



NOAA FISHERIES Webinar Series

Sponsored by the
Quantitative Ecology and Socioeconomics Training (QUEST) Program

Webinar Details:

Date: Wednesday March 30

Time: 2 – 3 pm EST (11 am – 12 pm PST)

Space is limited. Reserve your seat at: <https://goo.gl/YPOfec>

Topic: Behavior, Hyperstability, and Population Declines in an Aggregating Marine Fish

Presenter: Brice Semmens, Assistant Professor of Marine Biology
Research Division, Scripps Institution of Oceanography



Abstract: The Grouper Moon research program, a collaborative effort between the Reef Environmental Education Foundation (REEF) and the Cayman Islands Department of the Environment, uses a diverse array of field techniques in order to study the population and spatial biology of Nassau grouper (*Epinephelus striatus*). The Cayman Islands maintains a uniquely large (healthy) spawning aggregation of Nassau grouper (~4000 fish), in addition to several heavily depleted spawning aggregations of the species. Acoustic tagging studies on both the healthy and depleted the spawning aggregations indicate that all or nearly all reproductively mature individuals aggregate each year, and do not make abyssal migrations between islands. The acoustic data also suggest that individual grouper may visit multiple aggregation sites before ultimately coalescing at a single site. Finally, acoustic data revealed that larger (more fecund) fish aggregate longer than smaller fish, and that regardless of size, all fish appear to aggregate over a longer period of time at depleted spawning sites. Taken together, these findings suggest a set of behavioral characteristics that present a mechanistic underpinning to the apparent hyperstability in aggregating species; hyperstability refers to the fact that catch per unit effort remains relatively constant despite steep declines in catch. The fact that hyperstability is mediated by spawning behaviors suggests that efforts to harvest aggregating species during their spawning season will likely stymy traditional fisheries management and assessment approaches.

Biography: Brice Semmens is an assistant professor in the Marine Biology Research Division at Scripps Institution of Oceanography at UC San Diego. Semmens' research is equal parts computer time and fieldwork. In the lab he focuses on developing novel methods for analyzing ecological information. In the field he uses advanced sampling techniques to characterize the movements and behaviors of marine animals as a function of habitat and interactions among individuals. Semmens makes use of a broad suite of analytic tools, including multi-level models, time/space series analysis, state-space model formulations, and information theoretic approaches to model selection. He has worked with data from a number of different ecosystems, including coral reef fish, Pacific salmonids, coastal gray wolves, southern resident killer whales, and coastal groundfish. In all of these projects, his goal has been to bridge predictions about how the world works with observed patterns, and in so doing gain insight into the forces regulating marine populations and ecosystems. In the field, Semmens uses advanced tracking technologies to characterize marine fish behavior. Prior to joining Scripps, Semmens was a National Research Council postdoctoral fellow at the Northwest Fisheries Science Center. He received his Masters of Environmental Science and Management at the Bren School, UC Santa Barbara, and his Ph.D. in zoology from the University of Washington.

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