SEDAR 41: South Atlantic Red Snapper and Gray Triggerfish
Public Comments

SEDAR41-RW06

Submitted: 7 March 2016

This information is distributed solely for the purpose of pre-dissemination peer review. It does not represent and should not be construed to represent any agency determination or policy.

SEDAR 41: South Atlantic Red Snapper and Gray Triggerfish
Public Comments

All of the public comments submitted through the sedar41comments@safmc.net email address by Monday, March 7 at 5pm were compiled into this working paper. There were a total of 5 comments received and the header on each page notes the author and date the comments were received.

SEDAR 41 RW-Written Comment

Review Workshop panelists:

My name is Paul Nelson, I have been a commercial and charter fisherman for over 40 years, mostly from my home port at Ponce Inlet, near Daytona Beach, Florida. I also was a participant in the data collection for the Florida FWC fisheries independent data collection which is represented in this assessment. There is critical data from the FWC's Red snapper study that is not represented in the BAM model. For example, in 2012, 5% of the fish commercial Red snapper landed and evaluated by the FWC were over 20 years old (see graph below). These fish are now 25 years old, and this significant age-class is not shown in the BAM model. Be reminded, we did not have either a recreational or commercial fishing season in 2015, so there was no way to show these older fish being landed by the either the commercial or recreational fleets since 2014.

C

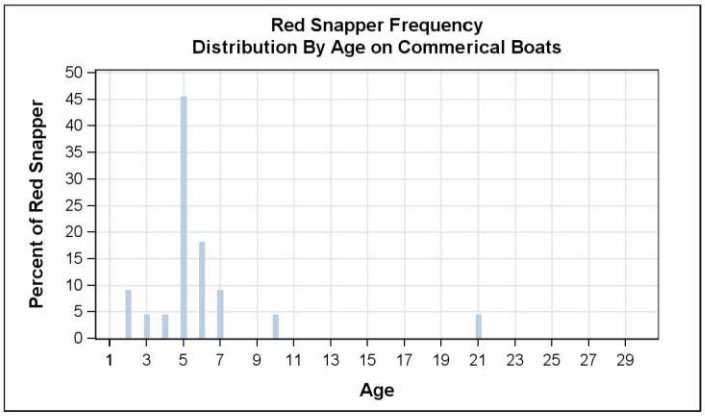


Figure 28 A-C. Age distributions of ages by sample type categories. Samples categorized as "Unidentified" and "Carcass" are recreationally caught samples but have not been assigned to a fishing mode.

From the length frequency data in the attached "tournament fish" graph from the 2012 mini –season (see graph below), there was an age class caught that was 70 cm in length. Based upon FWC's estimated growth rates those fish should have been 100cm in 2014 (the last year of SEDAR 41 assessment) and are now 115 cm in 2016. It is not likely these fish were caught by chevron traps or were fished out by hook n line fleets, and are therefore missing from the assessment.

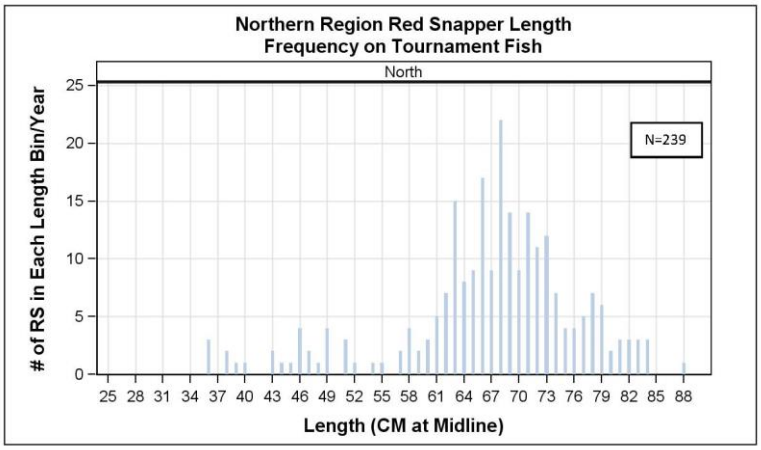


Figure 27. Length frequencies of red snapper from tournament samples (Northern Region). N = Number of observations, Percent = Number expressed as a percentage of overall totals for all inlets in the region. No Tournaments occurred in the Southern Region. Most samples were from Ponce Inlet (236 out of 239 total).

Let me also share with you some observations from my experiences on the water as a Black sea bass pot fisherman. I have set thousands of sea bass pots in this snapper-grouper fishery in the South Atlantic. According to NOAA-NMFS' reports, from my home port of Ponce Inlet, FL, I have been pot fishing in the center of the prime red snapper fishing area in the South Atlantic. I have not caught 20 red snappers in in my pots over the years. These fish (especially the bigger older ones) live up in the water column in separate schools, and are not going to swim down to the bottom and swim into a metal trap. The real old fish over 10 years old are solitary and live in the deeper water.

In the black, red and green attached graph (see below) are the length-frequencies from the FWC fisheries independent data collected aboard my vessel, it is reasonable to make the case that no fishing fleet uses the larger hooks, (because you cannot catch anything else on the bigger hooks) thereby providing larger length and age classes in the population the opportunity to be not targeted, and therefore to survive to older ages.

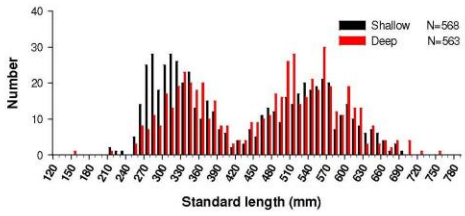


Figure 11. Summary of the length frequency of red snapper between shallow (≤ 30 mete and deep (≥ 30 meters: lower panel) strata for the active repetitive timed drop survey.

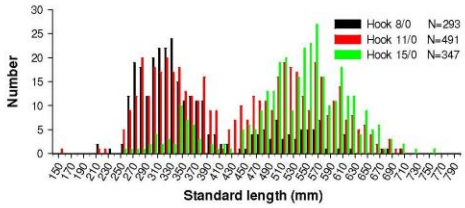


Figure 12. Summary of the length frequency of red snapper among hook sizes for the ac timed drop survey.

During my work as a captain on several of the FWC fisheries independent data collection trips, toward the end of the study, we added a "captain's choice" sample collection, which was where the captain got to pick the tackle, bait and the fishing spot. We caught more bigger fish on the tackle chosen by the captain, due to the years of experience in catching red snapper. Contrary to NMFS' opinion from SEDAR 24, we used a lot longer, lighter, and sometimes fluorocarbon leader to trick the bigger fish into biting. We also fished up in the water column. Older and bigger are smarter they are solitary and stay out away from the main school of smaller fish, most of the time the bigger fish are out in the sand off the reef. They are going to avoid a big metal chevron trap.

We also made several trips to the deep water in which the conditions most of the time were unfishable due to the typically strong Gulf Stream current. On the trips I made there was only one day the conditions were fishable and we caught a lot of much larger Red snapper out there. So we have an area of bottom from Hatteras to Fort Piece in 200 to 300 foot of water in which the big Red snapper live that does not get fished very often due to the conditions.

As commercial fisherman we do not target the big fish for two reasons the price is better on the fish under 15 pounds and the smaller ones are easier to catch. If you fish for an older fish you could be waiting for a while because he is slow on his bite he is cautious and will investigate for a long time. We as fisherman want to catch are fish fast and easy so we can move to another species or get home. Not into waiting a long time for an old red snapper to bite. In summary, I do not believe that the NMFS and MARMAP chevron traps have adequately sampled the larger and older Red snapper and the BAM model is flawed as a result.

Paul Nelson
Bloodline Fishing 386 527 0732

AUTHOR: JIMMY HULL
COMMENTS RECEIVED: 3/3/2016

MARCH 2, 2016

Written Comment: **SEDAR 41 South Atlantic Red Snapper Review Workshop**

SEDAR 41 RW Panelists:

My name is Captain Jimmy Hull, and I have been commercial fishing for Atlantic Red Snapper for over 40-years out of Ponce de Leon Inlet on the central east coast of Florida. Thank you for giving me, as a snapper-grouper fisherman, the opportunity to provide input on the National Marine Fisheries Service's Red Snapper stock assessment model. The SEDAR 41 Beaufort Assessment Model (BAM) results indicate that the South Atlantic Red Snapper stock is near the same abundance (# of fish) as the virgin "unfished" stock, and the biomass (at age) to be at 1975 levels. The BAM results indicate that the biomass is at one-third of the biomass, compared to 1955. As a result, the BAM indicates that the stock is overfished and overfishing is still occurring. Fishermen disagree with this conclusion that the biomass is greatly reduced verses the historical record.

During the 1970's, fishing for Red Snapper was an art; it took hard work scanning the bottom with a fish finder machine looking for schools of Red Snapper to anchor on and harvest. At this time there were no size limits, bag or catch limits. During August 1983, a 12-inch size limit was enacted; then in 1992 a 20-inch size limit regulation was enacted. Fishermen quickly observed an increased improvement and rebuilding of the Red Snapper stock abundance from the 1990's to the present.

Following the 1992 size regulation implementation, fishermen observed several new age-classes moving into the population. As a result, fishermen began interacting and measuring the expanding size of their catch; in essence, observing a rebuilding of the Red Snapper biomass. Fishing was good, environmental conditions and new management rules supported expansion of the stock. Fishermen and coastal fishing communities were onboard with accurate fisheries science and management.

The original NMFS Red Snapper stock assessment, conducted for the SAFMC, was completed in 1998 and indicated that the stock was rebuilding, while responding well to management. Fishermen observations agreed with that conclusion and the improved data collection validated the results of that assessment. Yet the NMFS Beaufort Lab failed to conduct a continuity run for the original assessment model and instead completely changed to the BAM analysis to start assessing Atlantic Red Snapper.

In 2008, the SEDAR 15 BAM model results indicated that the Red Snapper stock was overfished and overfishing was occurring, with only 500,000 Red Snapper left in the Western Atlantic Ocean Red Snapper stock. Fisherman were shocked and disagreed and we found these conclusions to be the polar opposite of what we had been observing fishing on the water.

By 2010, SEDAR 24 was completed and that assessment indicated the Red Snapper stock was overfished and overfishing was occurring. The BAM analysts believed the stock had rebuilt just enough to avoid a complete closure of bottom fishing in many areas as shallow as 98-feet of depth out to 240-feet. Fishermen believed that these conclusions again were incorrect and inconsistent with their fishing observations on the water.

Since 2009, fishermen have been committed to working cooperatively with state and federal scientists to produce data to attempt to better inform the BAM model of the abundant and rebuilding Red Snapper stock we've observed on the water.

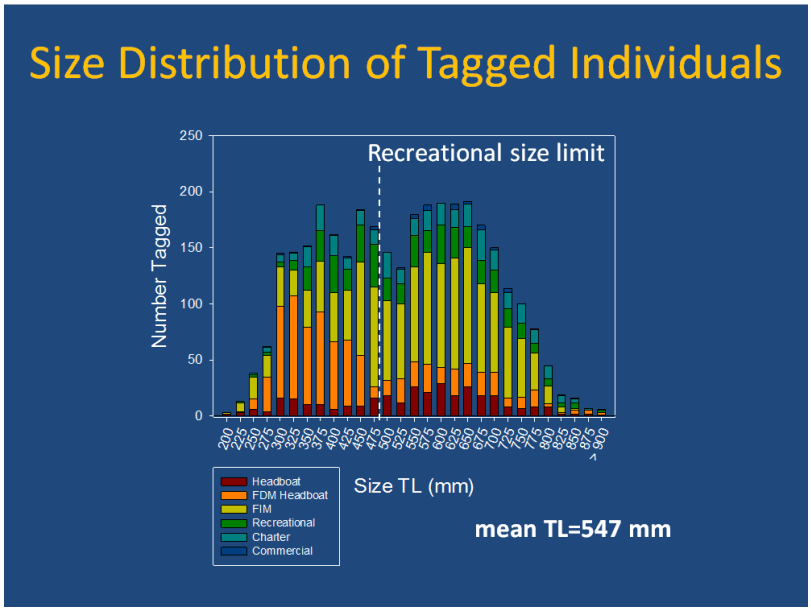
During 2010, fishermen were involved with a cooperative tagging program targeting the Atlantic Red Snapper worked with the State of Florida's Fish and Wildlife Commission (FWC)- Fish & Wildlife Research Institute teamed with the Southeastern Fisheries Association and the Gulf & South Atlantic Fisheries Foundation. This cooperative research project produced 3340 measured and tagged Red Snapper caught along the east coast of Florida.

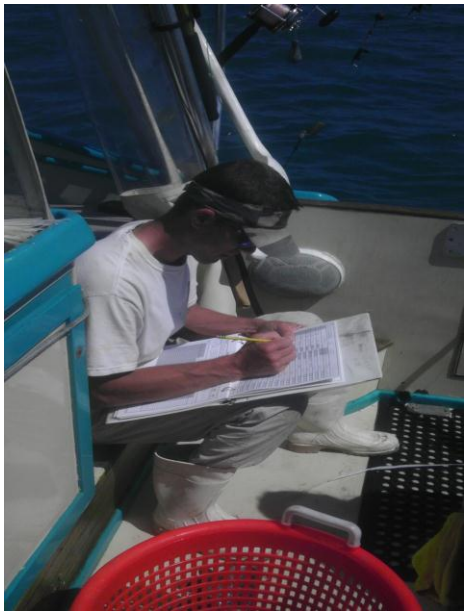
The mean total length (TL) of Red Snapper in this 2010 study was 547-mm (over 21-inches), which indicates the average age of the stock was 4-years old. That was 6-years ago and now the fish in that age class have moved thru the population and the mean TL has increased significantly and have now became a productive age-class of 10-year old Red Snapper. These large fish can weigh 20-pounds or more

Fishermen are commenting that they are currently observing and interacting with abundant 800-mm (over 31-inches) in length Red Snapper populations while fishing. This same study indicates many Red Snapper samples out to 900-mm (over 35-inches) in length were caught also. The fish that were 10 years old about six years ago when this study was conducted are now productive 16-year old Red Snapper, all well over 20-pounds or more in size.

Fishermen agree with the results of the State of Florida data-rich and intensive Red Snapper study thru the observed data and thru our observation and interactions fishing for the Red Snappers.

<u>Why doesn't the observed data in the BAM model show these older fish?</u>





Fisherman have been cooperatively collecting larger older fish beginning June 2009 with the FWC.

In 2012, a Red Snapper mini-season tournament sampling was conducted by Florida's FWC scientists. The results of this study (see Figure 27 graph below) show that length frequencies of Red Snapper harvested indicate a significant age-class > 650-mm that were more numerous in landings than smaller Red Snapper measuring less than 650-mm in length. This provides observed data directly indicating an increasing biomass of older, larger Red snapper that are highly productive contributing to recruitment to an ever expanding population.

Why doesn't the observed data in the BAM show these older age class fish in the population?

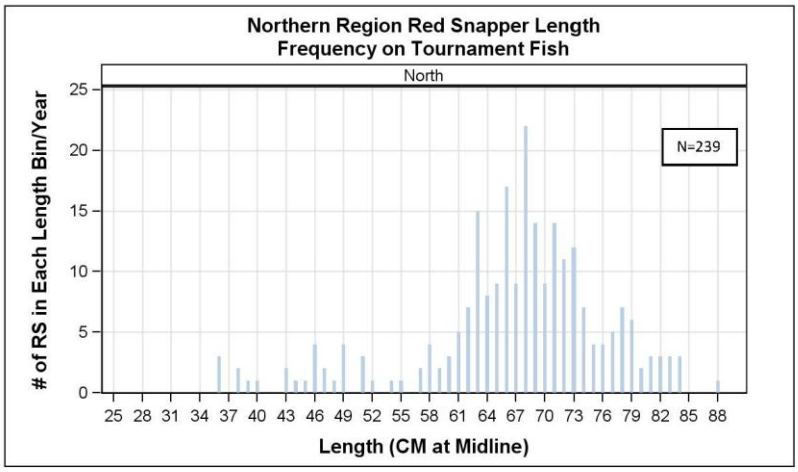
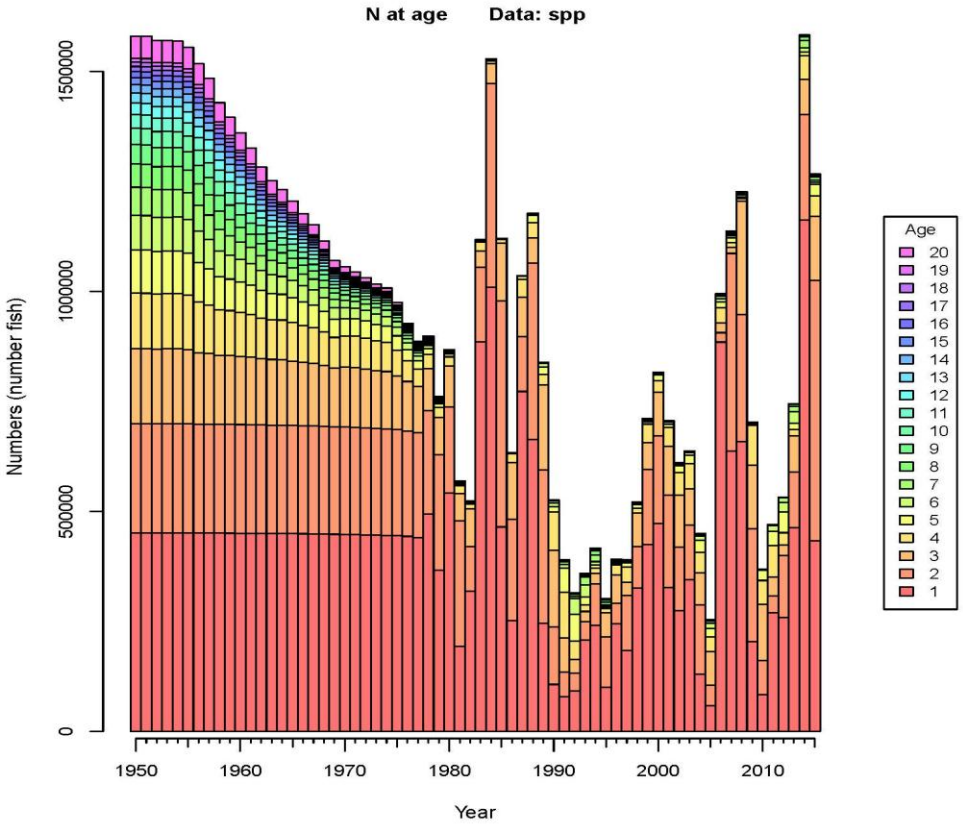


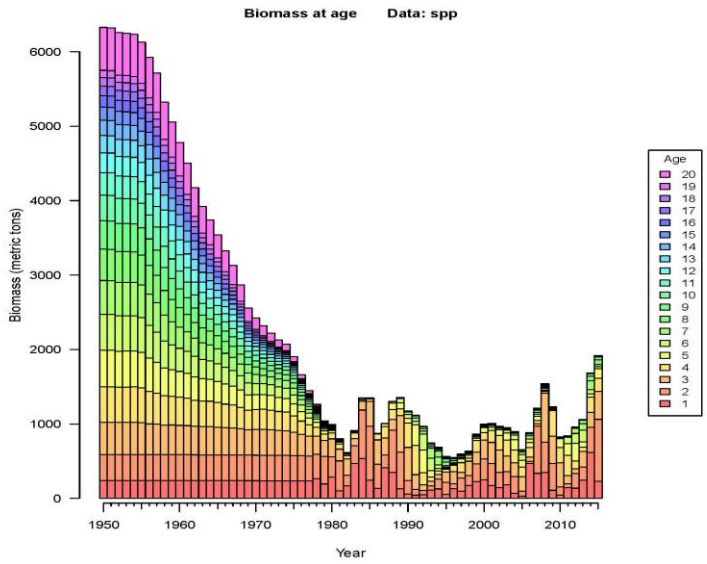
Figure 27. Length frequencies of red snapper from tournament samples (Northern Region). N = Number of observations, Percent = Number expressed as a percentage of overall totals for all inlets in the region. No Tournaments occurred in the Southern Region. Most samples were from Ponce Inlet (236 out of 239 total).

Recreational mini season catch

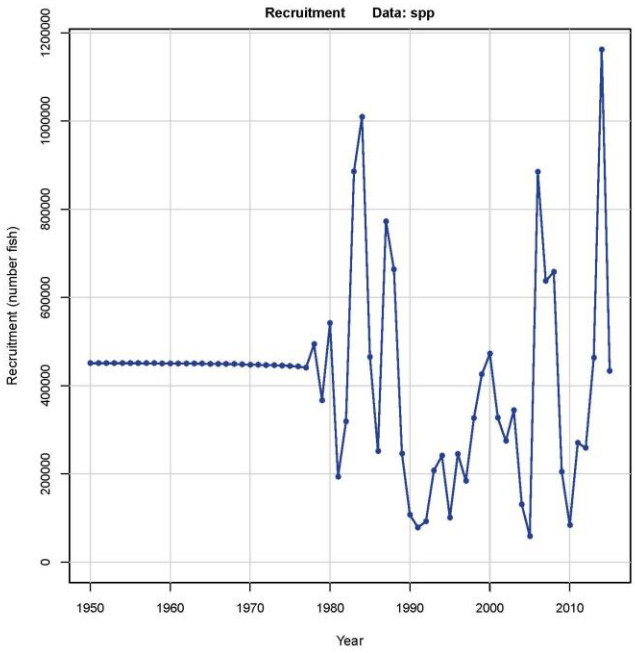
There has never been more abundant numbers of Red Snapper than at the current time. The SEDAR 41 BAM model indicates this (see graph below). We agree and the observed, empirical data validates this model conclusion. Fishermen have been reporting the increasing abundance for many years, before the results of SEDAR 15, SEDAR 24 and SEDAR 41 were finalized.



Now we can all agree that the Red Snapper stock abundance as measured in numbers is larger than it has ever been, yet we are told by the BAM analysts that this stock should be full of 20, 30 and 40-year old fish. Fishermen disagree, and we are advising the SEDAR 41 RW Panelists that in our opinion based on real empirical data, that the Red Snapper stock is totally rebuilt both in abundance and historical age structure. The model assumption of the BAM analysts, that prior to around 1978, the stock biomass was made up of many metric tons of fish older than 10-years of age is not validated by any observed or empirical data. The inaccurate assumptions of a huge long lived, older-aged Red Snapper biomass has destroyed the BAM's ability to accurately assess the stock (see graph below).

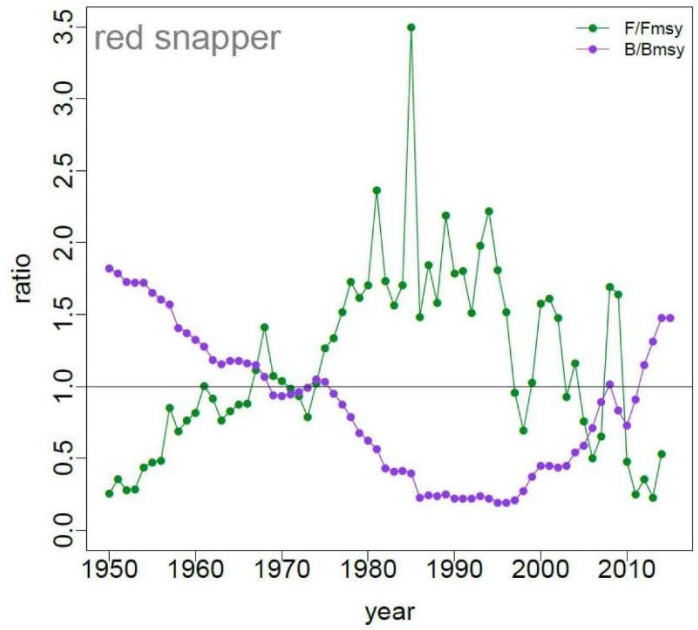


The current Red Snapper stock is rebuilt as nature intended it to be. This is a fish stock that is able to reproduce an abundance of new recruits (see graph below) in numbers never observed before. The Atlantic Red Snapper stock high recruitment periods are that of a totally rebuilt stock.



This stock is made up of highly productive, aggressive fish living in a very competitive ocean where they eat and are eaten. Very few Red Snapper will ever survive beyond 20 years of age. That is the way it was prior to 1970's and that is the way it is today forty-six years later. The Red Snapper stock rises and falls in abundance based on recruitment, predation, competition, environmental factors and management. This is not a fish stock hypothetically designed by a model to assume a stock structure of what it never was and never will be, a stock of predominated by 20, 30 and 40-year old Red Snapper. Without, any empirical data on the age-structure before 1978, the BAM model has guessed on the historic age-

structure. Alternatively, I believe that variable recruitment and pulses of successful age-classes over time have produced a rebuilding population that is more realistically indicated by the SEDAR 41 ASPIC model for Red snapper (see below).



The incorrect assumption about the historic biomass created by the BAM model, again with no observed or empirical data on age-structure before 1978, is what I (We) hope and pray that the RW Panelists will correct from the current BAM model. The observed data produced by the Florida FWC's recent research support the perspectives that I have stated above. We believe that the South Atlantic Red Snapper stock is fully rebuilt and the SAFMC managers should be given the opportunity to open this fishery back for the American citizens.

Respectfully, Captain Jimmy Hull

F/V Sea Lover, F/V Denise Ann,
SAFMC Snapper-Grouper AP member, SAFMC SEDAR Pool member, SAFMC Citizen Scientist

Author: Southeastern Fisheries Association
Received: 3/3/2016

SOUTHEASTERN FISHERIES ASSOCIATION (SFA)

EAST COAST FISHERIES SECTION (ECFS)

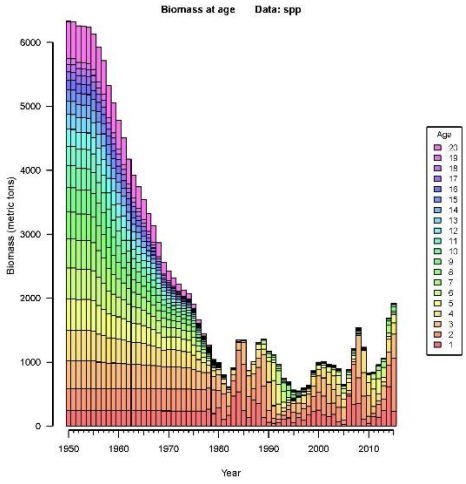
3 March 2016

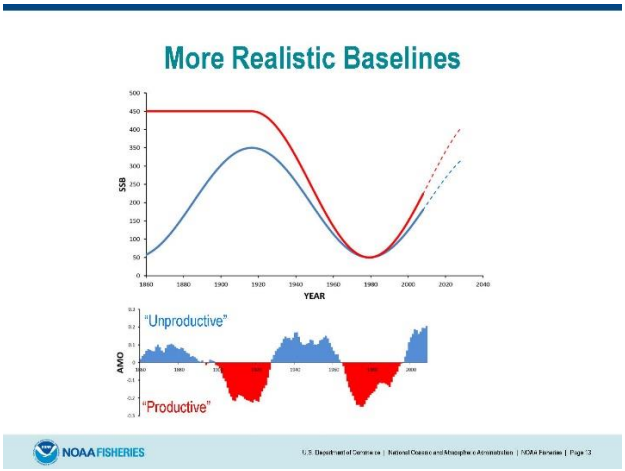
SEDAR 41 Review Workshop Panelists:

Below are comments produced by our scientific consultant, Dr. Peter Barile, a SEDAR 41 Data Workshop and Assessment Workshop panelist, concerning problems with the output from the Red snapper Beaufort Assessment Model. We encourage the RW panel to consider these comments so that you can produce the "most realistic" simulation model of the South Atlantic Red snapper fishery stock.

1. Lack of evidence to support the BAM's historical age-structure hypothesis

The simulated logistical age-structure "draw-down" of the South Atlantic Red snapper stock biomass preceding 1978, is not supported by any empirical age-structure data. The 2014 NMFS- SEFSC Science Program Review suggested that such a biomass drawdown is "not realistic" (see below, Schirripa 2014 PPT slide).



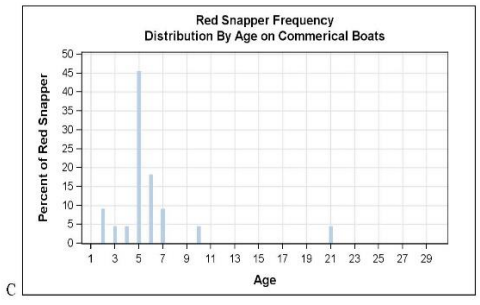


In fact, the most reliable empirical data on the age structure of the South Atlantic Red snapper stock during the "pre-historic" period (1950-1978) is provided by a comprehensive survey of Red snapper landings during the early 1960's in east Florida by Anderson et al. (1965). These authors report the average weight of Red snapper in the sport fishery from 1959-1962 was 8 lbs, or a 4 year old Red snapper; a size similar to the primary modal age-distribution of the 2014 general recreation fishing fleet. Moreover, in the "modern" period (1978 to 2014) of the model, it is clear that stochastic recruitment of significant age-classes into the population is that of an "r-strategist" population that is capable of significant recruitment events, with strong cohorts, irrespective of spawning stock biomass.

It is more likely that the South Atlantic Red snapper stock has oscillated in a productive but variable state throughout its history. Indeed, the Red snapper base model indicates no spawner-recruitment relationship, so the concept of "restoring" the stock to a "pre-fishing" age-structure to support optimal recruitment is without scientific merit.

2. **The NMFS "fisheries independent" chevron trap is not catching advanced age-class Red snapper**

For better or for worse, the "fisheries independent" survey chevron trap is a quasi-commercial fishing (i.e. "fisheries dependent") gear technology, that essentially acts a "fish attraction device" (FAD) or baited artificial reef. The chevron trap is deployed in a random-stratified sampling universe in the South Atlantic and has been recently (2010-14) fitted with GoPro cameras to provide video indexing of the fish stocks surrounding the traps; and also provides information on the performance of the trap versus the surrounding fish populations. For the purposes of this stock assessment, the chevron trap and the video index have been combined because they cannot be assumed to operate independently. Experts in the fishing industry have testified that there is an ontogenetic (developmental) shift with age in schooling behavior of Red snapper, where younger fish associate with bottom structure and are aggressive feeders, and hence, are susceptible to trapping. Alternatively, larger Red snapper that are less susceptible to predation aggregate high in the water column and rarely will associate with schools of smaller fish in proximity to reef habitat. As a result of these ontogenetic behavioral shifts, the BAM does not recognize significant retention of larger age-class fish in the chevron trap/ video index (see below). However, it is clear during the same year (2012) a significant cohort of age-21 Red snapper represent 5% of the commercial handline fishery landings, as surveyed by the State of Florida- FWC (see below). The Review Workshop panel must reconcile the inability of the chevron trap/video "fishery independent survey" to adequately recognize age-classes in the population that are not caught in the trap. While the chevron trap/ video survey may adequately assess abundance (as an index) over time and space, it is inadequate to characterize age-classes of the Red snapper population. We agree with the Francis (2011) analysis that <u>abundance indices should trump age-comp data</u> in catch-at-age models.



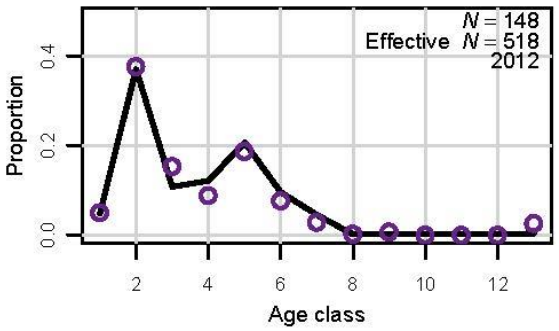


Figure 28 A-C. Age distributions of ages by sample type categories. Samples categorized as "Unidentified" and "Carcass" are recreationally caught samples but have not been assigned to a fishing mode.

3. BAM recruitment estimates defy age-structure of Red snapper stock

The lack of a spawner-recruitment relationship in the South Atlantic Red snapper model is not surprising, as the Szuwalski et al. (2014) meta-analysis indicated that recruitment and SSB are not positively related in 61% of 224 stocks assessed. Alternatively, regime change in "productivity state" over time is suggested as a more significant (biological) factor in determining recruitment success (Vert-Pre et al. 2013). Indeed, several strong year classes over the past 10 years may be indicative that the South Atlantic Red snapper stock is presently in a very productive state. Despite an incessant use of spawning stock biomass as a "bell-weather" for stock status of this reproductively prolific Red snapper stock, a NMFS-Beaufort analyst stated during the Assessment Workshop "The recruitment we are seeing now is the same of a recovered stock."

Thank you for your consideration of these comments.

Bob Jones, Executive Director SFA
Jimmy Hull, Chairman ECFS

AUTHOR: RUSTY HUDSON
RECEIVED: 3/7/2016

DIRECTED SUSTAINABLE FISHERIES, INC. (DSF)

A SALT WATER FISHERIES CONSULTING COMPANY

07 March 2016

To: SEDAR 41 Review Workshop Panelists,

Below are two SEDAR 41 Data Workshop hyperlinks that discuss the Red Snapper Historic Photos that my family supplied to better inform the assessment process. On the secured SEDAR 41 web site are file folders of the various photos from the 1950's to the 1970's that were referenced in these working papers.

http://sedarweb.org/docs/wpapers/SEDAR41_DW24_Hudson2014_RSHistPhotos_7.21.2014.pdf

http://sedarweb.org/docs/wpapers/SEDAR41_DW38_Gray_etal._RSHistCatchRates_8.3.2014.pdf

Thank you for your consideration of this important information. As an official observer of the SEDAR 41 Review Workshop, I will be glad to comment on these historic data sets.

Rusty

Russell Howard Hudson, President
Directed Sustainable Fisheries, Inc. (DSF)
PO Box 9351
Daytona Beach, Florida 32120-9351

(386) 239-0948 Telephone
(386) 253-2843 Facsimile
DSF2009@aol.com

Saltwater Fisheries Consultant, Shark Specialist
Deep-Sea Fishing Expert and Shrimp Boat Captain
Retired 100-ton United States Coast Guard (USCG) Licensed Sea Captain
Recreational, For-Hire & Commercial Fishing Life Experience, 1958-2016
Sixth Generation Waterman from Central Florida East Coast
Seafood Coalition (SFC) member
American Elasmobranch Society (AES) member 2004-2016
Atlantic Coastal Cooperative Statistics Program (ACCSP) Advisory Committee Florida member
ACCSP Biological Review Panel (BRP) member
ACCSP Bycatch Prioritization Committee (BPC) member
Atlantic States Marine Fisheries Commission (ASMFC) Coastal Shark (CS) Florida (FL) Advisory Panel (AP) commercial & for-hire recreational member [former Chair of CS AP]
National Marine Fisheries Service (NMFS) Highly Migratory Species (HMS) AP Commercial Shark member 2016-2018
NMFS HMS SouthEast Data, Assessment and Review (SEDAR) AP Pool member 2016-2021
South Atlantic Fishery Management Council (SAFMC) SEDAR AP Pool member no term limits
SAFMC Fisheries Citizen Science Workshop Participant 2016
SAFMC Snapper-Grouper (SG) AP FL commercial member 2015-2017
SAFMC Marine Protected Area (MPA) Expert Work Group (EWG) participant 2012-2013
Former SAFMC MPA AP FL commercial member
Former NMFS Atlantic Large Whale Take Reduction Team FL participant (ALWTRT)
Former NMFS Bottlenose Dolphin Take Reduction Team FL participant (BDTRT)
Participant, observer and/or contributor to US coastal shark stock assessments during 1992, 1996, 1998, 2001, 2002, 2005, 2006, 2007 and 2010-2015
Participant, observer and/or contributor SEDAR 11 (Large Coastal Sharks), 13 (Small Coastal Sharks), 16 (King Mackerel), 19 (Red Grouper/Black Grouper), 21 (Large Coastal Sharks/Small Coastal Shark), 24 (Red Snapper), 25 (Black Sea Bass/Golden Tilefish), 28 (Spanish Mackerel/Cobia), 29 (Gulf Blacktip Shark), 32 (~~Gray Triggerfish~~/Blueline Tilefish), 34 (Atlantic Sharpnose Shark/Bonnethead Shark), 36 (Snowy Grouper), 38 (King Mackerel), 39 (Smoothhound Sharks) and SEDAR 41 (Red Snapper/Gray Triggerfish)

AUTHOR: DAVID NELSON
RECEIVED: 3/7/2016

Public Comment SEDAR 41- RW

My name is David Nelson and I am a second generation fisherman from Daytona Beach, Florida. I have fished out of Ponce Inlet for the last 31 years. My father started fishing for red snapper from Cape Canaveral to Jacksonville, in 1955 and I started in 1975. Over the years we have seen many ups and downs in the fishery. In 1992, the two per person bag limit was implemented and this changed the fishery forever. Since 1996, we have seen year over year growth in the number and size of red snapper that we catch. From what we have seen on the water we feel that overfishing ended in 1992, and the stock has been rebuilding ever since. I have been involved with the scientific process on red snapper since SEDAR 24, including the current assessment DW and AW. One of the major problems with the red snapper fishery is that during the last 30 years the NMFS failed to collect enough high quality usable data on red snapper for an age based model like BAM to be used. There has also been a failure by the NMFS to try to understand the behaviors and other factors that impact the ability of fishermen to catch red snapper. The major problem is that the BAM model used to assess red snapper is not able to account for all of the variables involved in a fish like red snapper.

Selectivity

In SEDAR 41, the BAM model has once again calculated the wrong selectivity for the commercial fleet in the South Atlantic. The selectivity for all fleets should be dome shaped with a shift towards older fish in the dome of the commercial sector. In SEDAR 24 AW 05, every argument for flat topped selectivity was an assumption about red snapper with no data to support any of the claims. The main argument was the depth of water available to the SA fishermen compared to the GOM. However, there is no relationship between depth of water and selectivity for red snapper. This was proven in the most recent assessment on red snapper in the Gulf of Mexico, when both long line fleets fishing out to 600 feet were dome shaped selective as were all other fleets in the GOM. There are no major gear differences between the two regions. Without a NMFS long line survey like the one available in the GOM the BAM model will always be incapable of accounting for the differences in red snapper behavior as they age. Some examples of behavior variability with age that can impact selectivity are listed below.

1. As they grow larger they have less of a need for protective cover and structure (SEDAR 31). All bottom fishermen without exception fish structure in some form or fashion.
2. These older fish are line shy and less likely to bite a hook than a younger faster growing fish. Young red snapper are much more aggressive when it comes to feeding than older red snapper. There is plenty of video evidence on Youtube to support this belief (see attached clips and times of relevant video).
3. These older fish are exponentially much harder to catch than their younger counter parts. The sheer power of a 20 pound red snapper compared to a 5 pound red snapper cannot be quantified.
4. These older larger fish separate themselves from the larger schools of fish that are smaller than they are. This is one of the main reasons that these fish are not selected on the same scale as the smaller fish.

During the last three years I have been involved with the FWC sampling of red snapper between Cape Canaveral and Jacksonville. During this time we caught hundreds of red snapper and we observed hundreds more feeding near the surface. The major difference was that as we were bringing the fish up from the bottom and they were emptying their stomach contents near the surface, the larger red snapper of 20+ pounds were feeding on this food. We very rarely caught these larger fish on the assigned gear on the same spots that we observed them feeding. Fishermen have known this as long as red snapper fishing has been going on. The larger red snapper do not associate themselves with large groups of smaller fish very often.

SEDAR 41 does not account for any of these factors when it comes to selectivity. All fisheries in the SA should be dome shape selective and the model should be forced to adjust to this. The reason that some of these fisheries are catching older larger red snapper is that the fishery is rebuilt and is 20-25 years ahead of the Gulf of Mexico in rebuilding. The regulations put in place 24 years ago in 1992, ended overfishing and the stock began to rebuild. The ASPIC model clearly shows this rebuilding of the stock starting after 1992.

Lack of Data

Recreational Data

According to data available the recreational fishery is by far the largest fishery by number of fishermen and red snapper caught. However, the data on recreational fishing is at best extremely poor with the data collected being used to drive the future of this fishery. In some entire decades, recreational data is missing completely and the gaps are being filled in somehow. Only until recently have we started to collect recreational data and with the study from the state of Florida (Sauls) the Federal recreational catch numbers (MRIP) are inflated by a factor of 10 or more in many cases. Phone surveys do not work at collecting important data for such an important fishery. We have the largest fishing sector for red snapper basically absent when it comes to high quality, accurate data.

Headboat Data

The data that is available during the 1990's is so sparse that the BAM is unable to detect any type of rebuilding that was occurring. On the water after 1996, fishermen in all states, saw year over year growth in the stock in numbers of fish and the size of the fish. The reason for the lack of data in the 1990's has to do with the new size regulation put in place in 1992. The 20 inch size limit basically cut off all headboat data for over a decade while the stock was rebuilding. Headboats normally catch red snapper under 20 inches, this can be seen in the historic landings data. The headboat data is the longest time series in the model and was basically stopped in 1992 until the observers were put in place. This huge gap in the data left the BAM model to assume that there were almost no red snapper being landed during this time, when in fact they were being released by the thousands.

Chevron Traps

Up until very recently there were very few red snapper caught in Chevron traps. Only recently has there been enough samples in the Chevron traps to even use in the assessment. With the addition of cameras more weight has been put on this data set and this is a major problem in the current assessment. The chevron trap is not able to sample red snapper population properly for a number of reasons. First of all, red snapper do not like traps at all. In my experience with sea bass traps I have made thousands of trap sets and in all my years of trap fishing I have caught less than 20 small red snapper in sea bass traps. The majority of these traps were set on prime red snapper territory that is close to sea bass habitat. While the traps are set we hook and line fish around them as they attract other fish, and we catch small red snapper as fast as we can get our lines down. When that same trap is brought up there are zero red snapper 99% of the time.

Chevron traps will never catch larger red snapper in them on a consistent basis and the traps themselves might be preventing larger fish from being captured on video. In my experience scuba diving and when talking to other divers it is clear that larger red snapper are very shy and will leave a reef if they feel threatened. Smaller red snapper will follow a diver around like small puppy dogs and a large red snapper will take off like a wily fox staying out of spear gun range. Chevron traps have the dimensions of 1.5 m x 1.7 m x 0.6 m and could seem as threatening as a diver when deployed from above. There have been no studies as to the impact on fish behavior of dropping large metal traps on red snapper habitat. Since the BAM model cannot account for the impacts of Chevron trap deployment on red snapper behavior, this data should be limited in its use regarding selectivity. It should most certainly be dome shaped regardless of how many larger red snapper have been captured in them.

Video Evidence

I have attached video clips of red snapper behavior. Above each clip I give a description and explain the relevance to the fish behavior impacts on selectivity. The BAM model is not capable of accounting for these behaviors.

1. Video clip below of red snapper feeding that show larger fish being very cautious. In the fishing industry this is called being line shy and it is part of every fishery. This prevents flat topped selectivity in all fleets of the Gulf of Mexico and this should be the same selectivity in the SA.

https://www.youtube.com/watch?v=24aY6SD3--A

3:30- large fish moves in from the left but leaves without feeding.

3:36- large fish quickly moves through

4:47- left side larger fish being cautious

5:16- left side “”

5:52- right side same

6:09- giant red snapper right side

6:18- same

6:27 –large red snapper extremely cautious

6:44- same

2. Clip below shows that smaller red snapper have no problem feeding which increases their selectivity over larger red snapper.

https://www.youtube.com/watch?v=coxpHMoGQ2k

3. Again this clip below shows larger fish not being aggressive like the smaller fish.

https://www.youtube.com/watch?v=YCSbFD8DWSY

Whole video shows aggressive small fish and larger fish not as aggressive.

:03-larger fish very cautious

:20-larger fish very cautious

:38 – larger fish very cautious

4. This video clip below was shot in deep water (260’) off of Key West. It shows the red snapper population spread throughout the water column. If the rate of camera drop is even, then it takes 55 seconds for the camera to drop 260 feet, which is 4.7 feet per second. This would mean that the first large red snapper was seen around 75 feet and many large red snapper are aggregated 100 feet above the bottom. Most of the larger fish up in the water column keep their distance from this relatively small GoPro camera. If a Chevron trap is much larger then this could cause larger snapper to leave and if many large snapper spend their days 100 above the reef the trap will never sample them.

https://www.youtube.com/watch?v=AY3VfsHlapg

00:16 –Large red snapper show up almost immediately.

00:16-00-55- For 40 seconds many larger snapper are seen high in the water column and all are keeping their distance from the camera.

00-56- 05:34- Many smaller snapper come right up to the camera as it lays on the bottom but there are very few if any of the larger red snapper that were up in the water column coming near the camera.

Commercial Landings Data

Commercial landings data in in the red snapper fishery is considered some of the most reliable because of the buying and selling that has been tracked over the years. According to the data the landings peaked in 1968 and then declined after that. However, there are so many factors involved that the steep decline was not all due to overfishing and a declining stock.

Historical red snapper landings in the South Atlantic (SA) are some of the more accurate data that is available to show pounds landed before 1976. However, when searching for trends in these landings we should examine factors besides overfishing that could lead to declines in commercial landings. According to Mutsert and Cowan(2008),

> ***"As such, we suggest caution when interpreting changes in the mean trophic level over time, and over large geographical areas based upon commercial landings alone. Caution is especially needed if information is not available regarding changes in fishing practices, markets, and data acquisition methods" (Essington et al. 2006).***

According to NMFS records the red snapper commercial landings peaked in 1968, with over one million pounds. The exact poundage found in the NMFS records is 1,043,000 pounds. These landings occurred with no size limits and no limits on the number of fishermen that could sell them. Since 1968, the records of commercial landings have become more and more accurate. With computer data reporting and landings data requirements, these data sources are getting better each year. With these facts it is important to look at the historic red snapper commercial landings and their declines in the light of all other species and their exploitation rates.

Commercial fishing is a difficult livelihood with so many factors impacting the ability to make a living. Some of these factors being; weather, fuel prices, water temperature, fish prices, vessel equipment, regulations, fish availability, etc. (Nelson 2014). From 1968 to 1992 the number of commercial red snapper fishermen in the South Atlantic declined due to death, moving into other fields of work, and fishermen moving into other fisheries. For exampl, in 1968, there were more than ten commercial red snapper fishing vessels out of Ponce Inlet, Florida that only targeted red snapper and by 1992 that number had dropped to zero boats that were exclusively fishing for red snapper" (P. Nelson II 2014).

The commercial fishermen, who continued to fish the region between 1968 and 1992, also began to move into other fisheries that were more lucrative than red snapper fishing. From 1968 to 1992 many former red snapper fishermen began catching; sharks, vermilion, amberjack, snowy grouper, and golden tilefish. The more lucrative the fishery the more fishermen would move into it. In interviews with commercial fisherman David Grubbs he states,

> ***"In the late 1980's and early 90's it was common on a commercial shark trip to stay as close as 20 miles from shore to make a good trip"***

By 1992 shark landings made up a large portion of the total vessel landings in the SA region. With landings like these there was no need or time to target red snapper in any capacity.

In the late 1950's and 1960's commercial bottom fishing out of Ponce Inlet and Jacksonville, would consist of multi-day trips targeting red snapper and grouper only. According to Captain Paul Nelson II, "It was common for snapper boats to unload 5000 to 6000 pounds of red snapper at Inlet Harbor Seafood, in Ponce Inlet"(Nelson 2014). According to Captain Tad Grubbs, "By the 1970's and early 1980's commercial bottom fishing would often consist of multi-day trips targeting vermilion snapper and often would catch, red snapper, trigger fish, gag grouper, and many other species as by-catch" (Grubbs 2014). The landings data matches these observations. With vermilion landings in 1976 at just over 200,000 pounds and by 1989, their landings were over 1 million pounds (NMFS 2014).

When red snapper landings peaked in 1968 there were also no regulations on other fisheries such as shark, snowy grouper, vermilion snapper, amberjack, and golden tilefish. In 1968, those five species had total commercial landings of 165,200 pounds. According to the NMFS data base, by 1992, the total commercial landings of these five species had increased to 7,037,000 pounds. This is a 4,200% increase from the same species landings in 1968 (165,200 pounds). During the same time period red snapper commercial landings decreased to a low of 141,996 pounds in 1991, before the size limit increase. This was still 24% of the red snapper landings that had occurred in 1976, even with this massive shift in effort. (See chart below)

AUTHOR: DAVID NELSON
RECEIVED: 3/7/2016

NMFS Commercial Landings Data Base
Historic Landings of
Red Snapper and Five Other Species

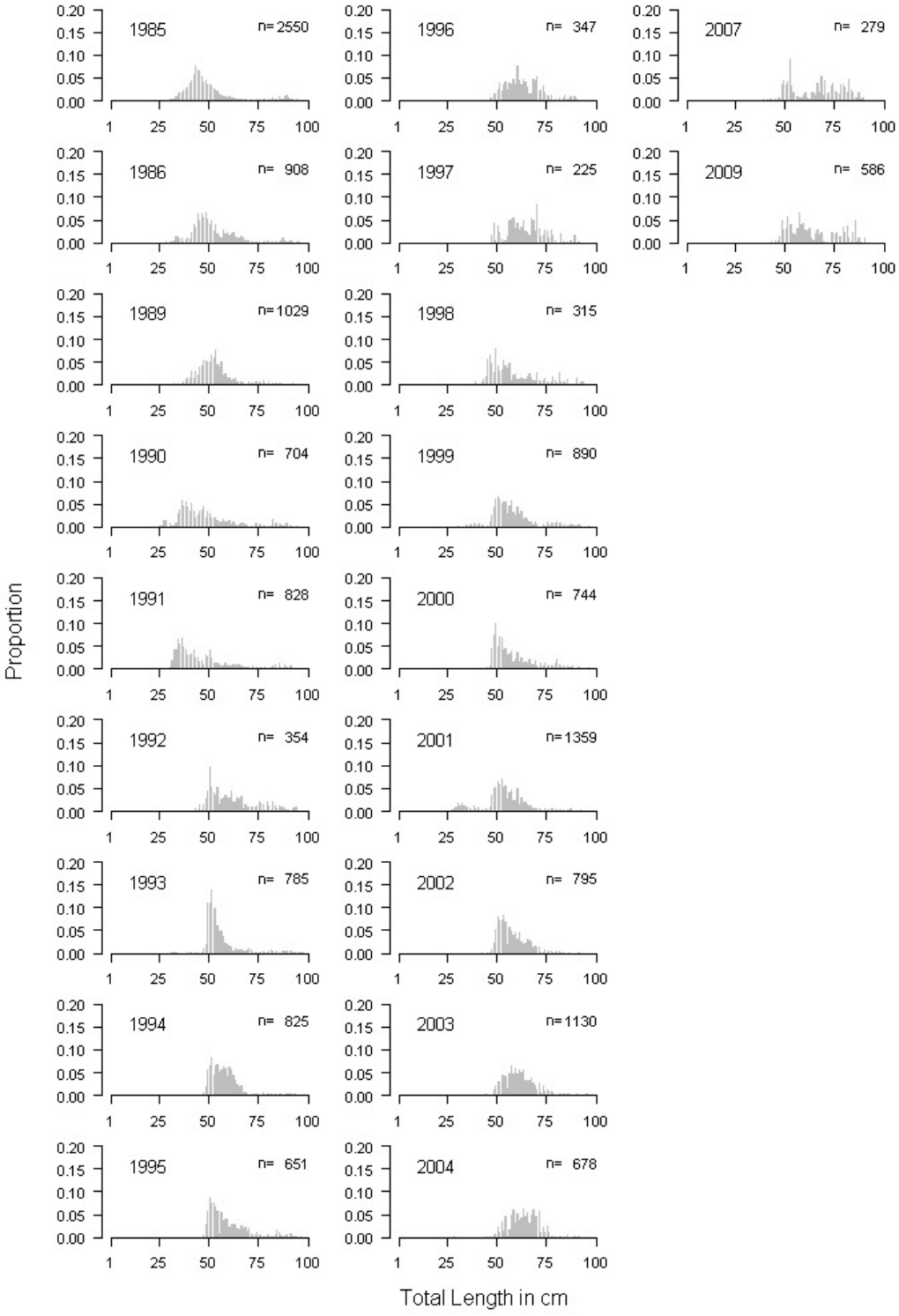
YEAR		VERMILION POUNDS	SNOWY POUNDS	TILEFISH POUNDS	AMBERJACK POUNDS	SHARKS POUNDS	TOTAL ALL OTHERS	TOTAL RED SNAPPER	
1976		203,500		152,200			355,700	582,500	1976
1977		212,900		64,900	66,300		344,100	625,800	1977
1978		261,807		163,167	37,689		462,663	592,240	1978
1979		373,106		155,899	37,655		566,660	418,194	1979
1980		619,174		338,966	59,499	87,632	1,105,000	374,911	1980
1981		519,898	97,516	1,191,692	89,936	337,441	2,236,000	371,088	1981
1982		611,854	138,369	3,709,672	98,381	365,803	4,924,000	302,231	1982
1983		554,008	416,966	2,080,090	63,240	499,497	3,614,000	313,961	1983
1984		690,156	319,390	1,390,491	103,761	1,146,750	3,648,000	251,204	1984
1985		869,430	155,621	1,183,266	115,799	1,175,668	3,498,000	248,528	1985
1986		811,623	408,052	1,251,121	342,510	1,636,512	4,448,000	220,638	1986
1987		675,985	317,660	298,812	969,251	2,499,152	4,760,000	191,039	1987
1988		913,334	255,237	539,438	781,345	3,159,548	5,688,000	174,027	1988
1989		1,152,263	434,132	939,408	908,296	3,700,303	7,081,000	268,105	1989
1990		1,330,499	561,141	952,302	928,776	2,940,781	6,672,000	222,497	1990
1991		1,410,171	447,999	856,314	1,159,063	2,821,452	6,694,000	141,996	1991
1992		738,547	547,989	815,808	938,775	3,998,713	7,037,000	98,848	1992

Size Limits

Before the 20 inch size limit was implemented in 1992, the majority of red snapper landed by commercial fishermen in the region were less than 20 inches. If the data before 1992 is examined closely and more weight is given to those years with the highest number of samples then it is extremely clear that commercial fishermen selected smaller fish. Looking at the data from 1985 to 1991, in some years, nearly 80-90% of the red snapper landed by the commercial fishery are below 20 inches (512mm). This matches the selectivity in the GOM for commercial fishermen as well. When the size limit was raised in 1992, it had a major impact on commercial landings of red snapper that were already decreasing due to the major shift into other species.

AUTHOR: DAVID NELSON
RECEIVED: 3/7/2016

Red Snapper Commercial Lengths Due to Size Limit Change



Commercial hook and line landings can be misleading as to whether there is a relationship between them and the actual amount of biomass available in a stock of fish. As Mustert and Cowan (2008) suggest the use of commercial landings data can be misleading when it comes to true biomass tends.

> "In general, we caution the use of commercial fish landings alone to make statements concerning the state of fisheries and ecosystem health, as these data often are driven by selective targeting, and other human decisions concerning fishing practices. We encourage the development and use of fisheries independent data, as indices like the MTLI can be useful tools if they truly represent community composition."

All of the most current research supports this caution and moving forward with red snapper this should continue to be looked at and researched. Fewer red snapper caught by commercial fishermen in the SA can be caused by many factors that are not related in any way to the number of red snapper in the region and the amount of fish being removed by fishing. Until there is a long time series of multiple fishery independent indices of abundance, all historical landings data should be looked at knowing that many factors impacted the landings. Factors such as effort shifts, size limit changes, number of fishermen, regulation changes, and many others can impact landings and need to be considered when looking at historic landings trends or CPUE for the commercial fishery.

Conclusion

The ASPIC model is more accurate in showing the trends in the stock as they have occurred, including all of the historical trends since 1992, and should be used to move forward with management advice. The BAM needs more extensive and detailed information about red snapper behavior and more fishery independent data for it to properly assess red snapper. Without a fishery independent long line survey like the one in the GOM red snapper assessment, the BAM will never be able to properly assess red snapper selectivity. Until we know more about the impact of deploying Chevron traps on fish behavior then this is another area that prevents the BAM from having enough information to use this data properly. There are too many variables in red snapper behavior and also not enough is known about the impacts of fishing gear and Chevron traps on red snapper behavior. The SA red snapper is rebuilt, is borderline overpopulated, and is having a negative impact on the ability to fish for other species in the region including; gag, vermilion, mutton, and trigger fish. There is very little habitat left from Cape Canaveral to Jacksonville that is not dominated by red snapper and this was not the case in 1955 according to my father. In our region you used to be able to avoid red snapper in 1955 and now you really can't. It is the same in North Carolina according to public testimony given at the AW the red snapper are taking over areas normally dominated by gag. Also, in Key West according to experienced captains in the Dry Tortugas, red snapper are taking over normal mutton snapper habitat in the deep water of the Keys. This fishery needs to be open as soon as possible before it destroys other fisheries.

Thank you.

David Nelson
fishnmore@cfl.rr.com