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

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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-

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**Table 1. Collection dates, number of collected *Argyrodes* specimens and gender distribution.**

<table>
<thead>
<tr>
<th>Date</th>
<th><em>A. elevatus</em></th>
<th><em>A. furcatus</em></th>
<th><em>A. caudatus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>17 Jul 1997</td>
<td>1♂, 2♀</td>
<td>4♂, 3♀</td>
<td>2♂, 2♀</td>
</tr>
<tr>
<td>31 Jul 1997</td>
<td>—</td>
<td>4♂, 28♀</td>
<td>1♂, 1♂ juv, 2♀</td>
</tr>
<tr>
<td>12 Aug 1997</td>
<td>1♂, 1♀</td>
<td>13♂, 30♀</td>
<td>3♂, 1♂ juv, 3♀</td>
</tr>
<tr>
<td>13 Aug 1997</td>
<td>—</td>
<td>6♂, 15♀</td>
<td>1♂, 1♀</td>
</tr>
</tbody>
</table>

* Collected in 15 *L. bishopi* webs.
* 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.

We are grateful to K. Cangialosi and E. Leighton for critical reviews of the manuscript. Mr. J. Thorsen, District Ranger in Ocala National Forest gave permission to observe red widows and to collect voucher material.

**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.

**References Cited**


