Oceanography Seminar

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"Nā Kilo Honua o He'eia: Patterns and drivers of bacterioplankton community dynamics in a substropical estuarine system"

In Hawai'i, the transition from customary subsistence flooded taro agroecosystems, which regulate stream discharge rate trapping sediment and nutrients, to a plantation-style economy (c. the 1840s) led to nearshore sediment deposition - smothering coral reefs and destroying adjacent coastal fisheries and customary fishpond mariculture. To mitigate sediment transport, Rhizophora mangle was introduced in estuaries across Hawai'i (c. 1902) further altering fishpond ecosystems. Initiated in 2007, Nā Kilo Honua o He'eia (He'eia Coastal Observing System) has conducted monthly (or more frequent) sampling and maintained in situ instruments to record physical and biogeochemical variability in He'eia Fishpond and the adjacent coastal ocean. He'eia Fishpond is a tropical coastal estuarine embayment in Kāne'ohe Bay on the island of O'ahu constructed by Native Hawaiians over 800 years ago. The physical structure of the fishpond as an enclosed embayment with portals constrains flow of freshwater from He'eia Stream and marine sources, in effect, functioning as an estuarine mesocosm embedded within the natural coastal environment. The mesocosm-type environment provided by He'eia Fishpond permits a degree of experimental control not achievable in an unconfined coastal system, enabling quantitation of land-based inputs and on near shore resources. We have established baseline physical and biogeochemical conditions from which perturbations from baseline due to invasive species removal (mangrove and macroalgae), fishpond restoration, and seasonal storm impacts have been quantified; recently we have begun to incorporate long-term climate patterns into our analysis. Here, we examine the impact of cultural restoration between 2012-2018 at He'eia Fishpond as well as the impact of first storm of the 2014 Pacific Hurricane season on microbial community dynamics.

Thursday October 18th, 2018 3:00p.m. MSB 114

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