Plankton Dynamics of a Species-Poor Bahamian Saltwater Lake: Which Prey Do Lined Seahorses (*Hippocampus erectus)* Prefer?

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Abstract: Relatively little is known about the diet preferences of seahorses, except that they are ambush predators. Sweetings Pond, a tidal Salt Lake on the island of Eleuthera (The Bahamas) contains an unusual high-density population of lined seahorses (*Hippocampus erectus*). These anchialine ponds often have unique biota differing dramatically from nearby coastal ecosystems, even varying in planktonic composition. In this study, we investigated diet preference of lined seahorses by comparing available planktonic dietary components. Replicate 2-minute surface plankton and 2-minute tows above the seafloor were collected with a 150 µm 0.5 m net at each end of the 1600 m long lake just after dawn and before dusk across October 2015. In addition, 12-hour light traps collected benthic organisms overnight at each sampling time point. A non-lethal gastric lavage technique was performed to assess seahorse diet breadth, anesthetizing animals with a 0.05% clove oil solution and flushing food items through their continuous gut with fresh water following the methods of Castro and colleagues (2008). Animal size, reproductive condition, and gender were assessed using photographs taken at each sampling event. Overall, the plankton community of the pond was dominated by calanoid copepods, with calanoids, harpacticoids, and cyclopoids observed in all tows, and amphipods, annelids, metazoans, echinoderm larvae and shrimp observed intermittently. Few differences were observed by either time of day or location of tow. Light traps were characterized by copepods and shrimp, with additional genera represented that were not observed in plankton tows. Seahorses across size and gender consumed predominantly copepods (females=50%, males=51%, gravid males=57% of diet), but other food types observed were small fish (otoliths), amphipods, mysids, and diatoms. Seahorse numbers globally are on the decline due to overfishing and habitat degradation, and thus, Sweetings Pond animals represent a unique opportunity to study a healthy, intact population to gain a deeper insight into seahorse food requirements on a larger scale.

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