NOCTURNAL PREDATION BY *MISUMENA VATIA* (ARANEAE, THOMISIDAE)

Spiders of the family Thomisidae are typically small ground or vegetation inhabitants which capture their prey by ambush and do not spin webs (Gertsch 1979). Because of their dependence on vision, thomisids are primarily active during the day (Foelix 1982). The crab spider *Misumena vatia* (Clerck) is one of the most abundant and widely distributed of the "flower spiders" in North America. It is commonly observed during the day on flowers such as goldenrod in the late summer and fall (Kaston 1978). *Misumena vatia* has been reported to feed in the daytime on dragonflies and butterflies (Lovell 1915), as well as on bumblebees, honeybees, hoverflies, and various unidentified insects (Morse 1979). To our knowledge, Morse (1981) presents the only record of nocturnal predation. He does not indicate when in the nocturnal period it occurred or the species of the "moth" prey. While conducting nocturnal sampling of cotton insects, we occasionally observed evidence of predation by *M. vatia.* Although these observations are preliminary, we believe they provide further evidence for the nocturnal activities of this spider.

Observations were conducted in a 1-ha fallow crimson clover field in Washington Co., Mississippi, from 4-9 September 1987. Weather conditions during this period were moderate; temperatures ranged between lows of 16°C and highs of 33°C; there was no precipitation; incidence of solar radiation averaged over 400 langleys/day; and the wind blew occasionally (0-10 km/h) from the southwest. The region is largely agricultural, with nearly all the surface area covered by catfish ponds, roads and drainage ditches, and row crops including: cotton, corn, soybeans, grain sorghum and rice. This particular field had been undisturbed since spring and was overgrown with Johnsongrass. Scattered throughout the field and protruding above the canopy were isolated individuals of the Common Sunflower, *Helianthus annuus* L. (Compositae). These plants were 1.7-2.0 m tall and contained 8-12 inflorescences each, from 0.3 to 2.0 m above the ground. One particular plant, the only one in full bloom, was examined daily at

Table 1.—Prey of *Misumena vatia* and time observed.

Date	Time	Taxon of prey	Prey stage
4 Sept.	2100	*Trichoplusia ni* (Hubner) (Lepidoptera: Noctuidae)	adult
	2130	*T. ni*	adult
	2200	*Diabrotica undecimpunctata howardi* Barber (Coleoptera: Chrysomelidae)	adult
	2230	*Colomychus talis* (Grt.) (Lepidoptera: Pyralidae)	adult
	2300	*T. ni*	adult
9 Sept.	2100	*T. ni*	adult
	2130	*T. ni*	adult
	2230	*D. undec. howardi*	adult

0700-0800 for the presence of *M. vatia* and at no time were more than two individuals detected, none with prey. This same plant, when observed after dark, contained as many as nine individuals, some with prey.

Local sunset during early September is approximately 1915 with moonrise occurring at 1500 on 4 Sept. and 2130 on 9 Sept. On both nights from 2000-2400, the *Helianthus* plant was visually searched for spiders, with the aid of a red-filtered headlamp. Numbered tape markers were attached to a stem within 10 cm of each individual. At 30-min intervals each spider was examined and removed from the plant if prey had been captured.

On 4 Sept., nine *M. vatia* were observed on one *Helianthus* plant, with five capturing prey between 2000 and 2400 (Table 1). On 9 Sept., six *M. vatia* were observed on the same plant, with three individuals obtaining prey during the observation period. All were observed as solitary occupants of an inflorescence, positioned with the center of the vertically oriented flower and facing downward, with the first two pair of legs spread wide in an "alert" posture.

A cursory comparison of diurnal and nocturnal observations at *Helianthus* during early September indicated considerably more night-time insect activity. Not only were the inflorescences attractive to various insects, but moths were also observed feeding at the extra-floral nectaries located on the petal bracts. *Misumena vatia* appears to have responded to this nocturnal peak in prey activity by expanding its typical diurnal predatory activity into at least the early portion of the night. This same general phenomenon was reported by Morse (1981), who demonstrated that nocturnal predation by *M. vatia* on milkweed, but not on goldenrod, was associated with high nocturnal insect activity on milkweed compared to low nocturnal activity on goldenrod. We therefore suggest that *M. vatia* does not depend on visual cues and has the ability to be a successful predator outside the typical thomisid activity period.

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