

EVALUATION OF THE NUTRITIONAL STATUS OF REHABILITATED GREEN SEA TURTLES (*CHELONIA MYDAS*) UTILIZING NUTRITIONAL MARKERS, STABLE ISOTOPES, AND METAGENOMICS

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Abstract

Green sea turtles (*Chelonia mydas*) are unique because hatchlings and pelagic juveniles are carnivorous, while later life history stages are primarily herbivorous. Dietary requirements at each life stage are poorly understood, making diet selection during rehabilitation of injured and sick animals challenging. Although turtles are typically transitioned to an herbivorous diet before release, food items high in animal protein (e.g., fish, shrimp, and squid) are often offered/consumed early in rehabilitation to combat poor appetite and emaciation. This may result in gastrointestinal pathologies and potential obesity.

To understand the impact of diet on health and recovery, nutritional parameters in green turtles undergoing rehabilitation at the Georgia Sea Turtle Center are being compared to those of healthy, free-ranging turtles captured during an ongoing monitoring project in St. Lucie County, Florida. Analyses include: (1) a suite of blood nutritional parameters (e.g., biochemical enzymes), (2) carbon and nitrogen stable isotopes in skin tissue, and (3) metagenomics of bacterial fecal flora. Rehabilitated turtles are monitored at admission, mid-rehab, and release. Preliminary analyses of blood nutritional parameters was completed on 13 rehabilitated turtles that were initially fed primarily carnivorous diets and then transitioned to primarily herbivorous diets pre-release. Turtles at the release time point had higher mean total protein ($P < 0.001$), mean triglyceride ($P < 0.001$), and mean ionized calcium ($P < 0.001$), and lower mean uric acid ($P < 0.05$) compared to the entry time point. Ultimately, information gained from this study will enable rehabilitation centers to make dietary modifications and develop gel-based diets that will enhance the recovery process for these endangered animals.

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