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Article · April 2020

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Leucauge venusta, The Orchard Spider (Aranaea: Tetragnathidae)

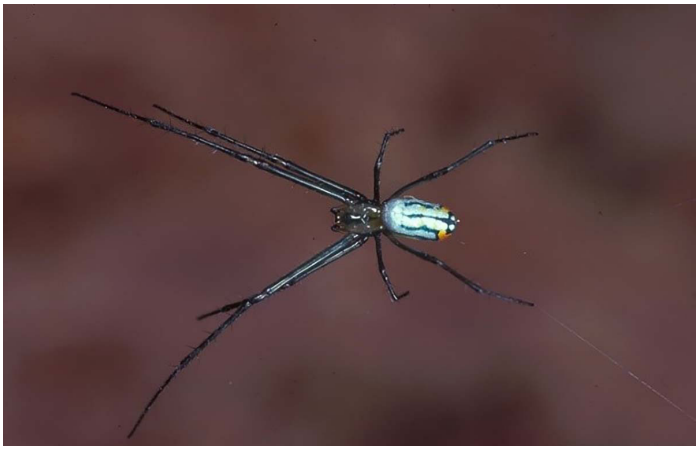
Megan Mulcahy, Forest Huval, Chris Carlton and Gene Reagan

Description

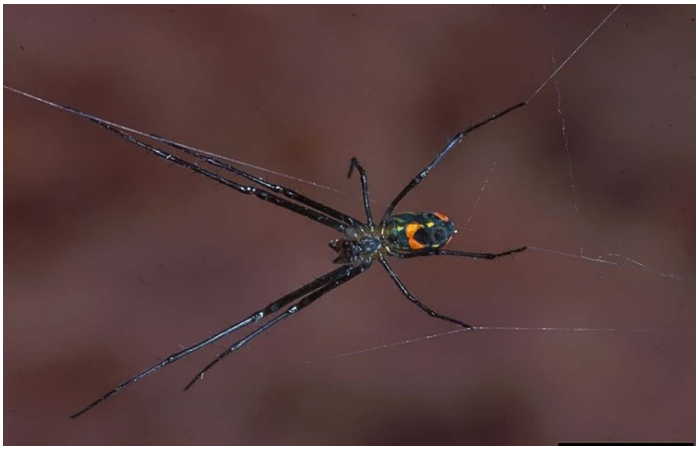
The orchard spider, or orchard orb-weaver, is a small, strikingly patterned spider that belongs to the family Tetragnathidae. This group of spiders is known collectively as the long-jawed orb-weavers, and they typically have long bodies, legs, and chelicerae (jaws). Orchard spiders are .13 to .3 inches (3.5 to 7.5 mm) in length, with females typically larger than males. They vary in color and markings. The abdomen is typically silvery-white, with a dark stripe running down the center and ending in a black tip. The stripe is sometimes flanked by additional black, green or brown streaks and blotches of red or yellow. The sides and underside of the abdomen can be yellow or green with shimmering red, gold and orange dots, bands and triangles. The legs are most often green with black bands at the joints, but they can also be black, light brown or orange. The carapace is light yellow or brown with black stripes along the sides. Orchard spiders can be distinguished from other long-jawed orb-weavers by their oval-shaped abdomen and by a double row of bristles on the hind legs. The spider has eight eyes. The median eyes are grouped together, and the lateral eyes are some distance away so that the eyes together form a trapezoid.

A similar species that occurs in Florida, *Leucauge argyrobapta,* is difficult to distinguish from the orchard spider and requires detailed examination by a specialist. They are also sometimes confused with the black widow spider because of the red markings on the underside of the abdomen. Unlike the orchard spider, the black widow is large, up to 1.5 inches in length (38 mm) and has a completely black body except for orange or red markings on the abdomen.

This species is found throughout the eastern U.S. and also are reported from southern California. They prefer warm, moist climates, typical in Louisiana, where they are common in woodland areas, meadows, tree lines, hedges, and other shrubby habitats. They are common in urban areas and shaded man-made structures and are a common garden species.



Orchard spider, top view. Sturgis McKeever, Georgia Southern University, Bugwood.org.



Orchard spider, underside. Sturgis McKeever, Georgia Southern University, Bugwood.org.

Life History

Orchard spiders construct webs using silk secreted from spinnerets at the tip of the abdomen. All long-jawed orb weavers are orb webs, so named for their circular shapes. The shape is created by numerous sticky spirals surrounding an open central area. Irregular strands of

silk can be found below the web, forming a structure known as a barrier web. The main web is about a foot in length. The spider waits upside down beneath the web and monitors for trapped prey. Immature spiders often build their webs near the ground, while the adults build higher off the ground. Orchard spider webs are extremely effective at catching small flying or jumping insects. The webs are remade each morning. When prey is abundant, many webs may occur together in the same location.

Young orchard spiders appear during spring and early summer and reach adulthood later in the season, when mating occurs. Males transfer sperm to their pedipalps. Following a complex vibrating courtship ritual, the male makes his way across the web, where he inserts the sperm into the reproductive tract of the female. After mating, the female constructs an egg sac of loose, fluffy, orange-white silk in a protected area in or near the web. The dark-orange eggs are tiny (0.4 mm or one one-hundredth of an inch) and several hundred may be present in the egg sac. The adults typically die during fall. Spiderlings hatch and overwinter in the egg sac, emerging during spring to disperse and repeat the cycle.

Ecological Significance

Orchard spider densities can be high in small areas. They are useful predators in the garden, helping to manage nuisance insects and plant pests. They are not harmful to humans and, therefore, control is not advised.

Orchard spiders also serve as food for other organisms, such as other spiders, birds, small reptiles, bats and rodents. They are also attacked by a parasitic wasp in the genus *Hymenoepimecis* (family Ichneumonidae). These wasps sting and paralyze the spider before laying an egg at the base of the spider's abdomen. The spider then goes about its daily life while the wasp larva sucks fluids from its body. The larva feeds on the spider until it reaches a specific size then injects the spider with a hormone that causes erratic behavior. The spider stops hunting and spinning orderly webs and eventually stops moving all together. The orchard spider dies soon after, allowing the larva to consume the remaining abdominal fluid until only a husk remains. This grotesque process culminates when the wasp larva forms a cocoon and attaches it to the spider's own web. The wasp finally emerges as an adult to mate and seek out more orchard spiders to parasitize.

Interesting Facts

- *Leucauge venusta* is the only spider that was named by Charles Darwin. The Greek-derived genus name *Leucauge* means "with a bright gleam," while the specific epithet *venusta* means charming.
- Two orchard spiders were transported on a U.S. space station, Skylab 3, in 1973 for web-building observations in zero gravity. The web building started off quite uncoordinated, but once the spiders adapted, they were able to construct excellent webs.

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Pub. 3714 (500) 4/20