

Abstract

Determining the underlying cause of sexual dimorphism and sexual selection is a major question in evolution. One commonly held theory is that differences in competition for mates is influenced by differences in paternal investment in offspring (Clutton-Brock). In most species males compete for females even when male parental care is shown. However, some species in the family Syngnathidae, which includes fish who exhibit male pregnancy including seahorses, pipefish and seadragons, show a complete sex role reversal (Jones and Avise, 2001). In these species, for example *S. fuscus* and *S. typhle*, the females display secondary sexual characteristics like brighter coloring and ornamentation (Jones and Avise, 2001). Previous studies on *S. fuscus* have shown that they produce nutrient poor eggs in comparison to other species of Syngnathidae. However, the nutrient level in the fry of both species was similar suggesting that there was paternal provisioning of nutrients throughout pregnancy in *S. fuscus* (Ripley and Foran, 2006). This study aims to provide a more concrete explanation for the development of sex roles by quantifying male and female investment in offspring. We aim to quantify the paternal investment throughout pregnancy by comparing the energy content and dry weight of newly fertilized eggs to new fry from the same breeding pair. Observing an increase or maintenance of dry weight would indicate that there is a difference in male and female investment. By quantifying this we hope to provide a better baseline for understanding the sex role reversal in *S. fuscus*.