

EVOLUTION, ECOLOGY, & GENETICS RESEARCH SCHOOL OF BIOLOGY

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Unravelling the cryptic feeding habits of marine turtles using compound specific stable isotope analysis of amino acids

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Marine turtles spend the vast majority of their lives in relatively inaccessible marine habitats. As a result, indirect approaches such as the use of bulk tissue stable isotope analyses have been used to infer diet and the location of feeding habitats for these endangered reptiles. Carbon and nitrogen stable isotopes have long been used by ecologists as dietary tracing tools because, in terms of isotopic composition, “You are what you eat, plus a little bit”. However, there are a number of assumptions that must be met in order to satisfactorily interpret bulk tissue carbon and nitrogen stable isotopic composition in relation to an animal’s feeding ecology. Compound specific isotope analysis of amino acids (CSIA-AA) is a novel tool that can alleviate some of the challenges associated with the interpretation of bulk tissue isotopic values. This is because some amino acids reflect the nitrogen isotopic composition of source nitrogen at the base of the food web, whereas others are significantly enriched in ^{15}N as they move up the food chain. Similarly, the origin of essential amino acids can be traced using “ ^{13}C fingerprinting” by identifying unique patterns in the carbon isotopic composition of amino acids. In this presentation, I will discuss the application of CSIA-AA in understanding leatherback migration and feeding in the Pacific Ocean and as a tool to trace the biosynthetic origin of nutrients in hind-gut fermenting green sea turtles.

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