



SCHOOL OF  
NATURAL SCIENCES

## SEMINAR SERIES

### Transforming the study of food web architecture with compound-specific stable isotope analysis

My research interests unite two fundamental themes in ecology: 1) the role of food web architecture in the structure and function of complex ecosystems and 2) the influences of climate change and human-environment interactions on those relationships. My approach centers on the development and application of novel compound-specific stable isotope analysis (CSIA) tools to transform how we study the sources, cycling, and trophic modification of organic matter as it flows through food webs. In this talk, I will explore a multi-part case study, using powerful new CSIA tools to address a major paradox in ecology: How are coral reefs so productive and biodiverse in such nutrient poor waters? This work builds from an understanding of organismal nutritional ecology in controlled laboratory studies to explore ecosystem food web dynamics in the field. I will show how a CSIA-based approach to food web ecology can provide a transformative, mechanistic understanding of how food web architecture impacts marine ecosystem function, as well as tools to develop and evaluate effective ecosystem-based management in an age of rapid climate change and human-environment interactions.

***Kelton W. McMahon, Ph.D.***  
Institute of Marine Science  
University of California, Santa Cruz

Dr. Kelton McMahon is an assistant research and lecturing faculty in the Institute of Marine Sciences at the University of California, Santa Cruz. Dr. McMahon has a strong background in Ecology, Oceanography, and Isotope Geochemistry, which he uses to study the roles that food web architecture play in the structure, function, and resilience of past and present marine ecosystems. He is particularly interested in how climate change and human-environment interactions can alter these relationships. Dr. McMahon's research is centered on the development and application of cutting-edge compound specific stable isotope analysis (CSIA) tools. His work builds from a mechanistic understanding of organismal nutritional ecology in controlled laboratory studies to explore resource utilization, trophic dynamics, and biogeochemical cycling in a wide range of marine ecosystems, including coral reefs to temperate kelp forests and polar ice systems. While his research program is firmly rooted in fundamental ecological theory, it is framed to address current and emerging ocean challenges.

<https://keltonmcmahon.sites.ucsc.edu/>

**Thursday**

April 13, 2017  
10:30am- 11:30am

**Location:**

COB I, Rm. 322



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