counteracted by their willingness to prey also upon beneficial insects."

Data collected in this investigation indicate that the green lynx spider is counterproductive as a predator of economically important insects since it takes beneficial insects as prey more often than it takes harmful insects. Eliminating the neutral grades (0), the ratio of beneficial to harmful prey taken by *P. viridans* in this study was 44:12. This ratio may change as further prey investigations of this type are conducted for the green lynx spider and by the biases of the specialists qualifying the prey as harmful or beneficial.

Data in Table 1 indicate *P. viridans* to be a general insect feeder. The data lack the numbers required to show that the spider takes these insects in amounts sufficient to affect the overall prey populations. These data parallel those reported by Turner (1979). More extensive investigations, including data on the relative abundance of prey species, are needed to indicate that the green lynx spider is a possible biological control agent, or a counterproductive insect predator.

Table 1.–List and evaluation of prey of the green lynx spider, *Peucetia viridans* Hentz.

ORDER	FAMILY	SPECIES	No. Spms.	-3	-2	-1	0	+1	+2	+3
Hymenoptera	Ichneumonidae	*Ceratogaster ornata* (Say)	2							*
		Anomalon sp.	1							*
	Sphecidae	*Ammophila placida* Smith	2							*
		Liris (Leptolarra) argintata (Palisot-Beauvais)	1							*
	Vespidae	*Vespula maculata* (Linn.)	1						*	
	Colletidae	*Colletes mitchelli* Stephan	4							*
	Apidae	*Bombus impatiens* (Cresson)	3							*
	Pompilidae	*Paracyphononyx fumerus* (Lepeletier)	2				*			
	Scoliidae	*Campsomersus plumipes* (Fabr.)	2							*
	Tiphiidae	*Myzinum* sp.	1							*
		Myzinum prob. *namea* (Fabr.)	2							*
	Halictidae	*Halictus ligatus* (Say)	5							*
	Chrysididae	*Omalus* sp.	1			*				
Diptera	Tachinidae	*Trichopoda pennipes* (Fabr.)	2					*		
	Bombyliidae	*Exoprosopa fasciata* Macquart	2					*		
	Dolichopodidae	*Condylostylus* sp.	1							*
	Calliphoridae	*Cochliomyia macellaria* (Fabr.)	1					*		
		Phanenicia cuprina (Weid)	3				*			
	Syrphidae	*Eristalis dimidiata* Weidemann	8					*		
	Sarcophagidae	*Sarcodexia innota* (Walker)	1				*			
Hemiptera	Pentatomidae	*Brochymena* sp.	1					*		
		Euschistus servus (Say)	3			*				
	Phymatidae	*Phymata mystica* Evans	2					*		
	Reduviidae	*Zelus bilbobus* Say	2					*		
		Pselliopus cinctus (Fabr.)	1					*		
	Corediae	*Leptoglossus phyllopus* (L.)	3			*				
	Rhopalidae	*Harmostes reflexulus* (Say)	2				*			
Lepidoptera	Noctuidae	Genus ?	3	*						
		Mocias latipes (Guenee)	2		*					
Coleoptera	Scarabaeidae	*Anomala innuba* (Fabr.)	1				*			
	Cerambycidae	*Arhopalus nubilus* (LeC.)	1				*			
		Totals	66	3	2	7	10	19	2	23
		%		4	3	10	15	29	3	35

Speculation on the potential utility of spiders as biological control agents has been great. Before the economic potential of spiders can be accurately determined quantitative and qualitative field prey data must be collected and evaluated. Qualified evaluation of economic importance, harmful or beneficial, or all prey taken by a spider must be included in any prey investigation. Without such data, conclusions on the usefulness of spiders as biological control agents, negative or positive, or their role in insect pest regulation will be misleading.

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