

Observations of the insect *Arachnocoris trinitatus* (Heteroptera: Nabidae) as an inquiline of the spider *Coryssocnemis simla* (Araneae: Pholcidae) in West Indies

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The nabid bug *Arachnocoris trinitatus* (Bergroth, 1916) is often found in webs of the pholcid spider *Coryssocnemis simla* Huber, 2000. Thirty-one webs of *C. simla* were checked for occupancy by the spider and the insect in April 2008 in a deciduous seasonal forest in Trinidad, West Indies. *Arachnocoris trinitatus* showed no significant preference either for webs occupied by juvenile versus adult spiders, or for empty webs versus those occupied by *C. simla*.

Key words: *Arachnocoris trinitatus*, Nabidae, *Coryssocnemis simla*, Pholcidae, symbiosis

Web-building spiders of the genus *Coryssocnemis* Simon, 1893 (Pholcidae) are known only from northern Venezuela and Trinidad (Huber, 2000). Data from specimen labels suggest that they build their webs mainly close to the ground in shady humid areas. Our observations of *C. simla* Huber, 2000 in deciduous seasonal forest in the Northern Range of Trinidad, West Indies, are consistent with this pattern. Most webs were in depressions in earth banks along trails, spaces between adjacent buttress roots, and other shallow cavities close to the soil surface.

Arachnocoris Scott, 1881 is a small Neotropical genus of the family Nabidae (Heteroptera). These insects are often found in spider webs (Kerzhner, 1990), mostly of the family Pholcidae. Coexistence between the insect and pholcids has previously been reported from Costa Rica (Kerzhner, 1990), Guadeloupe (Lopez, 1990) and Trinidad (Sewlal, 2005; Kuznetsova et al., 2007 and Sewlal & Starr, 2008). *Arachnocoris* spp. show physical adaptations for life in spider webs (Myers, 1925). Their body coloration consists of white markings on a dark ground colour, rather similar to that of some web-building spiders.

In Trinidad, *A. trinitatus* (Bergroth, 1916) is frequent in webs of *Mesabolivar au-*

rantiacus (Mello-Leitão, 1930). It has been assumed that *A. trinitatus* is a kleptoparasite, feeding on prey caught in the webs (Harris, 1928). However, Sewlal and Starr (2008) found a statistical preference for abandoned webs, suggesting that it utilizes these as ready-made prey-capture devices and possibly a site for finding mates.

The web of *C. simla* in Trinidad consists of a sticky sheet web of densely packed parallel lines of silk (Sewlal pers. obs.), with a tangle of non-sticky webbing above the sheet in the form of a dome. Juvenile and adult spiders build webs of the same design. The overall shape of the web is similar to that of the pholcid *M. aurantiacus* (Sewlal, 2005; Sewlal & Starr, 2008). Preliminary observations indicated the frequent presence of *A. trinitatus* in *C. simla* webs, which raised the question of the relationship between the two species. If *A. trinitatus* feeds on prey trapped in the host spider's web, is it kleptoparasitic or simply commensal? We approached this question through observations of the incidence and position of *A. trinitatus* in *C. simla* webs.

This study was carried out in the higher elevations of the deciduous seasonal forest above the Mt. St. Benedict monastery in Trinidad (118°00.79'N, 67°49.19'E) in April 2008 (late dry season). We recorded

Table. Incidence of *Arachnocoris trinitatis* in webs of *Coryssocnemis simla* in Trinidad, West Indies.

	Occupancy of <i>Coryssocnemis</i> webs				Total
	No <i>Coryssocnemis</i>	Juvenile <i>Coryssocnemis</i>	Single adult <i>Coryssocnemis</i>	Two adult <i>Coryssocnemis</i>	
<i>Arachnocoris</i> absent	10	0	3	0	13
<i>Arachnocoris</i> present	9	3	4	2	18
Total	19	3	7	2	31

the incidence of *A. trinitatus* in webs, their general position (middle or periphery of the sheeting or on supporting threads), and their position relative to any *C. simla* in the web, as well as any juvenile or adult resident *C. simla*. Because our collecting efforts roughly simulated a predatory attack, we noted the reactions of *A. trinitatus* and *C. simla*.

Of 31 *C. simla* webs, 18 webs contained at least one *A. trinitatus* (see Table). One pair of *A. trinitatus* comprised an adult and a juvenile, while all other consociated individuals were adults. In the five adult pairs the individuals were approximately 1 to 5 cm apart from each other. In the adult-juvenile pair, the juvenile remained mostly at the periphery of the web, about 3 cm from the adult.

All of the 30 *A. trinitatus* found in webs were in the sheet, none in the tangle. In spider-occupied webs, all *A. trinitatus* were found either in the middle or periphery of the sheeting.

Because it is easier to be certain of finding all *C. simla* than all *A. trinitatus* in a web than it is of finding all *C. simla*, for statistical purposes we record *A. trinitatus* simply as either present or absent (Table). The data show no significant preference for the webs of either adult or juvenile spiders ($\chi^2=4.52$; $df=1$; $p=0.1$) or for webs with or without *C. simla* present ($\chi^2=2.58$; $df=1$; $p=0.1$).

Arachnocoris trinitatus was often observed either walking or stationary on threads of the underside of the web. When disturbed in the sheet, the nabid retreated

or flew toward the edge of the web or flew out the web.

We believe that *A. trinitatus* treats webs as a favoured venue to seek mates. This hypothesis is supported by the observation that six out of seven (86%) of the pairs of *A. trinitatus* found sharing a web each comprised one adult of each sex. In the two webs that contained four nabids each, a pair was found close to the centre while the second pair was found near the periphery in both webs. The web that contained three nabids, had one on the periphery of the sheet and a pair close to the centre.

When disturbed *A. trinitatus* would retreat to objects such as a dry leaf or under a jutting rock near the top of the dome of the web. These were the same areas used by *C. simla* as retreats when threatened, which indicates that the web architecture and placement facilitate protection of the nabid from predators.

Indifference of *A. trinitatus* towards occupied and vacant webs suggests that the nabids depend not on the pholcid or its web as a means of catching prey. Moreover, in occupied webs, *C. simla* were not viewed as much of a danger as when disturbed some nabids would go quite close to the pholcid in the designated retreat areas.

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