

# **Analysis of the Final Rule to Prohibit the Use of Hired Masters for Sablefish Catcher Vessel Quota Shares Received by Transfer after February 12, 2010**

---

Consistency of the Final Rule With National Standards 9 and 10 of the Magnuson-Stevens Fishery Conservation and Management Act

**National Marine Fisheries Service, Alaska Region**

**April 1, 2016**

This analysis was prepared in response to a January 13, 2016, order from the United States District Court, Western District of Washington, regarding a 2014 final rule issued by NMFS (Fairweather Fish, Inc. et al. vs. Pritzker et al., Case No. 3:14-cv-05685-BHS). The final rule prohibits initial Quota recipients from using a hired master to harvest Individual Fishing Quota derived from sablefish catcher vessel Quota received by transfer after February 12, 2010. NMFS has determined that the Final Rule is consistent with the Magnuson-Stevens Fishery Conservation and Management Act National Standards 9 (minimize bycatch and bycatch mortality) and 10 (promote safety at sea). This analysis describes the factors NMFS considered in determining that the Final Rule is consistent with National Standards 9 and 10. While the Final Rule is expected to have economic impacts on some Quota holders as described in the record associated with this action, the Final Rule is not expected to increase bycatch or bycatch mortality in the sablefish IFQ fishery overall or reduce the safety of human life at sea for persons participating on board a vessel in the sablefish IFQ fishery.

## Contents

1	Summary .....	2
2	The IFQ Program .....	3
3	National Standard 9 .....	4
3.1	Bycatch and Bycatch Mortality in the Sablefish IFQ fishery .....	5
3.2	Bycatch Management in the Sablefish IFQ fishery .....	9
3.3	Consistency of the Final Rule with National Standard 9.....	12
4	National Standard 10 .....	18
4.1	Impacts of the IFQ Program on the Safety of Human Life at Sea .....	18
4.1.1	Occupational Safety in the Fishing Industry .....	19
4.1.2	Safety in the IFQ Program Fisheries.....	19
4.2	Consistency of the Final Rule with National Standard 10.....	23
5	References .....	27

**National Standard 9 and 10 Analysis of the Final Rule to Prohibit  
Use of Hired Masters for Sablefish Catcher Vessel Quota Shares  
Received by Transfer after February 12, 2010**

This analysis was prepared in response to a January 13, 2016, order from the United States District Court, Western District of Washington, regarding a 2014 final rule issued by NMFS (Fairweather Fish, Inc. *et al.* vs. Pritzker *et al.*, Case No. 3:14-cv-05685-BHS). NMFS published the final rule (Final Rule) to prohibit initial Quota recipients from using a hired master to harvest Individual Fishing Quota (IFQ) derived from sablefish catcher vessel Quota received by transfer after February 12, 2010 (NMFS 2014). The Final Rule is intended to promote a fishery management objective identified by the North Pacific Fishery Management Council (Council). The Council recommended the Final Rule to maintain progress toward predominantly owner-onboard halibut and sablefish fisheries.

NMFS has determined that the Final Rule is consistent with the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) National Standards 9 (minimize bycatch and bycatch mortality) and 10 (promote safety at sea). While the Final Rule is expected to have economic impacts on some Quota holders as described in the administrative record associated with this action, the Final Rule is not expected to increase bycatch or bycatch mortality in the sablefish IFQ fishery overall or reduce the safety of human life at sea for persons participating on board a vessel in the sablefish IFQ fishery. This analysis describes the factors NMFS considered in determining that the Final Rule is consistent with National Standards 9 and 10. This analysis is a compilation of information and data that were publicly available at the time the Final Rule was published on July 28, 2014, with a limited number of exceptions as described. This analysis considers documents outside the existing administrative record for Fairweather Fish, Inc. *et al.* vs. Pritzker *et al.*

## 1 Summary

The Final Rule is consistent with National Standard 9 for the following reasons:

- Bycatch in the sablefish fisheries was significantly reduced with implementation of the IFQ Program, and the best available information indicates that current bycatch levels do not negatively impact bycatch species;
- Regulations governing bycatch in the sablefish IFQ fishery are consistent with National Standard 9, and the Final Rule does not change these regulations;
- NMFS does not believe the Final Rule would increase the amount of halibut bycatch in the sablefish IFQ fishery overall; and
- The Final Rule may further reduce bycatch and bycatch mortality compared with no action because available scientific literature suggests that owner-onboard Quota holders are more likely to take actions to minimize bycatch of other species compared to persons hired by Quota holders to fish their Quota (i.e., hired masters).

The Final Rule is consistent with National Standard 10 for the following reasons:

- Significant improvements in safety were realized in the sablefish fisheries with implementation of the IFQ Program;

- Improvements in safety have continued since implementation of the IFQ Program from a number of U.S. Coast Guard regulations that promote vessel safety in all commercial fisheries;
- The IFQ Program provisions promoting safety are consistent with National Standard 10, and the Final Rule does not change these provisions or the U.S. Coast Guard regulations governing fishing vessel safety;
- The Final Rule does not increase safety risks for initial Quota recipients because it does not modify the ability of Quota holders who are unable or unwilling to be on board the vessel to transfer Quota or use a temporary medical transfer to receive economic value from their Quota holdings; and
- The Final Rule may further promote safety of human life at sea compared to no action because available scientific literature suggests that persons who are hired by Quota holders to fish their Quota (i.e., hired masters) may have less operational flexibility to avoid fishing in unsafe conditions than owner-onboard Quota holders.

## 2 The IFQ Program

The Final Rule is a limited amendment to the IFQ Program that specifies which sablefish Quota can be fished by a hired master instead of the Quota holder. The Final Rule does not change the primary elements of the IFQ Program that address bycatch and safety at sea in the sablefish IFQ fishery.

The sablefish (*Hippoglossus stenolepsis*) and halibut (*Anoplopoma fimbria*) fisheries have historically supported a large number of small vessels, many of which have strong ties to coastal communities in Alaska. These two fisheries are similar in many respects. Both species are targeted with fixed gear, primarily longline (stationary, buoyed, and anchored line with hooks attached), and command a relatively high ex-vessel price.

Prior to implementation of the IFQ Program in 1995, the sablefish and halibut fisheries were managed under an open access system regulated by managers monitoring catch in-season with closures timed to coincide with harvest of the total allowable catch. A catch limit was established for each fishery and all fishermen competed for the fishery catch limit. This created a “race to fish” situation, also called a “derby fishery,” where fishermen competed against one another to catch as many fish before the limit was reached and the fishery closed.

The catching power of the sablefish and halibut fleets posed several management challenges. To limit total catch to the level needed to protect the fishery stocks, managers progressively shortened fishing seasons, creating a derby as fishermen raced to obtain a share of the fishery. At the extreme, in some regulatory areas, halibut seasons were reduced to 24-hour derby openings. Sablefish IFQ fishery season lengths were also reduced. In 1984, the sablefish fishing season in the eastern Gulf of Alaska (GOA) was 180 days in length; by 1990, the season length decreased to 20 days. The central GOA sablefish IFQ fishery season decreased from 254 days in 1984 to 60 days in 1990 (see Hanselman et al. 2013). In both sablefish and halibut fisheries, managers had difficulty regulating harvests, because they could not accurately gauge harvest levels for these very short openings. Managers believed that gear losses were excessive, estimated to have resulted in almost 2,000,000 pounds of halibut mortality in 1990, as unretrieved gear continued

to catch fish. Safety was compromised because owners of smaller vessels felt compelled to fish, regardless of the weather, to maintain their participation. Catch quality suffered as some vessels queued at processing plants for up to a week waiting to offload (Fina 2011).

A derby fishery requires a fairly rigid management structure that is not adaptable to changes in weather, markets, or other operating considerations. Therefore, a derby fishery often results in shorter fishing seasons and unsafe fishing practices. Prior to the IFQ Program, both the sablefish and halibut IFQ fisheries experienced significant growth in fishing capacity with attendant reductions in season length, increased bycatch of non-target species and poor handling and release practices for those fish, increased amounts of lost gear on the fishing grounds and associated mortality of fish captured on the lost gear (deadloss), and increased safety concerns because fishermen were forced to fish in severe weather conditions due to the short season length.

The IFQ Program was designed to eliminate the derby fisheries and address a number of management problems, including allocation conflicts, gear conflicts, deadloss of fish from lost gear, bycatch loss, discard mortality, excess harvesting capacity, product wholesomeness, safety, economic stability in the fisheries and fishing communities, and rural coastal community development of a small boat fleet. The IFQ Program—the result of years of deliberations by the Council—was largely intended to control expansive growth in participation in the fisheries and end the derby (Fina 2011). The IFQ Program has provided the fleet with tools to produce more fish at lower costs, and improve fishermen’s safety and profit margin.

Under the IFQ Program, Quota holders are allocated an exclusive harvest privilege for a portion of the annual catch limit for sablefish and halibut, called IFQ. This privilege allows fishermen to decide how and when to catch their allocation of IFQ—preferably when weather, markets, and business conditions are most favorable. Allocations of individual Quota allow fishermen to set their own pace and adjust their fishing effort. The system reduced the premium that was traditionally placed on speed, allowing fishermen to pay more attention to efficiency and product quality. The flexibility provided by the IFQ Program has also provided participants with the opportunity to take actions to minimize bycatch in the fisheries and modify operations to promote safer fishery operations (NMFS 1993).

### 3 National Standard 9

National Standard 9 of the Magnuson-Stevens Act specifies that fishery “conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.” 16 U.S.C. 1851(a)(9). This section presents information on bycatch in the sablefish IFQ fishery and provides the rationale for NMFS’ determination that the Final Rule is consistent with National Standard 9.

### 3.1 Bycatch and Bycatch Mortality in the Sablefish IFQ fishery

NMFS estimates and monitors bycatch and bycatch mortality in the sablefish IFQ fishery through scientific information collected by the North Pacific Groundfish and Halibut Observer Program (Observer Program). The Observer Program provides the regulatory framework for observers to collect information necessary for the conservation and management of the groundfish and halibut fisheries in Alaskan waters. The information collected by observers provides the best available scientific information to manage the target fisheries and to develop measures to minimize bycatch and bycatch mortality. Observers collect biological samples and fishery-dependent information on total catch and interactions with protected species. Scientists use observer-collected data for stock assessments and marine ecosystem research.

NMFS compiles observer data and landings data in the Catch Accounting System database. NMFS managers use information in the Catch Accounting System database to monitor Quota use and fishery catch limits and document and reduce fishery interactions with protected resources. The primary purpose of the Catch Accounting System is to provide estimates of total catch for managed fish species in the groundfish and halibut fisheries and allow the in-season monitoring of catch against limits as required in the Council’s fishery management plans (FMPs). NMFS uses the term “total catch” to describe the sum of retained and at-sea discarded species and the term “retained catch” to describe quantities of fish not discarded at sea.

Species that are targeted in fisheries or have biological characteristics that require them to be protected by conservation and management measures are called groundfish in the FMPs (NPFMC 2015a and 2015b) for the Bering Sea and Aleutian Islands Management Area (BSAI) and the GOA. NMFS annually establishes catch limits for groundfish that potentially require in-season managers to close fisheries catching those species when the limit is reached.

The FMPs also specify ecosystem components that are composed of fish species that must be avoided by vessels catching groundfish. Specifically, ecosystem components are composed of forage fish (e.g., capelin) and prohibited species (i.e., Pacific salmon [*Oncorhynchus spp.*], steelhead [*O. mykiss*], Dolly Varden [*Salvelinus malma*], Pacific herring [*Clupea pallasii*], Pacific halibut [*Hippoglossus stenolepsis*], king [*Lithodes spp.* and *Paralithodes spp.*] and Tanner [*Chionoecetes spp.*] crab). Prohibited species often have complicated sector and seasonal catch limits or allocations that require in-season monitoring using the Catch Accounting System. NMFS relies on the Catch Accounting System to track prohibited species catch (PSC) in the fisheries against established limits and allocations.

In the sablefish IFQ fishery, all harvested fish count towards catch limits. Discarded fish are counted and sampled on observed vessels and this information is used to estimate discards for all other unobserved vessels in the fleet.

NMFS manages the fisheries based on estimates of groundfish catch and bycatch from the Catch Accounting System. NMFS uses this comprehensive and timely information to annually establish sablefish catch limits and estimate PSC for the sablefish IFQ fishery. Under the Final Rule, the Council and NMFS will continue to use Observer Program data in the Catch Accounting System to estimate bycatch and bycatch mortality in the fisheries.

Bycatch in the sablefish IFQ fishery is low compared to other groundfish fisheries. Typically, longline harvests in the fishery consist of a high proportion of sablefish, 90 percent or more. Bycatch in the sablefish IFQ fishery is primarily composed of halibut and other groundfish species, including grenadiers, skates, crab, and several species of rockfish. Following implementation of the IFQ Program in 1995, bycatch of non-sablefish groundfish species in the sablefish IFQ fishery declined significantly and remains low. Bycatch of groundfish species has declined by approximately 47 percent, bycatch of halibut has declined by approximately 45 percent, and bycatch of crab has declined by approximately 70 percent.

Bycatch is estimated to be low in the sablefish IFQ fishery, and the best available information indicates that bycatch in the sablefish IFQ fishery does not result in negative impacts on these bycatch species. Table 1 shows that the largest bycatch group for which target fisheries occur is GOA thornyhead rockfish (147 metric tons discarded). Sharks and skates are also taken in substantial numbers and are mostly discarded. NMFS annually completes a stock assessment for sharks and skates, and no conservation concern has been identified for these stocks (Tribuzio et al. 2013a and 2013b; Ormseth 2013a and 2013b). Giant grenadiers, a non-target species with a very large biomass, make up the bulk of the non-target species bycatch, with 7,642 tons taken as bycatch on average from 2009 through 2013. NMFS annually completes a stock assessment for giant grenadiers, and no conservation concern has been identified for the stock (Rodgveller and Hulson 2013).

Table 1 shows the average annual amount of groundfish bycatch in the sablefish fisheries from 2009 through 2013. Table 1 also shows that the amount of bycatch of these species in the sablefish IFQ fishery does not exceed 10 percent of the average annual 2009 through 2013 acceptable biological catch that was established for each species in the BSAI and GOA groundfish fisheries. Therefore, the bycatch of these species in the sablefish IFQ fishery is a limited portion of the acceptable harvest of these species.

Table 1. Average annual bycatch (discards) of BSAI and GOA groundfish in the sablefish IFQ fishery, average acceptable biological catch of discard species, and discards as a percentage of acceptable biological catch of bycatch species, from 2009 through 2013 in metric tons.

Species	Average Annual 2009–2013 Discards (metric tons)	Average Annual 2009–2013 Acceptable Biological Catch of Discard Species (metric tons)	Average Annual 2009–2013 Discards as % of Average Annual 2009–2013 Acceptable Biological Catch
Grenadiers (giant grenadiers + grenadiers)	7,642	123,368	6.19%
Sharks	330	6,755	0.86%
Skates	318	36,886	1.02%
Thornyhead Rockfish	147	1,756	8.37%
Shorthead Rockfish	132	1,364	9.68%
Other Rockfish	57	5,137	1.11%
Rougheye Rockfish	55	1,749	3.14%
Pacific Ocean Perch	1	41,036	0.002%

Source: NMFS Catch Accounting System and Bering Sea and Aleutian Islands and Gulf of Alaska Stock Assessment and Fishery Evaluation Reports at [http://www.afsc.noaa.gov/refm/stocks/Historic\\_Assess.htm](http://www.afsc.noaa.gov/refm/stocks/Historic_Assess.htm).

Note: The Acceptable Biological Catch for Skates included in the March 14, 2016, *Declaration of Glenn Merrill* included only the GOA Acceptable Biological Catch for Skates. That figure should include the BSAI Acceptable Biological Catch as shown here.

Table 2 shows the average annual amount of halibut, salmon, and crab prohibited species bycatch in the sablefish fisheries from 2009 through 2013. Table 2 also presents the average annual 2009 through 2013 prohibited species bycatch limits that were established for each species in the BSAI and GOA groundfish fisheries. The sablefish IFQ fisheries are exempt from the bycatch limits, but these limits are provided to demonstrate that the amount of bycatch of these species in the sablefish IFQ fishery is a small portion of the overall limit established for bycatch of these species in the BSAI and GOA groundfish fisheries.



Table 2. Average annual BSAI and GOA prohibited species catch (PSC) estimates in the sablefish IFQ fishery from 2009 through 2013, average annual prohibited species catch limits established for these species in BSAI and GOA groundfish fisheries, and tons of mortality for halibut and numbers of animals for crab and salmon.

Species	Average Annual 2009–2013 PSC	Average Annual 2009–2013 PSC Limit Established for Other Fisheries (metric tons)	Average Annual 2009–2013 PSC as % of Average Annual 2009–2013 PSC Limit Established for Other Fisheries
Halibut (metric tons of mortality)	73	6,844	1.07%
Chinook salmon (numbers)	19	42,955	0.04%
Other salmon (numbers)	332	42,000	0.79%
Golden king crab (numbers)	608	No limit established	N/A
Bairdi (Tanner) crab (numbers)	297	3,358,671	0.01%
Opilio crab (numbers)	53	6,322,455	0.001%
Red king crab (numbers)	13	193,403	0.01%

Source: NMFS Catch Accounting System

Note: The amount of halibut discards included in the March 14, 2016, *Declaration of Glenn Merrill* included all halibut discards. The appropriate measure of halibut prohibited species catch only includes the portion of halibut that die from being caught and discarded, called halibut mortality, as shown here.

The best available information shows that halibut mortality from bycatch in the sablefish IFQ fishery averages approximately 1.07 percent of the average annual PSC limit established for halibut for Alaska groundfish fisheries from 2009 through 2013. Although an average of a total of 593 mt of halibut were discarded annually from sablefish vessels from 2009 through 2013, NMFS estimates that a relatively small portion of discarded halibut (e.g., 10 percent in the GOA) in the sablefish IFQ fishery die after being discarded, resulting in 73 mt of estimated mortality from 2009 through 2013. Therefore, mortality of halibut from bycatch in the sablefish IFQ fishery accounts for a limited portion of the total limits established for halibut bycatch in the groundfish fisheries. In recognition of the limited amount of halibut bycatch in the sablefish IFQ fishery, the Council and NMFS exempt the fishery from the halibut bycatch limits established for the groundfish fisheries in the BSAI and the GOA (NMFS 2016a and 2016b<sup>1</sup>).

The annual sablefish stock assessment includes an analysis of the bycatch considerations for the sablefish IFQ fishery. Table 3 summarizes the analysis from the 2013 stock assessment, which indicates that the Alaska sablefish IFQ fishery does not have negative impacts on species that are caught as bycatch in the fishery (Hanselman et al. 2013).

<sup>1</sup> This citation provides the most recent example of the NMFS annual harvest specifications to demonstrate that the Council and NMFS continue to exempt the sablefish IFQ fishery from halibut bycatch limits. This analysis does not use any underlying data from the 2016 harvest specifications.

Table 3. Analysis of bycatch considerations for the sablefish IFQ fishery

Indicator	Observation	Interpretation	Evaluation
Prohibited species (primarily halibut and crab)	Small catches	Minor contribution to mortality	No concern
Forage species	Small catches	Minor contribution to mortality	No concern
Non-target species	Grenadier, spiny dogfish, and unidentified shark catch notable	Grenadier catch high but stable, recent shark catch is small	Possible concern about relatively high amounts of grenadier bycatch, but no stock conservation concern has been identified

Source: Hanselman et al. 2013 at <http://www.afsc.noaa.gov/REFM/stocks/assessments.htm>.

## 3.2 Bycatch Management in the Sablefish IFQ fishery

### *IFQ Program Incentives to Minimize Bycatch*

The Final Rule does not change bycatch management tools in the sablefish IFQ fishery that minimize bycatch and bycatch mortality to the extent practicable. This section reviews the bycatch management tools that have been established for the sablefish IFQ fishery: the IFQ Program, maximum retainable amounts for groundfish species, and PSC management and PSC limits for some species that are highly valued in other target fisheries.

The Council and NMFS anticipated that implementation of the IFQ Program would reduce bycatch in the sablefish and halibut fisheries. Reducing bycatch was one of several objectives for the fisheries identified by the Council during development of the IFQ Program (NMFS 1993).

The IFQ Program replaced the derby fishery in the sablefish and halibut IFQ fisheries. As described above, a derby fishery creates a substantial disincentive for participants to take actions to reduce bycatch, particularly if those actions could reduce target catch rates. In a derby fishery, participants who choose not to take actions to reduce bycatch and waste stand to gain additional target catch by continuing to harvest at a higher bycatch rate, at the expense of any vessels engaged in bycatch avoidance. Allocation of allowable harvests in the form of exclusive harvest privileges (i.e., the IFQ Program) is a management approach that replaces the rigid management structure of a derby fishery with a flexible program that provides accountability and removes disincentives to controlling and reducing bycatch and waste.

Allocating exclusive harvest privileges to fishery participants as IFQ mitigates the potential negative impacts of a derby fishery on target and bycatch species, and on the operational and economic efficiency of the fisheries. In the IFQ Program, a portion of the catch limit for the sablefish and halibut fisheries is allocated to individual Quota holders. Each Quota holder must stop fishing when his/her specific share of the catch limit is reached. This removes the incentives for each participant to maximize catch rates to capture a larger share of the available catch before

the catch limit is reached and the fishery is closed. As a result, participants can make operational choices to improve fishing practices. These choices could include fishing in a slower and more efficient fashion, using modified gear with a lower harvest rate but which reduces bycatch, coordinating with other vessel operators to avoid areas of high bycatch, and improving handling and processing practices in ways that yield increased value but which are possible only by slowing the pace of the fishery. For example, the IFQ Program provides fishermen with incentives to more carefully set and retrieve their gear to minimize their operating costs. In addition, Quota holders have operating flexibility to set gear in known areas of lower bycatch and to move to other fishing areas if they encounter high rates of bycatch. This management program allows fishermen to plan their fishing effort around the weather, markets, or other business considerations and allows other fishery dependent businesses to plan more effectively.

Implementation of the IFQ Program in 1995 resulted in significant reductions in bycatch and deadloss from lost fishing gear in the sablefish and halibut fisheries. The slower-paced fishery that occurred under the IFQ Program reduced fishing mortality that was caused by lost fishing gear and bycatch because fewer fishermen were on the grounds and there were fewer gear conflicts during the extended season. In the sablefish IFQ fishery, some areas were open to sablefish fishing for as little as 51 days from 1992 through 1994. Under the IFQ Program, fishing has been allowed for 240 to 262 days. In the first year of the IFQ Program, capacity, as measured by the number of active vessels landing sablefish, decreased by 45 percent from 1,109 vessels in 1992 through 1994 to 615 vessels in 1995. Two-thirds of the vessels landing sablefish during the years prior to implementation of the IFQ Program are no longer active in the sablefish IFQ Program. The number of entities holding sablefish Quota decreased by 20 percent between IFQ Program implementation in 1995 and 2011. Results have been similar in the halibut fishery. From 1992 through 1994, some areas were open to halibut fishing for as little as four days; under the IFQ Program, fishing has been allowed for an average of 250 days. In addition, the number of entities holding halibut Quota decreased during each year of the IFQ Program, resulting in a 42 percent decline from 1995 to 2011. Accordingly, capacity was reduced as there were 70 percent fewer vessels actively landing halibut in 2011 compared to the years prior to implementation of the IFQ Program (NMFS 2013).

In addition to implementing the IFQ Program, NMFS has promulgated numerous, detailed regulations designed to limit bycatch in the halibut and sablefish fisheries, most importantly maximum retainable amounts for groundfish and PSC management. The Final Rule does not revise these regulations.

#### *Maximum Retainable Amounts*

The primary regulation designed to limit bycatch in the sablefish IFQ fishery is the maximum retainable amount (MRA), which limits the amount of groundfish that can be retained when that species is closed to directed fishing. MRA regulations establish the calculation method and MRAs for groundfish species that are closed to directed fishing. The MRA is calculated as a percentage of the retained amount of species closed to directed fishing relative to the retained amount of basis species or species groups open for directed fishing. All MRA accounting is computed based on round weight equivalent. Amounts that are caught in excess of the MRA percentage must be discarded.

MRAs are the primary tool NMFS uses to regulate the catch of species closed to directed fishing. NMFS prohibits directed fishing for a species to avoid reaching a total allowable catch (TAC) (typically established for conservation reasons), reaching an amount or percentage of groundfish included in the annual specifications for a gear and species or species group, or for a prohibited species limit (e.g., halibut limits). When NMFS prohibits directed fishing, retention is allowed up to an amount calculated with the MRA.

The MRA is a proportion representing the rate of expected or accepted incidental catch of species closed to directed fishing relative to target species. As a management tool, MRAs rely on the ability of the vessel operator to selectively catch the target species. The target species is called a basis species in regulation. The species closed to directed fishing are the incidental species. The MRA percentages are intended to slow the rate of harvest of a species when insufficient TAC or PSC amounts are available to support a directed fishery.

When NMFS prohibits directed fishing on a groundfish species, MRAs buffer the amount of catch of species on bycatch status occurring in the open directed fisheries. Ideally, the application of an MRA rate slows catch of a species so that harvest can be managed up to the TAC by the end of the year. Beyond management of a TAC to obtain optimum yield, MRA calculations perform two additional functions. First, MRAs limit retention to species' expected or accepted incidental catch rate. Alternately, the MRA functions as a trip limit for retention of incidental catch of a species. This function allows for limited targeting of a species up to the MRA ("topping off").

#### *Prohibited Species*

In addition to establishing MRA regulations to minimize bycatch in the sablefish IFQ fishery, the Council and NMFS have designated specific species as "prohibited species" in order to provide fishermen with incentives to avoid catching these species in groundfish fisheries, generally because these species are highly valued target species in other fisheries. Pacific halibut and several other species (herring, salmon and steelhead, king crab, and Tanner crab) are prohibited species in the GOA and BSAI FMPs (NPFMC 2015a and 2015b). By regulation, the operator of any vessel fishing for groundfish in the GOA and BSAI must minimize the catch of prohibited species (50 CFR 679.21(b)(2)(i)) and release the prohibited species with a minimum of injury. Fishermen cannot retain and sell prohibited species and these species must be discarded when caught as bycatch. The requirement to discard prohibited species provides a strong incentive for fishermen to avoid catching prohibited species in the first place and to make operational changes if they encounter large amounts of prohibited species. Bycatch of prohibited species adds time and costs to fishing activities because crew must sort and discard PSC with a minimum of injury. Therefore, it is in the economic interest of vessel operators to minimize PSC to the extent practicable.

NMFS manages PSC in the GOA and BSAI by 1) establishing PSC limits for trawl and non-trawl fisheries; 2) apportioning those halibut PSC limits to groundfish sectors, fishery categories, and seasons; and 3) managing groundfish fisheries to prevent PSC from exceeding the established limits.

The FMPs authorize the Council to exempt specific gear types from the non-trawl halibut PSC limits that are established through the annual harvest specifications process. In past annual consultations with the Council, NMFS has exempted the sablefish IFQ hook-and-line gear fishery from the non-trawl halibut PSC limits established for the BSAI and GOA groundfish fisheries based on limited halibut PSC use in the fishery (NMFS 2016a and 2016b<sup>2</sup>).

#### *Halibut Retention Requirement*

The IFQ Program requires that any legal-size halibut caught in the sablefish IFQ fishery be retained if anyone on board the vessel holds halibut IFQ (50 CFR 679.7(f)(4)). The Council and NMFS included this requirement to minimize discards of halibut in the sablefish IFQ fishery and promote efficient use of halibut and sablefish resources (NMFS 1993). Approximately 65 percent of sablefish Quota holders also held halibut Quota at the time the Final Rule was published and therefore are required to retain legal-size halibut caught while fishing for sablefish. In addition, because there is crossover in Quota holdings, it is likely that one or more crew members on board a vessel in the sablefish IFQ fishery will hold halibut Quota, which authorizes and requires the vessel to retain legal-size halibut up to the amount of halibut Quota held by persons on board the vessel.

### **3.3 Consistency of the Final Rule with National Standard 9**

NMFS evaluated the Final Rule with respect to the National Standard guidelines at 50 CFR 600.350 and determined that the Final Rule is consistent with National Standard 9 while meeting the objective to promote an owner-onboard fishery. This section provides NMFS' rationale for this determination.

National Standard 9 requires that conservation and management measures must, to the extent practicable, (A) minimize bycatch, and (B), to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. 16 U.S.C. 1851(a)(9). The Magnuson-Stevens Act defines bycatch as "fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards. Such term does not include fish released alive under a recreational catch and release fishery management program." 16 U.S.C. 1802 3(2).

NMFS has developed guidelines for each of the 10 national standards in the Magnuson-Stevens Act. These guidelines are located at 50 CFR 600.305 through 600.355. The Council and NMFS use these guidelines to evaluate the consistency of proposed conservation and management measures with the national standards. NMFS has determined that the Final Rule is consistent with the National Standard guidelines found at 50 CFR 600.350.

The guidelines at 50 CFR 600.350(b) provide that the Council and NMFS must consider the bycatch effects of existing and planned conservation and management measures. This guideline states that bycatch can, in two ways, impede efforts to protect marine ecosystems and achieve sustainable fisheries and the full benefits they can provide to the Nation. First, bycatch can increase substantially the uncertainty concerning total fishing-related mortality, which makes it

---

<sup>2</sup> This citation provides the most recent example of the NMFS annual harvest specifications to demonstrate that the Council and NMFS continue to exempt the sablefish IFQ fishery from halibut bycatch limits. This analysis does not use any underlying data from the 2016 harvest specifications.

more difficult to assess the status of stocks, to set the appropriate optimum yield (OY) and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Second, bycatch may also preclude other more productive uses of fishery resources.

The guidelines at 50 CFR 600.350(c) define the term “bycatch” as fish that are harvested in a fishery, but that are not sold or kept for personal use.

The guidelines at 50 CFR 600.350(d) specify that the priority under National Standard 9 is first to avoid catching bycatch species to the extent practicable while fishing for target species. Fish that are bycatch and cannot be avoided must, to the extent practicable, be returned to the sea alive. This guideline recognizes that all fishermen encounter some amount of bycatch when targeting specific species because other non-target species are found in the same locations and cannot be practically excluded by available fishing gear. In order to achieve optimum yield on a continuing basis for target species fisheries, as required by National Standard 1, the guidelines recognize that some bycatch will occur in fisheries for target species. To address this, National Standard 9 requires fishery conservation and management measures to minimize bycatch and bycatch mortality “to the extent practicable.”

As described in Section 3.2, the sablefish IFQ fishery is managed using MRAs for groundfish and PSC limits for prohibited species such as salmon and halibut. NMFS uses MRA and PSC management to allow for optimum yield in the groundfish fisheries in Alaska, including sablefish, while minimizing bycatch and bycatch mortality to the extent practicable, recognizing that some bycatch will occur in all groundfish fisheries. These regulations provide incentives for participants in the fishery to avoid bycatch and require fishermen to return all prohibited species to the sea (unless the sablefish fisherman holds halibut IFQ) immediately with a minimum of injury (50 CFR 679.21(b)(2)(ii)). NMFS previously determined these regulations minimize bycatch and bycatch mortality to the extent practicable, consistent with National Standard 9. The Final Rule did not change these regulations and does not increase the level of bycatch or bycatch mortality in the sablefish IFQ fisheries.

The guidelines at 50 CFR 600.350(d) specify that in developing conservation and management measures, the Council and NMFS must consider the net benefits to the Nation, which include, but are not limited to negative impacts on affected stocks; incomes accruing to participants in directed fisheries in both the short and long term; incomes accruing to participants in fisheries that target the bycatch species; environmental consequences; non-market values of bycatch species, which include non-consumptive uses of bycatch species and existence values, as well as recreational values; and impacts on other marine organisms.

The Council and NMFS consider these types of factors when establishing total allowable catch limits for groundfish species, including sablefish, through the annual process to establish catch limits, called the harvest specifications process. The 2016/2017 harvest specifications were published in the *Federal Register* on March 18, 2016 (NMFS 2016a and 2016b<sup>3</sup>).

---

<sup>3</sup> This citation provides the most recent example of the NMFS annual harvest specifications to demonstrate that the Council and NMFS consider the factors specified at 50 CFR 600.350(d) when establishing annual catch limits through the harvest specifications. This analysis does not use any data from the 2016 harvest specifications.

50 CFR 679.20(a) establishes requirements for the annual harvest specifications process. 50 CFR 679.20(a)(3) specifies that when establishing TACs for groundfish species, the Council and NMFS will review 1) the biological condition of groundfish stocks, and 2) socioeconomic considerations for the groundfish fisheries.

With respect to the biological condition of the groundfish fisheries, the Council and NMFS review resource assessment documents that provide information on historical catch trends; assessments of the stock condition of each target species; assessments of the multispecies and ecosystem impacts of harvesting the groundfish complex at current levels, given the assessed condition of stocks, including consideration of rebuilding depressed stocks; and alternative harvesting strategies and related effects on the component species group.

With respect to socioeconomic information, the Council and NMFS consider the goals of the FMPs for the groundfish fisheries of the BSAI and the GOA, including the need to promote efficient use of fishery resources, including minimizing costs; the need to manage for the optimum marketable size of a species; the impact of groundfish harvests on prohibited species and the domestic target fisheries that use these species; the desire to enhance depleted stocks; the seasonal access to the groundfish fishery by domestic fishing vessels; the commercial importance of a fishery to local communities; the importance of a fishery to subsistence (non-commercial) users; and the need to promote use of certain species.

The Council and NMFS also establish PSC limits in the annual harvest specifications process. Regulations at 50 CFR 679.21(d)(4)(ii) and 679.21(e)(5)(ii) require the Council and NMFS to consider a number of factors when establishing PSC limits and further apportionments of these limits. The Council and NMFS must consider the following factors when establishing PSC limits for halibut:

- (A) Seasonal distribution of halibut.
- (B) Seasonal distribution of target groundfish species relative to halibut distribution.
- (C) Expected halibut bycatch needs, on a seasonal basis, relative to changes in halibut biomass and expected catches of target groundfish species.
- (D) Expected variations in bycatch rates throughout the fishing year.
- (E) Expected changes in directed groundfish fishing seasons.
- (F) Expected start of fishing effort.
- (G) Economic effects of establishing seasonal halibut allocations on segments of the target groundfish industry.

The Council and NMFS consider a comprehensive suite of biological, economic, and social factors (i.e., net benefits to the Nation) to establish groundfish TACs and PSC limits through the harvest specifications process. The Council and NMFS balance these factors consistent with the National Standard 9 requirement at 50 CFR 600.350(d) to evaluate the net benefits to the Nation when considering conservation and management measures. Under the Final Rule, the Council

and NMFS will continue to implement the annual harvest specifications process as required by 50 CFR 679.20 and 679.21, and consistent with National Standard 9.

In addition to specifying that the Council and NMFS must evaluate the net benefits to the Nation when considering conservation and management measures, the guidelines at 50 CFR 600.350(d) specify that the Council must meet four requirements for a measure to be consistent with National Standard 9—

- (1) *Promote development of a database on bycatch and bycatch mortality in the fishery to the extent practicable.*

As described in Section 3.1, the Council developed, and NMFS implemented, a comprehensive groundfish and halibut Observer Program for Federal fisheries in Alaska. Data collected on board observed vessels are entered into the NMFS Catch Accounting System database and used to estimate bycatch and bycatch mortality as the fisheries are ongoing, and NMFS manages the fisheries based on these estimates as they become available. The Council and NMFS use this comprehensive and timely information to annually establish groundfish catch limits and estimate PSC for the sablefish IFQ fishery. Under the Final Rule, the Council and NMFS will continue to use Observer Program data and the Catch Accounting System to estimate bycatch and bycatch mortality in the fisheries.

- (2) *For each management measure, assess the effects on the amount and type of bycatch and bycatch mortality in the fishery;*

- (3) *Select measures that, to the extent practicable, will minimize bycatch and bycatch mortality.*

The Council and NMFS considered the impacts the Final Rule would have on the amount and type of bycatch and bycatch mortality in the sablefish IFQ fishery. The Council determined, and NMFS agrees, that the Final Rule meets the Council's objective to promote an owner-onboard fishery by limiting further increases in the amount of Quota fished by hired masters. The Final Rule does not change the IFQ Program requirements that have been implemented to minimize bycatch and bycatch mortality in the sablefish IFQ fisheries to the extent practicable and does not change the level of bycatch or bycatch mortality in the fishery. Specifically, the Final Rule does not change the areas in which the sablefish IFQ fishery takes place, the management measures currently in place to minimize bycatch and the mortality of bycatch in the fishery (i.e., MRA and PSC management), or vessel operations (e.g., gear deployment or retrieval, release of bycatch) in the fishery. Consistent with National Standard 9 of the Magnuson-Stevens Act, the Council and NMFS use MRA management and PSC limits in the groundfish fisheries to minimize bycatch and bycatch mortality to the extent practicable while achieving, on a continuing basis, optimum yield from the groundfish fisheries as required by National Standard 1 of the Magnuson-Stevens Act. The PSC limits in the groundfish fisheries provide an additional constraint on PSC mortality and promote conservation of the halibut resource.

The Final Rule continues the IFQ Program's incentives to minimize bycatch and bycatch mortality of non-target species. The IFQ Program creates a structure for halibut and sablefish



IFQ fishery participants to efficiently manage harvesting activities that minimize bycatch and optimize use of target fisheries. The IFQ Program also provides a management structure that minimizes the mortality of non-target species caught as bycatch in the IFQ fisheries. Exclusive harvesting privileges and extended seasons provide fishermen with sufficient time to release carefully those non-target species to maximize their survival.

The Final Rule also continues the IFQ Program's encouragement of a rational, more easily managed use of the resource by providing incentives for fishermen to optimize the value of their IFQ. Under the IFQ Program, fishermen can adjust their fishing operations according to weather conditions, market prices, and other factors that are discounted in a race for fish during relatively short fishing seasons. The IFQ Program has decreased fishing mortality compared to the derby fishery due to discards and bycatch because fishermen have an incentive to minimize their costs. Fishermen have an opportunity to land halibut and sablefish that they catch in other fixed gear fisheries (e.g., Pacific cod) that would otherwise be discarded. In addition, the IFQ Program provides an incentive for fishermen to land a premium product that will maximize market value. This occurs as a result of a greater ability for fishermen to coordinate their landings with market variables throughout the season, and more time while fishing to clean and properly preserve their catch. Hence, the overall yield, in terms of volume and value, from the halibut and sablefish resources is optimized.

The Final Rule continues the IFQ Program's incentives for Quota holders to maximize value from fishing by minimizing costs because it provides strong incentives for fishermen to catch only those species for which they have IFQ or can otherwise retain. Bycatch increases fishing costs because it increases the amount of time and effort taken to catch target species allocations and increases time on the fishing grounds because crew must handle and release fish that must be discarded. Fishermen are better able to time their fishing activities with peaks in the market value of halibut and sablefish.

As described above, the National Standard 9 guidelines recognize that all participants in the sablefish IFQ fishery have some amount of halibut bycatch. However, as described in Section 3.1, NMFS considers the bycatch rate, or the amount of bycatch caught as a portion of sablefish in the IFQ fishery, to be very low compared to groundfish fisheries such as Pacific cod and flatfish, particularly for halibut bycatch. In fact, NMFS exempts the sablefish IFQ fishery from halibut bycatch limits that have been established for other groundfish fisheries because of the relatively low rate of bycatch and the low level of mortality for halibut caught on longline gear and discarded. Typically, longline harvests in the fishery consist of a high proportion of sablefish, 90 percent or more. In addition, NMFS applies a 10 percent discard mortality rate for halibut caught and discarded in the sablefish IFQ fishery versus a 59 percent discard mortality rate for halibut caught as bycatch with trawl gear (NMFS 2016b<sup>4</sup>).

NMFS evaluated the effects of the Final Rule on bycatch and bycatch mortality for the sablefish IFQ fishery overall, rather than at an individual operation level, because information is not available to determine specific impacts at the operational level. Although some initial recipients

---

<sup>4</sup> This citation provides the most recent example of the NMFS annual harvest specifications to demonstrate that the Council and NMFS have historically applied and continue to apply a very low rate of mortality to halibut bycatch in the sablefish IFQ fishery compared to other groundfish fisheries.

may have used transfers of Quota to “cover” halibut bycatch in the sablefish IFQ fishery before the Final Rule, NMFS has no information to suggest that this was a common practice among Quota holders or that this would result in an increase in bycatch or bycatch mortality in the fishery. Therefore, NMFS has no information to suggest that the Final Rule would increase the amount of halibut bycatch in the sablefish IFQ fishery overall because all sablefish fishermen have options to adjust fishing operations to maximize the value of their IFQ. While it is possible that the Final Rule may result in some Quota holders having a reduced amount of halibut Quota available to cover halibut bycatch in the sablefish IFQ fishery under the Final Rule, NMFS notes that hired masters fishing for these Quota holders have other options to reduce bycatch: avoid known areas of high bycatch rates, move to areas with lower bycatch rates if they encounter high rates, or hire crew who hold halibut Quota to supplement the QS holder’s halibut Quota to cover halibut bycatch.<sup>5</sup>

In summary, the IFQ Program is consistent with the requirements of National Standard 9 because it results in fishing practices that minimize bycatch and bycatch mortality to the extent practicable halibut and sablefish IFQ fisheries. Nothing in the Final Rule changes regulations on the amount of permissible bycatch or the regulations governing bycatch in the sablefish IFQ fishery. Because the Final Rule does not allow more bycatch in the sablefish fisheries than the established limits or provide incentives for participants to fish in a manner that leads to greater bycatch in the fishery overall, it is consistent with National Standard 9 while achieving the established objective to promote an owner-onboard fishery.

*(4) Monitor selected management measures.*

As described in Section 3.1, the Council and NMFS will continue to use information from the Observer Program to monitor bycatch and bycatch mortality in the sablefish IFQ fisheries following implementation of the Final Rule. As described above, the Council and NMFS do not anticipate that the Final Rule will increase bycatch or bycatch mortality in the sablefish IFQ fishery. The Final Rule does not change the established IFQ Program regulations to minimize bycatch and bycatch mortality under the Final Rule. Ongoing monitoring of the fishery by the Observer Program will enable the Council and NMFS to verify this anticipated outcome and take additional action in the future if additional measures are needed to minimize bycatch and bycatch mortality in the sablefish IFQ fishery.

In conclusion, NMFS has determined that the Final Rule is consistent with National Standard 9 and its guidelines. The Final Rule may further reduce bycatch and bycatch mortality compared with no action because available scientific literature<sup>6</sup> suggests that owner-onboard Quota holders are more likely to take actions to minimize bycatch of other species compared to persons fishing

---

<sup>5</sup> IFQ regulations at 50 CFR 679.7(f) require that all legal-size halibut caught on that vessel must be retained up to the cumulative amount of Quota held by all persons on board the vessel.

<sup>6</sup> The cited literature was available at the time the Final Rule was published on July 28, 2014. While NMFS has compiled the literature for this analysis, the literature is not critical to NMFS’ determination that the Final Rule is consistent with National Standard 9 because there is no information to suggest that the Final Rule will result in increased bycatch over the entire sablefish IFQ fishery. The literature cited here suggests that the Final Rule may actually result in decreased bycatch over the entire sablefish IFQ fishery compared to the “no action alternative,” but NMFS does not have information to make this determination.

Quota as a hired master. Providing fishermen with a guaranteed percentage of the TAC through a catch share program is anticipated to engender a stewardship ethic amongst shareholders, because the shareholders' long-term profits are inherently tied to the health of the resource. Assuming that the stakeholder's investment in the fishery is primarily a factor of the duration of the fishing privilege,<sup>7</sup> when the fishery transitions to more hired masters, these anticipated stewardship benefits may not materialize or may dissipate, as hired masters may have a much shorter time horizon with respect to the fishery (Scott 1999; Bradshaw 2004; Gibbs 2009). Furthermore, for fisheries in which an increasingly larger percentage of hired master profits are paid out to the person holding the underlying Quota (Quota holder), the hired master may alter their behavior to make up some of that profit loss (van Putten and Gardner 2010). Given their shorter time horizon in the fishery, the hired master may try to make up some of that profit loss by targeting higher valued catch, which could include fishing practices designed to maximize catch of higher valued species rather than avoiding catch and discards of lower valued bycatch species.

## 4 National Standard 10

National Standard 10 of the Magnuson-Stevens Act specifies that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. 16 U.S.C. 1851(a)(10). This section presents information on safety measures applicable to the Final Rule and provides the rationale for NMFS' determination that the Final Rule is consistent with National Standard 10.

### 4.1 Impacts of the IFQ Program on the Safety of Human Life at Sea

The Final Rule is a limited amendment to the IFQ Program regulations. This section reviews the IFQ Program safety measures that NMFS considered in determining the Final Rule is consistent with National Standard 10 while achieving the objective of the action, which is to promote an owner-onboard fishery by limiting the amount of Quota that can be fished by hired masters.

Vessel and crew safety was an important consideration in developing the IFQ Program. As described in Section 2, the IFQ Program slowed the race for fish by, among other things, extending the fishing season. A longer fishing season allowed vessels to fish more slowly, avoid conflicts with other vessels, and avoid fishing in unsafe weather conditions. The IFQ Program replaced short intensive fishing seasons with longer, predictable seasons. The IFQ Program was intended to increase safety at sea and reduce the cost of human capital and equipment invested in the production of halibut and sablefish products.

The short and infrequent fishing seasons for halibut, and to a lesser degree, sablefish, especially in the GOA, often compelled fishermen to risk their vessels and lives to fish in poor weather instead of waiting for the weather to clear and miss the fishery. This was one of the 10 problems identified by the Council during development of the IFQ Program and is characteristic of

---

<sup>7</sup> NMFS notes that initial Quota recipients hiring a master are required to have an investment in the fishery operations. Regulations at 50 CFR 679.42(i)(1) require an initial Quota recipient to own a minimum 20-percent interest in the vessel for a minimum of 12 months prior to submitting an application to hire a master.

overcapitalized derby fisheries. The IFQ Program resolved this problem by allowing fishermen to choose when they fish within a 9-month period. For example, fishing can be postponed due to poor weather conditions, if necessary, or when the crew is fatigued.

Although the Council and NMFS recognized that the IFQ Program would not prevent casualties at sea, they designed in part to allow fishermen to make sensible judgments that will enhance their safety. The Council and NMFS also determined that the IFQ Program promoted the safety of human life at sea because skilled crew members are more in demand under the IFQ Program if they can contribute to the value of the fish products and lower costs of fishing. The IFQ Program provides for enhanced safety for crew members who work in one of the most hazardous work environments. For these reasons, professional fishing vessel crews in the halibut and sablefish fisheries are better off under the IFQ Program than under the derby fishery (NMFS 1993).

The following sections provide background information on safety issues related to the IFQ Program fisheries.

#### 4.1.1 Occupational Safety in the Fishing Industry

Commercial fishing is one of the most dangerous occupations in Alaska. In Alaska, the annual fatality rate for commercial fishermen is 26 times the rate for all workers in the U.S. (National Institute of Occupational Safety and Health 2010). Fishermen have been described as risk-lovers, predisposed to operating under higher levels of risk than the general public and drawn to fishing for the adventurous nature of the profession (Binkley 1991; Poggie et al. 1995; Pollnac et al. 1998; Kaplan and Kite-Powell 2000; Bye and Lamvik 2007; Hall-Arber and Mrakovcich 2008; Davis 2012). However, researchers have also shown that fishermen avoid uncompensated risk and will only accept higher risk if the pecuniary rewards are also high (Jin and Thunberg 2005). Researchers have shown that economic conditions and other factors, including age, experience, position, kinship, and investment affect risk taking behavior and perceptions of risk (Acheson 2002; Kaplan and Kite-Powell 2000; Murray 2002). Although research shows that fishermen avoid uncompensated risk, their “comfort” with risk may increase over time with continued exposure to risky conditions (Pollnac et al. 1995; Pollnac et al. 1998).

#### 4.1.2 Safety in the IFQ Program Fisheries

##### *Implementation of the IFQ Program*

Consistent with National Standard 10 of the Magnuson-Stevens Act, the IFQ Program provided participants with a flexible management structure that promotes safe fishing operations. Prior to the implementation of the IFQ Program in Alaska’s halibut and sablefish fisheries, these fisheries were managed by TACs and seasonal restrictions. Fishermen had an incentive to increase their fishing capacity by purchasing bigger boats with larger engines and using more gear in order to catch as many fish as possible within the allowable fishing season. As a result, the TACs were increasingly harvested more quickly and managers had to institute increasingly shorter fishing seasons to ensure that the TACs were not overharvested, resulting in seasons as short as 24 hours in some areas and years. Among other impacts, this derby fishery resulted in decreased safety at sea as season openers were not contingent on weather conditions and fishermen were competing for harvest on increasingly congested fishing grounds (NRC 1999).

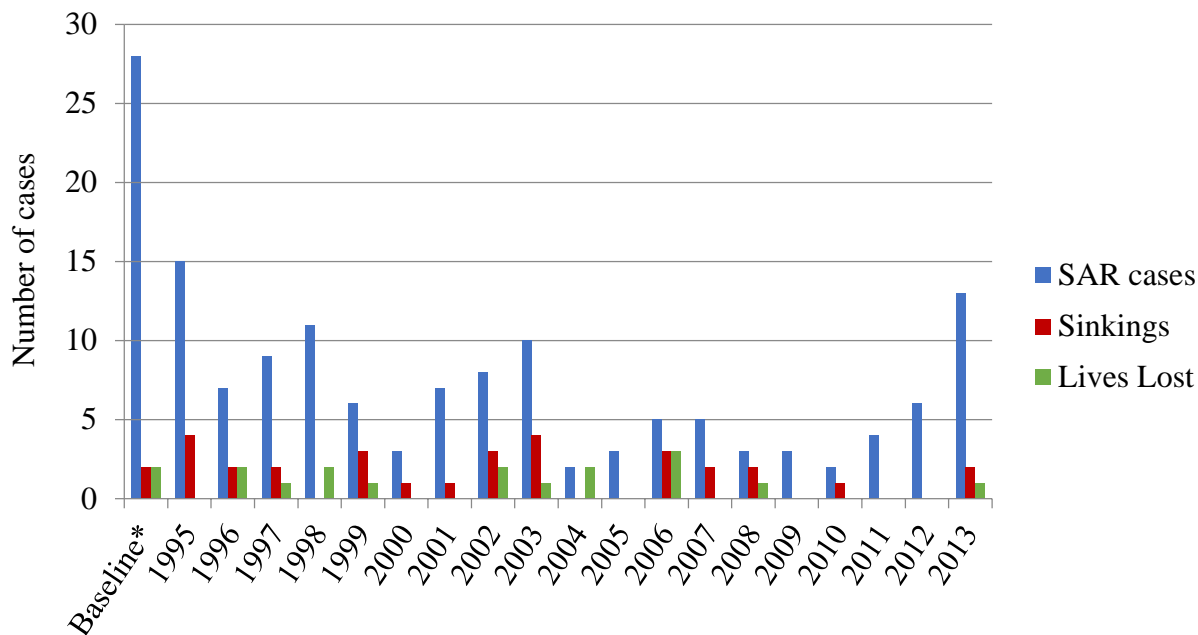
One of the anticipated benefits of implementing the IFQ Program in the halibut and sablefish fisheries was safety improvements (Pautzke and Oliver 1997). With longer fishing seasons and a guaranteed percentage of the TAC provided to individual participants, the IFQ Program was expected to shift fishermen's incentives toward improving the quality of their landed fish and to eliminate the drive to race for fish, both of which were anticipated to produce safety benefits.

Researchers have shown that when instituted in fisheries with derby-style fishing seasons, catch share programs like the IFQ Program can provide safety improvements in fisheries by eliminating the race for fish and providing fishermen with flexibility on when they fish, which can minimize fishermen's incentives to work without rest, delay vessel repairs, and fish in dangerous weather conditions as well as provide them with the opportunities to ensure that their vessels and crew are ready for the season (Woodley 2002; Windle et al. 2008; Woodley et al. 2009). There is also some evidence that catch share management can decrease fatality rates and search-and-rescue missions in fisheries (Lincoln et al. 2007; Woodley et al. 2009). Indeed, in the halibut and sablefish IFQ fisheries, researchers have shown positive changes in fishermen's perceptions of safety improvements and in actual safety metrics (i.e., search-and-rescue missions) since implementation of the IFQ Program (Knapp 1999; Hartley and Fina 2001; Lincoln et al. 2007; Criddle 2012; Carothers 2013).

The best available information from the U.S. Coast Guard indicates that the IFQ Program's elimination of the derby fishery in the halibut and sablefish IFQ fisheries has improved safety by reducing the pressure to fish under dangerous conditions. Since implementation of the IFQ Program in 1995, the number of U.S. Coast Guard Search and Rescue (SAR) cases for the IFQ fisheries has declined. The numbers of vessel sinkings and lives lost in the IFQ fisheries have also declined since 1995. During the 1999 IFQ fishing season, there were 10 SAR cases attributable to halibut and sablefish fishing activity (compared with 15 in 1995, seven in 1996, nine in 1997, and nine in 1998). There were two vessel sinkings in 1999 (compared with four in 1995, seven in 1996, two in 1997, and none in 1998), and one life lost (compared with one in 1995, two in 1996, one in 1997, and one in 1998). In the three years prior to implementation of the IFQ Program, there was an average of 28 SAR cases, two vessel sinkings, and two lives lost during the short "derby" seasons. The number of U.S. Coast Guard rescues in the three years following IFQ Program implementation was 31, less than half of the 83 rescues in the years prior to implementation (NRC 1999).

Figure 1 shows the number of SAR cases in the IFQ fisheries from the pre-IFQ Program baseline period (the average of the three years preceding IFQ Program implementation, 1992 through 1994) through 2013. The number of SAR cases has continued to decline and averaged 5 from 2000 through 2013. From 2009 through 2013, only 1 life was lost in the IFQ fisheries compared to an average of 2 lives lost each year during the 1992 through 1994 pre-IFQ Program implementation baseline period.

Figure 1. Search and Rescue Cases in the IFQ fisheries Pre- and Post-IFQ Program Implementation. The baseline period is the average of the three years preceding IFQ implementation, 1992 through 1994.



Source: U.S. Coast Guard.

### *Medical Transfer Provision*

The IFQ Program also includes a temporary medical transfer provision at 50 CFR 679.42(d)(2) that allows a Quota holder not otherwise qualified to hire a master to temporarily lease their annual IFQ to another individual if the Quota holder or an immediate family member have a temporary medical condition that prevents them from fishing. The provision is intended to provide a mechanism for Quota holders who are experiencing a temporary medical emergency that would prevent them from fishing during a season to lease their annual IFQ to another individual. The temporary medical transfer provision was implemented in 2007 (NMFS 2007). An applicant for a temporary medical transfer must document his or her medical emergency by submitting an affidavit to NMFS from a licensed medical doctor, an advanced nurse practitioner, or a primary community health aide, that describes the medical condition affecting the applicant and attests to the inability of the applicant to participate in the IFQ fishery/ies for which she or he holds IFQ permit(s), during the season. In the case of a family member’s medical emergency, the affidavit must describe the necessity for the IFQ permit holder to tend to an immediate family member who suffers from the medical condition. The Council and NMFS limited the length of time that Quota holders may use the medical transfer provision for the same medical condition. NMFS will not approve an emergency transfer if the Quota holder has been granted an emergency medical transfer in any two of the previous five years for the same medical condition.

Medical transfers were not included in the original design of the IFQ Program because the Council prioritized its policy of maintaining a fishing fleet of owner-operators in the IFQ fisheries by narrowly restricting leasing provisions. The Council rejected initial proposals for a medical transfer provision based on the potential for abuse and the lack of technical expertise at NMFS to determine disability. Following a few reported instances of injured or ill IFQ holders

being transported on and off fishing vessels to meet owner-onboard requirements, the Council recommended, and NMFS approved, the temporary medical transfer provision. In recommending the medical transfer provision, the Council balanced its objective to limit long-term leasing of Quota to promote an owner-onboard fishery with its recognition that a medical transfer provision would provide a mechanism for Quota holders to retain their Quota during bona fide medical hardships (NMFS 2007).

Generally speaking, most individual initial Quota recipients can hire a master; however, they cannot do so in the halibut Area 2C management area (2C) or the Southeast sablefish IFQ management area (SE), and they must own a minimum of 20 percent interest in a harvesting vessel to hire a master. Therefore, individual initial recipients who hold Quota in the 2C or SE management areas or who do not own a vessel have been approved for temporary medical transfers since it was implemented. The Final Rule created another class of persons that are “not otherwise eligible to hire a master.” The medical transfer provision is another way in which these initial recipients who are not eligible to hire a master can temporarily continue to receive financial benefits from the fisheries if they are not able to be on board the vessel on which the IFQ they hold is fished. The number of initial recipients using the medical transfer provision in areas other than 2C and SE increased from 15 in 2010 to 24 in 2013. NMFS anticipates this number will continue to increase after implementation of the Final Rule. The temporary medical transfer provision is a reasonable alternative for those who cannot otherwise hire a master to remain in the fishery when a medical condition leaves them temporarily unable to safely participate on board the harvesting vessel. However, it is important to note that because the Council prioritized its long-term objective to promote an owner-onboard IFQ fishery, the medical transfer is intended to be a temporary provision for Quota holders that have a medical emergency. It is not intended to be a mechanism for persons unable or unwilling to participate in the fishery as an owner onboard to continue to receive economic benefits from their Quota holdings.

#### *U.S. Coast Guard Vessel Safety Requirements*

In addition to the IFQ Program provisions that promote safe operations in the IFQ fisheries, the U.S. Coast Guard has promulgated numerous, detailed regulations designed to promote fishing vessel safety. The Final Rule does not change the vessel safety requirements established by the U.S. Coast Guard that are applicable to vessels in the sablefish IFQ fishery.

The primary safety regulation applicable to vessels in the sablefish IFQ fishery is a mandatory vessel safety inspection to demonstrate compliance with U.S. Coast Guard vessel safety requirements. Over 90 percent<sup>8</sup> of the vessels in the sablefish IFQ fishery are required to comply with the vessel safety inspection requirement because they are subject to NMFS Observer Program requirements and may be required to carry an observer on a fishing trip (50 CFR 679.51(e)(1)(ii)). These requirements specify that vessels carrying observers are required to have a valid U.S. Coast Guard Commercial Fishing Vessel Safety Decal issued within the last two years, which ensures the vessel is in compliance with U.S. Coast Guard safety equipment requirements.

---

<sup>8</sup> Source: NMFS Catch Accounting System; calculated from active vessels in the 2013 sablefish IFQ fishery in the GOA and the BSAI.

Sablefish fishing vessels are also subject to U.S. Coast Guard fishing vessel requirements, depending on the length and tonnage of the individual vessel. For example, most commercial fishing vessels are required by 46 CFR Parts 67 through 69 to be documented with the U.S. Coast Guard and display the name, hailing port, and U.S. Coast Guard documentation number on the vessel. Regulations at 33 CFR 81 require all fishing vessels comply with specific light, shape, and sound signal requirements to aid navigation, promote safer vessel transit, and prevent vessel collisions in a variety of operating and weather conditions. Finally, regulations at 46 CFR 28 establish 1) stability requirements for certain vessels; 2) requirements for specific safety items to be on board the vessel, including personal flotation devices, immersion suits, throwable flotation devices, survival craft, distress signal devices, and fire extinguishers; and 3) a requirement for all persons on a fishing vessel to notify the master or individual in charge of the vessel of any illness, disability, or injury suffered by anyone on board the vessel during a specified time period.

## **4.2 Consistency of the Final Rule with National Standard 10**

NMFS evaluated the Final Rule with respect to the National Standard guidelines at 50 CFR 600.355 and determined that the Final Rule is consistent with National Standard 10 while meeting the objective to promote an owner-onboard fishery. This section provides NMFS' rationale for this determination.

National Standard 10 requires that “conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.” The NMFS guidelines for National Standard 10 of the Magnuson-Stevens Act are located at 50 CFR 600.355. NMFS has determined that the Final Rule is consistent with the National Standard guidelines found at 50 CFR 600.350.

NMFS has determined that the Final Rule is consistent with 50 CFR 600.355(b). Section 600.355(b)(1) specifies that fishing is an inherently dangerous occupation where not all hazardous situations can be foreseen or avoided. The standard directs the Council and NMFS to reduce that risk in developing conservation and management measures, so long as they can meet the other national standards and the legal and practical requirements of conservation and management.

The guidelines at 50 CFR 600.355(b)(2) further clarify that “the qualifying phrase ‘to the extent practicable’ recognizes that regulation necessarily puts constraints on fishing that would not otherwise exist. These constraints may create pressures on fishermen to fish under conditions that they would otherwise avoid. The guidelines instruct the Council and NMFS to identify and avoid such regulations, if they can do so consistent with the legal and practical requirements of conservation and management of the resource.

The Council and NMFS determined that the Final Rule is necessary to meet the specified objective to promote an owner-onboard fishery by limiting the amount of Quota that can be harvested by hired masters. The Council and NMFS acknowledge that the Final Rule cannot achieve this objective without impacting Quota holders that rely on the use of hired masters and that cannot, for legal or practical reasons, be on board the vessel. In these cases, the Final Rule provides these Quota holders with the option to transfer the Quota to another qualified person to



receive economic value for the Quota or, in some circumstances, to use the temporary medical transfer provision in the IFQ Program. Because Quota holders have these options, the Final Rule does not create an additional pressure for Quota holders who are unable to be on board a vessel to go on board a vessel and “fish under conditions that they would otherwise avoid.” Therefore, NMFS determined that the Final Rule promotes the safety of human life at sea to the extent practicable, while achieving the objective to promote an owner-onboard fishery.

The guidelines at 50 CFR 600.355(b)(3) specify that for the purposes of National Standard 10, the safety of the fishing vessel and the protection from injury of persons aboard the vessel are considered the same as “safety of human life at sea.” Most importantly, the guidelines note that the safety of a vessel and the people aboard is ultimately the responsibility of the master of that vessel. Each master is responsible for decisions about vessel maintenance and loading and about the capabilities of the vessel and crew to operate safely in a variety of weather and sea conditions. The guidelines are clear that the requirements of National Standard 10 do not replace the judgment or relieve the responsibility of the vessel master related to vessel safety.

The guideline at 50 CFR 600.355(b)(3) also requires that the Council and NMFS undergo a consultation process with the U.S. Coast Guard in developing conservation and management measures to ensure they recognize any impact on the safety of human life at sea and minimize or mitigate that impact where practicable. The Council and NMFS consulted with the U.S. Coast Guard in the development of the IFQ Program and in the Final Rule. The U.S. Coast Guard has a representative on the Council, and this representative participated in the development of these regulatory actions.<sup>9</sup>

NMFS has determined that the Final Rule is consistent with 50 CFR 600.355(c). Section 600.355(c) provides a non-inclusive list of safety considerations that the Council and NMFS should use when evaluating conservation and management measures under National Standard 10. Two of these considerations are relevant to the IFQ Program and the Final Rule:

(1) *Operating environment.* An FMP should try to avoid creating situations that result in vessels going out farther, fishing longer, or fishing in weather worse than they generally would have in the absence of management measures. Where these conditions are unavoidable, management measures should mitigate these effects, consistent with the overall management goals of the fishery.

(2) *Gear and vessel loading requirements.* An FMP should consider the safety and stability of fishing vessels when requiring specific gear or requiring the removal of gear from the water. Management measures should reflect sensitivity to these issues and provide methods of mitigation of these situations wherever possible.

The Council and NMFS carefully considered the impacts on vessel safety when it developed the IFQ Program. The program was specifically designed to provide individual operators with flexibility to avoid situations requiring fishing in unsafe locations or conditions. The Final Rule does not change any provisions of the IFQ Program that promote vessel safety, nor does it result in a change to the vessel safety requirements implemented by the U.S. Coast Guard.

---

<sup>9</sup> A list of Council members is available on the Council web site at <http://www.npfmc.org/council-members/>.

The third consideration specified in 50 CFR 600.355(c) relates to fisheries that are managed under a derby system. The guidelines note that under such management systems, FMPs should attempt to mitigate the effects of safety concerns that occur in derby fisheries, such as fishing in bad weather or overloading vessels with catch and/or gear. This consideration does not apply to the IFQ Program or the Final Rule because the sablefish IFQ fishery is a catch share program and is not operated as a derby fishery.

NMFS has determined that the Final Rule is consistent with 50 CFR 600.355(d), which specifies that during preparation of any FMP, FMP amendment, or regulation that might affect safety of human life at sea, the Council should consult with the U.S. Coast Guard and the fishing industry as to the nature and extent of any adverse impacts. This consultation may be done through a Council advisory panel, committee, or other review of the FMP, FMP amendment, or regulations.

The Council and NMFS consulted with the U.S. Coast Guard in the development of the IFQ Program and in the Final Rule. As described above, the U.S. Coast Guard has a representative on the Council and this representative participated in the development of these regulatory actions.

The guidelines at 50 CFR 600.355(e) are not applicable to the Final Rule. Section 600.355(e) requires the Council and NMFS to consider a list of factors to mitigate the effects of a derby fishery or a race for fish as described in 50 CFR 600.355(c)(3). As described above, the sablefish IFQ fishery is a catch share program and is not operated as a derby fishery. Therefore, it is not necessary for the Council and NMFS to establish measures to mitigate the potential concerns of a derby for the sablefish IFQ fishery.

In conclusion, NMFS has determined that the Final Rule is consistent with National Standard 10 and its guidelines. The Final Rule may further promote the safety of human life at sea compared to no action because it limits further increases in the use of hired masters to fish IFQ for initial Quota recipients. Researchers<sup>10</sup> have shown that economic pressures (e.g., needing to pay for new gear, bills, and crew) and poor economic conditions caused, for example, by increasingly stringent management measures may diminish a vessel operator's capacity to avoid fishing opportunities that exhibit significant risk (Acheson 2002; Kaplan and Kite-Powell 2000; Murray 2002). Such economic conditions and pressures can be replicated for hired masters in an IFQ fishery, if the hired master must pay the Quota holder to fish their IFQ and this causes a significant reduction in the profit the hired master earns from fishing the Quota (van Putten and Gardner 2010). If an increasingly larger percentage of a hired master's profits are shifted towards the Quota holder, the hired master will have an increasingly smaller profit. For example, the institution of an IFQ program in Tasmania's rock lobster fishery resulted in the emergence of a class of small operators who fished as hired masters and did not hold IFQ. These operators were

---

<sup>10</sup> The cited literature was available at the time the Final Rule was published on July 28, 2014. While NMFS compiled this literature in this analysis, it is not critical to NMFS' determination that the Final Rule is consistent with National Standard 10 because there is no information to suggest that the Final Rule does not promote the safety of human life at sea while promoting the Council's objective of an owner-onboard fishery. The literature cited here suggests that the Final Rule may actually result in increased safety at sea because it will result in more owner-onboard fishermen.

found to have below normal economic profit (van Putten and Gardner 2010). This kind of profit margin compression may fundamentally change the way hired masters operate in the fishery, reducing their flexibility in when and how they operate, potentially making them more vulnerable to numerous timing-related operation issues, including inclement marine weather.

## 5 References

- Acheson, V. 2002. Fishers' Attributed Causes of Accidents and Implications for Management. *In* Proceedings of the International Fishing Industry Safety and Health Conference, Eds. J.M. Lincoln, D.S. Hudson, G.A. Conway, and R. Pescatore. Publications Dissemination, EID National Institute for Occupational Safety and Health, Cincinnati, Ohio. pp. 225-236.
- Binkley, M. 1991. Nova Scotia Offshore Fishermen's Awareness of Safety. *Marine Policy* 15: 170-182.
- Bradshaw, M. 2004. A Combination of State and Market through ITQs in the Tasmanian Commercial Rock Lobster Fishery: the Tail Wagging the Dog? *Fisheries Research* 67: 99-109.
- Bye, R. and G.M. Lamvik. 2007. Professional Culture and Risk Perception: Coping with Danger on Board Small Fishing Boats and Offshore Service Vessels. *Reliability Engineering and System Safety* 92: 1756-1763.
- Carothers, C. 2013. A Survey of U.S. Halibut IFQ Holders: Market Participation, Attitudes, and Impacts. *Marine Policy*, 38, 515-522.
- Criddle, K. 2012. Adaptation and Maladaptation: Factors that Influence the Resilience of Four Alaskan Fisheries Governed by Durable Entitlements. *ICES Journal of Marine Science: Journal du Conseil*, 69(7), 1168-1179.
- Davis M. 2012. Perceptions of Occupational Risk by U.S. Commercial Fishermen. *Marine Policy* 36(1):28-33.
- Fina, M. 2011. Evolution of Catch Share Management: Lessons from Catch Share Management in the North Pacific. *Fisheries* 36(4): 164-177.
- Gibbs, M.T. 2009. Individual Transferable Quotas and Ecosystem-based Fisheries Management: It's All in the T. *Fish and Fisheries* 10: 470-474.
- Hall-Arber, M. and K. Mrakovcich. 2008. Reducing Risk to Life and Limb: Safety Training Steps Towards Resilience in Massachusetts' Commercial Fishing Industry. *Human Ecology Review* 15(2): 201-212.
- Hanselman D, Lunsford CR, Rodgveller C. 2013. Assessment of the Sablefish Stock in Alaska. 110 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/GOAsablefish.pdf>.
- Hartley M. and M. Fina. 2001. Changes in Fleet Capacity Following the Introduction of Individual Vessel Quotas in the Alaskan Pacific Halibut and Sablefish fishery. In: Shotton R, editor. Case Studies on the Effects of Transferable Fishing Rights on Fleet Capacity and Concentration of Quota Ownership. Rome: FAO.

Di Jin and E.M. Thunberg. 2005. An Analysis of Fishing Vessel Accidents in Fishing Areas off the Northeastern United States. *Safety Science* 43(8): 523-540.

Kaplan, I. and H. Kite-Powell. 2000. Safety at Sea and Fisheries Management: Fishermen's Attitudes and the Need for Co-management. *Marine Policy* 24: 493-497.

Knapp, G. 1999. *Effects of IFQ Management on Fishing Safety: Survey Responses of Alaska Halibut Fishermen*. Institute of Social and Economic Research, University of Alaska.

Lincoln JM, Mode NA, Woodley CJ. 2007. An Evaluation of Quota-based Management Systems in Alaska. North Pacific Research Board Final Report 533 (North Pacific Research Board, Anchorage AK)

Merrill, G. 2016. *Declaration of Glenn Merrill*. Case No. 3:14-cv-5685-BHS, Document 53-1. Filed with United States District Court, Western District of Washington on March 14, 2016.

Murray, M. 2002. The Use of Narrative Theory in Understanding and Preventing Accidents. *In* Proceedings of the International Fishing Industry Safety and Health Conference, Eds. J.M. Lincoln, D.S. Hudson, G.A. Conway, and R. Pescatore. Publications Dissemination, EID National Institute for Occupational Safety and Health, Cincinnati, Ohio. pp. 243-250.

National Institute of Occupational Health. 2010. Commercial Fishing Safety in Alaska. Available online: <http://www.cdc.gov/niosh/topics/fishing/alaskaregion.html>.

NRC (National Research Council). 1999. Sharing the Fish: Toward a National Policy on Individual Fishing Quotas. National Research Council Committee to Review Individual Fishing Quotas. Washington, DC: National Academy Press; 422 pp.

National Marine Fisheries Service (NMFS) 1993. Final Rule to Implement the IFQ Program. *Federal Register* Volume 58, Number 215: 59375-59413.

NMFS 2007. Final Rule to Modify Several Provisions of the IFQ Program. *Federal Register* Volume 72, Number 153: 44795-44812.

NMFS 2013. NOAA Catch Share Performance Indicator Series, available at <https://alaskafisheries.noaa.gov/sites/default/files/reports/ifq-performance2013.pdf>.

NMFS 2014. Final Rule to Amend the Hired Master Provisions of the IFQ Program. *Federal Register* Volume 79, Number 144: 43679-43692.

NMFS 2016a. Final Harvest Specifications and Prohibited Species Catch Allowances for the Groundfish Fishery of the Bering Sea and Aleutian Islands Management Area. *Federal Register* Volume 81, Number 53: 14773-14800.

NMFS 2016b. Final Harvest Specifications and Prohibited Species Catch Allowances for the Groundfish Fishery of the Gulf of Alaska. *Federal Register* Volume 81, Number 53: 14740-14773.

North Pacific Fishery Management Council (NPFMC) 2015a. Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. 146 p., available at <http://www.npfmc.org/wp-content/PDFdocuments/fmp/BSAI/BSAIfmp.pdf>.

NPFMC 2015b. Fishery Management Plan for Groundfish of the Gulf of Alaska. 130 p., available at <http://www.npfmc.org/wp-content/PDFdocuments/fmp/GOA/GOAfm.pdf>.

Ormseth, O. 2013a. Assessment of the Skate Stock Complex in the Bering Sea and Aleutian Islands. 8 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/BSAIskate.pdf>.

Ormseth, O. 2013b. Assessment of the Skate Stock Complex in the Gulf of Alaska. 10 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/GOAskate.pdf>.

Pautzke, C. G., and Oliver, C. W. 1997). Development of the Individual Fishing Quota Program for Sablefish and Halibut Longline Fisheries off Alaska. North Pacific Management Council, Anchorage.

Poggie J, R. Pollnac, and S. Jones. 1995. Perceptions of Vessel Safety Regulations: A Southern New England Fishery. *Marine Policy* 19(5):411–418.

Pollnac R., J. Poggie, and S. Cabral. 1998. Thresholds of Danger: Perceived Risk in a New England Fishery. *Human Organization* 57(1):53–59.

Rodgveller, C. and P. Hulson 2013. Assessment of the Grenadier Stock Complex in the Gulf of Alaska, Eastern Bering Sea, and Aleutian Islands. 4 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/GOAgrenadier.pdf>.

Scott, A. 1999. Introducing Property in Fishery Management. FAO Fisheries Technical Paper 404 in *Use of Property Rights in Fisheries Management*. Rome, Italy.

Tribuzio C, K. Echave, C. Rodgveller, and P. Hulson 2013a. Assessment of the Shark Stock Complex in the Bering Sea and Aleutian Islands. 4 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/BSAIs shark.pdf>.

Tribuzio C, P. Hulson, K. Echave, and C. Rodgveller 2013b. Assessment of the Shark Stock Complex in the Gulf of Alaska. 6 p., available at <http://www.afsc.noaa.gov/REFM/Docs/2013/GOAshark.pdf>.

Van Putten, I., and C. Gardner. 2010. Lease Quota Fishing in a Changing Rock Lobster Industry. *Marine Policy* 34: 859-867.

Windle M.B. Neis, S. Bornstein, M. Binkley, and P. Navarro. 2008. Fishing Occupational Health and Safety: A Comparison of Regulatory Regimes and Safety Outcomes in Six Countries. *Marine Policy* 32(4):701–710.

Woodley C. 2002. Quota based management regimes. Proceedings of the International Fishing Industry Safety and Health Conference, eds. Lincoln JM, Hudson DS, Conway GA, Pescatore R (Publications Dissemination, EID, Cincinnati), pp 161–171

Woodley, C., J. Lincoln, and C. Medlicott. 2009. Improving Commercial Fishing Vessel Safety Through Collaboration. *Proceedings of the Marine Safety & Security Council, the Coast Guard Journal of Safety at Sea* 66(1): 38-43.