

# Department of Marine Ecosystems and Society Seminar Series

## Coral reef fish are in decline & reefs are dying: can we do anything, other than drive a Tesla?

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**Abstract:** Coral reefs are important for many reasons, principally as environmental indicators of clean water and for their support of healthy multibillion-dollar U.S. commercial and recreational fisheries. However, coral reefs are threatened by overfishing and changes in climate. We have heretofore been unable to manage this decline. Perhaps our inability to diagnose the problem and reestablish America's coral reef fisheries as self-sustaining systems is because we have been looking at things the wrong way? Generally, if fish stocks are not eaten, they are not assessed. Fisheries found in temperate and boreal seas are those traditionally managed. Fisheries managers model these single-species fisheries with the goal of maximum sustainable yield (MSY) by small fleets of large industrial vessels operating from a few major ports.

Tropical reef fisheries require a much different perspective. They are characterized by large diverse fleets of small commercial vessels and millions of recreational fishers landing tens of species across many widely distributed ports. State and federal agencies maintain that coral reefs are currently fished sustainably. Could this be a function of how these fisheries were assessed? Traditional assessment methods are unreliable for reef fisheries because they substantially underestimate exploitation pressures. How could this have happened, and how did we find out?

If the problem is analyzed more holistically, we will reach a very different conclusion. We employed statistically rigorous methods independent of the fishery to "see" what was left in the water after fishing. We created new forecasting methods based on systems science that allows probabilistic evaluations of fishing risks to sustainability. We focused on Florida groupers and snappers with the goal of sustaining the total ecosystem. Our data and models showed that reef fishery resources in the Florida Keys were serially overfished. We explored novel management interventions to mitigate reef fishery risks and sustain production. Subsequently, these fisheries have shown remarkable recovery. We highlight what we have learned and how it could serve as a model for recovery of other depleted reef fisheries in California, US Caribbean, and the Hawaiian Islands.

**Bio:** Jerald S. Ault, Ph.D. is Professor and Chair of the Department of Marine Ecosystems and Society at the University of Miami. Dr. Ault is an internationally renowned fisheries scientist specializing in population dynamics, predictive analytics, ecosystem modeling and risk assessment who regularly provides expert testimony to U.S. Fishery Management Councils, Florida Governors (Chiles, Bush and Crist), U.S. House Committee on Natural Resources, NOAA Fisheries, National Park Service, International Council for Exploration of the Seas, International Union for Conservation of Nature, and International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. He has been widely featured in print and TV media including PBS's Emmy® award-winning "Changing Seas", named Hero of Conservation by Field & Stream, and received numerous awards for his body of work in marine fisheries assessment and management.