

Florida Keys National Marine Sanctuary

Population Dynamics of Fin Fish

Management Issue

Fish stocks in the Florida Keys National Marine Sanctuary (FKNMS or Sanctuary) are under steadily increasing fishing pressure. There is insufficient information on the habitat utilization of both food fish and “non-food” fish at the spatial and temporal scales needed to protect ecosystem services within the Sanctuary.

Description

Though the Florida Keys has had a recreational and commercial fishing community for many years, the number of anglers has increased markedly in recent years and the development of new technologies, such as radar, GPS, and fathometers, 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 movement patterns and rates of fish as adults?
- 3) How do the movement patterns and rates of fish change during ontogeny?
- 4) Although not intended for fisheries management, how effective are SPAs and other FKNMS zones in the preservation of fin fish populations?
- 5) What are the effects of new artificial reefs, including the USS Hoyt Vandenberg, on local fish communities, and how do those effects cascade into the surrounding diversity of fish or habitat?

Scientific Approach and Actions

- Examine the effects of habitat degradation and loss of coral on local fish community structure and stability.
- Give more attention to and gain a better understanding of the role, diversity, and ecological significance of non-food fish species in the community; include biogeographic distribution in order to be more predictive of responses to protection.
- 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

FWC/Florida Wildlife research Institute; NOAA/NMFS; UM/RSMAS; NOAA/AOML; Academic partners such as UM/RSMAS, UNCW, USF, FSU, CSU Monterey Bay; NGOs such as REEF and TNC; volunteers

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

Updated: 5/1/2010

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

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

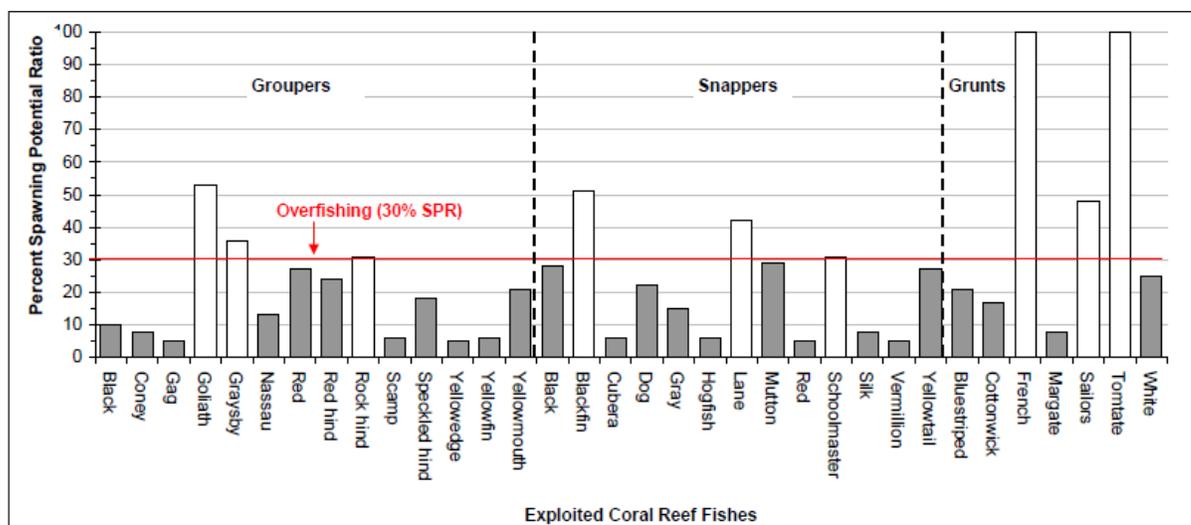
- Research and Monitoring Action Plan, Strategy W.33, F.6, F.7, F.11
- Education and Outreach Action Plan, Strategy E.1, E.3, E.10

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)



Spawning potential ratio (SPR) analysis for 34 exploited species in the snapper-grouper complex from the Florida Keys for period 2000-2002. Dark bars indicate overfished stocks and open bars indicate stocks that are above the 30% SPR standard. Source: redrawn from Ault et al., 2005a

Updated: 5/1/2010

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