



Use of traditional mark recapture and facial markings to track population of *H. erectus* seahorses in a saltwater Bahamian lake

Heather D. Masonjones¹, Emily Rose^{1,2}, Alana Boyles¹, Alexandra Marter¹, and Joshua Smith¹

Affiliation: 1 - University of Tampa, Department of Biology, 401 W. Kennedy Boulevard, Tampa, Florida, 33606, United States , 2 – Texas A&M University, Biology Department, 3258 TAMU, College Station, Texas, 77843, United States

Presenting author: Alexandra Marter

Anchialine ponds are habitats frequently associated with unique biota that differs dramatically from nearby coastal systems. Sweetings pond (91 hectares) on the island of Eleuthera (The Bahamas) is such a system, containing an unusual population of the lined seahorse (*Hippocampus erectus*). In this study, researchers worked to assess the seahorse population size of the lake and track movement patterns, using both traditional mark-recapture techniques (Curtis, 2006) and facial recognition techniques (Correia et al. 2014). Animals were collected on 30 X 2 meter benthic transects arranged in 5 zones around the lake (35, repeated twice per year; March 2014, July 2014, August 2015, March 2016), photographed in situ, and replaced on their holdfasts. In addition, during Spring 2016, 202 seahorses were marked at one site (Quarry) in the pond with elastomer (NMT) following the protocol from Curtis (2006) and tracked through the spring and summer of 2016. All seahorse photographs (N=1861) were analyzed using the Interactive Individual Identification System (I³S; <http://www.reijns.com/i3s/>). Analysis is ongoing to determine how well facial patterning works for individual identification of *H. erectus* seahorses in this population by comparing physically marked animals to repeat collections of those same animals using I³S. A total of 553 seahorses were observed at the Quarry site in 2016, 202 of them were marked, and of those marked, 57 were re-sighted during surveys. Using closed population estimation techniques, it was determined there were 873+/-150 animals in that region of the pond. Facial analysis is ongoing and expected to be complete by September 2017. Compared to research focused on other global seahorse species, Sweetings Pond animals have a higher habitat density and are shaped differently than other *H. erectus*, indicating a population that may be a discrete management unit compared to other *H. erectus*. Given the CITES Appendix II listing of all seahorses and their decreasing numbers worldwide due to overfishing and habitat loss, this population represents a valuable biological resource for Bahamians and one that should be protected.

Keywords: population biology, mark-recapture, anchialine lake, *Hippocampus erectus*, facial recognition