



## **Comparison of Digital and IDIA Methodology in Measuring Female Ornaments of Gulf Pipefish (*Syngnathus scovelli*)**

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This experiment conducts the comparison of an automated system that was programmed to measure iridescence of *S. scovelli* ornaments to the digital methods used by S. Flanagan and colleagues. In their study (2014), they measured ornament area, number, and body size. This process was done by measuring standard length (mm) from digital images of females using the software, ImageJ 1.60. From each digital image, they calculated the total number of bands and captured an outline of each band using tpsDig2. The band and outlines were then used to calculate band area (mm<sup>2</sup>) with a custom R script using package splancs. The system Iridescence Detection and Isolation Algorithm (IDIA) uses Access Microsoft to analyze female ornaments by toggling the image to best iridescence then placing the image in ImageJ and automatically calculating the band length count, band length sum (mm), band length sum 2 (mm), average length, and standard deviation. With the data, it can be concluded that the IDIA program is a successful and efficient method of measuring iridescence in female ornaments.

**Keywords:** Behavioural ecology, Ecology, Evolution, Sexual Selection