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### **Missing links between *Argyroneta* and Cybaeidae revealed by fossil spiders**

The European Water spider *Argyroneta aquatica* (Clerck, 1757), is the only spider known to live for most of its life in fresh water. Most authors agree that this species is close to Cybaeidae Simon, 1898, but it has been placed in a monotypic family Argyronetidae by some, thus emphasizing the unique adaptations for aquatic life which set this species well apart from its terrestrial relatives. These adaptations include: tracheal spiracles close to the epigastric furrow; large tracheal trunks running forward into the prosoma, including appendages; a mat of short, fine setae forming a plastron on the opisthosoma; and long setae on the proximal podomeres of the posterior legs which assist in carrying a bubble of air under water. Here, I present data from Eocene (c. 35 Ma) fossil spiders from the Isle of Wight, UK, which show the intermediate condition of a spiracle situated mid-way between the spinnerets and the epigastric furrow (i.e. in a similar position to that in juvenile *Argyroneta*), large tracheal trunks running forward into the prosoma, but no plastron hairs. Other features place the fossil in Cybaeidae. Younger fossil spiders, from the Miocene (c. 15 Ma) of Germany, show a similar tracheal pattern to the Isle of Wight fossils and juvenile *Argyroneta*, together with a plastron and long leg setae. These fossils are therefore intermediate in these adaptations between the Isle of Wight fossils and modern *Argyroneta*. The fossils described here elucidate the evolution of aquatic adaptations in this group of cybaeids. Argyronetinae Menge, 1869, is delimited as a subfamily of Cybaeidae on the basis of enlarged tracheal trunks running into the prosoma and a wide tracheal spiracle situated well forward of the base of the spinnerets.