

Orb Weavers, *Neoscona crucifera* (Lucas 1839) and *Neoscona domiciliorum* (Hentz) (Arachnidae: Araneae: Araneidae)¹

G. B. Edwards²

The Featured Creatures collection provides in-depth profiles of insects, nematodes, arachnids and other organisms relevant to Florida. These profiles are intended for the use of interested laypersons with some knowledge of biology as well as academic audiences.

Introduction

Neoscona crucifera (Lucas 1839) and *Neoscona domiciliorum* (Hentz 1847) are common and conspicuous members of the moist woodland communities in much of Florida. These spiders are beneficial, consuming a variety of insects. Although typically nocturnal throughout most of their life spans, adult females can be found sitting head down in the hubs of their webs during daylight hours of the fall season. Bites from these spiders are not known to cause serious effects to humans.

Distribution

These spiders have a wide geographic range: *Neoscona crucifera* is found from Lake Okeechobee in southern Florida north to New England, west to Minnesota, and southwest to Arizona and central Mexico, whereas *Neoscona domiciliorum* occurs southeast of a line drawn from Massachusetts to Indiana southwest to Texas. In the more northern states,

males may mature as early as late June and females in July (Berman and Levi 1971), but in Florida, adults usually are not apparent until late August.



Figure 1. Dorsal view of female *Neoscona crucifera* (Lucas), an orb weaver.

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2. G. B. Edwards, Florida Department of Agriculture and Consumer Services, Division of Plant Industry, UF/IFAS Extension, Gainesville, FL 32611.

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Systematics

These two species have been confused with each other, mostly due to the interpretations by various authors of the descriptions by Walckenaer (1841) of two forms of *Epeira benjamina* from an unpublished manuscript of drawings of Georgia spiders made by John Abbot in 1792. Berman and Levi (1971), who reviewed the history of the controversy, decided to use the name *Neoscona hentzii* (Keyserling 1864) in place of *Neoscona benjamina*, since *Neoscona hentzii* was the oldest name with adequate description and certain interpretation. They also designated a neotype for *N. domiciliorum* (Hentz). However, since then, *Neoscona hentzii* was synonymized with *N. crucifera* (Grasshoff 1986).

Diagnosis

Neoscona crucifera and *Neoscona domiciliorum* are similar but can be distinguished by several characters. Generally, *Neoscona crucifera* is the larger and more common of the two species. It has more drab coloration, with females reddish-brown to brown, and males lighter brown with the sides of the carapace nearly black. Northern females are occasionally white. On the other hand, female *Neoscona domiciliorum* have a bright white or grayish yellow abdominal dorsum, with lateral wide, black stripes on each side. In both species, a double row of black slash marks occurs on the posterior half of the abdomen; sometimes these are obscured.



Figure 2. Dorsal view of female *Neoscona crucifera* (Lucas), an orb weaver.

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Figure 3. Female *Neoscona domiciliorum* (Hentz), an orb weaver. Credits: G. B. Edwards, FDACS–DPI

Legs are banded with reddish-brown and pale yellow markings, but those of *Neoscona crucifera* have brown femora, whereas *Neoscona domiciliorum* have red femora. In *Neoscona crucifera*, the second tibia of the male has two rows of clasping macrosetae (*Neoscona domiciliorum* has three rows) and the epigynal scape (part of the female genitalia) has two pairs of bulges (versus one pair in *Neoscona domiciliorum*). Female *N. crucifera* range from 8.5 to 19.7 mm ($\frac{1}{3}$ – $\frac{3}{4}$ in) in length; males from 4.5 to 15 mm ($\sim\frac{1}{8}$ – $\frac{2}{3}$ in) in length. Usually, Florida specimens are in the upper part of the size range, making them one of the largest orb-weaving spiders in the state. Female *Neoscona domiciliorum* range from 7.2 to 16.2 mm ($\frac{1}{4}$ – $\frac{2}{3}$ in) in length; males from 8.0 to 9.0 mm ($\frac{1}{3}$ in) in length. For both species, Florida specimens usually are larger than more northern specimens (Berman and Levi 1971).

Habits and Habitat

Both species are more common in moist woodland habitats than in drier woods and seem to prefer those habitats dominated by hardwoods. Juvenile stages usually begin making vertical orbwebs about dusk and take the orbs down shortly after dawn (Kaston 1976). During the day, each spider stays in a retreat made of leaves curled together and tied with silk, located at the attachment of an upper frame thread; frame threads are sometimes left in place. Adult females often leave their webs up and hunt during the day. This may be due to their need for additional food for

developing eggs along with a decrease of nocturnal prey in the cooler fall nights.

The orb part of the web of *Neoscona crucifera* may be nearly 2 feet (60 cm) in diameter (Kaston 1976); that of *Neoscona domiciliorum* usually is somewhat smaller. The eggsac of *Neoscona crucifera* consists of fluffy yellow threads in a rolled leaf over a lenticular or spherical egg mass 5–12 mm ($\frac{3}{16}$ – $\frac{1}{2}$ in) in diameter, which may contain up to 1,000 eggs. Juveniles are frequently preyed upon by mud daubers, especially *Trypargilum politum* (Say) (Hymenoptera: Sphecidae) (Kaston 1948).



Figure 4. Male *Neoscona crucifera* (Lucas), an orb weaver.
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Survey and Detection

Both species of orb weavers are often found on or near buildings. The human occupants may not even be aware of the spiders' presence unless they walk outside after dark and see the web in a lighted area or walk into the web in the dark. Often, the edge of an eave is used as an upper support, with the bottom frame lines attached to a shrub or the ground. A simple silken retreat under the eave may serve as a diurnal shelter. Specimens may be seen in open woodlands by observing webs strung between trees in late fall, or earlier in the year by finding webs at night with a headlight.



Figure 5. Closeup of male *Neoscona crucifera* (Lucas), an orb weaver.
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