

This presentation is a review and discussion of issues related to the status of Florida's great barracuda populations. The presentation will summarize stakeholder concerns about possible declines in the population, review the available information that can be used to evaluate the status of this species, and discuss potential management actions.

This presentation has been updated with minor changes to clarify staff's suggestions for moving forward on this issue.

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Barracuda

- Large, predatory fish
- Targeted for sport, food, and bait
- Individuals exhibit varying behaviors during the year
 - Some fish reside in same areas
 - Some move great distances
- Residency behavior potentially makes them vulnerable to localized depletion
- No species-specific FWC rules
 - Statutory 100-lb or two fish recreational bag limit
 - No commercial trip limit



The great barracuda is a large, predatory fish targeted for sport, food, and bait. Individuals exhibit varying behaviors in movement. While some fish are resident, meaning they reside in the same area throughout the year, others move great distances and are not loyal to any particular location. The residency behavior of some individuals makes barracuda vulnerable to localized depletion, particularly on reefs and wrecks that are commonly visited by fishermen.

FWC does not currently have any regulations specific to barracuda. Their harvest is subject only to the general statewide fishing regulations, including the recreational bag limit set in Florida Statutes for species without specific limits, that allows for the recreational harvest of up to 100-pounds or two fish per person per day (whichever is greater). Harvest over this amount is considered commercial quantities. There are no barracuda-specific commercial trip or gear limitations in Florida.

Barracuda – Stakeholder Concerns

- Fishing guides and anglers have expressed concern over declining barracuda populations in Florida Keys
 - Traditionally targeted by the for-hire industry during winter months
- Declines also reported from other areas of southeast Florida
- Anecdotal reports of increasing commercial spearfishing and recreational harvest for chum
- Mislabeling in the seafood market
- Potential for ciguatera poisoning



Fishermen and divers who spend large amounts of time on and in the water are often the first ones to observe changes in natural marine resources. This type of stakeholder-provided information can be very beneficial to managers, especially for species not closely monitored by research staff. In recent years, recreational anglers, fishing guides, and divers have expressed concern over observed declines in barracuda populations in south Florida, particularly in the Florida Keys. Barracuda are traditionally targeted by charter operators and guides in the Keys. The for-hire sector relies on barracuda as an exciting species for their customers to target on the flats during the winter months and for customers wanting to catch large fish on the reefs. Declines of barracuda populations have also been reported from other areas of southeast Florida, predominantly south of Stuart. Divers in both the Keys and southeast Florida have reported seeing fewer barracuda, especially on artificial reefs. Anecdotal reports of increased commercial spearfishing and recreational harvest for use as chum have been suggested by stakeholders as potential causes of the observed declines.

Additional stakeholder concerns relate to the potential expansion of the commercial fishery for barracuda and include reports of mislabeling of this species in seafood markets as well as concern about the potential for ciguatera poisoning due to consumption of large barracuda. Ciguatera is a foodborn illness contracted by eating seafood contaminated with natural toxins produced by certain microorganisms (dinoflagellates). While the public commonly associates barracuda with concerns about ciguatera, these toxins can occur in many species, especially large, long-lived reef species including snapper, grouper, amberjack and mackerel. In Florida, there are typically several reported cases of ciguatera poisoning each year, however, in recent years none have been associated with eating barracuda.

Stock Status Unknown

- No stock assessments for barracuda in Florida
- Available data includes:
 - Recreational landings
 - Commercial landings
 - Florida Fish and Wildlife Research Institute (FWRI) reef fish visual census (RVC) data
 - Reef Environmental Educational Foundation (REEF) recreational diver data



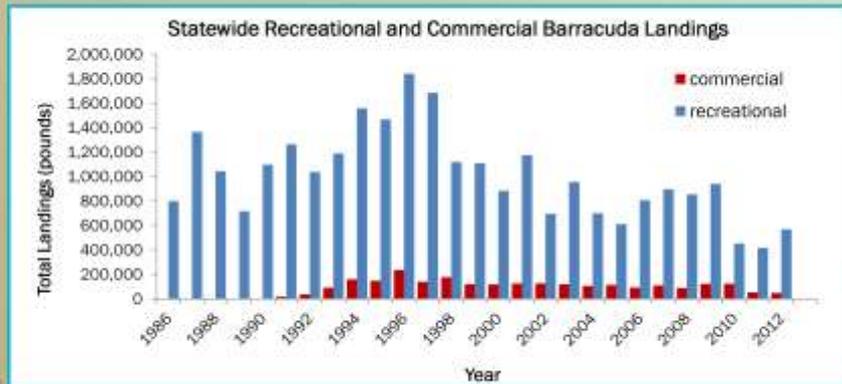
There are not currently any stock assessments available for barracuda in Florida, and insufficient data hampers the ability to conduct one. However, there is a limited amount of data available that can be used to infer trends. Given the localized nature of the reported declines, fisheries-dependent data including recreational and commercial landings were analyzed at the smallest scale available to determine whether they suggest there have been changes in abundance. Fisheries-independent information was available from reef fish visual census (RVC) data collected by the Florida Fish and Wildlife Research Institute (FWRI) and its partners, as well as volunteer-based diver data submitted to the Reef Environmental Educational Foundation (REEF) program.

Other sources of available information on barracuda included information gathered by individual fishing guides, counties, and organizations, but those data are not included in this discussion because of their limited scope. Nonetheless, stakeholder observations and public input are particularly important in cases like barracuda where there is a lack of data on stock status.

Landings by Sector



- Recreational fishery responsible for 85–90% of harvest
- Statewide recreational catch rates peaked during the 1990's and then declined

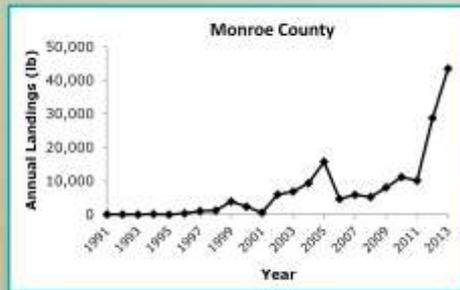
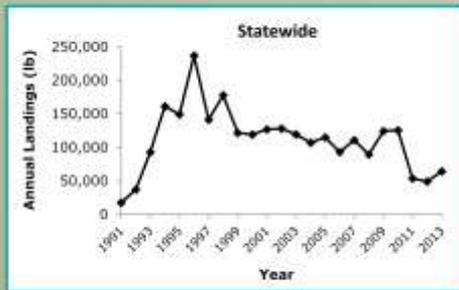


Statewide recreational barracuda landings collected as part of the Marine Recreational Information Program (MRIP) and commercial landings reported through Florida's trip ticket program are shown here for the period 1986–2012. Recreational landings (in pounds of fish) increased steadily through the late 1980s and mid-1990s, but have decreased gradually since that time. In any given year, recreational landings accounted for the majority of barracuda landings, with the recreational sector often estimated to be responsible for 85-90% of the harvest.

Commercial Landings



- Fewer landings statewide in recent years
- Recent increases in Monroe County
- Hook and line gear is the primary commercial gear
- Brief peak in commercial spearfishing statewide 2009–2010



Commercial landings show variability statewide. While statewide landings have been lower in recent years than the mid 1990s, the landings from Monroe County have increased dramatically the last two years. In 2013, Monroe County accounted for 67% of the total statewide commercial barracuda landings. This corresponds well with concerns from stakeholders in the area who have reported increasing commercial interest in this species.

Fisheries Independent Data

FWRI Research

- Reef Fish Visual Census (RVC): a count of all species within a given area
 - Barracuda density relatively stable from 2005–2012

REEF Research

- Volunteer-based diver monitoring program
- No detectable changes through time in Florida Keys
- Declines in the early 2000s in south Florida: Jupiter to Key Biscayne (excluding the Keys)



The RVC surveys conducted by the FWC's FWRI consist of a standardized underwater survey method in which divers count all fish within a five-meter cylinder around their location for a time of three minutes. This survey method allows researchers to compare trends in prevalence of the species encountered during this type of survey through time. FWRI conducts RVC surveys throughout the Florida Keys, and the data summarized here was collected from 2005 to 2012. If there has been a decline in the abundance of barracuda in the Keys during recent years, the RVC surveys were not able to detect it. However, the RVC surveys were not designed to assess the abundance of barracuda and are not ideally suited to this particular species because of their preference for non-reef habitats. So the lack of a trend in the recent RVC data may mean that the decline has not been substantial enough to be picked up in the survey results, or it may be a result of the unique behaviors of barracuda and their use of non-reef habitats.

The volunteer-based REEF fish survey project consists of recreational divers who collect data using a visual survey method called the roving diver technique. As opposed to the stationary RVC data collection methods used by FWRI, this data is collected by divers moving along standard transects of a certain length. An evaluation of this data set also failed to detect any changes in barracuda abundance through time in the Florida Keys. However, this data does reflect a possible decline in abundance during the early to mid-2000s between Jupiter and Key Biscayne off Miami. The number of dives used for this data included a range of 236 to 1,896 dives per year in the Florida Keys, and 75 to 306 dives per year in the Jupiter to Key Biscayne region.

Summary

- Harvest is largely unregulated
- Localized stakeholder concern
 - Limited data available
- Reports of increased spearfishing and use as chum
 - Recreational catch stable
 - Commercial landings stable and relatively low
 - Increasing in the Keys
 - Harvest with spears has returned to low levels after a brief spike



Photo courtesy of NOAA



In summary, harvest of great barracuda is largely unregulated in state and federal waters off Florida. Stakeholders in the Keys and southeast Florida are concerned because their observations may indicate the population (or populations) have declined. However, fisheries-independent monitoring has been unable to detect density changes in the Keys. The data does reflect possible declines in southeast peninsular Florida.

Anecdotal reports of commercial spearfishing and harvest of barracuda for use as chum have been reported as possible causes of the potential decline, but there are conflicting aspects of the available data with respect to these claims. Recreational catch and catch rates have been stable over the past 10 years, and contribute 85 to 90% of the total catch annually. Commercial landings are relatively low, but have increased markedly in the Keys. Statewide commercial harvest using spearing gear did spike in recent years but has subsequently returned to the low levels historically associated with this fishery.

Commission Direction Requested

- Staff suggests proceeding with rulemaking for barracuda
- Workshops would be conducted to gather public input on the following rulemaking options:
 - Commercial and recreational bag limits
 - Size limits (minimum or slot)
 - Spearfishing prohibition
 - Commercial harvest prohibition
 - Regional regulations

If directed, staff will hold public workshops and return with a proposed draft rule package



Staff is requesting Commission direction on how to proceed with respect to barracuda. Staff suggests moving forward with rulemaking. If directed to do so, staff proposes to hold public workshops on the topic to discuss stakeholder suggestions and any other possible options for managing the barracuda fishery. To date, stakeholders have suggested establishing commercial trip limits, establishing recreational bag limits, implementing size limits (either a minimum size limit to allow fish to reach spawning size or a slot limit to protect both immature and large fish), and prohibiting spearfishing of barracuda due to their vulnerability to this gear. Some stakeholders have also requested the Commission consider prohibiting commercial harvest of barracuda. Any regulatory measures considered could be limited to south Florida or implemented statewide.

After conducting workshops, staff would return with a draft rule package for Commission consideration at a future meeting.

The following slides are considered backup material and are not anticipated to be part of the actual presentation to the Commission



Life History

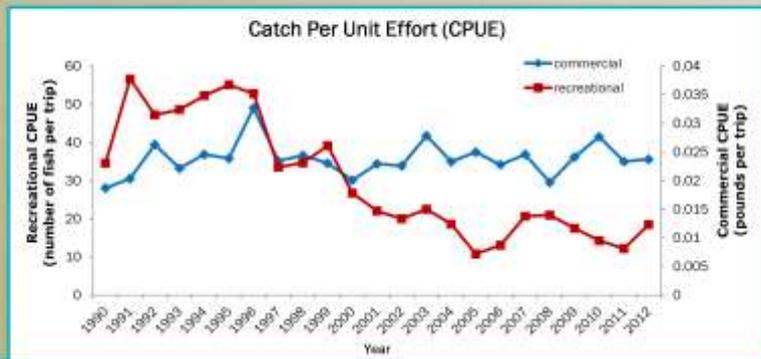
- Large predator
 - Reach 15+ inches FL in the first year
 - Over 23 inches FL by age 2
 - Adults can reach 6 feet in length, over 100 pounds
- Females reach 18 years of age, males 11
- Females mature between 2 and 4 years old (28-39 inches), males between 1 and 2 years (25-32 inches)
- Spawning is believed to occur in offshore waters during the spring, summer, and early fall months



Catch Rates



- Recreational catch rates (catch per unit effort) declined in the late 1990s, but have been stable for the least 10 years
- Commercial catch rates have been stable throughout recent history

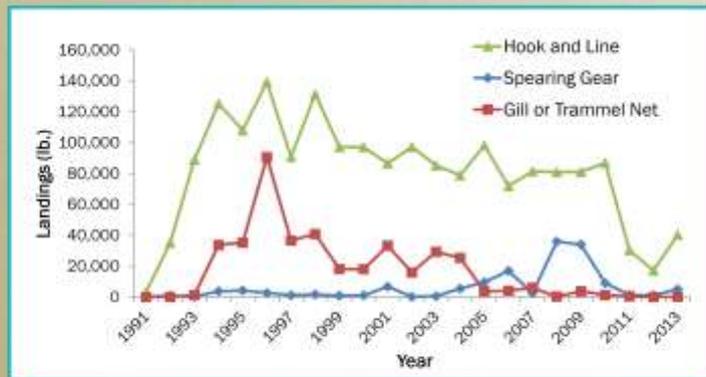


This graph shows the catch per unit effort (CPUE) for both the recreational and commercial sectors for the last twenty years. The estimated recreational total catch of barracuda (in numbers of fish) and the catch per unit effort statewide have both declined since their peak in the mid-1990s, but have stabilized over the past 10 years. The commercial CPUE has been variable but stable over the least the last twenty years.

CPUE can be a general metric of the status of the population, but without additional information about fishermen behavior, it is difficult to determine whether or not these trends actually reflect changes in fish abundance.

Statewide Commercial Landings by Gear

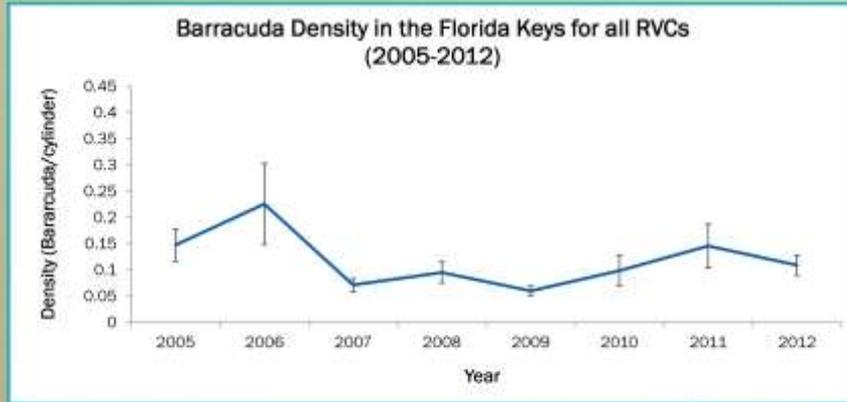
- Hook and line continues to be the most common gear
- Peak in spearing landings between 2008-2009



Because of reports about an expansion of commercial spearfishing for barracuda, the commercial landings were evaluated according to gear type. In any given year, hook and line continues to be the most common gear used for commercially harvesting barracuda. A spike in the use of spearing gears occurred in 2008 and 2009, but the reported use of this gear to harvest barracuda has since returned to the lower levels more typical of this fishery. Historically, gill and trammel nets contributed substantially to landings of barracuda, but have dropped significantly since the Net Limitation Amendment in 1995. Landings from these gear continue to occur at low levels in federal waters.

FWRI Research

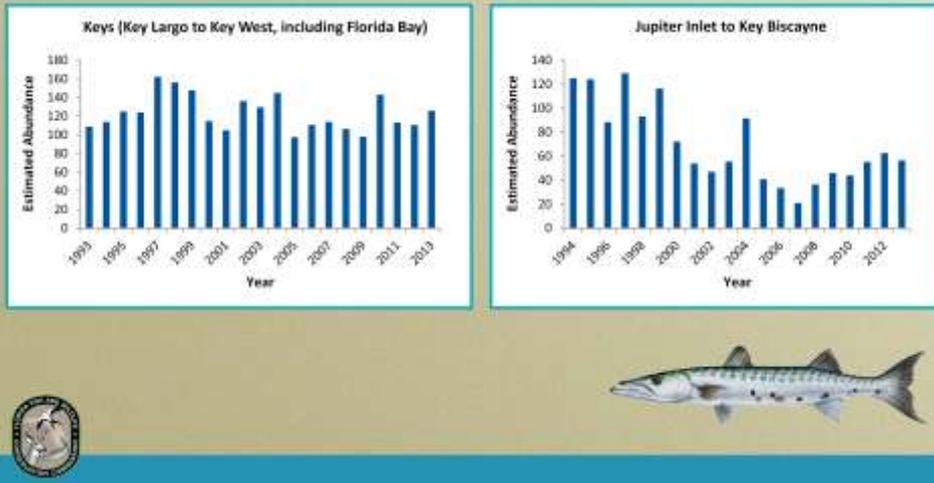
- Reef Fish Visual Census (RVC): a count of all species within a given area



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REEF Research

- Volunteer-based diver monitoring program



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