Luc Bussière, University of Stirling:

Life history consequences of sexual dimorphism

The Bussière research group at the University of Stirling studies the life history consequences of sexual dimorphism by exploiting the extraordinary diversity of mating systems that can be observed among dance flies (Diptera: Empididae: Empidinae). The mating swarms of these flies typically involve the transfer of nutritious nuptial gifts from males to females, and in most species adult females are thought to obtain all of their dietary protein from mating encounters. In some taxa, female competition for male nuptial gifts causes a reversal of the conventional sex roles, so that females compete for males, and males become very choosy. This "sex-role reversal" can even lead to the evolution of impressive female ornaments that appear to exaggerate a female's size in the presence of choosing males. Such extravagant ornaments (rare among animals, even in other sex-role reversed species) are puzzling because their exaggeration should theoretically be limited by resource trade-offs between sexual ornamentation and fecundity. Consequently, the diversity of dance fly mating systems provides a unique opportunity to test how life history constrains the evolution of sexual dimorphism.
The scanning micrograph (photo credit Axel Wiberg) shows a female from the species *Rhamphomyia longipes* bearing "pennate" scales on her hind legs that have evolved to attract food-bearing males.

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