



The Effects of 17 α -ethynyl-estradiol (EE2) on Banding Patterns of the Sexually Dimorphic Gulf Pipefish, *Syngnathus scovelli*

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Abstract: The Gulf pipefish (*Syngnathus scovelli*), the most abundant pipefish found in Florida, exhibits sexual dimorphism (females have blue iridescent bands along the trunk of their bodies while males do not). The estrogenic compound 17 α -ethynyl-estradiol (EE2) is a common synthetic chemical used as an ovulation inhibitor for birth control. EE2 is released in water systems through human wastewater and could potentially harm aquatic life, such as the Gulf pipefish. For this experiment, five male pipefish and five female pipefish, housed independently, were exposed to two different concentrations of EE2 for three weeks (both levels at or below levels commonly seen in the environment). We observed whether banding patterns in the males would occur and to see if the higher concentrations of EE2 would increase the iridescence of the bands in females. After twenty-one days of data, the results showed that three out of the five males displayed banding patterns and the iridescence increased in all five females. These findings indicate that exposing Gulf pipefish to EE2 has a morphological effect on the organisms that could influence their behavior and mating strategies. The presence of blue bands in males could potentially be used as a bio-indicator for estrogen around wastewater outflows in the wild. Further research could determine if the appearance of blue bands in males has a physiological effect that could impair their mating methods.

Keywords: Conservation and management, Behavioral Ecology, *Syngnathus scovelli*