South Atlantic Red Snapper:

Estimated mortalities in 2010 and 2011

Prepared by
National Marine Fisheries Service
Southeast Fisheries Science Center

May 2012

Background

In a memorandum dated 7 April 2012, from Bob Mahood to Dr. Bonnie Ponwith, the South Atlantic Fishery Management Council requested updated 2010-2011 estimates of red snapper mortalities in the South Atlantic (see Appendix). Because red snapper were under a moratorium during these years, most of the mortality is of discarded fish, however some fish were observed in landings and are included here for completeness.

Methods

Mortality estimates were derived from three different sources: commercial logbooks, MRFSS, and the Southeast Region Headboat Survey (SHRS). Any analytical methods used for data preparation were the same as those used in SEDAR-24. Commercial logbook and MRFSS data were queried and analyzed by personnel in the Sustainable Fisheries Division of NMFS-Miami. SHRS data were queried and analyzed by personnel in the Sustainable Fisheries Branch of NMFS-Beaufort.

In those data queries, some landings were observed, despite the moratorium. Thus, landings were separated from released fish for computing total mortalities. All landings were considered killed, and the appropriate fleet-specific discard mortality was applied to the releases only. The release mortality estimates (i.e., proportion of released fish expected to die) were those of SEDAR-24: 0.48 for commercial lines, 0.41 for recreational for-hire, and 0.39 for recreational private. The recreational for-hire fleet consisted of headboats and charterboats.

The numbers of fish killed by each fleet (commercial handlines, for-hire, or private recreational) were summed to compute the total number of red snapper mortalities. These estimates were converted to units of thousand pounds using the average weight of mortalities (landings + dead discards) implied by the projection with $F=0.98\times F30$ and headboat weight $\omega=0.30$. This projection scenario was identified in Table 9C in the April 7 memorandum (see Appendix). The projected average weights were 5.3 lb in 2010, and 6.6 lb in 2011.

Results

Table 1 shows red snapper mortalities by fleet. Table 2 shows total red snapper mortalities estimated in units of number and in weight.

Discussion

The estimates of 2010-2011 red snapper mortalities (Table 2) are similar to those considered in Amendment 17A, as described in Table 1 of the memorandum (See Appendix. Note an apparent error in

the legend of memorandum Table 1, namely that values in the table are in pounds, rather than thousands of pounds). Differences between actual mortalities and projected mortalities could occur for many reasons. For example, recruitment in recent years may have been higher than expected, such that discards would exceed expectation even under stable or decreased levels of fishing effort. Conversely, recruitment may have been lower than expected, resulting in fewer discards regardless of effort.

The estimates of landings and discards tabulated here derive from self-reported data, and come with an unknown degree of uncertainty and possible bias. In most cases, we do not have the necessary data to address reporting bias, however we were able to examine the level of agreement, at the trip level, between presence of red snapper in the MRFSS headboat at-sea observer program and in the SRHS. In 2010, 56.4% of the at-sea observed red snapper trips were matched to SRHS-reported trips, and in 2011, 70.0% were matched. These matched trips showed 100% agreement with the presence of red snapper reported as discards. Unfortunately, this analysis could only be done on the basis of presence/absence, as total discard estimates are not available from at-sea observed trips. This analysis is somewhat reassuring, but it does not guarantee that estimates are unbiased. In other words, the strong agreement is a necessary, but not sufficient, condition for accurate estimates.

Table 1. Total mortalities by fleet (units=number of fish). A and B1 refers to MRFSS notation for fish known to be killed. Discard mortalities are equal to total estimated releases multiplied by the fleet-specific release mortality rate.

	For-hire (charter+headboats)		Private recreational		Commercial handlines	
YEAR	Landed (A+B1)	Discard mortalities	Landed (A+B1)	Discard mortalities	Landed	Discard mortalities
2010	971	20569	0	31561	0	18293
2011	1950	22131	0	16156	0	21169

Table 2. Estimates of total red snapper mortalities (landings and discards) summed across fleets, in units of numbers (fish) and in weight (1000 lb).

YEAR	Total mortalities (fish)	Total mortalities (1000 lb)
2010	71394	378.387
2011	61405	405.276

Appendix

SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

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April 7, 2012

MEMORANDUM

TO: Bonnie Ponwith
FROM: Bob Mahood RKM
SUBJECT: Data Request

At our June 2012 meeting the Council may address the possibility of allowing some level of harvest of red snapper in the near future. To aid in that decision we are requesting that the SEFSC provide bycatch mortality estimates (all sectors) to evaluate the actual and estimated level of mortality relative to the previously projected mortality levels. Would you please provide the estimates of bycatch mortality as highlighted in yellow in the Table 1. (below) for the years 2010 through 2011. The information should be provided on or before noon on May 21, 2012 to be included in the June 2012 briefing book.

Table 1. Projection levels (thousand pounds whole weight) for red snapper and actual/estimated discard levels taken from Table 9c. (memo-page 2).

Projections				**Actual & Estimated**	**Amount**
	Discards	**Landings**	**Total**	**Discards**	**Available**
2010	346,000		346,000		
2011	56,000	365,000	421,000		

2012	77,000	464,000	541,000		

In Amendment 17A, the Council used the projections in Table 9c. (below) in determining that the appropriate management approach for red snapper was to continue the total prohibition on harvest and possession. Table 9c was part of SEDAR-24 (South Atlantic Red Snapper) and contains the management quantities and projections that had been requested by the SSC and SERO. The table was prepared in November 2010 by the Sustainable Fisheries Branch, Southeast Fisheries Science Center, Beaufort, NC.

Table 9c. Projection results (expected values) with F=0.98×F30, extended from assessment model configuration with component weights as in the AW report, but headboat index weight increased to $\omega = 0.30$. F is fishing mortality rate (per yr), SSB is mid-year spawning stock (mt), R is recruits (1000 age-1 fish), D is discard mortalities (1000 fish or 1000 lb whole weight), L is landings (1000 fish or 1000 lb whole weight), and sum L is cumulative landings.

Year	F	SSB(mt)	R(1000)	D(1000)	D(klb)	L(1000)	L(klb)	Sum L(klb)
2010	0.32	22.67	325	65	346	0	0	0
2011	0.199	27.74	338	33	56	31	365	365
2012	0.199	31.29	373	41	77	45	464	829
2013	0.199	35.14	394	44	86	52	525	1354
2014	0.199	39.3	414	47	92	59	589	1942
2015	0.199	43.79	432	50	96	64	649	2592
2016	0.199	48.58	449	52	101	69	710	3302
2017	0.199	53.72	466	54	105	74	772	4074
2018	0.199	59.15	481	56	109	79	835	4909
2019	0.199	64.76	495	58	112	84	898	5807

Thank you for your consideration of this request. If you have any questions, please contact John Carmichael or me.

cc: Roy Crabtree

David Cupka

Gregg Waugh

John Carmichael

Myra Brouwer