

# Florida Keys National Marine Sanctuary

## Population Dynamics of Fin Fish

### Management Issue

Fish stocks in the Florida Keys National Marine Sanctuary (FKNMS or Sanctuary) were serially overfished during the last four decades and are under steadily increasing fishing pressure as the human population of south Florida and the Florida Keys continues to increase. There is insufficient information on the habitat utilization, migration, and spawning aggregation behavior of both food fish and “non-food” fish at the spatial and temporal scales needed to protect ecosystem services within the Sanctuary.

### Description

The Florida Keys has had a recreational and commercial fishing community for over a century, and the number of recreational anglers has increased markedly in recent years. Advanced technologies, such as radar, GPS, and fathometers (a.k.a., fish finders), are now affordable, which has increased the efficiency of fishers.



*School of yellow goatfish swimming with a few bluestriped grunt. Photo Credit: ONMS*

### Questions and Information Needs

- 1) What are the effects of habitat degradation and loss of coral on local fish community structure and stability?
- 2) What are the patterns and frequency of adult fish movement within the Sanctuary?
- 3) How do patterns and frequency of adult fish movement within the Sanctuary change during ontogeny?
- 4) In what ways have fully protected Sanctuary zones affected fin fish behavior and population structure inside and around those zones?
- 5) What are the effects of permitted artificial habitats (e.g., the USS Hoyt Vandenberg) on local fish communities, and do those effects cascade into adjacent fish or habitat communities?

### Scientific Approach and Actions

- Examine the effects of habitat degradation and loss of coral on local fish community structure and stability.
- Elucidate the role, diversity, and ecological significance of non-food fish species in the various Sanctuary habitat types (i.e., coral, seagrass, mangrove, hard bottom).
- Create an ecosystem model for reef fish communities in the FKNMS to predict cascading effects of zoning on reef fishes.
- Encourage research that utilizes the latest acoustic technologies to monitor fish movements throughout the FKNMS.

### Potential Key Partners and Information Sources

NOAA Fisheries, NOAA's Atlantic Oceanographic and Meteorological Laboratory, Florida Fish and Wildlife Conservation Commission, Reef Environmental Education Foundation, The Nature Conservancy, University of Miami, University of South Florida, Florida State University, NOVA Southeastern University, California State University Monterey Bay, volunteers

*Updated: 12/02/14*

*For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>*

## Management Support Products

- Habitat utilization models at appropriate spatial and temporal scales that enable managers to utilize geographic and temporal zoning as a tool for protection and conservation of resources.
- An ecosystem model for reef fish communities to predict cascading effects of zoning on reef fishes

## Planned Use of Products and Actions

- Utilize this information to develop geographic and temporal zoning alternatives to ensure the protection and conservation of resources within the FKNMS
- Share this information with fishery managers so that they can incorporate it into their management decisions about fishery regulations
- Support education and outreach efforts

## Program References

### FKNMS Management Plan

- Research and Monitoring Action Plan, Strategy W.33, F.6, F.7, F.11
- Education and Outreach Action Plan, Strategy E.1, E.3, E.10

### ONMS Performance Measures

- Number of sites in which living marine resources, based on long-term monitoring data, are being maintained or improved

### Other Documents

- FKNMS Comprehensive Science Plan (2002)
- FKNMS Condition Report (2011)

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