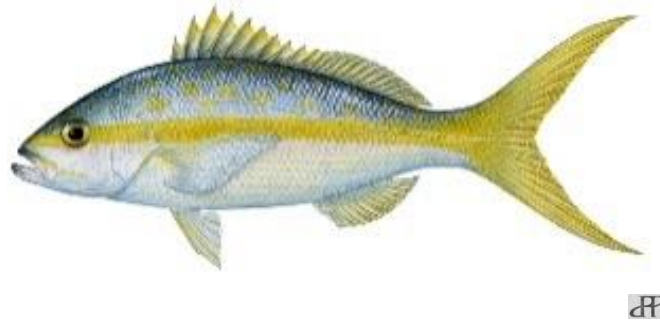


Modification to Gear Requirements for Yellowtail Snapper in the Gulf of Mexico



Draft Framework Action to the Fishery Management Plan for Reef Fish Resources in the Gulf of Mexico

August 2015



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Name of Action

Draft Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico to Modify Gear Restrictions for Yellowtail Snapper.

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CHAPTER 1. INTRODUCTION

1.1 Background

Currently, some commercial fishing regulations differ between the Gulf of Mexico (Gulf Council) and South Atlantic Fishery Management Council (South Atlantic Council) waters and in some cases, state and adjacent federal waters (i.e., the State of Florida). This makes it burdensome for commercial fishermen to abide by different regulations in the applicable areas, particularly the Florida Keys, where commercial fishermen can fish in multiple jurisdictions on a single trip (Figure 1.1.1).

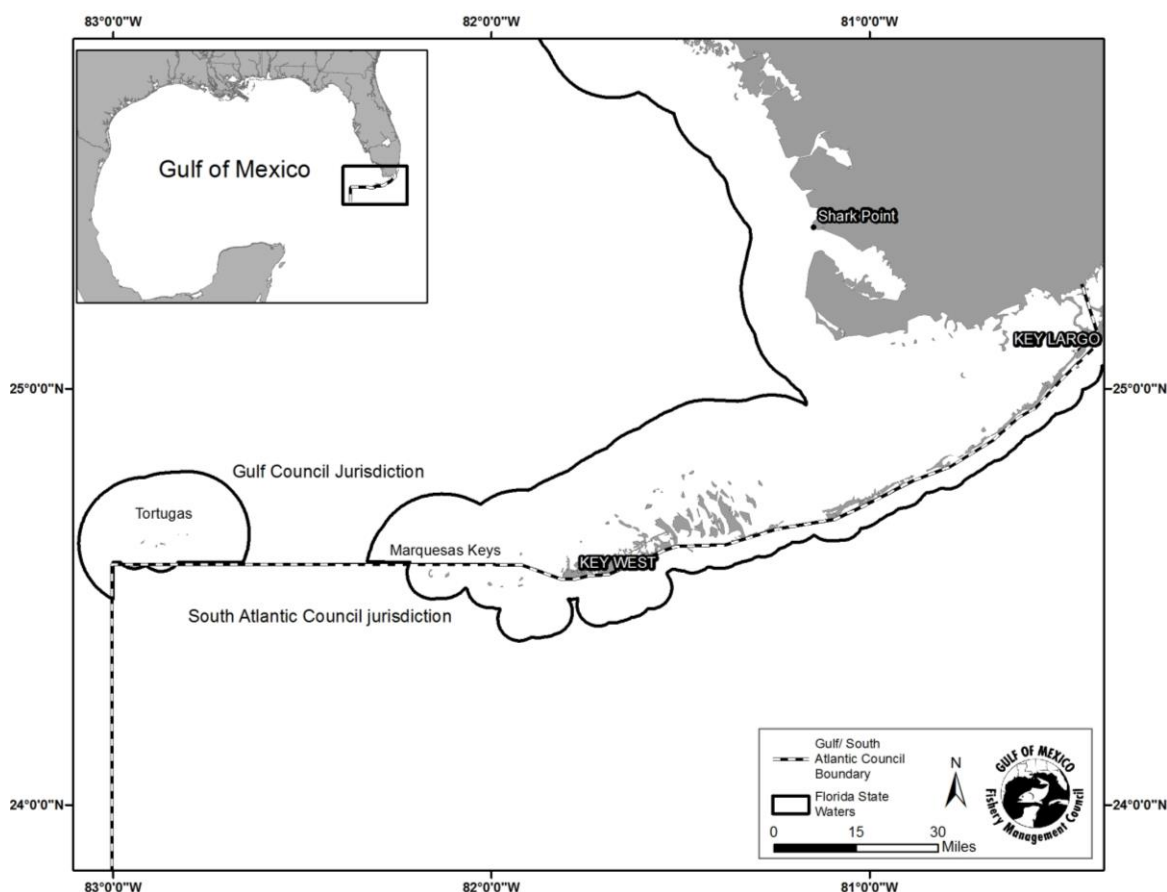


Figure 1.1.1. Inter-Council jurisdiction boundary in southern Florida, Florida Keys and Monroe County between the Gulf of Mexico and South Atlantic Councils. A full description of the inter-Council boundary can be found: 61 FR 32540, June 24, 1996, as amended at 63 FR 7075, February 12, 1998 or (CFR 600.105).

Commercial reef fish permit holders fishing for yellowtail snapper in the Gulf are currently required to use circle hooks when fishing with natural bait (50 CFR 622.41). These regulations differ from those in the South Atlantic Council’s jurisdiction, where snapper-grouper permit holders are not required to use circle hooks when fishing for any species within the snapper-grouper complex south of 28° 0’ North latitude. Both the Gulf Council’s Reef Fish Fishery

Management Plan (FMP) and the South Atlantic Council's Snapper-Grouper FMP include yellowtail snapper, which are primarily caught in and around the southern half of Florida, particularly in the Florida Keys.

Commercial yellowtail snapper fishermen indicate that they use chum bags on the surface to encourage yellowtail snapper to school near the stern of the fishing vessel, and then use natural bait on small hooks to catch and land the fish. These commercial fishermen also indicate that their release tools allow them to release yellowtail snapper which have been caught with j-hooks more easily than those caught with circle hooks, resulting in decreased handling times for fish which are to be discarded. Decreased handling times due to quicker dehooking methods may result in an increase in the efficiency with which the commercial yellowtail snapper fishery is prosecuted.

Yellowtail Snapper

Yellowtail snapper are managed with a stock ACL. In the U.S., yellowtail snapper comprise a single stock. The South Atlantic and Gulf Council jurisdictions are combined for stock assessment purposes. In the Generic Annual Catch Limits and Accountability Measures Amendment (GMFMC 2011), the apportionment of the yellowtail snapper ABC between the Gulf and South Atlantic Councils was established based on the Florida Keys (Monroe County) jurisdictional boundary using 50% of the catch history from 1993-2008 and 50% of the catch history from 2006-2008. This formula resulted in an allocation of 75% of the ABC to the South Atlantic Council and 25% of the ABC to the Gulf Council for yellowtail snapper.

In 2012, the Florida Fish and Wildlife Research Institute (FWRI) conducted a yellowtail snapper benchmark stock assessment (SEDAR 27 2012). The assessment was conducted with a statistical catch-at-age model (ASAP2). Fishery-dependent data included commercial logbooks, MRFSS, and the headboat survey. Fishery-independent data came from the NMFS/University of Miami Reef Visual Census. Results from the assessment indicate that, as of 2010, the yellowtail snapper stock is neither overfished nor experiencing overfishing.

The yellowtail snapper stock straddles the jurisdictions of the Gulf and South Atlantic Councils. Therefore, the assessment was reviewed in October 2012 by a joint meeting of the South Atlantic Council's SSC and the Gulf Council's Standing and Special Reef Fish SSC. The SSCs thought that setting OFL at the equilibrium yield level for F_{MSY} would be a sustainable and risk neutral approach. Consequently, the SSC established OFL at the equilibrium MSY yield is 4.61 million pounds (mp) whole weight (ww) total removals (landings plus dead discards), or 4.51 mp ww in landings.

To set the ABC, the Gulf and South Atlantic Councils have separate ABC control rules for establishing the appropriate P^* value (acceptable risk of overfishing). Using the South Atlantic ABC control rule resulted $P^* = 0.40$. Using tier 1 of the Gulf ABC control rule resulted in $P^* = 0.416$. Since the results were very close, the joint SSC agreed to use $P^* = 0.40$ to set the ABC. When this P^* was applied to a probability distribution function prepared by FWRI, the resulting ABC was 4.13 mp ww total removals, or 4.05 mp ww in landings. When the ABC resultant

from SEDAR 27 was apportioned between the South Atlantic and Gulf jurisdictions, the resulting regional ABCs in terms of landings were:

South Atlantic: 3.0375 mp ww
Gulf of Mexico: 1.0125 mp ww

Because these ABCs are based on equilibrium yields, they do not fluctuate from year to year, but remain constant until adjusted by a future assessment. In the Gulf, the ACL is set equal to the ABC, and there are no established sector allocations. Table 1.1.1 shows the annual landings of yellowtail snapper from 1986 – 2013 by Council and fishing sector. Table 1.1.2 shows the annual percentages of landings by sector for yellowtail snapper from 1986 – 2013 by Council. Table 1.1.3 shows yellowtail snapper landings by statistical collection zone for each Council by sector for 2008-2013. Commercial landings are assigned to sub-region (Gulf of Mexico or South Atlantic) based on fisher-reported catch area. For example, landings reported north of U.S. 1 are considered to be within the Gulf of Mexico jurisdiction and south of U.S. 1 landings are considered to be within the South Atlantic jurisdiction. Headboats based from Texas to Gulf-based in Monroe County are within the Gulf of Mexico jurisdiction, and headboats from North Carolina to the Florida Keys are within the South Atlantic jurisdiction. Marine Recreational Fisheries Statistics Survey (MRFSS) data was post-stratified to break the Florida Keys out from the Gulf of Mexico landings. The MRFSS landings from the Florida Keys were re-assigned to the South Atlantic Council, because most legal sized yellowtail snapper are likely caught in South Atlantic waters (GMFMC ACL/AM Amendment 2011).

Table 1.1.1. Yellowtail snapper landings from 1986 through 2013 in the Gulf of Mexico and South Atlantic in pounds whole weight.

Year	Gulf of Mexico			South Atlantic			Grand Total
	Commercial	Recreational	Gulf Total	Commercial	Recreational	SA Total	
1986	506,144	7,622	513,766	612,676	776,238	1,388,914	1,902,680
1987	1,275,194	9,743	1,284,937	88,876	723,364	812,240	2,097,177
1988	638,412	9,460	647,872	774,164	1,103,823	1,877,987	2,525,859
1989	1,020,640	10,581	1,031,221	830,896	1,692,498	2,523,394	3,554,615
1990	906,233	11,532	917,765	849,380	1,342,553	2,191,933	3,109,698
1991	787,663	13,180	800,843	1,073,979	2,299,879	3,373,858	4,174,701
1992	831,013	36,986	867,999	1,024,653	1,067,445	2,092,098	2,960,097
1993	1,067,452	51,015	1,118,467	1,311,367	1,189,637	2,501,004	3,619,471
1994	1,344,942	11,762	1,356,704	860,543	880,763	1,741,306	3,098,010
1995	591,074	3,434	594,508	1,265,856	660,358	1,926,214	2,520,722
1996	485,120	2,854	487,974	973,815	554,130	1,527,945	2,015,919
1997	218,384	2,008	220,392	1,455,496	702,997	2,158,493	2,378,885
1998	341,479	4,965	346,444	1,183,074	487,063	1,670,137	2,016,581
1999	601,027	39,260	640,287	1,245,345	288,951	1,534,296	2,174,583
2000	388,984	4,781	393,765	1,203,154	395,845	1,598,999	1,992,764
2001	246,849	7,045	253,894	1,174,008	328,458	1,502,466	1,756,360
2002	341,823	7,782	349,605	1,069,057	407,848	1,476,905	1,826,510
2003	463,743	11,472	475,215	948,886	510,314	1,459,200	1,934,415
2004	478,221	17,937	496,158	1,002,309	698,058	1,700,367	2,196,525
2005	510,437	31,176	541,613	814,899	576,247	1,391,146	1,932,759
2006	542,237	21,477	563,714	694,958	560,320	1,255,278	1,818,992
2007	350,079	19,726	369,805	628,608	786,399	1,415,007	1,784,812
2008	460,569	6,056	466,625	910,323	746,313	1,656,636	2,123,261
2009	891,925	19,250	911,175	1,085,281	348,536	1,433,817	2,344,992
2010	569,275	8,783	578,058	1,126,231	434,259	1,560,490	2,138,548
2011	769,730	25,560	795,290	1,125,220	390,998	1,516,218	2,311,508
2012	630,984	5,087	636,071	1,439,586	493,409	1,932,995	2,569,066
2013	728,387	6,991	735,378	1,305,002	666,026	1,971,028	2,706,406
Mean	642,429	14,554	656,984	1,002,773	754,026	1,756,799	2,413,783

Source: SERO ALS Database (commercial landings) and MRIP (recreational landings).

Table 1.1.2. Yellowtail snapper sector landings percentages from 1986 through 2013 in the Gulf of Mexico and South Atlantic.

	Gulf of Mexico		South Atlantic	
Year	% Comm	% Rec	% Comm	% Rec
1986	98.5%	1.5%	44.1%	55.9%
1987	99.2%	0.8%	10.9%	89.1%
1988	98.5%	1.5%	41.2%	58.8%
1989	99.0%	1.0%	32.9%	67.1%
1990	98.7%	1.3%	38.8%	61.2%
1991	98.4%	1.6%	31.8%	68.2%
1992	95.7%	4.3%	49.0%	51.0%
1993	95.4%	4.6%	52.4%	47.6%
1994	99.1%	0.9%	49.4%	50.6%
1995	99.4%	0.6%	65.7%	34.3%
1996	99.4%	0.6%	63.7%	36.3%
1997	99.1%	0.9%	67.4%	32.6%
1998	98.6%	1.4%	70.8%	29.2%
1999	93.9%	6.1%	81.2%	18.8%
2000	98.8%	1.2%	75.2%	24.8%
2001	97.2%	2.8%	78.1%	21.9%
2002	97.8%	2.2%	72.4%	27.6%
2003	97.6%	2.4%	65.0%	35.0%
2004	96.4%	3.6%	58.9%	41.1%
2005	94.2%	5.8%	58.6%	41.4%
2006	96.2%	3.8%	55.4%	44.6%
2007	94.7%	5.3%	44.4%	55.6%
2008	98.7%	1.3%	55.0%	45.0%
2009	97.9%	2.1%	75.7%	24.3%
2010	98.5%	1.5%	72.2%	27.8%
2011	96.8%	3.2%	74.2%	25.8%
2012	99.2%	0.8%	74.5%	25.5%
2013	99.0%	1.0%	66.2%	33.8%
Mean	97.7%	2.3%	58.0%	42.0%

Source: SERO ALS Database (commercial landings) and MRIP (recreational landings).

Table 1.1.3. Yellowtail snapper landings by statistical collection area for the Gulf of Mexico and South Atlantic Council jurisdictions. Landings are separated by sector and are displayed in pounds whole weight. Statistical collection zones for recreational landings as reported by the Florida Fish and Wildlife Conservation Commission (FWC) include the Northeast (Nassau to Brevard County), Southeast (Indian River to Dade County), the Florida Keys (Monroe County), Southwest (Collier to Levy County), and Northwest (Dixie to Escambia County). Statistical collection zones for commercial landings include the East (Nassau to Broward County), South (Dade and Monroe County), and West (Collier to Escambia County). Commercial data were aggregated in this way due to restrictions on data confidentiality.

Recreational Sector									
Council	Region	2008	2009	2010	2011	2012	2013	Mean	% of Mean
South Atlantic	NE	134	605	1,640	0	0	145	793	0.1%
	SE	581,279	520,470	333,846	210,358	286,013	623,573	478,532	33.8%
	K	1,583,584	570,257	623,266	497,448	623,304	2,017,435	925,702	65.3%
Gulf	WC	12,664	17,852	5,675	6,667	2,140	3,855	12,063	0.9%
	NW	0	0	0	0	0	0	0	0.0%
Commercial Sector									
Council	Region	2008	2009	2010	2011	2012	2013	Mean	% of Mean
South Atlantic	East	26,245	28,879	30,135	91,858	28,423	25,065	38,434	2.1%
Both	South	1,341,755	1,942,968	1,662,667	1,797,833	2,066,160	1,998,411	1,801,632	97.5%
Gulf	West	1,326	3,157	1,116	3,811	12,642	20,708	7,127	0.4%

Virtually all yellowtail snapper landed in the Gulf of Mexico are landed in Florida (> 99.9%, 2008-2013, SERO-ALS and MRIP databases). Recreational and commercial landings by statistical collection zone are shown in Figures 1.1.2 and 1.1.3, respectively.

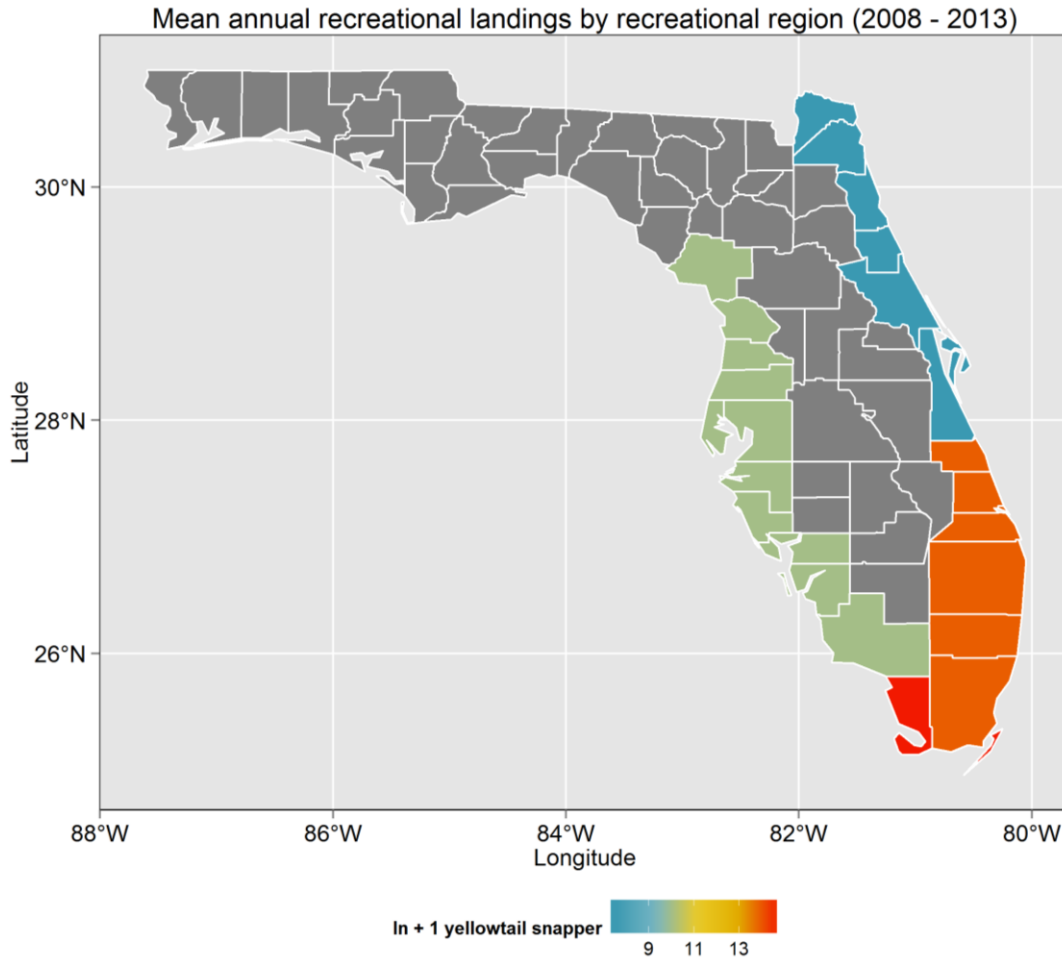


Figure 1.1.2. Mean annual recreational landings by statistical collection region for yellowtail snapper in Florida for 2008-2013. Landings are averaged across years and log-transformed for homogeneity. Blue colors indicate areas of low landings, red colors indicate areas with high landings, and counties shaded in gray have no landings.

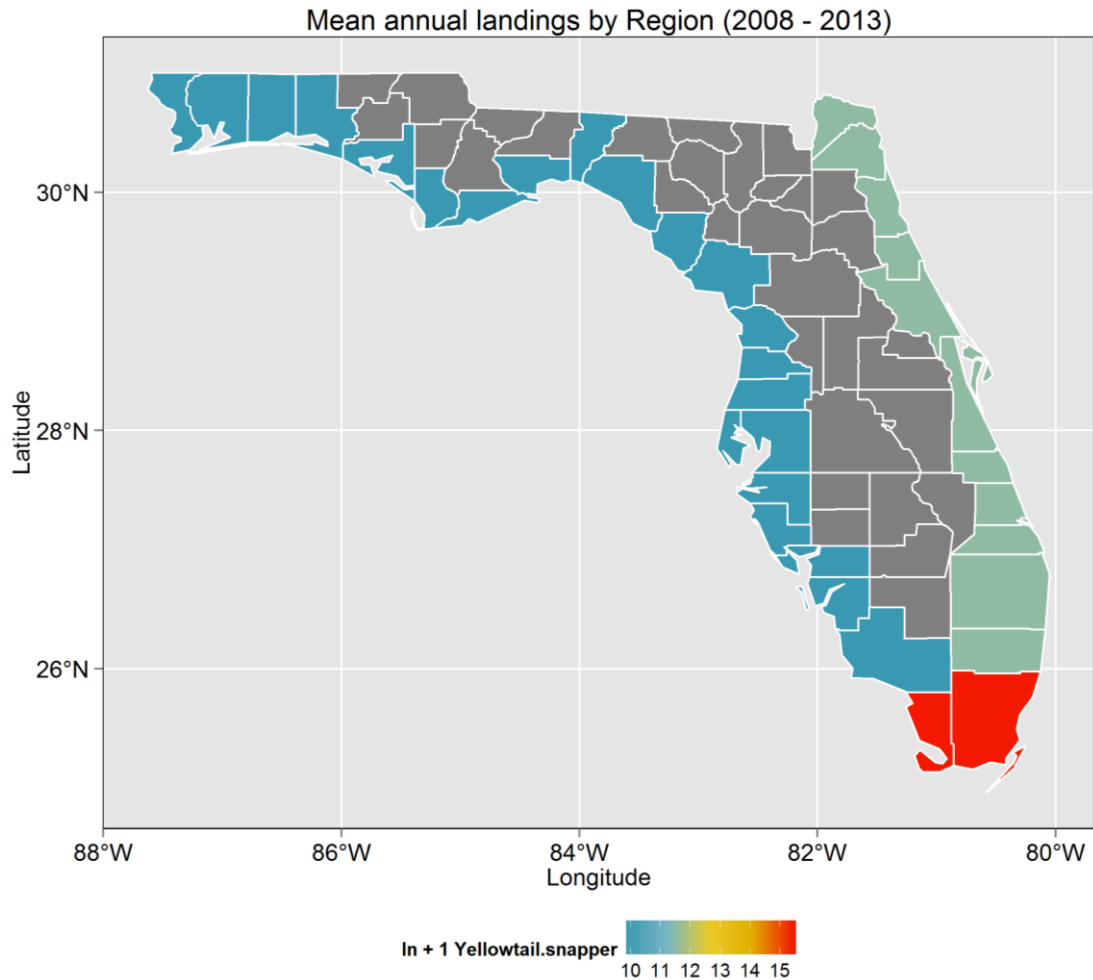


Figure 1.1.3. Mean annual commercial landings by region for yellowtail snapper in Florida for 2008-2013. Landings are averaged across years and log-transformed for homogeneity. Blue colors indicate areas of low landings, red colors indicate areas with high landings, and counties shaded in gray have no landings.

1.2 Description of the Fishery

Yellowtail snapper in the southeastern United States are harvested by both recreational and commercial fishermen, with all landings coming almost exclusively from waters adjacent to the State of Florida. Very small amounts of yellowtail snapper are landed in Texas. Landings of yellowtail snapper in the Gulf are dominated by the commercial sector, which lands, on average, over 97% of the yellowtail snapper caught in the Gulf (Table 1.1.2).

Commercial fishermen in the Gulf harvest yellowtail snapper exclusively off the southwestern coast of Florida and west and northwest of the Florida Keys. The most common fishing practice is hook-and-line fishing behind the vessel, using a chum slick (a large amount of natural chum drifting away from the stern of the fishing vessel). The chum slick draws the fish up to the surface, where they feed directly behind the stern of the fishing vessel. Fishermen use small

hooks with natural bait and “cane poles” (rods with ~15’ of monofilament fishing line tied to the tip) or spinning reels to catch yellowtail snapper. Landed fish are then quickly dehooked and dropped into a hold with ice. The operation is similar in the South Atlantic, where circle hooks are not required to land reef fish when using natural bait. Fishermen in the South Atlantic have developed special dehooking boxes to quickly remove j-hooks from caught yellowtail snapper. Since a majority of the fishing occurs at the stern of the vessel in sight of the schooling fish, fishermen can proactively prevent unwanted fish from taking a bait. Further, anecdotal information suggests that since the fish are feeding at the surface and cannot take any or very little line off a fishing reel after being hooked, the probability of a fish being hooked anywhere besides the mouth is minimal.

Recreational fishermen in the Gulf also harvest yellowtail snapper almost exclusively off the southwestern coast of Florida and in the Florida Keys. Common fishing practices include hook-and-line fishing with natural bait or jigs and, to a lesser extent, spearfishing. Recreational fishermen are permitted to retain 10 yellowtail snapper per person per day, with a minimum size limit of 12” total length (TL). Contrary to commercial fishing practices, the multi-species nature of most recreational fishing trips, combined with the aforementioned bag limit, reduces the necessity of increasing the efficiency of recreational fishing effort for yellowtail snapper.

Recreational anglers may also create chum slicks when fishing for reef fish species over structure (e.g., artificial and natural reefs). The paramount difference in angler behavior is that commercial fishermen typically actively target only certain species for a variety of reasons (e.g., fishing seasons, market value, local abundance), while recreational fishermen typically fish for many species when fishing over bottom structure. This results in the increased probability of a recreational angler catching and retaining species other than yellowtail snapper, which could have adverse effects on those other species if hooks other than circle hooks are permitted for use. Further, if a recreational angler lets a yellowtail snapper “run” or swim with the bait in its mouth before reeling it in, there may a greater likelihood of a j-hook resulting in gut hooking and, by association, increased release mortality. Therefore, modifications to the recreational gear requirements are not currently being considered in this document.

1.3 History of Management

Yellowtail snapper were included in the 33 species (15 snappers, 15 groupers, and 3 sea basses) that comprised the original fishery management unit for the Reef Fish FMP (GMFMC 1984). The first reef fish regulations, implemented in November 1984, included 1) prohibitions on the use of fish traps, roller trawls, and powerheads within an inshore stressed area; 2) construction requirements, maximum size, and numerical limits for fish traps; and 3) permit requirements for fish trap operators. In addition, reporting requirements were implemented for fish traps, commercial vessel owners and operators, and dealers and processors.

Amendment 1 (GMFMC 1989) the Reef Fish Fishery Management Plan, implemented in 1990, implemented a 12 inch TL minimum size limit on yellowtail snapper. A 10 snapper aggregate recreational bag limit was also created, which included yellowtail snapper. The stressed area was expanded to run along the entire Gulf coastline, and a commercial vessel permit was established for the harvest and sale of reef fish. Amendment 1 also established an optimum yield

goal for all reef fish of 20% spawning stock biomass per recruit (SSBR) relative to the SSBR that would occur with no fishing, and an overfished stock was defined as a stock biomass below 20% SSBR. Overfishing was defined, for a stock that is not overfished, as fishing at a rate that would not allow harvest of optimum yield on a continuing basis, and for a stock that is overfished, as fishing at a rate that is not consistent with rebuilding the stock to 20% SSBR. The spawning stock biomass per recruit terminology was later replaced with spawning potential ratio (SPR).

Amendment 11 (GMFMC 1995a) was partially approved by NMFS and implemented in January 1996. It established a permit requirement for reef fish charter vessels and headboats.

Amendment 12 (GMFMC 1995b) was submitted in December 1995 and implemented in January 1997. It established an exclusive economic zone (EEZ) aggregate recreational daily bag (possession) limit of 20-reef fish per angler for all reef fish not having a bag limit. Yellowtail snapper remained in the separate 10-snapper aggregate bag limit for snappers other than red, lane and vermilion.

A **regulatory amendment** in August 1999 (with its associated EA, RIR, and IRFA) (GMFMC 1999a) closed two areas (i.e., created two marine reserves), known as Steamboat Lumps and Madison-Swanson (104 and 115 square nautical miles respectively), and implemented year-round to all fishing under the jurisdiction of the Council with a four-year sunset.

Amendment 23 (GMFMC 2004a), established the MFMT as the fishing rate associated with F_{MSY} , and the MSST as a biomass level equal to $(1-M)*B_{MSY}$ (or B_{MSY} proxy), where M is the natural mortality rate, estimated to be 0.25.

Amendment 27 (GMFMC 2007b), implemented in June 2008, required the use of non stainless steel circle hooks when using natural baits to fish for Gulf reef fish, and required the use of venting tools and dehooking devices when participating in the commercial or recreational reef fish fisheries.

The **Generic Annual Catch Limits/Accountability Measures Amendment** (GMFMC 2011a), submitted in September 2011, established annual catch limits, optional annual catch targets, and accountability measures for all stocks under Council management that required such parameters and did not already have them. For yellowtail snapper, the amendment established an apportionment of ABC, with 75% apportioned to the South Atlantic jurisdiction and 25% to the Gulf of Mexico jurisdiction. For the Gulf of Mexico apportionment, the amendment established a yellowtail snapper stock ACL of 0.725 million pounds whole weight, and a stock ACT of 0.645 million pounds whole weight.

The accountability measures for vermilion snapper and yellowtail snapper differ slightly. If the ACL for yellowtail snapper is exceeded in a fishing year, then in the following year, if the ACL is reached or projected to be reached, the Assistant Administrator for Fisheries shall file a notification to close the appropriate sector(s) for the remainder of the year. Since the yellowtail snapper stock ACL is not allocated by sector, all fishing for the species would be closed under the accountability measure.

A **framework action**, effective September 3, 2013, increased the Gulf yellowtail snapper Annual Catch Limit from 725,000 lb round weight to 901,125 lb round weight, and removes the requirement to have onboard and use venting tools when releasing reef fish.

1.4 Purpose and Need

The purpose for this framework action is to address inconsistencies between Gulf of Mexico and South Atlantic Fishery Management Council circle hook requirements for yellowtail snapper commercial fishing in Gulf of Mexico waters, and to increase the operational efficiency of the commercial yellowtail snapper fishery.

The need for this framework action is achieve optimum yield and to decrease the burden of compliance with differing regulations based on separate regulatory agencies across adjacent bodies of water (i.e., Gulf of Mexico, South Atlantic, and State of Florida waters).

CHAPTER 2. DRAFT MANAGEMENT ALTERNATIVES

2.1 Action 1. Changes to Hook Requirements for Commercially Harvested Yellowtail Snapper in the Gulf of Mexico

Alternative 1: No action – Do not change the current hook requirements for commercially harvested yellowtail snapper in the Gulf of Mexico. Circle hooks will remain required when fishing with natural bait yellowtail snapper in the exclusive economic zone of the Gulf of Mexico.

Alternative 2: Remove the requirement to use circle hooks when commercial fishing with natural bait for yellowtail snapper throughout the exclusive economic zone of the Gulf of Mexico.

Alternative 3: Remove the requirement to use circle hooks when commercial fishing with natural bait for yellowtail snapper south of 28° 0' North latitude in the exclusive economic zone of the Gulf of Mexico.

Alternative 4: Remove the requirement to use circle hooks when commercial fishing with natural bait for yellowtail snapper south of 25° 23' North latitude on the west coast of Monroe County, Florida south to the Gulf Council jurisdictional boundary.

Discussion:

In 2008, the Gulf Council adopted a preferred management alternative in Amendment 27 to the Reef Fish Fishery Management Plan (GMFMC 2008), which required recreational anglers fishing in federal waters to use non-stainless steel circle hooks when catching reef fishes with natural bait (50 CFR 622.41). Circle hooks are defined by regulation as “a fishing hook designed and manufactured so that the point is turned perpendicularly back to the shank to form a generally circular, or oval, shape.” Florida matched federal regulations, with the added specification that a circle hook must have zero degrees of offset (Florida Administrative Code §68B-14.005).

In 2010, the South Atlantic Council approved Amendment 17A to the snapper grouper Fishery Management Plan (SAFMC 2010a), which required recreational and commercial anglers fishing in federal waters to use non-stainless steel circle hooks (offset or non-offset) when fishing for all species in the snapper grouper complex when using hook-and-line-gear with natural baits in waters north of 28° 0' North latitude. This requirement was effective March 3, 2011.

Multiple reef fish species managed by the Gulf Council occur in waters south of 28° 0' North latitude. A recent stock assessment on red snapper recognized and incorporated reduced discard mortality as a result of the requirement to use circle hooks when fishing with natural bait

(SEDAR 31 2013). Sauls and Ayala (2012) observed red snapper caught with circle hooks and j-hooks within the recreational sector and reported a 63.5% reduction in potentially lethal hooking injuries for red snapper caught with circle hooks (6.3% potentially lethal injuries, versus 17.1% with j-hooks) (SEDAR 31 2013). SEDAR 33 (2014a, b) examined the effects of hook type on gag and greater amberjack and determined that the generally low level of recreational discard mortality for both species (both prior to and after the 2008 circle hook requirement) negated the realization of benefits from using circle hooks (Sauls and Ayala 2012; Sauls and Cermak 2013; Murie and Parkyn 2013). Red grouper (*Epinephelus morio*) are also found cohabitating submerged structures with yellowtail snapper (e.g., artificial and coral reefs), and studies have described lower incidences of gut-hooking red grouper when using circle hooks as opposed to j-hooks (Bacheler and Buckel 2004; Cooke and Suski 2004; Burns and Froeschke 2012). A stock assessment (SEDAR 42, in press) further characterizing the effects of using circle hooks on red grouper is currently in progress, and is due to be completed in the fall of 2015.

Alternative 1 would retain the current circle hook requirements in Gulf of Mexico jurisdictional waters, requiring commercial anglers fishing in federal waters to use circle hooks when fishing for yellowtail snapper with natural bait. Biological impacts from this alternative are not expected to change from present conditions. Any biological benefit(s) to the current circle hook requirement would be expected to persist. In general, fishing behavior may differ when fishermen use circle hooks compared to j-hooks. Anglers using a circle hook may wait for their fishing line to become taught, which is indicative of a fish taking the bait, and *then* reel in the fishing line, often hooking the fish in the mouth. Conversely, fishermen using j-hooks typically jerk the rod upward when they feel the fish take the bait in order to hook the fish, with the likelihood of gut-hooking the fish often being greater than when the angler uses circle hooks. Currently, no literature is available with respect to the post-release mortality of yellowtail snapper when using circle hooks versus j-hooks. However, a recent stock assessment on red snapper recognized and incorporated reduced discard mortality as a result of the requirement to use circle hooks when fishing with natural bait (SEDAR 31 2013). Sauls and Ayala (2012) observed 6.3% potentially lethal injuries with circle hooks versus 17.1% with j-hooks for red snapper.

Alternative 2 would remove the requirement to use circle hooks when fishing commercially with natural bait for yellowtail snapper throughout the exclusive economic zone of the Gulf of Mexico. Some commercial fishermen have informed resource managers of an increased propensity for gut-hooking yellowtail snapper when fishing with circle hooks due to the small size of hook needed to successfully hook yellowtail snapper. These fishermen indicate that the smaller circle hooks (especially those which feature a hook tip which is offset from the shank of the hook) are swallowed completely into the stomach, increasing the likelihood of the hook snagging somewhere in the fish's digestive tract. Circle hooks are designed to be swallowed by the fish, coming back up the fish's esophagus as the fish swims away, and finally hooking the fish in the mouth. This practice requires anglers to allow the fish to swim off with the bait to become hooked. Commercial yellowtail snapper fishing practices do not accommodate allowing a fish to swim off with the bait, thereby preventing circle hooks from being used as designed. If j-hooks are permitted for use, fishermen argue, they will be able to hook yellowtail snapper in the mouth more frequently due to the morphology of the fish's mouth.

Alternative 3 would remove the requirement to use circle hooks when fishing with natural bait for yellowtail snapper south of $28^{\circ} 0'$ North latitude in the exclusive economic zone of the Gulf of Mexico. Figure 2.1.1 shows the area referenced in **Alternative 3**, focusing on the primary area in which yellowtail snapper are found. The primary harvest areas for yellowtail snapper in the Gulf for both the recreational and commercial sectors exist in waters adjacent to southwestern Florida and the Florida Keys.

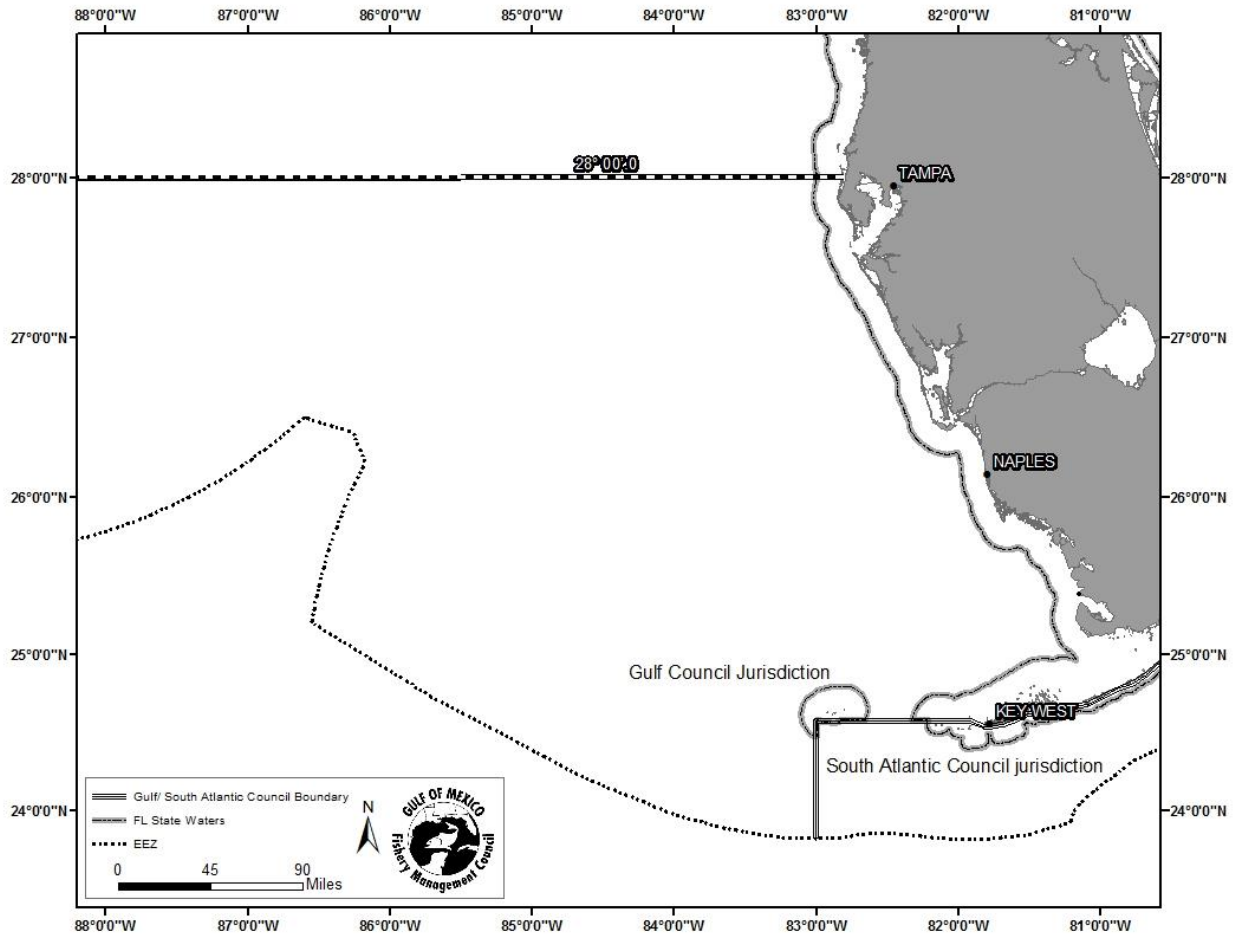


Figure 2.1.1. State of Florida with proposed $28^{\circ} 0'$ North latitude boundary in the Gulf Councils' jurisdiction for Alternative 3.

Alternative 4 would remove the requirement to use circle hooks when fishing for yellowtail snapper south of $25^{\circ} 23'$ North latitude on the west coast of Monroe County, Florida south to the Gulf Council jurisdictional boundary (Figure 2.1.2).

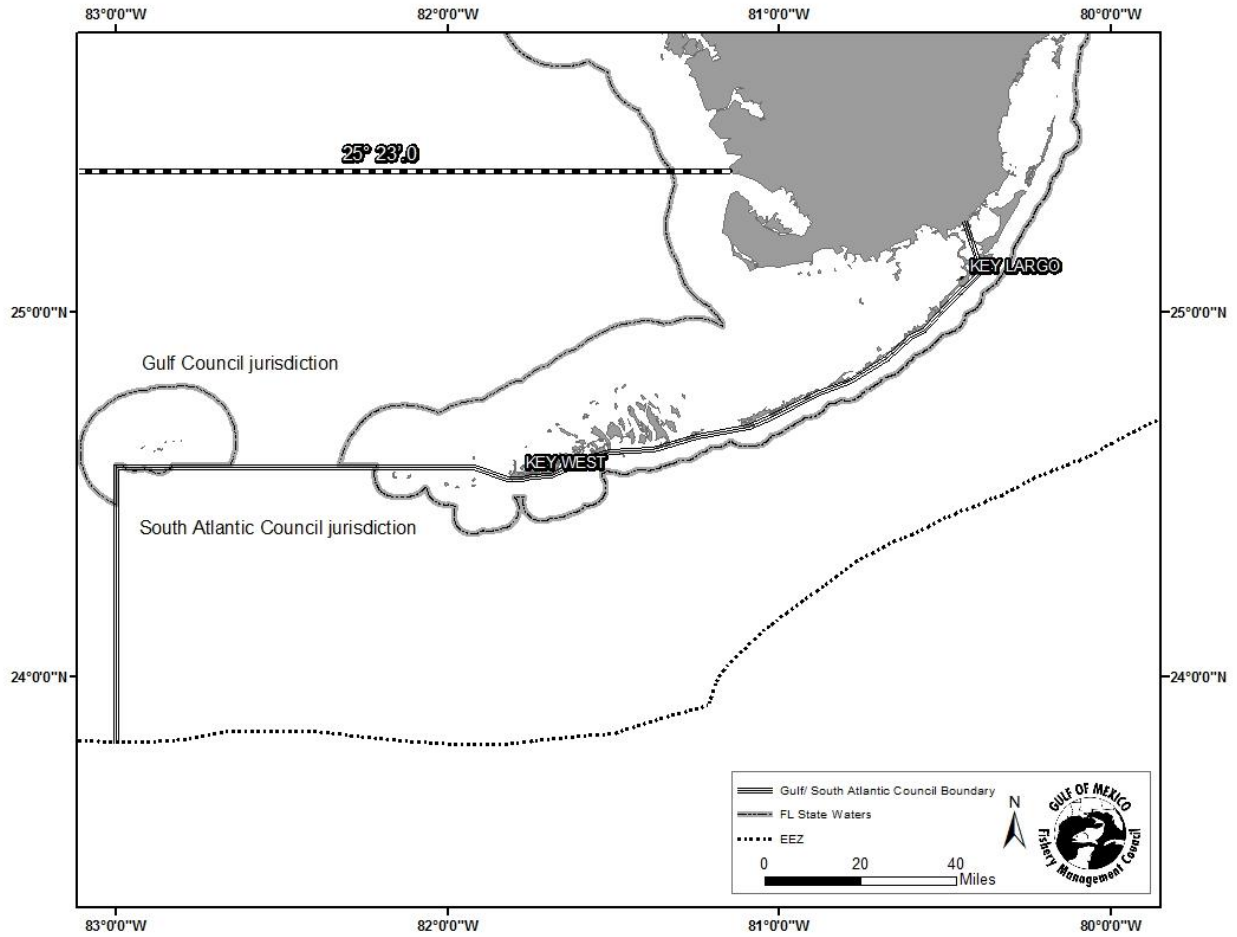


Figure 2.1.2. State of Florida with the boundary line at 25° 23' North latitude on the west coast of Monroe County, Florida, as outlined in Alternative 4.

CHAPTER 3. REFERENCES

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