Who Should Manage Red Snapper (*Lutjanus campechanus)* in the Gulf of Mexico?

A Study of the Social Dynamics of the Red Snapper Fishery

By

Sydney A. Alhale

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
College of Arts and Sciences
University of South Florida St. Petersburg

Major Professor: Christopher Meindl, Ph. D.
Brandon Shuler, Ph. D.
Richard Mbatu, Ph. D.

Date of Approval: April 21, 2017

Keywords: fisheries management, natural resources, sustainability, state, federal, Magnuson-Stevens Act

Acknowledgements

I would like to thank my advisor, Dr. Christopher Meindl for his endless support and help guiding me through the writing process. Also, thank you to Dr. Brandon Shuler for his guidance and support throughout the design phase of the research project. Thank you to Dr. Richard Mbatu for his kind demeanor and valuable support. I would also like to thank the participants of this study, who offered their time and helped make this project possible. Lastly, thank you to my family and friends for their limitless encouragement, support, and love throughout my graduate career.

Table of Contents

List of Figures

List of Tables

Glossary of Acronym

ACL	Annual Catch Limit
ASA	American Sportfishing Association
CCA	Coastal Conservation Association
CCC	Center for Coastal Conservation
FMP	Fishery Management Plan
FWC	Florida Fish and Wildlife Conservation Commission
GMFMC	Gulf of Mexico Fishery Management Council
GOM	Gulf of Mexico
GSRSMA	Gulf States Red Snapper Management Authority
IFQ	Individual Fishing Quota
IRB	Institutional Review Board
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Act
MSY	Maximum Sustainable Yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
OY	Optimum Yield
RFMC	Regional Fishery Management Council
SEDAR	Southeast Data, Assessment, and Review

SFA	Sustainable Fisheries Act
TAC	Total Allowable Catch
UNCLOS	United Nations Conference on the Law of the Sea

Abstract

There have been many studies of the biology of red snapper; however, there are few studies addressing the social dynamics of the Gulf of Mexico (GOM) red snapper fishery[1] and its effect on stock management. The GOM red snapper fishery was in decline from the 1950s through the 1980s from years of rampant overfishing. A rebuilding plan was established in 1984 under the Magnuson-Stevens Act guidelines, placing stringent regulations on red snapper fishing. To successfully rebuild the fishery by 2032, federal seasons and quotas have been shortened to allow the stock to grow. Recreational fishermen have become increasingly unhappy with the shortening of days on the water and have partnered with recreational interest groups to call upon the state legislature for an overturn of management to the states and a return to magnanimous access.

In July 2015, on behalf of the directors of the five Gulf States' natural resource agencies' marine fish divisions, Congressman Garrett Graves (R-La) proposed H.R. 3094 *The Gulf States Red Snapper Management Authority Act* to transfer federal management of red snapper to each state through a quasi-governmental management authority comprised of the directors of each Gulf State's fish and wildlife commissions (U.S. House of Representatives, n.d.; Appendix A). The H.R. 3094 proposal declares there will be one management authority, the Gulf States Red Snapper Management Authority, who will create an overarching management plan for red snapper in the Gulf region, from which the five Gulf States can then choose state-specific regulations and seasons.

[1] [1] A fishery is a unit that is engaged in the harvesting of a fish species. A unit is often managed as a single, dependent component rather than part of a larger ecosystem-based

Although federal management has greatly improved the conditions for the species over the past few decades under the Magnuson-Stevens Fishery Conservation and Management Act, increasing the fishery's total annual catch limit from roughly over 6-million pounds in 2007 to slightly over 12-million pounds in 2014[2], the Gulf States might ignore conservation tenets, that have successfully rebuilt the fishery because the States' preferred natural resource management ideology, the North American Model of Wildlife Conservation, promotes lenient management, unlimited public access, and an elimination of markets (commercial fishing).

This study uses stock assessments to establish the relative effectiveness of federal management for red snapper to date, examines documents that reveal the Gulf States' plans for managing red snapper, and reports key points from interviews with several stakeholders and interest groups to reveal the agendas of those who want to shift management of the red snapper fishery from the federal level to state control. When asked about data collection and stock assessments, participants called for better recreational data, fishery independent data, and more timely data. Noncompliance with federal fishing season suggestions and recreational quota overages have led to tension and mistrust amongst stakeholders, further widening the rift between state and federal management.

Results show that 12/15 participants from stakeholder groups including environmental advocacy organizations, dual-permitted fishermen, a seafood dealer, and

[2] Although the bulk of discussion relates to policies pertaining to the present climate of the fishery, this study only incorporates data up to 2014 because it is the most recently calibrated data by MRIP and the SSC, adopted by the Council and approved by NMFS and NOAA.

federal scientists, do not support a state takeover and believe it is a hunt for access by recreational fishermen. These participants also fear H.R. 3094 would reverse the progress that has been made towards rebuilding the red snapper stock under the Magnuson-Stevens Act. Three participants, representing state and recreational interests, insist that the stock is nearly rebuilt and that more flexible management is now possible. Although stock assessments show that total biomass is increasing, the spawning potential ratio is only half way to the rebuilding target and age variation within the population still needs improvement, therefore fidelity to the recovery plan is necessary in order to reach the red snapper rebuilding target by 2032.

Chapter One: Introduction

The Gulf of Mexico (GOM) is a partially enclosed extension of the Atlantic Ocean, bounded on the north by the Florida panhandle, Alabama, Mississippi, and Louisiana; by Texas and Mexico to the west; and by peninsular Florida to the east. Mexico's Yucatan Peninsula forms part of the southern boundary and Cuba sits in the middle of the Gulf's connection to the Caribbean Sea and the rest of the Atlantic. The Gulf's maximum east-west length is 1575 km and 900 km north-south (Darnell and Defenbaugh, 1990). Water depth varies greatly throughout the Gulf of Mexico, with an average depth of 5000 feet, however, near-shore water depth depends on the location and the state. Water depth near the panhandle of Florida reaches 60 ft. immediately offshore, while depths reach ~120 ft. off the coast of Louisiana.

The Gulf of Mexico region supports a multitude of economic activities, including tourism and natural resource extraction (oil, natural gas, and fish). In 2012, residents of the Gulf of Mexico region spent $1 billion on saltwater recreational fishing trips (U.S. Department of Commerce, 2014). The Gulf is home to diverse marine and coastal ecosystems, including wetlands, estuaries, and coral reef communities; because of this, fishing is an extremely popular pastime in the GOM region (Darnell, 2015). There are approximately 520 species of reef fish off the Gulf coast of Florida and reef-related tourism, including fishing, diving, and boating, generates $17.5 billion a year in the GOM region (Heimbuch, 2011). Marine resources landings revenue from the Gulf of Mexico

totaled $763 million in 2012 (U.S. Department of Commerce, 2014). Because the Gulf supports such a large tourism industry and provides nearly half of the United States' seafood, human impacts have taken a toll on the Gulf's fish stocks (Darnell, 2015).

Overexploitation has decimated many fish stocks around the world with 77 percent of global fisheries exploited or depleted (Granek et al., 2008). Exploited means that the number of fish born are equal to the number of fish taken out, which prevents population growth; depleted stocks are driven down to low biological growth rates and lower biomass than historical levels as a result of fishing pressure. According to Jackson et al. (2001), overfishing of large vertebrates and shellfish was the first major human disturbance to coastal environments. Although humans have utilized marine resources for centuries, exploitation of these resources, specifically fish species, has skyrocketed in recent years due to increased technology and greater catch per unit effort, making it easier to extract fish quickly. The combination of increased human population, demand for fish, and environmental stressors such as pollution, ocean acidification, and oil spills, have led to declining fish stocks across the United States. In 2010, a cement seal on the Deepwater Horizon, an oil well off the coast of Louisiana, failed, causing the largest marine oil spill in history (Griffin, 2015). A total of ~4.2 million barrels of oil spewed into the Gulf of Mexico for 87 days, causing major destruction to marine life, including fish, birds, turtles, and submerged aquatic vegetation. The Gulf of Mexico is still recovering from the disastrous event; nevertheless, evidence shows that fish stocks are beginning to rebound (Griffin, 2010).

For much of U.S. history, commercial fishing operations had few, if any, regulations. However, the National Marine Fisheries Service (NMFS) has since placed

commercial fishing into accountability systems with management tools including Individual Fishing Quotas (IFQ), onboard observers, and mandatory logbooks, all of which will be discussed later in this paper. Many have argued that commercial fishing has depleted fish stocks, and perhaps they have; however, increased research into recreational fishing impacts has shown that recreational landings now have a greater effect on many fisheries than commercial landings due to increased efficiency and sheer numbers (Granek et al., 2008). In the Gulf of Mexico alone, recreational anglers account for 64 percent of total landings of stocks declared overfished or undergoing overfishing (McClenachan et al., 2013). Impacts of recreational fishing are often underestimated because of the perception that individual anglers have a lower impact on the environment (Lewin et al., 2006). One angler may catch one or two fish; however, when that angler is among 3.1 million Gulf anglers, the number of fish taken is significant (Ocean Conservancy, n.d.).

One of these overfished species is red snapper, a popular reef fish in the GOM region, in both commercial and recreational fishing industries. The northern red snapper (*Lutjanus campechanus*) is a snapper species native to the Gulf of Mexico and the southeastern Atlantic coast of the United States (Bester, n.d.). The fish is almond-shaped and has a dark red appearance that fades towards its underbelly. Red snapper have long pectoral fins, continuous dorsal fins and pointed anal fins (Figure 1). Red snapper grow an average of four inches per year for the first six years of their lives, reaching an average of 24 inches, and they can live up to 57 years (Jackson et al., 2007; Reichers et al., 2015). Red snapper spawning season in the Northern Gulf of Mexico begins in May and lasts through late September; and because red snapper are batch spawners, they can spawn up

to 30 times per season (Reichers et al., 2015). Larger red snapper produce many more eggs than smaller ones (Curtis, 2014). For example, a one-year-old red snapper produces an average of 350,000 eggs per season, while a mature 20-year-old can produce upwards of 123 million eggs per season (Porch et al., 2007). Red snapper spawn in areas away from reefs at depths of 60-120 feet, over flat sand bottoms (Bester, n.d.).

After spawning, eggs are buoyant and float at the surface, hatching 20 to 27 hours after fertilization. Successful larvae settle in the water column after 20 days in areas protected from predators, such as sharks and other large fish. Juveniles spend early life inshore on low-relief, relic-shell habitat and migrate to deeper waters (33-620 feet) (mostly federal waters) as adults (Geary et al., 2007). Young fish live over sandy and muddy bottoms, while adults prefer cooler, deeper spots with cover from ledges, wrecks, and oil platforms. Because water depths vary throughout the Gulf of Mexico region, adult fish can be found throughout the Gulf. On the west coast of Florida, the panhandle area near Panama City reaches depths of 60 ft. immediately off the coast, while Tampa Bay area fishermen must travel at least 9 nautical miles offshore to reach deeper waters where adult red snapper live.

Figure 1. Red Snapper (photo from Shipp, 2016).

Today, red snapper is arguably one of the most important species in the Gulf of Mexico because of the employment that the species supports and the significance of this fish to the seafood market. In 2014, commercial anglers in the Gulf landed more than 5.5 million pounds of red snapper, which sold dockside for $23 million (National Marine Fisheries Service, 2015). According to the American Sportfishing Association, saltwater recreational fishing generates ~$3.9 billion in retail sales and supports 65,212 jobs in Florida (ASA, 2013). State and federal agencies, such as the Florida Fish and Wildlife Conservation Commission (FWC) and the Federal Government's National Marine Fisheries Service (NMFS), manage fisheries throughout the Gulf of Mexico, including red snapper. In Florida, state management extends offshore to nine nautical miles, while the NMFS manages ocean waters from 9 out to 200 nautical miles off the Florida coast (Shuler, 2015) (Figure 2). This study will compare past state and federal efforts to manage red snapper in the Gulf of Mexico (GOM) and analyze their effectiveness at

managing species throughout state and federal jurisdiction. The study will also explore an effort by some interests to have state authorities manage federal waters.

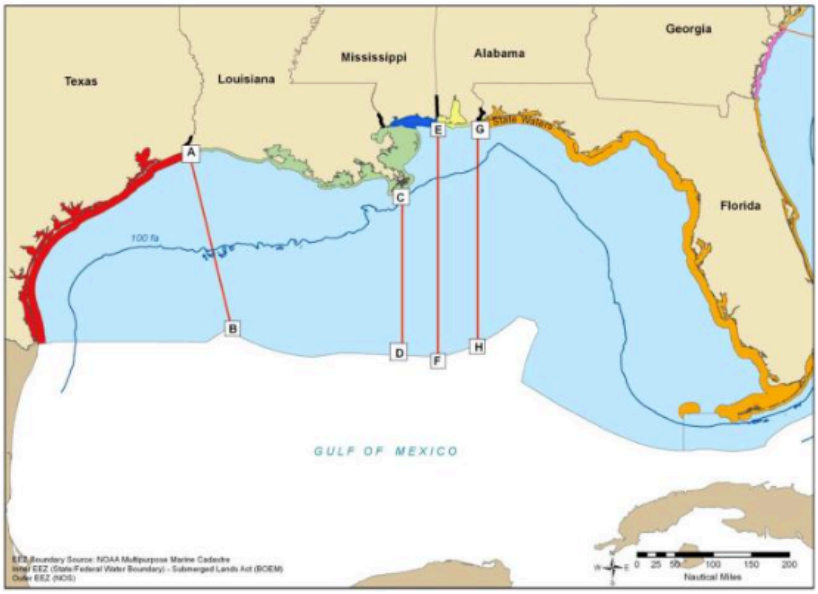


Figure 2. State Marine Jurisdictional Boundaries. This figure depicts the state and federal water boundaries of the five states in the Gulf of Mexico. (Reichers et al., 2015)

Natural Resources Management

Natural resources are often defined as "resources that are derived from the Earth, biosphere or atmosphere and that exist independently of human activity," although resources are human-centered by their very nature because they have utility to people (Cutter and Renwick, 1999, 1). Natural or environmental resources are stocks of substances found naturally and their quantities are sometimes fixed or finite (Mather and Chapman, 1995). Scientists classify resources into two major categories: renewable and non-renewable (Chiras and Reganold, 2010). Renewable resources (such as wild animals, groundwater, and forests) are those that can be continuously harvested with proper planning and management. Improper use/management may result in the exhaustion of

renewables, leading to negative social and economic effects. Non-renewable resources (such as fossil fuels and metals) form so slowly, that for all practical purposes, they may be considered finite. Red snapper are a slow-growing species, reaching sexual maturity at five years old, so despite being a renewable resource, these fish require careful management or their stocks could be depleted. Human perception of resources affects their perceived usefulness or value, which leads to the idea that environmental resources can be created, destroyed or rendered useless by changing human perceptions and technology (Mather and Chapman, 1995). Factors that affect this perception include cultural-evaluation, view of nature, social change, economic and technological factors, and resource scarcity, because of the resources' preciousness or due to human overexploitation (Cutter and Renwick, 1999).

The debate over state and federal management of red snapper in the GOM is a relatively recent part of a long-standing and wide ranging conflict over natural resources management in the United States. In the early twentieth century, sharp disagreement raged between preservationists, who demanded that some landscapes and resources be set aside for passive recreation (or no use at all)—and conservationists, who believed that all resources should be put to maximum use for the benefit of as many people as possible (Mather and Chapman, 1995). Conflict between preservationists and those who insist upon use of resources continues today. Because of fundamental philosophical disagreements to management approaches, which have never been entirely resolved, natural resource management is often influenced by each decision maker's preferred ideology, whether conservation or preservation, or state vs. federal management (Cutter and Renwick, 1999).

On top of the preservation/conservation divide, there is disagreement about which level of government should manage natural resources. The fight over resource management authority has existed for decades, and the red snapper management dilemma is just one of many recent examples. Much like red snapper, in the 1970s, leaders in several Western states launched the Sagebrush Rebellion, a war of words in which Western governors and other states' rights advocates demanded more autonomy over, and access to resources, in the vast amount of federal land available in most Western states (Cawley, 1993). The Red Snapper Saga can be viewed as a recent, marine resources iteration of the Sagebrush Rebellion of the 1970s. The federal government currently owns ~600 million acres of land in the western United States (Wald et al., 1982). This public land has natural resources (wildlife, oil shale, coal, timber, grass and so forth) that private interests wish to exploit. The passage of environmental laws in the 1970s, such as the Endangered Species Act, Wilderness Act, and the Federal Land Policy and Management Act, initiated strict management of federal western lands by the Bureau of Land Management. Moreover, due to overgrazing, the federal government reduced the number of animals allowed on public lands. Westerners questioned the validity of the Bureau of Land Management's carrying capacity measurements that forced ranchers to reduce their herd sizes (Thompson, 2016).

When the federal government reduced private interests' access to natural resources on public land, westerners objected loudly to what they perceived as a heavy-handed federal government. In 1979, state legislatures in Nevada, Utah, Wyoming, Alaska, Oregon, and Arizona introduced bills demanding the transfer of land, or at least management of federal land, to the states (Thompson, 2016). Ronald Reagan, in 1980 as

a presidential candidate, openly supported the rebels and when he was elected, appointed James Watt as Secretary of the Interior. Watt advocated for property rights and also supported the rebellion; when the Reagan era began, Watt rolled back strict, federal environmental regulations instituted previously by the Carter administration. After this rollback in 1981, the rebellion simmered and supporters grew quieter, realizing the transfer of land management would cost states millions of dollars, which would then trickle down to the taxpayers (Nelson, 1984). Additionally, the rebels recognized that the proposed bills had little to no legal basis and would not survive in Congress.

The Sagebrush Rebellion of the 1970s and early 1980s was not the first occurrence of states fighting for control of public land and resources, nor would it be the last. State versus Federal power struggles in the West date back at least to Theodore Roosevelt's presidency (1901-1909), when lands were set aside for national parks and forests (Wald et al., 1982). Following the Sagebrush Rebellion, the Wise-Use Movement emerged in Nevada in 1988, calling for increased access to, and development of, federal lands and natural resources (Burke, 1993). Supporters of the Wise-Use agenda argued that regulations protecting natural resources on private property constituted "takings," when in reality they desired unrestricted access to resources on federal lands (St. Clair et al., 2016). In early 2016, a group of armed militiamen occupied Malheur National Wildlife Refuge in Oregon to protest the federal government and the perceived mistreatment of western ranchers, while preventing U.S. Fish and Wildlife staff from performing their duties (Siegler, 2016). The occupation lasted 41 days and ended with one fatality and the arrest of twenty-six protestors. A criminal trial in October 2016 resulted in the acquittal of seven defendants, including the two organizers, while a more

recent trial of four others concluded with two being found guilty of conspiracy (Bernstein, 2016). Despite the odd outcome of the occupation, Malheur sparked the most recent battle for reduced federal authority and arguably the revival of the Sagebrush Rebellion.

Gulf States have much less federal land but they front the vast common property resources of the Gulf of Mexico, and many private interests are demanding increased access to these resources. Similarly, in 2009, several hundred fishers from the Northeastern U.S. protested the federal government's reduced catch limits intended to reduce overfishing; and in early 2010, fishers from around the country gathered in Washington, D.C. to protest fishing restrictions established by federal fisheries managers to rebuild fish stocks (Associated Press, 2009; Phillips and Shutak, 2010). Recreational fishermen are worried about the loss of access to fishery resources resulting from stringent federal restrictions intended to curb overfishing. To increase recreational fishing opportunities and to possibly eliminate commercial fishing altogether, the Gulf States are pushing for increased management authority over red snapper in the Gulf of Mexico.

In order to understand the current struggle to manage red snapper, it is important to address the history of state fish and game commissions. According to Halverson's *The Entirely Synthetic Fish* (2010), states created these commissions after the Civil War, and they were funded through each state treasury. As state budgets shrunk in the 1880s, states relied more upon hunting and fishing licenses to fund state-level wildlife conservation activities. After World War II, fishing became increasingly popular, both recreationally and commercially, and war ships were transformed into commercial fishing boats

(Shuler, 2015). The influx of recreational fishermen and commercial fleets brought much-needed revenue to the states.

In 1937, the Federal Aid in Wildlife Restoration Act, or the Pittman-Robertson Act, created an 11% excise tax on sporting arms and ammunition, which the Secretary of the Interior allocates to the states for the management and restoration of wildlife (FWS, 2013A). Similarly, States receive funds from anglers' participation in the fishing supplies market. Modeled after the Pittman-Robertson Act, the Federal Aid in Sport Fish Restoration Act, or the Dingell-Johnson Act, of 1950 established a 10% excise tax on all motorboat fuel and fishing equipment sold in the U.S., which Congress allocates to each state's fish and game commission (FWS, 2013B). A 1984 amendment to the Dingell-Johnson Act created the Wallop-Breaux Aquatic Resources Trust Fund, through which Congress allocates funds generated through excise taxes on previously untaxed sport fishing equipment sales. According to the American Sportfishing Association's "*Sportfishing in America*" report (2013), the excise taxes from the Dingell-Johnson Act generated $390 million for conservation efforts in 2010.

Natural resource agencies are staffed with people committed to protecting public goods; however, they are stuck with a funding model that encourages them to sell more hunting and fishing licenses, therefore commodifying the resource that goes against part of the Seven Sisters principles of conservation listed below. Increased population and demand for fish resources, as well as more licensed hunters and fishers, places more pressure on the fish and wildlife resources they are committed to protecting. Because red snapper drives a valuable market for the Gulf States' commercial and recreational cultural and fishing interests and the tourism industries that they serve, agencies,

including Florida's Fish and Wildife Conservation Commission (FWC), may be reluctant to apply stringent restrictions on the already overexploited resource (Geist and McTaggart-Cowan, 1995).

State agencies push for increased access to fisheries while preventing resources from being exploited for monetary gain, yet the states and recreational leadership claim that recreational fishing is a greater economic driver than commercial fishing (Participant 15, personal communication, Nov 7; Geist and McTaggart-Cowan, 1995). Individual Fishing Quotas (IFQ) provide commercial fishermen with the privilege to harvest a share of an annual, pre-determined total allowable catch (TAC), which contributes to national food security by supplying foodstuffs for Americans that do not have direct access to the Gulf. Yet, recreational fishermen argue that the commercial industry only supplies food for the upper class because red snapper is considered a delicacy in the restaurant business (Solis et al., 2014). The IFQ program encourages fishermen to adjust their operations to increase profitability and to reduce excess harvesting (Solis et al., 2014). Since its implementation in 2007, the IFQ system has been instrumental in rebuilding the red snapper fishery in spite of increased pressure from the recreational sector. Contrary to the results of the Red Snapper Commercial IFQ system, according to McTaggert-Cowan (1995), the North American Model of Wildlife Conservation suggests that enhanced commercialization of fish and wildlife, especially in the form of IFQs, will harm species restoration efforts and reduce access to the resource.

Privatization is defined by state agencies and the recreational sector as transferring wildlife from the public trust to private entities (Geist and McTaggart-

Cowan, 1995). An Individual Fishing Quota program, like the red snapper IFQ, is an example of a catch share program, defined by the National Marine Fisheries Service (NMFS) as "allocat[ing] a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities." Catch share programs, including IFQs and tag systems, are a way for the NMFS to provide flexible access to resources, while encouraging long-term economic and ecological sustainability (NOAA, n.d.A, i). Recreational fishermen believe red snapper are privatized because the catch share program ensures certain individuals "rights" to the fish stock. Although recreational fishermen argue that Individual Fishing Quotas are an example of privatization, the IFQ system is not truly privatization because any fishermen can enter the fishery by purchasing shares from existing members. Commercial landings also provide food to the public, specifically to those who cannot access the resource. For the purposes of this paper, IFQ's and tag systems will be referred to as catch share programs, rather than systems of privatization, however the word *privatization* will be defined using the recreational and state definition.

The North American Model of Wildlife Conservation emerged as a result of the efforts of hunters and anglers in the mid-1800s and was ultimately formalized by Dr. Valerius Geist, Professor Emeritus of Environmental Science, in 1995 (Organ et al., 2012). According to Organ et al., the model centers around seven principles, known as the Seven Sisters for Conservation. These principles, when applied together, have resulted in major successes in wildlife conservation and management in the U.S. and Canada. The seven principles are as follows:

- Wildlife resources are a public trust.
- Markets for game should be eliminated.
- Allocation of wildlife is by law.
- Wildlife can be killed only for a legitimate purpose.
- Wildlife is considered an international resource.
- Science is the proper tool to discharge wildlife policy.
- Democracy of hunting is standard.

Several of these principles pertain to the struggle between state and federal red snapper management authority because they address public access, commercial fishing, resource allocation, and scientific data collection. The first principle, 'wildlife resources are a public trust,' demands that such resources on public lands or waters managed by government agencies, are kept wild and made available for current and future generations. One view of the Public Trust Doctrine[3] deems the government responsible for the care of wildlife, fish, and waterways, and places ownership in the hands of citizens in the form of opportunity to access these resources for traditional purposes, including fishing and hunting (Batchellor et al., 2010). This view asserts that claiming ownership of wildlife as private property, thus limiting access to and use of wildlife, are threats that undermine and inhibit sound conservation practices (Batchellor et al., 2010). Recreational fishermen believe this principle has been violated through the privatization of the commercial sector. Recreational fishermen, specifically sportfishermen, have used the Public Trust Doctrine as a means to argue against the restriction of access, such as marine reserve closures or quotas and bag limits (Bevis, 2005). The use of the Doctrine

[3] The Public Trust Doctrine is a principle of common law that establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public.

by recreational interests to argue for equal rights to access the fishery is misguided as it excludes commercial fishing and charter for hire. Recreational fishermen are given the privilege to access the fishery through quotas and seasons; however, no fishermen are given individual rights to the fish. The charter for-hire and the commercial fleets are given explicit privileges to allow the non-boat owning and seafood-consuming public fair access to the resource.

Allocation of fish or wildlife (such as through an IFQ), the third principle, is applied and enforced by laws created through a public process. Any allocation of fish and wildlife that is accomplished by anything other than a public process would violate this principle. This thesis will ultimately consider proposed red snapper management legislation in Congress that could very well abandon a truly public process for allocating red snapper.

The final relevant principle is the belief that sound science is vital for effective fish and wildlife policy. Currently, the Gulf of Mexico Fishery Management Council uses the Marine Recreational Information Program (MRIP) to sample anglers for information regarding how often they are fishing (effort) and what they are catching per trip (catch rate), which is combined with biological surveys and commercial data to estimate the total catch of selected species (NOAA, n.d.B). Biologists survey anglers in person and by telephone, however it is impossible for them to reach every angler. Because of this, MRIP analysts use statistical models to extrapolate from survey data on recreational catch to inform management decisions. Although data is not faultless, federal fisheries managers practice best-available science through transparency, including marginal error calculations and reporting strengths and weaknesses of each assessment in an advisory

report. As technology advances and new information emerges, fisheries management works towards bettering assessment methods.

Problem Statement

This study focuses on GOM red snapper, a controversial species. The GOM red snapper fish stock suffered a major decline from rampant overfishing from the 1950s through the 1980s due to the increase in recreational fishermen joining the fishery after World War II. Following the first stock assessment in 1988, the National Marine Fisheries Service declared the stock overfished (Shuler, 2015). After the Gulf's red snapper fishery decline became apparent in the 1980s, the Gulf of Mexico Fishery Management Council developed a fishery management plan in 1984 to allow the Gulf's red snapper stock to replenish. In order for the stock to rebound, in 1984, the Gulf Council established minimum size limits and bag limits for both the recreational and commercial sectors. In addition, season lengths allow the Council to manage how quickly fishermen reach the quota based on catch per unit effort, which is influenced by size and bag limits of red snapper. If the Council sets an annual catch limit (ACL) of 12 million pounds (mp) for example, with a 2 fish bag limit per person, at 16 inches minimum size limit, they can calculate how quickly fishermen will catch the allotted poundage with these numbers and determine the season length. Red snapper season usually occurs in June because this is historically when the highest percentage of fish is caught and when the most socio-economic activity occurs in the GOM.

In 2007, the commercial sector adopted an IFQ program that allows permitted fishermen to harvest an allocated amount of the commercial quota in federal waters,

eliminating competition and the race to find the remaining fish before others harvest them. Before the IFQ system, there was no system of accountability for the commercial sector, therefore the IFQ program greatly reduced the commercial fishermen's quota overages and success ultimately allowed their allocation to be increased from 2.04 mp (1991) to 3.3 mp (2007) and then to 6.7 mp (2015) (GMFMC, 2016). The recreational sectors' allocation has also increased since, from 2.45 mp (2008) to 3.86 mp (2010) to 5.39 mp (2014) (Table 1). However, private recreational fishermen have exceeded their quota almost every year since the stock rebuilding plan began, sometimes by over 144% a year, angering their fishing counterparts in the commercial sector (Figures 3 and 4).

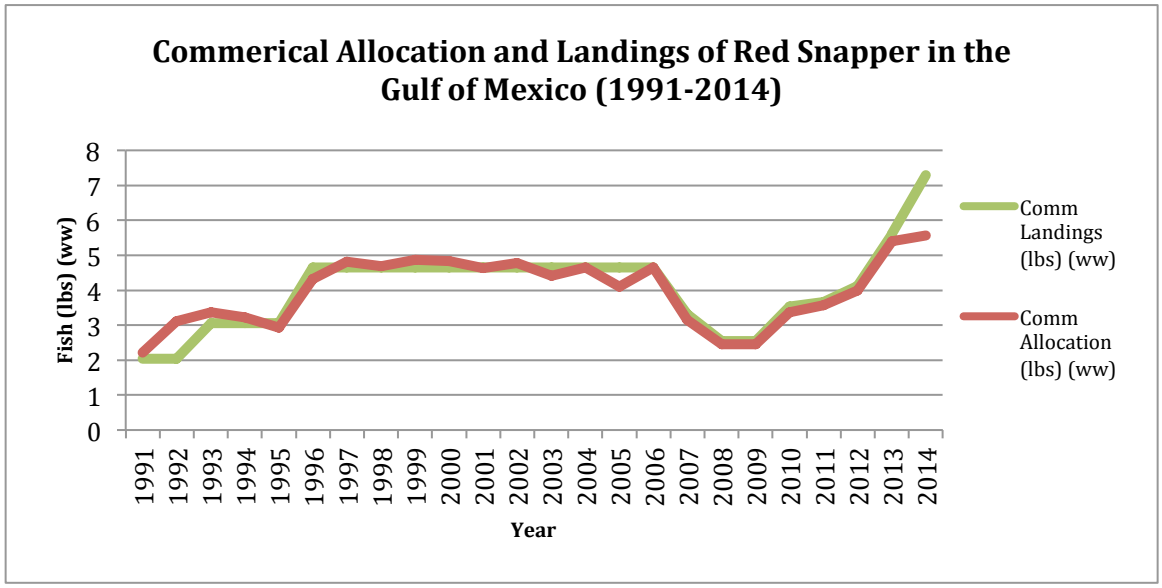


Figure 3. Commercial Allocation and Landings of Red Snapper in the Gulf of Mexico (1991-2014). This graph depicts the commercial sector's quota and landings for 1991-2014. Quota and Landings measured in million pounds, whole weight. (GMFMC, 2016)

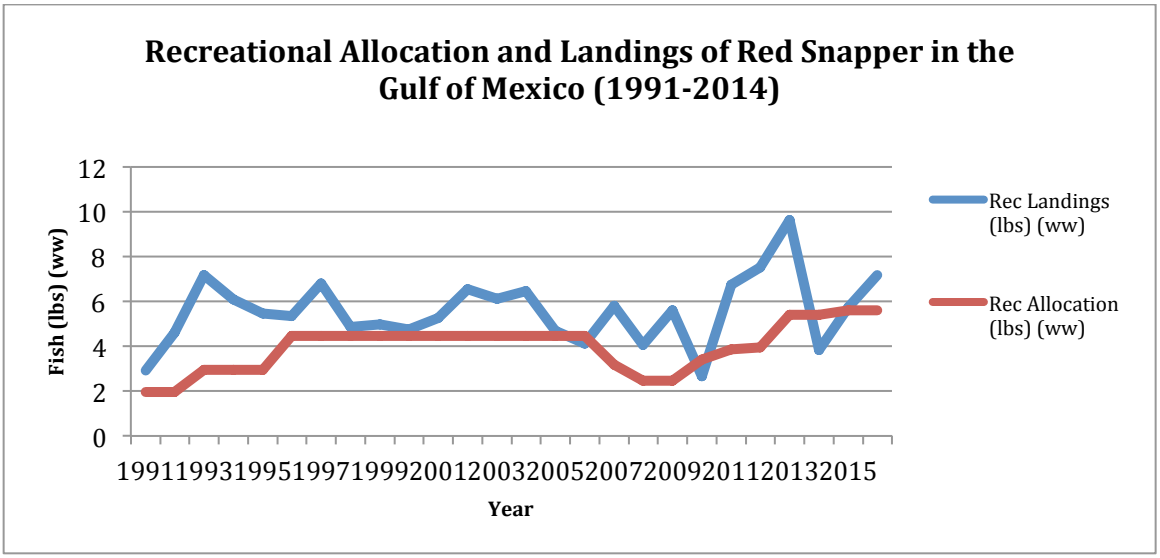


Figure 4. Recreational Quota and Landings of Red Snapper in the Gulf of Mexico. This graph depicts the recreational allocation and landings from 1991-2014. Quota and Landings measured in million pounds, whole weight. (GMFMC, 2014)

Table 1. Recreational and Commercial Quota, Landings, and % of Quota (1991-2014). This table depicts the recreational and commercial quota, landings, and % of quota filled between 1991, when both sectors had quotas instituted, through 2014. Highlighted percentages are quota overages. (GMFMC, 2014; Cass-Calay et al., 2015)

Year	Rec Landings (mp)	Rec Quota (mp)	Rec % of Quota	Comm Landings (mp)	Comm Quota (mp)	Comm % of Quota
1991	2.917	1.96	149%	2.213	2.04	108%
1992	4.618	1.96	236%	3.106	2.04	152%
1993	7.161	2.94	244%	3.374	3.06	110%
1994	6.076	2.94	207%	3.222	3.06	105%
1995	5.464	2.94	186%	2.934	3.06	96%
1996	5.339	4.47	119%	4.313	4.65	93%
1997	6.804	4.47	152%	4.81	4.65	103%
1998	4.854	4.47	109%	4.68	4.65	101%
1999	4.972	4.47	111%	4.876	4.65	105%
2000	4.75	4.47	106%	4.837	4.65	104%
2001	5.252	4.47	117%	4.625	4.65	99%
2002	6.535	4.47	146%	4.779	4.65	103%
2003	6.105	4.47	137%	4.409	4.65	95%

Table 1. Recreational and Commercial Quota, Landings, and % of Quota (1991-2014). (continued)

2004	6.46	4.47	145%	4.651	4.65	100%
2005	4.676	4.47	105%	4.096	4.65	88%
2006	4.131	4.47	92%	4.649	4.65	100%
2007	5.809	3.185	182%	3.153	3.315	95%
2008	4.056	2.45	166%	2.461	2.55	97%
2009	5.597	2.45	228%	2.461	2.55	97%
2010	2.651	3.403	78%	3.362	3.542	95%
2011	6.734	3.866	174%	3.562	3.664	97%
2012	7.524	3.959	190%	4	4.121	97%
2013	9.639	5.39	179%	5.399	5.61	96%
2014	3.826	5.39	71%	5.568	7.293	76%

According to stock assessment reports, total biomass is predicted to increase, demonstrating that the rebuilding plan and management choices have been relatively successful thus far (Figure 5). Both fisheries managers and fishermen have discovered a paradox: the recent appearance of larger fish is a sign that restrictions are working and they enable fishermen to fill their quotas quicker. Yet recreational fishermen are unhappy with limited access to the resource, because it appears as if red snapper have rebounded. Accordingly, in July 2015, on behalf of the directors of the five Gulf States' natural resource agencies,[4] Congressman Garrett Graves (R-La) proposed H.R. 3094 *The Gulf States Red Snapper Management Authority Act* to transfer federal management of red snapper to the states because of the recreational sector's dissatisfaction with federal management (U.S. House of Representatives, n.d.). Graves introduced H.R. 3094 as a result of the partnership between recreational fishermen and special interest groups such

[4] Texas Parks and Wildlife Department, Louisiana Department of Wildlife and Fisheries, Mississippi Department of Marine Resources, Alabama Department of Conservation and Natural Resources, and Florida Fish and Wildlife Conservation Commission.

as the Coastal Conservation Association, American Sportfishing Association, and the Center for Coastal Conservation; and the bill includes provisions that could reduce commercial fishing by 10% each year without review. The proposed state management scheme offers less restrictive regulations for recreational fishers and an uncertain future for the commercial sector. Because federal fisheries are currently bound by the protective Magnuson-Stevens Act, the nation's most important fisheries management law, some observers are concerned that state management will be insufficient to protect the species (Lallo, 2015A).

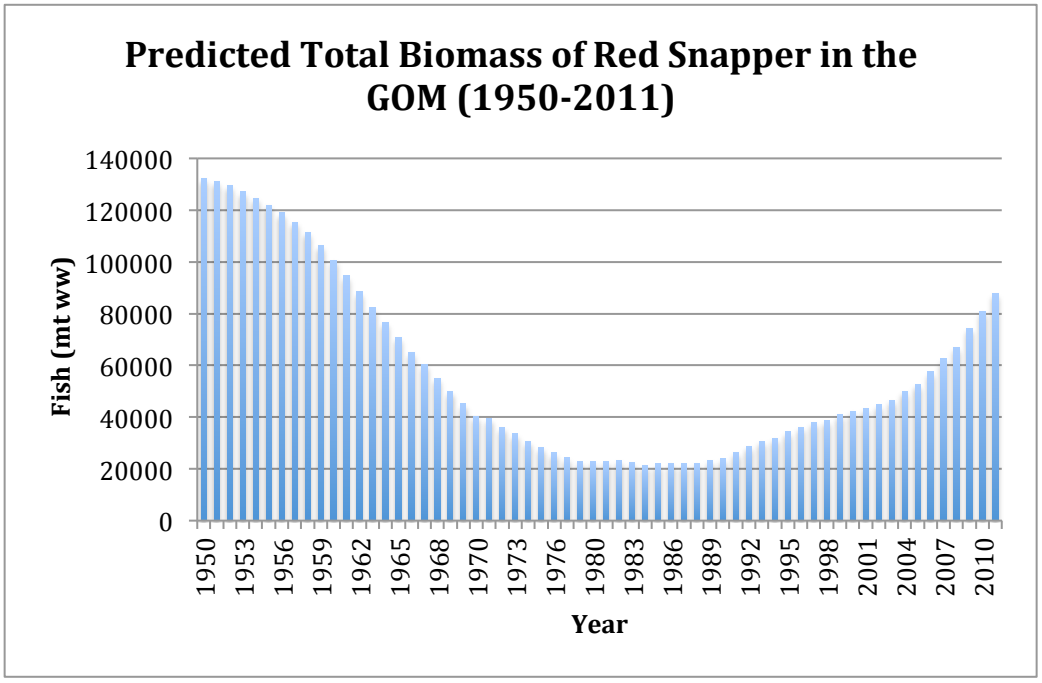


Figure 5. Predicted Total Biomass of Red Snapper in the Gulf of Mexico. This graph depicts the predicted total biomass (metric tons whole weight) of red snapper in the Gulf of Mexico from 1950 to 2011. (SEDAR, 2013).

Research Question and Objectives

Some studies (Tokotch et al., 2012; Rossiter et al., 2015) have focused on stakeholder involvement in fisheries management, however there are few studies (Doerpinghaus et al., 2014; Cullis-Suzuki et al., 2011) addressing the social components (stakeholder perceptions and management actions) of the red snapper fishery. Red snapper is an economically, recreationally, and intrinsically valuable species in the Gulf of Mexico, garnering much public attention. As a result, a study exploring the motives behind the effort to eliminate federal management of this important species in the Gulf is vital. The overall objective is to investigate the following research question, "what is driving the Gulf States to push for state management of red snapper, despite the fact that federal management has demonstrably helped this fish recover?" Additional queries revolve around how the red snapper fishery management plan has executed the mandates of the Magnuson-Stevens Act, as well as how management mechanisms have affected the relationship between management authorities such as the NMFS and Florida's FWC.

Conceptual Framework

This study employs the *Federal vs. State analysis* framework model for natural resources management (Cawley, 1993). This framework is based on the federal government's strict regulatory policies for natural resource access in public lands, as opposed to the less stringent/open access ideologies advocated by some users. Stakeholders' differing management ideologies are at the core of the battle over red snapper, with the federal government practicing proactive conservation management that restricts access as directed by the Magnuson-Stevens Act, and the states—cloaking their desire to increase access to the resource by using tenets of the North American Model of

Wildlife Conservation. The battle between conservation and the desire for open access is also exemplified by the Sagebrush Rebellion and western ranchers' fight for access to federal grazing lands. During the first half of the twentieth century, the federal government promoted resource development through managed use, which allowed users access to resources on public land (Cawley, 1993). After World War II, the U.S. population became more interested in outdoor recreation, which paved the way for public use of nature and policies to protect and manage these landscapes (Cawley, 1993).

In the 1970s, the emergence of conservation-driven federal policies for natural resource management placed conservation of natural resources before development and exploitation. During the 1960s and 1970s, as Congress considered and then passed several important environmental protection laws including the Clean Air Act, Clean Water Act, and the National Environmental Policy Act, the U.S. government applied more restrictive environmental regulations to public land and marine resources—including the Magnuson-Sevens Act. Meanwhile, public land users pushed for greater state control, reduced federal involvement—and expanded access. Reduced access to natural resources in the West and a shift in policy widened the gap between the federal government (based in the east) and Western states because Westerners perceived these actions as punishment rather than conservation (McCarthy, 1992). Red snapper are currently managed according to a no-nonsense rebuilding plan that allows some access for fishermen while instituting limits that allow the stock to repopulate, including bag limits, size restrictions, and seasons. The conceptual framework of this study (analysis of Federal vs. State approaches to natural resource management) traces the impact of a changing definition of conservation and subsequent new approaches to natural resource

management by analyzing changes in red snapper management and in the perspectives of many different stakeholders. Current management of the red snapper fishery is based upon efforts by the federal government in the 1970s (expressed in the Magnuson-Stevens Act of 1976) to curb overexploitation and ensure availability of marine resources for future generations. The proposed legislation by the five Gulf States to expand access to a recovering fishery reflects the efforts by Western state legislatures in the 1970s to increase access to resources on federal government property in the West.

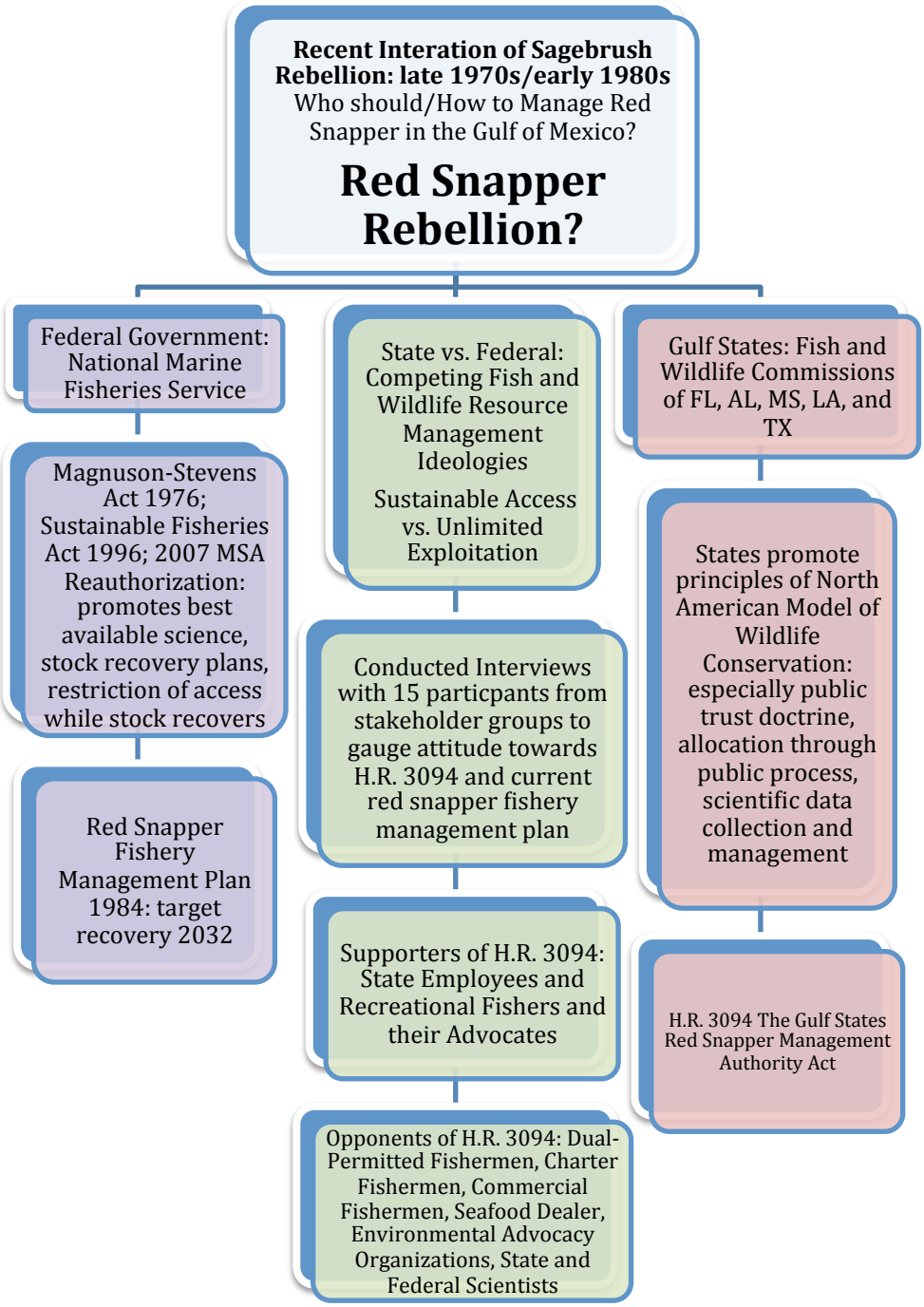


Figure 6. Conceptual Framework of This Thesis.

Chapter Two: Literature Review

U.S. Fisheries Management

Prior to 1976, states handled all U.S. fisheries management. The Submerged Lands Act of 1953 clarified that each state is responsible for managing offshore lands beneath navigable waters, including all natural resources (U.S. Commission on Ocean Policy, 2004). This legislation allows states to manage marine resources up to three nautical miles from their shores (nine nautical miles in Florida and Texas), without requiring a management scheme similar to neighboring states. Before the formal zoning system, Florida and Texas waters were defined as 3 leagues, which equals 9 nautical miles, and was never changed. In 1973, the Third United Nations Conference on the Law of the Sea (UNCLOS III) convened to discuss concerns about declining fish stocks and each nation's jurisdiction of coastal waters (U.S. Commission on Ocean Policy, 2004). Early proceedings of UNCLOS III revealed a consensus among coastal nations that there should be sovereign rights to fish resources out to 200 nautical miles from each nation's coast (U.S. Commission on Ocean Policy, 2004). Unsatisfied with the UNCLOS III's relative lack of progress, the U.S. Congress developed the Magnuson-Stevens Fishery Conservation and Management Act in 1976 to combat declining fish resources.

The Magnuson-Stevens Act (MSA) established a modern federal system for managing fisheries in the United States (Dell'Apa, 2012). Under the MSA, the federal government assumed responsibility for fisheries occurring between three nautical miles

(nine off Florida and Texas) up to 200-nautical miles offshore, an ocean region known as the exclusive economic zone. Congress created exclusive economic zones to rid national waters of foreign fishing vessels and to secure the country's waters from foreign threats.

The MSA also created eight Regional Fishery Management Councils (RFMCs) to divide jurisdiction for the nations' ocean waters among eight marine regions. There are 17 voting members on the Gulf of Mexico Fishery Management Council (GMFMC or the Council), representing a broad reflection of the GOM fisheries' stakeholders. The current GMFMC makeup includes the Southeast Regional Administrator of the NMFS, the five directors of the Gulf state marine resource management agencies, and 11 members nominated by the five Gulf state governors and appointed by the Secretary of Commerce (Dell'Apa, 2012). Florida has three representatives representing commercial, recreational and environmental interests.

The Council meets publicly five times a year around the Gulf region to craft and discuss amendments to fishery management plans, hear public comment, and take final actions on proposed amendments. Stakeholders are encouraged to get involved in the decision making process through a designated commenting period that allows them to read proposed amendments and offer their opinions to the Plan Coordinator. Furthermore, the MSA provides a level of transparency due to the regional council process, but also by making all council recommendations subject to the National Environmental Policy Act (NEPA). NEPA encourages transparency of federal activities and mandates agencies to account for environmental impacts that may result from federal projects (infrastructure

construction and regulation). This act also requires agencies to publish environmental impact statements and make them available for public review before project finalization.

These regional councils are responsible for creating fishery management plans (FMPs) for most aquatic species that abide by the MSA's ten national standards to encourage conservation of fish species:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
2. Conservation and management measures shall be based upon the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privilege.
5. Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.
9. Conservation and management measures shall, to the extent practicable, (a) minimize bycatch and (b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
10. Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

All FMP amendments adopted by the regional councils are sent to the NMFS for a review of compliance with the MSA; the NMFS, through the Office of Law Enforcement, is ultimately responsible for enforcement of the Magnsuon-Stevens Act, Endangered Species Act, and more than 35 other federal statutes in federal waters (Dell'Apa, 2012; U.S. Commission on Ocean Policy, 2004). The Secretary of Commerce reviews all plans,

regulations, and amendments to ensure these national standards are reflected in each regional council's fishery management plans (NOAA Fisheries, n.dA).

The Magnuson-Stevens Act defines maximum sustainable yield (MSY) as "the largest average catch that can be taken continuously from a stock under average environmental conditions" (U.S. Commission on Ocean Policy, 2004, 34). The Act then defines the concept of optimum yield (OY) as "the harvest level for a species that achieves the greatest overall benefits, including economic, social, and biological considerations" (U.S. Commission on Ocean Policy, 2004, 34). Optimum yield is a more broadly based concept because it includes human economic and social considerations, while maximum sustainable yield is limited to the biological impact of fishing. The Magnuson-Stevens Act demands that maximum sustainable yield should be used to determine the amount of fish that can be harvested sustainably, therefore limiting a large portion of social and economic considerations from management.

The Sustainable Fisheries Act (SFA) of 1996 introduced new concepts and changes to the Magnuson-Stevens Act, including requiring Regional Fishery Management Councils to address overfishing, reduce bycatch and waste, and protect fish habitat (U.S. Commission on Ocean Policy, 2004; Dell'Apa et al, 2012). The 1996 amendments to Magnuson-Stevens also included the requirement for fishery management plans to identify essential fish habitat for each fishery in order to promote conservation and avoid excessive anthropogenic harm to these critical habitats. Because many fish stocks remained threatened, Congress reauthorized and amended the MSA again in 2006, calling for the use of science-based annual catch limits meant to end overfishing by 2011,

and to rebuild populations based upon fishery dependent lifecycles. The 2006 reauthorization gave the Council the authority necessary to truly limit overfishing with the introduction of annual catch limits. An annual catch limit is the amount of fish that can be harvested from a stock per year; if this amount is exceeded, accountability measures are instituted (GMFMC, 2014). Accountability measures are actions taken to prevent the annual catch limit from being exceeded, or to correct/mitigate overages if they occur (GMFMC, 2014). For example, if the quota is exceeded, the following year's quota might be reduced to account for the previous year's quota overage. The 2006 reauthorization also suggested development of market-based fishery management through limited access privilege programs, while encouraging greater international cooperation (Dell'Apa et al., 2012). It was not until the 2006 reauthorization that regional councils were forced to reduce overfishing and rebuild fish stocks on strict timelines. It appears that Congress has become increasingly concerned about fisheries management over the past several decades, demanding the use of progressively sophisticated concepts and policy tools intended to ensure that marine resource users transition to more sustainable uses.

Stock Health and Management

New and improved fishing technologies appeared after World War II, decreasing the effort required per unit of fish landed, which led to a sharp decrease in the red snapper stock (Porch, 2007; Shuler, 2015). Spawning potential ratio (SPR) is a biological reference point used to measure the impact that fishing has on the ability of each young fish (recruit) to contribute to spawning. Spawning potential is a ratio, between 0 and 1,

but usually some percent in between, derived by dividing the number of eggs that could be produced by an average recruit in a fished stock by the number of eggs that could be produced by an average recruit in an unfished stock (National Marine Fisheries Service, 2012). A spawning potential of 0% reflects a stock with no spawning, essentially a collapsed stock; whereas a value of 100%, in a stock with no fishing pressure at all, is typical of stocks producing plenty of new fish every year.

Because of overfishing, red snapper suffered a decrease in spawning potential from nearly 45% in 1950 to 3% in 1990 (Shuler, 2015). Fish were being added to the stock at a much lower rate than before because of significantly increased fishing pressure from people (Figure 7). Red snapper are exceptionally vulnerable to overfishing because females do not reach full sexual maturity until they reach five years of age, and 20-year old fish produce millions more eggs per year than do 5-year olds. Overfishing is such a serious problem for red snapper because if most of the older fish are taken out of the stock, the remaining young fish produce far fewer offspring. Stock scientists also look for age class variation within a population, similar to human population pyramids. An appropriate age class structure would feature larger, young age classes and progressively smaller, older age classes. Overfishing leads to a truncated age class because younger fish are fished out before they reach old age, leading to less biomass in older age classes (Saari et al, 2014) (Figure 8).

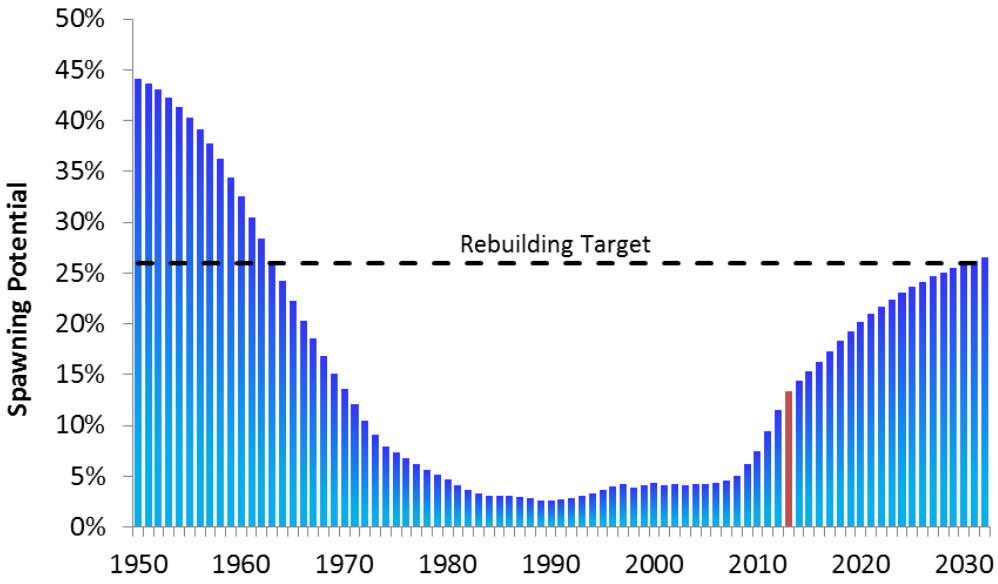


Figure 7. Spawning Potential for Red Snapper in the GOM. The figure depicts spawning potential based on historical landings data and projected spawning potential after 2013. (NOAA Fisheries, n.d.B)

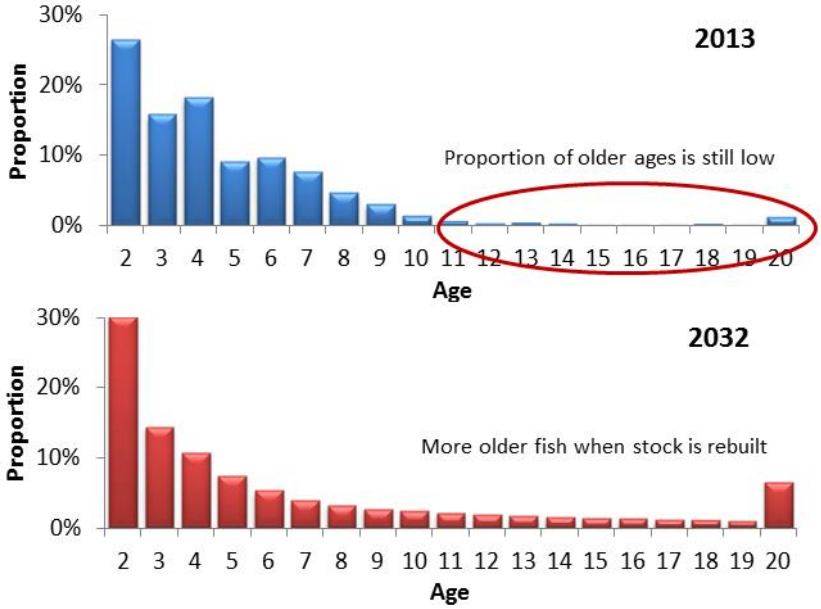


Figure 8. Age Class Variation Diagram for Red Snapper. This figure depicts an age class structure of an overfished stock and a rebuilt stock. (NOAA Fisheries, n.d.B)

A stock is considered overfished when the stock size remains below a prescribed threshold, while overfishing is when the harvest rate is above a prescribed threshold (Dell'Apa et al., 2012). A snapper species is considered overfished when the population has an SPR of 20% or less of the unfished stock and is considered to be undergoing overfishing when harvest rates exceed the population's ability to maintain their traditional SPR (South Atlantic Fishery Management Council, 1998). Responding to this problem in 1984, the NMFS instituted a minimum size limit and bag limit to allow more red snapper to reach sexual maturity and produce more eggs (Shuler, 2015). The minimum size limit is a direct result of the fecundity of red snapper; larger fish produce many more eggs than smaller ones (Curtis, 2014). After the NMFS's Scientific and Statistical Committee's 1988 stock assessment, the NMFS declared this stock overfished (Shuler, 2015). Both the NMFS and the GMFMC made rebuilding red snapper a top priority in 1984, initially setting a recovery goal for 2000, which they eventually pushed back to 2007, then to 2009, and now managers hope the stock is rebuilt by 2032 (Shuler, 2015). The 1990 stock assessment made it clear that 2007 was an unrealistic goal and would not allow for any fishing in order to give red snapper a chance to recover. In 1992, authorities pushed the rebuilding date back to 2009. In 2001, improved understanding of red snapper life-cycle and science led them to extend rebuilding to 2032 (Shuler, 2015). The 1996 Sustainable Fisheries Act seeks to rebuild damaged fish stocks to a level that supports MSY in 10 years or less (Cass-Calay et al., 2015). If stocks cannot be rebuilt in 10 years, the rebuilding time is based on a bio-mathematical model that predicts the number of years it takes to rebuild a stock in the absence of fishing mortality plus one generation (SEDAR, 2013). Since a red snapper generation is estimated to be nearly 20

years, and at a fishing mortality of 26% of the population per year, it will take 12 years plus 19.6 years generation time starting in 2000, resulting in a target recovery for 2032 (SEDAR, 2013). The Gulf of Mexico Fishery Management Council used this science to develop a plan to rebuild the red snapper stock, including dividing the fishery into commercial and recreational sectors (Shuler, 2015).

In 1990, the GMFMC allocated 51% of the harvestable stock to commercial fishermen, leaving 49% to recreational anglers; these figures were based on each sector's historical catch averages between 1979 to 1987 (Shuler, 2015). The recreational sector was later divided into for-hire vessels and private vessels in 2014, while for-hire vessels were even further split into charter boats and head boats (Figure 9). Head boats carry large numbers of passengers for day trips and often drift fish over wrecks and reefs, while charter boats carry a maximum of 6 people and often tailor fishing experiences to guests' wishes. Charter and head boats fishing in federal waters are mandated to carry federal permits for their fishing operations.

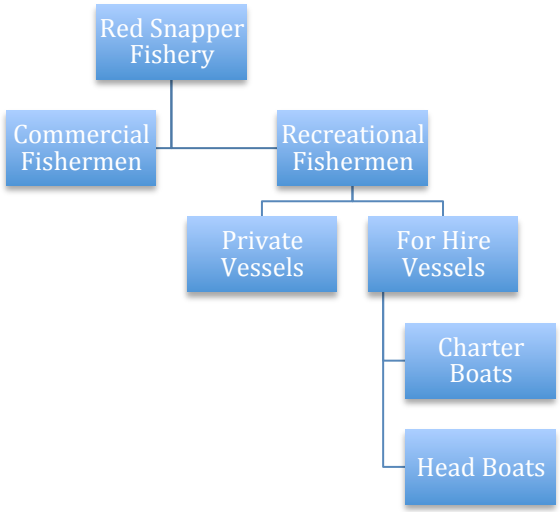


Figure 9. Red Snapper Sector Separation. This figure depicts the division of the commercial and recreational sectors and the further separation of the recreational sector.

Since the development of the initial Gulf of Mexico fishery management plan for red snapper in 1984, the Gulf Council has passed over 40 amendments to this plan (Appendix B). In 2015, the Gulf Council approved Amendment 40 for sector separation quotas within the recreational sector, further subdividing the 49% quota to recreational anglers by assigning 57.7% of the recreational quota to private individual anglers and the remaining 42.3% of the recreational share to federally-permitted for-hire vessels (Hood, 2015). Effective May 2016, Amendment 28 adjusted red snapper annual catch limits to 48.5:51.5 for the commercial and recreational sectors, respectively (Department of Commerce, 2016).

Both commercial and recreational sectors have experienced a significant tightening of regulations in order to meet the 2032 goal of a healthy red snapper stock in the Gulf of Mexico. The recreational sector has experienced bag limit reductions, minimum-size restrictions, and shorter federal seasons, enforced by the NMFS, which are

confounded by state noncompliance that allow state-water fishers to access the fishery more often and to remove more fish than the prescribed federal rules allow (Shuler, 2015). Noncompliance with season regulations has become a trend with the Gulf States over the last few years. Federal seasons are determined based on how quickly the Council thinks each sector will catch their allotted pounds of fish, using previous landings information. Because states choose season lengths in state waters, states have lengthened their seasons over the last few years, resulting in a shortening of federal seasons, angering most private recreational fishermen because more red snapper can be found in federal waters than in state waters (Table 2). Lengthening state seasons causes a positive feedback because it allows the annual catch limit to be filled quicker, resulting in fewer pounds to be caught during the federal season. The 2016 federal season lasted 9 and 16 days for the private recreational and federal for-hire subsectors, respectively. Over the past four years, state seasons have skyrocketed, with Texas starting the trend of noncompliance (Figure 10).

Table 2. State Red Snapper Seasons from 2012-2016 in Days.

	FL	AL	MS	LA	TX
2012	**46***	**46**	**46**	**46**	366
2013	65	**42**	**42**	113	365
2014	52	42	36	286	365
2015	70	41	118	215	365
2016	78	40	207	358	365

*Bolded numbers are seasons compliant with federal regulation.

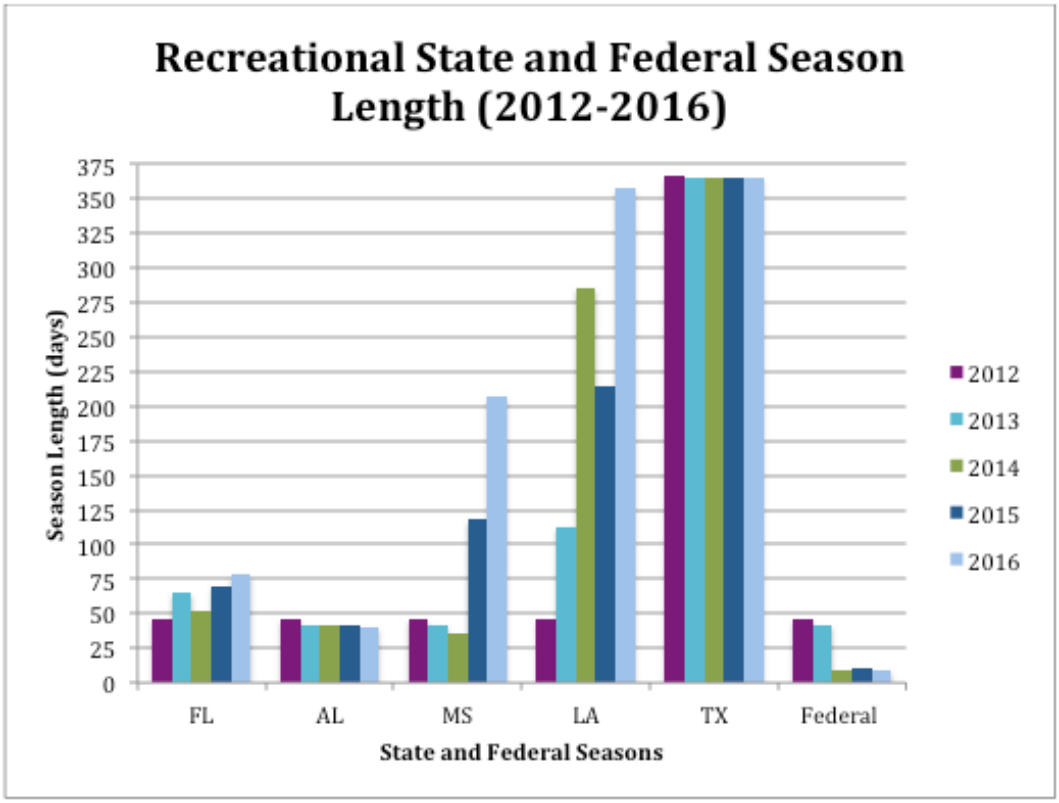


Figure 10. Recreational State and Federal Season Lengths. This graph depicts state and federal red snapper season lengths for 2012-2016 in days per year.

The commercial sector is currently under an Individual Fishing Quota program to eliminate the annual rush to catch as many fish as possible before the season ends (otherwise known as derby fishing) (Shuler, 2015). Since implementation of the IFQ program, commercial fishers harvest less than their allocation each year, and overcapacity has fallen as some commercial operators have gone out of business and the commercial season has been lengthened to year-round (Agar et al., 2014).

Stock Assessments

Although Florida's FWC manages red snapper in state waters, the NMFS conducts stock assessments periodically throughout the Southeast using a Data, Assessment, and Review process (NOAA Office of Science and Technology, n.d. A). This process involves three steps: data workshop, stock assessment workshop, and peer review (GOM Fishery Management Council, n.d.). The data workshop brings biologists, data collectors, and experienced fishermen together to review available data, determine what data should be used for, and to decide if further data and research is necessary. Then they meet to decide the type of analysis that will be used to study the stock and how much uncertainty is associated with such analysis. A stock assessment report is then reviewed by a committee of independent fisheries analysts appointed by the Center of Independent Experts. The Center was established by NOAA in 1998 to provide experts to perform peer reviews of stock assessment reports to fulfill the peer review requirements of National Standard 2. Experts are highly qualified individuals in the fields of fishery stock assessment analysis and protected species and usually come from outside the U.S. They produce a final report and an advisory report detailing strengths, weaknesses, and further suggestions for future stock assessments. Using this final report, regulators are able to make informed decisions regarding the health and management of the fish stock.

Stock assessments include four main sections: an introduction, data review and update, stock assessment methods, and model results. The introduction describes the stock's management history by outlining fishery management plan amendments and

reviewing previous assessments' results. The data review and update details the life history of the stock, including genetics, habitat requirements, growth, reproduction, age, and natural mortality. Assessments include stock landings, discards and bycatch, and biological sampling data, which are placed into statistical models. The methods section explains model configurations and equations, parameters, uncertainty measures, and sensitivity analysis. Model results update decision makers on the stock's status and progress towards rebuilding the stock, and determine how well the management system is performing.

Data used for stock assessments is either fishery independent or dependent data (Cooper, 2006). Fishery dependent data is collected from the fishing process, through self-reporting, dockside and telephone interviews/surveys, and onboard observers. Fishery independent data is obtained through trawls, acoustic, video and side-scan sonar surveys, and tagging methods. All of this data provides scientists with information on catch, relative abundance, and life history of fish species. Stock analysts take data collected from a range of sources and plug them into population dynamics models (which are subject to frequent calibration and re-calibration) to develop an estimate of how many fish will be in a stock the following year. The following equation is a simple example of a population dynamics model used by fisheries scientists: $N_2 = N_1 - D_1 + R_1$ where

N_1 = is the number of fish alive this year
D_1 = is the number of fish dying this year
R_1 = is the number of fish born this year
N_2 = is the number of fish alive next year

Biologists use the reproductive rate, or fecundity, of specific species to estimate the number of fish born and added to the stock each year. Instantaneous mortality rate is the

rate at which the stock is shrinking, accounting for natural and fishing mortality. This is why it is important to have accurate data on fish catch because this can be a big portion of fish mortality. Advanced statistical analysis is performed to determine the relative health of the stock, which guides decision-making.

Recreational fishing data is collected through surveys, including the Marine Recreational Information Program, established by NOAA Fisheries in 1979 to monitor saltwater recreational fisheries (Florida Fish and Wildlife Conservation Commission[3], n.d). In Florida, FWC biologists conduct multiple MRIP surveys (both in-person and telephone) with recreational anglers to estimate the number of fish caught, kept, and discarded (NOAA Office of Science and Technology, n.d. A). Recreational anglers claim that the federal government relies upon inaccurate and outdated recreational landings data, however states collect the data that is incorporated into stock assessments (Masson, 2015). At the same time, commercial fishing data is primarily collected by the federal government through the Gulf Fisheries Information Network and Trip Interview Programs, using state-mandated fishery trip-tickets, landing weigh out reports provided by seafood dealers, federal logbooks of fishery catch and effort, and shipboard and portside interviews and biological sampling of catches (NOAA Office of Science and Technology, n.d. B). It is widely believed that commercial landings data is far more accurate than recreational landings data, which is collected on a voluntary basis (Tomalin, 2016).

There is agreement between recreational and commercial fishermen that better data is needed to properly manage red snapper and other species (Tomalin, 2016). In

2016, President Barrack Obama approved Congress's Fiscal Year 2016 Appropriations Act, introduced by Senator Richard Shelby (R-Al) and Congressman David Jolly (R-Fl), granting $5-million to NOAA's National Sea Grant program to conduct external research on a red snapper tagging study throughout the Gulf of Mexico (Lallo, 2015B). Congress allocated another $5-million to develop a fishing data collection program using a third party managed by the National Marine Fisheries Service Southeast Regional Office in St. Petersburg, Florida (Tomalin, 2016). A total of $10 million will be put towards developing improved data collection and analysis efforts for fish populations in the GOM, including red snapper, in the coming years (Tomalin, 2016).

Meanwhile, the Mississippi-Alabama Sea Grant Consortium, on behalf of the university Sea Grant programs in the Gulf of Mexico region and NOAA Fisheries Service, recently accepted proposals to design an experimental fishing data collection system that will assess the Gulf-wide population of red snapper (Rohring, 2016). Proposals must include data collection systems that produce a Gulf-wide estimate of red snapper two years old and older and an estimate of biological parameters, such as natural mortality and growth rates. The successful design proposal will be used in future red snapper stock analyses. If more accurate and widely accepted data shows an improved stock, the NMFS will be able to increase red snapper annual catch limits for both commercial and recreational sectors, satisfying both interests (Tomalin, 2016).

Although the stock is managed Gulf-wide, stock assessments are conducted based on the notion that there are two dominant sub-stocks, one east and one west of the Mississippi River (Cass-Calay et al., 2015). The two populations are managed as one, however stock analysts believe the two sub-stocks are rebuilding at different paces,

possibly due to varying angler pressure in the two regions. Recruitment has increased in the West since the 1980s, while recruitment in the East peaked in the mid-2000s and has decreased slightly since then (Cass-Calay et al., 2015). However, the most recent stock assessment suggests total and spawning stock biomass have been increasing since 1990, consistent across both regions. According to the 2014 Southeast Data, Assessment, and Review Process (SEDAR) red snapper stock assessment, 31 Update, the stock biomass for the Gulf of Mexico is increasing, yet it remains below the minimum stock size threshold, which indicates that it is still considered overfished (Figure 5) (Cass-Calay et al., 2015).

Gulf States Red Snapper Management Authority Act

In July 2015, the five Gulf States of Florida, Alabama, Mississippi, Louisiana, and Texas—working through Congressman Garrett Graves (R-La)—proposed H.R. 3094 *The Gulf States Red Snapper Management Authority Act* to request the transfer of federal management of red snapper to the states (U.S. House of Representatives, n.d.). Each Gulf State would be responsible for red snapper in waters up to 200 nautical miles offshore, and fisheries management would be independently enforced by each state. The overseeing authority, the Gulf States Red Snapper Management Authority (GSRSMA), would be comprised of the fisheries management directors of the five Gulf States whose chair would rotate every two years (U.S. House of Representatives, n.d.).

The authority would create an overarching red snapper fishery management plan from which the states could develop state-specific fishery management regulations, such as season lengths. The proposal also claims it will conduct annual stock assessments and assess the gulf-wide stock status no less than every five years. Quotas would be

determined based on stock assessments, however there is no mention of accountability measures that would keep fishermen within their quotas. In the event of overfishing, the state shall submit a report to the authority that the state has implemented measures to end overfishing or rebuild the fishery. The authority can also vote on whether they believe it is necessary to notify the Secretary of Commerce for a fishery closure. Public participation includes having at least one public hearing in each Gulf state and allowing written comments to be submitted to the GSRSMA. It is unclear how they will incorporate public comment or if it will comply with the National Environmental Policy Act.

Gulf States claim they would "use flexible management approaches to manage red snapper to meet local needs as well as Gulf-wide conservation goals," (Reichers et al., 2015, 1). Because federal fisheries management has become more restrictive over time, some observers are concerned that state management will become less restrictive and insufficient to protect the species. Reactions to this legislation have been mixed, with concerns from both commercial and recreational anglers, but the Gulf States are receiving crucial support from recreational fishing advocacy groups, including the American Sportfishing Association, Center for Coastal Conservation, and Coastal Conservation Association (Masson, 2015). The American Sportfishing Association (ASA, n.d.A) is the sportfishing industry's trade association, advocating for recreational anglers, and related businesses, agencies, and organizations. Gulf coast recreational anglers launched the Coastal Conservation Association (CCA, n.d.) to address what they claim is commercial overfishing: "Through broad-based recreational angler support; a strong legal and legislative presence; decades of experience; and an unwavering vision for the future of

U.S. and global marine resources, CCA battles for the sustainable health of our coastal fisheries and for recreational anglers' interests." The Center for Coastal Conservation (CCC) (n.d.) is a political action committee that aims to persuade decision makers regarding marine-resource policy initiatives and to affect the political process to maximize opportunity for saltwater recreational anglers while limiting or eliminating commercial fishing. According to several knowledgeable fisheries stakeholders I spoke with, these groups have mobilized to put pressure on state representatives to introduce a bill that could possibly eliminate commercial fishing. Representative Graves claims, in a November 2015 congressional hearing, that he repeatedly reached out to get input from the commercial fishing industry, but received none (Lallo, 2015A). However the bill's inclusion of a provision that would allow the GSRSMA to reduce the commercial fishing quota by 10% each year without review has sparked public outrage within the commercial fishing community (GOM Reef Fish Shareholders Alliance, 2016).

Knowledge Gap

Although the Gulf States are confident in their ability to take over red snapper management, it is not clear that they would do a better job than the NMFS, and the root sources of the state proposal are unclear as well. Through further research, this thesis will contribute to the analysis of state/federal natural resources management by examining the perspectives of many different sets of stakeholders involved in Gulf red snapper management. Stakeholder groups include dual-permitted fishermen, commercial fishermen, commercial fishing organizations, recreational fishing organizations, as well as representatives of NMFS and state marine resources agencies. In addition, it is important to clarify the current responsibilities of Florida and U.S. fisheries management

agencies in the Gulf of Mexico. The overall objective is to investigate what is driving Gulf States to push for state management of red snapper, despite the fact that federal management has helped red snapper begin to recover. Using stock assessments, congressional documents, and interviews, this study will determine the merit of a possible transfer of fisheries management authority to states and provide suggestions for the future direction of red snapper management.

Chapter Three: Methods

This study creates a timeline that compares the history of the Gulf's red snapper stock with the many amendments and changes to the Gulf Council's fishery management plans. Analysis of literature identifies the history of Gulf red snapper management by Florida and federal agencies. To study the effectiveness of management over time, this thesis analyzes stock assessments and other government reports, and academic journal articles. The primary data for this study consists of semi-structured interviews with various stakeholders to reveal what they think of historic and current management of red snapper; why they think there is a movement to put states solely in charge of red snapper management; and do they think such a movement has merit.

Interviews were conducted with scientists at state and federal fishery management agencies, State fish and wildlife commission employees, personnel affiliated with recreational fishing organizations and commercial fishing organizations, dual-permitted anglers, seafood dealers, and non-profit environmental advocacy organizations (Table 3). Because of the controversy surrounding red snapper, participants will be referred to by generic names that identify which stakeholder group they represent to protect their identities (Table 3). Participants hailed from all five Gulf States, with the largest sample size from Florida and Texas, represented with 8 and 4 participants, respectively (Table 4). In addition to learning about each stakeholder's perspective on who they think is pushing

for a state takeover and why, participants were probed to learn of their opinions on current data collection and stock assessment systems.

Table 3. Stakeholder Groups and Descriptions.

Stakeholder Group	Sample Size	Definition
Commercial Fishermen	1	Captain that participates in IFQ commercial fishery
Charter For-Hire Fishermen	1	Captain that holds a federal for-hire permit
Dual-Permitted Fishermen	2	Captain that holds both a commercial license and federal for-hire permit
Commercial Fishing Organization Representative	1	Organization that advocates on behalf of commercial fishermen
Recreational Fishing Organization Representative	1	Organization that advocates on behalf of recreational fishermen
Seafood Dealer	1	Owner of seafood company
Environmental Non-Profit Organization Representative	3	Works at environmental advocacy organization
Federal Agency Employee	2	Works at federal fisheries management agency
State Agency Employee	3	Works at Gulf State fisheries management agency
Total	15	

Table 4. State Participation.

State	Sample Size
FL	8
AL	1
MS	1
LA	1
TX	4
Total	15

To study stakeholders' perceptions of the current and future management of red snapper, a series of open-ended questions were developed. Questions were approved by the University of South Florida Institutional Review Board (IRB) prior to being sent to participants (see Appendix). Potential participants (35) were sent emails requesting their participation in the study. Once contact was made and research subjects agreed to participate, they were sent the interview questions and the IRB informed consent paperwork, outlining their rights as a research participant (see Appendix). Participants were asked eight questions regarding current management of red snapper, state interests, and fishery management/monitoring mechanisms.

Semi-structured interviews gauge how the social dynamics of the fishery influence fishery management plan changes and stock rebuilding progress. A total of 15[5] participants were interviewed, five in-person and ten by telephone, resulting in a response rate of 43%. All interviews took place between August 2016 and December 2016. In addition to the 15 participants, I spoke with Congressman David Jolly (R-Fl) about red snapper data collection, stakeholders' concerns, and his opinion of the state management proposal in an informal interview. Specific stakeholders were selected because of their positions within the agencies and organizations they work for and their knowledge and involvement in the red snapper fishery. Although the sample size is not fully representative of both recreational and commercial sectors, the participants were chosen based on their expertise and are highly regarded in their respective fields.

[5] Congressman Jolly is not included in the 15 participants because our conservation did not involve the interview questions. This conversation was not recorded as requested by the Congressman and his staff, therefore, anecdotes are paraphrased.

Interviews were audio recorded with the signed permission of each interviewee. Audio recordings were transcribed and coded for major themes using thematic analysis. As one might imagine, answers varied widely amongst interviewees. Participants' answers were analyzed by question and then separated into a smaller number of general categories and by stakeholder (King and Horrocks, 2010). Once answers were divided, reoccurring themes were developed based on grouped answers and subject matter. Answers, number of participants and stakeholder groups for each answer were placed into tables (Table 5). For example, participants were asked how stock assessments could be improved. Answers to this question included obtaining more timely data, better fishery independent data and better recreational fishing data. Participant answer percentages will not necessarily add up to 15 or 100% because participants may have given more than one answer. A table was not created for each question, however several of these tables appear throughout the results section.

Table 5. Example of Participant Answer Codes to the Following Question: How can red snapper stock assessments be improved?

Code	Answer	Number of Participants	Stakeholder Groups
4a.1.1	Obtain data in a more timely fashion.	6/15	State Agency Employee, Environmental Non-Profit Organization Representative, Charter/Commercial Fishermen, Commercial Fishing Organization, Seafood Dealer
4a.1.2	Acquire better fishery independent data.	5/15	Environmental Non-Profit Organization Representative, Charter Fisherman, Federal Agency Employee, Recreational Fishing Organization, State Agency Employee
4a.1.3	Acquire better data on recreational fishing.	7/15	Commercial/Charter Fisherman, Commercial Fisherman, Seafood Dealer, Commercial Fishing Organization, Federal Agency Employee, Environmental Non-Profit Organization Representative

Chapter 4: Results

The subject of red snapper fish has raised many contentious issues between state and federal management agencies, as well as between commercial, private recreational, and for-hire fishermen, because of overfishing, quota overages and allocation decisions. Although the red snapper stock appears to be recovering from near collapse, tensions between stakeholders concerning access, data accuracy, and accountability have caused an unwillingness to collaborate on political decisions within the fishery (Cass-Calay et al., 2015). As a result, a proposal to completely transfer management of the species from the federal government to the five Gulf States appeared in July 2015. To better understand what sparked this proposal, stakeholders were asked questions about the effectiveness of the current fishery management plan, perceived benefits/challenges of a state takeover, stock assessments, and the future direction of the fishery.

Magnuson-Stevens Act Performance

Congress enacted the Magnuson-Stevens Fishery Conservation and Management Act in 1976 to more effectively manage the nation's marine waters beyond state control, to rid the exclusive economic zone of foreign fishing vessels and to enhance national security (Dell'Apa, 2012). The MSA includes accountability measures, actions taken to prevent annual catch limits from being exceeded, or to correct/mitigate overages if they occur (GMFMC, 2014). Under the 2006 reauthorization, federal fisheries managers were instructed to craft and implement plans to end overfishing of threatened species.

To establish stakeholders' perceptions of management effectiveness, the first question of each interview asked how well they think the Red Snapper Fishery Management Plan (FMP) abides by/executes the national standards set forth by the MSA. All 15 participants agreed that the Red Snapper FMP abides by the national standards "very well." Some applauded National Standard 1, which calls for an end to overfishing, while others were more critical. Private recreational fishermen are critical of National Standard 1 because in order for stocks to be rebuilt according to schedule, total allowable catch must be constrained, limiting anglers' access to fish.

Individual Fishing Quotas for commercial harvest of red snapper first appeared in 2007, and these are intended to reduce overfishing. Harvesting levels are supposed to be a function of each sector's respective quota, set by the Council. In 2016, the commercial sector's quota for red snapper was 48.5% of total allowable catch, approximately 6.768 million pounds, while the recreational sector could harvest the remaining 51.5% of the total allowable catch (7.076 million pounds); and these recreational pounds are further divided between private recreational fishers (57.7%) and federal for-hire anglers (43.3%) (GOM Fishery Management Council, 2016). Commercial fishermen abide by the IFQ program, and they—along with other stakeholders—called out the recreational sector for routinely exceeding their sector's quotas with relative impunity, until recently with the introduction of accountability measures. One commercial captain exclaimed, "We're really sick and tired of every year when the numbers come out, recreational fishermen have gone over their quota again, or management has let them go over the quota again and again and again." One fisheries manager at the NMFS contends that it is challenging

to rebuild the stock to support maximum long-term yield when the users, particularly recreational fishermen, are less concerned with sustainable yield, and "more worried about, for instance, having a longer fishing season." Recreational fishermen believe a longer season will provide more access to fish, however increasing the length of the season will not afford them more opportunity to fish, unless the quota is also increased.

One federal fisheries manager claims that the plan embraces the 10 standards in the MSA, including developing a stock rebuilding plan, using best available science, and taking socio-economic information into account when making decisions. He also mentioned that in 2010, the Council switched from a constant catch scenario to a constant F plan. A constant catch scenario is when an annual quota is set for the year, however red snapper were overfished because stock decline (mortality) was not taken into account when determining this quota (Tong et al., 2013). A constant fishing mortality plan (constant F) takes into account standard fisheries benchmarks, such as natural mortality and spawning potential, and mortality at maximum sustainable yield should not exceed spawning biomass (Powers, 1996). The red snapper plan coordinator explains it as such,

> Rather than taking out so many fish, we're taking out a proportion of the fish in the population. The advantage of doing that is that as population rebuilds, the catch can increase, whereas if you have a constant catch scenario, since you're holding catch constant over time, what happens is when you get closer to having the stock rebuilt people see a lot of fish out there and you need to keep the catch artificially small. This way, as the stock rebuilds, our quotas can go up.

Using this type of rebuilding scenario allows the acceptable biological catch to increase as the stock increases, which has resulted in quota increases every few years since 2010, contrary to what recreational fishermen argue (GMFMC, 2014).

Perceived Benefits and Challenges of a Stake Takeover of Red Snapper Management

While the Gulf States' proposal to manage red snapper from each state's coast out to 200 miles offshore claims it will benefit everyone, some stakeholders believe otherwise. After speaking with representatives of the major groups involved, 6/15 participants are convinced the proposed legislation is only aimed at advancing the private recreational sector (Marine Fish Conservation Network, 2016; Cantrell et al., 2015; Crockett, 2016). The proposal allows for up to a 10% reduction in commercial quota per year without review or approval by the Gulf of Mexico Fishery Management Council, allowing for the decrease of commercial access and possible elimination of the commercial sector in the future. One dual-permitted captain remarked, "I see absolutely no benefits other than if your goal is to hijack the resource from the consumer and the commercial fisheries and stop or prevent any further improvement in management of the charter for-hire sector. If those are your goals then H.R. 3094 will be beneficial for that. But to the American consumer, the non-boat owning public, H.R. 3094 will be the death knell to the industry and to the consumer's access to wild caught/grown seafood."

When asked what the benefits of a state takeover might be, many participants could only muster one: local knowledge might better inform local management. Some state employees were adamant that local knowledge would allow states to tailor management and assessments to state specific geography and cultures. Stakeholders

supporting the proposed state takeover claim that state management would provide flexibility, for example, in choosing the length and timing of each state's recreational fishing season in both state and federal waters. Supporters also mentioned the ability for states to define the universe of anglers and stakeholders working directly with the state as benefits, however they did not explain how this would improve management.

Because remaining commercial fishermen are satisfied with the IFQ system and their allocation, they are worried that a shake-up in the red snapper fishery could result in detrimental effects to the resource and their businesses. Commercial and charter for-hire fishermen said they would support a state takeover only if the commercial and charter for-hire sectors' quotas were not lowered as a result. Yet one environmental advocacy organization representative opined that: "I would say that benefits would probably flow mostly to the private recreational component of the fishery, and the charter for hire and commercial components for the fishery would suffer."

The state proposal claims it will use "flexible management approaches," a term that agitates many stakeholders, because it is reminiscent of the management style (no quotas or accountability) prior to the late 1980s that nearly resulted in a fishery collapse. One commercial fishing organization director asked, "What does flexibility mean? Because historically. . . in a number of situations flexibility has meant exceeding building timelines, extending their building timelines, exceeding their quotas and sidestepping conservation." One seafood dealer expressed similar skepticism with the concept of flexibility: "The problem is the theory applicable or flexible which is what everybody keeps talking about on this issue, specifically in this state (FL), it's what got us to where we were with red snapper in the 90s and now." Participants' concern over flexibility

stems from lenient management prior to development of the stock rebuilding plan in the late 1980s, before the existence of total allowable catch limits and accountability measures.

Some state agency employees insist that with more accurate data, stock management could be more flexible. For example, they could reduce or eliminate what managers call a "buffer" on the annual recreational quota. A buffer is an accountability measure that results in a portion, 20% in this case, of the annual catch limit being set aside to account for management uncertainty and quota overages. In 2014, as a result of being sued by a commercial fisherman for allowing recreational fishers to routinely exceed their quotas, the Gulf Council established a 20% buffer on the recreational annual catch target (GMFMC, 2014). For instance, in 2014, the recreational fishers' initial share of the total allowable catch was determined to be 5.39 mp, but Gulf Council then trimmed this allocation by 20% (the buffer) so that the final quota for recreational anglers was only 4.31 mp (20% less than 5.39 mp). In 2014, Buddy Guindon, a prominent commercial captain, filed a suit on behalf of commercial fishermen against the Council for violating the MSA by allowing a fall season for recreational fishers when the recreational quota had already been met (GMFMC, 2014). A federal judge ultimately found the NMFS violated the MSA by not closing the recreational fishing season in federal waters after this sector overfished its quota. As a result of this lawsuit, a 20% buffer was instituted as an accountability measure and the 2014 season length was determined based on the annual catch target, which is 20% less than the recreational quota (GMFMC, 2014).

The Coastal Conservation Association (CCA) filed an unsuccessful lawsuit against the Council in 2015, citing sector separation (setting separate quotas for private recreational and for-hire fishers) as an "agency action that is arbitrary and capricious, an abuse of discretion, not in accordance with law and in excess of statutory jurisdiction, authority, or limitations" (Dute, 2015). Private recreational fishermen opposed sector separation because it secured a portion of their quota for the for-hire subsector, resulting in a reduced quota for private recreational fishers. One CCA spokesperson claimed "Amendment 40 embodies everything that is wrong with federal management of our marine resources. It is completely out of step with this nation's heritage of wildlife resource management" (Dute, 2015). The opposition to sector separation is an additional example of the fundamental difference between fish and wildlife resource management ideologies. Sector separation divided the recreational sector's quota and season days between private recreational anglers and for-hire (charter and headboat) fishermen. In 2016, private recreational fishermen had a 9-day season in federal waters, while for-hire fishermen had a 16-day season. Many stakeholders fear a state takeover would result in disagreements about regulations and seasons; they are unconvinced that cooperation between states would lead to an equitable division of the resource, as seen with the Council's proposed Amendment 39. Amendment 39 would have instituted regionally specific management measures under the Council's authority, however the states could not agree upon initial state allocations so the Council tabled the amendment (Rainer, 2016).

In addition to concern over flexible provisions, one charter fisherman was unimpressed with the proposal's vague language: "And that was the unfortunate part of

the legislation. Is that it was long on promises and very, very short on specifics about how each state would ensure that their state fishermen would not overfish their allocation. There is nothing in the language of HR-3094 that gives anyone a warm and fuzzy feeling that overfishing in each state's sector will not occur." The proposed Act claims "each Gulf state would formally agree to comply fully with management measures developed through the Gulf States Red Snapper Management Authority-approved Plan under a memorandum of agreement," without ever explaining what the agreement would look like (Reichers et al., 2015, 4). State representatives refused to spell out what a state takeover would entail. Biologists and fisheries scientists believe it is "biologically nonsensical" to manage a stock with different management regulations from different states, while proponents of the state-controlled fishery assured that there would only be one management authority, the Gulf State Red Snapper Management Authority (GSRSMA).

According to the proposal document, the governing authority would be comprised of the lead fisheries managers from the five Gulf States' fish and wildlife commissions, with a rotating chair every two years (Reichers et al., 2015). Creating different management regulations with oversight from an elected chair violates the principles of current U.S. fisheries management as outlined in the MSA's transparency clauses and in touchstone environmental protection legislation like the National Environmental Policy Act. For example, according to National Standard 3 of the Magnuson-Stevens Act, any stock of fish should be managed as a unit throughout its range. Even more concerning is the Gulf States' commitment to abandoning the federal system. The proposal is adamant about renouncing any ties to the current fishery management scheme. The proposal

contends that: "[H.R. 3094] and any provisions of [H.R. 3094] regarding management and enforcement of any regulations and management provisions to the extent that there is any conflict will take precedence over the MSA and any portions of the Gulf of Mexico Fishery Management Council's Reef Fish Fishery Management Plan."

When asked how states would ensure that an increase in access would not result in a return to overfishing, most participants expressed serious doubts (Table 6). One commercial fishing organization director put it this way: "So long story short, I don't have any faith that the Gulf States can implement an accountable system that . . . prevents overfishing, because nearly everything they've done to date has shown that they don't want to do that." A scientist expressed similar concern, contending that "From the rhetoric I've heard they think the stock's already rebuilt so that means that they wouldn't strive to rebuild the stocks further. My biggest worry is that the states will kind of succumb to the tragedy of the commons[6]." Finally, according to this charter boat captain, "States are more concerned with user access than they are with the biology and the sustainability of the resource. And they always err on the side of access. They don't take more restrictive measures because it's politically unsavory at the commission and at the governor's level."

[6] Garrett Hardin's 1968 article on the "Tragedy of the Commons" outlines an open access situation in which members of a group exercise self-interest (taking more for themselves) rather than interest in the common good (restraint), resulting in overexploitation of the resource.

Table 6. Likelihood of States to Control Overfishing with Increased Access.

Question	Answers	Number of Stakeholders	Stakeholder Groups
It has been reported many times that the states' main interest is improving access to the red snapper stock; how do you think the states, if put in charge, will ensure that increased access will not result in increased overfishing?	More likely for states to prevent overfishing	3/15 (20%)	State Agency Employees, Recreational Fishing Organization Representative
	Less likely for states to prevent overfishing	11/15 (73%)	Commercial Fishing Organization, Charter Fisherman, Seafood Dealer, State Agency Employee, Federal Agency Employee, Environmental Non-Profit Organization Representative, Commercial Fishing Organization

Red Snapper Stock Assessments

The underlying tension surrounding the red snapper fishery partially stems from the notion that recreational red snapper harvest data is inaccurate. Data is the driving factor that decides allocation, season length, the health of the stock, and so forth, therefore data accuracy is the fishery's most important issue. Recreational data is

collected voluntarily through dockside interviews and telephone surveys, while commercial fishermen are federally mandated to report landings using electronic logbooks. Scientists rely upon this data to assess the relative condition of red snapper stocks in the Gulf of Mexico.

To date, recreational surveys collect data regarding angler target species, lengths and weights of harvested fish, annual and recent angler fishing effort, and number of fish harvested and released. When asked how current stock assessments could be improved, 7/15 participants mentioned obtaining more accurate data on recreational fish catch. No participants mentioned or questioned the accuracy of commercial data. NOAA scientists admitted to weaknesses in the data collection process, including the need for more intensive sampling and the relative inefficiency of recreational catch surveys. Concern about the accuracy of recreational data emanates from the fact that researchers currently focus on effort (amount of fishing pressure) rather than developing an estimate of how many fish are landed and discarded. With a more accurate estimation of how many fish are landed, scientists can better approximate the size and health of the stock. Because of the large number of anglers in the Gulf of Mexico, biologists cannot reach every angler, resulting in a partially representative sample of fishing activity.

Because of their dissatisfaction with the current data collection system, each state has recently created their own red snapper data collection methods. Although Florida, Alabama, and Mississippi use the MRIP system to report data, Texas and Louisiana use their own data collection methods to contribute data to federal stock assessments. Combining various data collection methods, without proper validation by the NMFS, only further complicates stock analysis. If fishery managers could agree on a standard set

of principles, perhaps each state could tailor data collection systems to their anglers, whether through an electronic app or a telephone survey, while also providing certified data for federal stock assessments. However, by replacing the federal system with several different state data collection methods[7] and not contributing to the overall federal data repository used to conduct stock assessments, states are exercising a form of rebellion, likely out of frustration. Statements from several of the states' marine resource agency websites reveal their dissatisfaction with current recreational red snapper data collection. For example, one Florida official acknowledged that "The current process for conducting recreational fisheries surveys, known as the Marine Recreational Information Program (MRIP), is broad and doesn't capture the amount and quality of data needed for effective management of reef fish species." Indeed, a Louisiana scientist boasts that

> Thanks to the support of Louisiana anglers, Louisiana Department of Wildlife and Fisheries Biologists measured 23 times more fish and surveyed 49 times more vessel trips than the federal MRIP Survey. This meant that we were able to provide more precise estimates of the numbers and sizes of red snapper harvested during that season.

Finally, the Alabama fisheries official notes that

> The credibility of the current federal surveys used to estimate recreational red snapper harvests among private and charter anglers has been under ever increasing scrutiny… However, recent changes to the federal law that governs how red snapper are managed have led to the imposition of stricter regulations

[7] Florida: Gulf Reef Fish Survey; Alabama: Snapper Check; Mississippi: Tails n' Scales; Louisiana: The Louisiana Recreational Creel Survey (LA Creel); Texas: Snapper Survey.

> each year with slim hopes for improvement. A timely and accurate method of counting fish such as the mandatory reporting program could improve the predicament we face in this fishery.

Although states are creating recreational surveys, there needs to be an open flow of verified data for analysis to be as accurate possible.

One third of participants mentioned improving fishery independent data, which the supervisor of stock assessments for the Gulf region assured me is already being discussed at the NMFS. Fishery independent data is usually collected by federal and state governments and involves standardized sampling, often using trawls, seines, hydroacoustics and video, to determine species abundance, size-age relationships, and possible changes in range distribution (Cooper, 2006). A portion of the $10 million that Congressman David Jolly (R-Fl) secured for NOAA will likely go towards improving the fishery independent data collection program to better analyze stock size and health using more robust sampling methods. In addition to better independent data, more fishery dependent data is needed from the recreational sector, likely in the form of more intensive dockside surveys throughout the day and over a wider range of locations. Stakeholders also called for more frequent red snapper stock assessments, however, investing in additional red snapper data collection and analysis costs additional money that agencies rarely have because they have many other species to monitor. As seen in Table 7, formal red snapper stock assessments began in 1987 and now average about once every four years, similar to assessments of other species.

Table 7. NMFS Red Snapper Stock Assessment Years. This table shows the years a stock assessment for red snapper was produced. Earlier years averaged a 1-1.5 years apart, while more recent assessments average ~4 years apart.

1987	1988	1990	1993	1994
1995	1997	1988	1999	2005
	2009	2013	2014-update	

When stakeholders were asked what improvements could be made to stock assessment analysis to better guide decision-making, 6/15 mentioned advancing the timeliness of data collection and analysis (Table 8). Because stock assessments take so long to produce, when they are finally published, they describe data from prior years and paint a picture of what the stock may have looked like a year or two before. Unfortunately, it is nearly impossible to conduct a full assessment of the current state of the stock at any given time. During a conversation with Congressman David Jolly, he revealed that fishermen expressed confusion about what a recovered fishery entails and that they will never understand what it means to be sustainable if they do not first grasp this concept. After speaking with many stakeholders, it is evident that fisheries scientists need to do a better job of explaining the stock assessment process to fishermen and the general public. It is difficult for fishermen and stakeholders to make informed judgments if they do not understand stock assessment analysis.

Table 8. Participant Answers to How Stock Assessments Can Be Improved.

Question	Answers	Number of Stakeholders	Stakeholder Groups
What improvements should be made to stock assessment analysis to ensure allocations are based on the most up to date stock information?	More timely data	6/15 (40%)	State Agency Employee, Environmental Non-Profit Organization Representative, Charter/Commercial Fishermen, Commercial Fishing Organization, Seafood Dealer
	Better fishery independent data	5/15 (33%)	Environmental Non-Profit Organization Representative, Charter Fisherman, Federal Agency Employee, Recreational Fishing Organization, State Agency Employee
	Better recreational data	7/15 (47%)	Commercial/Charter Fisherman, Commercial Fisherman, Seafood Dealer, Commercial Fishing Organization, Federal Agency Employee, Environmental Non-Profit Organization Representative

Future Direction of the Red Snapper Fishery

Although user groups' social goals vary, all involved in the fishery want a healthy stock; however, interest groups differ on what they think is the most effective path to achieving this goal. The Gulf Council's red snapper recovery plan sets a target recovery for 2032, with a spawning potential ratio of 26% to support a reasonably high level of

fishing pressure on the stock. The 26% SPR means the population needs to increase to a level where it is producing roughly one quarter of the eggs that would be produced by an unfished population.

Participants were asked their opinions on how to achieve red snapper recovery. Many stakeholders believe that holding the private recreational sector accountable would solve quota overage issues, therefore allowing the stock to rebound. To achieve this accountability, 7/15 participants, including NOAA Scientists, NGO Environmental Organizations, a Charter/Commercial Fisherman, Commercial Fisherman, and Seafood Dealer, recommended a tag system, in which recreational fishermen obtain tags from state commissions, available contingent on each year's allocation. Tags may be distributed a number of ways, including a lottery where fishermen can be awarded a certain number of tags; each tag allows the owner to catch and keep a red snapper. Tag systems are usually enforced in fisheries that need harvest control and improved management. Potential benefits of a tag system include the ability to enforce harvesting limits, providing more reliable catch data, and the potential for longer seasons (Johnston, 2008).

Recreational fishermen and state commissions, however, oppose tag systems because they create a market and competition within the fishery, a principle these groups strongly advocate against. One recreational fishing organization representative put it this way:

> I don't like the trend at the Council level of moving this fish more and more towards privatization, or IFQs. I think these fish belong to the public. I think the market ought to drive who goes out there and fish for them. I think access should

> be fair. I don't think the government should be deciding who and who does not get to fish.

Yet one environmental advocacy organization representative disagrees, contending that

> There's been a lot of opposition to these things [individual fishing rights], under the guise of saying that it's privatizing the fishery, but I don't see a lot of difference with what we're doing now except tags actually provide some of the data we're looking for and provide some more access, more flexible access of what we're looking for.

Federal authorities have promoted catch share programs for fish species in the past, but this ultimately limits the number of participants in the fishery; meanwhile, states and recreational fishermen are pushing for transfer of management to states because they think mostly in terms of expanding access. Although tag programs offer many potential benefits, they certainly complicate the social dynamics of fisheries. If a tag system were implemented, ~5.3 million pounds of fish would have to be split between roughly 3.1 million Gulf state recreational anglers, effectively eliminating access for many fishermen (Ocean Conservancy, n.d.). As human populations in Gulf States continue to climb, there will likely be more than 3.1 million Gulf State recreational fishers in the near future.

Other suggestions for promoting a sustainable fishery included creating different fishery management plans for each subsector, while sticking to the general contours of the current rebuilding plan and regional management system, perhaps while collecting better data (Table 9). Because each component of the fishery has unique needs and varying fishing cultures, different management plans for each sector would allow the

Council to manage the subsector in a system, whether IFQ, tags, or otherwise, that accounts for these socio-political variables, while keeping fishermen within their quotas.

For a majority of study participants, their largest concern is accountability, because without it, they believe the fishery will not recover. Some state representatives and one recreational fishing organization person indicated that they believe the stock is already or nearly recovered. Because of this unsubstantiated belief, a state scientist is convinced that "now you have the ability to be more flexible with management and that is very doable without compromising the rebuilding process." Others believe the rebuilding plan is working and that it is best to stay on course until the stock is fully recovered. Some stakeholders think better data, from all fishery components—especially from private recreational fishers—will help guide the fishery's future direction. Overall, it is evident that all stakeholders would like a recovered fishery, yet some stakeholders claim that this has already happened.

Table 9. Participant Answers on Future Direction of the Fishery.

Question	Answers	Number of Stakeholders	Stakeholder Groups
The red snapper recovery plan sets a target recovery for the year 2032; what is the most effective path to achieve this recovery goal and a sustainable red snapper fishery?	Institute tag system for private recreational sector	7/15 (47%)	Charter/Commercial Fishermen, Seafood Dealer, Commercial Fishing Organization Representative, Environmental Non-Profit Organization Representative, Federal Agency Employee
	Regional management (state management)	1/15 (7%)	State Agency Employee
	Different management plans for each sector	2/15 (13%)	Environmental Non-Profit Organization Representatives
	Get recreational sector into system of accountability	5/15 (33%)	Federal Agency Employees, Commercial Fisherman, Commercial Fishing Organization Representative, Seafood Dealer, Charter/Commercial Fisherman
	Stick to rebuilding plan	4/15 (27%)	Federal Agency Employees, Environmental Non-Profit Organization, State Agency Employee, Charter/Commercial Fisherman
	Collect better data	5/15 (33%)	Recreational Fishing Organization, Commercial Fisherman, Commercial Fishing Organization, Seafood Dealer, Environmental Non-Profit Organization Representative

Stakeholder Division

It is clear that each stakeholder has a distinct perspective of what is happening in the Gulf's red snapper fishery. For example, several stakeholders argued upfront that they think states are better at managing natural resources than the federal government. According to one director of a state marine resource agency, "The states really do a good job at managing other fisheries, like red drum, Spanish mackerel, sheepshead, flounder; you know, we manage all those fisheries as individual states and do a good job and make sure those are not being overfished as a whole, so I don't think red snapper will be any different." One recreational organization representative added that, "The states have a lot of experience managing recreational fisheries where the federal government does not." States and recreational advocacy groups (ASA and CCA) often use red drum as a shining example of successful state management, however commercial take for this species is prohibited (Williamson, 2008). Similar to red snapper, red drum was overfished in the late 1980s and federal authorities instituted several emergency closures to reduce fishing pressure. In 1987, the Gulf Council created a fishery management plan prohibiting commercial fishing, leaving only recreational fishermen. Using a fishery that entirely eliminated the commercial sector is hardly an example of successful management for a multi-use fishery.

At the opposite end of the spectrum, a few stakeholders observed that the federal government is better than states at fisheries management. One federal scientist drew attention to the obvious: "I mean in general, there's a few things where history has shown that federal management performs better than individual state management and that's defense, transportation, and natural resources, because the states are sharing those things.

So you need some higher arbitrating authorities." Similarly, a dual-permitted fisherman contends that "So looking at how the states have a current track record managing fisheries is not that great, especially in a multiuse fishery."

As seen above, there is a clear allegiance between states and recreational fishermen/organizations, and the federal government and commercial/charter fishermen. There is a mistrust of federal authority by recreational fishermen, resulting in suspicion of data, a lack of cooperation, and a hesitation to participate in stakeholder processes. When I asked one stakeholder why recreational fishermen do not trust the federal government, he noted that,

> Recreational fishermen look at [having less access with a recovered stock] and think the federal government is trying to prevent us from fishing and so that's the mindset that's among a lot of recreational fishermen is that this system has been established to prevent recreational fishermen from being able to go and that creates a lot of mistrust.

He also thinks that there is a feeling among recreational anglers that they are not being listened to when they attend Gulf Council meetings and listening sessions. Because recreational fishermen do not believe they are being listened to, they are less inclined to participate in and cooperate with data collection efforts, which contributes to the current crisis with recreational data. They are also less likely to trust federal reports and stock assessments, believing that scientists are fabricating stock information. Congressman Jolly also noted that recreational fishermen desire a more receptive audience at the Gulf Council.

Special interest groups that speak on behalf of recreational fishers, like the CCA and ASA, are feeding dubious rhetoric to uninformed fishermen, deepening the schism between the recreational sector and the federal government (Altman and Artiles, 2015; CCA, 2017 and 2016). Bill Bird, chairman of the Coastal Conservation Association's National Government Relations Committee expressed his support for Congressman Garret Graves and his aversion towards commercial fishermen in a television report saying,

> If you watch this series you know that the forces [commercial fishermen] trying to take over public marine resources like red snapper for their own are not afraid to target and take down any politician who opposes them. That makes what Rep. Graves is doing by standing up to this corrupt system even more admirable. Recreational anglers and the public at large owe him their utmost support as he leads this charge

(Dute, 2015). The ASA also attacked current red snapper management declaring, "There are many contributing factors that have resulted in the current state of unrest regarding red snapper management, including overly rigid statutory requirements, inadequate stock assessments, inaccurate angler harvest estimates, a refusal by managers to reexamine allocations and the heavy influence of commercial fishing and environmental organizations" (American Sportfishing Association, n.d.B). Such rhetoric only fosters further mistrust of the NMFS and the peer reviewed studies they produce.

While recreational fishermen are frustrated with the NMFS, commercial fishermen and other stakeholders are wary of states' intentions. Because governors appoint state commissioners, many stakeholders are worried that this allows political

influence to infiltrate state management. Indeed, one environmental advocacy organization employee added that "They're going to have state bureaucrats beholding to the governors of the states so I think you're introducing a lot more politics into it." A commercial fishing organization director echoes this sentiment: "I'm just pointing out the fact that the commissioners are appointed by the governor and there's often times perception that politics drives fisheries management at the state level." In conclusion, an environmental advocacy organization director stated the obvious: "The management is not consistent across states. Within the states, it is easier for special interest groups to assert undue influence than it is at the federal level."

Although the state proposal declares that states will be held accountable by the GSRSMA, and they will request intervention from the U.S. Secretary of Commerce if necessary, states now routinely ignore season length suggestions made by the Council. State recreational fishing seasons for red snapper in state waters have been lengthened out of opposition to the federal management's choice to shorten seasons in federal waters, leading recreational fishermen to overfish their quota. States have not held recreational fishers accountable and the federal government only recently began implementing accountability measures. The commercial fishermen I spoke with argue that this is unfair because they have made efforts to be compliant, while recreational fishers are damaging the progress they have made to establish a sustainable fishery. The lack of cooperation and defiance of federal rules and guidelines by the states only creates more division within the fishery.

Chapter 5: Conclusion

Through this research it is apparent that the red snapper fishery's issues are mostly social and political, and less biological or managerial. Some stakeholders are engaged in a fight to expand access because they think red snapper has recovered—or they think the federal government should not be telling them what to do. As one state scientist put it, "A problem still to be resolved, really, is this different perceptions of what is success in managing red snapper…So, getting this issue resolved is still very much needed, but it's something that is going to be handled much more from that social-economic perspective than from the biological/scientific perspective, because it transcends, really, just the biological state of the stock."

Although there have been many biological studies of the red snapper stock, few have investigated the social framework of the fishery. This study examines how the fishery's social dynamics have led to a split between recreational and commercial fishers. Federal authorities are clearly trying to limit fishing pressure in order to restore the Gulf's red snapper stock. The relatively modest numbers of commercial fishermen who are still in business accept the federal government's stock assessments and IFQ program as a way to rebuild stocks, while the more numerous recreational anglers (~3.1 million) continue their fight for increased fishing opportunity by rejecting the federal government's scientific stock assessments and pressuring state governments to take their side.

Stakeholders provided insight into the shortcomings and strengths of the current management regime and offered their opinions on a possible state takeover. Overall, the

results reveal a clear divide in the fishery, with some strongly opposing state management, and others very supportive of such a possibility. Dual-permitted fishermen, NGO environmental advocacy organizations, commercial fishing organizations, and federal and state scientists, all fear a state takeover would lead to a setback in the red snapper stock rebuilding progress. It is widely believed states will increase access and soften regulations, ultimately jeopardizing the health of the red snapper stock. Proponents of the state takeover bill are convinced the stock is currently at a level that would allow for flexible regulations, including eliminating catch buffers and extending season lengths, even if they offer no evidence for this belief.

Despite the social differences of stakeholders, participants unanimously agreed that the red snapper fishery management plan abides by the national standards of the Magnuson-Stevens Act. The MSA has guided fisheries management for the past 40 years, using an unbiased, scientifically peer reviewed process to analyze the health of the nation's fisheries. H.R. 3094, The *Gulf States Red Snapper Management Authority Act*, violates the very principles that established the current fisheries management system in the U.S. Many stakeholders are concerned that a divergence from the MSA and Regional Council process could result in the elimination of stakeholder involvement in decision-making. The states desire to take away management authority from the NMFS, an agency responsible for the prioritizing recovery of the stock, and one that invites a diversity of perspectives in the policy making process, is concerning to those that believe in the integrity of science and stakeholder participation. H.R. 3094 is a dangerous piece of legislation not only to the health of the red snapper stock, but also to the existence of

public access to seafood through commercial fishing operations. Results show that 12/15[8] participants from stakeholder groups including environmental advocacy organizations, dual-permitted fishermen, seafood dealer, and federal scientists, and Congressman Jolly, do not support a state takeover.

Biological assessments of the red snapper indicate the stock is recovering according to schedule, with an increase in total biomass. However, the reports also suggest the stock's skewed age variation (relatively few mature fish in the stock) needs improvement in order to be fully recovered. Spawning potential ratio is also not quite high enough to support an increase in fishing pressure. Current science suggests that the stock is not fully recovered and cannot sustain the increased access desired by the Gulf States without reducing the commercial sector's quota—and H.R. 3094 calls for such a reduction.

Because the red snapper is such a popular species, many eyes are on the management choices of authorities. The Gulf of Mexico Fishery Management Council, under the NMFS's guidance, is attempting to restore a fishery by using the best science available. While it is true that there is some controversy over the amount of recreational fish catch, and fisheries scientists are the first to admit that their assessments are not perfect, those favoring state takeover of the fishery appear to believe that red snapper has recovered and that access should increase, even if it means reducing commercial fishing. However, issues within the fishery are much deeper than the health of the stock; division amongst the sectors and stakeholders has caused wild variation in the length of seasons in state waters, very short seasons in federal waters, data contribution obstruction, a lack of

[8] Ratio does not include Congressman Jolly.

trust and competing claims by many stakeholders, and no accountability for recreational anglers.

When the Gulf States first proposed taking over the red snapper fishery, supporters claimed that regional management would offer the benefit of local knowledge. Yet, it is evident that the Gulf States proposal never collected the input of all stakeholders involved in the red snapper fishery. Despite Congressman Graves' claims that he invited all involved to comment, many stakeholders have no such recollection. This research has led me to believe that the states are proposing a takeover for ideological reasons, such as increased access, reduced federal control, and maximum flexibility. The state takeover is not grounded in sound science, nor will it promote a sustainable red snapper fishery. Effective renewable, natural resource management must allow as much access as possible while ensuring that the resource remains no less plentiful for future generations. Conservation of threatened species requires restraint, in the form of limited access to diminished or recovering resources. Conflict over natural resource use is common, but resource users must agree on what constitutes facts and best scientific judgment.

It may be that many recreational anglers continue to find fish, however that does not mean that a fish stock is healthy. This can be seen in the case of the Newfoundland cod fishery off the southeast Canadian coast (Hilborn and Hilborn, 2012). One year there appeared to be plenty of fish (probably because harvesters knew where to look for the last few fish) and the next year there were no fish to be found: the fishery collapsed. By the time Canada could institute conservation management measures it was too late. The U.S. government is trying to practice proactive resource management, balancing the needs of the resource, commercial fishermen, and the range of recreational anglers.

The conflict over the Gulf's red snapper fishery mirrors the tension between state and federal governments over natural resource management throughout the United States. As with the Sagebrush Rebellion from several decades ago, the *Gulf States Red Snapper Management Authority Act* calls for greater state control in the Gulf of Mexico and increased fishing opportunity for recreational fishers. The bill first appeared in July 2015, yet it did not pass. Representative Garret Graves intends to reintroduce the bill and believes it will be easier to pass now that fellow Republicans control Congress and the White House (Wietecha, 2017).

Both the Sagebrush Rebellion and the Red Snapper Saga emerged out of growing frustration with reduced access to natural resources managed by the federal government. As seen with the Sagebrush rebels, private recreational fishermen have reacted to a conservation issue with a rights based argument, contending that the Gulf of Mexico Fishery Management Council is taking away their "right" to fish. The Sagebrush Rebellion was a symbol of ranchers' dissatisfaction with federal management after a long period of lax regulation (Nelson, 1984). The Graves bill emerged out of similar dissatisfaction with the Gulf Council's effort to reduce overfishing of red snapper by applying stringent regulations. Unexamined in this study, but perhaps no less important, are the role of population growth in the Gulf States, a dramatic increase in the region's recreational anglers over the past several decades, and the impact of improved fishing technology that makes recreational fishers increasingly efficient—all of which have undoubtedly contributed to reduced red snapper and increased conflict over access to the resource.

In conclusion, Congressman Garret Graves sponsors H.R. 3094 *The Gulf States Red Snapper Management Authority Act* on behalf of the private recreational fishing community because he believes that recreational fishing opportunity should not be limited. Because of fundamentally different natural resource management ideologies, recreational fishermen (working through the states) and federal employees have reached a crossroads where they no longer agree on the direction of the red snapper fishery or even basic facts regarding the condition of the fishery. Recreational fishermen have confidence that the tenets of the North American Model of Wildlife Conservation will successfully guide fisheries management, partly because this ideology condemns the commercial sector (market) and advocates for open access. It is evident from the proposed bill and rhetoric by state employees and private recreational fishermen that they desire a red snapper fishery with lenient management, open access, and no commercial sector. The Gulf States believe they are better fit to manage red snapper, however stock assessments suggest federal management, under the guidelines of the Magnuson-Stevens Act, has improved the stock's health, increasing biomass and enhancing the reproductive rate of the population (Figure 11). Indeed, as a result of this management, the total allowable catch (TAC) has increased from 4 million pounds in (1991) to almost 13 million pounds in (2014)—and if the stock continues to improve, the TAC will continue to increase (Figure 12).

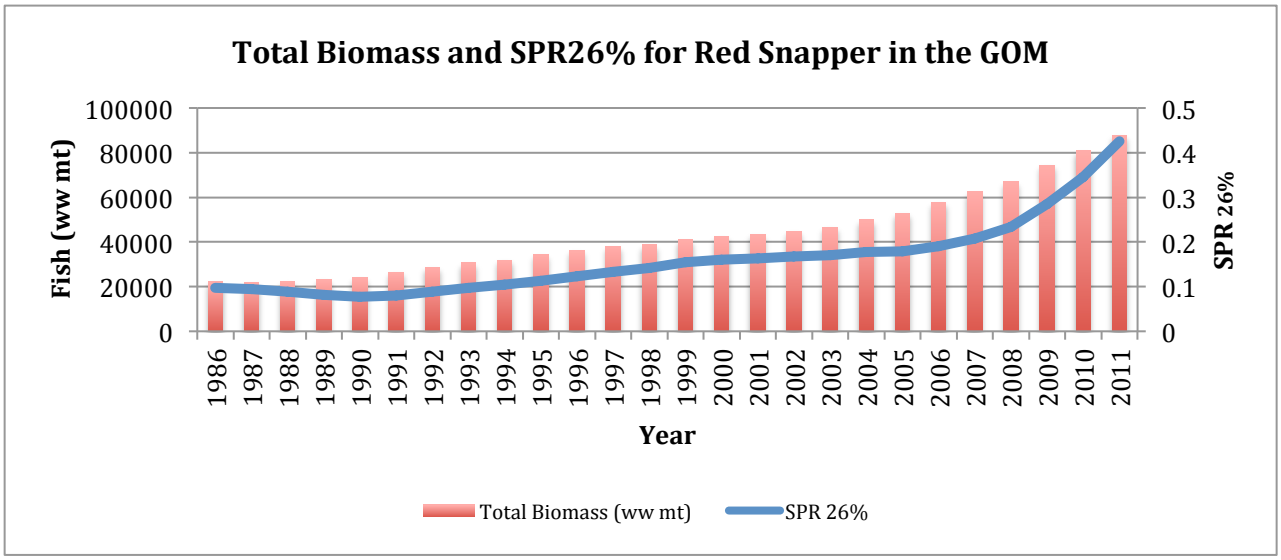
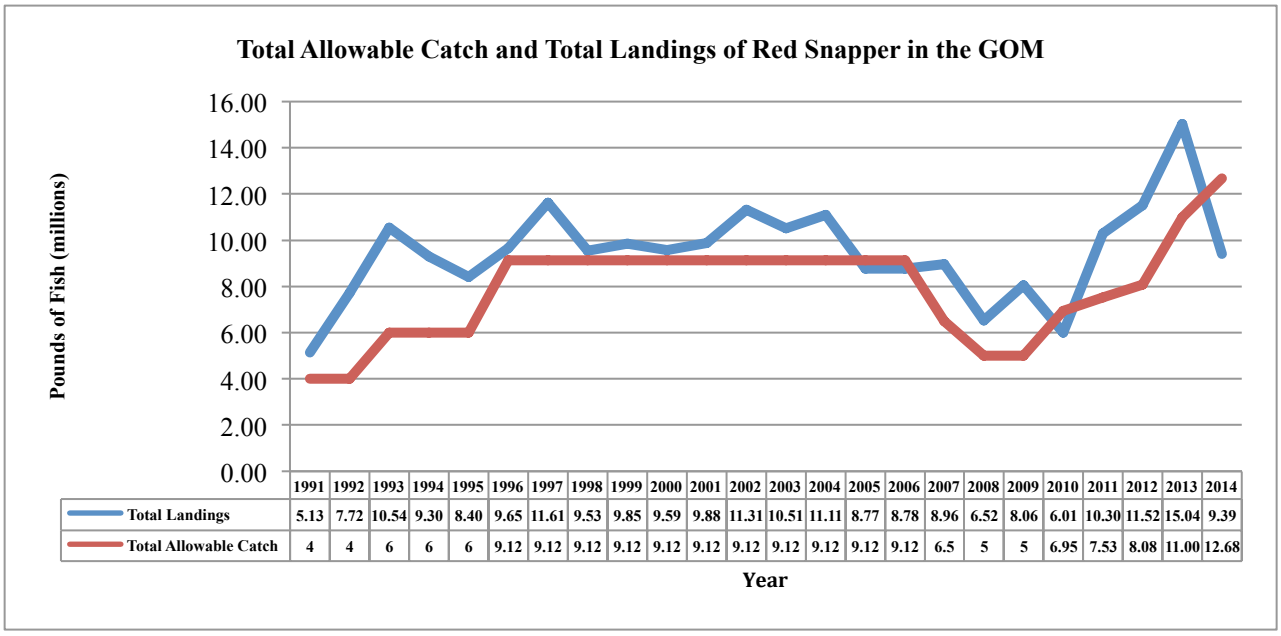


Figure 11. Total Biomass and $SPR_{26\%}$ for Red Snapper in the GOM (1986-2011). This figure depicts the total biomass of red snapper in the GOM and the spawning potential ratio at 26% rebuilding target for 1986 through 2011. (GMFMC, 2014; Cass-Calay et al., 2015)



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Landings	5.13	7.72	10.54	9.30	8.40	9.65	11.61	9.53	9.85	9.59	9.88	11.31	10.51	11.11	8.77	8.78	8.96	6.52	8.06	6.01	10.30	11.52	15.04	9.39
Total Allowable Catch	4	4	6	6	6	9.12	9.12	9.12	9.12	9.12	9.12	9.12	9.12	9.12	9.12	9.12	6.5	5	5	6.95	7.53	8.08	11.00	12.68

Figure 12. Total Allowable Catch and Total Landings of Red Snapper in the GOM (1991-2014). This graph depicts the total allowable catch for recreational and commercial red snapper fishing from 1991-2014. (GMFMC, 2014; Cass-Calay et al., 2015)

This study improves understanding of the current social/political climate of the red snapper fishery and the management choices of the NMFS. The firsthand accounts in this study provide a window into stakeholders' perceptions of the current state of the fishery and the future of red snapper. They also offer management personnel detailed accounts of what user groups find to be the biggest problems in the fishery, including data collection, accountability, and division within the fishery.

Limitations and Future Research

Like most studies, this one suffers from some important limitations. For example, I reached out to many stakeholders but the response rate was low and even fewer people agreed to interviews. This may be because of the controversy surrounding the red snapper and the possibility that stakeholder representatives are wary of offering their opinions for fear of backlash or misrepresenting their employers/agency affiliations. Despite relying on few participants, the people interviewed for this study are highly regarded in their fields and offered opinions that aligned with the stakeholder groups they represented. Additionally, I supplemented the shortage of interview data with articles from special interest groups' websites and op-eds in newspapers and publications. Another weakness of the study was the limited number of questions asked. I asked participants only eight questions to allow for detailed answers. In hindsight, I should have asked more questions about specific policies and amendments, for example, the IFQ system or the accountability measures enacted with the 2006 MSA reauthorization.

Future research should further examine the social dynamics of the recreational sector of the red snapper fishery by speaking with recreational fishermen from each Gulf state to explore their diverse fishing cultures. In addition, researchers should study the

history of the rift between commercial and recreational sectors, starting with the implementation of the IFQ program in 2007. Some participants hinted that the IFQ program marks the beginning of the tension between commercial and recreational fishers. Furthermore, a more detailed study of Gulf State population and recreational fisher increase—and the role of technology in recreational fishing—would help illustrate how these factors contribute increased pressure on red snapper. Finally, a further analysis of stock assessments and fisheries data would also be advised when the next stock assessment is released in 2017 to evaluate progress towards rebuilding goals.

Works Cited

Alabama Department of Conservation and Natural Resources (ADCNR) (n.d.) "Red Snapper Data and Mandatory Reporting FAQs." Retrieved on January 29, 2017 from http://www.outdooralabama.com/red-snapper-data-and-mandatory-reporting-faqs

Agar, J., Stephen, J., and Strelchek, A. (2014). "The Gulf of Mexico Red Snapper IFQ Program: The First Five Years." *Marine Resource Economics*, 29(2): 177-198.

Altman, T., and Artiles, F. (2015). "States have remedy for red snapper mess." Retrieved January 28, 2017 from http://www.joincca.org/articles/769

American Sportfishing Association (ASA) (n.d.A). "About the Sportfishing Industry's Trade Association." Retrieved April 24, 2016 from http://asafishing.org/about-us/

American Sportfishing Association (ASA) (n.d.B). "Gulf Red Snapper Management: Finding a Solution to Gulf Red Snapper Management." Retrieved March 30, 2017 from http://asafishing.org/advocacy/legislative-action/gulf-red-snapper-management/

American Sportfishing Association (ASA) (2013). "Sportfishing in America: An Economic Force for Conservation." Retrieved April 4, 2017 from http://asafishing.org/wp-content/uploads/Sportfishing_in_America_January_2013.pdf

Associated Press (2009, October 30). "New England fishermen protest new catch rules." *NBC News*. Retrieved May 21, 2016 from http://www.nbcnews.com/id/33553385/ns/us_news- environment/t/new-england-fishermen-protest-new-catch-rules/#.V0COb2M0wde

Batchellor, G., Bambery, C., Bies, L., Decker, T., Dyke, S., Guynn, D., McEnroe, M., O'Brien, M., Organ, J., Riley, S., and Roehm, G. (2010). "The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada." The Wildlife Society, Worthy Shorts, Inc. Retrieved on February 16, 2017 from http://wildlife.org/wp-content/uploads/2014/05/ptd_10-1.pdf

Berg, B. and Lune, H. (2012). *Qualitative Research Methods for the Social Sciences*. Upper Saddle River, NJ: Pearson Education.

Bernstein, M. (2016). "Two convicted and two acquitted of conspiracy in Oregon occupation trial." *The Oregonian*, 10, March. Retrieved on March 14, 2017 from http://www.oregonlive.com/oregonstandoff/2017/03/oregon_occupation_trial.html

Bester, C. (n.d.) "Northern red snapper." Florida Museum, Ichthyology. Retrieved February 14, 2017 from https://www.flmnh.ufl.edu/fish/discover/species-profiles/lutjanus-campechanus/

Bevis, K. (2005). "Stopping the silver bullet: how recreational fishermen can use the public trust doctrine to prevent the creation of marine preserves." *Southeastern Environmental Law Journal*, 13(2): 171-202.

Burke, W. (1993). "The Wise Use Movement: Right-Wing Anti-Environmentalism." Retrieved on March 14, 2017 from http://www.publiceye.org/magazine/v07n2/wiseuse.html

Cantrell, S., Guindon, B., Brooks, G. and Veerhusen, B. (2015). "Fishermen oppose H.R. 3094." Seafood Harvesters of America, 20, October. Retrieved March 10, 2017 from http://www.seafoodharvesters.org/2015/10/20/fishermen-oppose-h-r-3094/

Cass-Calay, S., Porch, C., Goethel, D., Smith, M., Matter, V., and McCarthy, K. (2015). *Stock Assessment of red snapper in the Gulf of Mexico 1873-2013 – with provisional 2014 landings.* SEDAR*,* North Charleston, SC. Retrieved from http://sedarweb.org/sedar-31

Cawley, R. (1993). *Western Anger: The Sagebrush Rebellion and Environmental Politics*. Lawrence, KS: University Press of Kansas.

Center for Coastal Conservation (n.d.) "About Us: Who We Are." Retrieved April 24, 2016 from http://www.joincca.org/about

Chiras, D., and Reganold, J. (2010). *Natural Resource Conservation*. Upper Saddle River, NJ: Pearson Prentice Hall.

Coastal Conservation Association (CCA) (n.d.). "About CCA." Retrieved April 24, 2016 from http://www.joincca.org/about

Coastal Conservation Association (CCA) (2016). "Anglers Applaud Gulf Governors' Stance On Red Snapper Bill." 30, June. Retrieved February 17, 2017 from http://www.joincca.org/articles/804

Coastal Conservation Association (CCA) (2017). "CCA Commends Congressman Graves' Efforts On Behalf Of Recreational Anglers." 10, February. Retrieved February 17, 2017 from http://www.joincca.org/articles/837

Cooper, A. (2006). "A Guide to Fisheries Stock Assessment: From Data to Recommendations." University of New Hampshire, Sea Grant College Program. Durham, NC.

Crockett, L. (2016). "Pew urges congressional committee to reject gulf red snapper bill." Pew Charitable Trusts, 14, June. Retrieved March 10, 2017 from http://www.pewtrusts.org/~/media/assets/2016/06/pew_urges_congressional_committee_to_reject_gulf_red_snapper_bill.pdf

Cullis-Suzuki, S., McAllister, M., Baker, P., Carruthers, T. and Tate, T. (2012). "Red snapper discards in the Gulf of Mexico: fishermen's perceptions following the implementation of individual fishing quotas." *Marine Policy*, 36: 583-591.

Curtis, J. (2014). *"Discard mortality, recruitment, and connectivity of red snapper (lutjanus campechanus) in the northern Gulf of Mexico*. Ph.D dissertation, Marine Biology, Texas A&M University-Corpus Christi, Corpus Christi, Texas.

Cutter, S. and Renwick, W. (1999). *Exploitation, Conservation, and Preservation: A Geographic Perspective on Natural Resource Use*. New York, NY: John Wiley & Sons.

Darnell, R. (2015). *The American Sea: A Natural History of the Gulf of Mexico.* Texas A&M University Press, College Station.

Darnell, R. and Defenbaugh, R. (1990). "Gulf of Mexico: Environmental Overview and History of Environmental Research." *American Zoologist*, 30(1): 3-6.

Dell'Apa, A., Schiavinato, L., and Rulifson, R. (2012). "The Magnuson–Stevens act (1976) and its reauthorizations: Failure or success for the implementation of fishery sustainability and management in the US?" *Marine Policy,* 36:673-680.

Department of Commerce (2016). "Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Reef Fish Fishery of the Gulf of Mexico; Red Snapper Management Measures; Amendment 28; Final Rule." Federal Register 81(82): 25576-25582.

Doerpinghaus, J., Hentrich, K., Troup, M., Stavrinaky, A. and Anderson, S. (2014). "An assessment of sector separation on the Gulf of Mexico recreational red snapper fishery." *Marine Policy*, 50: 209-317.

Dropkin, A. (2014). The Gulf's Red Snapper Fishery Makes a Comeback. *Texas Observer*. 24 September. Retrieved http://www.texasobserver.org/red-snapper-fishery-texas-gulf-sustainable/.

Dute, J. (2015). "CCA lawsuit seeks to stop split of recreational red snapper sector." *Alabama Outdoors,* 22 April, Retrieved February 20, 2017 from http://www.al.com/outdoors/index.ssf/2015/04/cca_lawsuit_hopes_to_block_sec.html

Florida Fish and Wildlife Conservation Commission[1] (n.d). "Red Snapper." Retrieved from http://myfwc.com/fishing/saltwater/recreational/snappers/gulf-red-snapper/.

Florida Fish and Wildlife Conservation Commission[2] (n.d). "FWC Enlists Anglers to Assist Reef Fish Studies." Retrieved February 23, 2016 from http://myfwc.com/research/saltwater/fishstats/recreational-fisheries/reef-fish-fishery-study/

Florida Fish and Wildlife Conservation Commission[3] (n.d). "Marine Recreational Information Program FAQs." Retrieved June 23, 2016 from http://myfwc.com/research/saltwater/fishstats/recreational-fisheries/mrip-faq/

FWC (n.d.) "Gulf Reef Fish Survey FAQs." Retrieved on January 29, 2017 from http://myfwc.com/fishing/saltwater/recreational/gulf-reef-fish-survey/faq/

FWS (2013A) "Federal Aid in Wildlife Restoration Act." Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service. Retrieved on April 7, 2017 from https://www.fws.gov/laws/lawsdigest/FAWILD.HTML

FWS (2013B) "Federal Aid in Sport Fish Restoration Act." Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service. Retrieved on April 7, 2017 from https://www.fws.gov/laws/lawsdigest/FASPORT.HTML

Geary, B., Mikulas, J., Rooker, J., Landry, A., and Dellapenna, T. (2007). "Patterns of Habitat Use by Newly Settled Red Snapper in the Northwestern Gulf of Mexico." *American Fisheries Society Symposium*, 60: 25-38.

Geist, V. and McTaggart-Cowan, I. (1995). *Wildlife Conservation Policy.* Detselig Enterprises, Calgary, Alberta.

GOM Fishery Management Council (GMFMC) (2014). "Final Draft Framework Action to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico." Retrieved Febraury 20, 2017 from http://gulfcouncil.org/docs/amendments/Red%20Snapper%20Accountability%20Measures%20Framework%20Action.pdf

GOM Fishery Management Council, n.d. "About SEDAR Stock Assessments." Retrieved January 25, 2017 from https://gulfcouncil.org/resources/about_sedar.php

GOM Fishery Management Council (GMFMC) (2016). "Revision of the Red Snapper Recreational Sector Separation Sunset Provision." Retrieved January 28, 2017 from http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/reef_fish/2016/am45/documents/pdfs/gulf_reef_am45_ea_final.pdf

GOM Reef Fish Shareholders Alliance (2016). "Gulf of Mexico Reef Fish Shareholders' Alliance Opposes Gulf States Red Snapper Takeover."15, June. Retrieved February 20, 2017 from http://www.shareholdersalliance.org/documents/2016-06-16.pdf

Granek, E., Madin, E., Brown, M., Figueira, W., Cameron, D., Hogan, Z., Kristianson, G., de Villiers, P., Williams, J., Post, J., Zahn, S. and Arlinghaus, R. (2008). "Engaging Recreational Fishers in Management and Conservation: Global Case Studies." *Conservation Biology*, 22(5): 1125-1134.

Griffin, D. (2015). "5 years after the Gulf oil spill: What we do (and don't) know." *CNN*, 20, April. Retrieved May 1, 2017 from http://www.cnn.com/2015/04/14/us/gulf-oil-spill-unknowns/

Halverson, A. (2010). *An Entirely Synthetic Fish: How Rainbow Trout Beguiled America and Overran the World.* New Haven, CT: Yale University Press.

Heimbuch, J. (2011). "48 facts you should know about the Gulf of Mexico, from sunken ships to ancient corals." Retrieved March 10, 2017 from http://www.treehugger.com/natural-sciences/48-facts-you-should-know-about-the-gulf-of-mexico-from-sunken-ships-to-ancient-corals.html

Hilborn, R. and Hilborn, U. (2012). *Overfishing: What Everyone Needs to Know*. Oxford University Press, Inc. New York, US., pp 1-11.

Hood, P., Strelcheck, A., Steele, P. (2007). "A history of red snapper management in the Gulf of Mexico." *Red Snapper ecology and fisheries in the US Gulf of Mexico. American Fisheries Society Symposium 60*, Patterson WF, Cowan JH Jr, Fitzhugh GR, Nieland DL (eds), Bethesda, Maryland, pp 267–284.

Hood, P. (2015). "NOAA Establishes Separate Gulf of Mexico Red Snapper Recreational Quotas for Private and For-Hire Fishermen." NOAA Southeast Fishery Bulletin. Retrieved June 7 2016 from http://sero.nmfs.noaa.gov/fishery_bulletins/documents/pdfs/2015/fb15-031_gulf_reef_fish_am40.pdf

Jackson, J., Kirby, M., Berger, W., Bjorndal, K., Botsford, L., Bourque, B…Warner, R. (2001). "Historical overfishing and the recent collapse of coastal ecosystems." *Science*, 293(5530): 629-638.

Jackson, M., Cowan, J., and Nieland, D. (2007). "Demographic differences in Northern Gulf of Mexico Red Snapper reproductive maturity: implications for the unit stock hypothesis." *American Fisheries Society Symposium*, 60: 217-227.

Johnston, R. (2008). "Evaluation of Fish Tags as an Attenuated Rights-Based Management Approach for Gulf of Mexico Recreational Fisheries." (Master's Thesis). University of Connecticut, 2008. Retrieved from http://seagrant.uconn.edu/publications/fisheries/fish_tags_GOM.pdf

King, N. and Horrocks, C. (2010). *Interviews in Qualitative Research*. SAGE Publications Ltd., London.

Lallo, E. (2015A, March 25). "Gulf State Managers Propose Controversial Plan for State Management of Red Snapper Fishery." *Gulf Seafood Institute Newsroom*. Retrieved February 13, 2015 from http://gulfseafoodnews.com/2015/03/25/managers-propose-controversial-plan-for-red-snapper-fishery/

Lallo, E. (2015B). "Gulf Congressional Delegation Teams for Big Win for Gulf Reef Fish Accountability in 2016 Omnibus Appropriations Act." *Gulf Seafood Institute Newsroom*. Retrieved March 10, 2017 from http://gulfseafoodnews.com/2015/12/19/gulf-congressional-delegation-teams-for-big-win/

Lewin, W., Arlinghaus, R. and Mehner, T. (2006). "Documented and Potential Biological Impacts of Recreational Fishing: Insights for Management and Conservation." *Reviews in Fisheries Science*, 14: 305-316.

LDWF (n.d.) "About LA Creel." Retrieved on January 29, 2017 from http://www.wlf.louisiana.gov/about-la-creel

Marine Fish ConservationNetwork (2016) "Voices Opposing H.R. 3094, the 'Gulf States Red Snapper Management Authority Act." 29 September, Retrieved March 10, 2017 from http://conservefish.org/2016/09/29/voices-opposing-h-r-3094-gulf-states-red-snapper-management-authority-act/

Marine Stewardship Council (n.d.) "What is a fishery?" Retrieved February 12, 2017 from https://www.msc.org/track-a-fishery/what-is-a-fishery

Masson, T. (2015). "Industry reacts to bill that would transfer red snapper control to states." *The Times- Picayune.* 20 July. Retrieved February 13, 2016 http://www.nola.com/outdoors/index.ssf/2015/07/industry_reacts_to_bill_that_w.html.

Mather, A. and Chapman, K. (1995). *Environmental Resources*. Essex, England: Pearson Education.

McCarthy, M. (1992). "The First Sagebrush Rebellion: Forest Reserves and States Rights in Colorado and the West, 1891-1907." *The Origins of the National Forests: A Centennial Symposium.* Forest History Society. Durham, North Carolina.

McClenachan, L. (2013). Recreation and the "Right to Fish" Movement: Anglers and Ecological Degradation in the Florida Keys." *Environmental History*, 18: 76-87.

National Marine Fisheries Service (2012). "2012 Annual Report to Congress: Status of Stocks 2012." Retrieved June 23, 2016 from http://www.nmfs.noaa.gov/sfa/fisheries_eco/status_of_fisheries/archive/2012/2012_appendix2.pdf

National Marine Fisheries Service (2015). 2014 Gulf of Mexico Red Snapper Individual Fishing Quota Annual Report. St. Petersburg, FL: NMFS Southeast Regional Office. Retrieved June 24, 2016 from http://sero.nmfs.noaa.gov/sustainable_fisheries/ifq/documents/pdfs/annual_reports/2014_rs_annualreport.pdf

Nelson, R. (1984). "Why the Sagebrush Revolt burned out." *Regulation Magazine* May/June 1984. Retrieved February 9, 2017 from https://object.cato.org/sites/cato.org/files/serials/files/regulation/1984/5/v8n3-5.pdf

NOAA (n.d.A) "NOAA Catch Share Policy." Retrieved April 4, 2017 from http://www.nmfs.noaa.gov/sfa/management/catch_shares/about/documents/noaa_cs_policy.pdf

NOAA (n.d.B). "Marine Recreational Information Program Data User Handbook." Retrieved February 17, 2017 from http://www.st.nmfs.noaa.gov/recreational-fisheries/MRIP-Handbook/MRIP_handbook.pdf

NOAA Fisheries (n.d.A). "National Standard Guidelines." Retrieved from http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/index.html.

NOAA Fisheries (n.d.B) "Historical Overview (1800s-present): How has the red snapper fishery changed over time?" Retrieved June 21, 2016 from http://sero.nmfs.noaa.gov/sustainable_fisheries/gulf_fisheries/red_snapper/overview/index.html

NOAA Office of Science and Technology (n.d A). "Recreational Fisheries Statistics." Retrieved http://www.st.nmfs.noaa.gov/recreational-fisheries/index

NOAA Office of Science and Technology (n.d B). "Commercial Fisheries Statistics." Retrieved from http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/landings-background/index.

Ocean Conservancy (n.d.) "Red Snapper." Retrieved March 14, 2017 from http://www.oceanconservancy.org/healthy-ocean/marine-wildlife/gulf-species/red-snapper.html

Organ, J., Geist, V., Mahoney, S., Williams, S., Krausman, P., Batcheller, G., Decker, T., Carmichael, R., Nanjappa, P., Regan, R., Medellin, R., Cantu, R., McCabe, R., Craven, S., Vecellio, G. and Decker, D. (2012). *The North American Model of Wildlife Conservation.* The Wildlife Society Technical Review 12-04. The Wildlife Society, Bethesda, Maryland.

Phillips, L. and Shutak, M. (2010). Fishermen protest federal catch limits. *Carteret County News Times*. 26 February. Retrieved from http://www.carolinacoastonline.com/news_times/news/article_ed83e134-5e45-5eb5-bf86-bdd6aa7859f3.html.

Porch, C. (2007). "An assessment of the red snapper fishery in the U.S. Gulf of Mexico using a spatially-explicit age-structured model." *Red Snapper ecology and fisheries in the US Gulf of Mexico. American fisheries society, symposium 60*, Patterson WF, Cowan JH Jr, Fitzhugh GR, Nieland DL (eds) Bethesda, Maryland, pp 355–384.

Porch, C., Collins, L., Duncan, M., Fitzhugh, G. and Jackson, M. (2007). "Modeling the dependence of batch fecundity on size and age for use in stock assessments of red snapper in the U.S. Gulf of Mexico waters." *American Fisheries Society Symposium*, 60: 229-243.

Powers, J. (1996). "Benchmark requirements for recovering fish stocks." *North American Journal of Fisheries Management,* 16:495-504.

Rainer, D. (2016). "So many fish… So little time! Another short season for private anglers." *Trussville Tribune*. 12 February. Retrieved February 20, 2017 from http://www.trussvilletribune.com/2016/02/12/so-many-fish-so-little-time-another-short-season-for-private-anglers/

Reichers, R., Pausina, R., Miller, J., Blankenship, C. and McCawley, J. (2015). "Gulf of Mexico Red Snapper Management Authority Act." Retrieved February 13, 2016 from http://www.wlf.louisiana.gov/sites/default/files/pdf/news/38980-louisiana-other-gulf-states-agree-state-based-management-framework-red-snapper-ask-congressconsider/finalletterofsupport031315withmgmtmodelandbullets5.pdf

Rohring, E. (2016). "Funding opportunity to design red snapper population assessment." NOAA Sea Grant, 16 May. Retrieved on June 7, 2016 from http://seagrant.noaa.gov/News/SeaGrantAnnouncements/TabId/275/ArtMID/731/ArticleID/659/Funding-opportunity-to-design-red-snapper-population-assessment.aspx

Rossiter, J., Curti, G., Moreno, C. and Carr, D. (2015). "Marine-space assemblages: Towards a different praxis of fisheries policy and management." *Applied Geography*, 59: 142-149.

Saari, C., Cowan, J., and Boswell, K. (2014). "Regional differences in the age and growth of red snapper (*Lutjanus campechanus*) in the U.S. Gulf of Mexico." *Fishery Bulletin*, 112(4):261-273.

SEDAR (2013). SEDAR 31 – Gulf of Mexico Red Snapper Stock Assessment Report." Retrieved on February 17, 2017 from http://sedarweb.org/docs/sar/SEDAR%2031%20SAR-%20Gulf%20Red%20Snapper_sizereduced.pdf

Shipp, B. (2016). "The Great Gulf Red Snapper Train Wreck: 35 years of flawed data, user conflicts and political infighting." Sportfishing Magazine, 26, February. Retrieved March 30, 2017 from http://www.sportfishingmag.com/great-gulf-red-snapper-train-wreck

Shuler, B. (2015). "A Brief History of the Gulf of Mexico Red Snapper Management." *Gulf Atlantic Florida Fishing Magazine*. February/March: 28-35. Retrieved from http://viewer.zmags.com/publication/c4a1a6ab#/c4a1a6ab/1.

Siegler, K. (2016). "Who Will Blink First? Armed Occupation In Oregon Drags On." NPR, 12, January. Retrieved on March 14, 2017 from http://www.npr.org/sections/thetwo-way/2016/01/12/462813360/who-will-blink-first-armed-occupation-in-oregon-drags-on

South Atlantic Fishery Management Council (1998). "Comprehensive amendment addressing sustainable fishery act definitions and other required provisions in fishery management plans of the south atlantic region." Retrieved on March 14, 2017 from https://books.google.com/books?id=EuM3AQAAMAAJ&pg=PA84&lpg=PA84&dq=spawning+potential+ratio+relative+to+overfishing&source=bl&ots=7WBhw_Bcnp&sig=E3ORSclWak3hTlThA_nZu4s7Yxg&hl=en&sa=X&ved=0ahUKEwiw29KUkdnSAhVBWSYKHfE4BOIQ6AEIRTAF#v=onepage&q=spawning%20potential%20ratio%20relative%20to%20overfishing&f=false

St. Clair, J and Ridgeway, J. (2016). "Rancher Rebels: the Rise of the Wise-Use Movement." Retrieved March 14, 2017 from http://www.counterpunch.org/2016/01/08/rancher-rebels-the-rise-of-the-wise-use-movement/

Thompson, J. (2016). "The First Sagebrush Rebellion: What sparked it and how it ended." *High County News*. Retrieved February 9, 2017 from http://www.hcn.org/articles/a-look-back-at-the-first-sagebrush-rebellion

Tokotch, B., Meindl, C., Hoare, A. and Jepson, M. (2012). "Stakeholder Perceptions of the Northern Gulf of Mexico Grouper and Tilefish Individual Fishing Quota Program." *Marine Policy*. 36 (1): 34-41.

Tomalin, T. (2016). Jolly moves to eliminate guesswork from fishing regulations. *Tampa Bay Times.* 4 January. Retrieved April 3, 2016 from http://www.tampabay.com/sports/outdoors/jolly-moves-to-eliminate-guesswork-from-fishing-regulations/2259887

Tong, Y., Chen, X. and Chen, Y. (2013). "Evaluating alternative management strategies for bigeye tuna, *Thunnus obesus*, in the Indian Ocean." *Scientia Marina*, 77(3): 449-460.

US Commission on Ocean Policy (2004). *An Ocean Blueprint for the 21st Century*. Washington, D.C.

National Marine Fisheries Service (2014). *Fisheries Economics of the United States 2012.* U.S. Department of Commerce, National Oceanographic and Atmospheric Administration: Technical Memorandum NMFS-F/SPO-137. Retrieved April 4, 2017 from http://media.nola.com/environment/other/Fisheries%20Economics%20of%20the%20U.S.%202012.pdf

U.S. House of Representatives. *H.R. 3094: Gulf States Management Authority Act*. Last accessed on 6 June 2016. Retrieved from https://www.congress.gov/bill/114thcongress/house-bill/3094/text.

Wald, J. and Temkin, E. (1982). "The Sagebrush Rebellion: The West against Itself—Again." *UCLA Journal of Environmental Law and Policy*, 2(2): 187-207.

Wietecha, O. (2017). "Red snapper scarcity prompts push to change US fishing laws." Retrieved on March 14, 2017 from https://www.undercurrentnews.com/2017/01/12/red-snapper-scarcity-prompts-push-to-change-us-fishing-laws/

Williamson, M. (2008). “Federal Government Confirms Red Drum and Striped Bass Gamefish Status.” ASA American Sportfishing Association, 17 October. Retrieved February 20, 2017 from http://asafishing.org/federal-government-confirms-red-drum-and-striped-bass-gamefish-status/

Appendix A:

Participant Email, Interview Outline, IRB Informed Consent Paperwork

Appendix (continued)

Dear (Participant Name), Date xx/xx/xx

Hello, my name is Sydney Alhale and I am a graduate student at USF St. Petersburg. I am writing to request your participation in my research study about red snapper management in the Gulf of Mexico. My goal is to learn more about state and federal management of red snapper. I would like to interview you because of your knowledge and/or involvement in the red snapper fishery.

I will be conducting interviews in person, or via phone, email or Skype based on your availability. If you accept the invitation to participate in an interview, I hope it will be acceptable for me to follow up with you on occasion if I require further clarification as I conduct analysis. Interviews will consist of several questions and take no more than an hour to complete.

Potential benefits from participating in the study include having a platform to voice your concerns about management decisions, as well as a chance to clarify any perceived misunderstandings. Your participation in the study will further the understanding of red snapper management and likely improve awareness of the fisheries management decision-making process.

If you have any concerns or questions about the study or your rights as a research participant, please do not hesitate to contact me. My email is sydneyalhale@mail.usf.edu. Your participation in this study is voluntary and you have the right to withdraw from the research process at any point during the study—just let me know. Please let me know if you accept the invitation to participate as soon as possible so I can schedule an appointment with you in the near future.

I look forward to hearing from you.

Sincerely,

Sydney Alhale, Master of Science candidate
sydneyalhale@mail.usf.edu
IRB# 27225

Interview Outline

Subjects To Cover:

- **Magnuson-Stevens Act**
- **Red Snapper Management Authority Act**
- **States' Interests**
- **Management Mechanisms**
    - **Stock Assessments**
    - **Data Collection**
    - **IFQ Program**
    - **Council Amendments**
- **Commercial vs. Recreational**

Interview Questions

Thank you for agreeing to participate in this study. My goal is to learn more about state and federal management of Red Snapper in the Gulf of Mexico. My questions are designed to get a sense of how the social components of the fishery affect the decision-making process and management.

Later on I will ask you some questions to which you may respond. But first, I'd like to learn more about you.

0. Before we start remind me again:

- Your place of work and job title?
- How long you have worked there?
- Your main responsibilities at your job?

1. Magnuson-Stevens Act

1a.1. How well do you think the red snapper Fishery Management Plan abides by/executes the national standards set forth by the Magnuson-Stevens Act?

2. Gulf States Red Snapper Management Authority Act

2a.1. What are the benefits of transferring management to the five Gulf states (FL, AL, LA, MS, TX)?

2b.1. The Gulf States say they will use flexible management approaches to manage red snapper; what are some challenges with managing one stock of fish with five different management authorities?

3. States' Interests

3a.1. It has been reported many times that the states' main interest is improving access to the red snapper stock; how do you think the states, if put in charge, will ensure that increased access will not result in increased overfishing?

4. Management Mechanisms

4a. Stock Assessments

4a.1. What improvements should be made to stock assessment analysis to ensure allocations are based on the most up to date stock information?

4b. Data Collection

4b.1. Estimates of the recreational catch of red snapper come from a combination of results from three surveys: (1) the Marine Recreational Information Program (MRIP), conducted by the NOAA Fisheries (NMFS), (2) the Texas Marine Sport-Harvest Monitoring Program by the Texas Parks and Wildlife Department (TPWD) and (3) the Southeast Region Headboat Survey (SRHS) conducted by NMFS, Southeast Fisheries Science Center, Beaufort, NC. What is your opinion on combining various data collection methods to estimate the state of the red snapper stock?

4c. Council Amendments

4c.1. How has the Gulf of Mexico Fishery Management Council handled the responsibility of rebuilding the red snapper stock?

5. Commercial and Recreational

5a.1. The red snapper recovery plan sets a target recovery for the year 2032; what is the most effective path to achieving this recovery goal and a sustainable red snapper fishery?

USF
UNIVERSITY OF
SOUTH FLORIDA

Informed Consent to Participate in Research Involving Minimal Risk

Pro # 27225

You are being asked to take part in a research study. Research studies include only people who choose to take part. This document is called an informed consent form. Please read this information carefully and take your time making your decision. Ask the researcher or study staff to discuss this consent form with you, please ask him/her to explain any words or information you do not clearly understand. The nature of the study, risks, inconveniences, discomforts, and other important information about the study are listed below.

We are asking you to take part in a research study called:
"Who Should Manage Red Snapper (*Lutjanus campechanus*) in the Gulf of Mexico?"

The person who is in charge of this research study is Sydney Alhale**.** This person is called the Principal Investigator. However, other research staff may be involved and can act on behalf of the person in charge. She is being guided in this research by Dr. Christopher Meindl.

The research will be conducted at USF St. Petersburg or at the office of participants or by telephone or email.

Purpose of the study

The purpose of this study is to further understand state and federal management of Red Snapper in the Gulf of Mexico. The study is designed to gain a sense of how the social components of the fishery affect the management decisions.

Why are you being asked to take part?

We are asking you to take part in this research study because you have knowledge of fisheries management and may be involved in decision-making processes related to red snapper.

Study Procedures:

If you take part in this study, you will be asked to:

- Answer a number of questions related to red snapper management and fisheries management.
- Only participate in one interview, no longer than 2 hours, however you may be contacted for follow up questions and clarifications.
- Be audio-recorded for transcription purposes, however if you are uncomfortable with being recorded you may ask not to be. Only I will have access to the audio records, however a transcription service will be used to convert audio to interview transcripts. Only my committee and I will see the interview transcripts.
- The audiotapes and interview records will be kept a minimum of 5 years after the Final Report is submitted to IRB. The records will be destroyed when this time is up through file deletion and shredding of documents.

Alternatives / Voluntary Participation / Withdrawal

You do not have to participate in this research study.

You should only take part in this study if you want to volunteer. You should not feel that there is any pressure to take part in the study. You are free to participate in this research or withdraw at any time. There will be no penalty or loss of benefits you are entitled to receive if you stop taking part in this study.

Benefits

You will receive no benefit(s) by participating in this research study.

Risks or Discomfort

This research is considered to be minimal risk. That means that the risks associated with this study are the same as what you face every day. There are no known additional risks to those who take part in this study.

Compensation

You will receive no payment or other compensation for taking part in this study.

Costs

It will not cost you anything to take part in the study.

Privacy and Confidentiality

We will keep your study records private and confidential. Certain people may need to see your study records. Anyone who looks at your records must keep them confidential. These individuals include:

- The research team, including the Principal Investigator (Sydney Alhale) and faculty advisor (Dr. Christopher Meindl).
- Certain government and university people who need to know more about the study, and individuals who provide oversight to ensure that we are doing the study in the right way.
- Any agency of the federal, state, or local government that regulates this research (Office for Human Research Protection (OHRP)).
- The USF Institutional Review Board (IRB) and related staff who have oversight responsibilities for this study, including staff in USF Research Integrity and Compliance.

We may publish what we learn from this study. If we do, we will not include your name. We will not publish anything that would let people know who you are.

You can get the answers to your questions, concerns, or complaints

If you have any questions, concerns or complaints about this study, or experience an unanticipated problem, call Sydney Alhale at 954-XXX-XXXX.

If you have questions about your rights as a participant in this study, or have complaints, concerns or issues you want to discuss with someone outside the research, call the USF IRB at (813) 974-5638 or contact by email at RSCH-IRB@usf.edu.

Consent to Take Part in this Research Study

I freely give my consent to take part in this study. I understand that by signing this form I am agreeing to take part in research. I have received a copy of this form to take with me.

_____ _____

Signature of Person Taking Part in Study Date

_____

Printed Name of Person Taking Part in Study

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect from their participation. I confirm that this research subject speaks the language that was used to explain this research and is receiving an informed consent form in their primary language. This research subject has provided legally effective informed consent.

_____

Signature of Person obtaining Informed Consent Date

_____

Printed Name of Person Obtaining Informed Consent

Appendix B:

H.R. 3094 Text, FMP Amendments (1984-2016)

Union Calendar No. 664

114th CONGRESS

2d Session

H. R. 3094

[Report No. 114-851]

To amend the Magnuson-Stevens Fishery Conservation and Management Act to transfer to States the authority to manage red snapper fisheries in the Gulf of Mexico.

IN THE HOUSE OF REPRESENTATIVES

July 16, 2015

Mr. Graves of Louisiana (for himself, Mr. Miller of Florida, Mr. Richmond, Mr. Austin Scott of Georgia, Mr. Thompson of Mississippi, Mr. Boustany, Mr. Abraham, Mr. Palazzo, Mr. Wittman, Mr. Olson, Mr. Gene Green of Texas, Mr. Westmoreland, Mr. Duncan of South Carolina, Mr. Benishek, Mr. Jody B. Hice of Georgia, Mr. Long, Mr. Babin, Mr. Cook, Mr. Walz, Mr. LaMalfa, Mr. Latta, and Mr. Carter of Georgia) introduced

the following bill; which was referred to the Committee on Natural Resources

December 8, 2016

Additional sponsors: Mr. Tom Price of Georgia, Ms. Bordallo, Mr. Collins of Georgia, Mr. Loudermilk, Mr. Allen, Mr. Graves of Georgia, Mr. Westerman, Mr. Gohmert, Mr. Farenthold, Mr. Hinojosa, Mr. Carter of Texas, Mr. Zinke, Mrs. Lummis, Mr. Mooney of West Virginia, Mr. Denham, Mr. Clay, Mr. Thompson of Pennsylvania, Mr. LaHood, Mr. Labrador, Mr. Gosar, and Mr. Hardy

Deleted sponsor: Mr. Mica (added October 21, 2015; deleted December 10, 2015)

December 8, 2016

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

[Strike out all after the enacting clause and insert the part printed in italic]

[For text of introduced bill, see copy of bill as introduced on July 16, 2015]

A BILL

To amend the Magnuson-Stevens Fishery Conservation and Management Act to transfer to States the authority to manage red snapper fisheries in the Gulf of Mexico.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the ``Gulf States Red Snapper Management Authority Act".

SEC. 2. TRANSFER TO STATES OF MANAGEMENT OF RED SNAPPER FISHERIES IN THE GULF OF MEXICO.

(a) In General.--The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.) is amended by adding at the end the following:

``TITLE V--TRANSFER TO STATES OF MANAGEMENT OF RED SNAPPER FISHERIES IN THE GULF OF MEXICO

``SEC. 501. DEFINITIONS.

``In this title:

``(1) Coastal waters.--The term `coastal waters' means all waters of the Gulf of Mexico--

``(A) shoreward of the baseline from which the territorial sea of the United States is measured; and

``(B) seaward from the baseline described in subparagraph (A) to the outer boundary of the exclusive economic zone.

``(2) Gulf coastal state.--The term `Gulf coastal State' means each of the following States:

``(A) Alabama.

``(B) Florida.

``(C) Louisiana.

``(D) Mississippi.

``(E) Texas.

``(3) Gulf of mexico fishery management council.--The term `Gulf of Mexico Fishery Management Council' means the Gulf of Mexico Fishery Management Council established under section 302(a).

``(4) Gulf of mexico red snapper.--The term `Gulf of Mexico red snapper' means members of stocks or populations of the species Lutjanus campechanus, which ordinarily are found within the waters of the exclusive economic zone and adjacent territorial waters of the Gulf of Mexico.

``(5) Gulf states red snapper management authority.--The term `Gulf States Red Snapper Management Authority' and `GSRSMA', means the Gulf States Red Snapper Management Authority established under section 502(a).

``(6) Red snapper fishery management plan.--The term `red snapper fishery management plan' means a plan created by one or more Gulf coastal States to manage Gulf of Mexico red snapper in the coastal waters adjacent to such State or States, respectively.

``(7) Reef fish federal fishery management plan.--The term `Reef Fish Federal fishery management plan' means the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, as amended, prepared by the Gulf of Mexico Fishery Management Council pursuant to title III and implemented under part 622 of title 50, Code of Federal Regulations (or similar successor regulation).

``(8) State territorial waters.--The term `State territorial waters', with respect to a Gulf coastal State, means the waters adjacent to such State seaward to the line three marine leagues seaward from the baseline from which of the territorial sea of the United States is measured.

``SEC. 502. MANAGEMENT OF GULF OF MEXICO RED SNAPPER.

``(a) Gulf States Red Snapper Management Authority.--

``(1) Requirement to establish.--Not later than 60 days after the date of the enactment of this title, the Secretary shall establish a Gulf States Red Snapper Management Authority that consists of the principal fisheries manager of each of the Gulf coastal States.

``(2) Duties.--The duties of the GSRSMA are as follows:

``(A) To review and approve red snapper fishery management plans, as set out in the Act.

``(B) To provide standards for each Gulf coastal State to use in developing fishery management measures to sustainably manage Gulf of Mexico red snapper in the coastal waters adjacent to such State.

``(C) To the maximum extent practicable, make scientific data, stock assessments and other scientific information upon which fishery management plans are based available to the public for inspection prior to

meetings described in paragraph (c)(2).

``(b) Requirement for Plans.--

``(1) Deadline for submission of plans.--The GSRSMA shall establish a deadline for each Gulf coastal State to submit to the GSRSMA a red snapper fishery management plan for such State.

``(2) Consistency with federal fishery management plans.--To the extent practicable, the Gulf Coastal States fishery management plans shall be consistent with the requirements in section 303(a) of the Fishery Conservation and Management Act of 1976 (16 U.S.C. 1853(a)).

``(c) Review and Approval of Plans.--

``(1) In general.--Not later than 1 year after the date of the enactment of this title and not more than 60 days after one or more Gulf coastal States submits a red snapper fishery management plan and annually thereafter, the GSRSMA shall review and approve by majority vote the red snapper fishery management plan if such plan meets the requirements of this title.

``(2) Public participation.--Prior to approving a red snapper fishery management plan submitted by one or more Gulf coastal States, the GSRSMA shall provide an adequate opportunity for public participation, including--

``(A) at least 1 public hearing held in each respective Gulf coastal State; and

``(B) procedures for submitting written comments to GSRSMA on the fishery management plan.

``(3) Plan requirements.--A red snapper fishery management plan submitted by one or more Gulf coastal States shall--

``(A) contain standards and procedures for the long-term sustainability of Gulf of Mexico red snapper based on the best available science;

``(B) comply with the standards described in subsection (a)(2)(B); and

``(C) determine quotas for the red snapper fishery in the coastal waters adjacent to such Gulf coastal State or States, respectively, based on stock assessments, and--

``(i) any recommendation by the GSRSMA to reduce quota apportioned to the commercial sector by more than 10 percent shall be reviewed and approved by the Gulf of Mexico Fishery Management Council;

``(ii) during the 3-year period beginning on the date of enactment of this title and consistent with subsection (d), the GSRSMA shall not determine a quota apportioned to the commercial sector; and

``(iii) nothing in this Act shall be construed to change the individual quota shares

currently in place in the commercial sector of the Gulf of Mexico red snapper fishery.

``(4) Review and approval.--Not later than 60 days after the date the GSRSMA receives a red snapper fishery management plan from one or more Gulf coastal State or States, the GSRSMA shall review and approve such plan if such plan satisfies the requirements of subsection (b).

``(d) Continued Management by the Secretary.--During the 3-year period beginning on the date of the enactment of this title, the Secretary, in coordination with the Gulf of Mexico Fishery Management Council, shall continue to manage the commercial sector of the Gulf of Mexico red snapper fishery.

``(e) Reporting Requirements.--

``(1) Reports by gulf coastal states.--Each Gulf coastal State shall submit to the GSRSMA an annual report on the status of the Gulf of Mexico red snapper fishery in coastal waters adjacent to such State.

``(2) Report by the gsrsma.--Not less often than once every 5 years, the GSRSMA shall use the information submitted in the annual reports required by paragraph (1) to prepare and submit to the Secretary a report on the status of the Gulf of Mexico red snapper fishery.

``SEC. 503. STATE IMPLEMENTATION OF THE RED SNAPPER FISHERY MANAGEMENT

PLANS.

``(a) Allocation of Management to the Gulf States.--

``(1) Certification of approved plans.--The GSRSMA shall certify to the Secretary that a red snapper fishery management plan is approved under section 502 for each of the Gulf coastal States.

``(2) Transfer of management.--Upon receipt of the certification described in paragraph (1) and subject to section 502(d), the Secretary shall--

``(A) publish a notice in the Federal Register revoking the regulations and portions of the Reef Fish Federal fishery management plan that are in conflict with any red snapper fishery management plan approved by the GSRSMA; and

``(B) transfer management of Gulf of Mexico red snapper to the GSRSMA.

``(b) Implementation.--

``(1) In general.--Upon the transfer of management described in subsection (a)(2)(B) and subject to section 502(d), each Gulf coastal State shall implement and enforce the red snapper fishery management plans approved under section 502 for the Gulf of Mexico red snapper fishery in the coastal waters adjacent to each Gulf coastal State.

``(2) Failure to transfer management.--If the certification

described in subsection (a)(1) is not made the transfer of management described in subsection (a)(2)(B) may not be accomplished and the Secretary shall remain responsible for management of the Gulf of Mexico red snapper.

``SEC. 504. OVERSIGHT OF GULF OF MEXICO RED SNAPPER MANAGEMENT.

``(a) Implementation and Enforcement of Fishery Management Plans.--Not later than December 1 of the year following the transfer of management described in section 503(a)(2), and at any other time the GSRSMA considers appropriate after that date, the GSRSMA shall determine if--

``(1) each Gulf coastal State has fully adopted and implemented the red snapper fishery management plan approved under section 502 for such State;

``(2) each such plan continues to be in compliance with the standards for sustainability provided by the GSRSMA pursuant to section 502(a)(2); and

``(3) the enforcement of the plan by each Gulf coastal State is satisfactory to maintain the long-term sustainability and abundance of Gulf of Mexico red snapper.

``(b) Overfishing and Rebuilding Plans.--

``(1) Certification.--If the Gulf of Mexico red snapper in the coastal waters adjacent to a Gulf coastal State is experiencing overfishing or is subject to a rebuilding plan,

such Gulf coastal State shall submit a certification to the GSRSMA showing that such State has implemented the necessary measures to end overfishing or rebuild the fishery.

``(2) Notification to secretary.--If, after such time as determined by the GSRSMA, a Gulf coastal State that submitted a certification under paragraph (1) has not implemented the measures and requirements described in such paragraph, the GSRSMA shall vote on whether to notify the Secretary of a recommendation of closure of the red snapper fishery in the waters adjacent to the State territorial waters of the Gulf coastal State.

``(c) Closure of the Gulf of Mexico Red Snapper Fishery.--

``(1) Conditions for closure.--Not later than 60 days after the receipt of a notice under subsection (b)(2) for a Gulf coastal State, the Secretary may declare a closure of the Gulf of Mexico red snapper fishery within the waters adjacent to the State territorial waters of the Gulf coastal State.

``(2) Considerations.--Prior to making a declaration under paragraph (2), the Secretary shall consider the comments of such Gulf coastal State and the GSRSMA.

``(3) Actions prohibited during closure.--During a closure of the Gulf of Mexico red snapper fishery under paragraph (1), it is unlawful for any person--

``(A) to engage in fishing for Gulf of Mexico red snapper within the waters adjacent to the State

territorial waters of the Gulf coastal State covered by the closure;

``(B) to land, or attempt to land, the Gulf of Mexico red snapper in the area of the closure; or

``(C) to fail to return to the water any Gulf of Mexico red snapper caught in the area of the closure that are incidental to commercial harvest or in the recreational fisheries.

``(4) Construction.--Nothing in this subsection shall be construed to allow the Secretary to close the red snapper fishery in the State territorial waters of a Gulf coastal State.

``SEC. 505. PROHIBITION ON FEDERAL FUNDING.

``No Federal funds are authorized to be appropriated to or used for the GSRSMA or its members to carry out management actions of red snapper in the Gulf of Mexico.

``SEC. 506. NO EFFECT ON MANAGEMENT OF SHRIMP FISHERIES IN FEDERAL WATERS.

``(a) Bycatch Reduction Devices.--Nothing in this title may be construed to effect any requirement related to the use of Gulf of

Mexico red snapper bycatch reduction devices in the course of shrimp trawl fishing activity.

``(b) Bycatch of Red Snapper.--Nothing in this title shall be construed to apply to or affect in any manner the Federal management of commercial shrimp fisheries in the Gulf of Mexico, including any incidental catch of red snapper.".

(b) Conforming Amendments.--

(1) Data collection.--Section 401(g)(3)(C) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1881(g)(3)(C)) is amended by striking ``and" after the semicolon at the end of clause (iv), by striking the period at the end of clause (v) and inserting ``; and", and by adding at the end the following:

``(vi) in the case of each fishery in the Gulf of Mexico, taking into consideration all data collection activities related to fishery effort that are undertaken by the marine resources division of each relevant State of the Gulf of Mexico Fishery Management Council.".

(2) Gulf state territorial waters.--Section 306(b) of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1856(b)) is amended by adding at the end the following:

``(4) Notwithstanding section 3(11) and subsection (a) of this section, for purposes of carrying out activities pursuant to the

Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico, the seaward boundary of a coastal State in the Gulf of Mexico is a line three marine leagues seaward from the baseline from which the territorial sea of the United States is measured.".

(c) Clerical Amendment.--The table of contents in the first section of such Act is amended by adding at the end the following:

``TITLE V--TRANSFER TO STATES OF MANAGEMENT OF RED SNAPPER FISHERIES IN

THE GULF OF MEXICO

``Sec. 501. Definitions.

``Sec. 502. Management of Gulf of Mexico red snapper.

``Sec. 503. State implementation of the red snapper fishery management plans.

``Sec. 504. Oversight of Gulf of Mexico red snapper management.

``Sec. 505. Prohibition on Federal funding.

``Sec. 506. No effect on management of shrimp fisheries in Federal waters.".

Union Calendar No. 664

114th CONGRESS

2d Session

H. R. 3094

[Report No. 114-851]

A BILL

To amend the Magnuson-Stevens Fishery Conservation and Management Act to transfer to States the authority to manage red snapper fisheries in the Gulf of Mexico.

December 8, 2016

Reported with an amendment, committed to the Committee of the Whole House on the State of the Union, and ordered to be printed

Red Snapper Fishery Management Plan Amendments

Year	Action	Description
1984	Reef Fish FMP created	Establishes 13 in. minimum TL
1990	Amendment 1	7 fish bag limit; 3.1mp commercial quota
1991	Amendment 3	Revise TAC framework to be more flexible; established 2007 recovery goal
1991	Reg Amendment	2.04 mp commercial quota; 1.96 mp recreational allocation
1992	Amendment 4	Moratorium on new reef fish commercial permits for 3 years
1993	Reg Amendment	3.06 mp commercial quota; 2.94 recreational allocation; restrict commercial vessels to landing one trip limit per day
1993	Amendment 6	Extended commercial 200 lb limit for permit holders without endorsement
1994	Amendment 5	Raise min. size limit from 14 to 16 in. over 5 yr. period
1994	Reg Amendment	Retain 6 million lb TAC and commercial trip limits; reduce daily bag limit from 7 to 5 fish; increase min. size limit from 14 to 15 in.
1994	Amendment 7	Establish dealer reporting
1995	Reg Amendment	Raise TAC from 6 mp to 9.12 mp
1994	Amendment 9	Establish limited entry commercial program (ITQ); Extend moratorium on the issuance of new reef fish permits

1995	Amendment 8	Attempted to establish ITQ system, shut down by Congress
1996	Reg Amendment	Split commercial quota into spring and fall season
1996	Amendment 13	Extend endorsement system through 1996
1997	Amendment 12	NMFS disapproves provisions to cancel the automatic commercial size limit increases to 15 in. TL in 96 and 16 in. TL in 97
1997	Reg Amendment	Change recreational allocation to a quota
1997	Reg Amendment	Cancel planned increase min. size limit to 16 in. TL
1998	Amendment 15	Establish two tier red snapper license limitation system (Class 1 and Class 2)
1998	Reg Amendment	Maintain 9.12 mp TAC; zero bag limit for captian and crew of for-hire rec. vessels
1998	Reg Amendment	Reduce bag limit to 4 fish and zero fish for caption and crew of for-hire vessels; reduce min. size limit to 14 in. TL
2000	Amendment 17	Extend reef fish permit moratorium for another 5 yrs.
2000	Reg Amendment	Maintain TAC at 9.12 mp for next 2 yrs.; increase min. size limit from 15 to 16 in. TL; set rec. bag limit to 4 fish; retain comm min. size limit at 15 in. TL

2003	Amendment 20	Establish 3 yr. moratorium on charter vessel/headboat permits for vessels fishing the EEZ or Gulf of Mexico for reef fish; allow permits to be transferable to other persons; require vessel captains or vessel owners to participate in data collection surveys as a permit condition
2005	Amendment 22	Establish status determination criteria and biological reference points; establish red snapper rebuilding plan; establish additional reef fish bycatch reporting methods
2005	Amendment 24	Extend comm permit moratorium indefinitely, unless replaced with comprehensive controlled access system
2006	Amendment 25	Extend rec for-hire reef fish permit moratorium indefintely, unless limited access system created
2006	Amendment 26	Establish IFQ program for commercial red snapper fishery
2007	Amendment 27	Reduce commercial quota to 2.55 mp; reduce recreational quota to 2.45 mp; reduce rec bag limit to 2 fish and bag limit for caption and crew of for-hire vessels to zero; reduce comm min. size limit to 13 in. TL

2008	Amendment 29	Establishes landing requirements and allocation transfer procedures for commercial red snapper IFQ program
2010	Reg Amendment	Sets TAC for 2011 to 6.945 mp; commercial quota is 3.542 mp and recreational is 3.403 mp
2011	Reg Amendment	Sets quotas for 2011: commercial quota to 3.664 mp and recreational quota to 3.521 mp
2012	Reg Amendment	Sets quotas for 2012: commercial quota to 4.121 mp and recreational quota to 3.959 mp; Sets Anticipated TAC for 2013: commercial quota to 4.432 mp and recreational quota to 4.258 mp
2013	Framework Action	Sets quotas for 2013: commercial quota to 4.315 mp and recreational quota to 4.145 mp; Sets recreational bag limit to 2 fish in EEZ
Sep-13	Framework Action	Increases quotas for 2013: Increases commercial quota by 1.295 mp and recreational quota by 1.245 mp
2015	Framework Action	Establish recreational ACT with 20% buffer applied to quota of 4.312 mp; recreational season lenghts determined based on when rec ACT will be met, not when quota is met

2015	Amendment 40	Creates sector separation in recreational sector: federal for-hire vessels (FFH) (further divided into charterboats and headboats) and private rec anglers (PRA); FFH quota set to 42.3% and PRA quota set to 57.7% of the recreational allocation; establishes 3 year sunset provision on sector separation and associated mgmt measures
May-15	Framework Action	Sets quotas for 2015: commercial quota to 7.293 mp and recreational quota to 7.007 mp; Sets quotas for 2016: commercial quota to 7.12 mp and recreational quota to 6.84 mp; Sets quotas for 2017 and subsequent years: commercial quota to 7.007 mp and recreational quota to 6.733; The FFH and PRA quota, respectively, are: 2.964 mp and 4.043 mp for 2015; 2.893 mp and 3.947 mp for 2016; 2.848 mp and 3.885 mp for 2017.
Nov-15	Framework Action	Withholds 4.9% of 2016 commercial quota prior to the annual distribution of allocation to the IFQ program shareholders

2016	Amendment 28	Revises allocations to 48.5% for commercial sector and 51.5% for recreational sector; Given the red snapper stock ACLs of 13.96 mp for the 2016 fishing year and 13.74 mp for the 2017 fishing year; revises commercial quota to 6.768 mp and 6.664 mp and recreational quota to 7.192 mp and 7.076 mp for the 2016 and 2017 fishing years