

Oceanography Department Seminar

KYLE EDWARDS

ASSOCIATE PROFESSOR
DEPARTMENT OF OCEANOGRAPHY
UNIVERSITY OF HAWAII

The spectrum of phytoplankton trophic strategies: cultivating a deeper understanding

The smallest phytoplankton play a large role in most of the ocean, but among the smallest eukaryotes are many ancient lineages whose functional and ecological differences are poorly understood. Here I describe work done in collaboration with Grieg Steward and others that takes advantage of a unique collection of diverse phytoplankton isolates from the oligotrophic North Pacific. We show that many of these phytoplankton are predators of *Prochlorococcus*, and we document tradeoffs characterizing a wide range of trophic strategies along an autotrophy-mixotrophy spectrum. We find that the niches of these phytoplankton are strongly correlated with their trophic strategies, leading to consistent shifts in community structure and function across multiple environmental gradients. A trait-based model of resource competition suggests that covarying nutrient and light availabilities jointly drive the observed patterns. Our results point to a more mixotrophic future for the oceans, with likely consequences for multiple ecosystem processes.

Thursday January 25th, 2024 3:00p.m. MSB #100