

SHORT COMMUNICATIONS

Egg sac inhibits filial cannibalism in the wolf spider, *Schizocosa ocreata*

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Foraging theory predicts that a potential prey item is excluded from the forager's diet if the prey profitability is low, or the risk from predation while obtaining the prey item is high (Stephens & Krebs 1986). Rejecting a prey item after it has been captured typically occurs when the forager discovers that the prey possesses physical or chemical defences, which reduce its profitability. Alternatively, the forager may release prey if it recognizes the prey item as kin, and thereby avoids the loss in inclusive fitness from cannibalizing a related individual. Most generalist predators continue to forage while exhibiting maternal care for their young. Consequently, to avoid filial cannibalism would require an ability to discriminate between offspring and prey. In those arthropod predators that carry their young with them (e.g. scorpions and wolf spiders), suppression of predatory behaviour towards young becomes paramount. Although cannibalism is common in wolf spiders (Hallander 1970; Yeorgan & Cothran 1974), reproductively active females appear to avoid filial cannibalism (Higashi & Rovner 1975 and references therein). The dramatic shift in cannibalistic tendencies within adult female spiders has been associated with the reproductive process (Eason 1969; Krafft 1982). Reproductive females of other species of wolf spiders also refuse to cannibalize unrelated spiderlings and, occasionally, heterospecific spiderlings (Eason 1969; Higashi & Rovner 1975; Miller 1989). Females' rejection of unrelated spiderlings does not appear to be directly adaptive, but is interpreted as an indirect result of strong selection against filial cannibalism. During the maternal-care phase, selection would strongly favour the ability of the female to discriminate between a spiderling and a prey item. Because the probability of encountering her own offspring is

higher than that of other spiderlings, however, there appears to have been weak selection for kin recognition in adult females. I became interested in identifying factors that suppress the normal cannibalistic behaviour in reproductive female wolf spiders after making two separate field observations of adult females capturing and releasing young spiderlings unharmed. These particular females were not carrying young, although it was at a time in the season when most spiderlings were dispersing from their mothers. Field and laboratory studies have indicated that cannibalism in *S. ocreata* is a significant density-dependent mortality factor among the young instars (Wagner & Wise, in press). The goal of this study was to isolate the component of the reproductive phase that creates the apparent behaviour shift whereby reproductively active *S. ocreata* females reject spiderlings as potential prey items.

Schizocosa ocreata is a medium-sized wolf spider (Lycosidae) (adult females 73.3 ± 1.3 mg; $N=131$) common in forests throughout the eastern United States (Dondale & Redner 1978; Stratton 1991). Wolf spiders are keen-sighted wandering spiders (Land 1985) that do not rely on webs to capture food, but instead ambush or actively pursue their prey. As an annual species, *S. ocreata* mature in the spring and produce their first, and often only, egg sac in early summer. Female wolf spiders carry the egg sac attached to their spinnerets until the young emerge. The emerging spiderlings climb onto the female's abdomen, where they remain for 7–14 days until they disperse into the leaf litter. By the time the spiderlings begin to disperse, all mature males have died. At the collection site, Patuxent Wildlife Research Center in Laurel, Maryland, dispersed *S. ocreata* spiderlings occur at high densities, approximately 60–90 individuals/m² (Wise & Wagner 1992).