

*ARGYRODES* IN WEBS OF THE FLORIDIAN RED WIDOW  
SPIDER (ARANEAE: THERIDIIDAE)

PETRA SIERWALD<sup>1</sup> AND THOMAS FENZL<sup>2</sup>

<sup>1</sup>Zoology, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive  
Chicago, IL 60605-2496

<sup>2</sup>Universität Regensburg, Naturwissenschaftl. Fakultät III Biologie  
Institut für Zoologie, Universitätsstr. 31, 93053-Regensburg, Germany

Spiders of the genus *Argyrodes* Simon 1864 (family Theridiidae, cobweb spiders) live almost exclusively in the webs of other spiders. *Argyrodes* species may interact with their hosts in several ways, as a kleptoparasite stealing the host's prey, as a host predator, web-stealer or commensal (see Cangialosi 1997 for discussion). Many *Argyrodes* species occur in the tropics and subtropics. They are often found in webs of var-

ious species of the genera *Argiope* Audouin 1826 (Araneidae), *Nephila* Leach 1815 (Tetragnathidae), *Agelenopsis* Giebel 1869 (Agelenidae), *Neriene* Blackwall 1833 (Linyphiidae) and *Achaearanea* Strand 1929 (Theridiidae; see Exline & Levi 1962).

In the course of behavioral studies on a Floridian endemic spider, the red widow *Latrodectus bishopi* Kaston 1938 (Theridiidae; Marion County, Ocala National Forest, along Hwy 40, 1/4 mile west of Central Lookout Tower) three different species of *Argyrodes* were collected from their hosts' webs. *Latrodectus bishopi*, limited to Central and South Florida (Kaston 1970; Levi & Levi 1990), builds its web on palmetto shrubs (Genus *Sabal*) in oak scrub-sand pine woods. The base of the web consists of a large, dense, slightly convex sheet, with an extensive three-dimensional large-meshed network of threads above the sheet and a densely woven, funnel-shaped retreat attached to the convex sheet. The retreat is always placed in an unopened palmetto leaf, with the opening of the retreat funnel directed upwards. During the six-week observation period (July and August) the red widow spiders spent most of their daytime hours in the retreat. Daily, 51 websites of young, subadult and adult female and male *L. bishopi* webs were monitored. All *Argyrodes* specimens were found only on webs of adult or subadult female *L. bishopi*, never in the webs of males or very young widow specimens. *Argyrodes* was always found in the large-meshed network above the convex sheet, never in the retreat or the convex sheet. The following three species of *Argyrodes* were found in *L. bishopi* webs at the above mentioned location: *Argyrodes elevatus* Taczanowski 1872; *Argyrodes furcatus* (O. P.-Cambridge 1898); *Argyrodes caudatus* (Taczanowski 1873), see Table 1. The *Argyrodes* species composition on individual *L. bishopi* webs was not recorded.

On August 12 and 13 all 51 *L. bishopi* websites were checked for *Argyrodes* specimens. On August 12, fifteen webs were found to carry *Argyrodes* specimens and all *Argyrodes* specimens were collected. Twenty-four hours later, the same *L. bishopi* webs were monitored again; eleven of the fifteen webs had *Argyrodes* specimens. Within 24 hours, the population of *A. furcatus* was restored to 50% of the original number. Possible *Argyrodes* recruitment sites (webs of other potential hosts) were not investigated. Distances between owner-occupied *L. bishopi* webs ranged from 2.1m to 10.8m; distances between *Argyrodes*-invaded widow webs ranged from 2.1m to 8.4m. The observations in the present note suggest that webs of other spider species living in close proximity to *L. bishopi* webs may also harbor *Argyrodes* specimens and that movements between these different host webs may occur.

On 26 July 1997 an adult female of *A. furcatus* was collected while feeding on a dead juvenile *L. bishopi*. Whether *A. furcatus* had caught the widow host or was just feeding on a dead host spider could not be determined. During the six-week observa-

TABLE 1. COLLECTION DATES, NUMBER OF COLLECTED ARGYRODES SPECIMENS AND GENDER DISTRIBUTION.

| Date                     | <i>A. elevatus</i> | <i>A. furcatus</i> | <i>A. caudatus</i> |
|--------------------------|--------------------|--------------------|--------------------|
| 17 Jul 1997              | 1♂, 2♀             | 4♂, 3♀             | 2♂, 2♀             |
| 31 Jul 1997              | —                  | 4♂, 28♀            | 1♂, 1♂juv, 2♀      |
| 12 Aug 1997 <sup>1</sup> | 1♂, 1♀             | 13♂, 30♀           | 3♂, 1♂juv, 3♀      |
| 13 Aug 1997 <sup>2</sup> | —                  | 6♂, 15♀            | 1♂, 1♀             |

<sup>1</sup>Collected in 15 *L. bishopi* webs.

<sup>2</sup>Collected in 11 *L. bishopi* webs.

tion period, prey capture and courtship behavior between *Argyrodes* males and females were observed frequently. *Argyrodes* specimens were found to reside in empty *L. bishopi* webs, but they were never observed in host-free webs built by a different species than *L. bishopi* on the palmetto shrubs.

Egg sacs of *A. furcatus* were collected with adult females and are described here for the first time. Single light-brown spindle-shaped egg sacs hang from thick silk threads in the three-dimensional network of the widow web. The egg sac ends with a round silk collar, and is very similar to the egg sac of western *A. baboquivari* as figured by Exline & Levi (1962: fig. 2).

Several aspects of the relationship between *Argyrodes* and its hosts, e.g., host-specificity, territoriality among various *Argyrodes* species, movement of *Argyrodes* invaders among host webs of the same or of different species and others can be investigated conveniently at the described location. *Argyrodes* and *Latrodectus* voucher specimens are deposited at the Field Museum.

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#### SUMMARY

Specimens of *Argyrodes elevatus*, *Argyrodes furcatus*, and *Argyrodes caudatus* were found in the three-dimensional large-meshed network above the convex sheet in large webs of subadult and adult females of the Floridian red widow, *Latrodectus bishopi*. The egg sac of *A. furcatus* is described for the first time. *Argyrodes* specimens were also observed eating their host and remaining in empty host webs during the six-week observation period.

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