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Mr. Darwin's mysterious spider: on the type species of the genus *Leucauge* White, 1841 (Tetragnathidae, Araneae)

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Abstract

For more than a century and a half the identity of *Linyphia* (*Leucauge) argyrobapta* White, 1841, the type species of the spider genus *Leucauge*, has been a mystery and an obstacle for revisionary work on this orb weaving genus. The only known specimen of *argyrobapta*, the type, was collected by Charles Darwin in Rio de Janeiro during the voyage of the H.M.S. Beagle and was lost after White's description was published. We designate a neotype for *Linyphia argyrobapta* (White, 1841) based on specimens collected in the type locality. The common and widespread American species *Leucauge venusta* (Walckenaer, 1841) is a senior synonym of *L. argyrobapta*.

Key words: Taxonomy, systematics, orb weavers, morphology, spider webs

Introduction

In May 1832, during the voyage of the H.M.S. Beagle, Charles Darwin collected near Rio de Janeiro (Brazil) an orb weaving spider with a brilliantly colored oblong abdomen. His detailed field notes on the specimen include a description of the web architecture and conclude with a remark about an abdominal red mark that was "like a ruby with a bright light behind." He thought that this orb weaving species was "closely allied to *Epeira*" and proposed for it the new name *Leucauge*. Darwin's specimen, a female, was studied by White (1841) who formally described it as *Linyphia (Leucauge) argyrobapta* White, 1841. Adam White's description, based on the single specimen available, lacked illustrations and has proved insufficient to ascertain the identity of *L. argyrobapta* (e.g., Cambridge, 1903; Levi, 1980). Furthermore, the type specimen is lost (Levi, 1980) and this has been confirmed during the course of our study by the curators of the Natural History Museum (London) and the Oxford University Museum of Natural History (Oxford). With 185 described species, *Leucauge* White, 1841 is one of the most species rich araneoid spider genera (Platnick, 2009). The genus is most diverse in the tropics but several species live in temperate zones in the southern and the northern hemisphere. There are no *Leucauge* species known from Europe, Northern Asia or North Africa. Many *Leucauge* species have bright coloration with shiny abdominal guanine patches. They spin horizontal to vertical orb webs which are built every morning (Eberhard, 1988). If the web is damaged during the day it is repaired or completely replaced. Their webs are often built in open sunny spots, such as patches of secondary growth along roads and forest gaps, and gardens and orchards. Some species prefer habitats along the shores of fresh water bodies while other species are found in pristine primary forests. Some *Leucauge* species are so common and well known, even to non-specialists, that they have been granted common names such as the "orchard spider" [*Leucauge venusta* (Walckenaer, 1841)]. Numerous studies have been published on a diversity of aspects of the biology of a few *Leucauge* species, to the extent that these spiders can be referred as model organisms for spider biology (e.g., Bishop and Connolly, 1992; Buckles, 1999; Craig and Freeman,

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