



This document summarizes a draft rule amendment creating a new chapter for great barracuda, Chapter 68B-60, Florida Administrative Code (FAC), within the Florida Fish and Wildlife Conservation Commission's (FWC) marine fisheries regulations. The proposed draft rule would establish size, recreational bag, and commercial trip limits for barracuda to address population concerns for this species in south Florida.

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Report date: May 26, 2015

Great Barracuda

- Large, predatory fish
- Targeted for sport, food, and bait
- Exciting fish important to the recreational diving industry
- Complex life history makes them difficult to study
 - Relatively little research to date
 - Underwater survey data now available 2005 through 2014
- No species-specific rules
- Default 100-lb recreational bag limit from FL Statute
- No commercial trip limit



The great barracuda is a large, predatory fish targeted for sport, food, and bait. Barracuda is also an important species for Florida's recreational diving industry because an encounter with these large, impressive fish is exciting for recreational divers.

Barracuda have a complex life history, making them difficult to study. Like many other reef fish, barracuda use inshore estuaries and bays as nursery grounds and make a shift toward inshore and nearshore reefs as they mature. Adult fish exhibit a variety of behaviors, with some fish returning to these inshore areas when following food or looking for suitable habitat, while others remain on the reefs. Some adult fish congregate in large schools, while others appear to prefer a solitary, territorial lifestyle. There is relatively little research to date on this species, and therefore there is not enough information available to conduct a stock assessment. The limited research conducted by the Fish and Wildlife Research Institute (FWRI) and its partners throughout south Florida has focused on their migratory behavior, release mortality, and abundance patterns.

FWC does not currently have any regulations specific to barracuda. Their harvest is subject only to the general statewide fishing regulations, including a default 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). For example, this could include 20 five-pound fish, or only two 60-pound fish. Harvest over this amount is considered a commercial quantity, and requires a saltwater products license – the general commercial fishing license required for all commercial fishers. There are no barracuda-specific commercial trip or gear limitations in Florida.

Barracuda – Issue Review

- Stakeholders in SE Florida and the Keys have voiced concerns about declines in barracuda abundance
- November 2014 Commission meeting:
 - Staff presented these concerns and available population data
 - Commission directed staff to conduct workshops in south Florida to gather additional data
- Workshops conducted in February and March of 2015
- Draft rule prepared based on the available information and stakeholder input



In recent years, stakeholders throughout southeast Florida and the Florida Keys have voiced concerns about declines in barracuda numbers. At the November 2014 Commission meeting, staff presented these stakeholder concerns and the available population data for barracuda. At that meeting, the Commission directed staff to conduct workshops in south Florida to gather additional information and stakeholder input and to determine if any additional scientific information was available. These workshops were conducted in February and March of 2015, and the results will be presented on the following slide. The draft rule in this presentation was prepared based on all of the available population information and stakeholder input gathered during these workshops, as well as other communications with stakeholders.

Public Input

- In-person workshops held in Key Colony Beach and Dania Beach
- Online statewide webinar
- Discussed a wide variety of possible management options
- Broad support in south Florida for barracuda management
- Lack of support for regulation from other areas of the state



In-person workshops were held in Key Colony Beach and Dania Beach to gather additional input on possible barracuda management in south Florida. Public turnout was high, with over 50 participants at each location. In addition, an online webinar was conducted to gather statewide input, with 13 individuals participating. During the workshops, staff presented a wide variety of possible management options and an explanation of how each option might affect the barracuda population. Staff also collected public comment, and conducted a survey about what management measures stakeholders wanted to see put in place. In general, there was broad support throughout south Florida for barracuda management. There was an apparent lack of support for barracuda management from other areas of the state, based on input gathered from the online webinar participants and additional email correspondence.

Stakeholder Requests for Action

Widespread support in south Florida for barracuda conservation measures

- Charter captains and guides
- Recreational fishermen and fishing club representatives
- Recreational divers
- Academic researchers and other concerned stakeholders

Stakeholder suggested measures:

- *Recreational bag limits* ✓
- *Commercial trip limits* ✓
- *Size limits* ✓
- Closed season
- Gear limitations
- Catch and release only

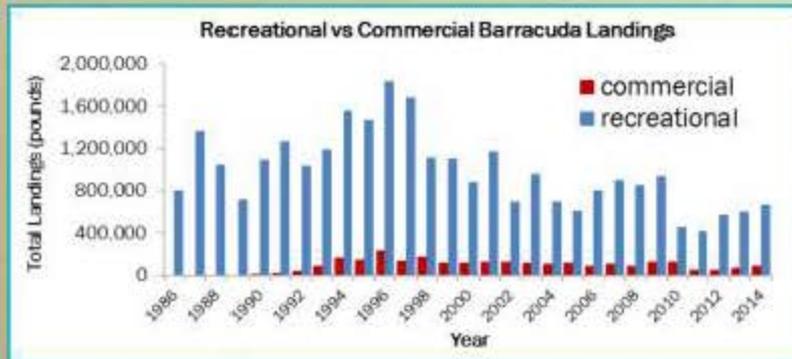


The widespread support in south Florida for barracuda conservation measures included a consensus from a variety of stakeholder groups, including but not limited to charter captains and guides, recreational fishermen, fishing club representatives, recreational divers, academic researchers, and concerned citizens. Stakeholders suggested a range of management options, including recreational bag limits, commercial trip limits, size limits, closed seasons, gear limitations, and establishing barracuda as catch-and-release only. However, staff do not believe some of these requested measures are appropriate because they are highly restrictive, particularly given the lack of information suggesting that drastic changes are needed. Therefore, staff is recommending the Commission adopt reasonable recreational and commercial bag and trip limits, combined with size limits in the affected region.

Recreational Harvest



- Recreational fishery accounts for about 90% of total harvest
- General public support for a small recreational bag limit
 - Consensus among in-person workshop participants from south Florida for a recreational bag limit of 2 fish or less



In any given year, the recreational fishery accounts for roughly 90% of the total harvest of barracuda. Because harvest is dominated by the recreational sector, a reasonable bag limit would be an effective tool for reducing harvest, while still allowing access to the barracuda fisheries for food and bait. There is wide public support, particularly in south Florida, for a recreational bag limit. While some participants at the in-person workshops in south Florida felt barracuda should be designated catch and release only, or that the bag limit should be one, there was consensus among the participants that the recreational bag limit should be no more than two fish per person per day.

Proposed Recreational Bag Limit

Recommended: 2 fish bag limit

- Supported by a wide variety of recreational interests
- Estimated to reduce recreational harvest by 35%
- Would not impact most recreational fishers
 - Less than 20% of trips harvest more than 2 barracuda



Other options to consider:

- 1 fish: 50% reduction in harvest
- 4 fish: 20% reduction in harvest



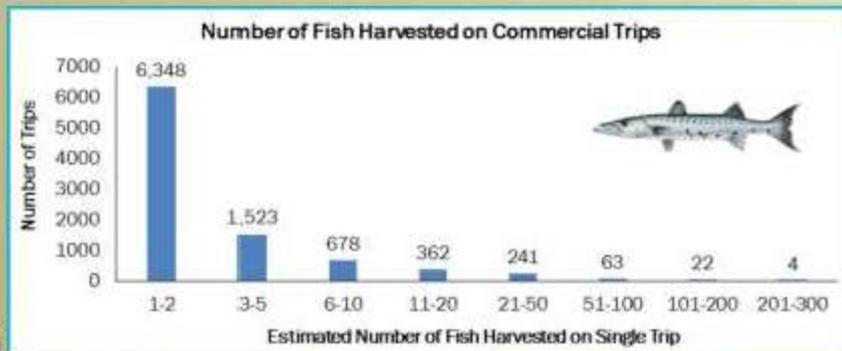
The graph pictured above shows the estimated reduction in recreational barracuda harvest under various potential bag limits. These estimates were calculated based on recent harvest rates for recreational trips in south Florida.

Staff are recommending the Commission implement a two-fish recreational bag limit for barracuda. This proposal is consistent with the majority of the public input staff have received and is supported by a wide variety of recreational interests, especially in south Florida. Based on current recreational harvest information, a two-fish recreational bag limit would be expected to reduce harvest by approximately 35%. This reduction in harvest is not expected to have a negative impact on most recreational fishers, because less than 20% of recent recreational trips harvested more than two barracuda.

Staff also considered recommending either a one-fish or four-fish recreational bag limit. Staff believe a one-fish limit would be overly restrictive. While a four-fish bag limit would impact even fewer recreational trips, it would only be expected to reduce recreational harvest rates by 20% and is unlikely to be supported by stakeholders in south Florida who believe the population has experienced severe declines.

Commercial Harvest

- Commercial fishery accounts for about 10% of the total barracuda harvest
- Majority of trips land an estimated 1 to 2 fish
 - Often taken in conjunction with king mackerel and yellowtail snapper fisheries
- Less than 4% of commercial trips landed more than 20 fish



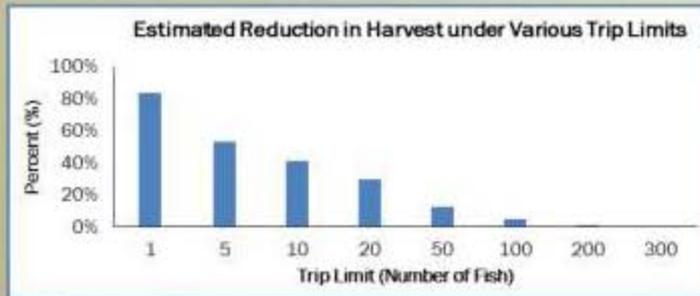
The graph pictured above shows the estimated number of barracuda landed during commercial trips statewide over the last five years. While commercial regulations are typically established based on numbers of fish, commercial barracuda landings are reported in pounds. South Florida fish houses report that the barracudas they buy from commercial fishermen average about 10 pounds per trip. So the pounds of barracuda landed were converted to estimates of the number of fish based on an average of 10 pounds per fish.

In any given year, the commercial fishery accounts for about 10% of the total barracuda harvest in Florida, with the vast majority of trips landing one or two fish. Commercial barracuda harvest often occurs in conjunction with commercial king mackerel and yellowtail snapper fisheries. However there are trips where barracuda is the primary target, landing more than 1,000 or even 2,000 pounds per trip. These trips make up only a small proportion of commercial trips, with less than 4% of trips in the past five years landing enough barracuda (recorded in pounds) to suggest that their harvest rate per trip exceeded 20 barracuda.

Proposed Commercial Trip Limit

Recommended: 20 fish trip limit

- Expected to decrease commercial harvest by 30%
- Would allow a viable commercial fishery to continue



Other options to consider:

- No change, maintain status quo with unlimited harvest
- Lower commercial trip limit
- Equal to recreational bag limit



The graph pictured above shows the estimated reduction in commercial barracuda harvest under various potential trip limits. Staff are recommending the Commission implement a daily commercial trip limit of 20 fish for barracuda. While only a small percentage of commercial trips currently land more than 20 fish, these limited number of trips contribute a substantial proportion of barracuda to the overall commercial harvest of the species. A 20-fish commercial trip limit would be expected to reduce overall commercial harvest by approximately 30%, which is similar to the expected reduction in recreational harvest (35%) under the recommended 2-fish bag limit. Implementing these recommended recreational and commercial limits would spread the burden of harvest reductions equally between the recreational and commercial fisheries.

A 20-fish commercial trip limit is high enough to allow the portion of the commercial fishery that specifically targets barracuda to continue to operate while still reducing overall harvest. It would also prevent harvest on the scale of thousands of pounds per trip, especially when coupled with the recommended size limit discussed later in this presentation and may reduce the likelihood localized declines in barracuda at popular fishing areas that have been observed by stakeholders in south Florida. This would be accomplished without impacting the majority of the commercial fishery, since only 4% of commercial trips are estimated to land more than 20 barracuda currently.

Staff also considered a variety of other potential commercial trip limits. Given that the commercial fishery is only responsible for 10% of the total harvest of barracuda, staff considered maintaining the status quo for the commercial fishery by continuing to allow unlimited commercial harvest, but the continued harvest of very large numbers of barracuda from known aggregation sites could contribute to localized depletions of the remaining large schools. Staff also considered recommending a lower commercial trip limit or setting the commercial limit equal to the recreational bag limit, but staff believes those measures would be overly restrictive based on the fact that the recreational fishery is responsible for the vast majority of the harvest.

Size Limit Considerations

Barracuda are not well-suited for a traditional minimum size limit

- Large size at maturity (28-39 inches for females)
- Recreational food fishery prefers smaller fish
- Perceived risk of ciguatera in larger fish

Recommended approach: Slot limit

- Includes minimum and maximum size limit
- Allows harvest of fish desired by food fishery
- Provides for conservation of both juveniles and spawning-size fish
- Allows juveniles to reach a moderate size before being subject to harvest
- Used successfully for many species including red drum, spotted seatrout, and snook
- Particularly appealing for barracuda because release mortality is negligible



Photo courtesy of NOAA



Staff also recommends creating a size limit for barracuda. While we don't know whether or not the reported declines in the numbers of barracuda in south Florida are impacting the productivity of the spawning stock, setting an appropriate size limit would be expected to contribute to harvest reductions and could potentially increase the spawning stock biomass, should that be an issue for this fishery. However, barracuda is not well-suited for a traditional minimum size limit set based on the size at maturity. Barracuda do not reach maturity until they are very large (28-39 inches for females, 25-32 inches for males), but fishermen targeting barracuda for food prefer to eat much smaller fish. Barracuda has a reputation for being prone to high levels of ciguatoxin (the naturally-occurring toxin that leads to ciguatera poisoning in people). While incidence of ciguatera are rare in Florida and barracuda are not any more prone to carry heavy loads of the toxin than other long-lived reef-associated species, the larger fish are expected to be more likely to be carriers of problematic levels of the toxin. Thus limiting harvest to large fish would, for practical purposes, close the food fishery.

For this reason, staff is recommending an another approach to setting the size limit for barracuda – a slot limit. A slot limit consists of both a minimum and maximum size limit and allows the harvest of the moderate-sized fish within the slot, while protecting the larger spawners. This management approach protects the largest fish in the population from harvest and can be a very effective management tool if coupled with an appropriate bag limit to ensure that some fish survive beyond the maximum size limit. It also sustains future recruitment, because those large fish are the most important contributors to the next generation, given that egg production increases exponentially with size of female fish. The Commission has successfully used slot limits to manage several marine species, including red drum, spotted seatrout, and snook.

A slot limit is particularly well-suited for barracuda because the release mortality of barracuda is negligible, so larger fish that are caught are very likely to survive if they are released.

Proposed Slot Limit

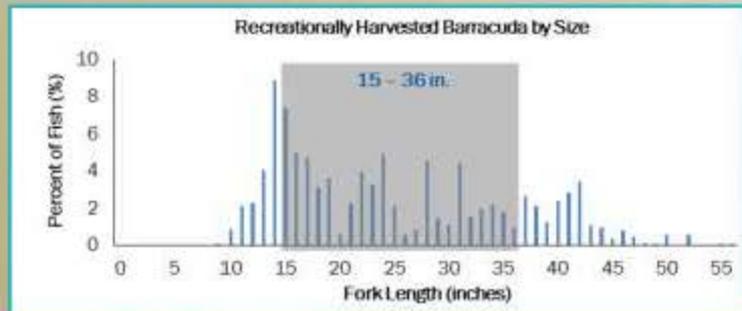


Recommended minimum size limit: 15 in.

- Allows continued harvest of moderate-sized food fish
- Protects a large portion of juvenile fish from harvest

Recommended maximum size limit: 36 in.

- Large spawners that survive through the slot would be protected
 - Same concept used to set the red drum slot limit
- Conserves large, exciting fish for the dive industry



Staff are recommending the Commission create a slot limit for barracuda consisting of a minimum size limit of 15 inches, and a maximum size limit of 36 inches, with harvest only allowed in between those sizes (15-36 inches fork length). The graph pictured above shows the size distribution of the barracuda harvested recreationally in south Florida over the last five years. The grey box represents the size of fish that would be legal to keep under the proposed slot limit.

Recreational food fishermen reportedly target barracuda between 12 and 24 inches. A minimum size limit of 15 inches would allow the barracuda food fishery to persist while protecting the smallest juvenile fish (those under a year old) that are currently being harvested by some fishermen. This would reduce fishing mortality for the smallest fish and is expected to increase a juvenile fish's chances of surviving to maturity.

A maximum size limit of 36 inches corresponds with the size at maturity for females (28-39 inches) and would eliminate harvest pressure for the vast majority of mature females as well as many mature males, and thus would conserve the large spawners that make it through the harvest slot. This is a similar concept as the red drum slot limit, where almost all of the fish inside the harvestable range of the slot limit are immature fish, but the large spawners that make it through the slot are protected.

An additional benefit to the maximum size limit is that it would conserve the largest fish, which are highly valued the south Florida's recreational dive industry.

Regional Management Proposal

- Staff recommend applying regulations to waters off south Florida only
 - Extend regulations into federal waters
- Proposed regulatory region: Collier to Martin counties
 - Stakeholder requests for management: Martin to Monroe counties
 - Fish commercially caught in the Keys often landed in Collier County



The proposed bag and size limits discussed earlier in this presentation could be applied regionally or statewide. Staff recommend applying the proposed regulations only to waters off south Florida, and extending those regulations into adjacent federal waters of the region. The proposed region where conservation measures would apply includes Collier through Martin counties. This region would include the counties where stakeholders have expressed concerns about the barracuda population (Martin, Palm Beach, Broward, Miami-Dade, and Monroe Counties). It would also include Collier County because many of the fish commercially harvested in the Keys are landed in Collier County. Thus including Collier County would reduce confusion over potential transit issues related to bringing barracuda back from the proposed region.

Proposed Draft Rules



68B-60.002 Definitions (NEW)

- Specify barracuda as any fish of the species *Sphyraena barracuda*

68B-60.003 Size Limits (NEW)

- For state and federal waters off Collier, Monroe, Miami-Dade, Broward, Palm Beach and Martin counties:
 - Establish minimum size limit of 15 inches
 - Establish maximum size limit of 36 inches

68B-60.004 Bag Limits (NEW)

- For state and federal waters off Collier, Monroe, Miami-Dade, Broward, Palm Beach and Martin counties:
 - Establish daily recreational bag limit of 2 fish per person
 - Establish commercial trip limit of 20 fish



The proposed draft rules would create a new chapter, 68B-60, FAC, for barracuda. The draft rule would create 68B-60.002, FAC, to identify barracuda as any fish of the species *Sphyraena barracuda*. It would also create 68B-60.003, FAC, to establish a minimum size limit of 15 inches and a maximum size limit of 36 inches for state and federal waters off Collier, Monroe, Miami-Dade, Broward, Palm Beach, and Martin counties; and create 68B-60.004, FAC, to establish a recreational bag limit of two fish per person and a daily commercial trip limit of 20 fish in the same counties.

Follow-Up: Evaluation of Management Measures

- Staff will evaluate the success of the proposed barracuda conservation measures by:
 - Continuing to monitor landings and catch rate trends
 - Continuing to conduct underwater visual surveys
 - Encouraging anglers to report barracuda catch data using mobile applications (apps)
 - Incorporating angler-based data into evaluations of the barracuda fishery



Should the Commission decide to create barracuda-specific regulation, as discussed in this presentation, there are several things staff will do to evaluate the success of the proposed conservation measures. Staff will continue to monitor annual landings and catch rate trends for both the recreational and commercial fisheries. Under the proposed changes, harvest rates would be expected to decrease in south Florida, leaving more barracuda in the water for catch and release (sport) fishing, and viewing by recreational divers, as well as to spawn and contribute to future generations of barracuda. The underwater visual surveys conducted by FWRI and others will also continue and will be monitored for any changing trends in barracuda abundances.

In addition, staff will encourage anglers to report barracuda catch data using mobile applications such as those developed by the Snook and Gamefish Foundation so that FWRI can incorporate that data into future evaluations of the barracuda fishery.

Staff Recommendation

Approve the proposed draft rules to establish species-specific management for barracuda

- Make the following rules effective in state and federal waters off Collier, Monroe, Miami-Dade, Broward, Palm Beach and Martin counties only
 - Minimum size limit of 15 inches
 - Maximum size limit of 36 inches
 - Recreational bag limit of 2 fish
 - Commercial trip limit of 20 fish

If approved and directed, return for a final public hearing at the September Commission meeting



Staff recommend approving the proposed draft rules establishing a region in south Florida where barracuda regulations apply, and establishing a minimum size limit of 15 inches, a maximum size limit of 36 inches, a recreational bag limit of two fish, and a commercial trip limit of 20 fish.

If approved and directed, staff will return for a final public hearing at the September Commission meeting.

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



Stakeholder Concerns

- Fishing guides and anglers have expressed concern over perceived declining barracuda populations in Florida Keys
 - Traditionally targeted by the for-hire industry during winter months and as a “save the day” species
- Declines also reported from other areas of southeast Florida
- Anecdotal reports of increasing commercial spearfishing and recreational harvest for chum
- Potential for ciguatera poisoning, especially at large sizes



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 foodborne 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.

Life History

- Large predator
 - Reach 15+ inches fork length (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 age 2 and 4 (28-39 inches)
- Males mature between age 1 and 2 (25-32 inches)
- Spawning is believed to occur in offshore waters during the spring, summer, and early fall



Stock Status Unknown

- No stock assessments for barracuda in Florida
- Available recreational and commercial landings data show a gradual decline in landings and catch rates since mid-1990s, but stable since
- Underwater surveys have not detected a decline in the Keys, but have detected a decline in southeast Florida
- Consensus among recreational and commercial fishermen, fishing clubs, and academic institutions of declines in south Florida
- Perceived declines may be environmentally related



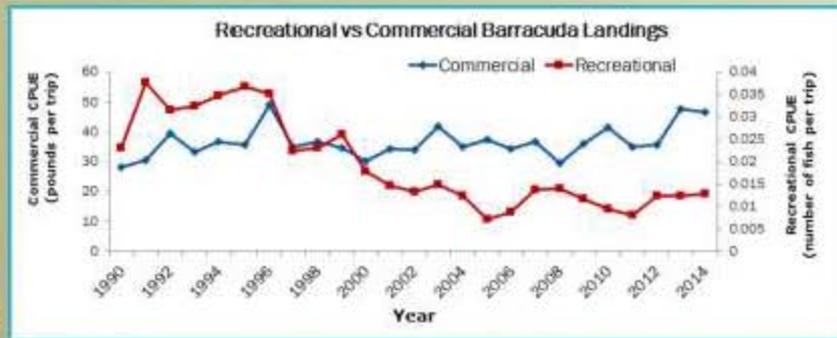
No stock assessments are currently available for barracuda in Florida and insufficient data hampers the ability to conduct one. However, there is a limited amount of data available that can be used to infer trends in barracuda abundance. Given the localized nature of the reported declines, fisheries-dependent 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.

Catch Rates



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



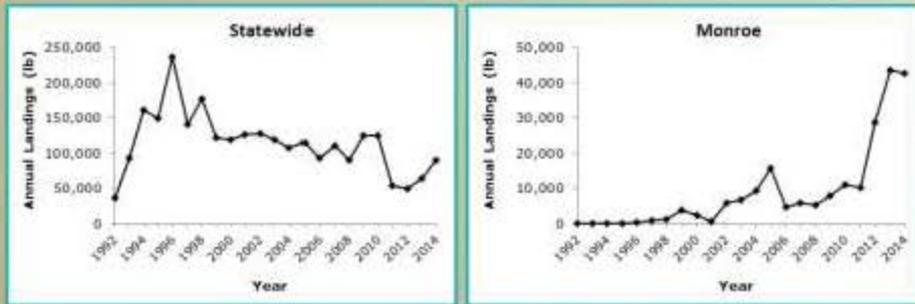
This graph shows the statewide catch per unit effort (CPUE) for both the recreational and commercial sectors for the last twenty-five years. The estimated recreational total harvest of barracuda (in numbers of fish) and the catch per unit effort statewide have both declined since their peak in the mid-1990s,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

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

Commercial Landings



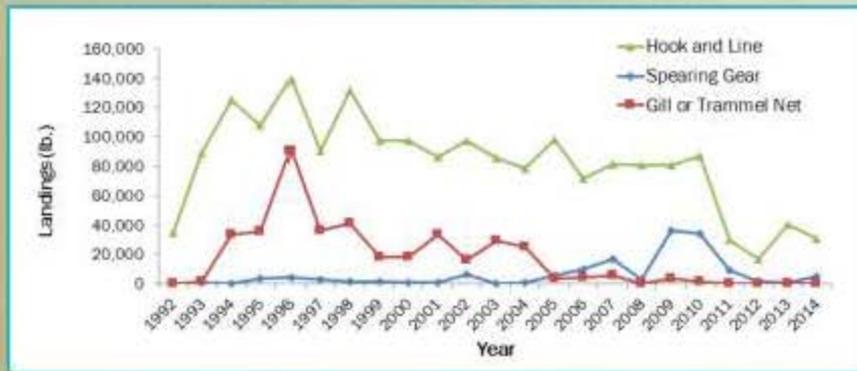
- Fewer landings statewide in recent years
- Recent increases in Monroe County
- Hook-and-line gear is the primary commercial gear
- Brief peak in commercial spearfishing statewide 2009–2010



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 in recent years, with approximately 43,000 pounds harvested in each of the last two years. Monroe County landings accounted for 67% of the total statewide commercial barracuda landings in 2013 and 47% of the statewide commercial landings in 2014.

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 dropped significantly following implementation of the Net Limitation Amendment in 1995. Landings from harvest in federal waters using this gear continue to occur at low levels.

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 reef fish visual census (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.

REEF Research



- Volunteer-based diver monitoring program



The volunteer-based Reef Environmental Education Foundation (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 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.

Updated Survey Data

- Underwater visual surveys conducted by FWRI
- Volunteer diver surveys



Staff anticipates receiving updated barracuda abundance data prior to the Commission meeting gathered during underwater surveys conducted in south Florida during 2014. This information will be added to the presentation once it has been received and analyzed.