Private Fish, Public Resource:
Socioeconomic Impacts of the Grouper-Tilefish Individual Fishery Quota (IFQ) Program on Gulf of Mexico Communities

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Chapter 4:

The Impacts of the Grouper-Tilefish IFQ Program on Central and Southwest Florida: Madeira Beach, Cortez and Beyond

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INTRODUCTION

This study considers the impacts of the Grouper-Tilefish Individual Fishing Quota (IFQ) program on fishing communities and fisheries in the Central and Southwest region of Florida. The Central and Southwest region of Florida produces the most grouper in the U.S. and the State of Florida. The region includes 11 coastal counties on the Gulf of Mexico and some inland counties as well. From north to south, these coastal counties are: Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, and Monroe. Within these counties are fishing communities, fishermen, dealers, processors, markets, restaurants, and others tied to the grouper-tilefish fishery and the IFQ program. All 11 coastal counties and a few inland counties, including Alachua, Orange among others, participate in the commercial grouper fishery and the grouper-tilefish IFQ program, yet the level of participation varies among them.

Research focuses, also, on the communities of Madeira Beach and Cortez. Madeira Beach and Cortez were selected for study in consultation with NOAA/NMFS personnel. Madeira Beach, located in Pinellas County, is known as "the grouper capital of the world" and lands the most grouper in Florida and the U.S. Madeira Beach is also associated with the history and development of commercial grouper fishing. Cortez, located in Manatee County, is a historic fishing village. Cortez is also a major producer of grouper in Florida and the U.S.

While these two communities remain important to the study, other communities in the Central and Southwest region are linked to commercial grouper-tilefish fishing and the IFQ program. These communities are considered as well. Participants in the commercial grouper and tilefish fishery and the grouper-tilefish IFQ program reside in coastal and inland communities and fish in waters that extend from Crystal River, located in Citrus County, to Key West, located in Monroe County. Discerning the impacts of the grouper-tilefish IFQ program on fishing communities and fisheries in the region requires a comprehensive approach.

For the purposes of this report, the following terms and definitions are used. "Fishery" refers to the natural resource harvested as well as those engaged in the harvest and use of the resource. "Fishermen," the term used by participants in this study, refers to those who harvest the resource. In keeping with National Standard 8 of the Magnuson-Stevens Fishery Conservation and Management Act, "fishing community" refers to a community "substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet its social and economic needs" (U.S.C. 1802, MSA § 3[17]). A fishing community includes a geographical space where those who participate in the fishery live and work as well as group of people sharing

a common interest, activity or livelihood like a community of fishermen. "Community" represents both structure and process, with the distinctive community form in the American South being the county (Arensberg and Kimball 1972: 106-107).

METHODS

Research was conducted over 19 months beginning January 2015. Site visits were made to Madeira Beach, Cortez, and other communities in the region associated with the grouper-tilefish fishery. Follow up visits to Madeira Beach and Cortez occurred over the research period. Photographs were taken during field research in the region.

Interviews and meetings with 70 individuals with ties to commercial fishing or the grouper-tilefish fishery serve as the primary source of information in this study. Participants in the study were identified through the reef fish permit database and list of dealers provided by NOAA/NMFS. Some participants recommended others and these individuals were contacted, also. A research protocol served as a guide for open-ended interviews.

Sixty of the 70 interviewed are or were associated with the grouper-tilefish fishery. These 60 individuals represent commercial fishermen, dealers, processors and charter boat operators and others in related activities. Among these are shareholders of IFQs and allocation, those who do not have IFQ shares but lease allocation, and those who do not have shares nor lease allocation. Although not a representative sample, these 60 individuals appear to represent the range of participants observed in the fishery. Ten of the 70 participants represent organizations that promote commercial fishing interests and marine research, education, and outreach.

Twenty of the 60 participants associated with the grouper-tilefish fishery provided in-depth interviews. These individuals had a lot to say and in-depth interviews lasted two hours on average.

Interviews were conducted in person and by phone. The majority of interviews were in person. In-depth interviews took place in person.

Visits to marinas, docks, area Chambers of Commerce, review of visitor guides and brochures, and local newspapers provided background information on communities in the region. The *Tampa Bay Times*, a local, regional, and national newspaper, was reviewed regularly. Relevant literature and data sources were researched and analyzed.

CENTRAL AND SOUTHWEST FLORIDA REGION

The Central and Southwest Region includes the coastal counties of Citrus, Hernando, Pasco, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, Lee, Collier, and Monroe as well as inland counties of DeSoto, Glades and Hendry. The region represents rural, urban and suburban environments, with the Tampa Bay area serving as the major urban hub to less populated urban, suburban and rural areas radiating north and south. Coastal cities to the north include Crystal River, Homosassa, and Spring Hill. Coastal cities to the south include Key West, Naples, Fort Myers, and Port Charlotte.

Figure 1. The Central and Southwest Region with research area shaded in green.
Source: U.S. Census County Map of Florida, 2000

The Tampa Bay area serves as the major metropolitan center of the region. Located on Tampa Bay, the metropolitan area includes the cities of Tampa, St. Petersburg, Clearwater and nearby cities and towns. Nearly 3 million people reside in the Tampa Bay area. With a population of 2,915,582 in 2014, the Tampa-St. Petersburg-Clearwater metropolitan statistical area (MSA) ranked 18th in the U.S. (Bureau of Economic Analysis 2015) and was one of the fastest growing metro areas in the nation (U.S. Census 2015). The MSA includes Pinellas and Hillsborough Counties. Health, education, insurance, tourism, commerce, and services remain important economic activities. A military presence is visible at MacDill Air Force Base in Tampa, the Coast Guard naval station in St. Petersburg and air station in Clearwater.

Tampa Bay is the largest estuary in the State of Florida, a productive ecosystem with 400 miles of open water and more than 2,000 miles of watershed (Tampa Bay Watch 2016). Many commercial and recreational activities, including commercial and recreational fishing, rely on and take place in Tampa Bay. Port of Tampa is Florida's largest port in tonnage and land. Port of Tampa harbors cargo ships and cruise liners and provides shipbuilding and repair facilities (Florida Ports Council 2016).

The North Port-Sarasota-Bradenton MSA is located just south of St. Petersburg and Tampa across Tampa Bay. Recognized as one of the fastest growing metropolitan areas in the nation (U.S. Census 2015), the population of North Port-Sarasota-Bradenton was 748,708 in 2014 and ranked 73rd in the U.S. (Bureau of Economic Analysis 2015). The MSA includes Manatee and Sarasota Counties.

North Port-Sarasota-Bradenton area is situated along Sarasota Bay, a 56-mile coastal lagoon that includes Big Sarasota Bay, Palma Sola Bay, Roberts Bay, Little Sarasota Bay, and Blackburn Bay (Sarasota Bay Estuary Program 2016). Port Manatee, the closest U.S. deep-water port to the Panama Canal, produces more than $2.3 billion annually and provides jobs and income for the local community (Port Manatee 2016). The Port is located in Manatee County near the entrance to Tampa Bay.

Table 1. Demographic Characteristics of the Central and Southwest Region by County
Source: Data from Florida Association of Counties (2016); Florida Legislature's Office of Economic & Development Research (2016); U.S. Census, 2010, 2015. Census data is from 2010 Census, with percent in poverty from 2014 and average annual wage from preliminary 2015.

County	Population	Persons/Sq. mile	Percent 65 or older	Family Households	Percent w/ Child < 18	Average Annual Wage	Percent in Poverty	Percent w/ HS degree	Percent w/ College degree
Citrus	141,236	242.8	31.9	41,368	25.7	$35,716	20.1	86.8	16.8
Hernando	172,778	365.6	25.8	49,313	32.6	$33,813	15.3	86.6	15.7
Pasco	464,697	622.2	20.7	127,079	38.1	$36,428	14.7	87.5	21.1
Pinellas	916,542	3,347.50	21.2	234,268	35.3	$46,044	15.2	89.4	28.3
Hillsborough	1,229,226	1,204.90	11.8	304,864	46.2	$49,914	16.8	87.1	29.8
Manatee	322,833	434.5	23.3	88,149	34.8	$39,444	14.1	87.7	27.5
Sarasota	379,448	682.6	31.2	106,952	28.1	$42,890	10.8	92.2	31.1
Charlotte	159,978	235.2	34.1	47,873	23.3	$35,668	11.9	89.1	20.9
Lee	618,754	788.7	23.5	171,026	33.9	$40,921	16	86.9	25.3
Collier	321,520	160.9	26.4	89,276	33	$44,985	14.3	85.7	32.3
Monroe	73,090	74.3	17.1	18,219	32.7	$38,902	14	90.4	29.7

A few characteristics about the Central and Southwest region are worth noting in Table 1. The counties vary from more urban to rural as illustrated in the persons per square mile. Additionally, older residents are most common in Charlotte, Citrus, and Sarasota counties, where they constitute about one-third of the population. In contrast, Hillsborough County has more young families. Here, family households with children under 18 years of age comprise nearly

one-half of the county's family households. The average annual wage in the Central and Southwest region ranges from a low of nearly $34,000 in Hernando County to a high of nearly $50,000 in Hillsborough County. The poverty rate is at or under the average for the State of Florida (16.6%) and the U.S. (15%) in 2014, with the highest rate in Citrus County and the lowest rate in Charlotte County. The educational profile of the region closely mirrors that of the State of Florida in 2014 (86.5% holding a High School degree, and 26.8% holding a college degree).

Along the coast of the Central and Southwest region, barrier islands provide protection for the mainland. The coastal waterways of the region feature diverse environments that range from estuarine saw grass marshes and mangroves to sandy beaches. Beaches in the region attract local, national, and international visitors and are often among "America's Best Beaches" selected by Dr. Beach (Beach 2016). Diverse and productive fisheries, both near shore and offshore, support commercial fishing and draw sports and recreational fishermen. Many commercial and recreational fish and shellfish are dependent on estuaries for some portion or all of their life cycle. It's estimated that 50-75% of commercial fish and shellfish landed rely on estuaries (Pendleton 2009-2016).

Madeira Beach, a city, is located in Pinellas County on a barrier island west of St. Petersburg. The population in 2010 was 4,264 (U.S. Census 2010). With white sandy beaches lining the Gulf of Mexico, tourism is the major economic activity. Commercial fishing, charter boat fishing, and recreational fishing are important economic activities, also. Madeira Beach is known as the "grouper capital of the world," landing the most commercial grouper in the U.S. The history and development of commercial grouper fishing is joined to Madeira Beach. Recreational fishing and boating are central activities among residents.

Cortez, a Census designated place (CDP), is located in Manatee County on a peninsula west of Bradenton. The population in 2010 was 4,241 (U.S. Census 2010). A small village with a tradition of commercial fishing, Cortez is a designated historic fishing village. Commercial fishing constitutes the major economic activity, with recreational fishing a significant enterprise and component of residents' lifestyle. Anna Maria Island, a barrier island west of Cortez, draws tourists and visitors to Cortez and protects Cortez from direct effects of hurricanes and other hazards.

Table 2. Demographic characteristics of Madeira Beach and Cortez
Source: U.S. Census, 2010, 2015

Community	Population	Population 2014 estimate	Percent 65 or older	Family Households	Percent in Labor Force 2014	Median Household Income 2014	Percent in Poverty 2014
Madeira Beach	4,263	4,297	24.3	1,076	52	$46,143	14.1
Cortez	4,241	4,114	25.6	1,348	39	$51,132	8.9

The character of Madeira Beach and Cortez differs, with Cortez a quiet hamlet and Madeira Beach a bustling beach town. Yet, the similarities of these two communities are striking. In addition to population and family household size, they share a similar percentage of older

residents. The differences in the percentage of those in the labor force and percentage in poverty are significant. However, poverty rates for Madeira Beach and Cortez were lower and almost the same, 6% and 6.1% respectively, in 2010 (U.S. Census 2010)

FISHERIES IN THE REGION

Fishing has been a significant activity in the region for millennia. Prehistoric peoples lived on the coast usually combining fishing with hunting to subsist, and some relied almost wholly on marine resources. The Calusa, encountered by the Spanish in the 16th century, lived almost entirely by fishing and reliance on the estuarine environment of Southwest Florida (Marquardt 1992). The Calusa were sedentary and exhibited a politically powerful and complex society (Marquardt 2014, 2016), with estimates of their population at 50,000 people (Florida Center for Instructional Technology 2002).

Today, commercial fishing supports the local, regional, state, and national economy. Although its size in relation to other economic activities in the region and State of Florida has diminished, fishing provides fresh fish and shellfish for local and regional markets, restaurants, and consumers who value and expect it.

The fisheries are diverse and include finfish and shellfish. The most valued commercial fisheries in the State of Florida remain spiny lobster, stone crab, reef fish such as grouper and red snapper, and pelagic fish like dolphin fish, wahoo, and kingfish. Stone crab, reef fish, and other pelagic fishing occur in the Central and Southwest region. Spiny lobster fishing takes place in the waters off the Florida Keys.

Like the diverse resources found in the region's waters, commercial fishing remains a diversified activity. Commercial fishermen often fish for multiple species of fish to make a living. For example, stone crabbers often fish for stone crab during the season from October 15-May 15. They'll fish for reef fish during the summer months. Other fishermen may fish for reef fish, mullet, and perhaps harvest blue crab. While some specialization does occur, particularly in the offshore long line fisheries and spiny lobster and stone crab fisheries in the Florida Keys, fishing in the region and the State of Florida may best be characterized as a small boat, often owner-operated, multi-species fishery.

GROUPER-TILEFISH FISHERY

An accurate assessment of the size and number of participants in the grouper-tilefish fishery in the Gulf of Mexico and the Central and Southwest region is difficult. While reef fish permits may provide one measure, permits are tied to vessels and many fishermen have more than one vessel. Furthermore, not all reef fish permit holders target grouper-tilefish. The number of dealers serves as another measure, yet dealers vary greatly in the volume of grouper-tilefish they handle. Shareholders of grouper-tilefish IFQs provide a third measure. In 2014, there were 628 shareholders, a decline from 766 shareholders in 2010 (NMFS 2015: 2) when the grouper-tilefish IFQ became effective. Yet, the actual number of individual participants in the fishery may be less than the number of shareholders because different share holders often represent an entity, for

example a corporation or family business, that controls many shareholdings (General Accounting Office 2002).

Some participants in the study provided estimates of the size of the fishery. One participant described the fishery as consisting of 600 offshore fishermen. Another estimated the fishery was composed of only 180 boats, with about 40 from Madeira Beach and the same from Cortez. A third suggested 300 boats in the fishery observing that "20% of the fishermen catch 80% of the allocation." In 2014, NMFS (2015: 14) reported 435 vessels, representing an increase of 21 vessels since 2013, with most vessels landing their catch in Florida.

The Central and Southwest region produces the most grouper in the U.S. and the State of Florida. Grouper landed in the Central and Southwest region comprised 94% of all grouper harvested in the Gulf of Mexico grouper-tilefish IFQ program in 2014. With total landings of 7,499,675 pounds of all species of grouper reported by NMFS (2015: 20) in 2014, the Central and Southwest region landed 7,073,946 of the total pounds (Florida Fish and Wildlife Commission 2016, see Table 3). Pinellas County landed 69% of all grouper landed in 2014 through the Gulf of Mexico grouper-tilefish IFQ program, accounting for 5,186,082 (Florida Fish and Wildlife Commission 2016, see Table 3) of the total 7,499,675 pounds landed (NMFS 2015).

Similarly, the Central and Southwest region produces the vast majority of grouper in the State of Florida. As illustrated in Table 3, Central and Southwest region accounted for 81% of the total pounds of grouper landed and 75% of the estimated value of grouper in the State of Florida in 2014.

Table 3. Grouper Landings in the Central and Southwest Region - 2014
Source: Landings data, Florida Fish and Wildlife Commission (2016)

Unit of Government	Pounds Landed	Number of Trips	Average Price/Pound	Estimated Value
State of Florida	8,757,727	15,744	$3.39	$29,654,805
Citrus	140,511	227	$3.17	$445,710
Hernando	30,906	91	$3.26	$100,666
Pasco	56,276	259	$3.88	$218,242
Pinellas	5,186,082	4,718	$3.12	$16,157,119
Hillsborough	113,954	70	$2.92	$332,356
Manatee	707,109	458	$3.13	$2,215,564
Sarasota	23,342	94	$2.77	$64,712
Charlotte	4,168	14	$3.27	$13,639
Lee	452,078	952	$3.42	$1,544,464
Collier	169,306	172	$2.79	$471,565
Monroe	190,214	2,509	$3.85	$731,506

Pinellas County landed 59% of all grouper landed (weight) in the State of Florida and accounted for 55% of the estimated value in 2014. Pinellas County was the major producer of grouper in the region in 2014. Manatee County accounted for second largest landings and estimated value of grouper in the region, followed by Lee County in 2014.

Landings of tilefish in the Central and Southwest region represents 37% of the total tilefish of 517,278 pounds landed in the Gulf of Mexico Grouper-Tilefish IFQ program in 2014 (NMFS 2015: 20). In the State of Florida, the Central and Southwest region contributes to a lesser degree to the state's tilefish fishery. Table 4 illustrates this point.

Table 4. Tilefish Landings in the Central and Southwest Region - 2014
Source: Landings data, Florida Fish and Wildlife Commission (2016)

Unit of Government	Pounds Landed	Number of Trips	Average Price/Pound	Estimated Value
State of Florida	1,001,573	1,394	$2.64	$2,640,150
Pinellas	52,564	131	$2.29	$120,558
Hillsborough	23,382	12	$0.96	$22,409
Manatee	15,018	22	$1.16	$17,450
Lee	12,504	18	$2.64	$32,981
Monroe	89,790	449	$2.86	$256,966

The Central and Southwest region accounted for 19% of the pounds landed and 17% of the estimated value of tilefish landed in the State of Florida in 2014. Monroe County landed the most tilefish in 2014, followed by Pinellas County and Hillsborough County.

The Fishing Community

In terms of demographics, research participants in the region's fishery were approximately aged 40s - 60s, and predominantly white male, yet a few participants were aged in their 20s - 30s, and some were of Hispanic or Latino heritage. Participants also included women, aged approximately 40s - 60s and white; women, aged approximately 20s - 30s, were represented, also. Retired or nearly retired participants in the fishery, aged 70 and older, were among those interviewed as well.

Women play visible and important roles in the fishery. A woman brought the first long line vessel and subsequent long line boats to the region, according to one participant. Women work as dealers; captains, co-captains and crew of vessels; and owners and managers of seafood markets and associated restaurants. Women are recognized as key business leaders and partners in the fishing enterprise.

The majority of participants reported a historic, family tie to their current occupation. The majority commented on carrying on the family business as a second, third, or fourth generation.

In these cases, participants had been active in the family business and transmission was from father to son or father to daughter. The majority of participants who fished had done so for more than 20 years, with most having fished for 30 or more years. Participants with historic and strong familial ties appear to be embedded in their communities.

Participants reported being active politically, assisting state and federal entities in fishery management efforts. In most cases, these individuals mentioned serving as advisors, attending and presenting at meetings. While they found this important, most added they did not like politics. Some participants mentioned activity in one or more organizations that represent commercial fishing interests.

The fishing community in the region may best be described as comprised of small, family-owned, business enterprises. Individuals, with support of family members, may assume multiple roles as fishermen, dealers, captains, seafood market and restaurant owners and managers. Fishermen often own one or two vessels, usually using bandit or rod and reel to harvest multiple species. A value for independence, an ethic of hard work, and historic family ties to fishing draw and keep these individuals in the fishery. Holding shares and allocation instills confidence and ensures their success.

Vessels and Gear

Grouper are found in shallow water and deep water of the Gulf of Mexico and fishermen harvest grouper in near shore and offshore waters. Tilefish tend to be found in deep waters. Fishermen in the grouper-tilefish fishery travel about 100 miles offshore to harvest grouper and tilefish. Their range of fishing varies from north to south along the Central and Southwest region.

Vessels reported by participants ranged in size from 25' to 60' in length. Participants reported using long line gear, bandit (electronic reel) gear, rod and reel, and spearfishing. Those using long line gear generally were fishing in the larger boats 40' to 50' or more. Those using bandit gear more commonly fished from vessels 30' to 45' or more. Those fishing with rod and reel were more often associated with vessels 25' to 30' or more.

Long line gear is the more "efficient" gear due to fishermen's ability to more easily capture greater numbers of bottom-dwelling grouper as well as red snapper and other valued pelagic fish. Long line fishermen reported landing around 6,000 lbs. fish a trip, with one referring to the fishing as "slow" when he landed over 5,000 lbs.

Yet, bandit gear along with rod and reel are recognized as the "traditional way to grouper fish." Bandit and rod and reel fishermen expressed pride in their prowess and method of fishing. One participant stated, "rod and reel fishing is the *real* way to fish. It takes skill and ability and keeps you busy all the time." Another reported that bandit gear fishermen "can land 5,000 lbs."

Some participants distinguished between rod and reel and bandit gear, noting the tendency of the government and others to refer to rod and reel as "bandit gear." To ensure clarity, one further described his rod and reel fishing as fishing with a "pole." However, some fishermen use both

bandit reel and rod and reel, and that may support the tendency to group of bandit and rod and reel gear.

Long line fishing trips are longer, lasting from 7 to 14 days. Bandit line fishing trips are shorter, generally 3 to 5 days or more. Some rod and reel fishermen with smaller, fast vessels reported fishing daily.

Dual-purpose vessels are common in the fishery. Of these, some participants reported have vessels equipped to stone crab and grouper fish. One participant used his vessel to long line then removed the long line equipment to bandit fish during the summer. A few participants owned dual-purpose commercial/charter boats that enabled them to commercial fish for grouper at times and take customers charter fishing at other times.

Commercial diving to capture grouper and other reef fish with spears appears to be growing in the region. Although no commercial diver was included in the study, a few participants recognized their presence and contributions to the fishery. One participant stated, "last year, one commercial spear fisherman landed 55,000 lbs."

One participant mentioned kayak grouper fishing as a potential concern. "They're going into areas that protect grouper and other fish, and fish are becoming 'boat shy.'"

Species Targeted

Fishermen in the Central and Southwest region target a variety of fish and shellfish. Fishermen must hold IFQ allocation, either owned or leased, to harvest and land grouper, tilefish, and red snapper. All participants who fish reported owning IFQ shares and allocation or leasing allocation as required for harvesting and landing grouper, tilefish or red snapper.

The majority of participants in the study targeted red grouper and gag grouper. While gag grouper remains the more valued and highly prized, red grouper is the most common and abundant. For example, in Pinellas County, red grouper constituted 82% of the grouper landings in 2014 (Florida Fish and Wildlife Commission 2016). In Manatee County, red grouper comprised 84% of the grouper landings in 2014 (Florida Fish and Wildlife Commission 2016). The firmer texture of red grouper makes "the best grouper sandwich," agreed participants in the study.

Some participants reported harvesting either gray (blueline) or golden tilefish. Tilefish is a deep water fish, and harvest is usually by long line. One participant reported providing gray tilefish to a restaurant and shipping out more valued golden tilefish. Five counties in the Central and Southwest region landed tilefish in 2014: Pinellas, Manatee, Hillsborough, Lee, and Monroe counties (see Table 4).

Yellowedge grouper, a deep water fish, was mentioned by one participant. This individual stated, "Yellowedge is a good eating fish, and it gets packed up and sent straight to Canada."

Some participants targeted black grouper, distinguishing "true" black grouper from gag grouper, which is sometimes referred to as "black grouper." Black grouper, they stated, was more common in warmer, southern waters of the region. In 2014, Monroe County, the southernmost county, landed more black grouper (88,668 pounds) than any other county in the Central-Southwest region (Florida Fish and Wildlife Commission 2016).

EXPERIENCES WITH THE IFQ PROGRAM

Experiences with the IFQ program vary among those in the fishery. The majority of participants in the study expressed discontent and concern with aspects of the program and identified adverse outcomes as well as benefits. A small portion of participants reported only good experiences, satisfaction, and support of the program.

Issues raised by participants in the study about their experiences with the IFQ program centered on IFQ shares, allocation, and leasing. A second topic tied to participants' experiences with the IFQ program involved red snapper and the red snapper IFQ program. Participants reported an overwhelming influx of red snapper 2015 and 2016 that was complicating and adversely affecting the fishery. Participants reported not having red snapper shares, enough shares, or ability to lease allocation to avoid red snapper by catch resulting in consternation and frustration with both the grouper-tilefish and red snapper IFQ programs.

IFQ Shares, Allocation, and Leasing

Key concerns expressed by participants revolved around IFQ shares, allocation, and leasing. These focused on "ownership" of shares and control of access to the fishery. The majority of participants own shares and possess allocation, while other participants have no shares and lease allocation. Both those with shares and those without raised concerns about the impacts of ownership, leasing, and control on the fishery.

The amount and distribution of shares varies widely in the region, with some holding a small amount of shares and some holding a large amount of shares. The initial distribution of shares and subsequent moves of some to buy out others' shares led to consolidation of the fishery or "winners and losers" as participants phrased it. According to many, some individuals became millionaires, while others lost out forever.

In addition, since 2015, shares are available to the public and reef fish permits are no longer a requirement. The majority of participants identified opening shares to the public and not tying shares to fishing as a mistake. These individuals expressed concern that investors, stockbrokers, bankers, national and international organizations have entered or will enter the program to make money. The majority of participants opposed this, viewing this outside presence as an indication that the fishery will consolidate further as wealthy shareholders buy out smaller shareholders and control the price of allocation. Most participants saw the future of the fishery at stake.

Participants reported difficulty in leasing allocation due to scarcity, and the wide variability of costs seems to bear this out. Stated one, "Someone is controlling the market, the cost of shares. The market is set by people who own the most shares." Another stated, "People with money

who don't fish got quota and they lease to fishermen like me who do all the hard work. And they make the money." Some participants referred to those who hold shares, don't fish, and just lease shares as "share lords."

Shares were initially determined on the basis of history and productivity, yet some participants found older, seasoned fishermen "cut out" of the fishery. One participant described the situation.

> Some of these fishermen who had been fishing a long time and had a history of fishing didn't think [the IFQ program] was going to happen or weren't aware or prepared. They didn't know how to fill out the paperwork with NOAA to get the history of their fishing recorded. Some ended up with few or no shares.

A lack of history also kept new entrants from acquiring shares. A participant told of one young man, a good fisherman, who bought a boat and fixed it up, "just like you're supposed to" but he did not have a history of fishing the previous two years. He "lost out" after making a big financial investment to enter the fishery.

Many participants referred to "big guys" and "little guys" in the fishery, with "big guys" being the large shareholders with "a fleet of long liners" and the "little guys" as small shareholders or small fishermen who lease allocation with one or two bandit or rod and reel boats. According to one participant, in the past it took hard work to succeed, now it takes money and hard work to even enter the fishery and succeed. Another observed, "It seems like it's a rich man's game. You need backing to get into [the fishery] and to make a living. It was a lot easier for the smaller guy in the past."

Impacts on the fishery are being felt in the region. "It's hard to find good captains and crew," stated one participant, "There's no future. You can't make any money." As one stated, "If leasing shares is too costly, there's no profit and the captain and crew lose."

Some participants identified "greed" as an adverse outcome of the IFQ program. According to one participant, greed had divided the community of fishermen that "used to get along" and ended friendships. A major challenge for the program, asked another, "How do you stop greed?"

The majority observed that no young people are going into fishing because it's too expensive and there's no future. "There's zero entry," stated one. Participants recognized the fishery was composed of older and aging fishermen and were disturbed by the lack of young entrants to the fishery. This poses challenges to the longevity and future of the fishery. Asked one participant, "Who will be left to fish?"

Red Snapper IFQ

During this research, participants and others in the region reported an overwhelming influx of red snapper. The re-entry of red snapper into the region was disrupting and displacing the grouper fishery. Too few participants in the region owned red snapper IFQ shares or were able to lease red snapper allocation, and this resulted in by catch of red snapper and expressed frustration. Participants reported waters "thick with American reds " and having to "fish through

the red snapper" as they attempted to reach grouper below. A few mentioned having to move from areas to avoid red snapper. The by catch of red snapper due to lack of or inability to secure red snapper allocation was described by some as "devastating."

Red snapper had been common in the region until the early 1980s and virtually disappeared until now, explained participants and others. In the past, fishermen could fish for red snapper but the red snapper IFQ program had allocated the majority of shares to the west Gulf where red snapper then thrived. While some IFQ shares and allocation was provided to the east Gulf, the amount was too small to meet the needs that this recent influx created.

The number of participants in the red snapper IFQ program in the Central and Southwest region is small, especially in comparison to those who participate in the grouper-tilefish IFQ program. According to NMFS (2015: 14), 83% of vessels that landed grouper-tilefish species also landed red snapper indicating a strong overlap in the fisheries and the grouper-tilefish and red snapper IFQ programs. Yet, in the Central and Southwest region, fewer counties are associated with the fishery. Table 5 illustrates the landings of red snapper and the estimated value in the region in 2014.

Table 5. Red Snapper Landings – 2014 in the Central and Southwest Region
Source: Landings Data, Florida Fish and Wildlife Commission

Unit of Government	Pounds Landed	Number of Trips	Average Price/Pound	Estimated Value
State of Florida	2,157,930	3,774	$3.88	$8,364,740
Citrus	4,054	38	$4.49	$17,464
Pasco	2,204	31	$4.78	$10,530
Pinellas	308,743	801	$4.32	$1,332,429
Manatee	14,458	97	$4.06	$58,714
Sarasota	1,055	15	$3.38	$3,569
Lee	75,904	201	$4.50	$341,203
Collier	7,568	16	$4.20	$31,767
Monroe	2,346	31	$3.66	$8,578

Pinellas County produced 14% of the total pounds of red snapper landed and 16% of the estimated value in 2014 in the State of Florida. Lee County landed the second largest quantity of red snapper in the Central and Southwest region in terms of pounds and value, followed by Manatee County as third largest producer of red snapper in the region.

VIEWS AND OPINIONS ABOUT THE IFQ PROGRAM

Participants in the study expressed views and opinions about the grouper-tilefish program. The objectives of the grouper-tilefish IFQ program are threefold: (1) to reduce overcapacity of the

fishery; (2) to increase harvesting efficiency; and (3) to eliminate the race to fish (NMFS 2015). Reducing overcapacity in turn would prevent derby fishing and (4) improve profitability of fishermen (NMFS 2015).

Participants varied in their views and opinions on how well the program has worked in the region. While a handful of participants expressed strong support for the program and requested no changes, the majority identified one or more areas of dissatisfaction and offered remedies to assist the goals and operation of the program.

The majority of participants was aware of the objectives and anticipated benefits of the grouper-tilefish IFQ program. Their comments and opinions are grouped by IFQ program objectives.

IFQ Objectives

(1) Reduce Overcapacity – Consolidate the Fishery

Participants recognized that the fishery has been undergoing consolidation since the start of the program. The initial distribution of shares and allocation led to a reduced number of fishermen participating in the fishery. In addition, share distributions made existing distinctions between "big guys" and "little guys" more obvious. Those without shares had to lease allocation, work as crew for others, or leave the fishery. Subsequent moves to buy up shares appeared to widen the divide among those in the fishery.

Opening shares to the public in 2015 raised alarm among the majority of participants, who expressed concern about the future of the fishery. "A few people or one person could end up controlling the whole thing." "There will be no one to fish." "The industry will be destroyed." However, one participant credited consolidation with eliminating transient fishermen and a more stable, committed fishery. Yet another stated,

> It's un-American. How can the government sell natural resources? Those who have shares, they just sit back and collect 15%. They just sell quota and let other people do the work. It's ruining the industry.

(2) Increase Harvesting Efficiency

One participant commented on the IFQ goal of "efficiency" and questioned its effects on the community and the fishery.

> Efficiency is always seen as a good thing. But it's inefficiency that creates jobs and brings money into a community. Long lines are efficient and they nearly wiped out the fishery.

Participants recognized the efficiency of long line gear in catching more fish. As one stated,

> Vertical lines can't compete with long line. Look at the economics of the situation. Long liners catch more fish.

However, participants who use bandit gear or rod and reel view these gears as the traditional and preferred way to fish for grouper, requiring more knowledge and skill, and resulting in a more sustainable fishery.

(3) Eliminate the Race to Fish/Prevent Derby Fishing

A few participants stated that there was no derby fishing in the grouper fishery. Derby fishing, they said occurred in the red snapper fishery. However, participants acknowledged that the IFQ program allowed those with shares or leased allocation to fish throughout the year whereas previously they would be limited to a specified period of 10 days during the month. The majority of participants identified flexibility in deciding when and how often to fish as a good outcome of the program.

On a related matter, one participant credited the IFQ program with putting bandit boats on a more equal footing with long liners through the limits of shares and allocation, and eliminating a gear conflict between the two. Others attributed this latter outcome to two fishery management measures: Amendment 31 that took inactive long liners out of the fishery, reducing the number by half; and the regulation that moves long liners out beyond the 35 fathom mark on May 1 through the summer to avoid sea turtles during the nesting period.

(4) Improve Profitability of Grouper-Tilefish Fishermen

Participants recognized an increase in value for grouper and tilefish, and market demand for grouper and tilefish. Participants recognized, also, that those in the fishery that held shares, particularly larger amounts of shares, were doing very well financially. One participant stated the program "made some people rich. Fishermen got wealthy." A few participants mentioned that fishermen with shares would be able to retire and pass on a legacy to their children. Others, who held no shares and had to lease allocation, lamented the variable prices of allocation and attendant costs that affected their ability to make a profit.

One participant described this as the "ex-fisherman price" as opposed to "ex-vessel price."

> 'Ex-fisherman price' is the dock price minus the cost of allocation minus the government 3% recovery fee. Then subtract the cost of fuel, food, bait, and other costs. Fishermen can't make any money. They have to work seven to nine years to break even.

IFQ Benefits

The anticipated benefits of the grouper-tilefish IFQ program are: (5) greater market stability; (6) more flexibility for fishermen and fishing operations; (7) cost-effective and enforceable management; (8) improved safety at sea; (9) balanced social, economic and biological benefits; and (9) reduced by catch and by catch mortality (NMFS 2015). Participants in the study were aware of the expected benefits of the IFQ program, and commented on one or more of the IFQ benefits.

(5) Greater Market Stability

In terms of the market, participants recognized that higher price and demand led to more stability in the market. Some stated they closely watched market and, if prices got too low, they would stop fishing. Others noted impacts on the consumer. While the supply of fish was available to consumers nearly year round, the increased costs have affected consumers' ability to buy.

(6) Flexibility for Fishermen and Fishing Operations

Participants expressed appreciation and support for the ability to fish year-round and to schedule their fishing activity. As mentioned (see Objective 3, Eliminate Derby Fishing, above), participants acknowledge flexibility in deciding when and how often to fish as one of the major benefits realized by the grouper-tilefish IFQ program. Flexibility provided by the program fits well with fishermen's value of independence, enabling them to be in control as decision maker and actor or as one participant described "to be your own man."

(7) Cost-Effective and Enforceable Management

Participants brought up management and enforcement through three topics: the recovery fee, VMS, and enforcement activities. Of those who mentioned the recovery fee, all expressed unhappiness with the cost (3%), finding it excessive, and questioned where and how the funds were used. Yet, a few recalled experiences where grouper-tilefish IFQ program personnel assisted them. In one case, a leaser had transferred allocation to the wrong vessel and IFQ program personnel helped correct the situation. In another, a vessel had to return to dock before fishing and program personnel determined procedures for handling this scenario.

Participants commented on the VMS system, with most expressing concern that their fishing activity was tracked and recorded. Fishermen, especially those utilizing mobile gear, value secrecy and rarely share good fishing spots. There was concern expressed about the security of this data. Other comments addressed the reliability of the VMS system with some participants encountering difficulties with the operation and replacement of faulty VMS systems. In some cases, the VMS system reported fishing activity on docked vessels.

Enforcement evoked a variety of comments. The majority associated the recovery fee with support for enforcement of the IFQ program. The presence of enforcement at landing of catch was expected, yet most observed randomness while others noted the presence of Florida Fish and Wildlife Commission (FWC) researchers and observers at landings. In Florida, FWC provides enforcement support for the grouper-tilefish IFQ program. While most welcomed enforcement at landings, for those with seafood markets and restaurants nearby the only concern expressed was the possible negative impression that the presence of enforcement may have on customers.

Some commented on regulations, fines and violations. The majority of participants accepted regulation of the fishery, with some remarking on the biological benefits of the IFQ program in improving the stocks. Some referenced cases where violations of regulations had resulted in fines and imprisonment. These cases, particularly the amount of fines and term of imprisonment, underscored participants' compliance with fishery regulations.

(8) Improved Safety at Sea

Participants mostly referenced the program's anticipated benefit whereby fishermen would not have to fish in bad weather. Of those who commented on this, most stated that fishermen do not fish in bad weather. However, one participant stated, "We fish like hell when [grouper] are out there. Weather doesn't matter."

(9) Reduced By Catch and By Catch Mortality

Participants expressed grave concerns about by catch and by catch mortality, specifically associated with red snapper and the red snapper IFQ program. Participants lamented their inability to lease allocation that would allow them to land the snapper by catch. The resulting "regulatory discards" of red snapper by catch, and the impacts on the biomass, were viewed as immoral and a major fault of the IFQ program.

PERSPECTIVES ON THE FUTURE

Participants in the study who considered the future of the fishery expressed positive and negative sentiments. Some viewed the IFQ program as promoting a sustainable fishery and a thriving fishery. A few, expressing confidence in the future, intended to expand their operations by adding a long line vessel. Others expressing concerns about the future, questioned the longevity of the fishery. Some viewed the fishery as "a dying industry."

The majority of participants, including large and small shareholders, viewed the introduction of public shareholders in the grouper-tilefish fishery as the biggest threat to the future of the fishery. The "public" was described as "Wall Street investors" without ties to the fishery or the community yet with "big money" to purchase shares and possibly take control of the fishery. This new class of "brokers" without "skin in the game" posed problems for the grouper-tilefish fishery, commercial fishing, fishing communities and markets in the region. If left unchecked, the fishery would devolve and those within the fishery would be forced out or leave. Consolidation of the grouper-tilefish fishery raised concerns about a few large shareholders or one shareholder controlling the fishery, despite the program's cap on shares.

Participants perceived those in the fishery as aging and the lack of young fishermen in the grouper-tilefish fishery as an indication of a "dying industry." Here again, the initial share allotment and consolidation of the fishery were viewed as creating hurdles to new and young entrants into the fishery. Participants saw no future for young people due to the costs involved in entering the fishery and no prospect to purchase shares. Young people would have to work as captain or crew and be limited to leasing allocation with little opportunity to make a successful living. Without young people to take over for retiring fishermen and others, the fishery would fade away.

Participants viewed the future for captains and crew without holding shares as limited. With no opportunity for advancement, the best of captains and crew had left or would leave the fishery.

A few participants, however, thought captains and crew could succeed through leasing allocation.

Participants provided recommendations to redress concerns about the grouper-tilefish IFQ program. IFQ shares and the leasing of allocation were the focus of the majority of recommendations.

Recommendations

Many participants in the study provided recommendations to improve the grouper-tilefish program. The most commonly reported recommendation addressed shares. These were phrased as:

"Only people who actually fish for income should have a quota."
"Take all the shares out of the hands of people who aren't fishing. Shares should stay in the hands of the traditional fisherman."
"Look at the boats out there and distribute the shares more evenly."
"You need to catch fish to own or lease shares."
"Make it 'pain to gain.' If you have IFQs, you need 'skin in the game. You need a boat permit, VMS, etc. to maintain and lease shares. These are real costs."

Other recommendations were related to leasing of allocation. These were phrased as:

"Fix share [allocation] leasing."
"There should be a cap on the price of leased shares [allocation]."
"The government should handle purchase of shares/lease of allocation, perhaps through a website with oversight, monitoring."

Additional recommendations addressed the longevity and future of the fishery. Primary among these were to find ways to incorporate new entrants, particularly younger fishermen, into the grouper-tilefish fishery.

RESEARCHER'S REFLECTIONS ON THE IFQ PROGRAM

The Central and Southwest region of Florida is the heart of the grouper fishery in the U.S. and the State of Florida. In 2014, the Central-Southwest region produced 94% of all the grouper landed in the Gulf of Mexico grouper-tilefish IFQ program. Central and Southwest Florida produced 81% of all grouper landed and 75% of the estimated value in the State of Florida in 2014 (see Table 3).

Pinellas County is the major producer of grouper in the U.S., landing 69% of all grouper landed in the Gulf of Mexico grouper-tilefish program in 2014. Pinellas County produced 59% of the grouper landed and 55% of the estimated value of grouper in the State of Florida in 2014 (see Table 3). Madeira Beach, the primary community landing grouper in Pinellas County, is the "grouper capital of the world."

Manatee County is the second largest producer of grouper in the Central and Southwest region, landing 8% of the grouper in the State of Florida in 2014 (see Table 3). Cortez is the primary community landing grouper in Manatee County. Lee County is the third major producer of grouper in the region, landing 5% of the grouper in the State of Florida in 2014.

Grouper remains important to the communities and the counties in the Central and Southwest region, to the State of Florida, and the U.S. Grouper is a "Florida thing," as one participant described, harvested and mostly consumed locally and in the State of Florida. Harvesting grouper, commercially and recreationally, and consuming grouper, is part of the culture and experience of living on and visiting the Gulf coast of Florida. Tourism touts harvesting grouper by charter boat or guide and consuming grouper at restaurants and seafood festivals. The popularity of grouper drives restaurants to offer "the best grouper sandwich" from the local grouper fishery sometimes adding imported grouper to meet the high demand at competitive prices.

In Madeira Beach in Pinellas County, Lucas (2001: 38) reported 70% of grouper landed was consumed within 40 miles, with 30% going to other parts of Florida, out of state, and Canada. Although the popularity and demand for grouper has increased since then, results of this research support a similar finding, with increasing export out of state, for Madeira Beach and other major producing communities in the region. However, in communities that land smaller amounts of grouper, usually in more rural counties of the region, the vast majority of grouper appears to be sold and consumed in local or nearby markets and restaurants within the state.

Grouper has become an even more highly valued fish that is now available year-round due to the grouper-tilefish IFQ program. These economic benefits create stability and engender a sense of pride among fishermen, dealers, market and restaurant owners and others in the fishery. Yet, the increased cost of grouper may be moving grouper out of the hands of local consumers. During research observations, prices for grouper in seafood markets hovered around $11 per pound for whole red grouper and around $20 per pound for red group fillet. For residents in the Central and Southwest region with average annual wages ranging from $34,000 - $50,000 (see Table 1), the costs of purchasing grouper may be exorbitant. Similarly, restaurant prices for grouper entrées generally ranged between $20-$30, making the choice of this dining experience a special treat for local residents.

The grouper-tilefish IFQ program appears to have changed the fisheries and fishing communities in the Central and Southwest region. For some, the changes have been beneficial, yet not as beneficial for others.

The initial allotment of grouper-tilefish IFQ shares and subsequent consolidation of the grouper-tilefish fishery has created in the process a situation of winners and losers. Participants in the grouper-tilefish fishery recognize this fact, stating the IFQ program "made millionaires" among some of them and eliminated others among them from the fishery. Studies of IFQ and ITQ programs reveal that the initial allotment of shares often creates a windfall, enriching some over others, and reducing the number of fishermen in the fishery (National Research Council 1999, Pinkerton 2014).

Unlike participants in the study of the five-year impact of the red snapper IFQ program, the majority of participants in this research expressed concerns and dissatisfaction with the grouper-tilefish IFQ program. In a mail survey to determine fishermen's attitudes and perceptions of the red snapper IFQ program, Keithly et al. (2015) found that participants with large shareholdings of red snapper IFQs were "very satisfied" with the program, whereas those with small shareholdings were the "least satisfied."

In contrast, participants in this research with large shareholdings of grouper-tilefish IFQs as well as participants with small shareholdings were discontent with one or more aspects of the grouper-tilefish IFQ program. The majority of participants, including those with medium shareholdings, had a lot to say both good and bad about the grouper-tilefish IFQ program. Only a handful of participants expressed complete satisfaction with the program, indicating they wouldn't change a thing. Of these, the happiest appeared to be small share holding owner/operator/dealers with one or two vessels and enough shares to fish full-time and the ability to market their catch directly to restaurants and seafood markets.

A primary concern of participants with large and small shareholdings of grouper-tilefish IFQs involved the continuing consolidation of the fishery with the introduction of public shareholders in 2012. Public shareholders, without a reef permit and "skin in the game" in the fishery were viewed by the majority of participants as a threat to the future of their livelihood and the fishery. Vestiges of this were seen in the variability of lease allocation costs among participants.

This is a valid concern. In 2014, NMFS (2015: 2) reported 29 new shareholder accounts and a 26% increase in the number of shareholder accounts without permits in the grouper-tilefish IFQ program. Accounts without permits constituted 4.6-7.69% of overall quota share in 2014 (NMFS 2015: 2). In addition, as one of the indicators of consolidation NMFS (2015: 40) reported shareholder accounts declining 18% since the start of the grouper-tilefish program in 2010, with most of the reduction occurring among small shareholders. In addition, NMFS (2015: 41) reported an increase in the percentage of shareholder accounts "that are only transferring allocation (no landings)," with 51% of the tilefish, 41% of the deep water grouper accounts, and 26-27% of the remaining share categories only transferring allocation.

The rise of new entities serving as "brokers" to only buy and sell shares and lease allocation occurred within the first five years of the red snapper IFQ program (Gulf of Mexico Fishery Management Council 2013: 45). In IFQ programs, shares become a valued commodity that are more easily traded and accrue more profit than if fished. In a global review of Individual Transferable Quota programs, Pinkerton (2014) found that permits [shares] attracted investors with access to capital that bought and leased permits to fishermen who couldn't afford them. The National Research Council (1999: 10) cautioned that leasing of quota shares may need to be restricted "to avoid creation of an absentee owner class." Accordingly, it is recommended that the public holding of shares be revisited and, if necessary, restrictions be placed to ensure grouper-tilefish IFQ shareholders maintain direct physical engagement (or "skin in the game") in the grouper-tilefish fishery.

The process of consolidation in the fishery appears to be continuing. With entry of public shareholders, this may lead to further changes in the fishery and fishing communities in the Central and Southwest region.

Madeira Beach, Cortez and some of the communities in the Central and Southwest region are experiencing recent growth and development. While this may be due to the region's recovery from recession in Florida and the U.S., the economic benefits of a more highly valued grouper fishery and wealthier fishermen, dealers, and fish houses contribute to this as well. In Cortez, recent upgrades and expansion of fish houses and associated markets and restaurants are visible signs of success. In Madeira Beach, increased activity at the fish houses, nearby seafood restaurants, and residential growth signal success, also.

However, not all communities and counties in the Central and Southwest region are faring as well. More rural counties with smaller and fewer shareholders of grouper-tilefish IFQs are vulnerable economically. Since more of these smaller shareholders tend to be small boat owners, concern arises that these shareholders may be removed as the grouper-tilefish fishery continues to consolidate. Pinkerton (2014) found globally that small shareholders and small boat fisheries tended to be eliminated as part of the adverse impacts of ITQ programs. Certainly, for rural communities and counties with higher poverty rates and fewer economic alternatives, the loss of this segment of the economy could be devastating.

The paucity of young people in the fishery concerns everyone. With an aging population of fishermen, will anyone replace them when they retire? Incentives for support and success for young new entrants and re-entry of seasoned fishermen would go a long way toward ensuring continuity and growth in the fishery.

By catch and by catch mortality needs to be addressed, also. The reported experiences of participants in the study involving by catch of red snapper are troubling. Addressing and remedying the situation, however, would entail revisions to both the grouper- tilefish IFQ program and the red snapper IFQ program.

Yet, one aspect of the grouper-tilefish program that received unanimous approval among research participants in the study was the opportunity for fishermen to fish when and how often they wanted to fish. Fishermen appreciate the flexibility and autonomy that the grouper-tilefish IFQ program provides. Autonomy and flexibility fit well with the value of independence that fishermen hold dear, the value that drew and has held many of them in this livelihood.

Private Fish, Public Resource: Socioeconomic Impacts of the Grouper-Tilefish Individual Fishery Quota (IFQ) Program on Gulf of Mexico Communities

Chapter 5:

Impacts of the Grouper-Tilefish IFQ Program on Florida's Panhandle

David Griffith

Introduction

The region we are calling the Florida panhandle extends from Pensacola in the west to Steinhatchee in the east and south, encompassing the communities of Panama City, Apalachicola, Port St. Joe, Carrabelle, Panacea, and several other small communities either on or near the water, including, from west to east, the 13 counties of Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, Wakulla, Jefferson, Tyler, Dixie, Levy, and Citrus (see Figure FP.1). Like the other regions studied, the fisheries of this area are a mix of commercial, recreational, and charter boat operations that have encouraged the development of a complex infrastructure of seafood processing facilities and restaurants, marinas, boat repair facilities, bait shops, fuel and ice services, and symbolic supports of media outlets, fishing museums, and the ubiquitous fishing and nautical iconography one inevitably sees in coastal communities.

Among all this, the commercial grouper-tilefish fleet has been a critical component of the region's society and economy since the late 19th century, with fully established fish houses and fleets documented as early as 1896 and some waterfronts, such as Panama City's and Apalachicola's, packed with vessels and fish processing facilities by the turn of the 20th century. Florida Panhandle fisheries are varied and vibrant, deriving from a deep and at times contentious history of commercial and recreational fishing in the Gulf of Mexico. Despite recent crises such as a spate of early 21st century hurricanes, red tides and other environmental risks, and the April 2010 Deep Water Horizon (BP) oil spill, the fisheries remain sources of income for thousands of families.

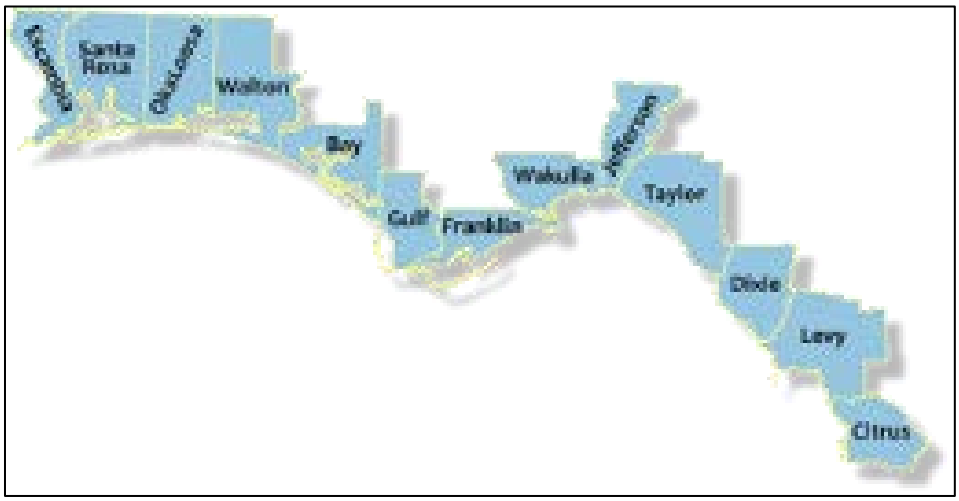


Figure FP.1. Florida Panhandle Coastal Counties

Today the grouper-tilefish fleet is spread across the region and its multiple fisheries in a way that fully entangles it in food production, energy, real estate, insurance, finances, tourism, and other sectors of the economy. At the far west end of the Panhandle, in Pensacola and Destin, many of the grouper-tilefish commercial fishermen operate charter boats, fishing commercially during the winter months and running charters during the summer. In Apalachicola and other communities of the Big Bend region—Panacea, Alligator Point, Carrabelle—some grouper fishermen supply their own or others' local restaurants, while still others fish for the large fish houses and dealers who supply markets in New England and beyond. Further east and south, grouper-tilefish fishermen hailing from Steinhatchee overlap with the long-lining fleets fishing from Tarpon Springs to the Florida Keys.

These connections have embedded the grouper-tilefish fleet in multiple Gulf of Mexico fisheries, most prominently red snapper but also amberjack, vermillion snapper, black sea bass, porgies, stone crabs, blue crabs, and king mackerel. At the same time, they have made the fleet indispensable to providing the public access to the Gulf's high quality seafood, either through market channels or by means of direct fishing from party and charter boats. The involvement of party and charter boats in the fishery, and the fact that many charter boat fishermen fish commercially during the winter time, has led to connections between the fishery and the region's tourism—a key sector of Florida's and the Panhandle's economy and a critical part of their identity and history.

Regional Overview and Panhandle History

The Florida Panhandle has been known by three different names that highlight distinct parts of its history, economy, and society: the Emerald Coast, the Forgotten Coast, and the Redneck Riviera. The Emerald Coast calls to mind the new, glittering shopping centers, high rises, gated communities, golf courses, and other parts of the region occupied or frequented by the region's wealthier residents or visitors. The Forgotten Coast resonates with the sentiments of many of the region's inhabitants in that it is a region bypassed by the rapid real estate and tourist growth that has characterized much of the state and even, in the minds of some, by time itself, still tied to the small farms, old growth forests, and multiple fisheries of the early twentieth century, when most of Florida was still uninhabited. The Redneck Riviera—a term derogatory to some—speaks to the region's working class heritage, tied to the region's military bases and opportunities for small, independent businesses that operate out of spaces rarely larger than a flea market stall, and its tendency, through the years, to attract more working class, family visitors than those interested in the high-priced tourist packages of Disney World, Busch Gardens, or Key West.

Each of these designations, and what they imply, contains grains of truth. The Emerald Coast is the cosmopolitan, metropolitan image that tourist boards, real estate agents, and many local politicians like to promote, encouraging gentrification through pricey leisure and recreational alternatives and services for wealthy retirees. All along the coast, expensive real estate covers portions of the landscape, manifested in walled communities of villas, condominiums, and mansions with names like Ridge Walk, The Retreat, and Destiny, in yacht basins, in country clubs, and in the multiple high-dollar shopping and tourist venues, including high-dollar charters for boating, fishing, and touring. These venues seem more prevalent in the west, in and around

Pensacola and Destin, than in the east and south, an impression that is borne out by the census. In Florida's District 1, which includes the far west counties of the Panhandle, nearly one in five households, or 19%, makes over $100,000 per year, while in the district to the immediate east the figure drops to around 17% and in the district to the east and south of this the figure drops to 16%. This decline, though hardly precipitous, roughly follows a gradual transition from west to east along the Panhandle, with the communities further east more likely to have higher rates of poverty.

By contrast, the designation Redneck Riviera suggests a region visited and inhabited by working class families with ties to Deep South rural lifestyles and, often, military and veteran backgrounds. Much of the region's infrastructure would support this. The region does have several military installations, from Elgin Air Force Base near Pensacola to Tyndall Air Force Base just east of Panama City, along with Marine and Naval support and training centers. Further, just as much of the region sports expensive real estate, at least as much or more of the region shows multiple signs of economic depression, with many empty storefronts and closed or abandoned offices, much of the tourist infrastructure dated and rusting or crumbling, and many inexpensive motels that have been colonized by the downtrodden and poor. Social Service offices are abuzz with lines of clientele. Much of the housing throughout the area is far from upscale. Many neighborhoods are rundown, with rusting cars and boats in their yards, along with crab traps and other fishing equipment. In 2014, 15.1% of Bay County, where Panama City is located, was under the poverty line. The rates are higher further east, around the Apalachicola area and Carrabelle, near 25%. Pawn shops abound. The Dollar General Stores are thick with the disabled, elderly, and visibly poor. Flea markets and swap meets offer opportunities for buying and selling used, recycled, and discounted products ranging from household goods to food, clothing, and tools.

Between the images and realities associate with the Emerald Coast and those associated with the Redneck Riviera are those associated with the Forgotten Coast. This is the coast that Marjorie Kinnans Rawlings chronicles in her 1930s memoir, Cross Creek, in which she celebrates such characteristics as "shabbiness":

> *"I think that the shabbiness of the Creek is part of its endearing quality. I for one might admire, but never truly love, an affluent perfection. The Williamsburg restoration, for instance, is fine and proud, but it is something only to be stared at. Old Williamsburg lived in genteel poverty that was more elegant than the new shining Governor's mansion, for its gentility came not from superimposed wealth but from long years of gracious living… The Creek's shabbiness was never elegant and never will be. It is merely comfortable and weather-beaten, meeting Time halfway. I am sometimes tempted to put up a new fence across the house yard. I have always thought that a white picket fence must be a great comfort to a householder… I tell myself that a white picket fence would interfere with the feeling one has inside the house of being a part of the grove; that a new fence would mean tearing out the coral honeysuckle vines that cling passionately to the old wire. But the real objection is that an elegant fence would bring to the Creek a wanton orderliness that is out of place"* (1942:16-17).

This passage not only fits the feeling one gets in this area from the mix of traditional industries, including commercial fishing, and the old, sagging buildings and residences alongside the newer developments, but, interestingly, the two contrasting references—to the museum of restored Williamsburg and the fence—are also particularly relevant and timely to the kinds of changes taking this area. In terms of the first reference, local museums, as tourist attractions, have attempted to preserve cultural heritage in the quaint and essentialist ways, often portraying commercial fishing as a dying art. Regarding the references to fencing, and the quality of the fence, up and down this coast gated, or fenced, communities have arisen—much in the way of policies and sympathies that confine indigenous peoples to specific roles, identities, cultural behaviors, and so forth—along with their private security forces. These fences protect people from having to interact with those parts of the local society who linger on as the working class and the struggling, small businesspeople who piece together livelihoods as tour guides, shopkeepers, waitresses, and other working poor. "Good fences make good neighbors," Frost said, but it is still a question as to whether he was being serious or facetious when he said this.

Most of the written history of this area makes references to the commercial fishing industry, particularly oystering but also, in the river, a catfish heritage and, in the Gulf, of course, a long history of shrimping. At the same time, the Apalachicola River's importance in shipping is a prominent part of the historical record, with references to steamboat traffic and, significantly, logging and related industries, such as the manufacturing of turpentine. These enterprises indicate a lengthy history of natural resource extraction and interaction across the Florida Panhandle, some of which resulted in the establishment of state forests and other methods of protecting resources, including fisheries management. Out of this lengthy history, too, have emerged local attachments to natural resources, whether terrestrial or coastal or marine, that continue to influence residents' positions toward state and federal management of those resources.

People typically refer to smaller towns like Apalachicola, Destin, and St. Joe as "quaint"—probably for their relatively small size, art galleries, antique stores, and local alternatives for lodging and dining, with much of the dining highlighting seafood. Apalachicola, for example, known across much of the United States for its oysters, is home to the "oldest maritime event" in Florida—the Florida Seafood Festival. This town is all about seafood, particularly oysters, but also shrimp, red snapper, amberjack, grouper, triggerfish, and other species. There are several oyster and shrimp plants in town. In addition, Apalachicola hosts an artists' festival annually where they invite several artists who paint in the *Plein Air Tradition*—a tradition of painting in the open air that, here, results in paintings not unlike Van Gogh's wheatfield with crows, where the paint seems to be applied liberally, making the paintings replicate the decrepit character of the subjects that artists here paint: old, fallen down seafood houses, abandoned boats, beekeeping, railroads gone under, and so forth.

Several other communities dot this region, although most of them are small, beach communities that appear to be struggling. Only Pensacola and Destin appear vibrant, but their vibrancy derives from tourism, the development of large gated communities, and the military presence. Panama City also has a large military presence, but parts of the community have not aged well. Much of its tourist infrastructure is ailing. When you move east across the panhandle toward Apalachicola you pass through Mexico Beach, Port St. Joe, and a few other coastal towns. Of all

of these, Apalachicola appears to have a pretty vibrant community, but then the villages beyond, toward the end of the Panhandle—Eastpoint, Carrabelle Beach, Carrabelle, Lanark Village, Alligator Point, Panacea, etc.—all seem rundown and decrepit. Panacea is currently struggling with an incorporation issue; signs for and against are posted all over town. Those against said that they will experience new taxes and more government intervention. Those for it say that it will improve the community and will entail no new taxes.

In general, the communities are small. East of Panama City, along the coast, all the way to Steinhatchee, there are no cities of any more than a few thousand souls. Apalachicola and Port St. Joe are the largest, but beyond that you have to get to Perry, which is not on the coast, to experience a community with any sense that it isn't just a string of homes nestled in among small restaurants, fish houses, gas stations, and convenience stores. The table below presents a few statistics on the counties of the region.

Table FL1: Florida Panhandle County Population Statistics: East to West

County	Population	Persons/ Square mile	Percent 65 or older	Average annual income	Percent in poverty	Percent with HS degree	Percent with College degree
Escambia	306,944	467.6	14.4	$39,364	15.3	88.5	23.9
Santa Rosa	162,925	161.1	12.9	$33,904	11.2	90.2	26.5
Okaloosa	191,898	206.3	13.9	$41,135	12.4	91.0	28.5
Walton	60,687	58.5	16.2	$32,803	15.8	84.8	25.1
Bay	173, 310	228.5	14.5	$36,857	15.6	87.6	21.6
Gulf	16,346	29.0	16.3	$34,183	23.1	79.6	14.7
Franklin	11,840	22.1	17.4	$29,364	25.3	78.4	16.0
Wakulla	31,283	51.6	10.8	$32,544	15.1	87.5	17.2
Jefferson	14,519	24.3	16.5	$31,206	18.0	80.1	17.8
Taylor	22,824	21.9	15.6	$37,217	23.4	74.5	10.0
Dixie	16,468	23.4	19.3	$32,077	27.1	79.1	7.5
Levy	40,448	36.2	19.4	$29,234	21.2	80.8	10.5
Citrus	141,501	243.3	31.9	$35,144	20.1	86.8	16.8

Source: Florida Association of Counties www.fl-counties.com/about-floridas-counties/county-statistics accessed spring & summer, 2016.

The above statistics support observations made above concerning impressions of the region as you move from Pensacola and Destin east and south. In general, poverty levels are lower in the eastern region, rising sharply from Bay to Gulf counties and remaining at between a fifth and a quarter of county populations in six of the eight counties west of Bay. Percentages of people with college degrees are lower in these counties as well.

Many of the counties are rural in character, with low populations and population densities of under 30 people per square mile, although five have populations over 100,000 and correspondingly high population densities. With the exception of Citrus County, the more populated counties tend to have higher percentages of their residents with college degrees, lower

poverty levels, and higher average annual incomes. This suggests that the poverty tends to be more concentrated in the region's rural areas, again supporting observations made above about the poor condition of a good deal of rural housing. Many rural housing sites also indicate that their residents employ multiple strategies to make ends meet, including fishing gear and boats indicating the use of marine resources to supplement household incomes.

In addition, many of the occupations in either natural resource extraction or tourism, which many of the people interviewed have, generate far lower annual incomes than those suggested in the table above. People in leisure and hospitality (tourism) jobs, for example, tend to have annual incomes nearly half those of the average, around $16,000 to $18,000 per year, and jobs in natural resources and mining, which would include fishing, are generally around $2,000 to $3,000 less than the average (Association of Florida Counties 2016: www.edr.state.fl.us, accessed July 17, 2016). This results in many people in the region, including some of those interviewed for this study, relying on multiple sources of income to make ends meet.

Overview of Panhandle Fisheries

We have already noted the importance of oystering and shrimping in the Panhandle, as well as the grouper-tilefish fleet's targeting of red snapper and other species, but it is important to point out that, in the Panhandle, the commercial fisheries are integrated with direct seafood consumption in local restaurants and seafood markets, with the charter boat fleet, and with the tourist industry. Many of those participating in the grouper-tilefish IFQ program also participate in the red snapper IFQ program and operate charter boats for tourists during the summer months. As such, the fleet is often based in marinas that are either predominantly recreational or are owned by municipalities that have cordoned off sections specifically for commercial vessels. In St. Andrews Marina in Panama City, for example, at least four vessels participate in the IFQ program, although the marina is home to other types of commercial vessels and to a variety of sailboats, private recreational vessels, leisure crafts, yachts, and other vessels that have no connection to commercial fishing. During a visit to the marina, Griffith described it as follows:

> *St. Andrews is a large municipal marina that sits in section of town that has a few upscale-looking shops and bars. While it is mostly home to sailboats, some fishing charters, and recreational vessels, one dock is majority-dedicated to commercial boats: longline yellowfin tuna and other longlining vessels, a couple of deep-water grouper/ snapper vessels with bandit rigs, and a few shrimp boats.*
>
> *In the Marina store they told me that two of the vessels in port today participated in the grouper IFQ program. The marina store, open seven days a week, provides some supplies but principally caters to tourists and casual visitors, selling souvenirs, t-shirts, snacks, and so forth. There are also other facilities that sell ice and fuel, and they have just acquired an ice plant, making it possible for commercial fishermen to buy ice where they dock. Two fishermen were hanging out on a vessel that had spools with blue lines fitted with hooks. They said this was a yellowfin tuna longlining vessel—unrelated to the grouper IFQ program (Griffith's field notes, February 28, 2016).*

Two IFQ vessels

Additional vessels at St. Andrews Marina

The above description and photographs show how the commercial fleet is more or less wedged into the recreational boating and tourist geographies of the region. Even in places like St. Andrews Marina, where some docks seem to have been earmarked for commercial use, there are far more recreational than commercial vessels. In the Panama City Marina in downtown Panama City, for example, they have no commercial vessels and only a few charter boats.

While dock space may be a continuing problem for the commercial fleet of the Florida Panhandle, the fleet does have access to the multiple services required for a commercial fishery to thrive: fuel, ice, tackle, bait, haul-out/ repair services, marine supplies, seafood dealers, and other parts of a typical infrastructure designed to support commercial fisheries. Most of the coastal towns of the Panhandle boast commercial fishing histories, which they display on welcome signs, in museums, on their websites, and in other ways. Seafood consumption across the region represents a critical part of its identity. Inventories of fishing infrastructure and other material culture related to commercial fishing revealed that the Panhandle included virtually every service and support sector that commercial fishermen would need, from marine insurance to celebrations of its products and its legacy.

Methods

The information presented here was compiled over a little more than 18 months of field research, reviewing secondary sources, and analysis, beginning in January 2015 and lasting into the summer of 2016. It is based primarily on interviews with 72 individuals representing different sectors of the Florida and Gulf of Mexico fishing industry. The majority of the interviews were with those directly involved in the Grouper-Tilefish IFQ program: current and former owners, captains, and crew of commercial fishing vessels; fish dealers; and holders (and leasers) of IFQ

allocation. Additional interviews were conducted with University of Florida Sea Grant personnel, NOAA personnel, Gulf of Mexico Fisheries Management Council staff and members of its Scientific and Statistical Committee, marine biologists, natural resource economists, and others familiar with the program from a scientific or regulatory perspective.

Based on a general research protocol developed by the team of investigators (see Appendix A), these interviews were primarily open-ended, initially asking informants to relate their experiences with the program and subsequently ranging over a variety of subjects ranging from personal assessment of the program to costs, benefits, changes in fishing operations and relations with markets, and so forth. Most were digitally recorded and subsequently analyzed systematically, using the following tabular format:

Theme	Relation to IFQ Social Goals/ Social issues	Relation to IFQ Biological Goals/ Bio issues	Relation to the fishing Community	Quotes

The themes included such things as issues related to the economics/ markets, crew composition, ecology/ biology, moral opposition or support, and so forth. For each theme, we considered how it was related to the social and biological goals of the program and its influence on "the fishing community." Of course, in this day and age, fishing communities tend to be highly fragmented, with the coastal environment parceled up into those who have lived there for generations, founding and maintaining working waterfronts, to those who are seasonal or temporary residents and have little attachment to coastal communities beyond seafood restaurants, kayak rentals, surf shops, and stores that sell shells and souvenirs. Retirees and new residents to coastal locations occupy spaces and sentiments somewhere in between.

In this work, when we refer to "the fishing community," we are referring to that segment of the local population that is involved in commercial fishing, may be a long-time native to the area, may belong to some organization that represents commercial fishing interests to the state legislature and federal regulators, and, most importantly, earns income from fishing. They are connected more by affiliation, sentiment, and networks than place of residence, and they are, like Benedict Anderson's (1983) definition of nationhood, an *imagined* community in the sense that they will never know all of the community's members but that they will share interests, attitudes, and behaviors that they recognize as unique to, or common among, members of the fishing community (e.g., they own vessels, possess local knowledge of fishing, frequent similar places of business, use similar jargon to refer to parts of the marine resource, lobby formally or informally for the rights of commercial fishermen). One interest many, if not all, of them share is the Grouper-Tilefish IFQ—if not as direct participants then as people interested in or concerned about it as a regulatory mechanism.

Participation in the Grouper-Tilefish IFQ program

Fishermen in the Florida Panhandle participate in the Grouper-Tilefish IFQ program in a number of ways. While some participate exclusively in commercial fishing, usually having both grouper-tilefish and red snapper quota in the IFQ programs, others combine grouper-tilefish fishing with fishing for vermillion snapper, king mackerel, amberjack, and other species. Still

others fish commercially during the winter and operate a charter boat during the summer. Some fishermen in the IFQ program do not fish commercially full-time, but combine commercial fishing with other occupations in construction, state and federal government, and other trades.

As with other IFQ programs, people who either are not fishermen or who do not fish for grouper or tilefish are involved in the fishery as shareholders who lease their shares. These include fish dealers, some of whom have been buying up their shares to assure that fishermen who have been landing fish with them will continue to have the opportunity to do so, or to operate their own grouper-tilefish fleets. Others who lease their grouper-tilefish allocation and are those who have either retired from the fishery or have moved on to other species (usually those mentioned just above). Finally, some shareholders inherited their shares, were awarded them in a court settlement (as in a divorce), or received shares as gifts or other forms of payment and annually lease all of their shares.

Typically, those who participate in the fishery fish with either bandit reels or with hand-held rods and reels. Although there are fishing vessels outfitted with long-line rigs, in the Panhandle region we did not encounter any grouper-tilefish fishermen who were long-lining during the course of the study; fishers in the long-line vessels we saw in the local marinas said that they fished for tuna. Those who had operated long-line vessels in the past had changed to individual reels, usually operated by multiple crew and sometimes by captains and boat owners as well. Many of the vessels in the fishery are owned by someone other than the captain and crew who fish from the vessel; usually it is the boat owner who owns grouper-tilefish allocation and the captain and crew who fish the owner's quota. In many cases, however, the owner is also the captain and he or she fishes with the crew, an arrangement that seems most common among those who charter in the summer and fish commercially in the winter from the same boat. Whether or not a vessel owner fishes with the crew, it is typical for the crew to pay the 3% recovery fee to participate in the fishery.

Grouper-Tilefish fishermen typically market their fish through wholesale fish dealers, although a few fish primarily for restaurants or other local, retail markets. Much of the fish landed at wholesale fish houses is shipped out of state, primarily to New York and New England, and fish dealers, in the Panhandle as in many other U.S. fisheries, tend to hold a good deal of the power in the fishery, either marshalling their own fleets or cultivating loyalty among several vessel owners and captains by providing dock space, selling ice and fuel, extending credit, and leasing grouper allocation for crews to fish.

Experience with and views of the Grouper-Tilefish IFQ program

Multiple themes emerged from the interviews, from the program's effects on the market and safety to whether or not it was established fairly or equitably. A few of the themes were mentioned by just a handful of participants in the IFQ program, while others nearly everyone discussed. Many of the interviews, too, reached quite a passionate pitch, particularly among those fishermen who believed that the distribution of allocation was unfair or that NOAA had no business regulating access to a public resource. In the following table, we have grouped several themes according to general categories along with specific ways IFQ participants raise them.

Table FL.2: Themes from the Interviews

Themes	**Examples of Specific Dimensions**		
Ecological	Seasonal factors affecting fish populations	Changing food webs	Effects of hurricanes on fish movement
Economic	Shifting power in the market	Costs of leasing allocation	Cost of recovery fee borne by crew
IFQ politics	Share requirements to vote for or against IFQ	NOAA's role in limiting access	Unequal participation in program design
Moral issues	Holders of shares should be active fishermen	Program is unfair	Program encourages waste/ discards
Knowledge	Traditional ecological knowledge	Problems with stock assessments	Networks encourage knowing other parts of Gulf
Safety	Reduced derby fishing	Fishermen can pick their weather	Less likely to fish if vessel requires repairs
Crew	Can employ crew through the year	Crew have to pay the recovery fees	Crew not included in initial IFQ allocation
Support sectors	Shareholders who only lease their allocation no longer buy bait, tackle, etc.	Assuring fishery sustainability assures economic contributions	Healthy fishery contributes to economic health.
State's role	Surveillance has led to better data	State shouldn't allocate public resources	State relies on poor biological models
The future	Too expensive for youth to get into the fishery	IFQ has resulted in a sustainable fishery	Reproduction of the fishery is uncertain

Although the above list does not represent the full range of themes raised by those interviewed, they do point to some of the most salient themes that emerged during our interviews. Again, we encountered few neutral positions about the program; in other words, views of the program tended to be extreme, with those who benefited from the original share allocations strongly in favor of the program and those who did not strongly opposed. This, of course, makes a great deal of sense, however little it tells us about the program's success or failure, but fortunately few of those interviewed confined their opinions about the program to their opposition or support. In the process of explaining their opposition or support of the program, that is, they revealed what they believed to be its benefits and its drawbacks. We discuss each of these themes at length below, noting that there is some overlap among the themes (e.g., between IFQ politics and economics, between economics or ecological themes and those addressing moral issues).

Ecological Themes. In order to be successful, most commercial fishermen draw on a good deal of ecological and technical knowledge to find and catch fish, assess conditions of the stocks, predict fish behavior, and explain changes in fisheries resources. The fishermen interviewed during the course of this study were no different, and they had several ideas about relationships

among the IFQ program, the grouper-tilefish fishery, and other aspects of the marine resource. Few seemed to believe that the IFQ program was responsible for all of the changes taking place in the Gulf, with many of them pointing to phenomena like the hurricanes of the early part of the 21st century or the 2010 oil spill and most of them considering the ecology of the Gulf holistically, with changes in one part of the resource influencing many other parts of the Gulf. Still, they did have thoughts about the ecological or biological effects of the program.

One relationship that came up again and again was how the IFQ program was liable to influence fishing pressures on other species. Fishermen expressed this in a few ways. First, some fishermen who received shares in the grouper-tilefish fishery began leasing some or all of their shares and then either began fishing for or devoted more effort to fishing for other species, principally vermillion snapper or king mackerel. Others, now able to pick and choose what times of the year they could fish for grouper, had begun moving among a variety of species through the year, depending on their availability. In the words of one fisherman: "In the winter, when the smaller fish aren't biting, I'll go to my grouper, and then in the summer months I'll go to beeliners (vermillion snapper) and porgies (white grunt) and stuff like that." It's interesting that he referred to the grouper with the possessive pronoun, now considering them "his" to fish whenever he wasn't fishing for something else.

Fishermen who fish for several species over the course of a year rather than specialize in a small cluster of species generally see themselves as engaging in more ecologically sound fishing practices than specialized fishermen, taking from the resources of the Gulf small portions of the many marketable species available rather than placing all their pressure on one or two species. By contrast, those who shifted effort from grouper and tilefish, leasing their shares and targeting other species, may be placing more pressure on the resource, and nearly all fishermen we interviewed said that those fishermen who had not received shares in the IFQ program were fishing for vermillion snapper, king mackerel, and other high value species. Because of this, some fishermen expected vermillion snapper and other high-value species to be targeted for an IFQ program in the near future; this may also increase pressure on these species, as fishermen scramble to establish history in those fisheries in hopes of receiving shares. One fisherman interviewed viewed the IFQ program as rewarding fishermen who practiced less ecologically sensible fishing practices, saying, "You don't get rewarded for this [fishing for many species]. They rewarded the ones who worked them to death."

In addition to ideas about distributing effort over the resource, fishermen believed that the IFQ program in red snapper had contributed to an increase in the snapper population—a development that, in conjunction with the effects of Gulf hurricanes and the Deep Water Horizon oil spill, shifted the territory of red snapper so that more of them were congregating in the eastern part of the Gulf. This altered the dynamics of the food web in that red snapper, as voracious feeders, became nuisance fish to grouper-tilefish fishermen. "Now that you put snapper on a quota," one fisherman complained, "they are an aggressive fish. He'll eat that small grouper and he'll eat the hell out of that small beeliner. Anytime you boost one population, you push another population down." Several other fishermen made similar statements, with some saying that they had to fish through red snapper to get to the grouper stocks. One fishermen said that, since the increase in the snapper population, he now had to spend time "teaching" the snapper that he was fishing so that they would learn to let the hooks drop to the grouper.

During the interviews, like fishermen everywhere, grouper-tilefish fishermen volunteered a lot of information about the biology of the stock and the ecology of the Gulf. One of the principal points that many of them made was that the Panhandle was the place where the transition from primary reliance on red snapper to primary reliance on grouper took place. In other words, they said that the area around the mouth of the Apalachicola River was a kind of rough boundary between the snapper and the grouper fleets, with those to the west of the boundary more dependent on snapper fishing and those to the east and south more dependent on grouper fishing. Some Panhandle grouper-tilefish fishermen also hold shares of red snapper in that IFQ program and, thus, often fish off the shores of Alabama, Mississippi, Louisiana, and Texas during parts of the year and off Florida's east coast during other parts of the year. The further east and south they fish, the more likely they are to overlap with the long-line fleet that operates out of Cortez and other ports in and around the Tampa-St. Petersburg area.

Economic and IFQ Politics. In practice, economics and politics are difficult to separate, particularly in cases, such as IFQ programs, where the state maintains a powerful role in how humans interact with economically valuable natural resources. As such, we discuss both the economic themes that emerged during our interviews with themes related to the politics of implementing and maintaining the IFQ program. By the economics of the IFQ program, we address issues such as the changes in seafood markets following the IFQ program and changing relations between dealers and fishermen. By IFQ politics we refer primarily to the way NOAA designed the program, including the people who participated in its design. Both economics and politics came up in our discussions about the allocation of shares of the grouper-tilefish quota.

The economic impacts and political dimensions of the IFQ program generated some of the most heated discussion, from those who believed that the government's distribution of grouper-tilefish shares was unfair, or even illegitimate or immoral, to those who believed that the program's most beneficial economic impact had been shifting the economic power in the fishery from seafood dealers to fishermen. The reality of the program's impact on the economics of the fishery, however, is that, whether you object to it morally or not, the state has granted itself the right to allocate fish and many seafood dealers still exert a good deal of economic control over the fishery through their control of dock space, their extension of credit, and their positions as shareholders. As noted earlier, too, some shareholders are no longer fishermen or no longer fish for grouper and snapper, which means that many shifts in economic power occurred between seafood dealers and grouper-tilefish shareholders.

Allocation. Among the earliest economics issues to emerge during the formation of the program had to do with questions of allocation. How was the basis for allocation of shares established? How were the years chosen to estimate historical participation in the fishery chosen? Why weren't many captains and crew included in the distribution of shares? These and other questions emerged from the interviews, with those who either didn't receive shares or received too few to participate in the fishery in any meaningful way questioning the logic of the allocation system and those who received substantial allocation believing that the logic was sound.

Several fishermen, principally those who benefited from the program, also believed that the allocation was a reflection of fishing ability or historical dedication to the fishery, implying or

explicitly stating that fishermen who did not received shares very likely were among the fishery's least talented members. Statements like the following were not uncommon among those who received allocation they considered adequate:

> "A lot of people who didn't get much, they weren't very good from the beginning. They weren't serious fisherman. Some were good fishermen, but they got antsy with the regulations coming and sold out. One guy across the bayou sold out for pennies when he would have been set for life, and now he blames the IFQ program for putting him out of business. Now, with the IFQ, his boats aren't worth anything, but with the IFQ they are. My boats, now, are paid off."

Still, other beneficiaries believed that the allocation system did not reflect the true history or talent in the fishery. According to a fisherman who benefited from the program, yet also believed it was not entirely fair, "It [the grouper-tilefish IFQ program] cut out a lot of people. It hurt people who didn't have the history. I had people working for me who didn't get any because the boat owner got the quota. Captains and crew who had been working their whole lives got no quota, because it went to the boat owner, so they had nothing to show for their life's work." Another who benefited from the purchase of a vessel and permit with a history of participation attached to it, said, "The guy who sold me the boat is probably cussing himself because he sold the boat to me. He lost his history and I ended up with part of his history. I ended up good and he ended up not as good. He had to purchase more." Yet another said:

> "I voted for it. I knew it would cut into poundage a bit, but you owned it. It wasn't just 'fish 'til you die', fish 'til you can't fish, sell your boat and your book of numbers and go away.' You had something at the end. You can horse trade, lease them, all that. I got a good lick, good catch record, came out to about half of what you fished in a year, but the increase in value of fish and value of shares made up for that."

Not everyone, of course, was so sanguine. Fishermen who received either no shares or too few shares considered the allocation of shares process flawed. Many of those who ended up with shares they considered not enough to bother with said things like, "I can go out and work hard for four days and I'm done. I can't keep up the boat all year to fish for four days. It gives me something—a commodity—but it ties my hands. Realistically, you can catch all those shares in two trips—two weeks out of the year and I'm done."

A more serious claim came from fishermen who either implied or stated outright that the initial distribution of shares was a corrupt process, with only those close to the Gulf Council or fishery managers receiving adequate allocation. "The government gave that quota to the fishermen. They got to vote on it, yeah, but the only ones that got to vote were the ones that 'substantially fished' those species. It was the ones that were going to get the most of the quota, they were the ones who got to vote."

Another fisherman characterized the IFQ program as a failure, saying that it was designed by special interests who kept increasing the amount of poundage you needed to have a vote in whether or not to implement an IFQ so that they would be assured a positive outcome. He had even written down his objections to the program on a yellow legal pad just in case the need arose

for a written document. It read: *"IFQ Failure. This system was designed by persons of special interests—theirs. From the very conception, the number of quota and pounds were elevated upwards to eliminate sheer numbers of fishermen that would be able to vote."*

He went on to claim that he was involved in the fishery from the beginning, but he didn't get a vote, adding, "They kept raising the number of pounds to have a select few in the club. When they were planning the program, early on the council people—particularly the long-liners, who were not going to vote against it—realized that they were going to have too many people voting and that there was a chance a lot of those would vote against it. So they kept raising the limit."

Others questioned the fundamental moral basis of the allocation, claiming that the state had no right to divide up a resource that belongs to the people. One combination charter boat fisherman and commercial fisherman, who received enough shares for just two trips per year, said:

> "It's a natural resource. Young people can't get into this business because, number one, fuel is three dollars a gallon, equipment is expensive, and then, on top of this, you have to lease shares from these IFQ guys. The only people who are going to end up fishing are going to be like sharecroppers of the old days…. I don't feel like it should belong to just a few people. It's like deer or turkeys or any other natural resource. It shouldn't be just a few people."

It was the case that most of those interviewed who objected to the outcome of the allocation were those who received too few or no shares. By contrast, those who supported it received adequate allocation to remain in the fishery as either fishermen or people leasing their shares. Despite their support or objection to the allocation, however, most fishermen interviewed echoed two perceived problems with the IFQ program: first, the cost of leasing allocation had made it difficult for young fishermen to enter the fishery. Leasing costs, when added to the multiple costs already associated with entering the fishery, such as payments on vessels, insurance, fuel, ice, etc., have reduced the value of fish landed.

Second, the business of leasing shares without any direct participation in the fishery was viewed as problematic by most of those interviewed. Generally, those interviewed believed that those, in their words, "with no skin in the game" did not deserve to be in the fishery. Even if the IFQ program did make fishing safer, by allowing fishermen to choose their weather to fish and reducing or eliminating derby fishing, fishing remains a potentially dangerous enterprise. To those who risk their lives fishing, it doesn't seem right that some individuals can reap the benefits of the fishery without ever stepping on a boat.

Seafood Markets. The most common economic issue that fishermen raised about the IFQ program was that the program had changed the dynamics of the market. As noted earlier, most expressed this as a shift in power from the seafood dealer to the fisherman. Briefly, the logic underlying this statement is that, prior to the program, fishermen would fish hard for grouper early in the year, engaging in derby fishing, flooding the market, and receiving low ex-vessel prices for fish due to there being an oversupply. Once the program was implemented, however, fishermen could choose when they wanted to fish and this resulted in fewer fish being landed at

the same time, reducing the supply and increasing the price. "Now you can land fewer fish for the same amount of money," one said of this new development. Another said, "The IFQ gave us equal footing with the fish market. The old sad song was that they wanted you to catch them until you had them, and then they would try to beat you up on price. But now that they are supposedly *our* fish, they have to deal with us." Similar sentiments were expressed in slightly different ways. Two fishermen interviewed together expressed this in the following two ways:

> Fisherman 1: "The market has gotten a lot better. With an open-access fishery, you fish them out. You flood the market, like all farmers coming to sell their produce at the same time. People who are buying these fish are from the Northeast and they are known to be pretty sharp."
>
> Fisherman 2: "The best thing about the IFQ is that it has given control back to the fisherman. You're not at the mercy of the fish house. Used to be you would go to them and they would say, 'The damned Mexicans just unloaded five million pounds.' Then they would knock 50 cents a pound off of it."

Another dimension of market control is that fishermen can plan for times of the year when they expect demand for fish and prices to be high. The clearest example of this is the increase in demand for fish during Lent, as one fisherman explained: "Prices are high right now [because it's Lent]. Prices are maxing out. That's more planning… We can plan to go out when the prices are high."

Not everyone agreed, however, that the program had resulted in less control over the market by dealers. In short, as long as dealers control dock space, freezers, market connections, wholesale and retail outlets, and other components of the seafood infrastructure, they will be able to persuade fishermen to fish for grouper, tilefish, and other species (or not to fish for them) at the times of year they want. One vessel owner/ captain who specialized in grouper said that, even though conditions in the Gulf were safe for fishing, his vessels and crew were idle because seafood dealers in New England, where he sold his fish, were suffering through an ice storm and could not send their trucks to his docks. Others noted that the higher prices fetched by grouper in particular meant that fewer consumers would be able to afford prices at the table. "It's becoming more of a luxury item," one said of grouper.

A related development is that, as tourism heats up in the region every year, several fishermen mentioned that they will sell a portion of their fish locally, primarily to restaurants, rather than ship them out of state. As the prices for grouper rise, and prices in restaurants rise along with them, this may result in lower consumer demand for grouper or in a higher overall price for a Panhandle vacation. Whether or not these developments are good for the fishing economy of the Panhandle, or the local economy generally, is a question for further analysis. The bright side of this is that, according to nearly all fishermen interviewed, grouper are now available to tourists all year round and, as such, assist in making the Panhandle more of a year-round rather than seasonal tourist destination.

Markets for allocation and shares. In addition to the program's impact on seafood markets, the IFQ program established a market for trading allocation of the different species in the program. The work of Gabriel Stocks and Ava Lassiter (2016), still in progress, shows that quite a brisk trade in allocation has occurred every year in the five years since the program's inception, even suggesting the possible emergence of so-called Sea Lords or Fish Lords—people who accumulate more and more shares over time. A few fishermen reported that the trade in shares can occur when a dealer takes advantage of a fisherman's bad luck: "If you're in trouble, you will most likely sell (shares) to the fish house, because you have a relationship with them," said one. Another echoed this sentiment with, "What happens is that you get into a bind and then sell shares to the dealer."

More commonly, however, through the year, fishermen, dealers, and others are continually buying/ leasing and selling allocation (as opposed to shares) in line with various developments in the fishery. For example, some fishermen reported calling friends to buy allocation of a species when they anticipated landing more pounds of that species than they had planned, actually buying the allocation after they had landed the fish. Of course, in such cases, if they are unable to purchase additional allocation, they will be forced to discard the fish at sea.

The market for shares or for allocation has influenced the overall value of participating in the fishery. Fishermen who have to lease allocation, whether in addition to allocation they own or as a way to target species they do not own, have to subtract the cost of leasing from the total value of the catch. This issue came up again and again, with several fishermen offering concrete figures regarding the difference between fishing your own allocation or having to lease allocation. Typical comments were: "They system is terrible because you make less money now between having to lease IFQs and paying the government. Before your biggest expense was your boat. Now that's the least of it! By the time you pay the recovery fee and the shareowner's share, you're getting around fifty cents a pound."

The Recovery fee. The fisherman just quoted raised an issue that many questioned as a moral issue: the fact that captains and crew have to pay the recovery fee. One crewman interviewed interpreted this in simple terms of transferring wealth from the poor to the rich, as in the classic case of capital extracting surplus value from labor, saying that the program enabled the wealthy (shareholders) to buy up shares and then lease them to the poor (captains and crew). "The rich get richer and the poor get poorer," he added. Several others said that the program was turning captains and crew into sharecroppers, as in the following quote:

> "Fishermen now lease gag grouper for $2.50 a pound. Fishermen catch them and get paid $5.00 a pound. Government gets their 3% catch cut, that's another fifteen cents, so they've got $2.65 right off the top, they're getting $2.45 net for their black groupers. They were getting paid more than that 30 years ago, for crying out loud. Their fuel costs and all their expenses have to be paid, their captain, crew, bait, everything has to be paid out of their 2.45 cents they're netting after they lease their quota. It's turned the fishermen into sharecroppers."

How much have these developments resulting from the IFQ system altered labor relations within the fishery is difficult to know without more in-depth research, yet a few observations are

possible. First, the transfers of value that have occurred because of the program do approximate those labor relations that emerged in the aftermath of the abolition of slavery, such as sharecropping, under which increasing shares of the production costs are transferred from labor to capital, resulting in a greater share of the profit accruing to capital. Second, the emergence of people who no longer participate in the fishery, yet who benefit from it, seems similar to the stock market, which allows non-producers to benefit from the labor of producers and which, further, has been implicated in recent years in the growing gap between rich and poor in the United States (Reich 2016). Whether one sees such developments as positive or negative depends, ultimately, on one's own personal politics and moral sentiments, yet it is clear that the political economic impacts of the IFQ program have been anything but even.

Moral Issues

We have already introduced three moral objections that some fishermen have to aspects or impacts of the program: the practice of people without "skin in the game" leasing shares to those who risk their lives to fish, benefitting from the fishery without effort; passing the recovery fees, leasing costs, and other costs of fishing onto captains and crew; and the right of NOAA to designate who can and who cannot have access to a common property resource. We will discuss each of these in more detail below, but first discuss two other moral issues that speak to the IFQ program's ability to address the biological objectives of protecting the species: first, the tendency for the IFQ program to push fishermen who received no shares into other fisheries; and, second, the issue of discards and waste of fish.

Channeling fishermen into other fisheries: We noted above that fishermen who did not receive shares in the IFQ program and who don't have the resources to lease shares of grouper and tilefish are liable to shift to other high-value species that can be substituted for grouper and tilefish in seafood markets. These species include vermillion snapper, king mackerel, amberjack, and other, similar fish. One fisherman summed this up nicely: "You got the fish lords who own a pile of shares. Then you got a struggling fisherman. If you didn't have no catch history, boom, you're out of that fishery. Now he's catching vermillion snapper, white snapper, amberjack, king mackerel, there's several species that he can catch that he gets paid one hundred percent for those fish."

The most obvious moral objection to this is that fishermen believe that shifting effort like this will place too much stress on fisheries that are not currently overfished, tinkering with the natural checks and balances of nature and leading to overfishing. These views are closely related to fishermen objecting to the protection of iconic marine species, such as turtles and porpoises, at the expense of commercial fishing, a process that many believe have led to imbalances in the food chain. "Dolphins are the main predator on their fish," one fisherman said. "They used to feed them off the tourist boats, but since they stopped that, they have been stealing our fish. That's the transformation that occurred… And they will rip you off until they are full. They're the worst. Way worse than a shark."

Second, many fishermen object to channeling fishing behavior, first, because it amounts to a kind of veiled social engineering, influencing human behavior through regulation. While this *is,* in fact, the goal of a good deal of regulation, many fishermen view fishing as an inalienable right

and find it a satisfying occupation specifically because they can, over the course of a year, target multiple species. Instead of allowing fishing over the entire resources, there are those who view the IFQ as a slippery slope of boxing fishermen into specific fisheries, forcing them to specialize.

Regulatory discards. One issue that many commercial fishermen object to, in Florida elsewhere, is the waste of fish through regulatory discards. Fishermen in the grouper-tilefish IFQ program are no different. Regulatory discards—or fish that are discarded because of legal restrictions on pounds, size limits, and other factors—occur in the grouper-tilefish IFQ because fishermen will discard fish that are either larger or smaller than the sizes wanted by the dealers. For example, for every 100 pounds of quota a fisherman owns, he can land 20 five-pound fish, which are preferred by seafood dealers because chefs prefer them that size, or he can land 10 ten-pound fish, which dealers may consider of poorer quality and pay a lower price. If this same fisherman lands two ten-pound fish for every five-pound fish, he may begin discarding the ten-pound fish if he believes he can meet his quota with five-pound fish.

While some fishermen complained that regulatory discards had increased after the implementation of the grouper-tilefish IFQ program, nearly everyone agreed that red snapper were the victim of the most regulatory discards. One said, "With the aggressive red snapper fishery, you got to clean off three thousand pounds to get to your grouper… You have to fish through them." This was not an isolated sentiment, but in fact nearly universal, and it led to regulatory discards of red snapper being common. Another claimed that the IFQ program "makes you throw more dead fish back, because you ain't got IFQs [quota]. Millions of pounds of fish get thrown back every year. We got porpoises following us around eating all the fish we throw back." Some discarded deep water species will survive, of course, but particularly those pulled from very deep water will have less of a chance of survival, making discards a troubling moral issue for many fishermen. One who claimed to be part Cherokee said that the Cherokee in him made him despise wasting fish, saying, "I hate wasting an animal's life."

Other moral issues. The three moral issues mentioned above—passing costs on to captains and crew, the legitimacy of NOAA, and people leasing fish without skin in the game—while not mentioned by everyone, nevertheless arose in multiple interviews. The first two issues are relatively straightforward: the first, as noted in the discussion of the recovery fee, is objectionable for its potential to turn captains and crew into sharecroppers; the second is more fundamental, ultimately tied to one's political view of the role of the state, with some people being against state intervention (or "big government" in the Orwellian vein) in general. The following quote placed this sentiment in the context of the effort involved with fishing:

> "It's a hard life, fishing, it's all about painting and keeping the boats up and riding the weather out. I've done it all. But… it's a locked system, and the fisheries people don't seem to care because they are not scrutinized by anyone but congress.… They make these laws and then they go to dinner with the shareholders. It's a natural resource. It's wrong. It's the worst thing that I can remember in the fisheries business."

Of the three, the rise of people leasing all of their shares without engaging in fishing at all was perhaps the most objectionable to those we interviewed. We noted earlier that we heard stories of people getting shares of grouper and tilefish as gifts, as inheritance, or in divorce settlements

without ever having any interest in the fishery. This was troubling not only from the perspective of someone with a serious work ethic, who objects to someone getting something without any effort, but also because those without any direct attachment to the resource tend to have little to no knowledge about the resource, and knowledge of the fishery is a first step toward protecting the fishery. One fisherman summarized this as follows: "There are independent people [who have] never been fishing [and] have 110,000 pounds of snapper, just bought into the system… One of the top dogs, he don't care about the fishery, he cares about himself – he said that in a meeting. He don't care if we make it or not. Which is going to bite him in the butt one day. If we're all gone, how is he going to make any money? Somebody's got to catch the fish."

Knowledge

Several authors have established that commercial fishermen, interacting with coastal and marine resources on a daily basis, possess significant local and traditional knowledge about the resource, including its health or condition, the factors affecting its condition, relationships among habitat and fisheries, the roles of salinity, dissolved oxygen, substrates, etc. in the behavior and geographies of species, and so forth (Garcia Quijano 2001; Menzies 2000; Griffith 1999…). Quite often, fishermen distinguish this knowledge—acquired from regular, long-term, direct interaction with the resource—from scientific knowledge, which many of them view as at least partially flawed. While much of the local or traditional knowledge that fishermen possess is not directly relevant to the success or failure of the IFQ program, fishermen's local knowledge systems have influenced how fishermen think about the grouper-tilefish fishery and, hence, its IFQ program.

Two phenomena that have influenced Gulf of Mexico ecosystems, in fishermen's minds, are the series of Hurricanes during the 2000s and the 2010 Deep Water Horizon oil spill. Florida commercial fishermen possess fairly deep knowledge about the role of hurricanes in Gulf fisheries. Many fishermen believe that hurricanes tend to aggregate species, pushing them into smaller territories and allowing fishermen to prey heavily on the species. One fisherman interviewed, expressing sentiments held by many, related the grouper population to heavy fishing after recent hurricanes, adding that the IFQ may prevent that. In his words:

> "Gag were getting pretty good in the spring unless there was a hurricane. A hurricane will run them out of the shallow water and then they go deeper and bunch up and they [the fishermen] fish them hard. We're still recovering from that; they caught too many. If the IFQ had been in effect back then, we'd have plenty of gag grouper now. If you catch an abnormal amount, it's good now, but you'll pay the price later…. The IFQ is a necessary thing to insure that the fishery doesn't get depleted. The only other thing that might do this is a close area, but with a hurricane, that won't work, due to the movement of fish. That's when people will fish them hard. Spring, the change of season, everything starts moving again."

Another fisherman made a nearly identical comment, but within the context of an assessment of the knowledge of biologists and others managing the fisheries of the Gulf:

> "Most of them [fisheries managers/ biologists] do not know how to fish, and I don't know how they get their stock assessments, but they've got to know something that we don't. When we don't have adequate information, they have to work with what they have. They are underestimating snapper, but the grouper are a little behind. We're not seeing a big comeback with the grouper. A hurricane will push them all together and they will be ass deep, but then you pay for it down the road."

While the IFQ program was not implemented specifically to address the issue of how hurricanes influence stocks, fishermen interviewed did seem to appreciate that the quota was preventing the kind of overfishing (or "hard" fishing) that occurs after the aggregating effects of hurricanes. The fisherman quoted above also expressed a sentiment that many fishermen share: wonder over stock assessments. Again, this is typically cast as the contrast between experiential knowledge based on long interaction with the marine environment and knowledge derived from scientific modeling with computers and suspect data. Two fishermen interviewed together both disagreed with recent grouper stock assessments, one of them saying that "the stock assessment reported a recent rebound in the gag population. If that's true, we haven't seen it."

Several fishermen link the lack of connection between their knowledge and the stock assessments released by NOAA and others to methodological problems. A combination charter boat/ commercial fisherman said:

> "In the charter boat industry we're fighting against horrible data. They don't listen to us. The politicians and environmentalists have a voice that speaks from power and wealth, but we're out there every day, and they're behind a computer and think they know more than us. It's a massive disconnect… I took a group of biologists out grouper fishing, but they told me how they had to fish. They would have been laughed off of any commercial fishing vessel trying to fish like they were. Of course they weren't catching any grouper and started getting pissed about it. They complained and I told them that they weren't going to catch anything, fishing like that, but they said that their superiors told them they had to fish this way."

In addition to questioning the methods and conclusions of stock assessments and the responses of stocks to hurricanes, fishermen interviewed volunteered information about fish territories (e.g. Apalachicola Bay being a rough boundary between grouper and snapper), food webs (e.g. the problems with porpoises and sharks), seasonal dimensions of fishing (e.g. smaller fish biting in the summer months), the influence on water depth and water temperature on spawning and growth rates of fish, and a variety of other incidental dimensions of coastal and marine habitats and the behaviors and abundance of fish. The varied nature of the knowledge that many fishermen possess can be deep, highly contextual, and often holistic, making it difficult for many to consider managing one species or a set of species, such as grouper-tilefish, at a time. Most of them reflect the belief of the fisherman who suggested the marine environment was dynamic and interconnected when he said, "Anytime you boost one population, you push another population down."

Safety

We have noted in several places in this report fact that fishing can be dangerous. Of course, this is well known today because of shows like The Deadliest Catch and books like The Perfect Storm, and many of those interviewed had stories to tell about harrowing and near-death experiences at sea. Hazardous sailing conditions due to weather, faulty equipment, and hustling to fish as fast as you can are all common sources of injury and death at sea.

No one we interviewed said that the IFQ had made fishing more dangerous, although a number repeated the three issues raised in Table FL.2 under the safety theme. First, the IFQ had led to a reduction in derby fishing—or fishing as hard as you can because the season is about to close or people want to catch as many fish as they can until they reach the quota. While there still may be conditions that promote derby fishing, such as dealers demanding a high volume of fish during Lent, it does seem to be the case that the IFQ has succeeded in distributing effort over the course of the year. One fisherman told a story of derby fishing that resulted in the loss of his boat:

> "I like it [the IFQ program]. I like it a lot. I've been in this fishery 25 years and I've seen some pretty bad regulations. Once, three of my crew had to go out in dangerous seas because the regulation stated you could catch 2,000 pounds/ trip for the first ten days of every month. These guys were out in bad weather because that was when they could fish, and the boat sunk. It was February. Eight foot seas. They sent out a distress signal, so they were saved, but we lost the boat. That derby fishing could have killed my crew… IFQ makes it so much safer, so much better, when we can fish."

The same seems to be true of weather. Several fishermen interviewed said things like, "Now we can choose our weather," meaning that they can stay tied up at the dock when dangerous weather threatens and steam to sea when conditions are calm. One believed this was in fact the program's best feature: "The best thing about the IFQ program is that you're not at the mercy of nature anymore," he said. "You can fish when you want." Similarly, fishermen who can fish their quota whenever they so desire do not have to go to sea when their vessels are in need of maintenance and repair. As such, overall, the IFQ program has made the fishery safer for captains and crew.

Crew

How captains, boat owners, and others spoke about crew varied from characterizing them as highly professional to casting them more or less as vagabonds who shifted about the docks for places to sleep between stints in jail for failure to pay child support. These characterizations are not confined to Gulf of Mexico fisheries, but are common in other fisheries across the South Atlantic and elsewhere (Kitner 2001; Griffith 2009). Women and men who work as crew on fishing vessels may in fact be predisposed to taking risks, living dangerously or vicariously, and otherwise behaving in ways common to people living along the margins of society. In most cases, crew are not paid a salary but a share of the catch, which means that they risk returning to port after a few days at sea with either no money or, if they had to pay for groceries, tackle, and other supplies, actually in debt. And we did hear of cases of boat owners finding out that crew were taking drugs or had problems with drinking or the law, conditions which can lead to instability among crew in the fishery. Equally common, however, were stories of reliable crew

who had been with boat owners and captains for many years, offering stable assistance over long time periods.

In contrast to the moral issues that some of those interviewed have with crew having to pay recovery fees, discussed above, several fishermen we interviewed said that the IFQ program had helped to stabilize or professionalize crew in the grouper-tilefish fishery. One fisherman said that, because he could space his catches over the course of the year rather than fish all at once, he was able to keep crew employed all year round. "The only the expense the crew has is groceries and tackle," he said. "We pay all the fuel, all the ice, and so forth. We try to keep them busy all the time—keep them working around the house or around the shop. We do basically one trip a month to space their trips through the year."

The ability to keep crew employed is particularly important to those who run charters during the summer and operate their vessels commercially during the winter, and the IFQ program allows them to do that. Again, this helps stabilize the crew by preventing reliable crew from moving on to new vessels due to prolonged periods of unemployment. "You can keep a crew now," one said. Another reported that he uses his quota primarily to keep crew employed, saying, "I lease the majority of what I catch. What fish I own I own to keep so my employees can work year round. If they choose not to fish, I lease…"

While it may have been the case that the IFQ program helped to stabilize labor in the grouper-tilefish fishery, we noted earlier that some complained that the IFQ program, first, cut a number of boats (and their crew) out of the fishery, reducing opportunities for crew. Second, because shares were distributed to boat owners, captains and crew received no part of the quota, despite that they may have had a long history in the fishery and, perhaps, the most so-called "skin in the game." The effect of this has been to deepen class divisions within the fishery, particularly since captains and crew now have to pay recovery fees along with things like groceries and tackle.

One final note regarding the crew is that many boat owners and fishermen reported that most of the crew were older and that younger crew tended to be less reliable than the older. "On one boat," one boat owner reported, "they have a father and son team, and the youngest guy is around 35, but the other is 80 and then his brother fishes with them and he's 75 and then there's another who is 60." A situation like this does not bode well for the reproduction of the fleet, as discussed in more detail below on the future of the fishery.

Support Sectors

The implementation of the IFQ program has not altered the kinds of support that fishing vessels, boat owners, and fishermen need to fish, but the belief that the IFQ program has resulted in a more sustainable fishery means that the fishery will continue contributing to the health of several support sectors in the region. Most of these were noted in inventories that we conducted in each of the ports and include the following:

- Vessel-related goods and services: labor (designers, factory workers, sales personnel, maintenance personnel, harbormasters, etc.), vessels manufacturing & sales, maintenance, finance, vessel insurance, slip space, storage space, pull-out repair yards, boat launches/ ramps, mechanics/ welding, and mechanical parts.

- Fishing trip goods and services: labor (boat owners, captains, crew, fish house workers, fishing association personnel, etc.), fuel, ice, groceries, tackle, bait, electronic equipment, fishermen's bars & other venues, fishing associations/ unions, fishing piers, and net manufacturing.
- Seafood marketing goods and services: labor (dealers, seafood processors & handlers, truckers, health inspectors, sales personnel, etc.), seafood restaurants & other retail outlets, ice, cold storage & cold storage maintenance, shipping & storage pallets, and shipping & packaging materials, including trucks and trucking infrastructure.
- Cultural goods and services: labor (museum personnel, librarians, docents, etc.) maritime museums, fishermen's churches, fishing monuments, art, & material culture, picturesque vistas, local history, archives, eco- and heritage tourist opportunities, hotels/ motels, and photo opportunities.
- Government goods and services: labor (bureaucrats, consultants, advisors, clerical staff, fisheries scientists, enforcement personnel, etc.), informational brochures and websites, stock assessments, surveillance services, port authorities, University of Florida Sea Grant College Program, Coast Guard, infrastructure development & maintenance, education, and laboratories.

Although none of the inventories we completed included all of the above sectors related to commercial fishing, all of the above can be found in the Panhandle. They are near enough to anyone living and working there to be part of the overall support system he or she encounters while earning income and contributing to the local ambiance by fishing commercially. As such, they indicate the economic breadth and depth of commercial fishing in the Panhandle, contributing to the support of multiple industry sectors and public goods and services.

The Role of the State

As a program established, overseen, maintained, monitored, and (with this report) evaluated by the National Oceanographic and Atmospheric Administration (NOAA), a division of the U.S. Department of Commerce, in conjunction with the Gulf of Mexico Fishery Management Council, it is obvious that the state maintains a substantial stake in the grouper-tilefish IFQ program. It stands to reason that fishermen involved in the program would raise the issue of the role of the state from many angles. We have already noted that some fishermen reject the idea that the state has a legitimate right to deny or grant access to what they consider a public, common pool resource. Beyond simple moral objections to state intervention, however, fishermen interviewed raised the issue of the role of the state in the program in a couple of ways.

First, the issue of state surveillance of fishermen and fishing effort arose several times. To participate in the program, fishermen have to have Vessel Monitoring Systems (VMSs) on board their vessels and need to notify authorities at least three hours before landing their fish. Either federal or state marine police then meet them at the dock to make sure they are off-loading fish within the limits of their participation. This system received both negative and positive commentary. The words of one fishermen were not uncommon: "NMFS likes the IFQ because it's easier for them to keep track of commercial fishermen," he said. "At one time there were 1,300 active reef permits, and now it's down to 50. There may be more permits out there, but

that's what I think is active. I pay $50.00 per month for a VMS and I'm monitored whether I'm chartering or commercial fishing."

Another fisherman's ambivalence about surveillance was also a sentiment we encountered multiple times. He said:

> "The fact is it's all computerized, but I don't know how else they could manage it. The thing about commercial fishing, forever, if a man wanted to work hard, he could make a good, honest living. It attracted a lot of people. I'm college educated, but some of those guys can't read. And the idea of having to deal with a computer system is terrible. I knew some people, if it weren't for a fish caught in illegal waters, they wouldn't catch any fish. The monitoring was put in place to make them play by the same rules."

The three-hour rule—a part of the surveillance system—was also a point of contention among some, especially when combined with the practice of transferring allocation at the last minute. One seafood dealer said that he had to scold fishermen for coming in early, saying,

> "I understand they've been offshore for 6, 7 days, they want to get home and take a shower, see their family – but I tell them, you don't want me to have to pass this on to the feds. Just nose up in the grass for an hour or so, so you're compliant with the 3 hour rule. The biggest issue is getting a notice that says, 'Allocation may not be sufficient.' Fishermen are supposed to have all the shares they need by the time they declare (call in). If the shares are in the boat owner's account it's okay, but if they're leasing, and haven't transferred them over, that's a problem."

One more general complaint about the monitoring system was that it was associated with high-cost e-mail service—service that users pay by the character or the word. Some fishermen seemed to believe that this service, along with the VMS preferred by the state, was being mandated by the state as a way of supporting the business that produced and maintained these services. Others simply complained about the cost of the service, and limited its use as much as possible.

Despite perceived problems with state surveillance of fishing, many fishermen saw the benefits of monitoring in terms of accountability and more accurate catch data. This is likely to accomplish two goals: first, it may improve stock assessments; and second, it may increase the legitimacy of commercial fishing vis-à-vis recreational fishing in the Gulf. In other words, some fishermen appreciated the fact that states tend to "like" (in the sense of giving preferential treatment) entities that provide them accurate data, as elaborated in James Scott's book, Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed (1998). Scott argued that census taking and other data gathering schemes, historically, have been important in making institutions, entities, and even individuals "legible" to the state—or officially visible.

Fishermen we interviewed, in so many words, repeated this argument. "What I like about the IFQ is the accountability factor," one said. "Now we're accountable for every fish." Another expressed similar sentiments this way:

> "Originally, a lot of people were against the VMS system and the government tracking their boats, but now, he said, they are all in support of it. You would be hard to find an *educated* fisherman who isn't 100% on board with the vessel tracking system… That ankle bracelet, the vessel monitoring system, proves that we weren't [fishing illegally]. Now we need to improve tracking the recreational sector. I would like to see a mandatory reporting system—you get a confirmation number to fish in federal waters and then you have 24 hours to report what you caught. If you don't report, you don't get a confirmation number the next time. In the technology era of today, this would be easy. They could use any one of many times of communication technology. Even so, it's never going to be as good as the commercial sector."

A second way that fishermen, dealers, and others spoke about the role of the state was to complain about specific regulations, often in relation to what they considered poor quality stock assessments. We noted in the discussion of knowledge above that fishermen routinely question the stock assessments of fisheries biologists, often contrasting it with their own accumulated knowledge. It is these assessments that often lead to specific regulations and programs such as the IFQ program. It is well known to anyone who studies fishing communities that criticizing fishing regulations is widespread among commercial fishermen, and during this research we rarely encountered a fisherman who had nothing but good things to say about regulation. Overall, however, most of those interviewed did find benefits from the IFQ program, however much they questioned its ability to attract new fishermen to the fishery.

The Future

Even those interviewed who applaud the grouper-tilefish IFQ program, praising what it has accomplished for the fishery, expressed concerns about the future of the fishery. On the one hand, many fishermen believe that the IFQ has made the fishery sustainable, and hence something that will last into the future. On the other, the barriers that the program has posed for the reproduction of the fleet threaten that sustainability. This was a concern among many who supported the IFQ program; among those opposed to the program, the reproduction of the fleet was often their paramount complaint. A combination charter boat/ commercial fisherman's comments are telling. He initially questions whether or not shareholders actually own the fish, saying,

> "Do they really own the fish? Or is it a natural resource that belongs to the whole country? They need to stop leasing the fish. Young people can't get into the fishery, or they just get around 50 pounds a year, and that just isn't enough. They are trying to get everything [under an IFQ]. They want to eliminate the effort…. They don't want anybody [in the fishery], so if they can limit it down to about thirty people that's got these IFQs, then they don't have to worry about somebody else doing it. That's the whole deal."

This may be an exaggeration, but a number of fishermen interviewed expressed similar concerns. In response to these concerns, some fishermen have been considering ways to assure the reproduction of the fleet. One said that he encouraged captains and crew to buy shares a little at a time. In the short run, he claimed, this would increase his chances of getting hired onto a

vessel, because he could bring his shares aboard. In the long run, he could accumulate enough shares in the fishery to make a living catching grouper and tilefish.

A second proposal has been put forward by two fishermen's alliances currently operating in the Gulf: the Gulf Fishermen's Alliance and the Shareholders' Alliance. Both alliances are interested in three things: 1) the sustainability of the fisheries; 2) the health of the fish stocks; and 3) the fishing community. To assure that the fishery is sustainable, of course, requires the reproduction of the fleet. The Shareholders' Alliance is attempting to accomplish this by establishing a quota bank for fishermen who do not have enough quota to make a living in the fishery. Those selected to receive shares will need to share the Alliance's goals of sustainability, have a catch history, and agree to be monitored by the state. Currently, according to the Alliance's website (www.shareholdersalliance.org), the quota bank is to provide quota for red snapper to grouper fishermen in order to reduce discards. Along with reducing discards, its second stated purpose is "to help the next generation of fisherman in the Gulf."

While a step in the direction of reproducing the fleet, the quota bank is new and, as yet, largely untested. To be eligible, fishermen need to comply with certain gear restrictions, have an active reef fish permit, have and active IFQ account, and maintain an Alliance membership. Nothing so onerous here, perhaps, but to lease shares from the bank the fishermen still needs to come up with the cash the lease the quota "at fair market value," which is set by the Shareholders' Alliance board of directors. Whether or not this will succeed in allowing new entrants to buy into the fishery, however, is something we will have to wait to see.

Private Fish, Public Resource: Socioeconomic Impacts of the Grouper-Tilefish Individual Fishery Quota (IFQ) Program on Gulf of Mexico Communities

Chapter 6:

The Impacts of the Grouper-Tilefish IFQ Program on the Bayou Lafourche Corridor, Louisiana

David B. Halmo

Introduction

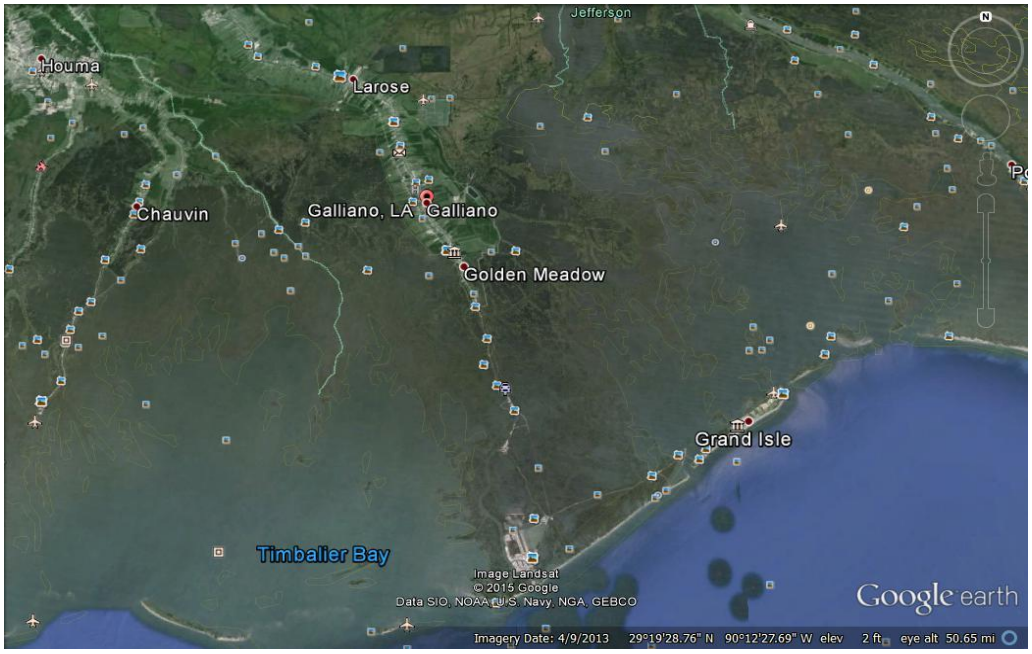
The region for study in southern Louisiana, based on NOAA grouper-tilefish landings data, was identified as Golden Meadow, a town of just over 2,000 people situated along the southern reach of Bayou Lafourche, in Lafourche Parish. Next in terms of landings of grouper and tilefish is Grand Isle, the largest barrier island off the Louisiana coast, with a population of approximately 1,300, located in Jefferson Parish.

Landings data would lead one to believe, then, that Golden Meadow constitutes the "central place" in the grouper-tilefish fishery. The reason for this is that, of all the towns along Bayou Lafourche, only Golden Meadow is incorporated. The towns of Larose, Cutoff, Galliano, Leeville and Port Fourchon are all unincorporated (IAI 2005:II:216-252). Consequently, postal services for these towns are rendered at the post office in Golden Meadow, such that someone or some business might be listed as being located in Golden Meadow when in actuality the individual lives/works or the business is physically located in Leeville or Port Fourchon, for example. As detailed below, while the grouper-tilefish fishery is centered in the unincorporated town of Leeville, yet because of the reasons mentioned above and for purposes of this study, the specific location will be referred to as Golden Meadow/Leeville when referring to the fishery.

Ethnographic research conducted for this study, as well as past studies (IAI 2005:II), suggests a much larger study area in geographic terms than a single community or place. The present research suggests that the study area in southern Louisiana is best defined analytically as a "corridor." Primary factors shaping this analytical definition are patterns of kinship, social networks and residence. These factors will be discussed in more detail below.

The Bayou Lafourche Corridor

For purposes of this study, the region in southern Louisiana selected for study is most accurately described as the "Bayou Lafourche Corridor" (hereafter "Corridor"). The Corridor as defined here extends in the north from the towns of Larose and Cutoff south through the communities of Galliano, Golden Meadow, Leeville and Port Fourchon. In addition, the corridor extends south and east to include the island community of Grand Isle.



The Bayou Lafourche Corridor.

The Corridor is so defined because current and former (and future) participants in the grouper-tilefish fishery live, work, and interact with each other up and down the Corridor. For example, an individual may work or fish out of Leeville or Port Fourchon, live in Cutoff, Golden Meadow or Galliano and, depending on circumstances, shift residence among various relatives in other towns along the Corridor. Thus, the question of whether one is describing a "fishing community" or "fishing communities" becomes relevant. Although it can be argued that each community in the Corridor is a fishing community, discreetly bounded, many if not most local residents view the entire Corridor as "the community" in many respects, due to the factors briefly mentioned above.

The Communities: Brief Background and History

The communities of Larose, Cutoff, Galliano, Golden Meadow and Leeville are more or less strung out along Bayou Lafourche, formed by the Mississippi River nearly 700 years ago, and Louisiana State Highway 1. Except for Leeville and perhaps Port Fourchon, the towns range in population from over 2,000 to over 7,000 people. The towns are virtually overlapping, such that one barely knows when one is leaving one town and entering the next (IAI 2005:II:221). Relations between the towns and their interdependence with one another led previous researchers to characterize the Corridor as comprising a "kind of linear 'supra-community" situated along the banks of Bayou Lafourche" (IAI 2005:II:221). Distance between towns increases at the southern end of the bayou, as does the width of the bayou itself, due to erosion and loss of marshland. Port Fourchon, at the southernmost point of the Corridor, is situated near the mouth of Bayou Lafourche and the Gulf. For the entire length of the Corridor, the communities are literally bifurcated by the bayou. A series of drawbridges allow large boats to travel up and down the bayou, and vehicle travel across the bridges from one side of the towns to the other.

All of the communities are inextricably linked to the fishing and oil industries and their support enterprises, commercial and retail outlets, shopping malls, fast food chains, big box stores (WalMart in Cutoff) grocery store and "drugstore" franchises (CVS, Walgreens) real estate, and all the other trappings of town/small city life (doctors, hospitals, convenience stores, gas stations, funeral homes, mom and pop restaurants and small business of all kinds, tourism (motels), among others. Indicators of gentrification include marinas, upscale housing, recreational bait/tackle shops, seafood retailers, dockside inns, charter and recreational boating, and a growth in trendy retail shops (boutiques, pubs, nightclubs, etc.).

Economically, the oil and fishing industries dominate in the Corridor. Still, from the north to the south, one observes cattle enterprises of various sizes (larger ranches in the north) and some agriculture. Leeville, a small settlement of an estimated 60 residents in 2003 (Tidwell 2010; IAI researchers estimated the population at 93; 2005:II:239), was founded as a subsistence community in the late 1800s (IAI 2005:II:239). Cotton was "grown as late as the 1920s", and "until the 1940s so many orange trees were grown here that the settlement was originally called Orange City" (Tidwell 2010:29). As will be described in more detail below, currently the town of Leeville is eroding and sinking into the Gulf of Mexico (IAI 2005:II:239).

Satellite view of Leeville.

The communities throughout the Corridor are ethnically Cajun, descendants of Loudanais French peasants forcibly displaced from their homelands in France in the mid-1600s, then subsequently forced from their new settlements in Nova Scotia/Acadia, ending up in the bayous of Louisiana ("New Acadia," hence the alternate ethnic term "Acadian") where they founded Lafourche Parish in 1805 (IAI 2005:II:212; Brasseaux 1987, 1992; Brasseaux and Gould 2011). Even today, there is discrimination against Cajuns as being rustic, backwards, lazy dirty people, although the food and music of the Cajun world have gained worldwide fame.

Within these ethnic communities are also minority populations of Euroamerican, American Indian, African-American and Vietnamese (the latter, especially, have become very successful commercial fishermen). In all of the communities one can observe the range of human experience and circumstance, from vast wealth exhibited in large homes, the newest cars, the latest state of the art watercraft, to abject poverty, dilapidated shacks and mobile home trailers, rusted cars in overgrown yards, neglected boats and slips, and everything in between. For a comprehensive overview of the Bayou Lafourche Corridor, the reader is referred to the baseline study conducted by Impact Assessment, Inc. (IAI 2005:II).

There is a long tradition of rituals involving fishing in the Corridor, centered on an annual rite in the town of Golden Meadow involving the blessing of the fleet, which takes place in April. Boats from up and down the corridor are decorated, loaded with food, some with live entertainment, and float down the bayou in parade fashion to the mouth where the bayou meets the Gulf. A wreath is laid in the water in remembrance of all those who have lost their lives at sea, both recently and in the past.

Parish priests bless the fleet with holy water and invocations for the protection of the fishermen during the fishing season to come. The blessing ritual is followed by a Cajun feast with traditional food, music and dancing (*fais-do-do*; see Tidwell 2010:69-74, 87-98 for a vivid description).

According to a convenience store clerk in Cutoff and newspaper stories in local papers, the 2016 ceremony, conducted from Our Lady of Prompt Succor church in Golden Meadow, was the largest ever, with a record 40 boats participating. So the tradition persists.

Looking north up Bayou Lafourche, Golden Meadow, with shrimp trawlers and cargo boat dockside.

Boat docked along Bayou Lafourche, Galliano.

Crabbing/Oyster skiff dockside, Bayou Lafourche, Golden Meadow.

Slightly more upscale housing, Galliano.

Methods

The information reported on here is the result of research begun in 2015 up until the summer of 2016. Background research and review of secondary source literature was combined with ethnographic fieldwork (roughly 3 ten-day visits to the study area) and interviews.

Potential respondents were identified through NOAA/NMFS lists of IFQ shareholders and authorized dealers. Due to the small size of the grouper-tilefish fishery (see below), interviews with 13 current and former participants in the GTIFQ program were conducted, along with more informal conversations with town folk in various occupations throughout the Corridor. Fishermen, dealers, and captains from Galliano, Golden Meadow/Leeville, Port Fourchon and

Grand Isle were interviewed during the course of this study. All but one of the interviews were conducted by telephone. One interview was conducted at the respondent's place of business. Contacted individuals were generous with their time, but they were also very busy, being at work and preparing for impending fishing trips, working on the boats or in the fish house, getting ready to travel to New Orleans to sell fish, or in the middle of conducting other business. Consequently, their immediate availability with some time to spare was taken advantage of by the interviewer to conduct the interview over the phone. The majority of interviews lasted between 30-40 minutes.

Numerous attempts were made to contact every person or enterprise included in each of the lists for the Corridor study area (individuals/enterprises listed as located in Louisiana but *outside* of the study area were not contacted). Despite numerous attempts, several individuals/enterprises simply could not be contacted. It should be noted that most communication and business in the Corridor appears to be conducted by cell phone. Of all those interviewed by phone, only one was conducted via land line; none of the individuals on the NOAA/NMFS lists were listed in the residential listings of the parish telephone directory. The rest of those interviews conducted by phone were conducted via cell phone; moreover, the contact numbers were provided by respondents during interviews in a snowball-like fashion.

The Grouper-Tilefish Fishery in the Bayou Lafourche Corridor

There are three approved landing areas listed for the Bayou Lafourche Corridor study area, out of 13 total for Louisiana. One is located in Golden Meadow/Leeville, one in Golden Meadow (actually Port Fourchon) and one in Grand Isle. A couple of Grand Isle fishermen land and sell their catch at an approved landing area outside the study area, in Dulac.

Relative to the other regions investigated as part of this study, the grouper-tilefish fishery in the Corridor is very small. In fact, in all of the Corridor, there is only one fisherman who exclusively targets grouper and tilefish. Most of the rest of the fishermen are primarily red snapper fishermen (and a few of these individuals were interviewed). They reported that they frequently haul in grouper as part of their bycatch. These are either sold if leases or trades have occurred, or are thrown back as regulatory discards. Two other individuals, one who fishes out of Golden Meadow/Leeville and one out of Grand Isle, are primarily snapper fishermen, but each dedicates a few or more trips per year to targeting grouper. Of these two, one (GI) owns his own boat; the other is a captain for a boat owner/shareholder who lives in Alachua, Florida but has been launching his boat from Golden Meadow/Leeville since 1985.Only a few of the other fishermen own their own boats.

There is one dealer who handles all of the catch from the GT fishery. The same dealer also handles "all reef fish" in the Corridor (outside of Grand Isle, where another dealer is located). The dealer owns his own boat (he purchased it from the individual who now captains for him sometime just prior to the BP Deepwater Horizon blowout in 2010), but he does not himself fish. He is an IFQ shareholder of grouper and tilefish. The fish house is located next to a marina (with restaurant and gift shop), docks, gas station, storage, ice and ties to trucking services (Tidwell 2010:19-20). Fishermen usually congregate there.

Supporting Infrastructure

As mentioned above, the communities in the Corridor are inextricably linked with the commercial, recreational and charter fishing industries. Windshield surveys identified bait houses, bars, boat builders, insurance companies, churches emphasizing maritime pursuits, cold storage, docking facilities, electronic equipment repair, fish houses, fishing monuments, piers, suppliers, processors, fuel companies, motels, ice houses, maritime legal services, boating suppliers, net sales and repair, public launches, recreational docks and marinas, bait, tackle and fishing supply shops, seafood restaurants, welding suppliers and charter and commercial boats. An inventory of the parish telephone directory business listings identified at least six seafood restaurants/outlets, three wholesale enterprises, two guide and charter companies, three tackle/parts/repairs shops, three fishing supplies outlets, two boat dealers, 28 boat rental/lease outfits, six boat repair shops, six marinas, nine marine services enterprises, two outboard sales and repair shops and four shipbuilders/repair businesses located throughout the Corridor. Again, the reader is referred to the baseline work of IAI researchers (2005:II) for more detail.

In the section on GTIFQ program participation that follows below, the discussion is organized around several topics or themes that were the subjects of inquiry using the protocol. Of necessity, some of the information presented is relevant to one or more topics/themes.

Participation in the GTIFQ Program: Experience and Personal History

Of those participants interviewed, five own shares/quota in grouper, only one owns shares of tilefish. The other individuals thus must lease shares of grouper from a dealer or members of their social networks in order to keep grouper hauled in as part of their bycatch. These latter individuals are red snapper fishermen who either own their own boat or captain for the Golden Meadow/Leeville dealer or in- and out-of-state boat owners/shareholders.

Gear Types, Fishing Patterns, Timing and Duration of Trips

The boats comprising the fleet in the GT fishery range from between 35-60 feet in length, with most being between 42-53ft. Only one vessel is a long liner; the rest are bandit reel vessels.

Grouper tend to be further out and in deeper water, so those who target them on specific trips will usually catch them first, then switch to tilefish or other species on the way back. The sole dedicated grouper-tilefish captain starts out a typical trip for GT by going west on his long-line vessel to fish spots from Galveston and Cameron, then working his way back east to the mouth of Bayou Lafourche, which he characterized as a "dead zone." He did not specify which species of grouper or tilefish was preferred, so one can infer that they target them all. He does not go east to Florida, and has not for years. He tries not to "pound an area" (that is, fish a spot heavy or hard). Of the 10-12 long liners in the Gulf, he said 3 or 4 of them are "heavy hitters," with much bigger boats, so he tries to stay out of their way and "not step on their toes." During the winter months he largely stays "inside" (inside the barrier islands in bays, lakes, etc.). Fishing inside during January-February affords some protection from inclement weather, what he called "northers."

On average, this fisherman lands between 11-12,000 lbs. of fish per trip; this translates into around $40,000 in income per trip. On the most recent trip recorded while in the field, this individual and his crew landed 3,000 lbs. of grouper and 6,000 lbs. of tilefish. Currently, this fisherman reported that they have started "leasing fish" (the local expression; in the Corridor, one either "owns fish" or "leases fish") because it is not cost effective in terms of expenses, paying a crew, or cost of the boat.

The captain was quick to point out that, in outfitting and equipping the boat, everything is bought locally, from WalMart to grocery stores and small businesses. "The whole community benefits from this boat," he said. Given that equipment and supplies are purchased at outlets throughout the Corridor, it is clear that he perceives the entire Corridor as "community," not just a single, specific town.

Other captains who occasionally target grouper also do so "outside" (i.e., outside the barrier islands in open sea). A red snapper fisherman, semi-retired, and who owns his own boat, says he usually fishes inshore, but when he goes offshore he typically catches shallow water, deep water and gag grouper as part of his bycatch, on an average of 7,000 lbs. per year. He leases shares in order to be able to sell them to the dealer in Golden Meadow/Leeville. Another boat owner out of Grand Isle, whose son captains his bandit reel vessel, owns between 6-8,000 shares of grouper, but leases them to a friend in Grand Isle while he targets red snapper because of its higher value. Yet another owner of a 60-foot bandit reel vessel out of Grand Isle leases grouper shares (between 3-6,000) from others on the island and sells them in Dulac after catching them in 400 feet of water during each of the four annual trips he takes for these fish.

A charter/commercial boat owner with his own company located in Port Fourchon near the mouth of Bayou Lafourche, appears on a NOAA list as having shares of shallow water, deep water and gag grouper. He says he no longer sells nor targets grouper; he said he loves catching them, but red snapper is a more valuable fish. Consequently, he doesn't have a lot of grouper shares and grouper currently constitutes part of his bycatch. He lands an estimated 1,000 lbs. of Warsaw grouper per year but, despite having an approved landing location at his business, he doesn't always land them there, but instead takes them up to Golden Meadow/Leeville to sell to the dealer there. The reasons he gave for not using his own landing site is that it lacks ice and scales. His ice machine is not big enough and Hurricane Gustav did heavy damage to his freezer. Thus it is more efficient to sell them up in Golden Meadow/Leeville occasionally, because the dealer there has better storage capacity. Before the IFQ programs were implemented, the Golden Meadow/Leeville dealer would occasionally come down to Port Fourchon with a refrigerated truck, trailer and ice.

Currently, the respondent said he doesn't land very many fish. Due to a decline in the volume of charter business in part because of the short seasons and the fact that Port Fourchon is not much of a tourist area (it is heavily dominated by oil industry installations and activity), he has scaled down his number of boats from four. His charter customers fish red snapper. Whatever fish he currently sells commercially, he now sells to KBC (Katie's? NOAA catch shares website) Foods in Galveston; interestingly however, his catch is held in the freezers of the dealer in Golden Meadow/Leeville until they can be transported. Once able to buy 10,000 lbs. of menhaden per

year as bait, he now buys bait from the Golden Meadow/Leeville dealer, from whom he also occasionally but infrequently leases shares.

This individual is on the Board of Directors of the Shareholder's Alliance. As such, he said can routinely rely on his friends, colleagues and associates on the Board and in the Alliance to put some shares into his account if and when he asks.

Fishing trips average anywhere from 10 days to three weeks. The number of trips varies as well. Before the IFQ there were derby conditions, with everyone fishing as much as they could within season limits (e.g., ten days for grouper). One captain recalled making five trips in the five months between January and May.

Under the IFQ, fishermen and dealers can choose when to fish throughout the year and better plan their trips. Trips can be a frequent as every other month or two. The more frequent the trips, the less long they tend to be.

A "vertically integrated" enterprise, Golden Meadow/Leeville.

Vessel dockside at marina/fish house site, Golden Meadow/Leeville.
Relationships between Dealers, Captains and Crew

Based on interviews, the relationships between dealers, captains and crew appear to be filled with contradictions, either socially or economically. In general, for example, captains who fish for dealers or someone else perceive themselves as merely workers or worse, given that they have no shares, boats, or catch history with a particular species, thus denied access to the IFQ program. It is largely for this reason that so few captains had any substantive comments or recommendations to make on the GTIFQ program. "Don't ask me, I'm just a worker" was a typical response.

Other researchers have reported both good and contested relations between boat owners/dealers and their captains, largely stemming from the former placing the burden of costs for lease shares, expenses, crew pay and recovery fees, etc. on the latter. Some owners/dealers are more lenient, others are not.

The grouper-tilefish fisherman interviewed believes those "who are not in the fishery and who never caught fish in their life," "spend their extra money in Florida playing pool and drinking beer shouldn't be allowed to own fish" directly conflicts with his current job as a captain for a shareholder/dealer who owns many shares, owns his own boat, yet does not himself fish. "I'm just a worker now," he said.

The dedicated grouper-tilefish fisherman also frequently mentioned that "expenses are tough." It is unclear what costs, if any, the dealer passes onto his captain, whether they operate on a 50-50 split of the take after expenses, whether he is saddled with paying recovery costs, etc. He hires his own crew of four locally, so it can be assumed that he pays them their salary of $100 per day from his cut. Yet overall, he is positive about the program with the above- mentioned caveat, and wishes that he "could buy fish."

Marketing of Grouper and Tilefish

By and large, grouper and tilefish are not sold locally. They are instead sold out of Golden Meadow/Leeville and other locations in the Corridor to New Orleans, Baton Rouge, Florida, Texas and as far north as Canada. As one fisherman stated, "Cajuns like their shrimp and crabs." Some of these fish make it onto the menu of restaurants oriented to tourists, however, and some shareholders agree that fresher high value fish more consistently offered on restaurant menus is one benefit of the GTIFQ program.

Observed Changes in the Fishery

A couple of individuals interviewed remarked upon observed changes in the fishery since the GTIFQ program was initiated. In the Corridor, these changes have nothing to do with the program itself, as others have reported for Florida and Texas (see Griffith and Weeks, this volume).

According to those interviewed, many of the fish being caught currently are not healthy fish. They blame the BP Deepwater Horizon disaster and say that the agencies responsible for monitoring the safety of seafood did a bad job. One pointed out that the "eggs never made it," and that perhaps some fish and shrimp populations would rebound in 5-6 years' time. Related to this, they noted that grouper is normally "slow during the summer," but that the summer of 2015 saw grouper slower than usual, with catches down.

Participant Perspectives and Recommendations on the GTIFQ Program

Generally, participants viewed the GTIFQ program positively, with some caveats. As in the other regions, however, these perceptions were split between those who own shares and/or boats, and those who do not own shares, boats and work as captains for dealers and others.

Comments. Four respondents had no comment on the IFQ program, other than "I don't know, I'm just a worker." Positive comments centered on benefits to fishermen, who are viewed generally as better off economically since the IFQ was implemented. Since the IFQ, there are no derby conditions, fishermen can fish all year, and go out when they choose, instead of dealing with short seasons and everyone trying to maximize their catch. The prices of fish have risen and are consistent/stable. Another liked the program overall, but viewed it as better for those who own fish and/or have more money. "It's a good program for those who care about fishing," he said. Still another likes the GTIFQ, and really likes the red snapper IFQ, because he "believes in the free market." The Florida boat owner pointed out that the program was good because it helps with bycatch issues, people can "make trades," and has an associated observer program which he participates in. Every year, he trades 2,000 lbs. of grouper for snapper, and leases some of his 6-7,000 shares of grouper to a group of guys in the eastern zone of the Gulf.

Recommendations. Those who commented on the GTIFQ program also offered recommendations for improving it moving forward. As one might guess, the predominant recommendation among non-shareholders/captains was to allow newcomers an opportunity to

gain access into the program by purchasing shares. Corollary to this recommendation is the comment that people who do not fish for a living should not be allowed to own fish.

Respondents recognized some of the inequities of the current system. One interviewee's first recommendation was "up the quota." "If the government would up the quota, they could allow newcomers access to the industry by providing low interest loans for working capital." Following on that, he recommended that newcomers be allowed "first dibs" on the new quota and then work back up to the largest and wealthiest, who get what's left. "Right now, only millionaires can get in," he said.

This individual further recommended that the system be changed so that shareholders can only pass on their shares to their children and no other relatives. After that, the shares should go back "in the kitty." This would reduce the majority of shares from being held forever by large and wealthy extended families. The reason for this recommendation is the fact that many of the fishers are aging: "When they retire, who's going to do the fishing? What will happen to the industry?" Thus the need to allow more fishermen into the program.

Another fisherman echoed this sentiment. He is 58, and his son is not involved in the fishery: "Young people don't want to work." In other documented cases, the offspring of fishermen may simply be interested in other fields of pursuit (e.g., college, engineering, etc.; Tidwell 2010). This may be a potential cause of intra-family conflict, and could ultimately end up in separations, divorces and family break ups (see Tidwell 2010 for a poignant examination of one Leeville shrimping/crabbing family who dealt with this issue). As captains without sons begin to retire, who will do the fishing? These comments indicate an acute concern for the future sustainability of the fishery.

Another respondent pointed out that the Shareholder's Alliance is working proactively to make the IFQ program better. Strategies for improvement include the development of a quota/share bank that would allow grouper long-liners to get snapper shares and vice versa. This strategy is seen as helping to reduce bycatch issues. Participants in the bank would have to commit to signing conservation covenants and comply with records requirements.

Other recommendations involved tweaking the existing programs, such as making the hail-in time more flexible. This would help in the event boats get delayed due to various circumstances (e.g., a barge being allowed to sink a dredge pipe, thus closing access to the bayou by vessel traffic for a period of time).

Will There Be Fishing Communities in the Bayou Lafourche Corridor in the Future? Environmental Threats to the Louisiana Coast and Its Fisheries

Ultimately, for the fishers and others dependent on various fisheries in the Bayou Lafourche Corridor, whether one supports or opposes IFQ programs, an increasingly pressing issue is whether, in the future, fishing communities will continue to physically exist in the Corridor and along the coast of Louisiana. This is especially true for the southernmost portion of the Corridor. The long term environmental effects of historical and contemporary efforts to extract energy and other resources through channeling, thousands of miles of subsurface pipelines, and canal

building has led to increasing erosion of marshland, increased intrusion of saltwater from the Gulf, and increased subsidence of coastal lands. These in turn lead to destruction of marsh grasses, the intrusion of saltwater further inland and into groundwater, all with deleterious effects on the fisheries nurseries which nurture offspring of numerous species and reproduces the seafood populations humans rely on for a living see Tidwell 2010; Burley 2010).

Coastal land loss was the overriding theme of Tidwell's landmark book. In 2003, he observed firsthand the Leeville cemetery eroding into the Gulf (see also IAI 2005:II:239). Since then, various individuals and groups have been attempting to save the burial grounds; recent reporting has indicated that these groups have given up on their efforts, due to the rapidity with which the tombs are being consumed by erosion and subsidence. What makes this even more painful for community residents is the fact that, in the southern Louisiana tradition, deceased individuals are interred above ground in sarcophagi and tombs which break apart, exposing the casket in some cases, such that one can literally observe each stage of the process.

In addition, the specter of climate change with its accompanying erratic and violent weather (witness the historic flooding in and around Baton Rouge in mid-August 2016) and extreme storms/hurricanes further threatens the barrier islands, coastal marshes, and ultimately, the coastal human communities located there. One fisherman interviewed stated that the relatively new LA 1 elevated toll road from Leeville to Grand Isle, built primarily for hurricane evacuation (but also because the old iron bridge leading from Leeville to points south along Old LA Highway 1 [Tidwell 2010:29] became unusable), is projected to eventually be extended to Golden Meadow. Hopefully, there will be both sustainable communities and fisheries along the coast of Louisiana in the future that everyone who wishes to can participate in, enjoy and prosper from.

The Gulf of Mexico intrudes into the marshlands, Golden Meadow/Leeville.

Submerged telephone poles that once stood on solid ground, Bayou Lafourche, LA Highway 1 between Golden Meadow and Leeville.

"Ghost" trees along LA Highway 1 between Golden Meadow and Leeville.

Another view of saltwater intrusion into the marsh, Golden Meadow/Leeville. Highway 1 toll road to Grand Isle can be seen at the left.

Private Fish, Public Resource: Socioeconomic Impacts of the Grouper-Tilefish Individual Fishery Quota (IFQ) Program on Gulf of Mexico Communities

Chapter 7:

Impacts of the Grouper-Tilefish IFQ Program on the Galveston Bay Region: Galveston, Freeport, Port Bolivar

Pris Weeks

Introduction

Galveston Bay Region: Galveston, Port Bolivar and Freeport

The upper Texas coast study region consists of three communities, Freeport, Galveston and Port Bolivar, that are wrapped around the Galveston Bay Complex and connected by the Intra-Coastal canal. The bay complex covers an area of roughly 600 square miles. It is situated about 50 miles south of Houston, one of the largest metropolitan areas in the nation and home to a major port and several industrial complexes.

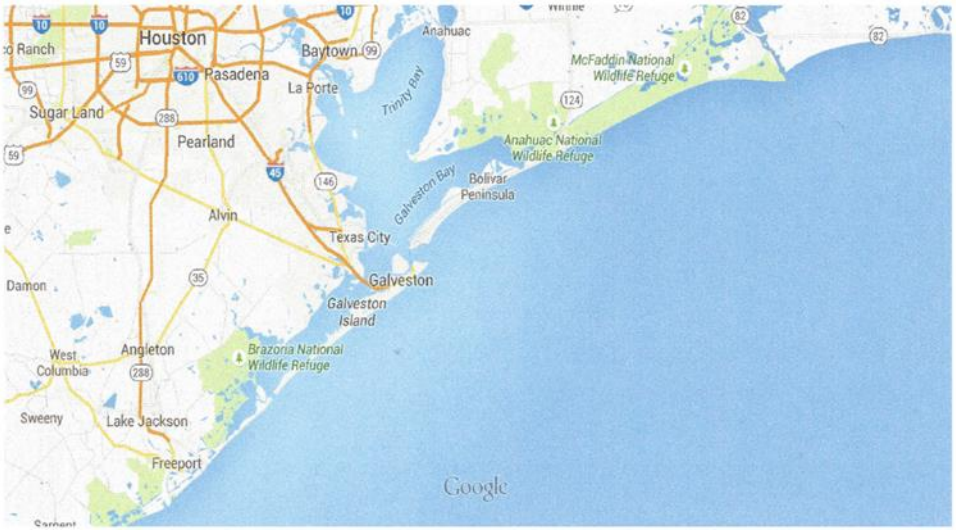


Figure 1: Galveston Bay Complex and Surrounding Communities

Freeport is situated at the far western edge in Brazoria County and is separated from Galveston Island by a bridge. At the far eastern edge of the bay is the Bolivar Peninsula in Galveston County and separated from the island by a ferry. At the center of the Galveston Bay complex is Galveston Island, also located in Galveston County. [1] Communities on Galveston Island and

[1] Note that place names in the research area can be confusing. Galveston is the name of the county in which the city of Galveston lies on Galveston Island which separates Galveston Bay from the Gulf of Mexico. Bolivar is a peninsula on the eastern edge of Galveston Bay on with the unincorporated area of Port Bolivar lies.

Bolivar Peninsula touch both the bay and the Gulf. Freeport is a few miles inland but can access both through a series of canals. Freeport is a small city (p: 12,093), Port Bolivar is unincorporated (pop 2,417) and Galveston is medium sized city pop (48,733).

Major ports were developed in the region in the early 1800s, contributing to its development as a hub for the petro-chemical industry in the Gulf of Mexico. It is home to several large chemical producers and processors and the cities of Freeport and Galveston both have substantial industrial ports as well as fishing ports.

Non-Fishing Economy

Tourism

Galveston Bay is a major migratory fly way and the study region is recognized as a globally important bird area. All three of the study sites will be included in a proposed Lone Star Coastal National Recreation Area (Rice 2012 (a). Each of the primary study communities is near some kind of wildlife sanctuary. There are Audubon bird sanctuaries on Bolivar Peninsula and Galveston Island and there is a 34,000 acre federal wildlife refuge near Freeport. The city of Galveston, especially, has embraced nature based tourism. It created a Nature Based Tourism Council which sponsors several birding events, a birding trail, and an interpretive center. The Galveston Park board plans to spend $41 million on its beaches, camping facilities and bike paths for tourism. Estimated economic revenue from visitors to the Galveston State Park is $4,862,463 (Heffernan 2015).

The city of Galveston is heavily dependent on other types of tourism as well. It hosted 5.8 million visitors in 2013 (Rice 2015). In addition to the nature based activities described above, there is a Pleasure Pier with rides and restaurants; an historic homes tour; Moody Gardens; 3 ghost tours; a food and wine festival; a "Dickens on the Strand" winter festival which draws 30,000 visitors a year; a week long Mardi Gras and the Lone Star Rally which is one of the largest motorcycle festivals in the nation. (Rice 2014). The city had more than 200,000 cruise ship visitors (Rice 2015). Additionally, Galveston also has a substantial Convention Center.

Figure 2: Galveston Pleasure Pier

Port Bolivar is an unincorporated area on the tip of Bolivar Peninsula. Visitors from Galveston reach it via a 20 minute ferry ride and often return to Galveston the same day. Port Bolivar itself is tucked off of the main route and visitors proceed past it to Crystal Beach, Gilchrist and High Island up the peninsula where there are more tourist amenities such as restaurants and RV parks. A search for Port Bolivar tourist activities leads to activities up the road in Crystal Beach where there is a recreational marina and fishing guides or Rollover Pass, further up the peninsula, a popular site for bulkhead and wade fishing.

Figure 3: Port Bolivar House

Figure 4: Port at Port Bolivar

Freeport is primarily an industrial town. It is a departure location for 'crew boats' carrying supplies to offshore oil rigs and a few years ago, the party boat operator closed his recreational fishing business to concentrate on running the more lucrative crew boats. Despite its industrial nature, however, there is some tourism in Freeport. The Brazoria National Wildlife Refuge is located nearby. Additionally, Freeport has a recreational marina for private boats and dive boats destined for the National Flower Garden Marine Sanctuary leave from Freeport.

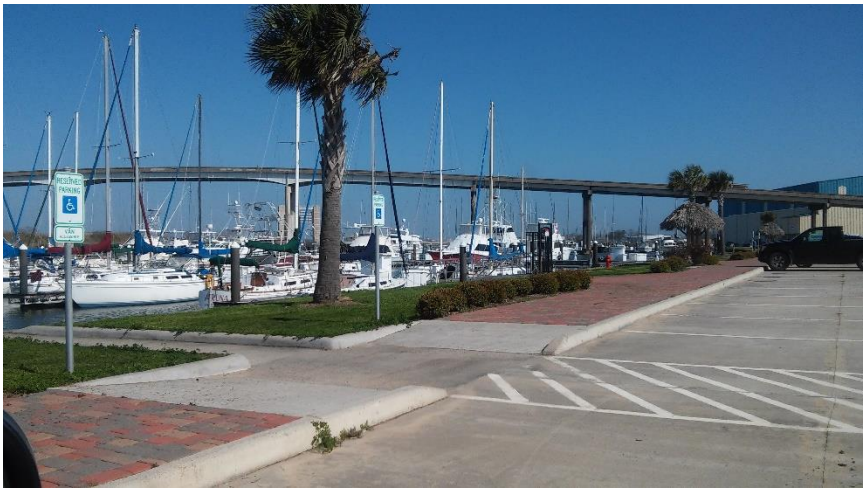


Figure 5: Recreational Marina in Freeport

Other Economic Resources

The Port of Galveston, located on the bayside of Galveston Island, services cargo ships, the offshore oil industry and cruise ships. Both its cargo services, to accommodate the Panama Canal expansion, and its cruise ship services are expanding. Additionally, a second facility located on Pelican Island across from the Port proper is being studied as a site for a container facility. The major employer in the City of Galveston is the University of Texas Medical Branch, which is the oldest medical school in Texas (Rice 2012b). Texas A&M, the state's land grant university also has a branch in Galveston that focuses on marine related disciplines and there is a community college.

Figure 6: Galveston Port

Freeport is part of a larger industrial hub that is projected to grow significantly. Low oil prices have benefited the chemical industry that uses petroleum as feedstock for its products. Dow Chemical, and Freeport LNG are both planning expansions. New industrial warehouse space is being planned and the Port of Freeport expects to host more ships due to the Panama Canal Expansion. Cargo has already grown by 40 percent in the last three years. If the Canadian pipeline does get completed, oil storage facilities will be in Freeport (Feser 2014).

Housing and gentrification

The city of Galveston has a diverse mix of neighborhood types. In the 1800s, Galveston was considered the New York of the Gulf Coast and many of the large Victorian houses from that era are now protected under an historical designation and home to professionals. Additionally, there are neighborhoods consisting of smaller homes in the city that were once beach houses and now house full time residents. Newer, more expensive beach houses are located on the far west and east ends of the island. The city's population has been declining for the last 30 years (Kever 2011) and Hurricane Ike, in 2008, accelerated this trend. Houses were severely damaged and people moved out of them to the mainland. Insurance rates after the storm skyrocketed, making living on the island expensive. Many of the residents that moved to the mainland after the storm have not come back and now about 50% of the city's workforce commutes to the island (Rice 2012b). City officials were slow to rebuild public housing and families dependent on this housing have also moved from the island, changing its demographic composition. The city is still debating how best to replace the devastated public housing. Although it has yet to rebuild all of its low income housing, luxury housing is on the rise. There is a new development that mimics

the older Victorian homes with houses starting at $600,000. On the west end of the island, new development is planned for high end homes that include a marina and boardwalk and there are several new high end condo developments.

Figure 7: Upscale development in Galveston

The city of Freeport was described by one informant as being in decline. The small downtown area is situated between a canal and industrial port and has many empty buildings. It has a bank and a couple of cafes at its fringes. Instead of eating downtown at noon, the chemical company workers crowded into a Bucc-ees Gas Station. According to a long-time resident there is talk of trying to redevelop the currently underutilized downtown. The neighborhoods in the central area of Freeport are older and smaller and range in value from $35,000 to $150,000 (Zillow accessed 11/15/15). Freeport has a few subdivisions outside of downtown but is geographically hemmed in by other small towns and can only grow by expanding across the Brazos River. Major population growth is expected in the communities to the north of the city (Mulvaney 2015). The image below shows the extent of industry in Freeport and how it is geographically bounded by industry and water.

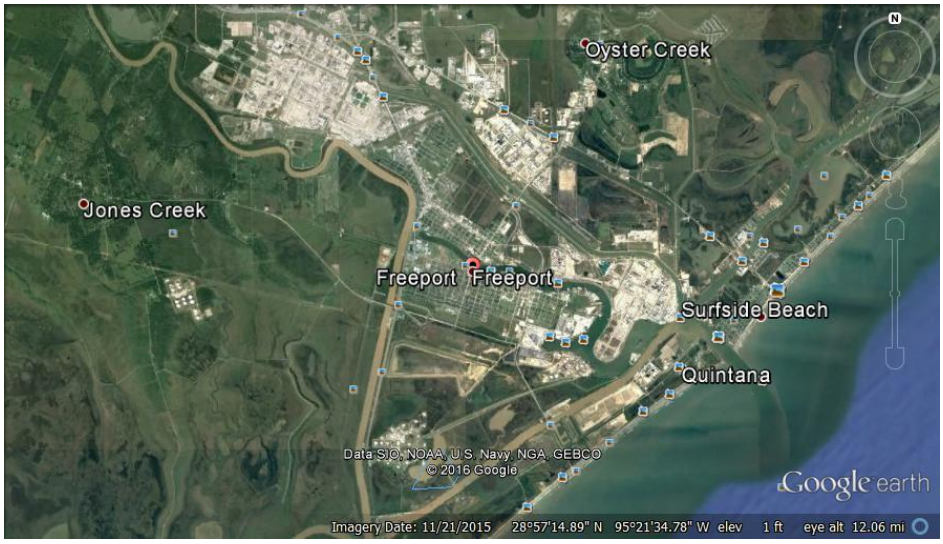


Figure 8: Map of Freeport

The Bolivar Peninsula suffered a direct hit during Hurricane Ike. A 15 foot tidal wave washed over the middle portion of the peninsula, (Crystal Beach) carrying away homes and businesses (Rice 2013a). Photographs chronicle a flattened landscape in the mid-peninsula area. Rebuilding began almost immediately. The small fishing camp style houses are largely gone and have been replaced by newer, more upscale housing and long-term, full-time residents by vacation home owners (Rice 2013a). There are now large houses and gated communities on the Gulf Side of the peninsula. Local workers in Crystal Beach have complained about the difficulty of finding affordable housing (Rice 2013a).

Although just a few miles away, the boom in real estate has not impacted the unincorporated Port Bolivar to the extent that it has Crystal Beach. Port Bolivar was not as hard hit during Ike and many of its homes were still standing after the storm, meaning that it still has an older housing stock. A review of several real estate sites (Zillow and Realtor.com accessed 6/30/16) showed little for sale in Port Bolivar but many houses for sale in Crystal Beach. This said, there are some expensive homes and lots on the market in Port Bolivar. Biscayne Beach is a new gated community currently being built on the gulf side of Port Bolivar, next to a sanctuary and a few upscale houses have been built on a canal on the bay side.

Fisheries in the Region

Fishing has been a major human activity in the Galveston Bay Region from prehistoric times to the present, being important to both First Nation and Anglo settlers (Gallaway 2012). Currently, Gulf commercial fisheries include shrimp, tuna, grouper, red snapper, vermillion snapper, amberjack, shark, mahi mahi, kingfish and wahoo. Popular recreational Gulf species are red drum, sand trout, black drum, snapper, amberjack, tarpon and cobia. Bay species such as bay shrimp, crab and oysters are also commercially important. The region has party boat operators (in Galveston), charter boats of various capacities, fishing guides, and public and private piers.

Figure 10: Pier 19, Galveston's Public Commercial Pier

As the largest of the three communities, the city of Galveston has the most fishing infrastructure and fishing themed activities. Commercial fishing is still an important part of its identity which is why it, with the encouragement of the Galveston Historical Foundation, continues to support the public commercial Pier 19. There are several fishing related associations. There is a Pier 19 Association and several board members of both the Charter Fishermen's Association and the Shareholders Alliance home port in Galveston.

In addition to the public commercial dock, Galveston has several icing facilities, dealers, a Wild Shrimp Festival, a NMFS research station and a branch of Texas A&M University which offers degrees in fishery science. A subdivision on the eastern side of the island is locally known as "Fish Village" because the street names are the names of fish. Despite the abundance of fishing/marine oriented activities and infrastructure, Galveston is not a fishing reliant community. Economically, it is more dependent on tourism, the port and the University of Texas Medical Branch.

Freeport has several charter boat fishing operations, recreational marinas and bait camps. Diving trips to the NMFS Flower Gardens Marine Sanctuary depart from Freeport. There is only one dealer for reef fish (two are listed on the permit list, but they are partners). There is a commercial marina with shrimp boats, a net-maker and ice house and the one reef fish commercial dock is owned by the dealer. Other approved landing sites for reef fish are private, located on canals behind homes. The sheer magnitude of the chemical industry in Freeport swamps the economic value of fishing and it cannot be considered a fishing reliant community.

Port Bolivar has one dealer/ commercial dock. Another dealer (who does not deal in reef fish) and dock are located a few miles up the peninsula in Crystal Beach where there are recreational marinas, bay and beach side restaurants and fishing guides. Further down the peninsula from these communities is Rollover Pass, an important wade/pier fishing area where there are bait camps. Despite the fishing infrastructure on the peninsula, there were no reef fish permits listed. The Port Bolivar dealer is new to reef fish and began buying it only after the IFQ program was begun. The area is more important for bay and gulf shrimp and bay oysters. Port Bolivar is most likely a fishing reliant community because of these species and the recreational fishermen that come to use the marinas and facilities at Rollover Pass.

Figure 11: Commercial dock in Port Bolívar

Methods

Galveston was chosen for study due to its position as a principal landing site for deep water grouper, having the 3rd highest level of landings along the Gulf of Mexico in the years prior to this study. Freeport and Port Bolivar are the two closest ports to Galveston. Freeport ranked 10th for deep water grouper landings and Port Bolivar ranked 11th for snowy grouper landings.

Field work was conducted in March 2015 and July 2015 with additional day trips in the intervening months. The interviewer for this region lives in the area making day trips possible.

Initial windshield surveys were conducted in Galveston, and Freeport in February 2015 and Port Bolivar in March 2015. Infrastructure such as docks, processing plants, fishing suppliers and maritime themed attractions were recorded on the project infrastructure checklist. Photos of the region were taken.

Potential interviewees were identified using the NFMS reef fish permit database and authorized dealer list. These were cross-checked with the IFQ shareholder list and authorized landing site list. Additionally, the snowball technique was used to identify other potential interviewees. Dealers were asked for the names of fishermen who sold to them and fishermen were asked who they sold fish to. Additionally, interviewees were asked who else they knew who should be interviewed and in particular if they knew of anyone who had left the fishery since the grouper-tilefish IFQ began.

Interviewees were called and a request was made for an interview. In-person interviews were requested but a significant portion of interviews took place by phone due to interviewee preference or interviewees being out of town for the season. Several were in Florida fishing. I

could not reach several fishermen after repeated phone calls and messages so Facebook was used as an additional way to contact non-responsive interviewees. The dock intercept method for accessing interviewees was unsuccessful despite repeated visits to several docks. This is most likely a change resulting from the IFQ. Fishermen can now schedule themselves and are not all unloading at once. Also, fishermen can now unload at private docks behind their homes and about a third of interviewees did so. Almost all Freeport fishermen unloaded at personal docks.

Attempts were made to interview all permit holders. The interviewer was able to speak with almost all of the fishermen on the reef fish permit and dealers lists in Galveston and Freeport. Of the 27 people reached, 21agreed to be interviewed. 6 declined full interviews but did provide some information about species and years they fished or boat size. Their information is included where relevant. In a few instances, the interviewer was unable to speak with the permit holder after repeated attempts but did speak with a member of staff or family and this information is also included. Also interviewed were fishermen in nearby communities of Jones Creek, Liverpool, Bacliff, Houston, Santa Fe and League City if they docked in one of the target communities or were recommended by an interviewee. Interviewees included people from the following categories: quota owning fishermen, non-quota owning fishermen, fish houses, captains, retired quota owing fishermen, county official and tourism. Attempts to interview crew were unsuccessful. The majority of interviews were with harvesters, with dealers in second place. No reef fish permits showed up in Port Bolivar though a shareholder did show up on the share list. Attempts to reach this potential broker failed. The dealer in Port Bolivar was interviewed.

In person interviews were conducted in a variety of settings, depending on the preference on the interviewee. These included in-home, dockside and place of business. For those who were out of town for the season or had been especially hard to contact, phone interviews were conducted. Newspaper articles from local and regional newspapers (The Galveston Daily News and Houston Chronicle) and local history were used to provide background information on the region. The websites Bizapedia (www.bizapedia.com) and BoatInfoWorld (http://www.boatinfoworld.com) were consulted for additional information on boat sizes, networks and potential consolidation in the fishery. The website BoatsAndQuota.com (http://www.boatsandquota.com) was consulted for more information about current allocation lease prices. Zillow (www.Zillow.com) was consulted for housing prices.

The Grouper-Tilefish Fishery

Although Galveston is a significant landing port for grouper, red snapper is much more important to most fishermen. Although almost half of the fishermen interviewed owned grouper/tilefish shares, only a handful of fishermen significantly target these species. Several fishermen stated that they use their few shares to allow them to catch grouper as bycatch and two stated that they received so few shares of grouper as to not allow them to catch even one fish, given the large size of grouper. Nine fishermen considered themselves snapper fishermen. Several fishermen stated that they have a mixed species strategy that includes grouper depending upon what the dealer wants. They sometimes lease grouper from the dealer to fulfill orders.

It was difficult, therefore, to get most of the interviewees to focus on grouper. They kept straying to discussions of the impact of the red snapper IFQ, making it difficult to separate the

impact of the grouper IFQ from the impact of the snapper IFQ. All interviewees wanted to be able to fish for snapper, even those who did not currently have snapper quota. Several interviewees stated that the number of fishermen declined since "the IFQ." When asked if they knew anyone who left the fishery due to the grouper/tilefish IFQ, no one did. Several commented that it was the snapper IFQ that thinned the ranks of fishermen in this region, not the grouper/tilefish IFQ program. One interviewee estimated that about 30% of Freeport fishermen left the fishery completely after the snapper IFQ. There were, however, fishermen who are no longer able to fish grouper because of the IFQ. In the upper Texas coast, snapper is closer to shore than grouper and snapper is accessible to small boats. Grouper is both further out, about 100 miles, and deeper. It therefore is more expensive and requires longer trips to catch. Several interviewees were allocated so little grouper poundage when the program began, that although they are listed as shareholders, they do not target grouper because they cannot make their expenses back on targeted trips.

Fishermen acquired grouper shares in several ways. Only a few stated that they had consistently targeted grouper before the IFQ as part of their overall fishing strategy and thus were given a substantial share of the fishery. Most fished for grouper only when the snapper season ended or kept grouper as part of their bycatch for other species and were given few grouper shares at the beginning of the program. Several quota owners who received shares at the beginning of the program have added substantially to their holdings by buying additional shares as they come available. One interviewee bought shares in $25,000 chunks each year. Additionally, shareholders lease additional shares as needed.

Of those interviewed in the Freeport area, 6 owned quota. In the Galveston area, 9 owned quota and in there were no reef fish permits on the Bolivar peninsula. These numbers represent individuals. An individual might own several businesses and boats, all of which have quota assigned to them. For example, 6 reef fish permits are associated with the same individual in Galveston through various business holdings.

Boat sizes range from 32 to 60 feet, the average being 45 feet. Captains of smaller boats either fish by themselves or use 1 crew, often a personal friend or family member. Trips for smaller boats are 2-3 days in duration. Many of the smaller boats did not target grouper, but took them as bycatch for snapper if they happened upon them. Larger boats may employ as many as 5 crew and stay out for a couple of weeks. They do target grouper. Most used bandit reels with a few using longlines or hook and line.

The IFQ has impacted both the number of boats and crew needed to fish. In order to catch as much as they could during the time allotted during the derby fishery, fishermen that could afford more than one boat and crew had several working at once. The IFQ allowed fishermen to reduce these inputs because they could fish anytime of the year. Several fishermen stated that they had reduced the number of boats used if they had more than one during the derby days. They also reduced crew per boat because fewer crew are necessary if you are not in a race to fish and can fish in good weather.

Crew Relations

Interviewees were divided in their opinion regarding how the IFQ impacted their relationship with their crew. One view is that the IFQ has stabilized the relationship with crew and that good crew are easier to maintain. One captain said that in the past boat owners had to scrounge around for crew when short-handed. Crew are now seen as more dependable because they no longer have to look outside of the fishery for work. Crew members were compared to independent contractors who can work for several different captains. One interviewee felt that the crew are better paid today. During the derby days, the dollar amount represented by crew share was smaller because the catch was smaller. An advantage for both crew and captain is the ability to schedule crew in advance because not everyone is fishing at once.

Not everyone was as optimistic about the ability to find good crew and some saw no change after the IFQ. One owner stated that he reduced the number of boats he owned because of the difficulty in finding crew. Another stated that many family men are not interested in grouper trips because they take longer due to being farther out and they do not want to be away from home so long. This leaves the grouper boats with a younger crew.

The interviewer was unable to get the views from crew despite attempts to contact them.

Crew are paid in several ways, all of which seem to be a permutation on the 50-50 split. A captain that works for a dealer stated that they used a 50-50 split with the dealer. After all expenses were paid, 50% went to the dealer, who owned the shares, and 50% went to the captain, from which he pays his crew. A captain/owner also used a 50-50 split after expenses – 50% to the boat and 50% to be divided among the crew. Not having to lease quota from a dealer, he is able to make more money from his split.

Dealer Relations

Only one harvester interviewee expressed the view that harvester/dealer relationships had improved under the IFQ program. This was a large quota owner who was not dependent on a dealer to share expenses. He felt that before the IFQ, harvesters had to approach dealers with whatever species they had caught, and if the dealer did not need them, the price was low. There was often a glut of a particular species. Now, the dealer requests what he needs when and the fisherman can negotiate a better deal. This interviewee felt that if you are a good business person, and pay for your own inputs without the dealer's help, you are on an even playing field and can negotiate good service and a good price for your fish.

On the flip side, one dealer who did not own shares or boats and that functioned as a dock for fishermen from other parts of the coast stated that it would be ideal if they could request the fish they want and schedule their deliveries but that it did not always work out that way. This dealer often still had to deal with what showed up at the dock. The day of the interview, two boats had shown up at once.

The majority of small quota holders and those that must lease quota felt that dealers have gained power under the IFQ program. One small quota holder stated that fish houses are territorial and have a monopoly. He said that he must call the dealer "to see if he can go fishing" (interview 7/13/15). For those not tied to a fish house, he felt there is a seniority system and that each fisherman has to wait for his turn to go fishing for a particular dealer. Another harvester stated that prior to the IFQ, 80% of fishermen sold directly to markets without a middle man but now small quota holders must be aligned with a dealer with a lot of quota. Dealers set the rates.

Fishermen without quota must lease it from the dealer and then sell the fish back to the dealer. One fishermen compared it to sharecropping. “You pay for ice, docking, offloading etc. You pay even before you catch a fish” (interview 3/4/015).

Strategies for obtaining fish differed among the dealers interviewed. One dealer owned several boats of his own and had a large amount of quota. He leased allocation to fishermen who sold him fish in addition to leasing allocation himself to use on his own boats. Another dealer had only one boat and a hired captain. Virtually all of the fish he sold came from this boat. A small amount came from other fishermen who he bought from occasionally and from Mexico. The third dealer did not own quota and bought fish from fisherman from all over the gulf who docked at his facility. The interviewer found no one from Galveston or Freeport who sold to this dealer.

Dealers who own quota appear to have more control over when they receive fish and what species they receive. They also make money from leasing allocation as well as selling fish to retail and wholesale customers.

Species Switching and Species Abundance

Small quota owners and those who lease quota fish for non-IFQ species such as vermillion snapper and pelagics when they have fished their quota for grouper. Several fishermen stated that they hoped that these non IFQ species might one day be included in a quota program because they now have built up a history of fishing for them.

A few fishermen commented on changes in target strategy caused by perceived changes in species abundance. A couple of fishermen commented on the abundance of snapper and having to ‘fish through them’ to get grouper and one felt that snapper were replacing deep water grouper. One interviewee commented that he had seen long range recreational boats now targeting grouper due to snapper limits. He felt that more pressure was now being put on grouper and that they were declining.

Stabilization and the Fishery

Large quota holders cited the ability to create a business plan as a major change of the IFQ program. One quota holder plans operations a year at a time. These plans include whether to lease additional allocation, what species to fish and when to fish. Fishermen are able to schedule in vacations and family events. Because the dealer now places orders for certain species at certain times, fishermen have a window in which to catch the fish as long as they deliver it on time.

Another change has to do with docking. During the derby, boats would go to the closest dock to unload so they could get back out and fish; now they can wait until they get to home port. Additionally, with the ability to use private docking facilities behind one’s home, one does not have to use a dealer’s dock to unload.

The IFQ program has changed several interviewees’ relationship with their charter operations. Some have used the IFQ to stabilize charters that were based on snapper and in trouble due to the short season. They bought shares early and fish for grouper in the off charter season. A couple

of charter operators have incorporated IFQ species into commercial fishing adventures and others have quit chartering in favor of the IFQ because they no longer need the extra income chartering brought.

Opinions about the IFQ Program

The majority of participants in the upper Texas Coastal region are either small quota holders or lease quota. Large quota holders, and dealers who also were quota holders, were generally very pleased with the IFQ program. One repeatedly stated that the IFQ had changed his life. It allowed him to shed excess costs for inputs, stabilize his income, be home for his family, make a business plan and increase his income. Having an entire year in which to catch one's quota not only allows fishermen to plan in advance, it also gives them some leeway if they are ill. One shareholder had been injured and not able to fish. He stated that if he were still in a derby situation, he would have been put out of business, missing the fishing season.

The IFQ program also allows shareholders to have a legacy. Several fishermen stated that now they have something to pass on to their children. Before IFQ, the whole business was the boat, now the business is the boat and shares. Leasing allocation can also provide a retirement income for those too old to fish.

The IFQ was also viewed as a conservation measure. During the derby days, "you would bring in whatever fish you caught because it was all about the amount of fish" (interview 3/19/015). Fishermen were not able to be selective about what size fish they brought in. Now, according to this interviewee, one can avoid sows and keep the breeding stock healthy. Another interviewee commented that he does not have the need to high grade fish.

Several interviewees discussed the freshness and increased quality of the fish they were landing. One called his fish 'showcase' fish and another stated that he was now able to provide sushi grade fish. An oft cited advantage of the program was increased safety because one no longer had to fish in inclement weather in order to be able to fish in the time allotted by a season.

Favorable views of the IFQ program are not universal. Several fishermen told me that they had received such small quotas for grouper or tilefish as to be worthless. One interviewee stated that he received ½ pound of grouper, another stated he received 11 pounds. Grouper are large and several interviewees did not receive enough quota to even handle bycatch. Others with small quota did not receive enough to make a profit. Because grouper off the upper Texas coast are further out, about 100 miles, and deep, fishing their quota does not cover the costs of the inputs expended. Another harvester that relied on leasing shares stated that he was able to buy allocation during the early years, but that now it is too expensive for him so he cannot add to his shares. He felt that the IFQ had left his business stagnant.

Fishermen use their networks and the web to find allocation to lease. Although grouper are more affordable to lease than snapper, harvesters stated that they do not make enough money if they must lease allocation. One interviewee stated that the lease price was $1.30 a pound and he received $3.50 at the dock, making only $2.20 a pound. With non-IFQ species, he can get $ 2.50 a pound and not need to purchase allocation. Therefore it was more cost effective to target non-IFQ species. Another stated that fishermen who must lease allocation make little over a $1 per pound.

Snapper, being closer and easier to catch, was the preferred species for most interviewees. With the IFQ program, small quota holders and those relying on leasing allocation stated that they could not fish for grouper they unless also had snapper – being able to participate in one program was therefore tied to participation in another. Several small quota holders sold or gave to family members their grouper allocation because they could not afford to fish it. Since few in the region target grouper as one of their primary species, this contributes to consolidation of grouper shares.

There was disagreement about the fairness of the initial allocation of shares. Large shareholders held the view that the program weeded out part time fishermen and rewarded professional fishermen. They viewed this weeding out process as positive and consolidation as economically sound. One fisherman stated that the program did what it was supposed to do, consolidate the fishery. Small holders and those that did not receive shares stated several reasons for not having a grouper/tilefish history which allocated them sufficient quota. One stated that grouper were harder to catch during the years that NMFS used to assign quota making it even more difficult for small boats to catch grouper. Now that grouper populations are healthy, it would be easier to catch them if they had enough quota to make it worthwhile. Also stated as a reason was the propensity to be paid in cash before the IFQ and lack of good accounting practices of some fishermen. Another view was that it was the people who overfished were who were rewarded with big quotas. Because VMS was not used to allocate shares during the program's inception, there was 'cheating' and people could write whatever they wanted in their log books.

One effect that IFQs has had is to switch fishing pressure to other species. Several fishermen stated that since grouper is no longer available, they had switched to non-IFQ species such as pelagics and vermillion snapper. Several fishermen targeting these non-IFQ species commented that they would like an IFQ program for them because now they would have a catch history. Large shareholders also felt that expanding to other species was a good idea.

Despite concerns among fishermen about the program, only one wanted to return to derby days. Others wanted the program tweaked to allow those who were not allocated many shares at the beginning of the program to acquire more. Now that fishermen understand the importance of their fishing history before an IFQ is implemented, several small holders who had begun targeting non-IFQ species, desired IFQ to be placed on these species because they now had a history with them.

Consolidation

The most striking attribute of the grouper IFQ program in the Texas study region is consolidation. Of the 33 entities (individual/boat/company) listed on the reef fish permit and approved dealer lists in the communities from which interviewees came, 7 were associated with one individual. Three were associated with a small dealer who had business ties with the individual associated with the 7 entities. Two were owned in partnership by large shareholders and 4 were owned in another dealer partnership. Thus, the total of completely separate entities is about 21.

In addition to owning multiple boats and companies, large shareholders continue to purchase additional quota and lease additional allocation as needed. Large dealers, especially, control significant amounts of shares/allocation. By leasing allocation to captains and other boat owners,

dealers can become a hub of a network of boats that become dependent upon them. Galveston is 3rd in the nation for grouper – tilefish landings and almost all of these go through one dealer - either through his own boats or others that dock in the same marina and sell to him. Additionally, he has assisted several younger fishermen by helping to finance their entry into the fishery. Some fishermen feel that the Shareholder Alliance should control unassigned "extra" quota, effectively acting as a gatekeeper over new entrants to the fishery.

The Desire for More Quota/Allocation

Overall, few interviewees had strong negative views of the program. There were complaints about the disparity between haves and have-nots. There were also complaints about the price of buying quota and leasing allocation. Those that discussed how it negatively affected them, when asked directly if they thought it was a good program, said that they agreed with the idea of the IFQ, they only wanted more quota.

In Texas, the snapper IFQ had a more profound impact than grouper IFQ. Although more than a few fishermen mentioned that many left the fishery after the introduction of IFQ, no one could give an example. The interviewer did speak with someone who had retired and leased allocation. He however, could still be thought of as participating in the fishery in a non-harvester mode. The interviewer also found a few fishermen who received so little quota as to be effectively cut out of the grouper fishery dud to the expense of harvesting grouper off the Texas coast but these fishermen still fished snapper and other species. Because snapper is more important in Texas than grouper and small boats can catch snapper, being unable to participate in that fishery had a greater impact in Texas. Fishermen speaking of the reduction of fishermen were referring to what happened after the snapper IFQ.

Private Fish, Public Resource:
Socioeconomic Impacts of the Grouper-Tilefish Individual Fishery Quota (IFQ) Program on Gulf of Mexico Communities

Chapter 8:

Conclusion:
A Comparative Discussion of the GT-IFQ Program in the Four Regions

David Griffith

Broader contexts

Each of the regional studies presented above emphasizes slightly different features of the local economies, societies, and fisheries they profile, in part due to the interests of the study's author although usually because the regions are, objectively, sufficiently different from one another. Galveston Bay communities, for example, are far more economically dependent on the energy sector than either of the two Florida regions, while Louisiana's coastline has been significantly reshaped, eroded, and disfigured from energy exploration and development. In both Galveston and southern Louisiana, the energy economy competes with commercial fishing for dock space, services, labor, and infrastructure, and other supporting economic resources, just as in the two Florida regions commercial fishing competes with recreational fishing and boating for similar resources. All of the regions have suffered from several 21st century hurricanes, other natural and ecological disasters (e.g. red tide), and the 2010 Deep Water Horizon oil spill, but to varying degrees.

Louisiana, of course, suffered the worst from Hurricane Katrina, Texas from Hurricane Ike, and the Florida Panhandle, most recently, from Hurricane Hermine. One thing the regions share is that, following hurricanes, the subsequent rebuilding results in higher insurance rates, fewer places for low-income families and the poor to live, increased gentrification, and longer commutes to work among working people, including the crew of fishing vessels. Each of these developments has a tendency to chip away at the Gulf's commercial fishing fleet. It is one reason why many of the marinas that commercial fishermen use depend on municipal and state governments to defend them against development, often by declaring them heritage or historic sites.

I raise this issue because evaluating the IFQ program must be done in the context of a changing fishery. All across the U.S. Southeast, commercial fisheries have been undergoing changes due to gentrification, competition with recreational fisheries, infrastructure loss, rising input costs, erosion, and multiple other natural and social developments. Fishermen and fishing families, nevertheless, have been nimble in responding to these changes, combining charter boat fishing with commercial fishing, marketing seafood more directly to consumers, and adopting multiple livelihoods that combine commercial fishing with other occupations. Some, unfortunately, have had to leave the fishery, but landings and ex-vessel price data—to say nothing of the vast state infrastructure created to monitor, regulate, and otherwise manage marine resources—suggest that

the fisheries of the U.S. Southeast remain viable. While the IFQ programs in the Gulf may seem to have further undercut dying fisheries, it is more accurate to portray them as contributing to changes already underway in the commercial fisheries of Florida, Louisiana, and Texas. Indeed, privatizing the resource under IFQ programs is in line with other mechanisms by which states and private businesses have reduced access to marine resources, and fishermen have responded to this development in positive and negative ways.

The shift from a public to a private resource

In all regions, the initial distribution of shares was perhaps the most contentious part of establishing the GT-IFQ program, as well as the part of the program that seems to have most influenced behaviors in other, similar fisheries. Overbey reports that fishermen perceived the allocation process as furthering class differences among grouper fishermen, favoring the more efficient long-liners over the bandit reel fishermen and disenfranchising those fishermen who failed to keep accurate records of their history of participation in the fishery. Griffith, Halmo, and Weeks make similar points in their reports. Similarly, all of the authors noted that current harvesters—those who actually touch the fish—object to separating share ownership from reef permits and the consequent result of individuals accumulating shares who have little to no direct involvement in fishing. In terms of the long-term influence of the way shares were allocated, current fishermen of species that are not now included in an IFQ program, such as vermillion snapper, are targeting those species heavily specifically to build up their history. Whether or not this specialization is beneficial to the resource is a question for marine biology, but many of the fishermen interviewed certainly believed that a more environmentally sound practice was to fish multiple species over the course of the year.

Grouper-Tilefish and Red Snapper IFQ program relationships

Among the most glaring difference relevant to the GT-IFQ program is that the regions vary significantly in terms of their dependence on grouper and tilefish, with the two Florida regions more dependent on the fishery than either Louisiana or Texas. Although pockets of heavy reliance on commercial fisheries exist in all four of the regions, few entire communities could be considered fishery reliant. Instead, fishing families and individual fishermen, captains, crew, seafood dealers, shareholders, and others attached to the GT fishery are unevenly distributed over the landscape, occasionally banding together organizationally into grouper like Galveston's Charter Fisherman's Association but otherwise operating independently. [2]

At the same time dependence on grouper and tilefish vary across the four regions, so too does dependence on red snapper, with Texas and Louisiana far more dependent on red snapper than the two Florida regions. Weeks reports, for example, that the grouper and snapper fisheries are so closely intertwined that it is difficult to get fishermen talking about only grouper. This was particularly the case with small quota holders. In her words, "Small quota holders and those

[2] Durrenberger (1992) reminds us that, contrary to a widespread myth in fisheries social science, fishers tend not to behave independently because of some psychological disposition toward independence but because they were legally barred from forming unions based on laws against price-fixing. With legal prohibitions against banding together, fishermen have been more likely to form networks rather than live together in place-based communities.

relying on leasing allocation stated that they could not fish for grouper unless they also had snapper—being able to participate in one program was therefore tied to participation in another."

In all regions, most fishermen involved in the GT-IFQ program are also involved in some capacity in the Red Snapper IFQ program, and the two often become confused in the ways that fishermen talk about and evaluate them. Fishermen in Florida were far more likely to complain about the rise in the red snapper population than fishermen in Texas or Louisiana, perhaps because the Florida fishermen recognize the increase in red snapper as a relatively recent phenomenon. Yet in all regions there were fishermen who claimed they had to fish through snapper to catch grouper.

The different degrees of dependence on grouper vs. snapper seem to have resulted in different levels of concentration of shares. In Texas, only a handful of individuals owned shares in the program, although in some cases one individual owned multiple reef permits and, by extension, had multiple share accounts. In Louisiana the holdings were even more concentrated. Halmo reports that one individual controls the bulk of the GT fishery. In the two Florida regions, shares are more dispersed among multiple shareholders, although some consolidation does seem to be occurring (Stocks and Lassiter 2016). Griffith's chapter reported that fishermen complained of dealers buying shares from fishermen suffering from financial duress.

The fact that both red snapper and grouper-tilefish are managed through IFQ programs, and both inhabit similar marine environments, has been responsible for an evident rise in regulatory discards. GT fishermen who catch red snapper incidentally often do not have any or enough quota to cover all of those they land and the same is true of red snapper fishermen who catch grouper and tilefish incidentally. As such, they tend to high-grade those species that they are allowed to catch as by-catch, tossing back those individuals that are not ideal from a marketable perspective. Nearly universally, fishermen who reported this found it a morally objectionable outcome of the IFQ program.

Captains, crew, and shareholders

In all regions, the GT-IFQ program has reorganized labor relations in the fishery, including relations among vessel owners, captains, and crew and relations between harvesters and dealers. The ways these relations have changed are not so different across the regions, and in most cases the program has reduced opportunities for both entry and upward mobility in the fishery. First, having to lease shares adds to the cost of entering the G fishery. Second, the program has reduced the absolute number of captains and crew necessary to land the GT quota every year. This has been due to a reduction in derby fishing and the consequent smoothing out of the fishing season over the entire year, which at the same time smooths out the man-hours over the course of the year.

Some argued that this had professionalized the crew by providing them steady work through the year, but others continued to characterize crew members as highly variable in terms of skill, reliability, and sobriety. In short, many vessel owners and captains have relatively poor opinions of fishing crew members in general, even if they know individuals who are exemplary crewmen, much in the same way people who know solid, hardworking individual immigrants will speak of

immigrants in general as societal sponges, criminals, rapists, and the like. In other words, many at the high end of the fishing echelon tend to cast those at the low end as primarily drug users and alcoholics who would be in jail or homeless if not for a space to live, work, and sleep on a fishing vessel. Stories of crewmen taking work aboard a grouper vessel to avoid arrest for failure to pay child support, of crewmen spending their share of the catch on drugs and alcohol within hours of returning to port, or of crewmen having no home between fishing trips are common enough that there must be some truth to them; equally common, however, are portraits of crew who are family men and hardworking deck hands, the sons of captains, or individuals with excessive skill and deep knowledge of the sea (Kitner 2006).

What this suggests is that, with the reduction of derby fishing, vessel owners and captains need not employ that segment of the crew labor pool who might be prone to alcoholism and drug abuse, and who also may present safety hazards at sea. While this may result in improving the overall quality of the crew and success of a fishing trip, working against this are the multiple developments that have undermined upward mobility in the fleet. These include, first, passing recovery fees and leasing costs on to captains and crew. Not only does this devalue crew labor, reducing the absolute value of their share of the catch, but it encourages comparisons to sharecropping and results in cognitive devaluing being a fishing crew member as well. We note that these sorts of developments often accompany the so-called rationalization of an industry, often opening the door to minority, immigrant, and otherwise less empowered labor (Kingsolver 2007; Benson 2012).

The extent to which relations between harvesters and crew have changed because of the program varies across regions. Few Texas or Louisiana fishermen reported significant changes in how they dealt with seafood dealers following the program, although some believed that the program gave dealers more power over the market. By contrast, a number of Florida fishermen reported that they believed harvesters had gained more power vis-à-vis dealers as a result of the IFQ program, claiming that the reduction in derby fishing had reduced gluts of fish and the lower ex-vessel prices that gluts create.

The IFQ program, good business practice, and efficiency

However much the program had increased the costs of entry and participation for those who have few or no shares, those fishermen who received adequate shares to make a living in the fishery are, understandably, highly satisfied with the program. While this isn't surprising, in many cases it has been accompanied by increased planning capability and the addition of one's shares to the overall value of their fishing enterprise. They now have more of a legacy to leave their children. In this sense, the program has achieved a measure of efficiency that its designers intended, perhaps by "weeding out" the less efficient fishermen and rewarding those who were more likely to keep good landings data, file accurate taxes, engage in planning, fully utilize their capital, and otherwise employ good business practices. Overbey notes that fishermen who either did not keep records of landings or could not negotiate NOAA paperwork requirements to get into the program did not receive shares, despite lengthy histories in the fishery.

Under the IFQ program, the Vessel Monitoring Systems in place have facilitated the state's ability to collect more accurate landings data, as well as to track fishermen, enforcing, to some

degree, good business practices. While some fishermen object to being so monitored, fearing their best fishing spots will be revealed, others welcome the effort as a way of improving fisheries biology and improving the image of commercial fishermen in the eyes of fishery managers, particularly in relation to recreational fishermen. Criticism of both fisheries biology and the data on recreational fishing landings can reach quite a heated pitch among commercial fishermen.

Whether or not good business practices represent an efficient use of the grouper-tilefish resource, however, is open to question. Fishermen who believe they engage in environmentally sound fishing practices tend to participate in multiple fisheries rather than specialize in one or two species, moving from one to the other in part to reduce pressure on any one species. Whether or not this is, indeed, environmentally sound is something to be sorted out in the halls of fisheries biology and traditional ecological knowledge. Yet fishing for multiple species is a practice that reflects an approach different from IFQs to the management of marine resources: the Marine Protected Area (MPA). MPAs protect entire segments of the marine environment—habitats, multiple species, marine food webs, etc.—rather than focusing management efforts on individual species, suggesting that plenty of precedent exists within NOAA fisheries in support of fishing multiple species rather than specializing.

Further, encouraging business orthodoxy among fishermen is not necessarily in line with the history of U.S. fishing communities and families, many of whom fish for reasons other than making money. It was three economists in New England (Doeringer, Moss, and Terkla 1987) who first contrasted capitalist fleets from kinship based fleets, demonstrating that kinship based fleets were less likely than capitalist fleets to lay off crew or discontinue fishing under conditions of declining ex-vessel prices, often staying in business just to keep money flowing even if they were just breaking even. Since their work, many social scientists have demonstrated that many fishing families take part in fishing because it is a highly satisfying livelihood, and to reduce it to economic calculus misses the point of the enterprise (Garcia Quijano, et al. 2015; Griffith, Garcia Quijano, and Valdes Pizzini 2013; Pollnac 2005). Although one could easily argue that the capitalist fleets were more efficient from an economic perspective, such behavior raises questions about the overall value of fishing as something impossible to reckon in dollars and cents. One of the fishermen Griffith interviewed for this study stated this in far more concrete terms, saying, "Fishin' is the most miserable, coldest, painful, hottest, aggravatin'est thing you ever do, and you look back on it and say, 'Damn it was fun!' It don't make no sense."

Summary Statement

In general, the GT-IFQ program has achieved at least two of the three the goals that its designers set out to achieve. The fleet has been cut back to a manageable size, thus reducing overcapitalization, and the program has reduced the race to fish (otherwise known as derby fishing). Whether or not the program has reduced inefficiency in the fishery is open to question, given that many of its unanticipated consequences are not indicative of efficiency. For example, evident increases in regulatory discards results in additional time at sea and a waste of a portion of the resource. The reduction in upward mobility in the fleet raises questions about whether or not the fishery is sustainable beyond the current generation. Finally, encouraging fishermen to specialize in one or two species may be efficient from a purely economic perspective but less so

from an ecological perspective, reducing the number of fishermen who fish for multiple species and can switch from one to another relatively nimbly.

The existence of the two Gulf IFQ programs—red snapper and grouper-tilefish—has indeed encouraged fishermen to specialize more than they have in the past. Fishermen who did not receive shares in either IFQ program reported that they are now fishing for non-IFQ species specifically in hopes that, eventually, these will be included in an IFQ program and that they will have the history of catching those species that will enable them to receive shares in the initial allocation. In most cases, the species now under pressure along these lines have been vermillion snapper and king mackerel.

Balancing social and ecological goals in fisheries is a delicate business, yet if the Magnuson Act privileges ecological goals over social goals by assigning priority to reducing overfishing first and considering social impacts second, for the GT-IFQ program to achieve its economic and social goals at the expense of the health of fish stocks may contradict the spirit of the Act. Again, whether or not specialization in the name of establishing history in a fishery is beneficial or detrimental to marine resources is a matter for fisheries biology and traditional ecological knowledge to sort out.

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U.S. Census 2000 County Map of Florida

US Census 2010, 2015 Data for Madeira Beach, Cortez, Citrus County, Charlotte County, Collier County, Hernando County, Hillsborough County, Lee County,Manatee County, Monroe County, Pasco County, Pinellas County, and Sarasota County. U.S. Census Bureau. Suitland, MD www.census.gov

Appendix A: Research Protocols

Effects of the Grouper-Tilefish IFQ on Gulf of Mexico Coastal Fishing Communities

Interviews with IFQ participants & observers, the central field research technique, will be part of a suite of methods that include:

- Marine infrastructure & gentrification inventories (to assist in determining probable businesses affected by the IFQ program—attached below).
- Photos & observations.
- Collection of background data from local publications, state Sea Grant programs, etc.
- Visits to others in the community (e.g. owners of seafood markets, county and city managers, marine suppliers).
- Use of local research assistants.

As with most anthropological studies, we will observe, discuss, and consider activities and behaviors taking place at different scales of social interaction: individual, household, extended family, social network, community, state, nation, and globe. The interview protocol is primarily oriented toward individual views/ behaviors that are situated within household, family, network, and community. The checklists are more about the community. The cultural mapping protocol is kind of an intermediate tool, designed to elicit data on businesses and other sites related to the fishery that are more or less intermediate between the individual/ family and the community.

The impact of the Grouper-Tilefish IFQ program: ***[record the interview if possible]*** **Note: gender, approximate age, ethnicity, other identifiers, location of interview, others listening/ participating in interview,**

Experience with the Grouper-Tilefish IFQ program/ history of participation (2010-present)… For example, species you target, gear you use, vessel size, places you land you fish, etc.

Others among your family, friends, or members of your personal networks who work in the Grouper-Tilefish fishery. What has been their experience?

Changes to fishing practices post-participation in program, including crew compositions, days at sea, gear modifications, by-catch, etc.

Your personal links to other fishing sectors (charter, other commercial, recreational, subsistence).

Your personal links to other fisheries (e.g. red snapper) or other regions.

Your personal work experience/ links to other economic sectors outside of fishing.

Your knowledge of linkages to other fishing sectors and other community businesses (e.g. marine suppliers, seafood markets, etc.).

What is the nature of the marketing/ processing sector for the Grouper-Tilefish fishery (e.g. landing centers, fish houses, processing plants)? Who works in this sector (e.g. fishing crew, immigrants, women, etc.)?

Places that participants in the fishery gather (e.g. bars, fish houses, churches).

Changing relations with these other fishing sectors, fish houses, markets, and landing centers due to the IFQ program (*businesses directly involved in the fishery*).

Changing relations with local and regional marine suppliers/ services due to the IFQ program (*businesses indirectly or only partially involved in the fishery*).

Your thoughts on how different actors in the IFQ program (shareholders, vessel owners, crew, etc.) have been affected by the IFQ program.

Your thoughts on the value or benefits of the IFQ program and the challenges or costs. How have these changed since 2010?

Your thoughts on how the fishing community has changed in the past 5 to 10 years. How has this influenced where you launch your vessel or conduct your business?

Local, state, and regional organizations that represent fishermen and fishing families in the community or in the fishery.

State and Federal offices or agencies involved in the fishery. What are their roles?

General attitudes toward fisheries policy/ management options.

Stories about people who were somehow dramatically affected by the program.

Future outlook for yourself and the fishery. Any thoughts about how the program could be changed or improved?

Marine Business Checklist

PORT:

Check for the presence of the following:

___Air fill stations (diving)
___Bait houses (commercial)
___Bars/ clubs (dockside or in town)
___Boat builders
___Boat insurance companies
___Churches with maritime touch
___Cold storage for bait, catch
___Docking facilities (commercial)
___Electronic, navigational, computer equipment and repair
___Fishing associations
___Wholesale Seafood/Fish House
___Fisheries research laboratories
___Fishing monuments
___Fishing pier
___Fish processors
___Fishing supplier
___Fuel company (oil, diesel, or gasoline companies that service recreational/commercial facilities)
___Harbormaster
___Hotels/Inns (dockside)
___Ice houses
___Labor unions (seafarers)
___Lawyers (admiralty and others working with fisheries)
___Marine conservation organization office
___Marine railways/haul out facilities
___Marine boating suppliers (type)
___Marine surveyors
___Museums—fishing/marine-related
___Net makers
___NMFS or state fisheries office (port agent, etc.)
___Public boat launches
___Recreational docks/marinas
___Bait & Tackle/fishing supplies
___Sea Grant Extension office
___Seafood restaurants
___Seafood retail markets
___Trucking operations
___Welding and welding suppliers
___Whale watching/pleasure tours
___Charter/Party Boats
___Commercial Boats

Gentrification Indicator Checklist

PORT:_____

___1. Visitors' bureau
___2. Marinas
___3. Upscale housing (condominiums, townhouses or residential development close to waterfront)
___4. Recreational bait/tackle shops
___5. Fish/Seafood retailers
___6. Fishing excursion vessels
___7. Trendy retail shops (Gourmet and/or organic food shops, coffee houses, boutiques, brewpubs, cigar bars, art studios and galleries)
___8. Recreational boat tours (including whale watching)
___9. Seaside restaurants
___10. Recreational boat dealers
___11. Hotels/Inns dockside
___12. Maritime museums
___13. Franchise restaurants, grocery stores, bookstores
___14. Resorts (spas, hotels, etc.)
___15. Public beautification – flowers, street lighting, parks etc., trash receptacles