

Red Drum

2005 Stock Assessment Review and Discussion Update No. 1 - March 28, 2006



Florida Fish and Wildlife Conservation Commission
Division of Marine Fisheries Management

Explanation of Update: This report has been updated to include slides summarizing the recent red drum stakeholder workgroup meeting and red drum survey (slides 10-11). A slide including graphs of red drum abundance and recruitment (slide 7) was added and slides 8-9 were reworded in order to clarify the red drum assessment information. A more thorough definition of escapement has also been provided on slide 4.

This is a brief review and discussion of the 2005 red drum (redfish) stock assessment by the Fish and Wildlife Research Institute (FWRI), and includes a review of the biology, the fishery, and the current regulations for the species. This assessment includes data through 2003. The previous red drum assessment was completed in 2002. Red drum is strictly a recreational fishery. Anglers target red drum for food and sport.

Biology



- Inhabit inshore and offshore waters throughout Gulf of Mexico and Atlantic from Massachusetts to Key West
- Juveniles occur in seagrass beds, mud flats, and along sand bottoms in estuaries, rivers, and canals; Adults prefer open nearshore or open ocean waters
- Spawn in passes and inlets in the late summer and early fall when daylight hours decrease
- Reach lengths of 45 inches and weigh up to 51 pounds, oldest 40 years

Red drum inhabit the nearshore and offshore waters throughout the U.S. Gulf of Mexico and along the Atlantic coast from Massachusetts to Key West. Juvenile red drum inhabit rivers, bays, canals, tidal creeks, and passes in estuaries. Juveniles may remain in this habitat for up to four years, after which they move to nearshore or open ocean waters as adults. Adults return to inshore areas to spawn. Males can begin spawning when they reach about two years of age; females reach maturity at about four years of age. Spawning begins in the fall, when waters begin cooling and daylight hours decrease. Most red drum spawn near passes and inlets. Spawning season in the Gulf lasts from August to mid-November with a peak in September. Atlantic red drum stocks begin spawning in July and continue through December, peaking in September and October. Most red drum tend to remain in the same geographic area in which they spawned. Red drum in Florida can reach lengths of 45 inches and weigh up to 51 pounds. The oldest red drum in Florida was aged at 40 years.

Fishery



- Commercial harvest prohibited = Gamefish
- Red drum currently managed as one stock
- Number of trips catching or seeking red drum each year has increased since 1988
- Since 1989, increase in harvest on the both coasts
- Since 1990 the number of red drum released has increased to about 5 to 7 times the number harvested

Due to severe overfishing, red drum was prohibited from being bought and sold in 1989; *i.e.* no commercial harvest (which essentially makes red drum a gamefish). Red drum are currently managed as a single stock in the State of Florida; however, the assessment examines stocks on either coast separately. The number of recreational trips (catching or seeking red drum) made by anglers has increased since 1988. Since more restrictive management regulations were implemented in 1989, there has been a significant increase in harvest on the Atlantic coast and a general increasing trend on the Gulf coast. A one-fish bag limit went into effect in 1989, and since then the number of red drum released by anglers has increased to about five to seven times the number harvested.

Current Regulations

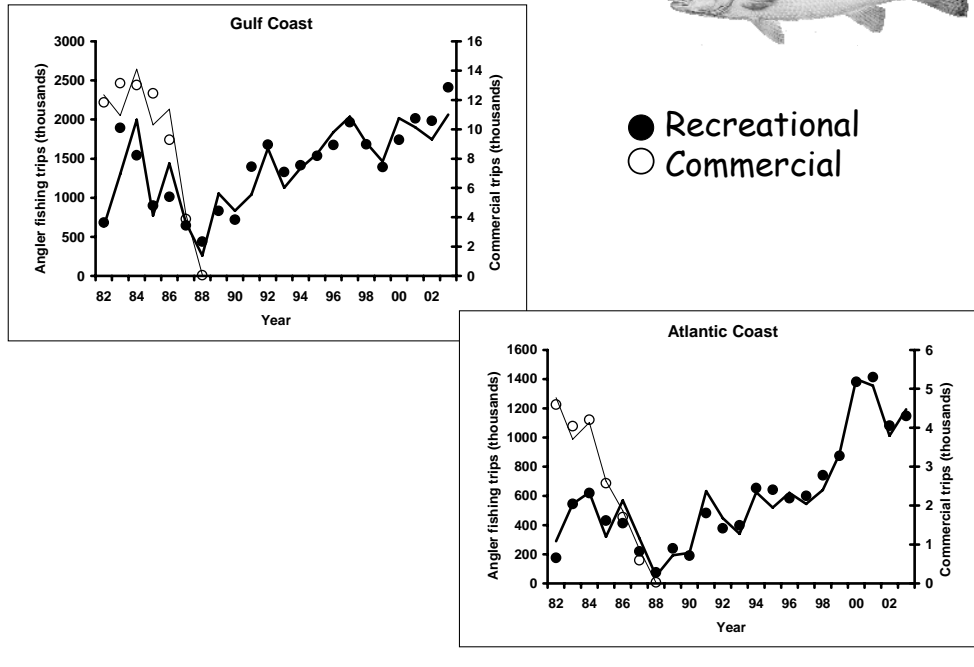


- Slot limit: 18 - 27" total length
 - Bag limit: 1 per person - statewide
 - Closed season: None
 - Management goal: 30% escapement
 - Escapement is the proportion of fish surviving through age 4 relative to the number that would have survived to that age if there was no fishery
- 30% Escapement \approx 20% SPR

Currently, there is a slot limit for red drum of 18 to 27 inches total length. There is also a statewide bag limit of one fish per person per day. There is no closed season for red drum. The 30% escapement goal for red drum was established in 1988. This goal was set by the Commission in order to maintain the spawning potential ratio (SPR) above 20% in order to maintain a large supply of new recruits into the fishery and to manage for large fish. Escapement is defined as the proportion of fish surviving through age 4 relative to the number that would have survived to that age if there was no fishery.

Escapement is used as a proxy for spawning potential ratio (SPR) in this fishery since there is very little fishing mortality on the adult population offshore. Spawning potential ratio is not used for management because there are few direct observations on the abundance of the adult spawners offshore. Thus, the proportion of juveniles surviving in the estuary is used as a measure of the abundance of offshore adults. If there is no mortality on the offshore adult spawners then 30% escapement equals 30% SPR. However, there is likely some mortality on these adults therefore resulting in 30% escapement being used as a conservative estimate of 20% SPR.

Number of Trips

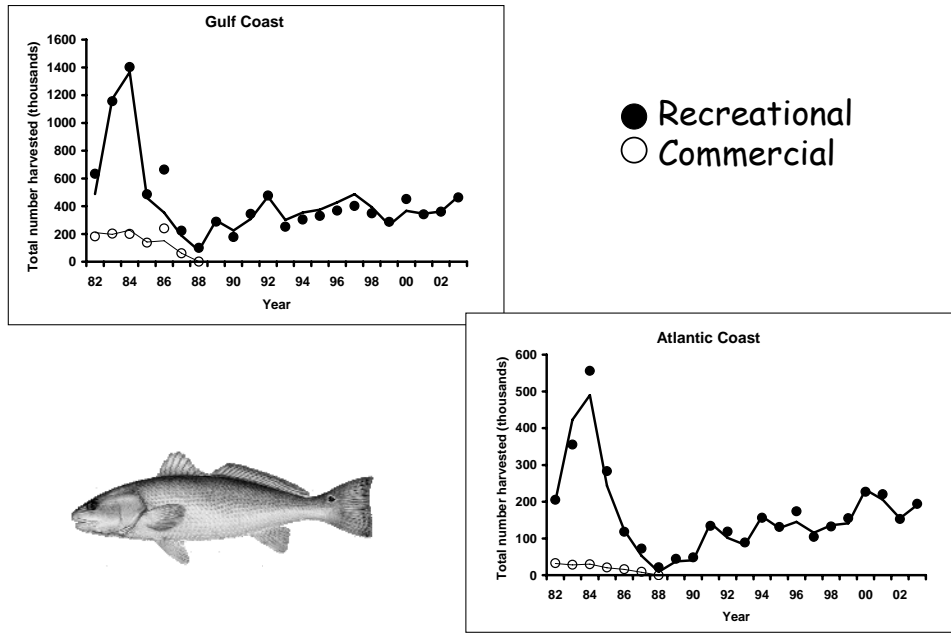


The number of fishing trips can be used as a proxy for fishing effort and thus for fishing mortality. There has been no reported commercial harvest in state waters since 1988 when red drum was declared a gamefish. On the Gulf coast, the estimated number of recreational fishing trips catching or seeking redfish has increased five-fold since 1989 from 0.5 million trips to 2.5 million trips, this is an average increase of about 93,000 trips each year. The number of directed trips reached a peak in 2003 of 2.4 million trips.

On the Atlantic coast there has been a general increase in effort. Between 1988 and 2003 there has been a five-fold increase in effort from approximately 0.25 million trips to 1.25 million trips, this is an average increase of about 78,700 trips per year. After reaching a peak of 1.4 million trips in 2000 and 2001 fishing effort appears to have declined in 2002, but increased again in 2003.

In general, there is about twice the fishing effort on the Gulf coast than there is on the Atlantic coast (notice the scales of the graphs are different).

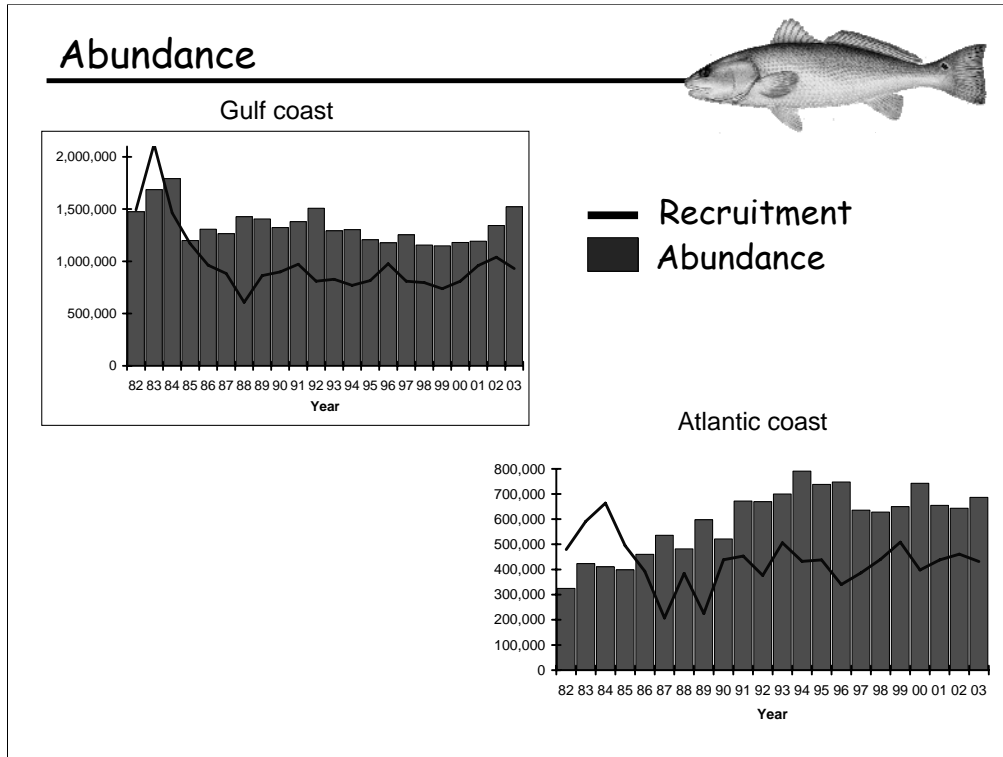
Numbers of Red Drum Harvested



The total harvest (includes those kept by anglers, those that died after release, and those that were released dead) of redfish has also been increasing over time. There is very little information on the number of red drum released by the commercial fishery. Therefore, the commercial harvest may have been underestimated if there was a significant release of dead or dying red drum from the fishery.

Since 1989 the harvest by the recreational fishery on the Gulf coast has been increasing at a rate of about 8,500 additional fish each year, resulting in about an overall 50% increase in the total harvest between 1989 and 2003. On the Atlantic coast since 1989 the harvest by the recreational fishery has been increasing at a rate of about 9,500 additional fish each year, resulting in about a three-fold increase by 2003.

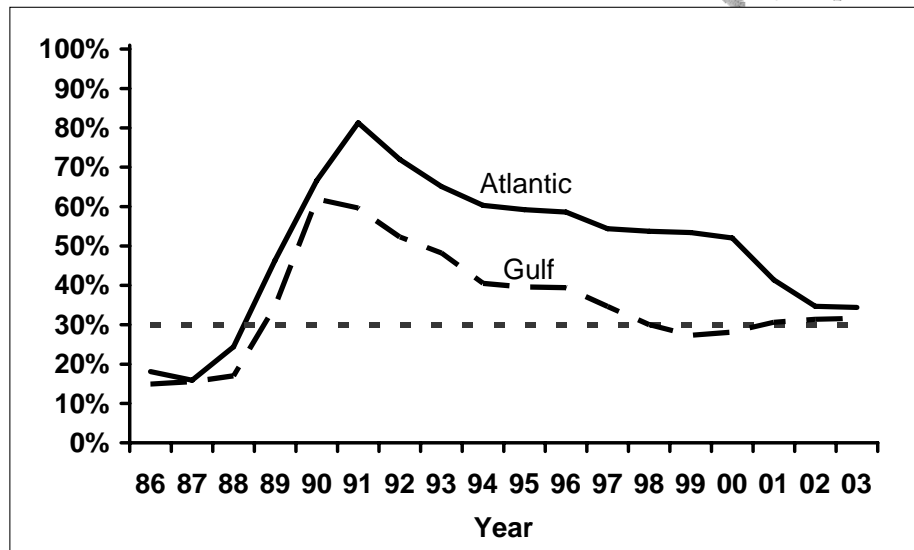
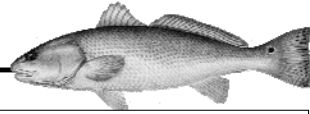
There has been an increasing rate in the number of red drum released alive. Between 1986 to the mid-1990s the number of releases had increased to about five to seven times the number of red drum harvested.



These graphs show recruitment (line) and abundance (bars) for red drum since 1982. Recruitment is represented by age-0 fish and abundance is represented by pooling the 1-3 year old fish. On the Gulf coast, estimates of abundance of red drum have declined since the 1980s; however, they have been stable at this lower level since then. Since a drop in the late 1980s, recruitment has shown a slight upward trend on the Gulf coast. On the Atlantic coast, abundance was low prior to the implementation of management actions in 1985. The population abundance has steadily increased and peaked in 1994, while decreasing to a lower more stable level since then. Recruitment increased in 1990 and has been fairly stable to the present time. On the whole since 1990 red drum populations on both coasts have been fairly stable in abundance and recruitment.

Prior to the implementation of the Fishery Independent Monitoring Program (1989 on Gulf coast and 1990 on Atlantic coast) the data are not as reliable as it has been since the early 1990s.

Escapement



This graph shows the escapement rate trend for both the Atlantic and Gulf coasts since 1986. The horizontal dotted line represents the 30% escapement goal. Before being managed aggressively in the mid 1980s, escapement rates were below 30% on both coasts. However, these rates increased rapidly in response to strict regulations placed on red drum in the mid 1980s, to peak values in 1990 and 1991. By 1992 escapement rates declined due to increasing fishing effort and harvest. This trend continued through the late 1990s on the Gulf coast, and through 2002 on the Atlantic coast. Gulf coast escapement rates appeared to have rebounded slightly in 1998. The 2003 estimates for both coasts were slightly above 30%.

Though recruitment has been stable, escapement has been declining since the early 1990s. Escapement is directly related to the level of fishing, and increased fishing pressure has caused a decrease in escapement. The escapement goal for red drum has been set at 30% to ensure an adequate abundance of spawners, which in turn should ensure a stable supply of recruits to the stock. If escapement drops below 30%, studies indicate that recruitment would likely decrease over time, subsequently resulting in decreased abundance. Since 30% escapement is equivalent to 20% SPR, an escapement rate of less than 30% would likely decrease the SPR to a level that has led to recruitment overfishing for other similar fisheries.

Assessment Results



- Currently we are meeting the management objective of 30% escapement on both coasts (Gulf -32%; Atlantic -34%)
- Number of trips and number of red drum harvested has increased since the late 1980s
- Recruitment and abundance are stable but fishing effort is increasing
- If fishing effort continues to increase then we will likely be below 30% escapement by the next assessment
- Next assessment due in 2008, more data will be collected by FWRI and ASMFC between now and 2007

This most recent red drum stock assessment included data through year 2003. The present assessment indicates that red drum populations are probably achieving 30% escapement through age 4. The year-class specific escapement on the Gulf coast was estimated at 32% and at 34% on the Atlantic coast. The number of trips and the number of red drum harvested has increased since the late 1980s. Recruitment (age-0) and abundance (age 1 to 3) have been stable since 1990. However, if fishing effort continues to increase, then we will likely be below 30% escapement by the next assessment, which is due in 2008. Between now and then FWRI will be collecting data on size, age structure, and catch and release mortality of sub-adult and adult red drum in Tampa Bay estuary. The Atlantic States Marine Fisheries Commission (ASMFC) will also be collecting data on the age composition of the offshore stocks. These data will be included in the next assessment.

Workgroup Response



- Statewide video-conference held February 28
- Assessment results and potential management options were presented
 - Status quo
 - Proactive - Adjust slot limit
 - Proactive - 1 to 2 month closed season
- Attendees preferred proactive management measures in order to ensure the long-term sustainability of the stock



The Division of Marine Fisheries Management (DMFM) and FWRI convened a red drum workgroup comprised of anglers from various parts of the state to attend a statewide video conference. At this meeting the assessment results were presented as well as potential management options for the future of the red drum fishery. Potential management options included a status quo option that would keep management measures the same and reassess the fishery following the next assessment due in 2008. Proactive management measures, such as an adjustment to the current slot limit or a 1 to 2 month closed season, were also presented. Attendees preferred proactive management measures in order to ensure the long-term sustainability of the red drum stock.

Survey Results



- Statewide email survey by TheSurveyMachine.com
- 240 respondents
- Most preferred a 1-3 month closed season or a change in the slot limit if management changes are needed



A survey was also conducted in order to capture more information about how stakeholders felt about the future of the red drum fishery. There were 240 respondents to this statewide email survey. Of the people who responded, most wanted proactive measures put in place and preferred a closed season or a change to the current slot limit.

Staff Recommendation

- Workgroup will meet again to hone management options
- If management changes are suggested then we will bring them to a future meeting after being fleshed out by the workgroup



The workgroup will meet again to hone management options for red drum. If the workgroup suggests management changes to red drum regulations, then we will bring those changes to a future Commission meeting.