

# The Economic Performance of U.S. Catch Share Programs

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U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service

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# The Economic Performance of U.S. Catch Share Programs

## Executive Summary

Catch share programs are a fishery management tool that dedicates a secure share of quota allowing individual fishermen, fishing cooperatives, fishing communities, or other entities to harvest a fixed amount of fish. With clearly defined fishing privileges, fishermen no longer need to “race to fish,” but instead can make harvest decisions based upon market conditions, improving economic performance, and weather conditions, which improves crew safety. These incentives can reduce the cost of taking conservation actions and can encourage individual fishing choices that are more consistent with sustainable fishing practices such as reducing low-value or undersized catch that is discarded at sea but is frequently associated with high mortality rates. The ability to align fishermen’s economic incentives with the long-term biological health of the fishery singularly distinguishes catch share programs from traditional fishery management strategies (i.e., trip limits, gear restrictions, etc.).

Nationwide, there are 15 catch share programs currently in operation (see Box 1). There are both striking differences as well as strong similarities among the programs. Six of the eight federal Fishery Management Councils have implemented at least one program; the most programs are in the Alaska region. Implementation dates of these programs span three decades, with five programs established in the 1990s, but the majority of programs (seven) were established in the past five years. Nine programs manage a single species or, in some cases, two species but as separate management units; the other six programs manage multiple species.

The term “catch share” includes specific programs defined in the Reauthorized Magnuson-Stevens Act (2007), such as “Limited Access Privilege Program”, “Individual Fishing Quota (IFQ)” programs, and other exclusive allocation measures such as Territorial Use Rights Fisheries. Catch share programs are designed by Regional Fishery Management Councils with significant stakeholder input. Catch share program design varies widely across programs and

### Box 1. U.S. Catch Share Programs By Fishery Management Council\*

#### New England

Northeast General Category Atlantic Sea Scallop IFQ, 2010  
Northeast Multispecies Sectors, 2010

#### Mid-Atlantic

Mid-Atlantic Surfclam and Ocean Quahog ITQ, 1990  
Mid-Atlantic Golden Tilefish IFQ, 2009

#### South Atlantic

South Atlantic Wreckfish ITQ, 1992\*\*

#### Gulf of Mexico

Gulf of Mexico Red Snapper IFQ, 2007  
Gulf of Mexico Grouper-Tilefish IFQ, 2010

#### Pacific

Pacific Coast Sablefish Permit Stacking, 2001  
Pacific Groundfish Trawl Rationalization, 2011

#### North Pacific

Western Alaska Community Development Quota, 1992\*\*  
Alaska Halibut and Sablefish IFQ, 1995  
American Fisheries Act (AFA) Pollock Cooperatives, 1999  
Bering Sea and Aleutian Islands Crab Rationalization Program, 2005  
Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80), 2008  
Central Gulf of Alaska Rockfish Cooperatives, 2012

\*The year corresponds to the implementation date for each Program

\*\*Program not included in this report.

regions, reflecting unique fishery characteristics and program objectives. However, a substantial number of catch share programs have several objectives in common. The most frequently stated program objectives are to meet conservation requirements, improve economic efficiency and/or flexibility, reduce excess capacity, eliminate derby fishing conditions and to improve safety at sea.

In this report, we provide information on 13 of the 15 catch share programs listed in Box 1. Of these 13 programs, only Baseline Period<sup>1</sup> indicator values are reported for the Central Gulf of Alaska Rockfish Cooperatives since it was recently implemented in 2012 leaving 12 program assessments. However, the report treats the Surfclam<sup>2</sup> ITQ and the Ocean Quahog ITQ, jointly implemented under the Mid-Atlantic Surfclam and Ocean Quahog ITQ, as well as the Halibut IFQ and the Sablefish IFQ, jointly implemented under the Alaska Halibut and Sablefish IFQ, as separate programs. Thus, 14 distinct program assessments are included in this report<sup>3</sup>.

Catch share fishery performance is compared to a baseline period prior to catch share program implementation. This means that factors such as changing market conditions or natural variability in target and non-target fish stocks affecting fishery performance that were concurrent, but not attributable to catch shares, are not controlled for in the analysis. The longer a catch share program has been in place the more likely the fishery has experienced some of these changes. This distinction is important in interpretation of results. While performance indicators may improve (or decline) under catch shares, one should take care in not assuming cause and effect.

Catch share programs are evaluated using a standard set of indicators that measure the basic economic performance of catch share programs, regardless of their design. In addition, since management measures implemented under a catch share program may affect economic performance, we provide one metric for tracking the management context (whether quotas are increasing/decreasing) and two metrics for monitoring management performance (whether the annual quota was exceeded and season length for monitoring whether the race to fish has been eliminated).

### **How did the Programs Perform?**

Overall, these programs were successful in having fishermen observe quota limits, improving overall economic benefits and efficiency, and ending the race to fish, thereby reducing pressure on fishermen to fish during unsafe conditions. Catch share programs have also been effective in reducing fishing capacity. However, catch share programs have had distributional consequences as reductions in the number of active vessels may have been counterbalanced by reductions in the number of shareholders. Findings for each of these common program objectives are discussed below.

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<sup>1</sup> In all cases, except for the Crab Rationalization Program, the Baseline Period was defined as the average of the three years prior to implementation of the respective Catch Share Program. Non-consecutive years were used as the Baseline Period for the Crab Rationalization Program.

<sup>2</sup> In the original FMP "surf clam" was referred to as "surfclam. However, the Northeast Regional Office, Science Center, and Mid-Atlantic Council have adopted the common name of "surfclam" in place of "surf clam" a convention that will be used throughout this report.

<sup>3</sup> The Wreckfish ITQ Program is not included due to confidentiality restrictions and the Alaska Community Development Quota (CDQ) program is not included because it is the only CDQ program and is inherently quite different in nature than the other programs.



*Management Context and Performance* Overall, annual harvest limits were rarely exceeded, with overages only occurring twice in the long history of the Mid-Atlantic Surfclam ITQ Program and in the first year of the recently implemented Mid-Atlantic Golden Tilefish IFQ Program. This suggests that catch share programs, which generally include increased monitoring to improve accountability, have coincided with users' compliance with the quota.

Fees collected for the cost recovery programs can be a maximum of 3% of the ex-vessel value of landings. In the most recent year that data are available for each program, fees have ranged from \$21,000 (Mid-Atlantic Golden Tilefish IFQ Program) to \$6.7 million (Bering Sea and Aleutian Islands Crab Rationalization Program<sup>4</sup>), representing 0.38% and 2.7% of the landings revenue in these programs, respectively.

Catch share programs do not directly affect decisions about harvest quota levels, but indirectly affect these determinations because catch share programs are typically implemented coincident with enhanced catch accounting and monitoring requirements, which can reduce management uncertainty and scientific uncertainty. As such, nine of the programs were implemented coincident with reductions – some quite substantial – in total allowable catch, signifying that prior to the implementation of the catch share program harvest restrictions were ineffective and, in some cases, not sustainable<sup>5</sup>. Notably, quota reductions would have been necessary whether or not the catch share programs were implemented due to requirements in the Reauthorized Magnuson-Stevens Act. Only three programs (Mid-Atlantic Surfclam ITQ, Mid-Atlantic Golden Tilefish IFQ, and Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) however, currently have quotas above their respective Baseline Periods.

Season length has increased for all catch share programs that had experienced shortened seasons caused by derby fishing during the Baseline Periods. These programs include Mid-Atlantic Golden Tilefish IFQ, Gulf of Mexico Red Snapper IFQ, Gulf of Mexico Grouper-Tilefish IFQ, Pacific Coast Sablefish Permit Stacking, Alaska Halibut IFQ, AFA Pollock Cooperatives, and Bering Sea and Aleutian Islands Crab IFQ. In the more extreme cases, the Pacific Coast Sablefish Permit Stacking Program season went from 9 to 210 days and the Alaska Halibut IFQ Program season went from 6 to 245 days. This report does not include any direct measures of fishing vessel safety. However, increased season length provides greater flexibility so that fishing is less likely to be undertaken in hazardous weather. For example, a detailed study of changes in fishing vessel safety of the Bering Sea and Aleutian Islands Crab IFQ Program found that the longer fishing season promoted operational changes in the fishery resulting in safer working conditions for crew and participating vessels.

In sum, the management performance and management context metrics present a somewhat mixed perspective on the catch share programs. On the one hand, fishermen are generally observing quota limits and derby fishing has been eliminated; but on the other hand, even though not directly tied to implementation of a catch share program, quota levels are generally not increasing, which may affect economic performance. In future years, we will expand the

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<sup>4</sup> The Crab Rationalization Program includes allocations of processor quota, as well as harvest allocations of crab to the IFQ Program and to coastal community groups: Community Development Quota and the Adak Community Allocation. The information provided in this Report refers to the IFQ Program.

<sup>5</sup> Only the Mid-Atlantic Golden Tilefish IFQ, Pacific Coast Sablefish Permit Stacking and the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Programs had an increase in quota under the first year of the program while the two remaining programs did not operate under a quota system prior to their implementation.

management context metrics to include information on whether stock status is improving. In addition to providing an indicator of performance for conservation goals included in most catch share programs, improved stock status should also provide additional insights into understanding quota trends.

*Economic Benefits and Efficiency* Several related performance indicators are used to monitor economic benefits and efficiency including aggregate revenue, revenue per vessel, quota utilization, and average price. In general, price and revenue based indicators are subject to uncertainty since market prices (hence revenue) are determined by market conditions that may be attributable to the catch share program (e.g., fishing season), but may also be influenced by factors that are external to the catch share program such as international trade, changing supply of substitute species, and the general economy. This just means that changes in these and other economic indicators may or may not be wholly attributable to catch share programs.

While quotas were reduced in the first year of operation in nearly all catch share programs, revenues from catch share species declined in nine of these programs while revenues (measured in inflation-adjusted 2010 dollars) increased in the five other programs. In the most recent year, catch share species revenue in most programs was below their respective Baseline Periods while aggregate catch share species revenues were above Baseline Period levels for five programs. Declines (increases) in catches and revenues may be due to reduced (increased) quotas or reduced (increased) market demand. With few exceptions, revenue per vessel increased during the first year of the program and has continued to increase. Quota utilization has also generally increased and has only fallen below the Baseline Period in each year following Program implementation in the Alaska Sablefish IFQ, Alaska Halibut IFQ, Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) and the Bering Sea and Aleutian Islands Crab IFQ Programs. In addition, quota utilization has fallen below the Baseline Period for the Mid-Atlantic Surfclam and Ocean Quahog ITQ and the Gulf of Mexico Grouper-Tilefish IFQ Programs. Compared to the Baseline Period, average prices increased during the first year of the program in all but four catch share programs. Average prices have continued to increase over time in nearly every catch share program or have at least remained above prices received during the Baseline Period.

Catch share species revenue per vessel is used as a proxy measure of economic efficiency since the numerator captures a revenue-based measure of output and the denominator captures the fishing vessel input. Revenue per vessel improved during the first year of program implementation for 12 of the 14 evaluated programs. Revenue per vessel declined during year 1 in the Gulf of Mexico Grouper-Tilefish IFQ and the Mid-Atlantic Ocean Quahog Programs. Catch share species revenue per vessel is currently above Baseline Period levels in all but two catch share programs (Gulf of Mexico Red Snapper IFQ and Gulf of Mexico Grouper-Tilefish IFQ). Although a more complete evaluation of economic efficiency would include information on the cost of fishing, the proxy measure of catch share species revenue per vessel is suggestive that the economic efficiency objectives have been met.

*Capacity Reduction* Relative to the Baseline Period, all but one catch share program (Amendment 80 Non-Pollock Groundfish Cooperatives) resulted in immediate decreases in the number of vessels that participated in the catch share program in the first year of the program. Furthermore, with few exceptions, the number of active vessels has remained the same or

declined over time. Thus, the program objective of reducing overcapacity (as measured by number of vessels) has largely been met.

*Shareholders* While a decrease in the number of active vessels reduces capacity, this trend coupled with a decrease in the number of entities holding shares and allocation in the first year and in subsequent years of the programs raises concerns about potential distributional effects. For programs that have been in existence for at least 10 years, about half of the reduction in entities holding share occurred during the first three years. Thus, experience to date has shown comparatively large distributive effects in the short term, while over the longer term annual changes in entities holding share have been more gradual. It is important to note, however, that these distributional effects were generally expected, which is why most catch share programs adopted share and allocation accumulation limits at the outset.

### **Future Assessments**

NOAA Fisheries is committed to providing an annual economic performance review of its catch share programs. In this initial assessment, information on quotas, catch and landings, effort, revenues, share accumulation, and cost recovery data are used to evaluate performance. Some of the indicators used in the report do not directly assess the catch share program objective but, rather, are indirect proxies. For example, landings revenue (dock-side revenue without accounting for the cost of fishing) is used as a measure of economic benefits, which would be more appropriately measured by profits, which accounts for the cost of fishing. Similarly, season length is used as a general indicator of vessel safety instead of a more direct measure such as reduced accidents or fishing in less dangerous conditions; distributional impacts are measured by the number of entities holding shares rather than a direct measure of distributional effects; revenue per vessel is used to proxy vessel efficiency rather than formally computed efficiency measures from economic models of profit, cost or production; and no direct measure of stock status, which could be used to assess progress on conservation objectives, is included.

In future assessments, NOAA Fisheries will be developing more advanced indicators that address profitability, stock status, distributional issues and efficiency, amongst other topics. In addition, NOAA Fisheries plans to extend these metrics to selected non-catch share managed fisheries in 2013, phasing in additional fisheries in the out years.

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## **Introduction**

A "Catch Share" is a general term for several fishery management strategies that allocates a share of fishing quota that entitles individual fishermen, fishing cooperatives, fishing communities, or other entities the right to fish that amount of quota. In the United States catch share programs have taken on several different forms including individual shares (e.g., Individual Transferable Quota (ITQ) or Individual Fishing Quota (IFQ)), group shares (e.g., cooperatives or sector allocation), and community shares (e.g., Community Development Quotas (CDQ)). Catch share programs are intended to end the race to fish by providing security of exclusive use over allocated fish. Establishing exclusive use promotes economic efficiency through improved market supplies where fish are delivered over the course of a season, cost savings of fishing, as well as the transfer of share or quota to fishery participants that may be more efficient, and promotes improved vessel safety. Catch share programs may be designed to promote social objectives through a number of design features including eligibility requirements, providing shares to crew, setting limits on the amount of share or quota that may be acquired by any one person or group, and set-asides for new entrants or for other purposes.

Effective November 4, 2010, the NOAA Catch Share Policy (Policy) provides guidance and direction on catch share programs as a fishery management tool to build and maintain sustainable and prosperous U.S. fisheries and healthy ocean ecosystems. The Policy was developed using input from each Regional Fishery Management Council, commercial and recreational stakeholders, environmental groups and thousands of public comments. The Policy states:

"To achieve long-term ecological and economic sustainability of the Nation's fishery resources and fishing communities, NOAA encourages the consideration and adoption of catch shares wherever appropriate in fishery management and ecosystem plans and their amendments, and will support the design, implementation and monitoring of catch share programs."

The Policy recognizes that catch share programs are but one management option Councils may choose to meet their management objectives. Catch shares are not required by the Policy or appropriate for every fishery. The Policy identifies a number of guiding principles to assist Councils in designing a catch share program; one of which is to track program performance to gauge whether a program is meeting its goals and objectives. It has been difficult to systematically measure the economic performance of catch share programs because they are so diverse in terms of target species, location, and size. However, experts from NOAA's Fisheries Service – including fishery economists, anthropologists, policy analysts, and resource managers – took on this challenge and developed an initial set of standard performance indicators that measure the economic performance of catch share programs, regardless of their design. These indicators such as catch and landings, effort, revenue, accumulation limits, and cost recovery are used as standard performance measures.

This report provides data on these performance indicators for all but the following U.S. catch share programs; the Alaska CDQ Program and the South Atlantic Wreckfish ITQ Program. The Alaska CDQ Program has unique community development objectives that would not be adequately measured with the performance indicators developed for all other catch share programs. The South Atlantic Wreckfish ITQ Program was not included because several recent

years of landings data are confidential due to the low number of active participants. There are three management institutions in Alaska that resemble catch share programs, but are not included in the report: Alaska Weathervane Scallops, the Freezer Longline Coalition, and Bering Sea Chinook Salmon Bycatch Management. NOAA Fisheries issues limited access permits in the Alaska Weathervane Scallops fishery, but it is primarily a state managed fishery and while the vessels have formed a voluntary cooperative, the cooperative is not given exclusive harvesting privileges. The Alaska Freezer Longline Coalition is a voluntary cooperative that has not exercised the formal process that would require NOAA Fisheries to write regulations establishing exclusive harvesting privileges and is, therefore, not included in the report. The Bering Sea Chinook Salmon Bycatch Management system is not included because it was established to minimize bycatch in the pollock fishery and involves the same participants as the AFA Pollock Cooperatives Program.

This report provides an initial snapshot of the economic performance of the catch share programs listed in Table 1, including trends over time. Throughout, catch share fishery performance is compared to a baseline period prior to catch share implementation. This means that factors that affect fishery performance which are not attributed to implementation of catch shares, but were concurrent with the catch shares, are not controlled for in the analysis. For example, for some fisheries, significant quota reductions were implemented at the same time as the catch share program. Increased monitoring effort and costs may only be partially due to the catch share programs. Other examples of confounding factors include: change in market conditions, varying fuel prices, natural variability in target and non-target fish stocks, etc. The longer the catch share program has been in effect, the more likely the fishery has experienced some of these other changes. Future efforts reporting on catch share performance will attempt to take these factors into consideration by comparing the performance of catch share fisheries to non-catch share fisheries affected by these other factors. This distinction is important in interpretation of the results. While it would be appropriate to state that an indicator has improved (or declined) while catch shares have been in place, one should take care in not assuming cause and effect.

The report is organized as follows. First, the process used to identify and develop the performance indicators is described. Second the definition and measurement method for each indicator is detailed. Third, the performance indicators for each catch share program are reported. Last, catch share program performance is compared across programs for selected economic indicators.

### **Catch Share Performance Indicators**

NOAA Fisheries' Office of Science and Technology initiated development of a national set of catch shares performance indicators by convening a workshop of NOAA Fisheries' regional economists, anthropologists and sociologists. The workshop was hosted by the Southwest Fisheries Science Center in La Jolla, CA during November 2009. The regional experts identified a substantial number of potential indicators that were subsequently classified as being Tier 1, Tier 2, or Tier 3 metrics based on data availability and relative ease in quantifying each indicator. Tier 1 indicators were defined as metrics for which data were readily available, could be routinely produced and updated, and could be provided for all catch share programs. Tier 2 indicators were defined as metrics that could be produced using available data, but required additional research before they could be routinely produced. Tier 3 indicators were determined to be

measures that would require large investments in research or new data collection programs. As research and data collection progresses, performance indicators in Tier 2 and Tier 3 will be moved up to Tier 1.

The Tier 1 performance indicators were refined at a follow-up workshop held during August 2011 at NOAA Fisheries' Alaska Fisheries Science Center in Seattle, WA. The data required to produce the final set of Tier 1 performance measures was requested from each region in November 2011. Data for four catch share programs were received during December 2011 and data for the remaining catch share programs were received in February 2012. The list of catch share programs included in the data request is reported in Table 1. These data form the basis for the snapshots and trends of the Tier 1 indicators reported herein.

**Table 1. U.S. Catch Share Programs as of January, 2013**

<b>Catch Share Program</b>	<b>Year Implemented</b>
<b>Northeast</b>	
Atlantic Surfclam and Ocean Quahog ITQ	1990
Mid-Atlantic Golden Tilefish IFQ*	2009
Northeast Multispecies Sectors	2010
Northeast General Category Atlantic Sea Scallop IFQ	2010
<b>Southeast</b>	
South Atlantic Wreckfish ITQ**	1992
Gulf of Mexico Red Snapper IFQ	2007
Gulf of Mexico Grouper-Tilefish IFQ	2010
<b>Pacific</b>	
Pacific Coast Sablefish Permit Stacking	2001
Pacific Groundfish Trawl Rationalization	2011
<b>Alaska</b>	
Western Alaska Community Development Quota**	1992
Alaska Halibut and Sablefish IFQ	1995
American Fisheries Act (AFA) Pollock Cooperatives	1999
Bering Sea and Aleutian Islands (BSAI) Crab Rationalization Program	2005
Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80)	2008
Central Gulf of Alaska Rockfish Cooperatives	2012

ITQ/IFQ denotes Individual Transferable/Fishing Quota

\*Implemented in November, 2009 at the start of the 2010 fishing year.

\*\*Program not included in this report.

The Tier 1 performance indicators include metrics for catch and landings, fishing effort, and revenue (Table 2). Catch and landings indicators include the quota allocated to the program or Annual Catch Limit (ACL), landings, whether the quota allocated to the program or ACL has been exceeded, and the percentage of the available quota that has been taken. These indicators are measured in units (e.g., live or whole weight, gutted weight, bushels, meat weight, or product weight) commensurate with the catch share monitoring program. For catch share programs that include more than one species or stock, reported quota, landings, and percent utilization are based on the combined quantities for all species in the catch share program. However, whether or not any ACL may have been exceeded is determined on a species-by-species basis. Tier 1 indicators also include information on excessive share accumulation limits in each catch share program, as well as the amount of fees collected for cost recovery purposes. Note that the Magnuson-Stevens Act requires the Secretary to adopt regulations implementing a cost recovery program to recover the actual cost of managing and enforcing any program implemented under the Limited Access Privilege Program provisions of the Magnuson-Stevens Act (see Section 303A).



**Table 2. Definitions for Tier 1 Performance Indicators of Catch Share Programs**

<b>Indicator</b>	<b>Definition</b>
<b>Catch and Landings</b>	
Quota allocated to Catch Share Program	Annual quota of combined catch share program species, in terms of weight.
Aggregate landings	Annual total weight of combined catch share program species generated by vessels that fish quota.
ACL exceeded (Y/N)	Was the ACL exceeded for any species/stock within the catch share program? (Y/N)
% Utilization	Portion of target species TAC that is caught and retained within a fishing year. Aggregate Landings/Quota allocated to catch share program
<b>Fishing Effort</b>	
Entities holding share	Annual total number of entities/individuals/vessel owners/permit holders receiving quota share at the beginning of the year.
Active vessels	Annual number of vessels that fish quota and landing one or more pounds of any catch share program species.
Season length <sup>6</sup>	Number of days per calendar year or fishing year, as defined above, that the catch share program fishery is open.
Trips	Annual total number of trips taken by vessels fishing quota on which one or more pounds of any catch share program species were landed.
Days at sea	Annual total number of days absent on trips taken by vessels fishing quota on which one or more pounds of any catch share program species were landed.
<b>Landings Revenue</b>	
Aggregate revenue from Catch Share species <sup>7</sup>	Annual total ex-vessel revenue of combined catch share program species generated by vessels that fish quota.
Aggregate revenue from non-Catch Share species	Aggregate ex-vessel revenue from non-catch share species caught on catch share program trips
Average price	Aggregate ex-vessel revenue from catch share species/aggregate landings
Revenue per active vessel	Aggregate ex-vessel revenue/active vessels
Revenue per trip	Aggregate ex-vessel revenue/trip
Revenue per day at sea	Aggregate ex-vessel revenue/day at sea
<b>Other</b>	
Cost recovery fee	Amount collected for cost recovery
Share cap in place (Y/N)	An ownership share and/or allocation cap is any measure consistent with the MSA LAPP purpose and intent whether or not the catch share program is required to have an excessive share cap. Y/N

<sup>6</sup> The Alaska programs use season length index to provide an indication of the temporal utilization of the resource each year.

<sup>7</sup> Revenue for the Alaska Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program is the first wholesale revenue, not ex-vessel revenue.

Effort indicators include the number of entities that hold shares, the number of active vessels, season length, number of trips, and time spent at sea. Quota shares may be assigned to an individual, vessel owner, permit or other entity. Since trades may occur at any time during the year, the number of entities that receive a quota share was based on the number of entities, however defined in each catch share program, at the start of each year. An active vessel is defined as any vessel that has a quota allocation either through lease or sale, and that lands one or more pounds of a catch share species on a fishing trip. Summing all such trips for the year provides the annual number of trips where catch share species are landed. Similarly, total annual days at sea are the sum of the duration of each fishing trip taken where catch share program species were landed. Season length is defined as the number of days in a year that the catch share fishery remains open. This may be 365 days in cases where the established annual quota or ACL has not been exceeded.

Revenue indicators include total annual revenues from all species in the catch share program, as well as aggregate revenues received from non-catch share program species while on a fishing trip where catch share species were landed. Several fishing revenue indicators are calculated using estimates of the catch and landings or effort performance indicators. These calculated indicators include the average price for catch share species, revenue per vessel, revenue per trip, and revenue per day. These calculated metrics are based on combined catch share species. For example, the average price in the Gulf of Mexico Grouper-Tilefish IFQ Program is simply the total revenue divided by the total landed quantity of all grouper and tilefish species included in the program.

Attribution of some of the indicators contained in this report to catch share programs is confounded by the large number of administrative changes as well as social and economic conditions that accompany the transition to catch shares. Additionally, changes in some indicators may be determined by external processes such as meeting statutory requirements for rebuilding fish stocks or conditions in the larger economy that would occur with or without catch shares. Further complicating interpretation of catch share indicators is that some indicators move in opposite directions. Prices, for example, may go up as landings and quota may be declining or revenue per vessel may be increasing while the number of active vessels or entities holding share may be decreasing. Taking these considerations into account simply means that catch share program performance cannot be captured or boiled down to any single indicator. Rather, it is the preponderance of indicators and their change over time that provides the insight needed to evaluate overall program performance. The following provides elaboration on specific indicators that may be difficult to interpret or attribute to the implementation of a catch share program.

Change in quota or ACL is used as a catch share indicator in this report, whether or not the ACL is exceeded and percent of ACL used are also used. Of these three indicators, the first two are consistent with MSA requirements and are management objectives for catch share and non-catch share fisheries alike. Quotas are set based on biological conditions that may be increased or reduced independent of any particular management program. For this reason we report trends in quota setting for catch share programs, but do not attribute changes in quota to catch shares. However, catch share programs are typically accompanied by increased monitoring of catches at the vessel or shareholder level. This improvement in catch accounting means that ACLs may be less likely to be exceeded under a catch share program. Similarly, the percent of ACL used may improve (without exceeding the ACL) under catch share programs depending on how a fishery

had been managed prior to transitioning to catch shares and/or whether the management program involves single or multiple species.

Councils frequently note the need to reduce capacity and end the race to fish resulting from output controls, such as total catch management when articulating their underlying rationale for adopting a catch share program. These catch share program objectives are measured herein by the number of active vessels and season length. Strictly speaking, the number of active vessels is not a direct measure of capacity as defined by NOAA Fisheries. Capacity is defined as the maximum output by the fishing fleet that may be produced given existing technology and stock size. Given this definition the number of active vessels is a consistent proxy for capacity since capacity output is directly related to fleet size. Although capacity reduction is a stated objective for many catch share programs, Councils may also be concerned with accumulation of quota shares among fewer and fewer owners. Thus reducing capacity is counterbalanced by social concerns over the number of entities that have access to the fishery or economic concerns over the ability to influence prices for fish or quota shares. The number of entities holding share as well as the presence or absence of an accumulation cap, are used as indicators of the level of ownership accumulation in catch share programs.

Extending the length of the fishing season is often cited as a Council objective associated with the transition to catch shares and is included as an indicator of catch share program performance in this report. Season length is often associated with economic factors allowing improved timing of harvesting with market opportunities as well as improving vessel safety as fishermen may choose when and where to fish as weather conditions allow. In this regard, season length needs to be interpreted in conjunction with other indicators of improved economic performance or vessel safety and not necessarily as a stand-alone indicator. Although the current set of catch share indicators does not include any specific measure for vessel safety, an in-depth study of changes in accident rates was conducted as part of the 5-year review undertaken by the North Pacific Fishery Management Council for the Bering Sea and Aleutian Islands Crab IFQ Program. That study found that the longer fishing season resulted in a number of changes to the operational manner in which the fishery was prosecuted, leading to safer working conditions for crew and participating vessels.

Several catch share indicators are based on fishing revenues; fishing revenues are a function of the interplay between landings and market demand, which determines the price received by fishermen. If the market price were only affected by harvested quantities of catch share species, then price changes would be a consistent inverse indicator of catch share landings; prices would increase as catch share landings decline and prices would decrease as catch share landings increase. Unfortunately, prices are affected not only by factors attributable to catch shares, but also affected by external factors such as changing supplies of species that may be market substitutes for catch share species, international markets, changes in consumer preferences, and income. Also, catch share programs tend to reduce market gluts, resulting in improved timing for harvesting fish, improving product quality and raising average prices over time. Taking all of these factors into account would require a number of special studies to disentangle the external drivers of market prices from changes associated with catch shares which is beyond the scope of the present report. This does not mean that average price cannot be used as a measure of catch share program performance but rather that price changes may or may not be wholly attributable to the presence of a catch share program.

The catch share indicators include a number of derived indicators such as, revenue per vessel, revenue per trip, and revenue per day. Each of these indicators combines two indicators to calculate an average. In each case the numerator is total revenue which may be subject to the same uncertainties noted above for price. The denominator of each of these indicators is a measure of input required (boats, trips, days) to produce total catch share revenues. As such, they are each proxies for economic efficiency or productivity, albeit crude. A more direct indicator of efficiency would require information on operating costs. Improved indicators to measure economic efficiency are under development and will be included in future reports as they become available.

## **Northeast Region**

There are five catch share programs implemented in the Northeast region including the oldest catch share programs among all federally managed Fishery Management Plans (FMPs). Individual Transferable Quota (ITQ) programs for the surfclam and ocean quahog fisheries were developed by the Mid-Atlantic Fishery Management Council and implemented in 1990. The Mid-Atlantic Council subsequently developed an IFQ program for the golden tilefish fishery that was implemented in 2009. The New England Council developed an IFQ program for a portion of the Atlantic sea scallop fishery that was partially implemented in 2008 and fully implemented in 2010. Last the Sector Management Program initially authorized in 2004 with Amendment 13 to the Northeast Multispecies FMP, commonly referred to as the New England Groundfish FMP, was greatly expanded with modifications under Amendment 16 and implemented during 2010. A snapshot of the performance indicators for the most recent complete available year is reported in Table 3.

More detailed trend data is provided for the Ocean Quahog fishery, followed by Surfclams, General Category Scallops, the Mid-Atlantic Golden Tilefish fishery and New England groundfish. In addition to trend data, the management history, objectives, and key events or features of each catch share program are briefly described. For all fisheries a Baseline Period has been constructed as the average of the three years prior to catch share program implementation. All price and revenue data are adjusted for inflation to 2010 equivalent dollars using the Gross Domestic Product price deflator. Quantities such as quotas and pounds are all reported in units consistent with each FMP. Ocean quahogs and surfclams are reported in bushels, scallops are reported in meat weights, golden tilefish are reported in live weight. Groundfish quota and catch are reported in live weight while landings are reported in landed weight.

**Table 3. Northeast Region Fishery Performance Measures by Catch Share Program**

	Ocean Quahog (2011)	Surfclam (2011)	General Category Scallops (2010)	Golden Tilefish (2011)	Groundfish Sectors (2011)
<b>Catch and Landings</b>	Bushels	Bushels	Pounds of Scallop Meats	Pounds	Pounds
Quota allocated to Program	5,332,982	3,400,047	2,559,370	1,895,248	179,487,960*
Aggregate landings	3,045,417	2,219,951	2,280,679	1,884,695	61,038,536**
% Utilization	57%	65%	89%	99%	39%
ACL exceeded	No	No	No	No	No
<b>Effort</b>					
Entities holding share (number)	40	55	321	13	781
Active vessels (number)	34	37	159	9	301
Days at sea (days)	2,106	2,911	4,202	925	19,227
Trips (number)	2,147	1,916	6,281	97	13,642
Season length (days)	365	365	365	365	365
<b>Revenue (\$)</b>					
Catch Share Program revenue	\$20,838,866	\$26,014,314	\$20,024,836	\$5,314,396	\$87,145,765
Non-Catch Share Program revenue	\$107,098	\$74,167	\$652,144	\$5,281	\$25,714,597
Average price (\$/pound)	\$6.84	\$11.72	\$8.78	\$2.82	\$1.43
Catch Share revenue per active vessel	\$612,908	\$703,090	\$125,942	\$590,488	\$289,521
Non-Catch Share revenue per vessel	\$18,027	\$2,005	\$4,102	\$587	\$85,431
Catch Share revenue per day at sea	\$9,895	\$8,937	\$4,766	\$5,745	\$4,533
Non-Catch Share revenue per day at sea	\$51	\$39	\$104	\$54	\$1,337
Catch Share revenue per trip	\$9,706	\$13,577	\$3,188	\$54,788	\$6,388
Non-Catch Share revenue per trip	\$50	\$39	\$104	\$54	\$1,885
<b>Other</b>					
Excessive share cap	None	None	Yes	Yes	N/A
Cost recovery fee collected (\$)	None	None	\$82,557	\$20,907	N/A

\* Live weight

\*\* Landed weight

N/A denotes not applicable

## **Mid-Atlantic Ocean Quahog ITQ Program**

### **a. Management History**

The surfclam and ocean quahog fisheries, managed by the Mid-Atlantic Fishery Management Council, were the Nation's first fisheries to adopt an Individual Transferable Quota (ITQ) management system beginning in 1990. In the several years prior to ITQ program implementation, surfclams had been the more intensively exploited species and were subject to limited access, whereas ocean quahogs remained an open access fishery. Compared to surfclams, ocean quahogs are distributed farther offshore and the fishery was prosecuted by only the larger vessels. Like the surfclam fishery, ocean quahogs were subject to quarterly quotas, but the effort limits imposed on surfclam fishing time were not needed in the ocean quahog fishery. Thus, the economic problems in the surfclam fishery with inefficient use of fishing vessels that were idled much of the year were not evident in the ocean quahog fishery. Nevertheless, when the Mid-Atlantic Surfclam ITQ Program was being considered the ocean quahog fishery was approaching the limit of its specified optimum yield and there was concern over the transfer of effort from surfclams to ocean quahogs if the former became an ITQ system and the latter did not. The ITQ Program for both surfclams and ocean quahogs was implemented through Amendment 8 to the FMP.

Since the ITQ Program was implemented, the plan has been amended on six occasions. While making no substantive changes to the ITQ system, these amendments altered overfishing definitions, added the Maine-based mahogany quahog fishery to the management unit, resolved administrative differences between New England and Mid-Atlantic FMPs, and brought the FMP into compliance with MSA provisions on Essential Fish Habitat and bycatch reporting. More recently, the Mid-Atlantic Council initiated development of Amendment 15 and Amendment 16. Among other proposed measures, Amendment 15 would develop recommendations for a cost recovery program and the latter, Amendment 16, would address share accumulation caps. However, since both Amendments are still under development, the accumulation cap and cost recovery performance measures cannot be reported herein.

### **b. Objectives**

The objectives established in 1990 for the ITQ program by the Mid-Atlantic Fishery Management Council have not changed in the more than 20 years the program has been in existence. The objectives include:

- Conserve the ocean quahog resource and stabilize harvest rates
- Simplify regulatory requirements to minimize public and private costs of managing the resource
- Bring harvest capacity in line with processing and biological capacity to allow industry participants to achieve economic efficiency
- Create a management approach that is flexible and adaptive to short term events or circumstances

### **c. Key Events and Features**

Initial shares for the Mid-Atlantic Ocean Quahog ITQ Program were primarily based on historical participation in the fishery in terms of landings. This meant that initial quota shares were

allocated to owners of ocean quahog fishing vessels. However, the ITQ Program permits the transfer of quota shares to any individual or entity provided they would be eligible to own a US Coast Guard documented vessel without requiring actual ownership of a vessel<sup>8</sup>. Quota shares may be transferred on a permanent basis or transferred (leased) on an annual basis to another entity. Quota shares may be owned by industry participants (processors or vessel owners) or other entities provided they would be eligible to own a fishing vessel. Processors may purchase ocean quahogs from a vessel owner that owns quota share or they may operate their own fleet of vessels which may lease additional quota from others. Processors may also contract for harvesting services to a fishing vessel owner. The variety of possible business arrangements complicates interpretation of performance measures such as the number of participating vessels or revenue per vessel since some vessels that are engaged in harvesting ocean quahogs may not be owners of a quota share and, conversely, some owners of quota shares may not be engaged in harvesting ocean quahogs.

The ocean quahog and surfclam fisheries use specialized gear that is used exclusively to harvest clams with very low catch rates of species other than ocean quahogs or surfclams. This means that revenues from species other than ocean quahogs on trips where ocean quahogs are harvested are very low (at most 1.8%). For this reason, performance measures for the Mid-Atlantic Ocean Quahog ITQ Program are based only on ocean quahog landings and revenues.

#### **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to implementation of the Mid-Atlantic Ocean Quahog ITQ Program, 1987-1989.

- i. Catch and Landings – All landings and quota are reported in bushels.

The commercial quota for ocean quahogs averaged 5.7 million bushels during the 1987-1989 Baseline Period (Figure 1). Over the first five years of the ITQ Program, the quota was held nearly constant averaging 5.3 million bushels. Consistent with resource conditions, the quota was decreased by approximately 7% per year from 5.4 million bushels in 1994 to 4.0 million bushels in 1998. From 1999 to 2003 the quota remained constant at 4.5 million bushels before being increased to 5.2 million bushels where it remained through 2011.

Ocean quahog landings averaged 4.6 million bushels during the Baseline Period (Figure 1). By and large, landings were maintained at pre-ITQ levels through 1995, but declined to 3.4 million bushels in 2000 as quota levels were decreased during this period. As the quota was increased to 4.5 million bushels from 1999-2003, landings rebounded to 4.2 million bushels in 2003. After declining over the next four years, ocean quahog landings increased from 3.0 million bushels in 2005 to 3.5 million bushels in 2010. However, landings were down 14% in 2011 compared to 2010.

Prior to implementation of the ITQ Program, 90% of the available quota was landed (Figure 2). This trend in quota utilization rates continued through the 1990s and early 2000s where

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<sup>8</sup> US Coast Guard regulations limit ownership of documented vessels to U.S. Citizens or U.S. owned corporations.



approximately 97% of the commercial quota was landed. Since 2005, quota use rates have ranged between 57-66% of the available quota.

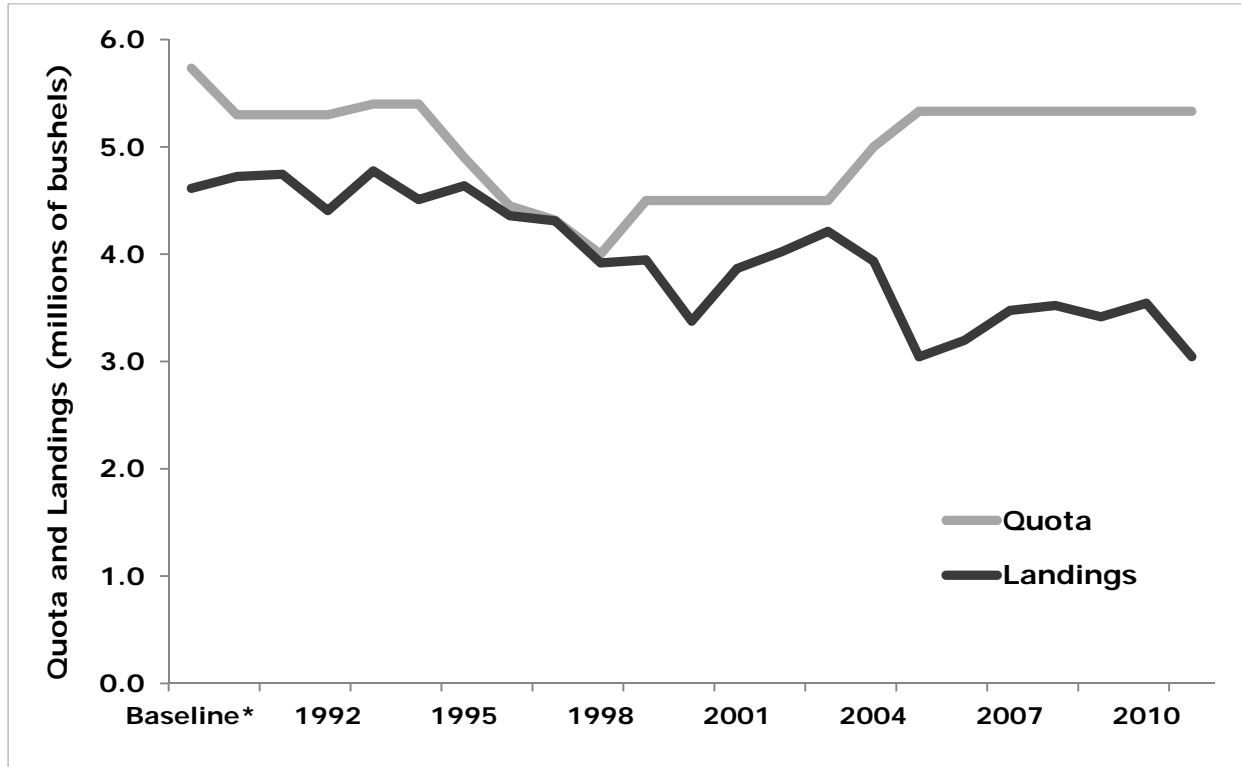


Figure 1. Quota and landings in the Mid-Atlantic Ocean Quahog ITQ Program

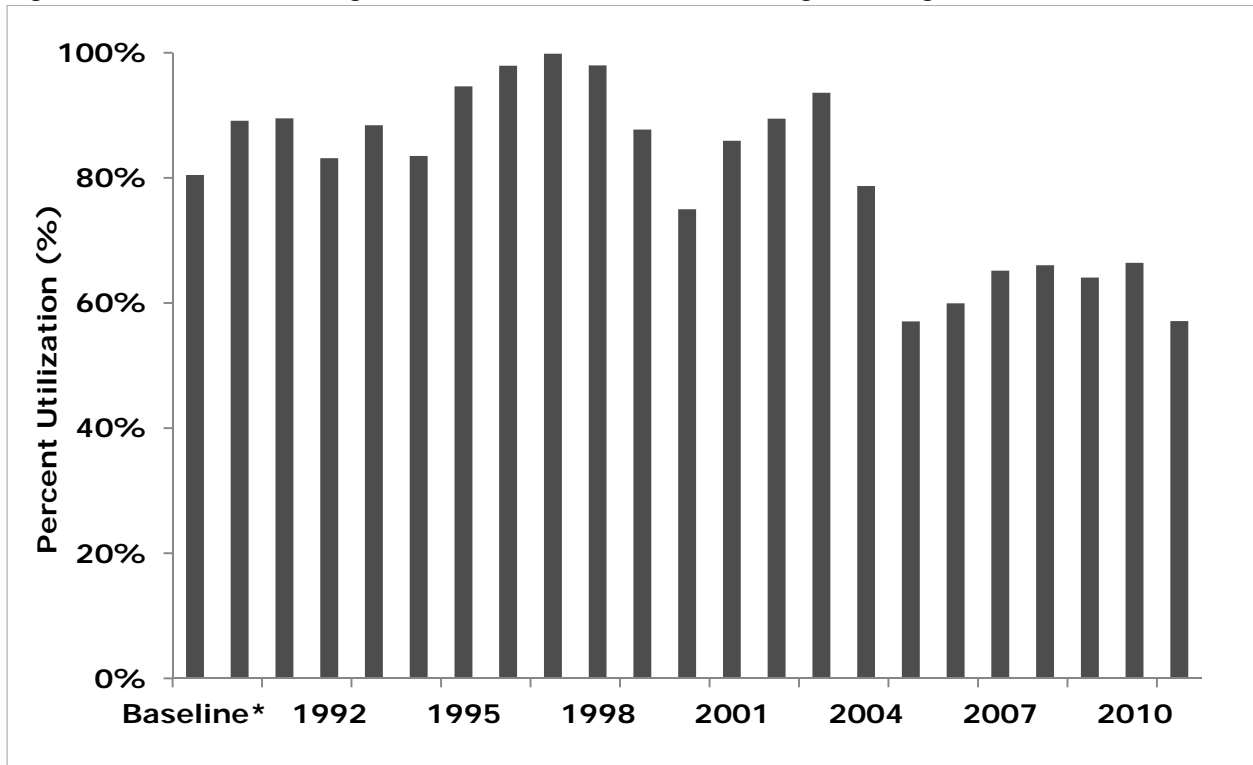


Figure 2. Utilization of available quota in the Mid-Atlantic Ocean Quahog ITQ Program

ii. Effort

Upon implementation in 1990, there were a total of 117 entities (i.e., unique ocean quahog allocation holder) that received an initial allocation of quota share. After the program's first year (following ITQ Program implementation and the subsequent allocation transfers), the number of entities receiving quota share declined to 82 and was reduced to 76 in 1993 (Figure 3). From 1995 to 2003 the number of entities issued quota shares was nearly constant ranging from 69 to 62 entities. In 2004, the number of entities dropped to 56 where it remained until 2007. Over the most recent four years the number of entities issued ocean quahog quota shares declined to 40, an annual average reduction of 7.6%.

The number of vessels that reported landing ocean quahogs averaged 67 during the Baseline Period years of 1987 to 1989 (Figure 4). The number of active vessels declined to 57 in 1990, but increased to more than 90 vessels harvesting ocean quahogs in both 1991 and 1992. The number of active vessels returned to numbers that were similar to that of the pre-ITQ Baseline Period averaging 64 vessels from 1993 through 2004. Since 2005, the number of active vessels has been declining at an average annual rate of 7.5% from 56 vessels in 2005 to 34 in 2011. As noted previously, the variety of possible business arrangements through which quota shares may be transferred complicates the interpretation of the changes in vessel activity levels.

Days spent fishing for ocean quahogs averaged 2,885 days during the pre-ITQ Program Baseline Period, but with the exception of 2001- 2004 days absent has been on a consistent downward trend to a low of 2,106 days in 2011 (Figure 5). The trend in days absent follows a similar trend to that of total trips as average trip duration has remained relatively constant ranging between 19 and 24 hours. Total trips taken where ocean quahogs were landed averaged 3,322 during the Baseline Period (Figure 6). Upon implementing the ITQ Program, the number of trips declined slightly in 1990, spiked to almost 6,000 trips in 1991, then stabilized from 1992 to 2001 ranging between 3,700 and 4,200 trips. However, since 2002 the number of trips that harvested ocean quahogs declined at an average annual rate of 8.6% from 4,935 trips in 2002 to 2,147 trips in 2011.

Prior to implementation of the ITQ Program the management program was structured to assure that a continuous supply of ocean quahogs would be provided to the market through a system of quarterly quotas. No additional measures were deemed necessary to assure that a reliable source of ocean quahogs could be brought to the market. Thus, while the timing of when ocean quahogs were harvested may have changed with the ITQ Program in place it did not change the fact that some ocean quahogs were available throughout the season, with or without the ITQ Program (Figure 7).

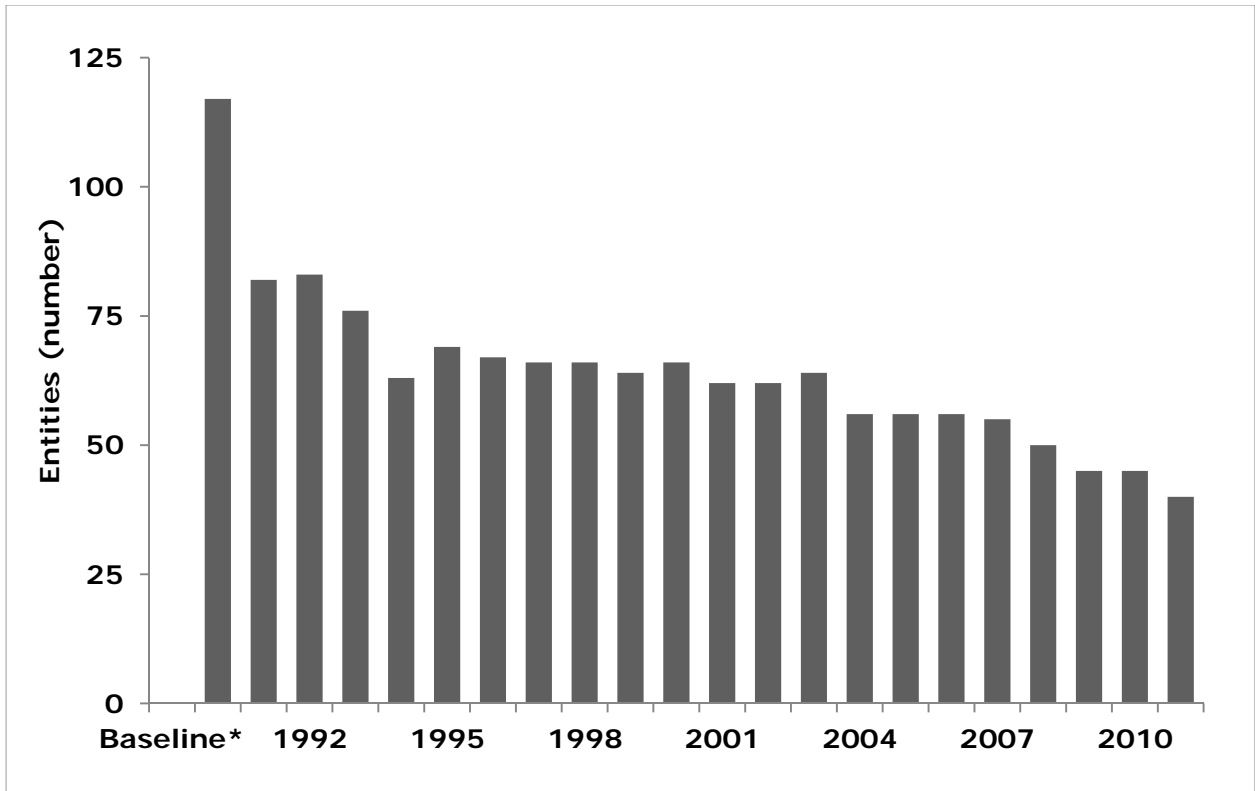


Figure 3. Number of entities holding share in the Mid-Atlantic Ocean Quahog ITQ Program

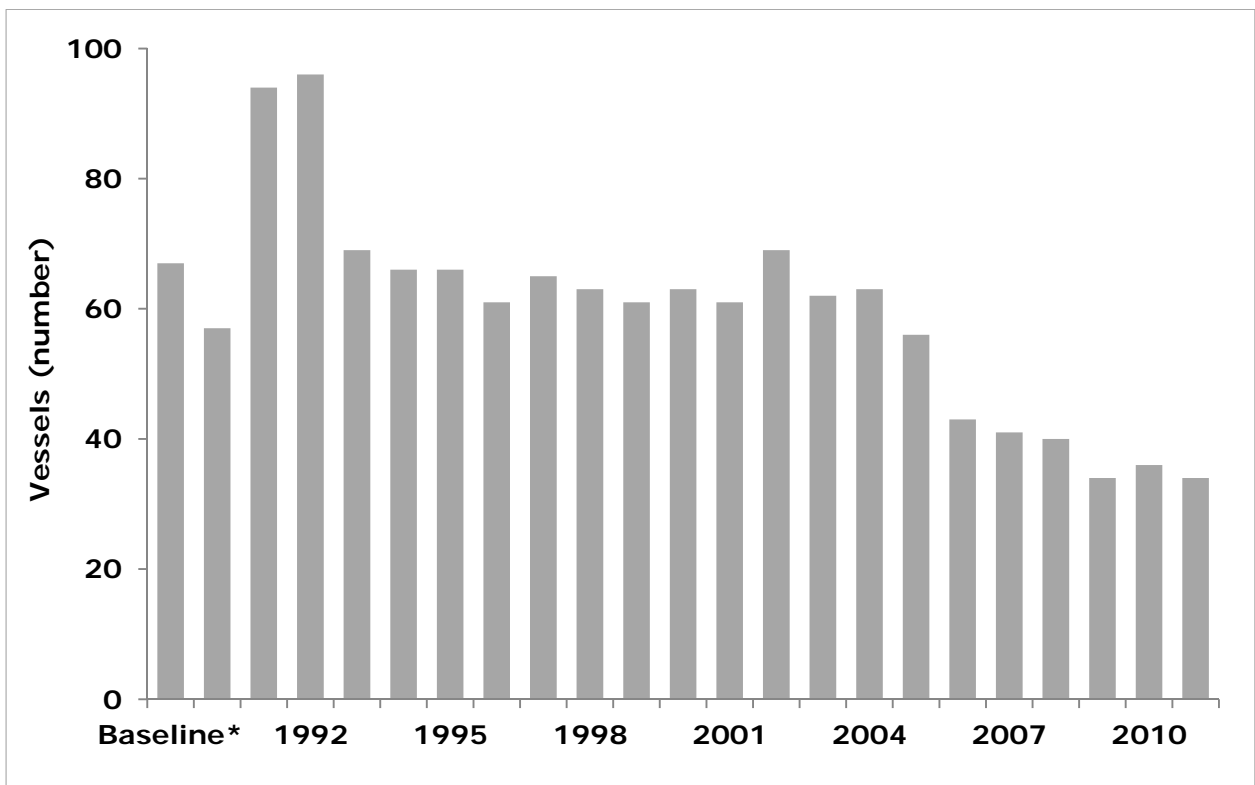


Figure 4. Active vessels fishing quota in the Mid-Atlantic Ocean Quahog ITQ Program

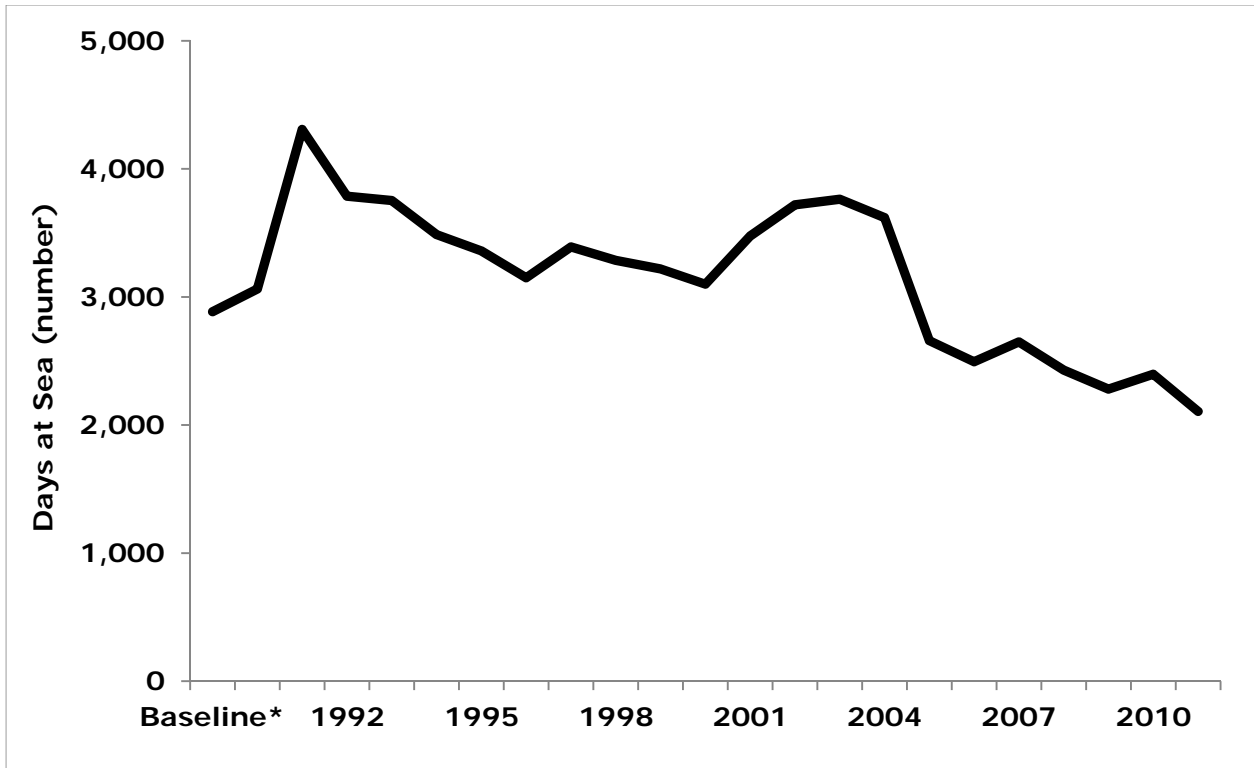


Figure 5. Number of days at sea on trips fishing quota in the Mid-Atlantic Ocean Quahog ITQ Program

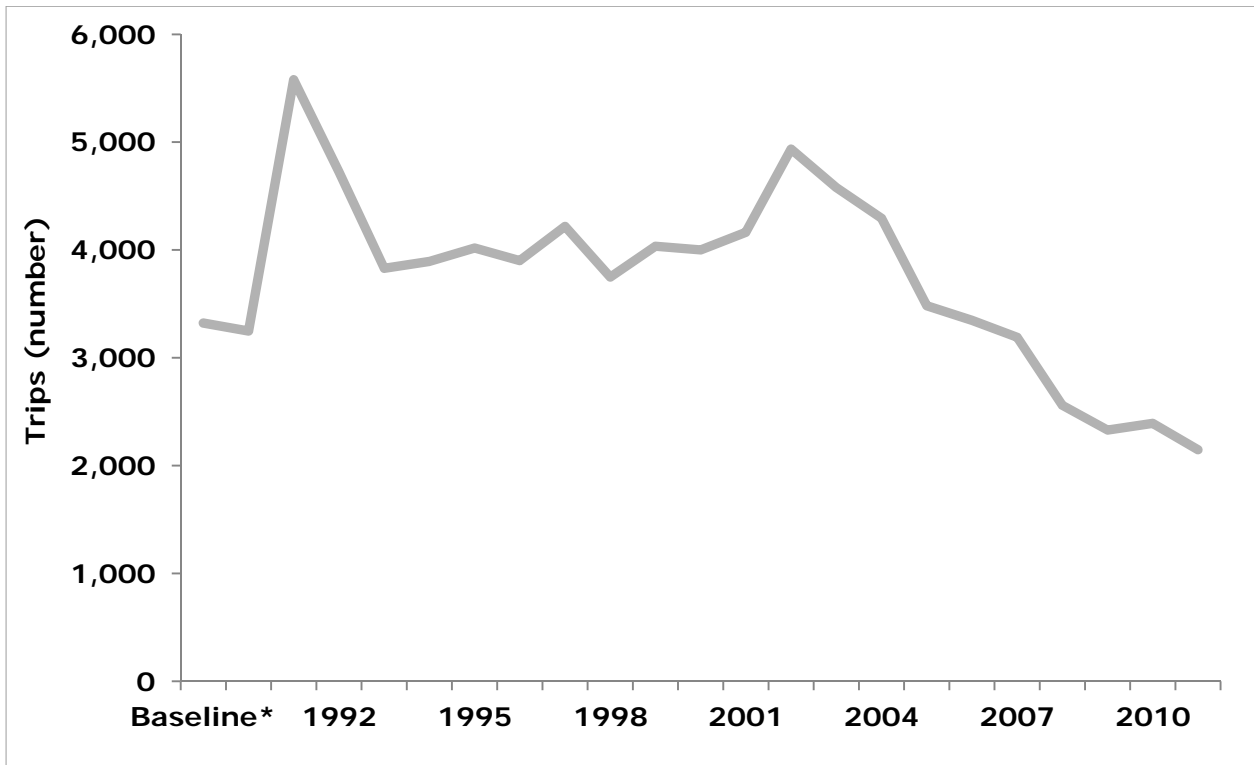


Figure 6. Number of trips harvesting ocean quahogs in the Mid-Atlantic Ocean Quahog ITQ Program

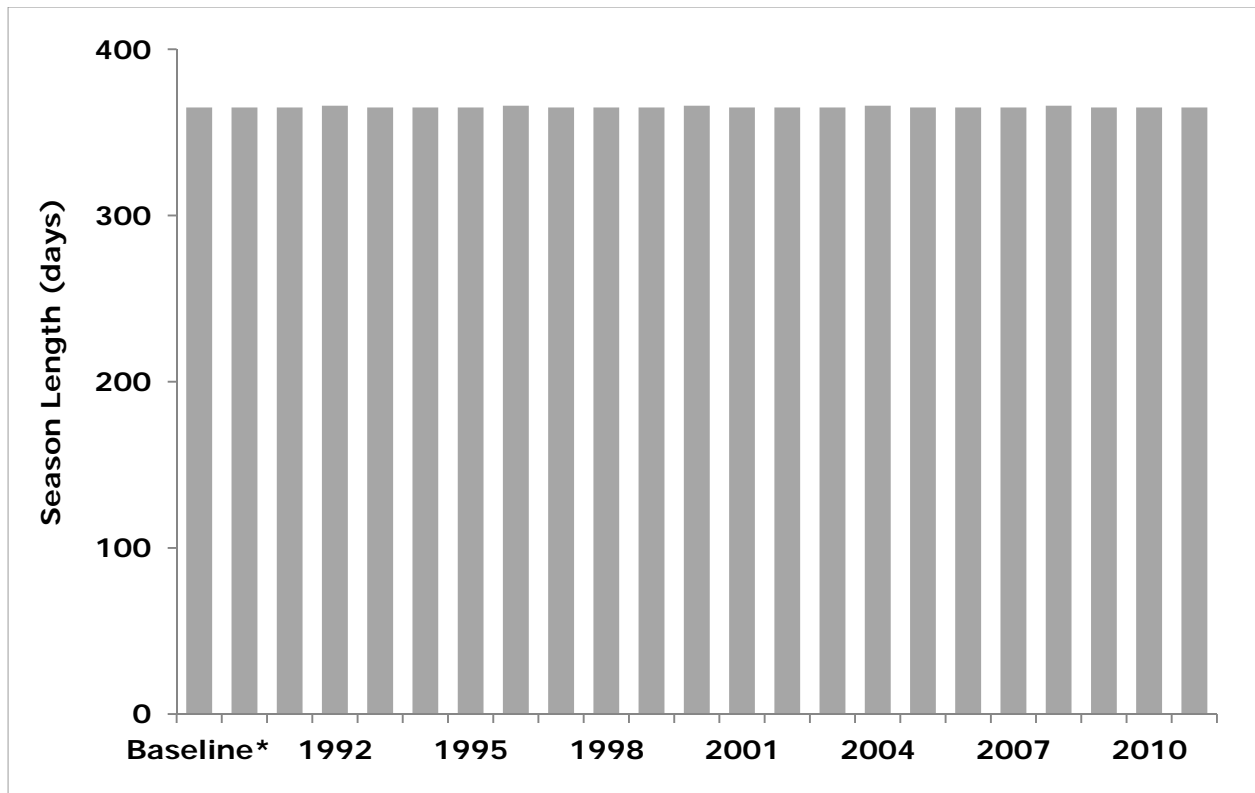


Figure 7. Season length (days) in the Mid-Atlantic Ocean Quahog ITQ Program

- iii. Revenue – All price and revenue data have been adjusted by the GDP deflator indexed for 2010.

Total dockside revenue from sales of ocean quahogs averaged \$28.1 million during the pre-ITQ Program Baseline Period (Figure 8). In the first year of the ITQ Program, total revenue dropped almost 20% to \$22.6 million even though total landings had increased by 2.4%. However, total revenues declined because the increase in landings was more than offset by a 21.4% decline in the average price per bushel from just over \$6 per bushel during 1987-1989 to less than \$5 in 1990 (Figure 9). Annual revenue rebounded to \$26.6 and \$27.0 million in 1991 and 1992, respectively, but declined over the next eight years by an average annual rate of nearly 3%. Annual revenue rose dramatically in both 2001 and 2002 to a 21-year high of over \$31 million. Since 2002 ocean quahog revenue has been trending downward at an average annual rate of 4% to \$20.9 million in 2011.

As noted above, the inflation-adjusted price per bushel of ocean quahogs initially dropped from the Baseline Period average of \$6.10 per bushel to \$4.79 in the first year of ITQ Program. However, in subsequent years the price per bushel increased at an average annual rate of 4.4% through 2002 when the price per bushel peaked at \$7.80 per bushel. The ocean quahog price declined over the next six years through 2008 to \$6.02. More recently (2009 to 2011), the price per bushel has been increasing at an average rate of just over 4% to \$6.84 per bushel in 2011.

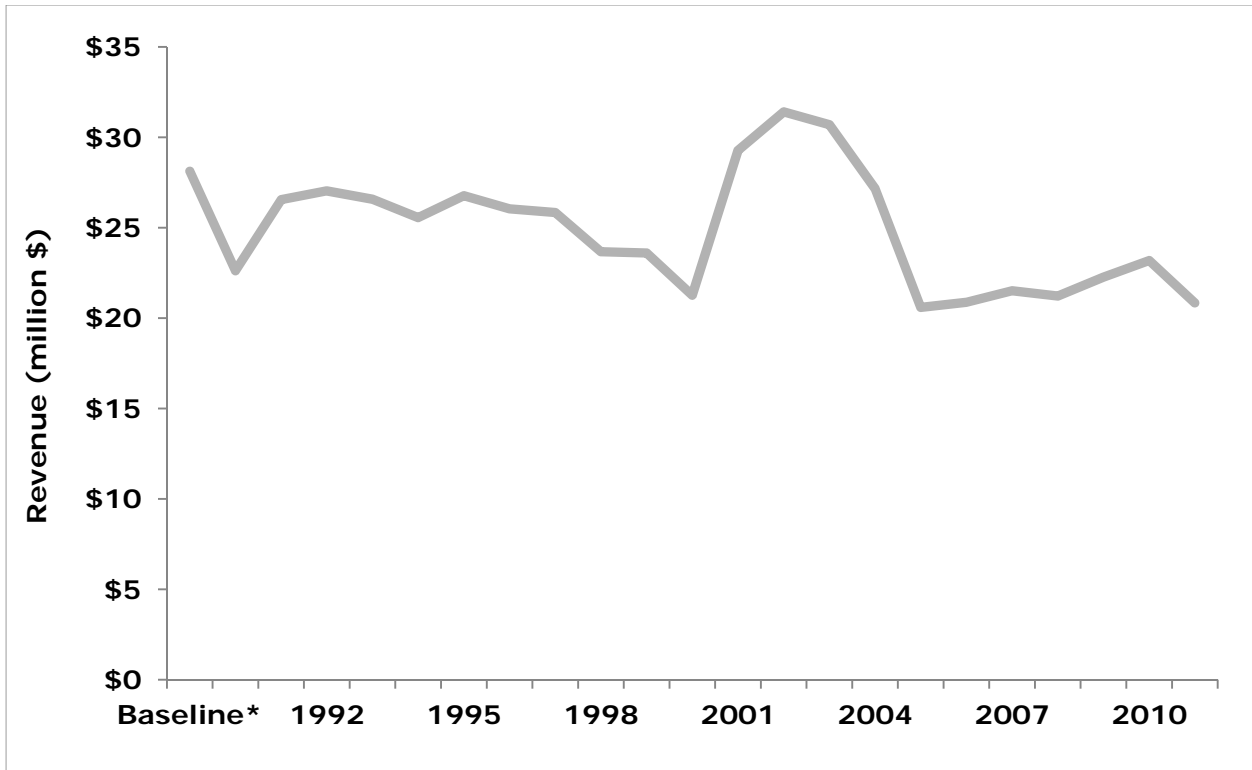


Figure 8. Total revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Mid-Atlantic Ocean Quahog ITQ Program

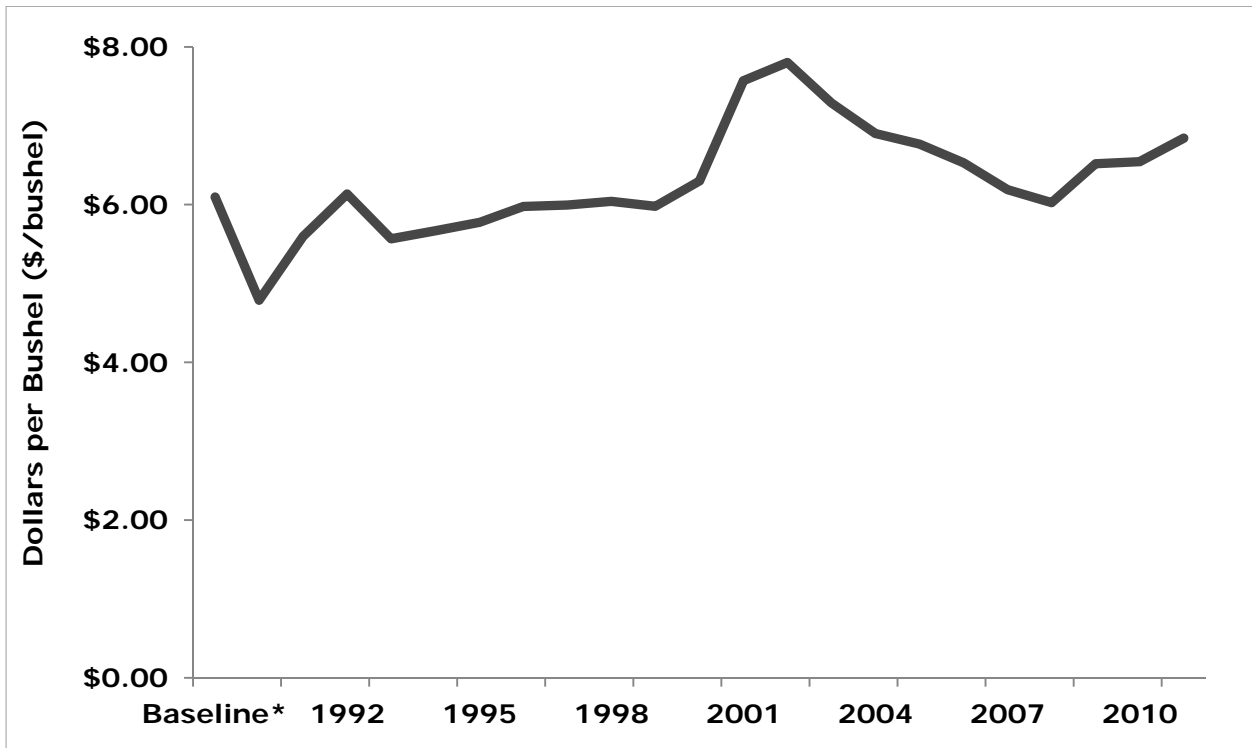


Figure 9. Average ocean quahog price per bushel (inflation-adjusted 2010 dollars) in the Mid-Atlantic Ocean Quahog ITQ Program

Average revenue earned per vessel from the sale of ocean quahogs was \$420,000 during the Baseline Period (Figure 10). Average revenue per vessel dropped to its lowest level at \$280,000 in 1991 and 1992, predominantly because of the unusually large number of active vessels in these two years. Since 1993, however, ocean quahog revenue per vessel has been on an upward trend at an average annual rate of 3.6%. Revenue per vessel peaked at \$655,000 in 2009. Ocean quahog revenue per vessel declined in both 2010 and 2011 to \$613,000, still about one-third greater than pre-ITQ Program levels.

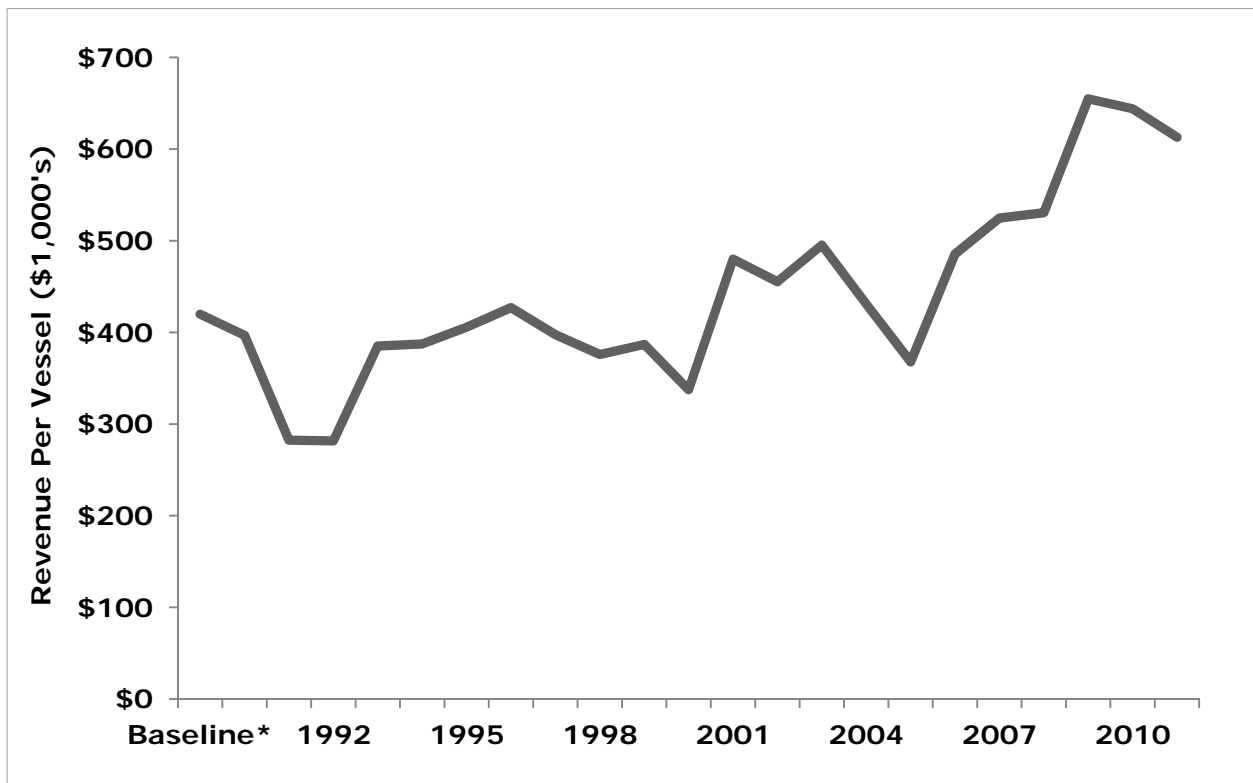


Figure 10. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Mid-Atlantic Ocean Quahog ITQ Program

Since the ITQ Program was implemented ocean quahog revenue per trip has ranged from a low of \$4,758 in 1991 to a high of just over \$9,706 in 2011 (Figure 11). Ocean quahog revenue per trip averaged \$8,467 during the pre-ITQ Baseline Period. Between 1993 and 2007, average trip revenue varied without trend ranging between \$5,000 and \$7,000 per trip. However, since 2005 average trip revenue has increased in consecutive years through 2011, increasing at an average annual rate of 8.9%.

Revenue per day initially declined following ITQ Program implementation from an average of \$9,749 during the 1987-1989 Baseline Period to \$7,388 in 1990 (Figure 12). After also declining in 1991, average revenue per day has been on an upward trend increasing from \$6,165 in 1991 to a high of \$9,865 in 2011. In the intervening years, ocean quahog revenue per day was increasing at an average annual rate of 2.7%.

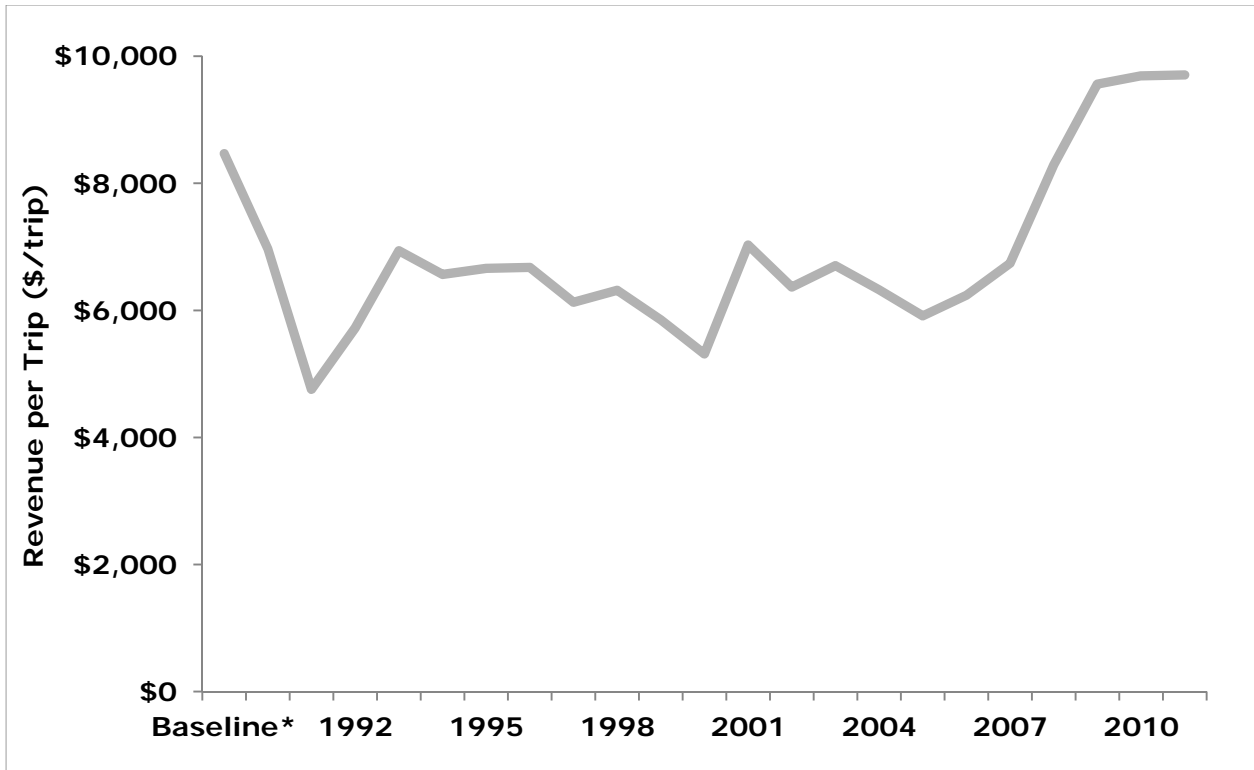


Figure 11. Revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Mid-Atlantic Ocean Quahog ITQ Program

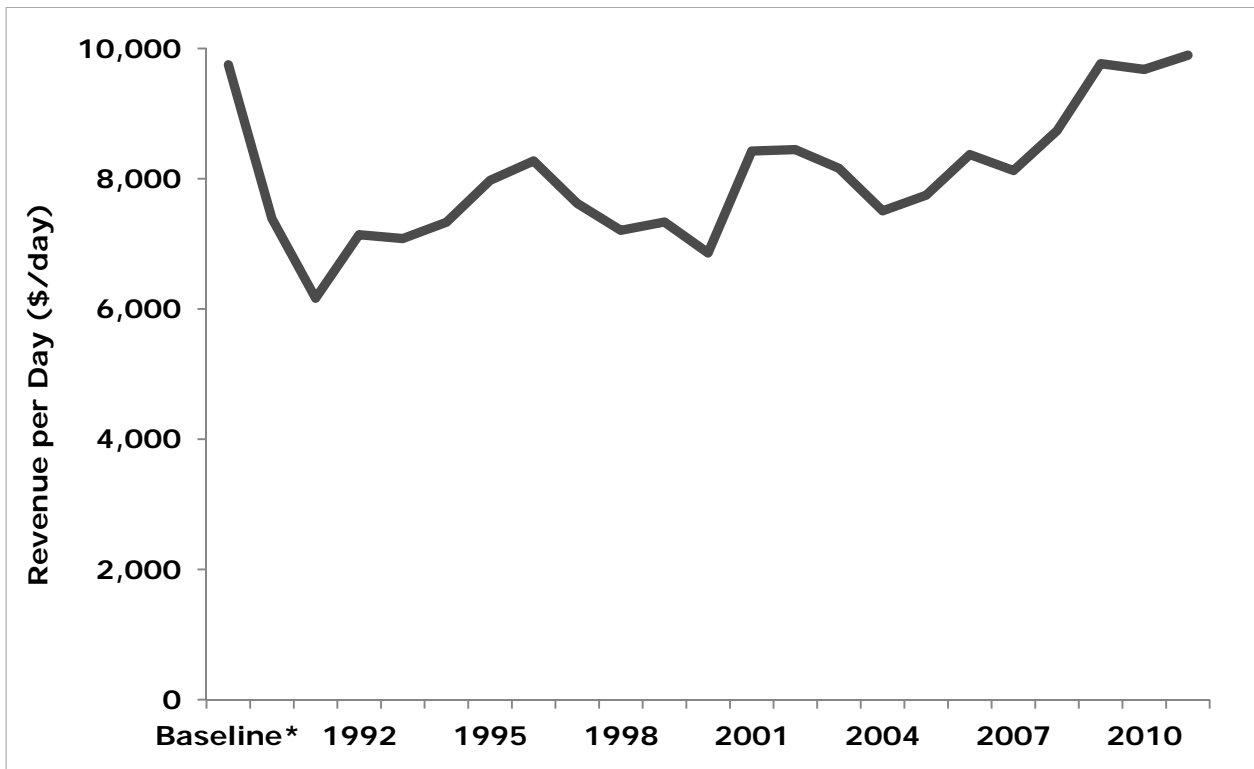


Figure 12. Revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Mid-Atlantic Ocean Quahog ITQ Program



## **Mid-Atlantic Surfclam ITQ Program**

### **a. Management History**

Managed by the Mid-Atlantic Fishery Management Council since 1977, the surfclam and ocean quahog fisheries were the Nation's first fisheries to adopt an Individual Transferable Quota (ITQ) management system beginning in 1990. In the thirteen years prior to adoption of the ITQ management system, the surfclam fishery was managed through limited entry, quarterly quotas, and restrictions on fishing time designed to maintain a steady flow of clams available to the market. Although these measures were successful in rebuilding the surfclam resource, quota levels were maintained by limiting vessels to only 36 hours each quarter. These limitations resulted in inefficient use of fishing vessels characterized by significant idle harvesting capacity for much of the year since the hydraulic dredge gear used in the fishery could not be used in other fisheries.

Since implementation of the ITQ system with Amendment 8 to the Fishery Management Plan (FMP), the FMP has been amended on six occasions. While making no substantive changes to the ITQ system, these amendments altered overfishing definitions, added the Maine-based mahogany quahog fishery to the management unit, resolved administrative differences between New England and Mid-Atlantic FMPs, and brought the FMP into compliance with MSA provisions on Essential Fish Habitat and bycatch reporting. More recently the Mid-Atlantic Council initiated development of Amendment 15 and Amendment 16. Among other proposed measures, Amendment 15 would develop recommendations for a cost recovery program and the latter, Amendment 16, would address share accumulation caps. However, since both Amendments are still under development, the accumulation cap and cost recovery performance measures cannot be reported herein.

### **b. Objectives**

The objectives established in 1990 for the ITQ Program by the Mid-Atlantic Fishery Management Council have not changed in the more than 20 years the program has been in existence. The objectives include:

- Conserve the surfclam resource and stabilize harvest rates
- Simplify regulatory requirements to minimize public and private costs of managing the resource
- Bring harvest capacity in line with processing and biological capacity to allow industry participants to achieve economic efficiency
- Create a management approach that is flexible and adaptive to short- term events or circumstances

### **c. Key Events and Features**

Initial quota shares for the Mid-Atlantic Surfclam ITQ Program were primarily based on historical participation in the fishery in terms of landings. This meant that initial quota shares were allocated to owners of surfclam fishing vessels. However, the ITQ Program permits the transfer of quota shares to any individual or entity provided that they would be eligible to own a US Coast Guard documented vessel without requiring actual ownership of a vessel. Quota shares may be transferred on a permanent basis or quota may be transferred (leased) on an annual basis to another entity. Quota shares or quota may be owned by industry participants (processors or vessel owners) or other entities provided they would be eligible to own a fishing vessel. Processors may purchase clams from a vessel owner that owns quota share or they may operate their own fleet of vessels or may contract for harvesting services to a fishing vessel owner. The variety of possible business arrangements complicates interpretation of performance measures such as the number of participating vessels or revenue per vessel since some vessels that are

engaged in harvesting clams may not be owners of a quota share and, conversely, some owners of quota shares may not be engaged in harvesting surfclams.

The surfclam fishery uses specialized gear that is used exclusively to harvest clams with very low catch rates of species other than clams. This means that revenues from species other than surfclams on trips where surfclams are harvested are very low (no more than 1.3%). For this reason, performance measures reported herein for the Mid-Atlantic Surfclam ITQ Program are based only on surfclam landings and revenues.

#### **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to implementation of the Mid-Atlantic Surfclam ITQ Program, 1987-1989.

##### **i. Catch and Landings – All landings and quota are reported in bushels.**

The commercial quota for surfclams averaged 3.2 million bushels and landings averaged 2.9 million bushels during the 1987-1989 Baseline Period (Figure 13). Consistent with resource conditions, the quota was decreased by approximately 3% per year over the first six years of the ITQ Program. From 1996 to 2000, the quota remained constant at 2.6 million bushels before being increased by an average of 7% per year to 3.4 million bushels in 2004. The surfclam quota has remained at 3.4 million bushels in every year through 2011. Landings of surfclams tracked available quota in just about every year from 1990 through 2003 as quota utilization averaged 97% from 1990 to 2003 (Figure 14). During these years the surfclam quota was exceeded on two occasions, in 1993 by 3% and again in 2000 by 1%. These were the only occasions in the entire program history that quotas were exceeded.

Since the quota was set at 3.4 million bushels in 2004, quota utilization averaged 81% as landings have been declining at an average annual rate of 4.2%. Since 2007 quota use rates have declined from 95% in 2007 to 65% in 2011. Over these years landings declined from 3.2 million bushels to 2.2 million bushels in 2011.

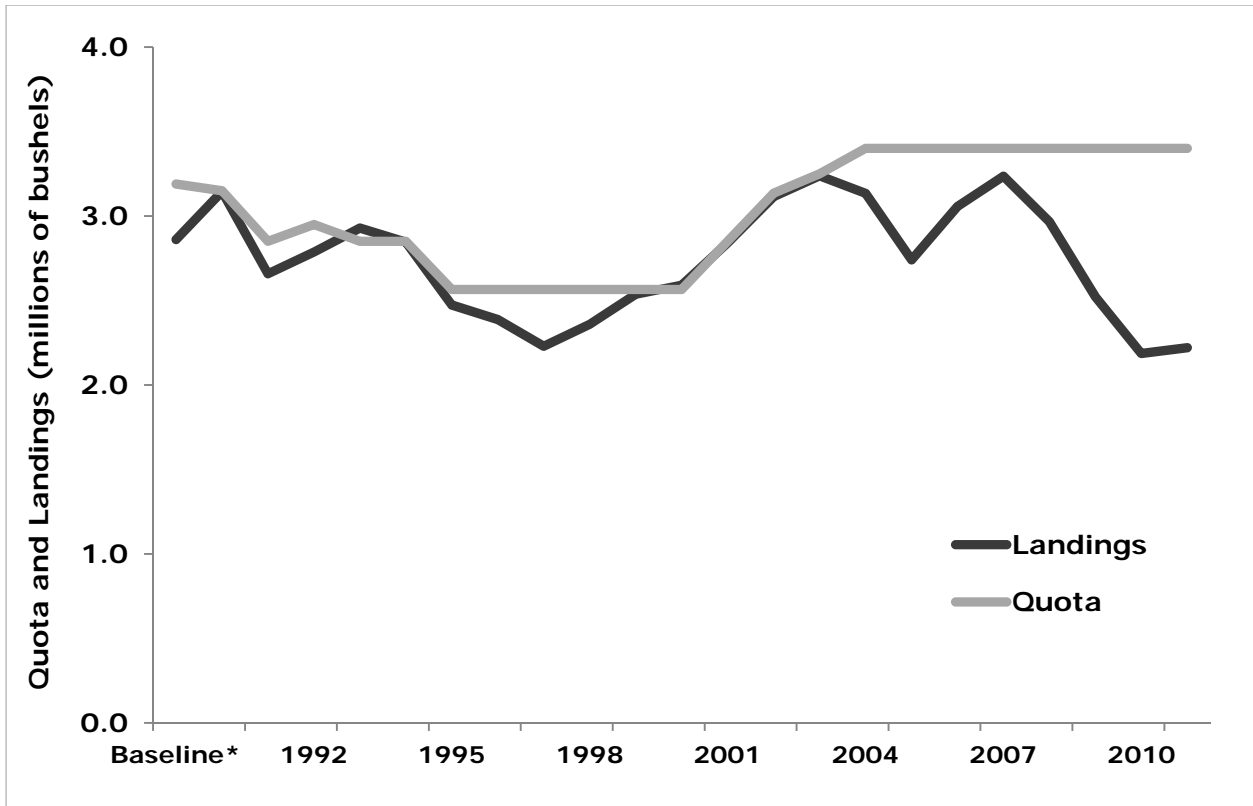


Figure 13 Quota and landings in the Mid-Atlantic Surfclam ITQ Program

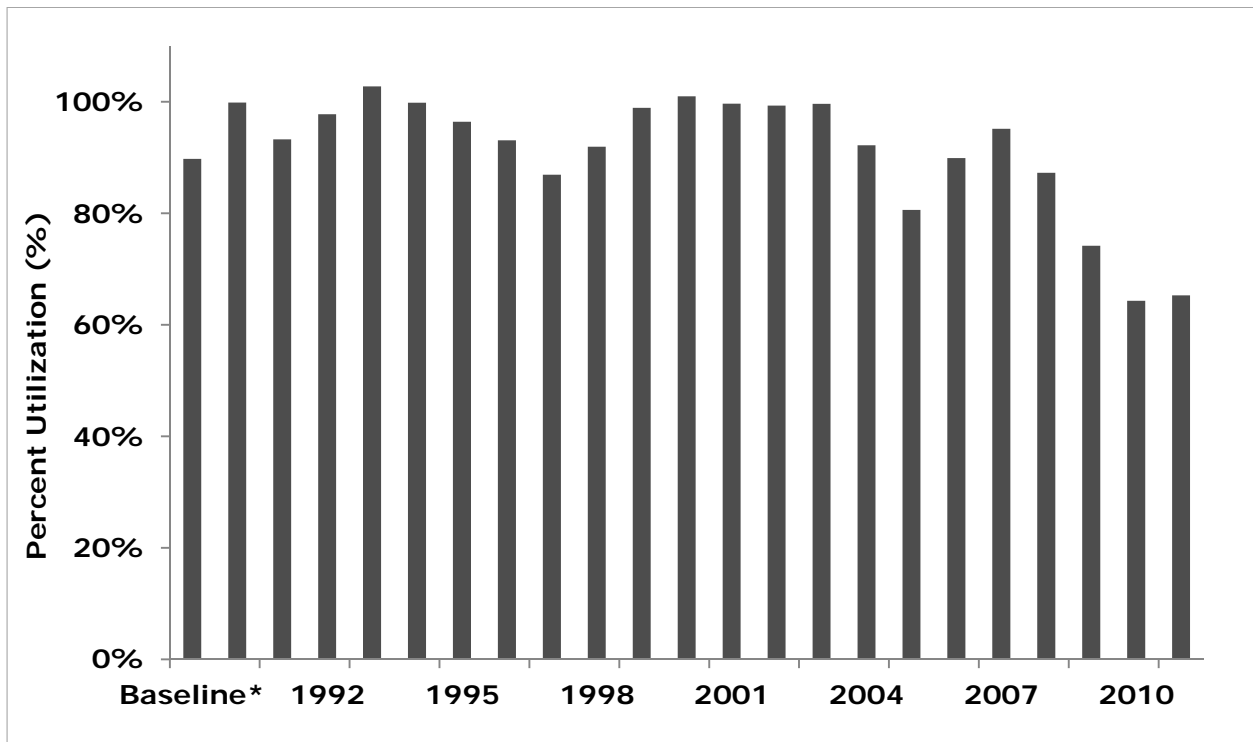


Figure 14. Utilization of available quota in the Mid-Atlantic Surfclam ITQ Program

ii. Effort

Upon implementation in 1990, there were a total of 154 entities (i.e., unique surfclam allocation holders) that received an initial allocation of quota share. After the first year of implementation the number of entities receiving quota share declined to 116 (Figure 15). The number of entities holding surfclam quota share stayed relatively constant ranging from 107 – 117 through calendar year 2000. Since 2005, the number of entities that held surfclam quota share has declined at an average annual rate of 5.6% to 55 entities in 2011.

The number of vessels that reported landing surfclams averaged 137 during the Baseline Period years of 1987 to 1989 (Figure 16). The number of active vessels declined about 18% per year for the first five years of the ITQ Program. However, since 1995, the number of active vessels harvesting surfclams has been relatively stable ranging between 29 and 39 vessels in every year. As noted previously, the variety of possible business arrangements through which allocation may be transferred complicates the interpretation of the changes in vessel activity levels.

Total trips taken on which surfclams were landed averaged 2,884 during the Baseline Period (Figure 17). Upon implementation of the ITQ Program, the number of trips declined in nearly every year through calendar year 2000. The number of trips increased in consecutive years of 2001 and 2002, but has since resumed the general downward trend observed during the first decade of the ITQ Program to 1,916 trips taken during 2011. On average, the number of trips taken during the 22 years the ITQ Program has been in existence has declined by an annual average rate of 1.5%. By contrast, after initially declining after the ITQ Program was implemented, the number of days spent on surfclam trips increased by an average annual rate of 7.0% from 1,706 days in 2001 to 2,911 days in 2011 (Figure 18). When coupled with the general decline in trips, this means that the average trip duration increased. After averaging less than a day (0.7 days) from 1990 through 2003, average trip duration increased to more than a day from 2004 onward. More recently, trip duration averaged 1.5 days during 2009-2011, more than twice that of the first fourteen years of the ITQ Program.

Prior to implementation of the ITQ Program, the management program was structured to assure that a continuous supply of surfclams would be provided to the market through a system of quarterly quotas and limits on fishing time. These measures meant that surfclams were available throughout the year. These measures were eliminated upon ITQ Program implementation allowing surfclams to be harvested according to market conditions. Thus, while the timing of when clams were harvested may have changed, the ITQ Program did not change the fact that some clams were available throughout the season with or without the ITQ Program (Figure 19).

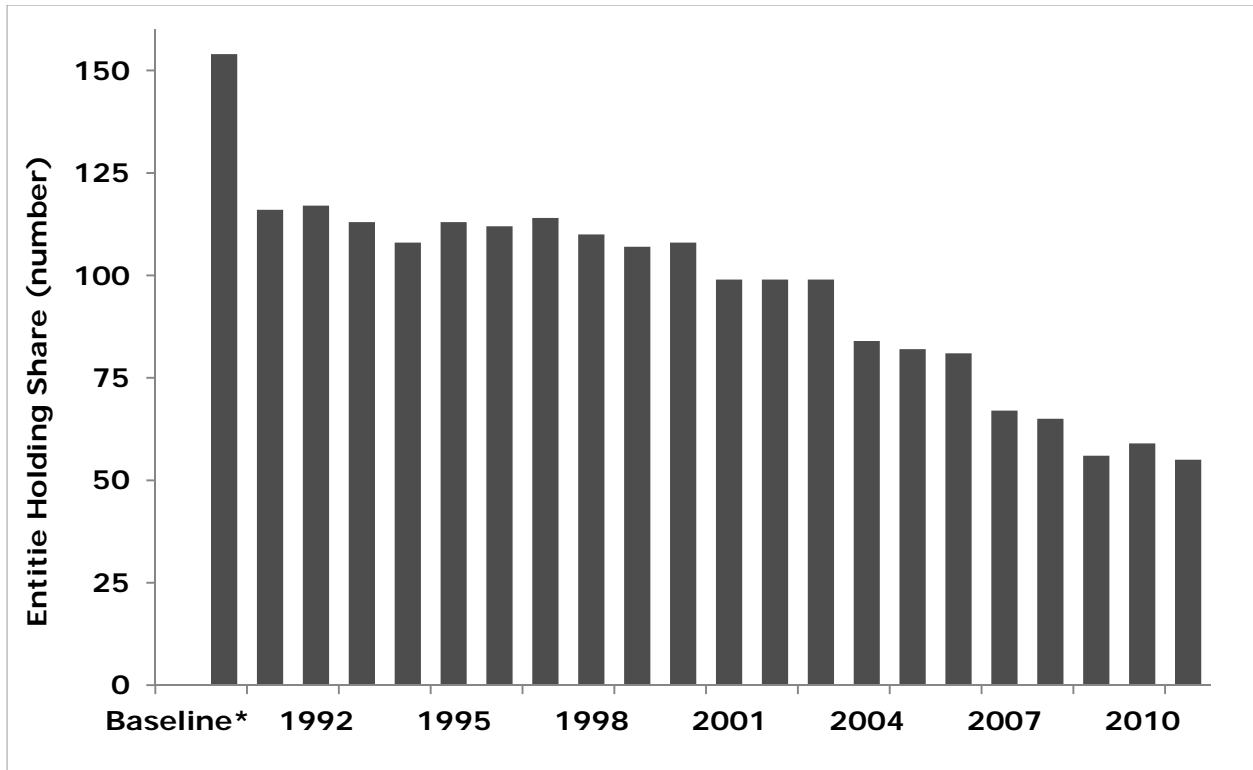


Figure 15. Number of entities holding share in the Mid-Atlantic Surfclam ITQ Program

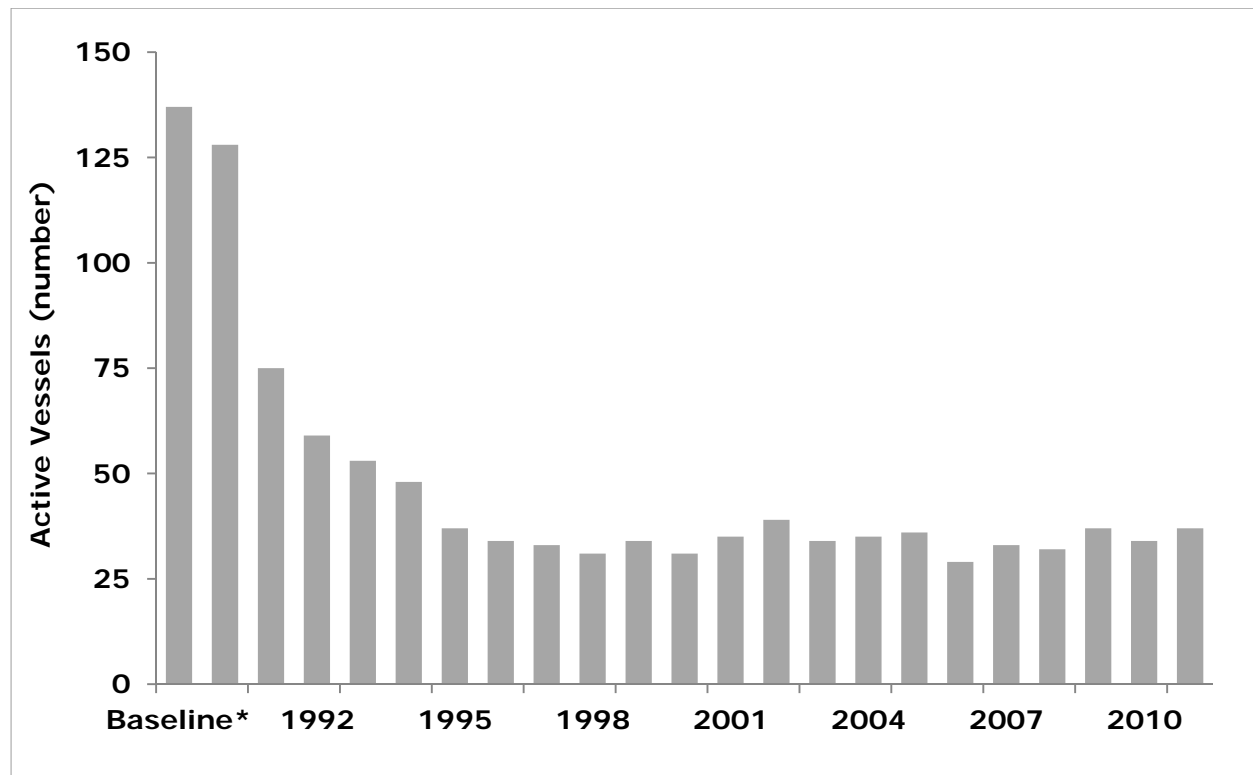


Figure 16. Active vessels fishing quota in the Mid-Atlantic Surfclam ITQ Program

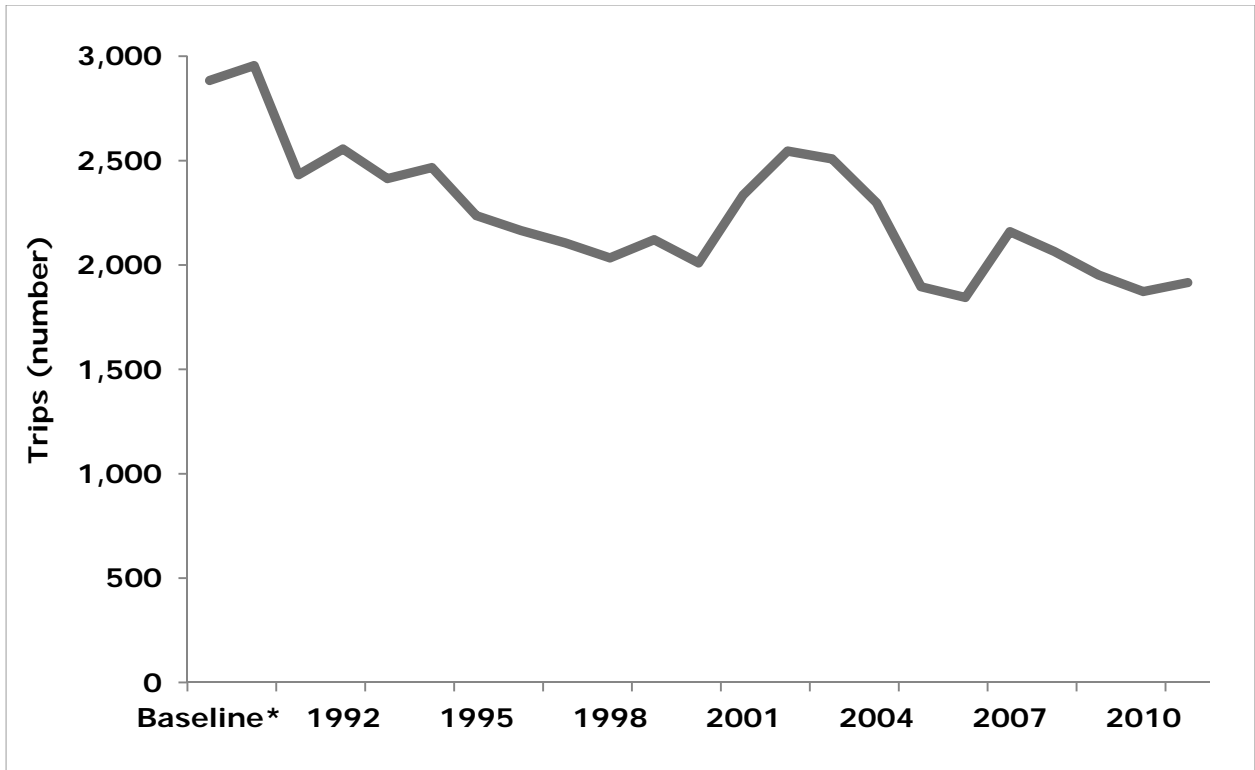


Figure 17. Number of trips harvesting surfclams in the Mid-Atlantic Surfclam ITQ Program

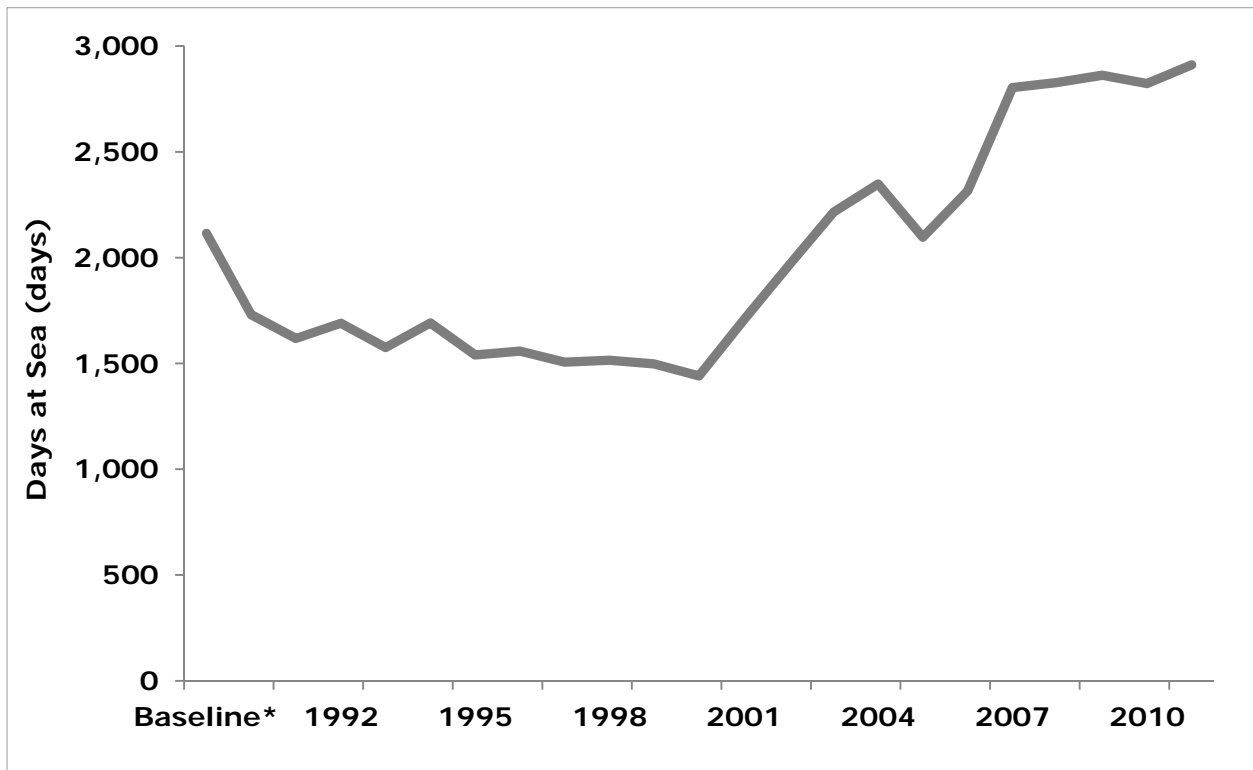


Figure 18. Number of days at sea on trips fishing quota in the Mid-Atlantic Surfclam ITQ Program

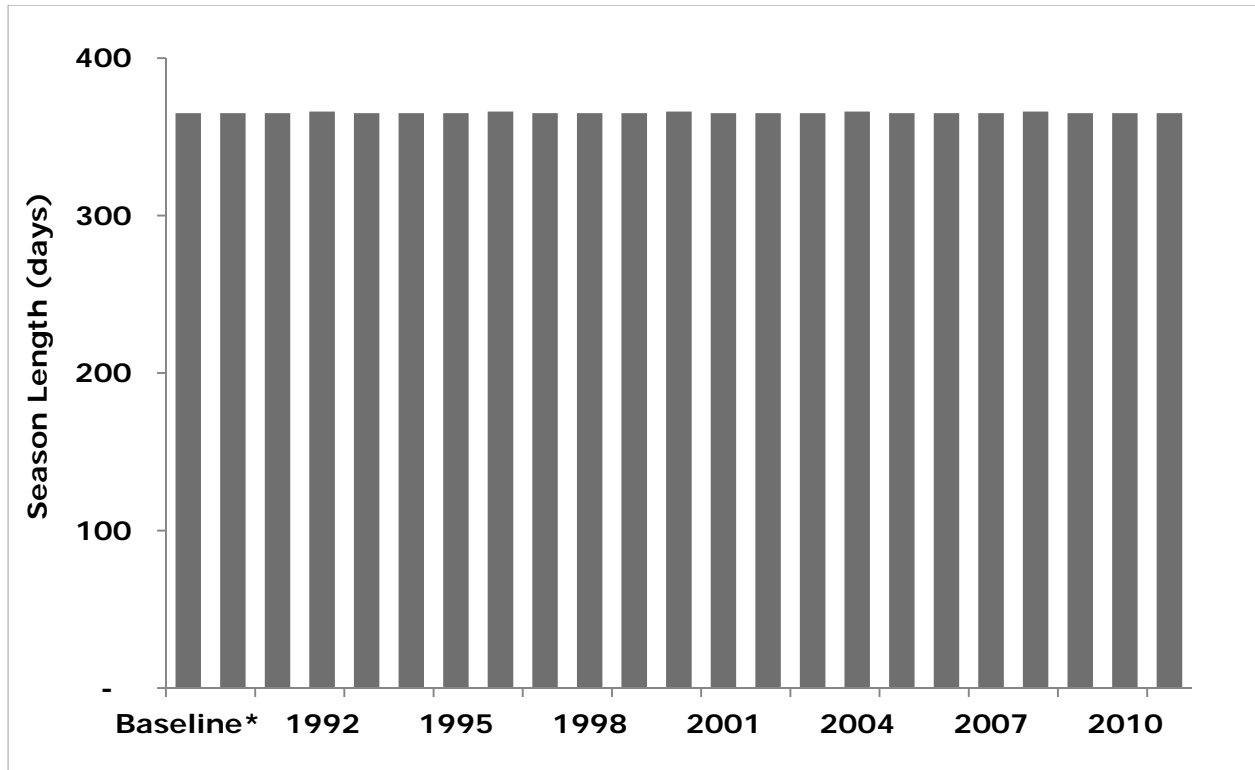


Figure 19. Season length (days) in the Mid-Atlantic Surfclam ITQ Program

- iii. Revenue – All revenue data have been adjusted by the GDP deflator indexed for 2010.

Gross revenue from the sale of surfclams averaged \$30.1 million during 2005-2011. However, after peaking at \$34.8 million during 2007, gross revenues have been declining (Figure 20) at an average annual rate of about 7.0%. Notably, since 2007, gross revenues declined at a slower rate than landings (-8.8%) because the average price per bushel of surfclams increased at an average rate of 2.2% (Figure 21).

Average revenue earned per vessel was \$278,000 during the Baseline Period (Figure 22). Average revenue per vessel increased in each of the first seven years of the program before declining for the first time in 1997 to \$659,000, still more than twice the Baseline Period average. Although revenue per vessel fluctuated between 1997 and 2006, the average revenue was still on a general upward trend. In fact, revenue per vessel from 1990 to 2006 increased at an average annual rate of 10.3%. However, over the most recent five years revenue per vessel declined an average of 9% from \$1.1 million in 2007 to \$703,000 per vessel in 2011. This change was partly due to lower surfclam revenues during 2011 as well as more active vessels (37 in 2011 compared to 33 in 2007).

Since the ITQ Program was implemented, surfclam revenue per trip has ranged from a low of \$11,602 in 2000 to a high of just over \$18,000 in 2006 (Figure 23). Surfclam revenue per trip averaged \$13,211 during the pre-ITQ Baseline Period. During the first 10 years of the program, revenue per trip exceeded the Baseline Period in the three years of 1994-1997, but was otherwise below the Baseline Period average through calendar year 2000. Note that most of these years corresponded to a period where the quota was declining; hence, most performance measures including revenue per trip would be expected to be declining. The link between revenue per trip and available quota is also evident from 2001 to 2004 as both revenue per trip

and available quota were increasing. However, over the most recent five years, revenue per trip has been declining from \$16,147 in 2007 to \$13,577 in 2011 despite the longer trip duration.

Revenue per day initially improved following ITQ Program implementation from an average of \$18,014 during the 1987-1989 Baseline Period to \$22,109 in 1990 (Figure 24). Since then, average revenue per day has declined in most years at an annual average rate of 3.8% to a time series low of less than \$9,000 in 2011.

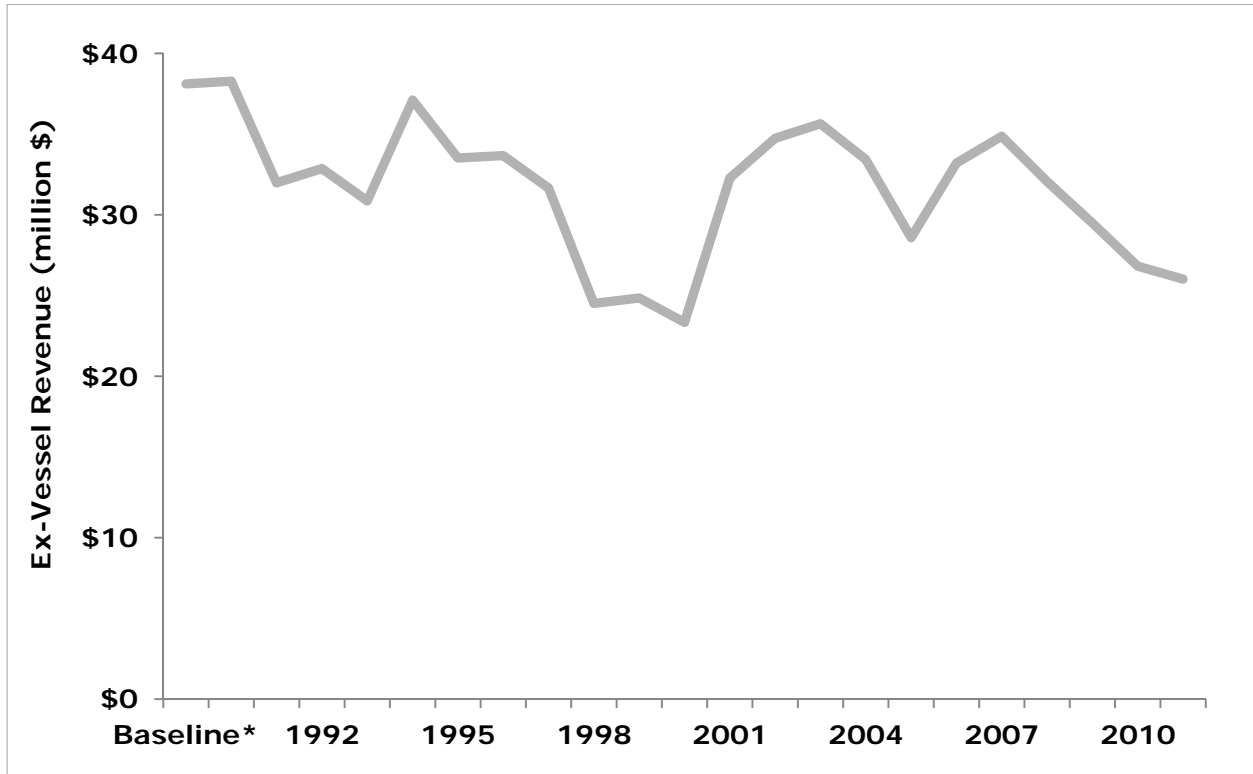


Figure 20. Total revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Mid-Atlantic Surfclam ITQ Program



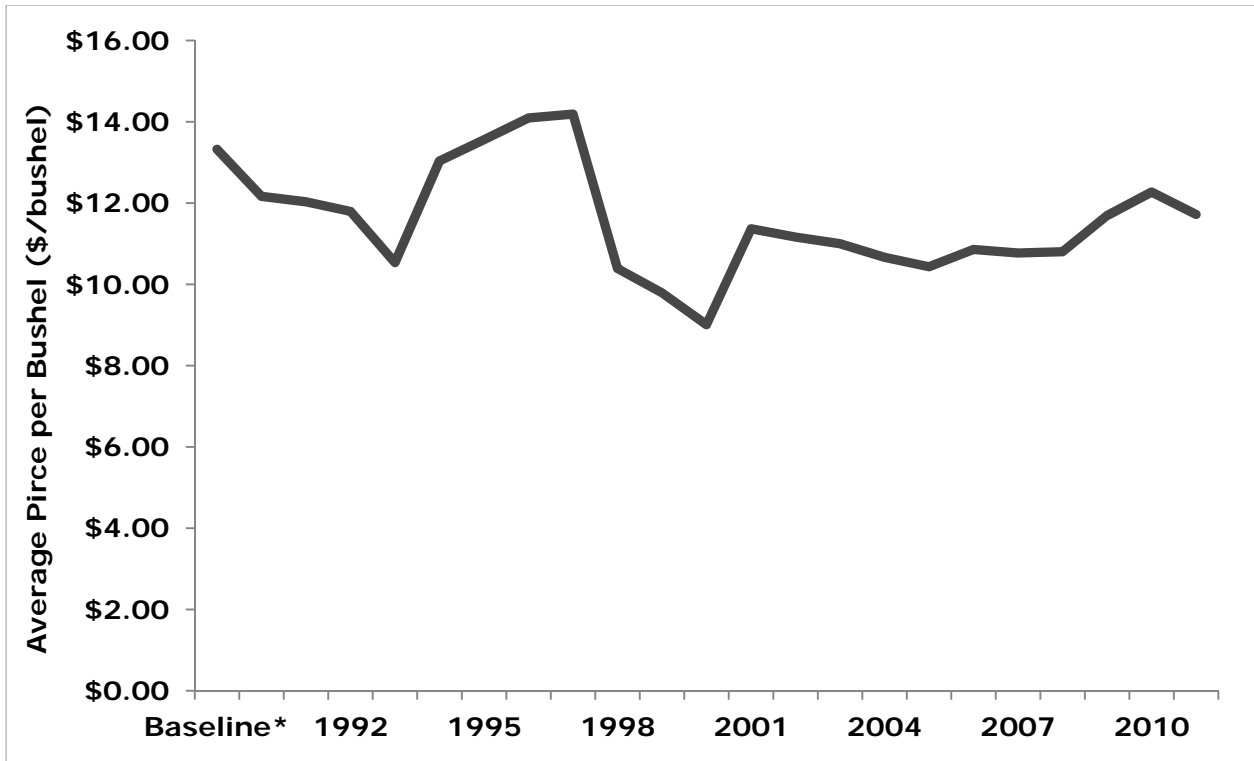


Figure 21. Average surfclam price per bushel (inflation-adjusted 2010 dollars) in the Mid-Atlantic Surfclam ITQ Program

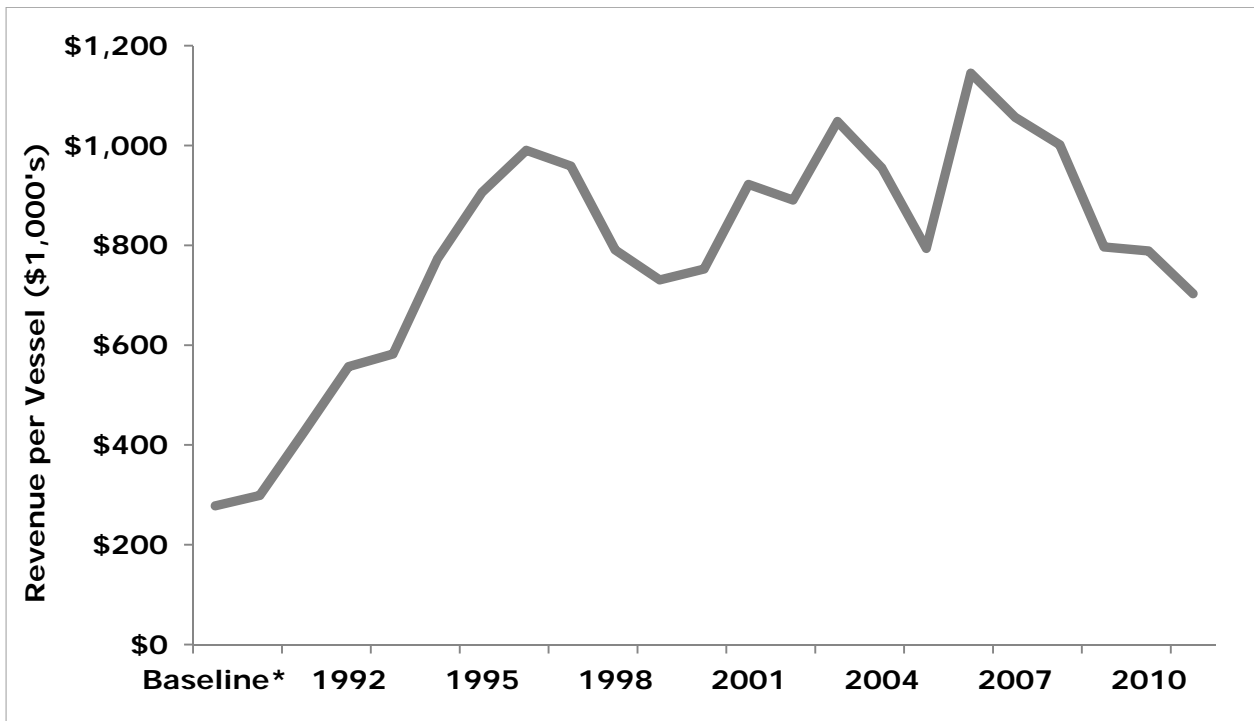


Figure 22. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Mid-Atlantic Surfclam ITQ Program

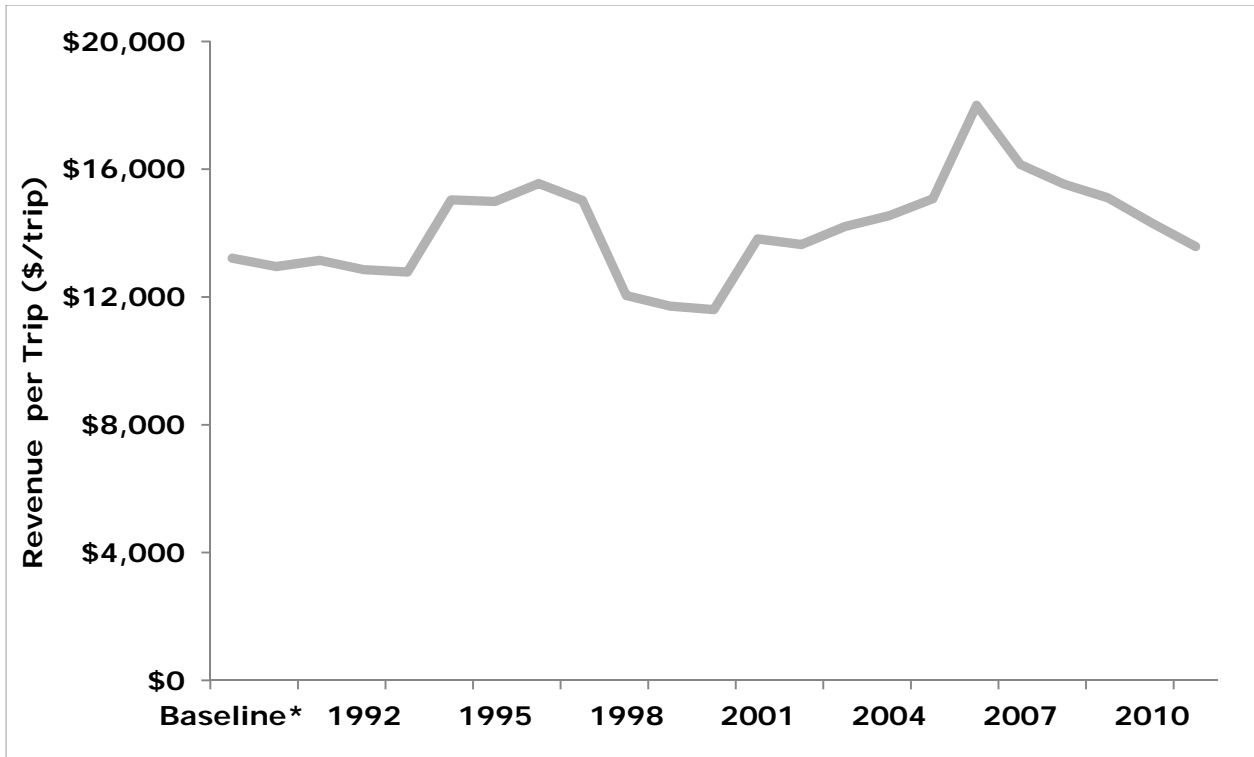


Figure 23. Revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Mid-Atlantic Surfclam ITQ Program

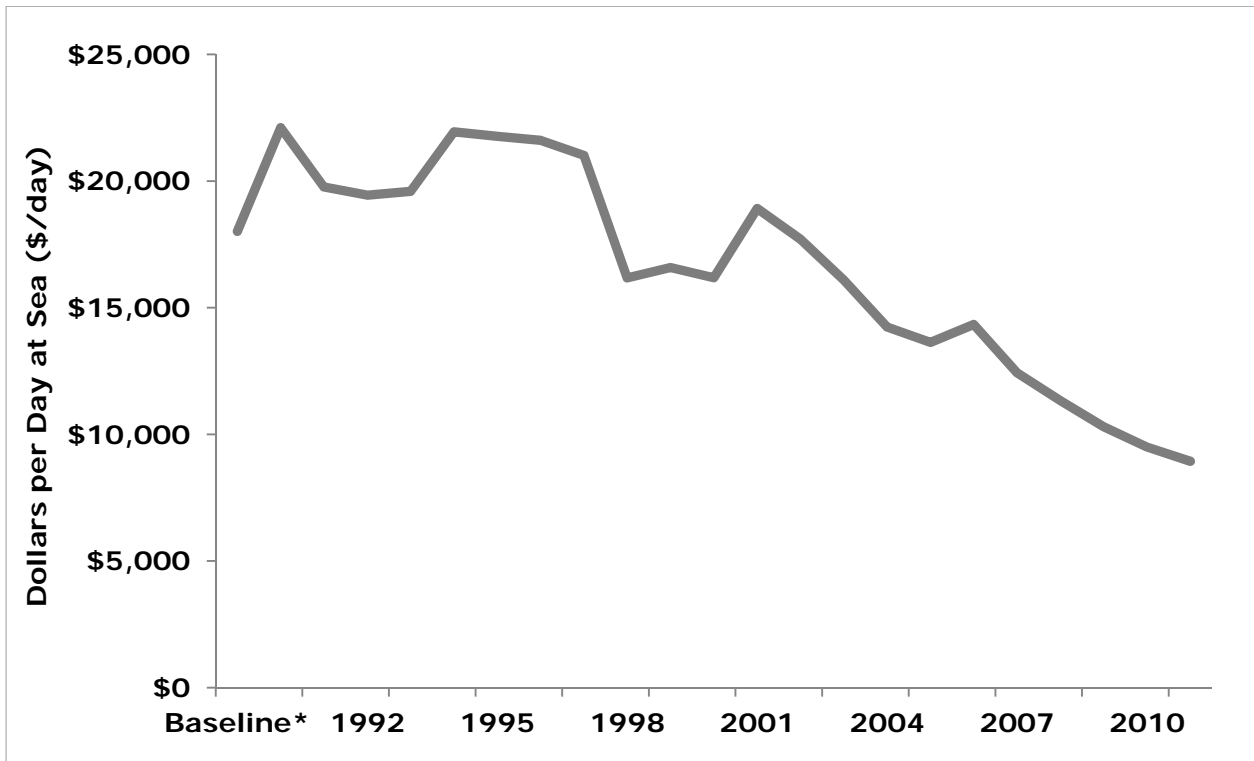


Figure 24. Revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Mid-Atlantic Surfclam ITQ Program

## **Northeast General Category Atlantic Sea Scallop IFQ Program**

### **a. Management History**

The majority of scallops landed in New England and Mid-Atlantic ports is harvested by fishermen operating under a limited access program managed by caps on days at sea and harvest limits for trips into scallop access areas defined through a rotational management area program. However, when the New England Fishery Management Council developed the limited access program in Amendment 4, it also created an open access permit to accommodate a small boat fishery that came to be known as the General Category Scallop fishery. This fishery was comprised of smaller vessels that had been harvesting comparatively small quantities of scallops (a trip limit of 400 pounds of scallop meats was imposed in 1994) on relatively short trips. As regulatory measures became more restrictive in a number of other fisheries, the general category scallop fishery increasingly became an alternative source of fishing income. Concerned with the growth in landings by the general category scallop fleet, in 2007, the Council proposed that a limited access program be implemented for the fishery; that small quota allocations be made for incidental harvest of scallops and for small-scale fishing in the Northern Gulf of Maine; that the fishery be subject to a landings limit of 5% of the total scallop catch limit; and that the majority of the fishery be regulated with an Individual Fishing Quota. This management program was implemented in 2008 and a start date of 2010 was set for the IFQ Program. Had the Council not taken action, growth in the fishery would likely have continued that may have led to reductions in the limited access days at sea fishery.

### **b. Objectives**

While recognizing that the fishery had changed over time, the Council's vision for the general category scallop fishery is one of "...a fleet made up of relatively small vessels, with possession limits to maintain the historical character of this fleet and provide opportunities to various participants including vessels from smaller coastal communities." The goals for the IFQ Program are to: 1) control capacity and mortality in the general category scallop fishery and 2) allow for better and more timely integration of sea scallop assessment results in management.

### **c. Key events/features**

Full implementation of the IFQ Program was anticipated to take one to two years. To provide for a transition to the IFQ Program, a quarterly quota was set for the fishery set at 10% of the total scallop catch limit. In 2010, the IFQ Program's quota was set at its planned level of 5% of the scallop catch limit. While it may appear that the quota was reduced from 4.1 million pounds during the Baseline Period to 2.5 million pounds in 2010, this was a scheduled reduction designed to ease the transition to the IFQ Program.

The IFQ Program is subject to an ownership cap set at no more than 2.5% for any one vessel. In the event that a single entity (an individual owner or ownership group) owns more than one vessel, the entity may not hold more than 5% of the total allocation. Allocations may be transferred on a permanent basis or transferred (leased) on an annual basis to another IFQ allocation holder, provided the ownership caps are maintained.

Although the scallop fishing year runs from March 1 through the last day of February, the cost recovery fee is based on expenses and landings made during the fee period, which runs from October 1 through September 30 each year. The 2011 fee period (October 1, 2010 through September 30, 2011) was the first time that NOAA Fisheries collected fees from scallop IFQ vessels. Actual cost recovery fees during the first year of implementation amounted to \$82,556, which represents 0.29 % of the value of the scallop IFQ fishery during the fee period.

**d. Recent Trends**

The Baseline Period refers to the average of the three years prior to implementation of the General Category Scallop IFQ Program, 2007-2009.

- i. Catch and Landings – All landings and quota are reported in pounds of meat weight.

Prior to IFQ Program implementation, the general category fishery operated without a hard quota since it was managed as a segment of the overall scallop fishery. During 2008 and 2009, quarterly quotas amounting to 10% of the total scallop quota were implemented. In the first year of IFQ Program, implementation of the general category quota was set at 2.6 million (5% of the total scallop quota) pounds of scallop meats (Figure 25). The general category scallop fleet landed 4.1 million pounds of scallop meats during the Baseline Period. Almost 2.3 million pounds, or 89% of the quota was utilized in 2010, down 44% from the 2007-2009 average. Note that this reduction in landings was actually lower than the 50% scheduled reduction in quota.

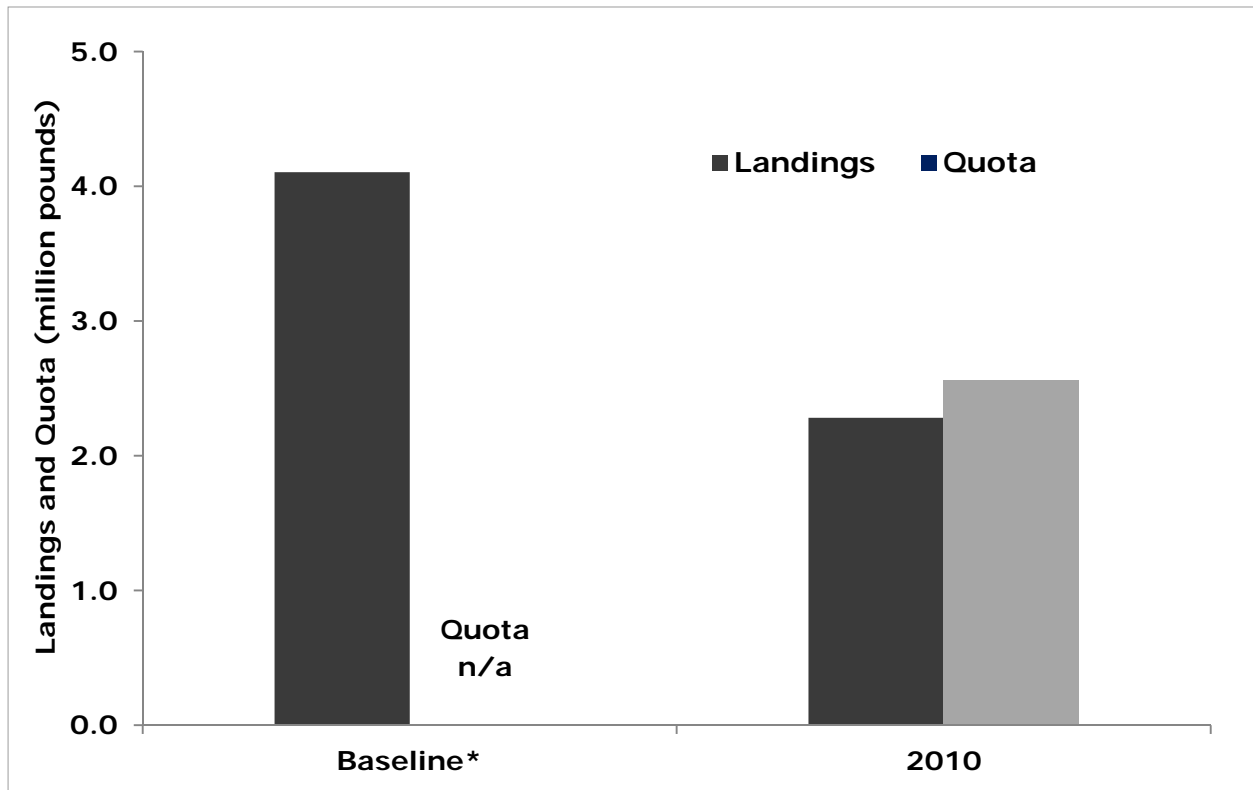


Figure 25. Quota and landings in the Northeast General Category Scallop IFQ Program

- ii. Effort

A total of 321 general category scallop vessels were allocated an IFQ Program share in the first year of the IFQ Program (Figure 26). Of the vessels allocated share, a total of 159 (just under 50% of the entities allocated share) were active in the general category scallop fishery during 2010 (Figure 27). Compared to the Baseline Period average, the number of active vessels in 2010 fell by 41%.

Total effort in the general category scallop fishery declined during 2010 compared to the 2007-2009 Baseline Period average. Total trips declined by 39% from over 10,330 to 6,281 (Figure 28). Similarly, days spent on general category scallop trips declined from 8,437 during 2007-2009 to 4,202 in 2010, an 18% reduction in average trip duration and an overall 50% reduction in total fishing time (Figure 29).

The general category scallop fishery has always been a comparatively small proportion of the overall scallop fishery. For this reason, supplies of general category scallops have relatively little impact on the availability of scallops to processors or seafood consumers. Implementation of the Northeast General Category Atlantic Sea Scallop IFQ Program does not alter this fact, in general, nor did it change the seasonal availability of scallops from the general category fishery, specifically (Figure 30).

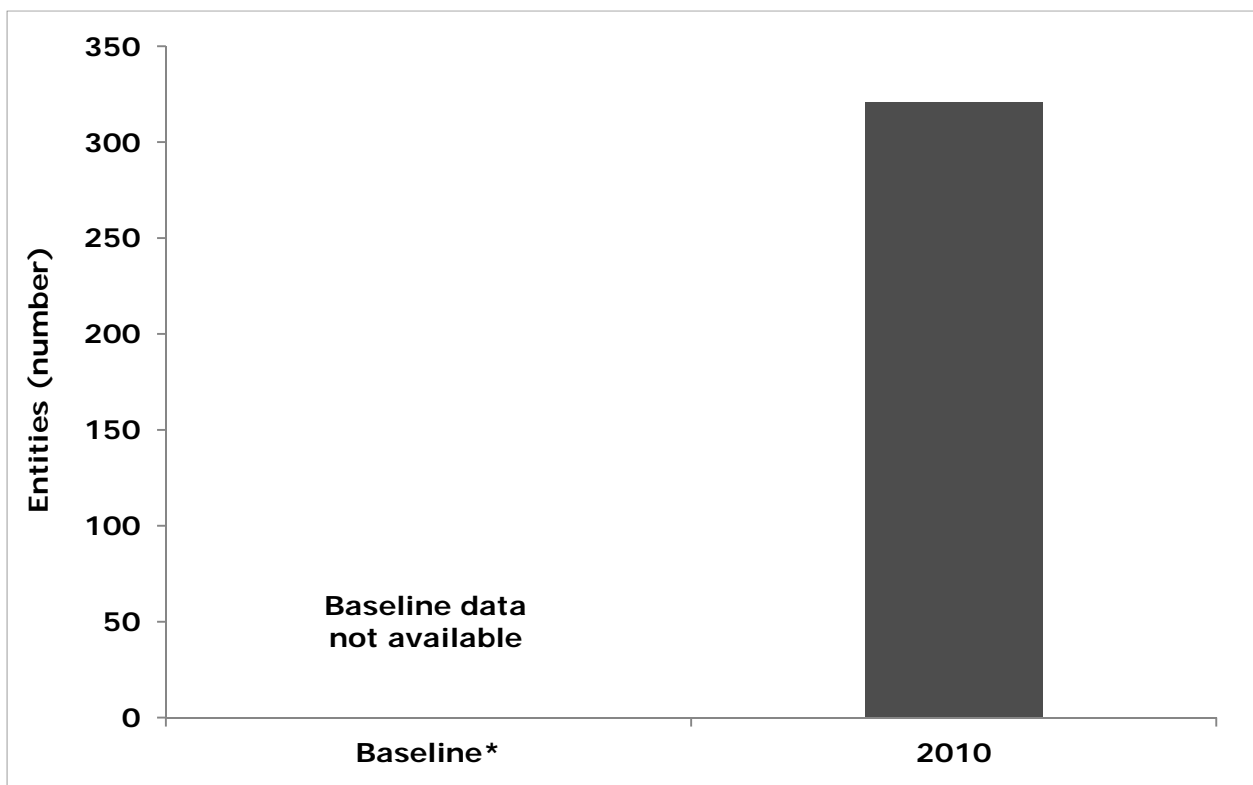


Figure 26. Number of entities holding share in the Northeast General Category Scallop IFQ Program

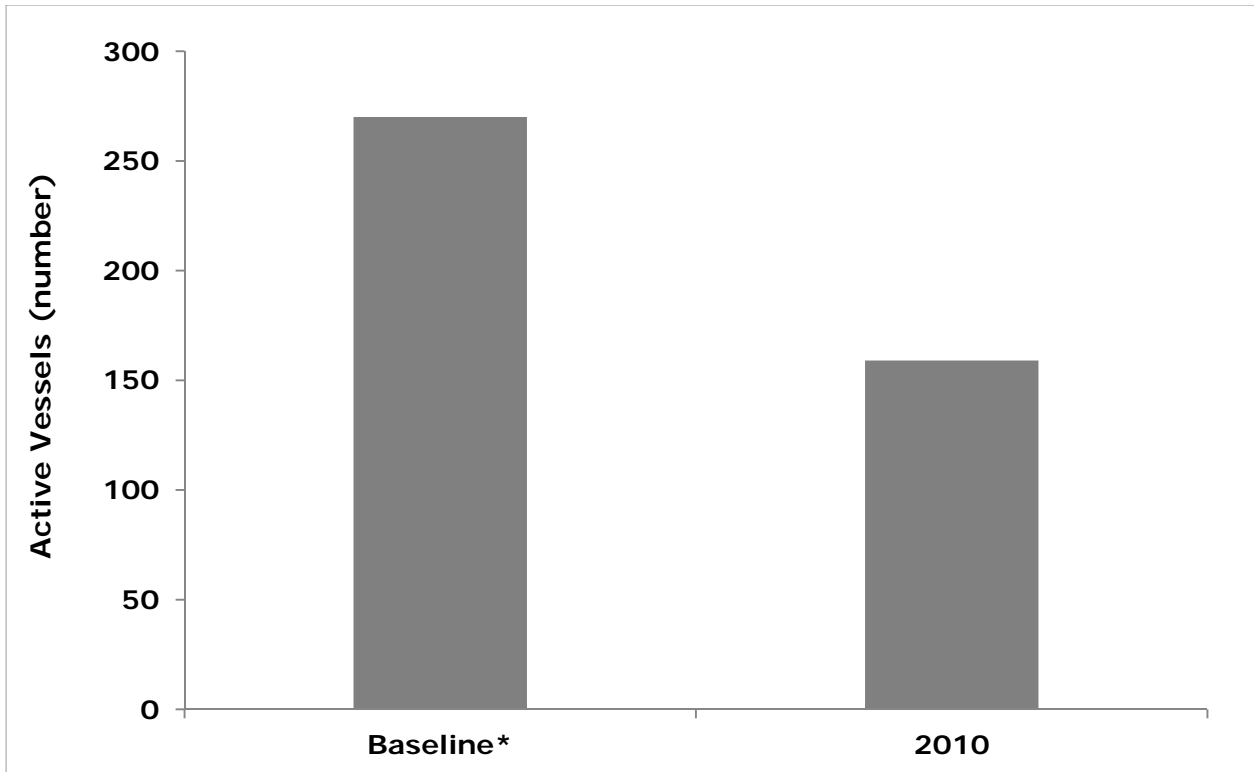


Figure 27. Active vessels fishing quota in the Northeast General Category Scallop IFQ Program

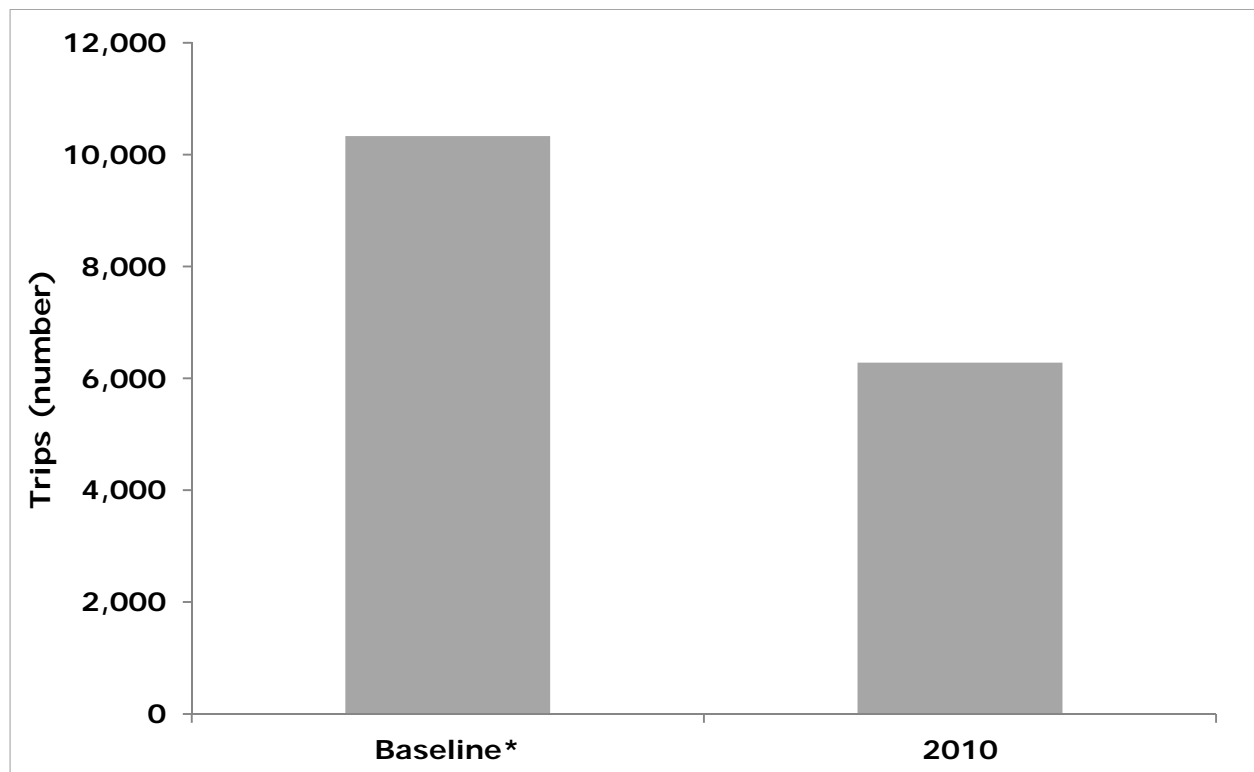


Figure 28. Number of trips harvesting scallops in the Northeast General Category Scallop IFQ Program

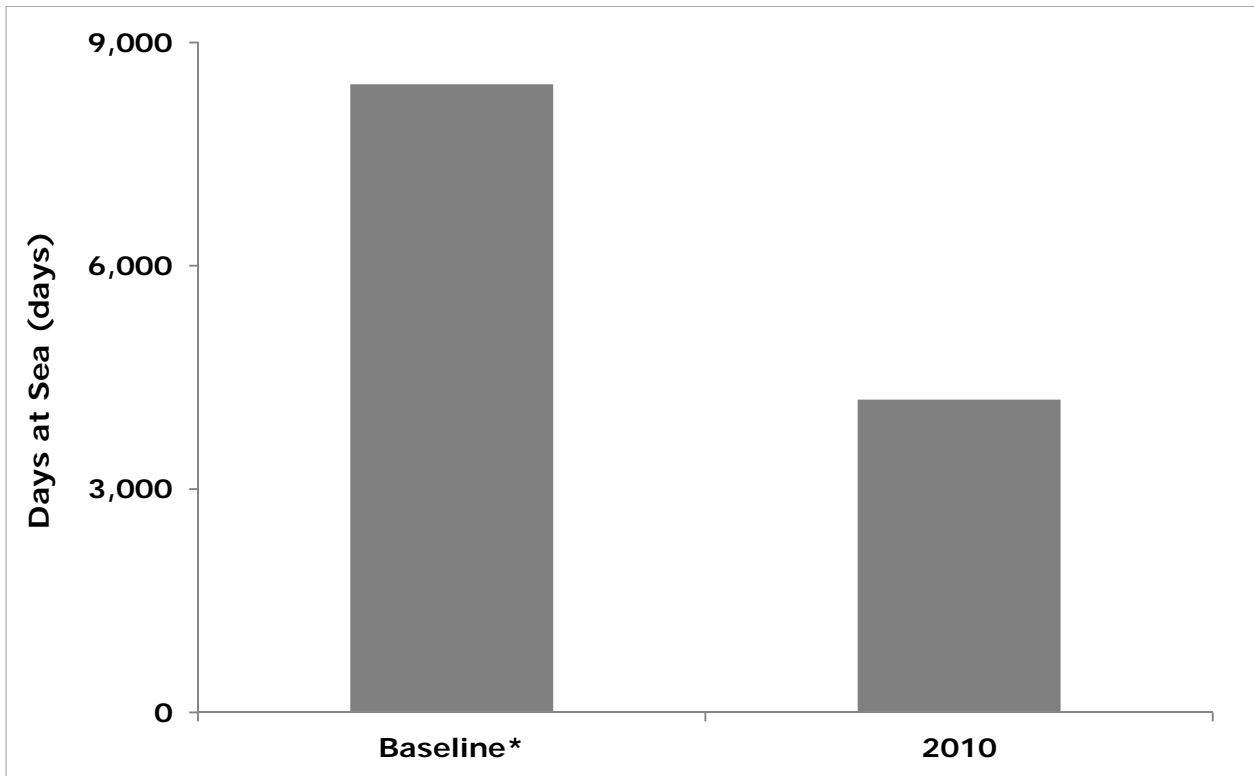


Figure 29. Number of days at sea on trips fishing quota in the Northeast General Category Scallop IFQ Program

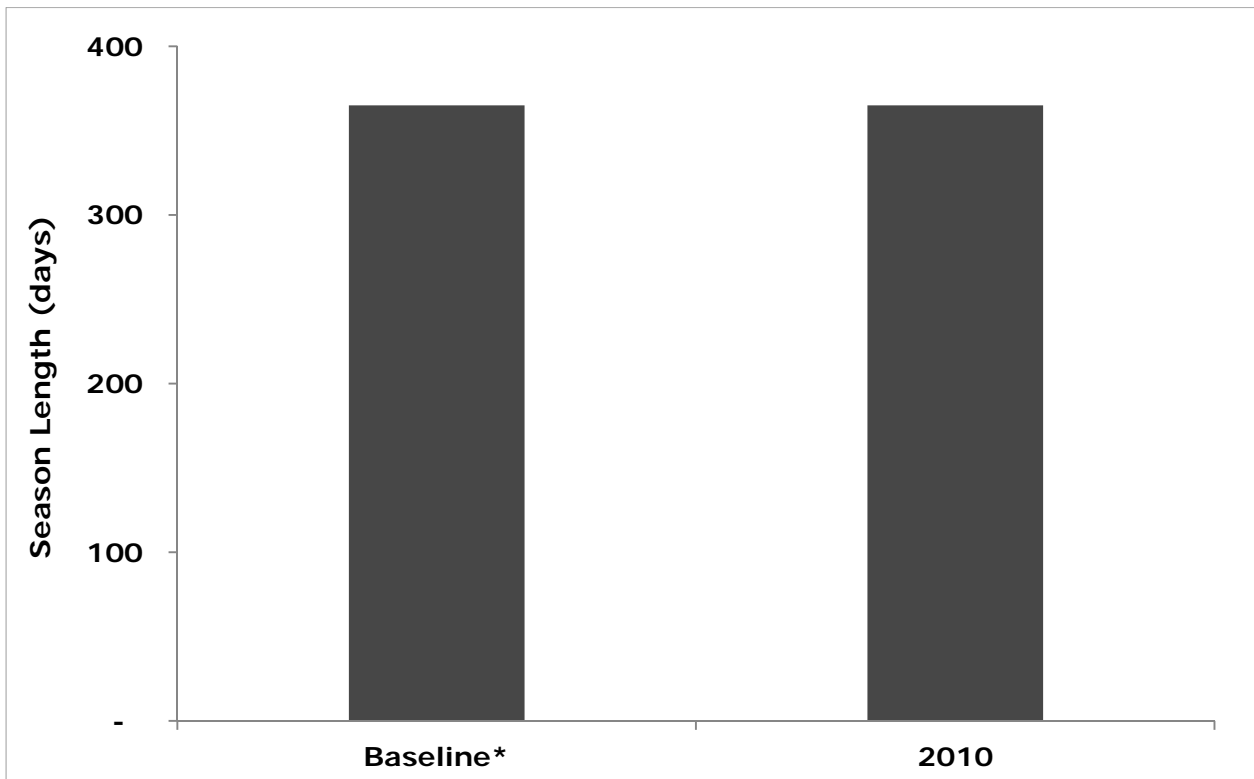


Figure 30. Season length (days) in the Northeast General Category Scallop IFQ Program

- iii. Revenue – All revenue data have been adjusted by the GDP deflator indexed for 2010.

The 2010 reduction in general category scallop landings was partially offset by increased ex-vessel prices as 2010 prices increased by 31% from the \$6.69 Baseline Period average to \$8.78 per pound (Figure 31). The price increase meant that the landings revenues from scallop sales were \$21 million during 2010 as compared to \$27 million during the Baseline Period (Figure 32). This means that in 2010 general category scallop revenues declined by 27% as compared to the 44% reduction in landings.

While using scallop gear in the general category scallop fishery, fishermen harvest small amounts of other species that contribute to total revenues. On average, fishermen earned 2.3% of total sales on general category scallop trips from species other than scallops during the 2007-2009 Baseline Period (Figure 32). The proportion of revenue from species other than scallops increased to 3.2% in 2010, contributing an additional \$652,000 to total general category scallop fishery revenues.

In contrast to landings revenue, general category scallop revenue per active vessel increased from \$102,000 during the Baseline Period to \$125,000 in 2010, an increase of 24% (Figure 33). When the increased revenue from other species are considered, total revenue per vessel increased even more from \$104,000 during the 2007-2009 Baseline Period to \$130,000 in 2010.

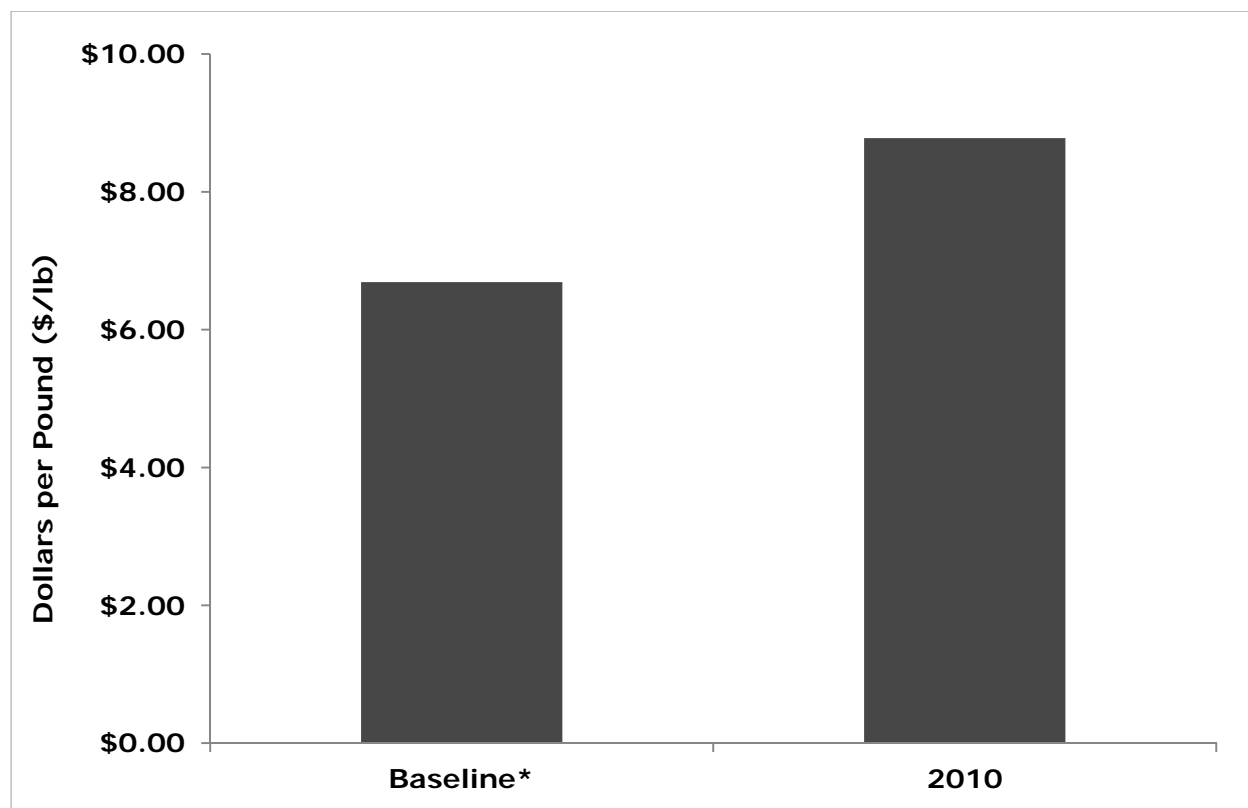


Figure 31. Average scallop price per pound (inflation-adjusted 2010 dollars) of scallop meats in the Northeast General Category Scallop IFQ Program



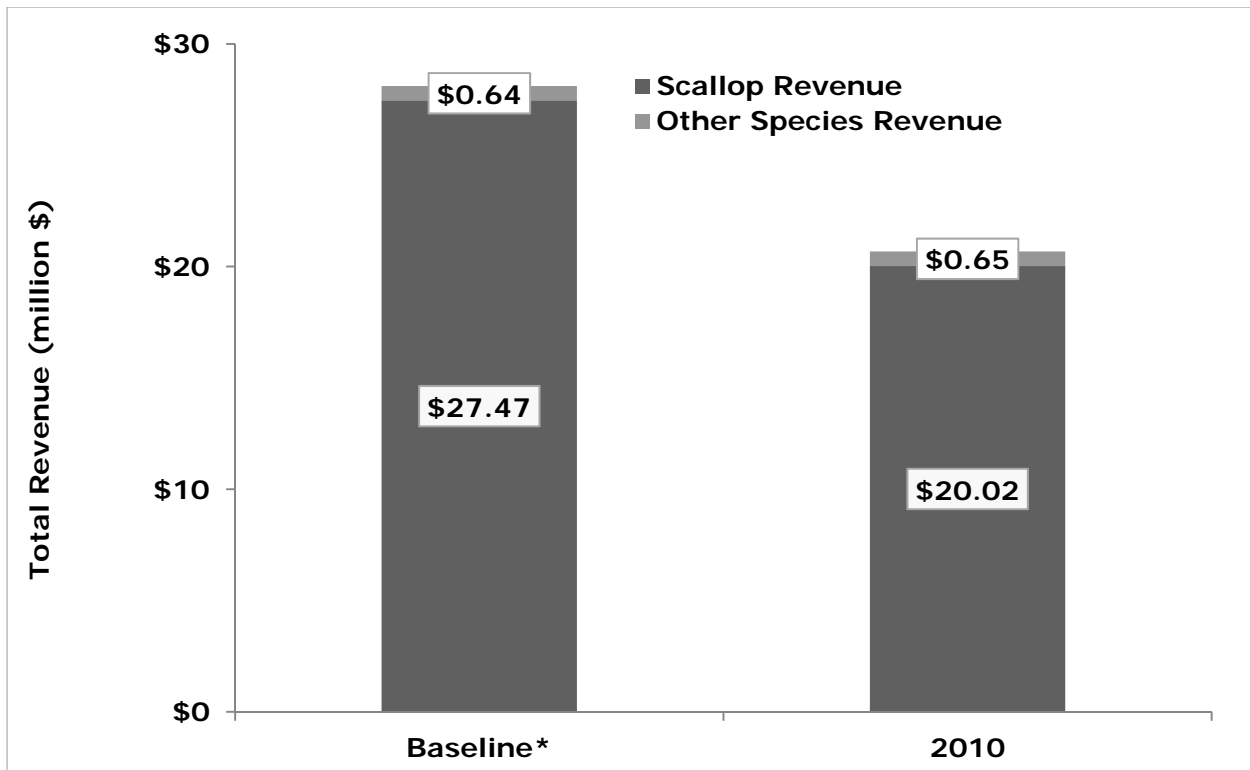


Figure 32. Total scallop and non-scallop revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Northeast General Category Scallop IFQ Program

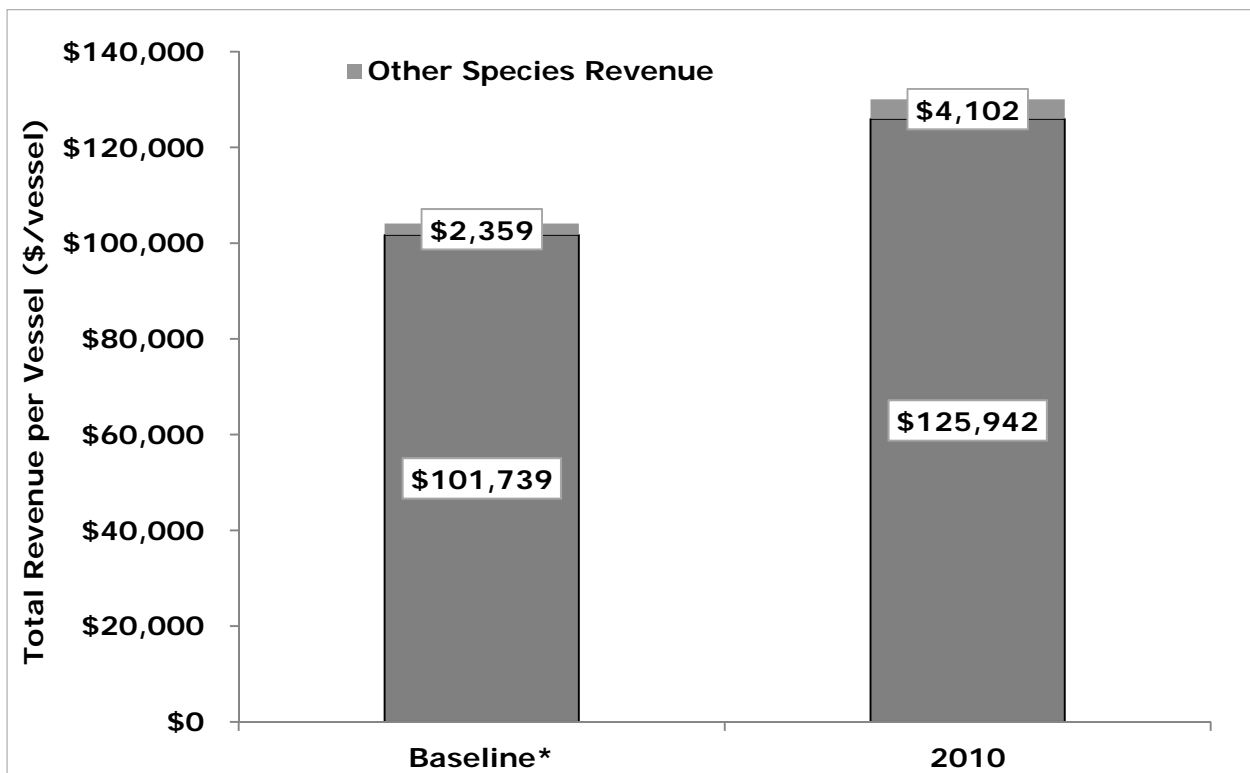


Figure 33. Scallop and non-scallop revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Northeast General Category Scallop IFQ Program

Both general category scallop revenue per trip and total revenue per trip increased during the first year of the IFQ Program compared to the 2007-2009 Baseline Period average. Revenue per day also increased, however, since average trip duration declined in the first year of the IFQ Program, revenue per day increased proportionally more than revenue per trip. Specifically, general category scallop revenue per day increased from the Baseline Period average of \$3,256 per day to \$4,766 in 2010; a 46% increase. Including revenue from species other than scallops, total revenue per day increased in 2010 by 48% (Figure 35).

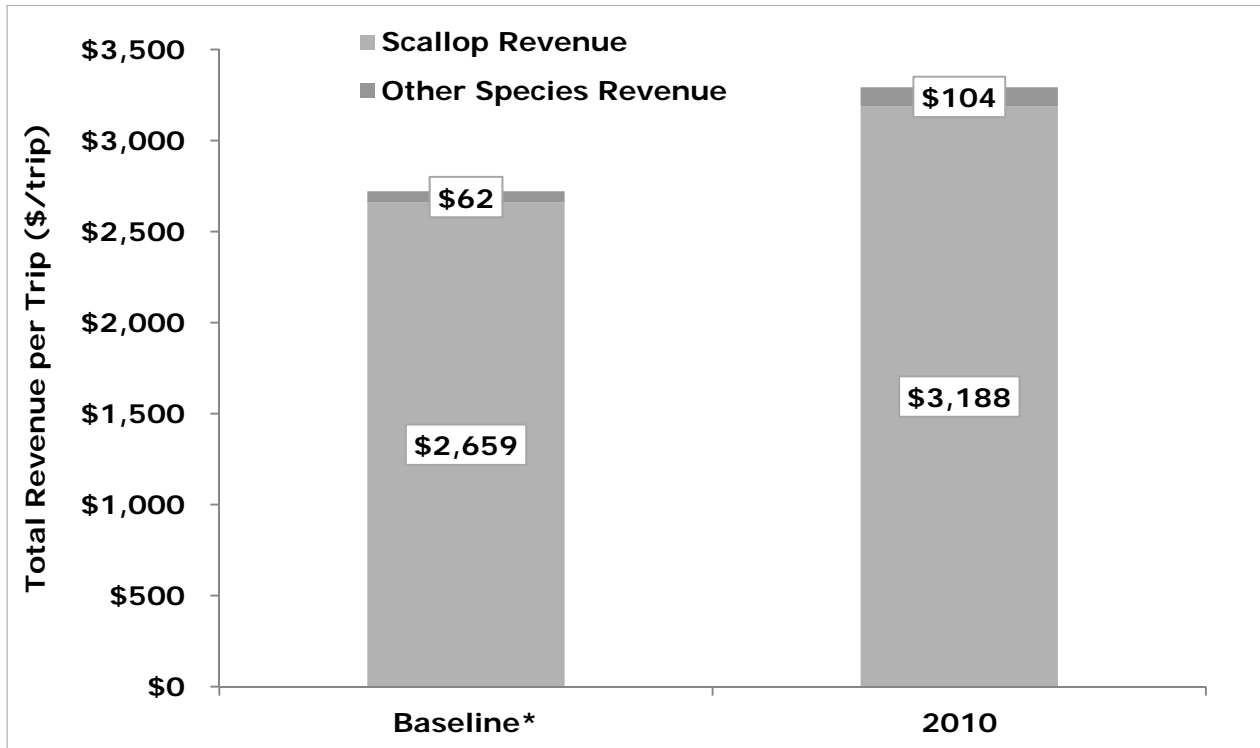


Figure 34. Scallop and non-scallop revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Northeast General Category Scallop IFQ Program

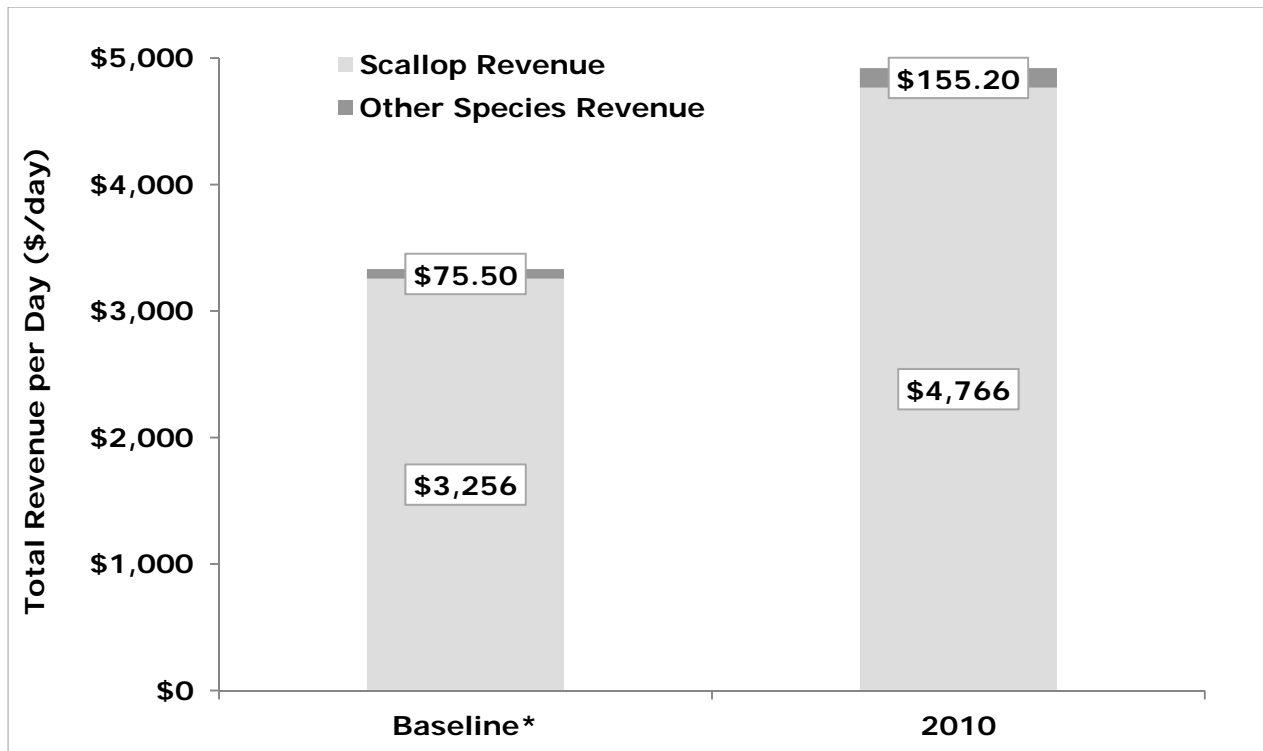


Figure 35. Scallop and non-scallop revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Northeast General Category Scallop IFQ Program

## **Mid-Atlantic Golden Tilefish IFQ Program**

### **a. Management History**

The Fishery Management Plan (FMP) for the Mid-Atlantic golden tilefish fishery was first implemented in 2001. The original FMP implemented a limited entry program establishing a tiered permitting system based on level of participation in the fishery. The fishery was managed with an overall landings limit that was sub-divided among each of the permit categories. The FMP included an open access permit category subject to a low trip limit to accommodate incidental quantities of golden tilefish that are occasionally landed while fishing for other species.

After setting aside 5% of the total quota to account for expected incidental landings in other fisheries. These fisheries are not quota managed, and are instead subject to a low trip limit. The remaining 95% of the annual quota was subdivided among the limited access permit categories including Full-Time Tier 1, Full-Time Tier 2 and Part-Time with two-thirds assigned to the Full-Time Tier 1 permit category, 15% to the Full-Time Tier 2 category and 19% assigned to the part-time category. Fishermen in the Full-Time Tier 1 permit category were able to come to an agreement between themselves to manage the quota allocated to the permit category as a whole in such a way that harvesting could be timed to market conditions. This cooperative agreement allowed individuals in the permit category to stay within their collective quota while avoiding market gluts and spreading landings throughout the year. Fishermen in the other permit categories were unable to come to agreement on any similar cooperative arrangements resulting in an early closure of the Full-Time Tier 2 fishery in 2005 and 2006 and the part-time quota was closed early in 2002, 2004, 2005, and 2006. These early closures prompted the Mid-Atlantic Fishery Management Council to develop a catch share program for the golden tilefish fishery. Amendment 1 to the FMP was submitted in 2008 and the Individual Fishing Quota became effective in 2009.

### **b. Objectives**

The primary objectives of the IFQ Program are to reduce overcapacity and eliminate problems associated with the race to fish golden tilefish. Ending the "race to fish" is anticipated to eliminate short fishing seasons, increase market stability, increase flexibility and efficiency of fishing operations, improve safety at sea, improve management and compliance, and provide biological benefits to golden tilefish and other marine resources.

### **c. Key Events/Features**

Golden tilefish management is unique because many key events occurred outside the traditional management process. Prior to the implementation of the IFQ Program, fishermen crafted internal agreements that aided cooperation. Their cooperative operations helped fishing businesses stay viable under the new regulations, which laid the foundation for implementing the IFQ Program (Kitts et al. 2007<sup>9</sup>).

The IFQ Program permits allocations to be transferred on a permanent basis or on an annual basis (leased) to another entity. A cap on accumulation of golden tilefish quota shares was set at 49% of the total quota shares. This accumulation cap was set at the same time the IFQ Program was implemented. The IFQ Program also established cost recovery for purposes of recovering the costs of data collection, monitoring, and enforcement of the program. Although the golden tilefish fishing year runs from November 1 through October 31, the cost recovery fee is based on expenses and landings made during each calendar year. In 2010, total recoverable

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<sup>9</sup> Kitts, A., Pinto da Silva, P. and Rountree, B. 2007. The evolution of collaborative management in the Northeast USA tilefish fishery. [Marine Policy](#), vol. 31(2): 192-200.

costs of \$21,438 represented 0.43% of the fishery ex-vessel value during the fee period. In 2011, total recoverable costs of \$20,907 represented 0.39% of the fishery value during the fee period.

**d. Recent Trends**

- i. Catch and Landings – All values are reported in whole weight pounds.

The golden tilefish fishery opens on November 1 of each year and closes October 31 of the following year. Annual data reported herein are for fishing years 2010 and 2011, which correspond to November 2009 to October 2010 and November 2010 to October 2011 respectively. The Baseline Period years for the golden tilefish fishery include fishing years 2007-2009.

The annual quota for golden tilefish averaged 1.86 million pounds during the 2007-2009 Baseline Period years and was 1.90 million pounds in both 2010 and 2011 (Figure 36). Landings during the Baseline Period were 1.7 million pounds. During 2010 and 2011, total landings increased to 1.92 and 1.88 million pounds, respectively. Utilization of golden tilefish quota increased in 2010 and 2011 compared to the 2007-2009 average of 93.7% (Figure 37), although landings exceeded the quota during 2010 by 1.5%.

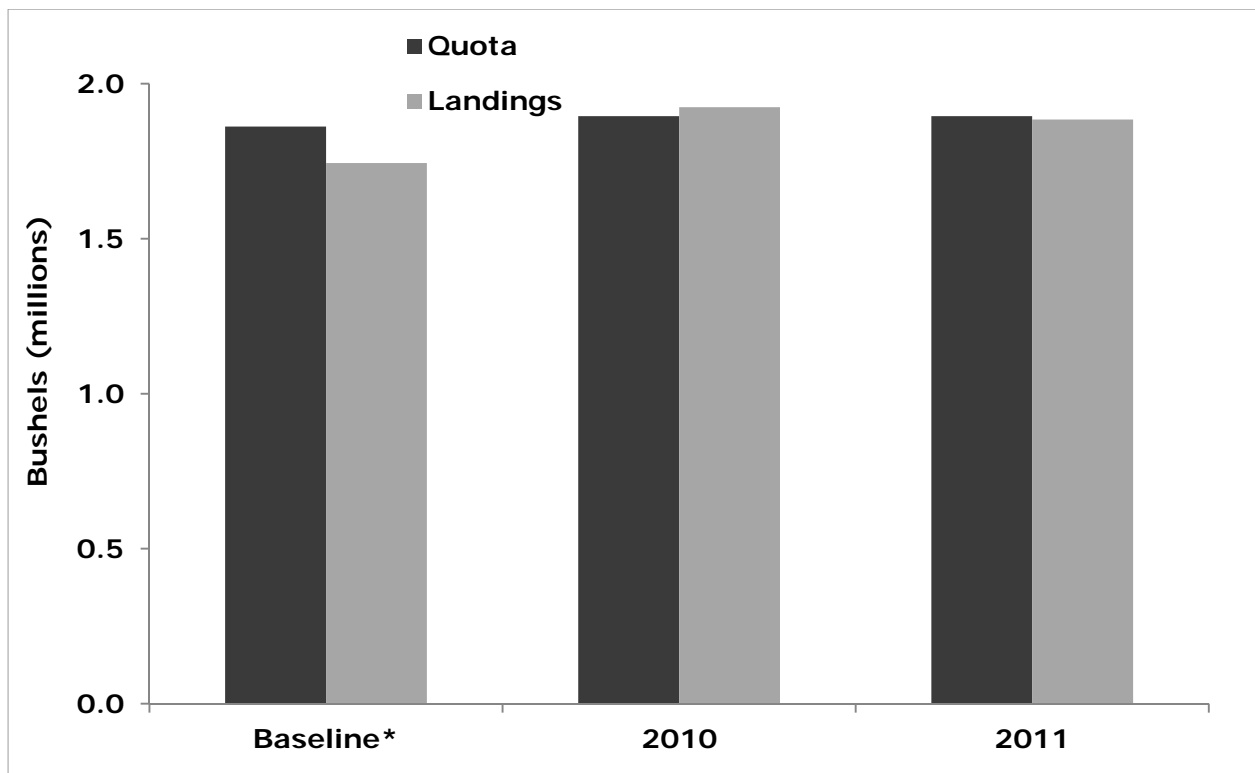


Figure 36. Quota and Landings in the Mid-Atlantic Golden Tilefish IFQ Program

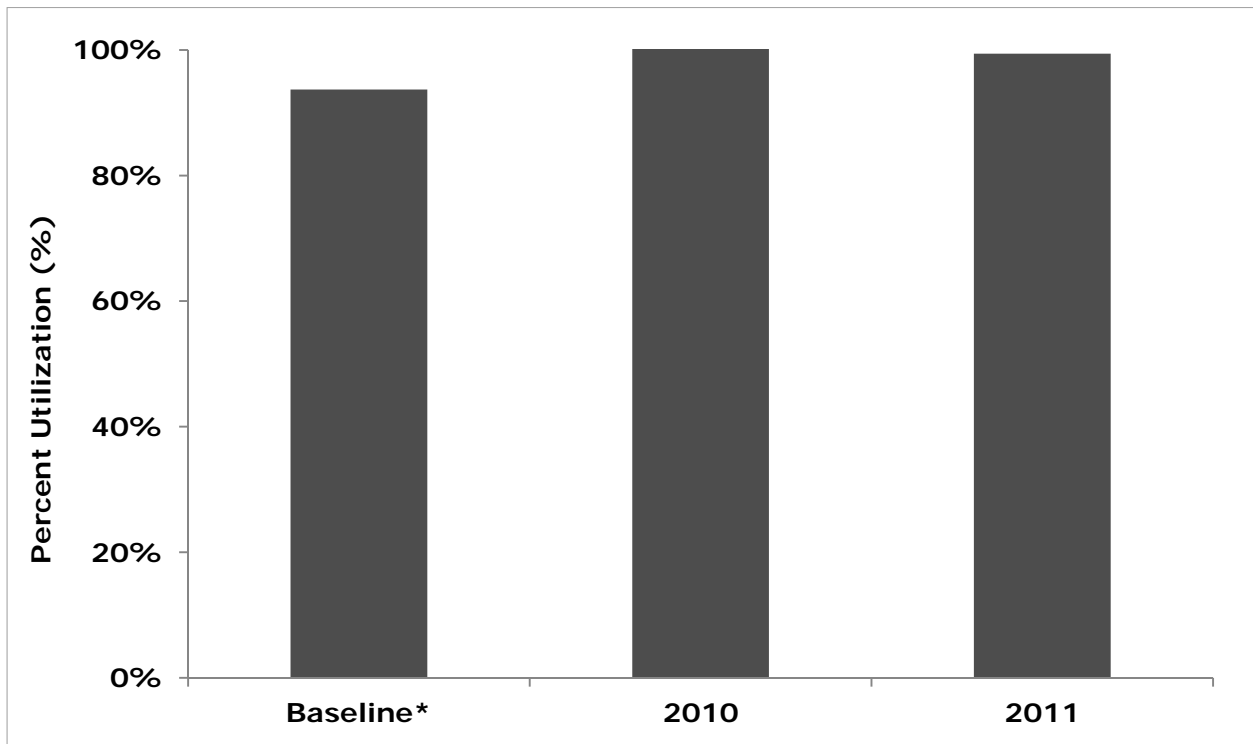


Figure 37. Utilization of available quota in the Mid-Atlantic Golden Tilefish IFQ Program

ii. Effort

Prior to program implementation there were about 30 vessels in the three limited access permit categories that were eligible to receive a quota share. However, due to inactivity in the fishery only 15 of the 30 eligible entities were issued a quota share in the first year of the program (Figure 38). In 2011, 13 entities were issued a quota share. On average, 14 vessels were active in the golden tilefish fishery during the Baseline Period (Figure 39).

In terms of fishing effort, both the number of trips taken on which golden tilefish was landed (Figure 40) and the days spent fishing (Figure 41) on those trips has declined. Total trips declined from 138 during the Baseline Period to 115 and 97 in 2010 and 2011, respectively. Likewise, days at sea declined from 1,780 in the Baseline Period to 925 days in 2011. On average, trip duration has declined from 12.9 days during 2007-2009 to 9.5 days in 2011.

As noted previously, the Full Time Tier 1 permit category did not exceed the golden tilefish quota allocated to the category in any year since the FMP was adopted in 2001. However, early closures in the other permit categories did occur resulting in shortened seasons averaging 310 days during the 2007-2009 Baseline Period (Figure 42). Since the IFQ Program was implemented, the fishery has not experienced any early closures resulting in golden tilefish being available to the market for the entire year in both 2010 and 2011.

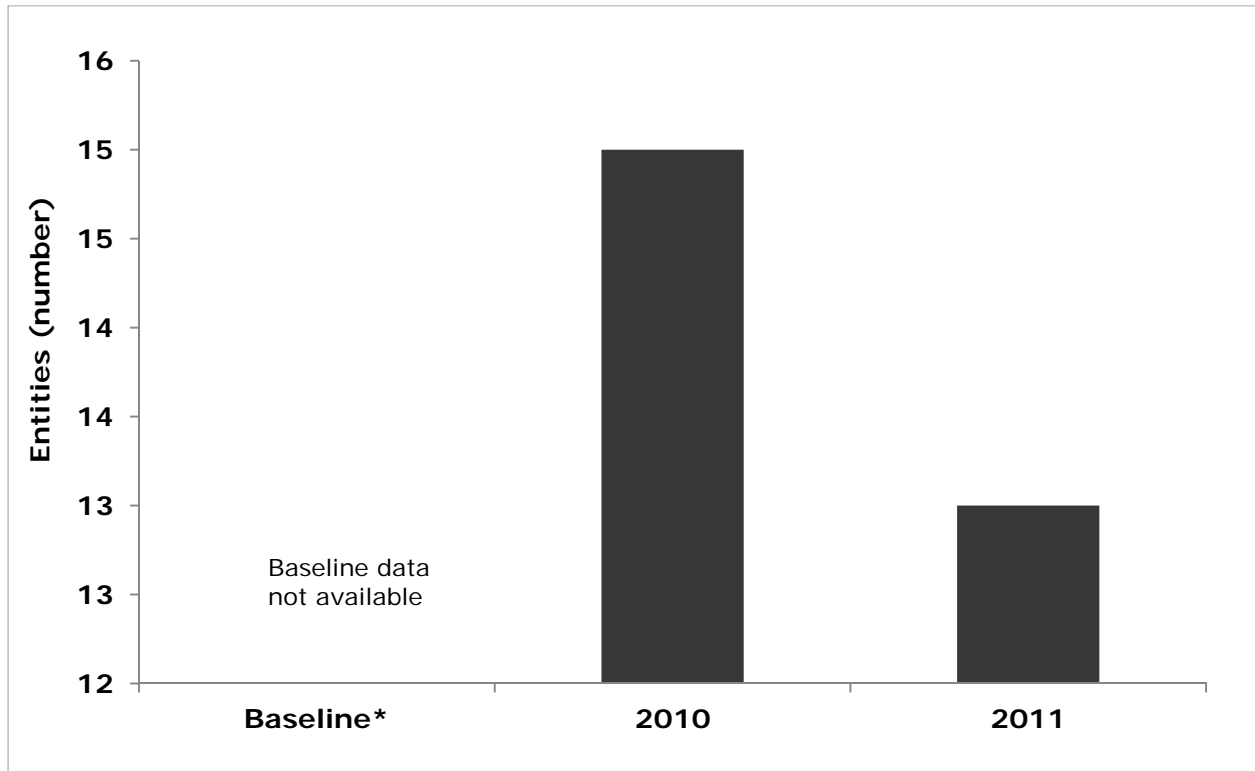


Figure 38. Number of entities holding share in the Mid-Atlantic Golden Tilefish IFQ Program

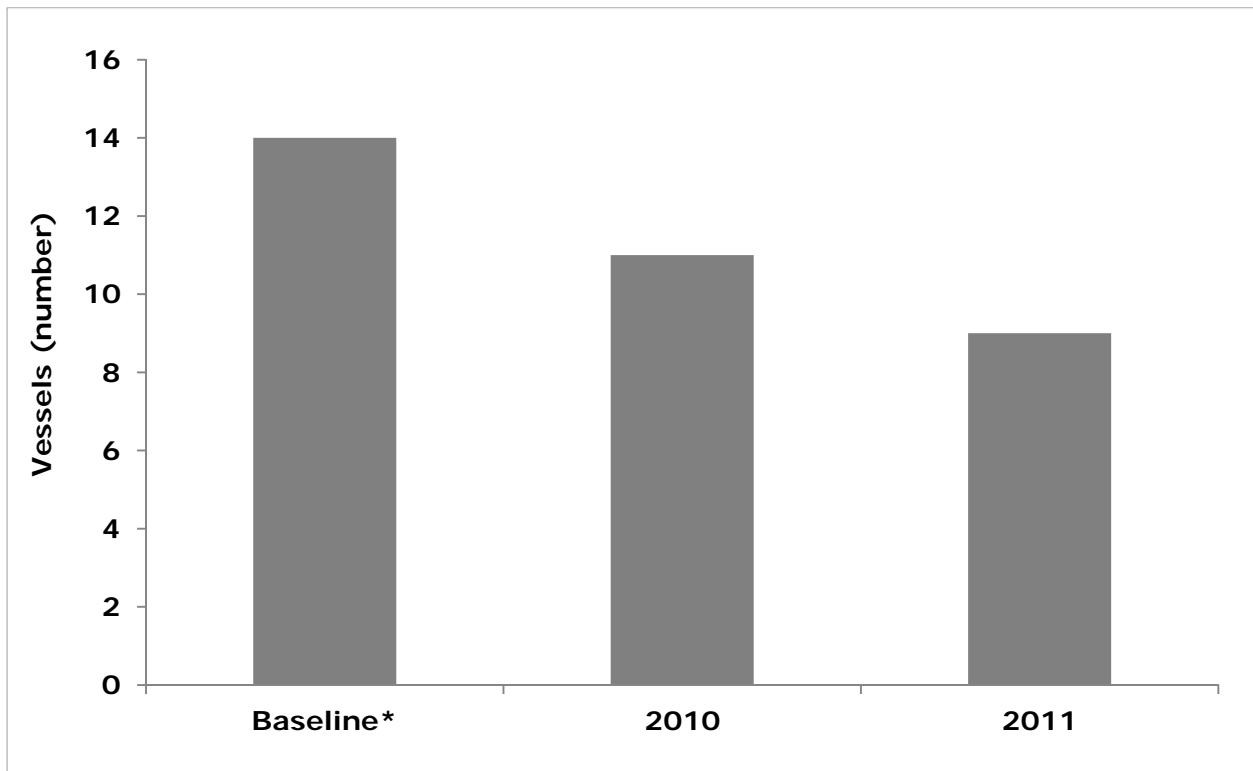


Figure 39. Active vessels fishing quota in the Mid-Atlantic Golden Tilefish IFQ Program

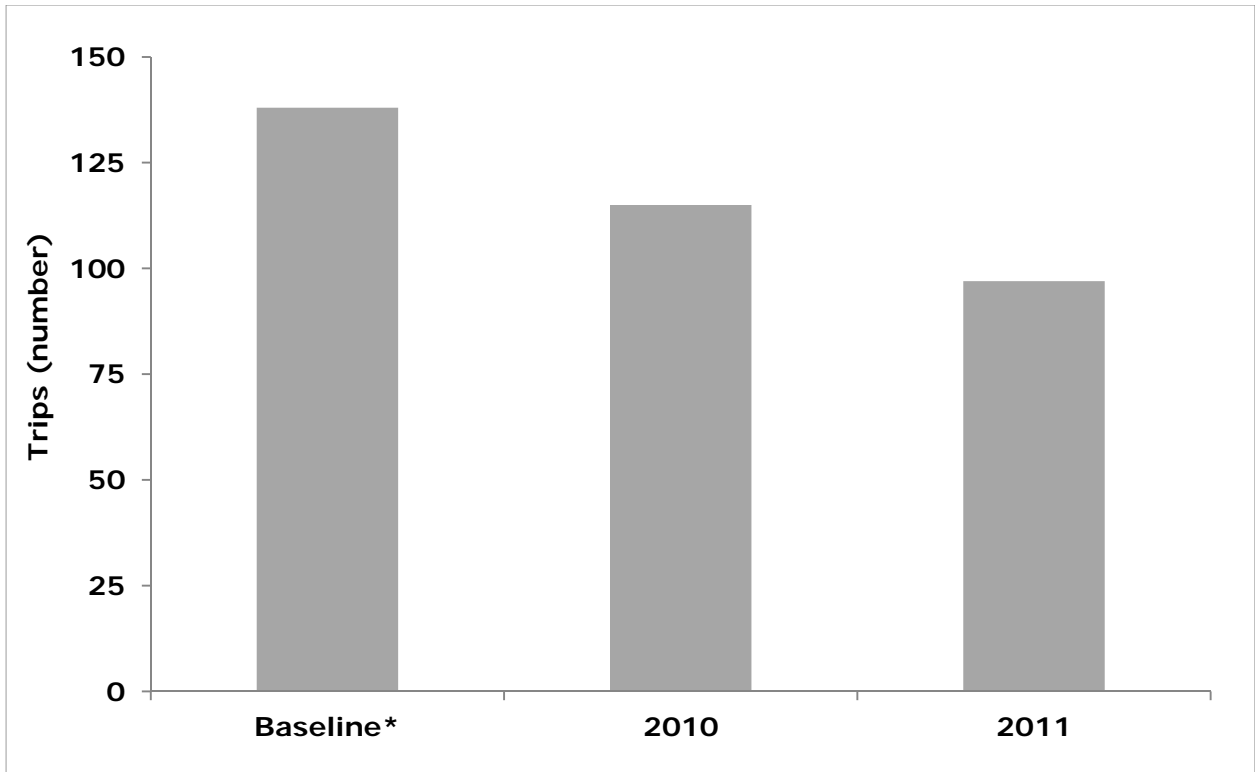


Figure 40. Number of trips harvesting golden tilefish in the Mid-Atlantic Golden Tilefish IFQ Program

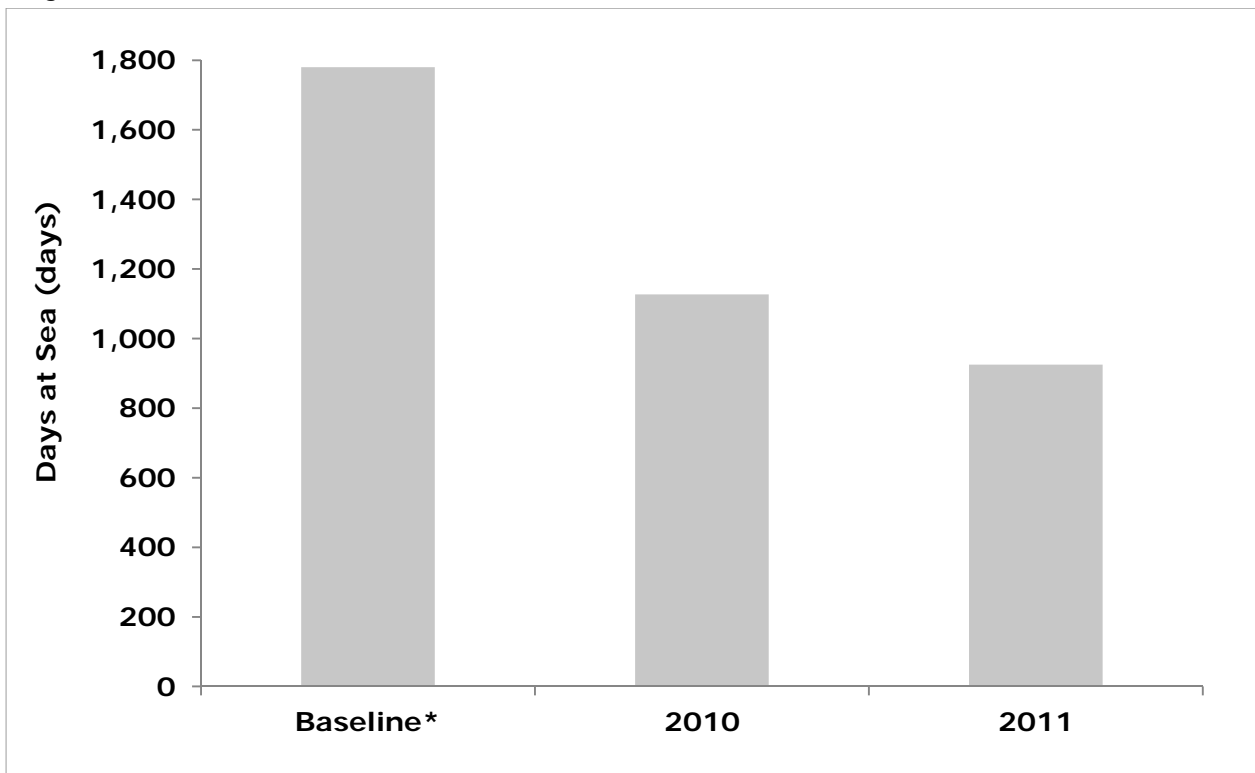


Figure 41. Number of days at sea on trips fishing quota in the Mid-Atlantic Golden Tilefish IFQ Program



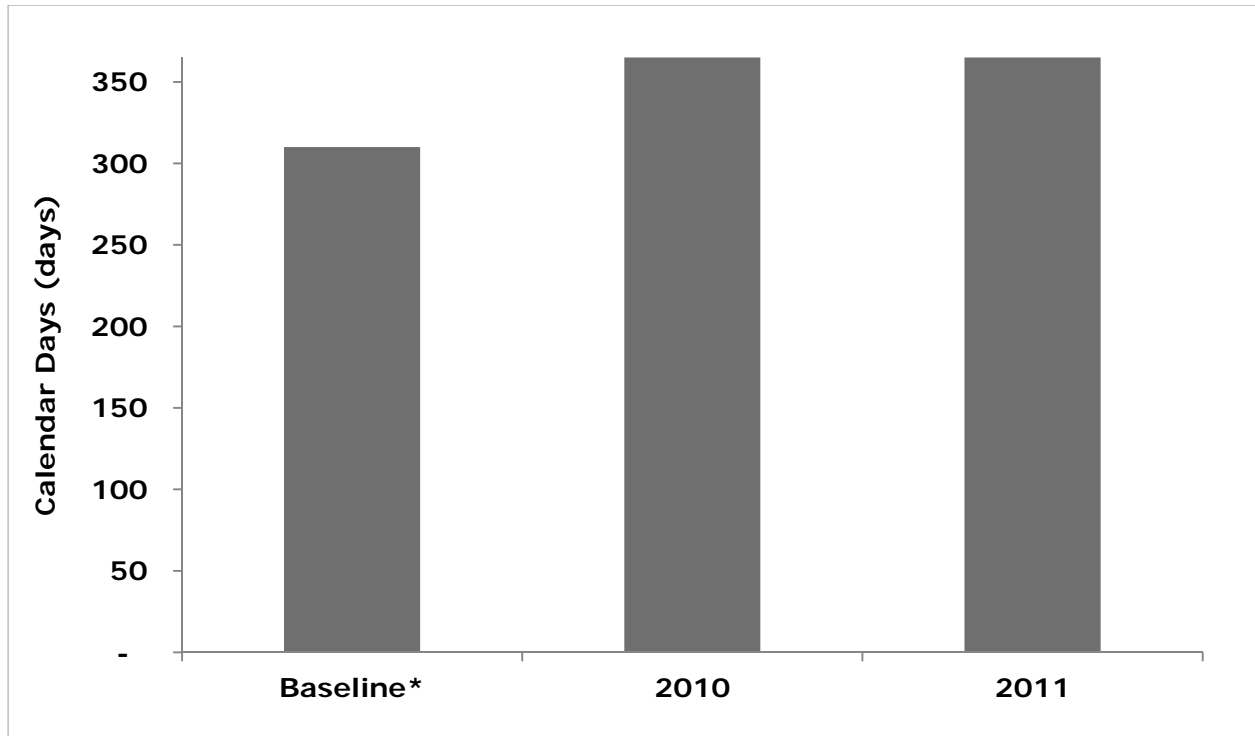


Figure 42. Season length (days) in the Mid-Atlantic Golden Tilefish IFQ Program

- iii. Revenue – All revenue data have been adjusted by the GDP deflator indexed for 2010.

Revenue from golden tilefish was higher in both 2010 and 2011 compared to the 2007-2009 Baseline Period (Figure 43). The improvement in total revenue in 2010 was primarily due to landings, as the average price for golden tilefish was nearly identical to that of the Baseline Period average (Figure 44). However, the average price received for golden tilefish increased from \$2.56 per pound in 2010 to \$2.83 per pound in 2011. This price increase resulted in an 8% increase in golden tilefish revenues in 2011 over the previous year.

Golden tilefish are targeted in deep water using bottom longline gear. While other species may be landed on trips that target golden tilefish, revenue from other landings are fairly small and have declined since the IFQ Program was implemented. During the Baseline Period the proportion of revenue from species other than golden tilefish on trips where golden tilefish were landed was approximately 4% of total trip revenue. However, in both 2010 and 2011 the proportion of revenue from species other than golden tilefish declined to 0.3% and 0.1%, respectively. For this reason, the remaining revenue-based performance measures will be reported only for golden tilefish revenues.

Given increasing total revenues and fewer active vessels, revenue per vessel increased in both 2010 and 2011 (Figure 45). In fact, 2011 revenue per vessel (\$590,000) was nearly twice that of the Baseline Period (\$320,000).

Coupling the reduced number of trips and days at sea with increasing revenues means that both revenue per trip (Figure 46) and revenue per day (Figure 47) increased in both 2010 and 2011. Revenue per trip increased from just over \$32,000 in the Baseline Period to about \$43,000 in 2010 and increased to nearly \$55,000 in 2011, a change of 69% in revenue per trip over the Baseline Period. Since days spent fishing went down proportionally more than the number of

trips, relative to the 2007-2009 Baseline Period average, the 2011 increase in revenue per day was even greater (129%).

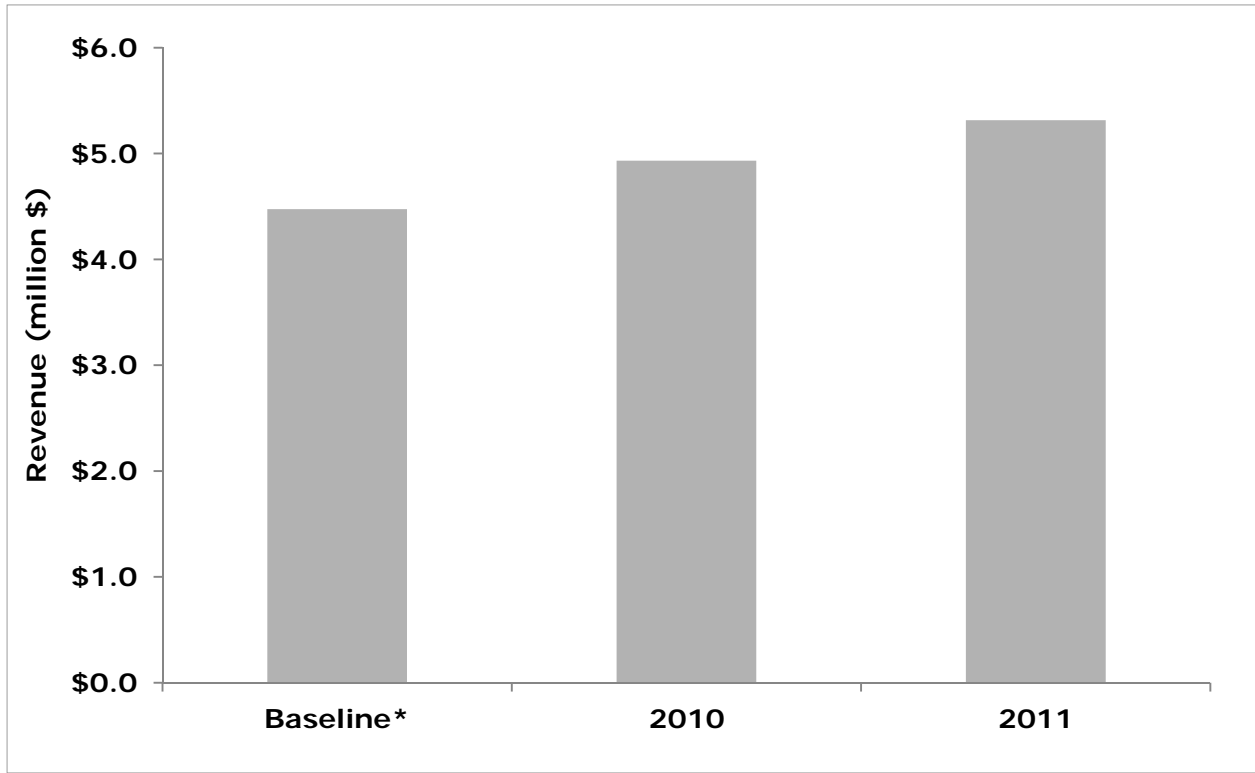


Figure 43. Total golden tilefish and non-golden tilefish revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Mid-Atlantic Golden Tilefish IFQ Program

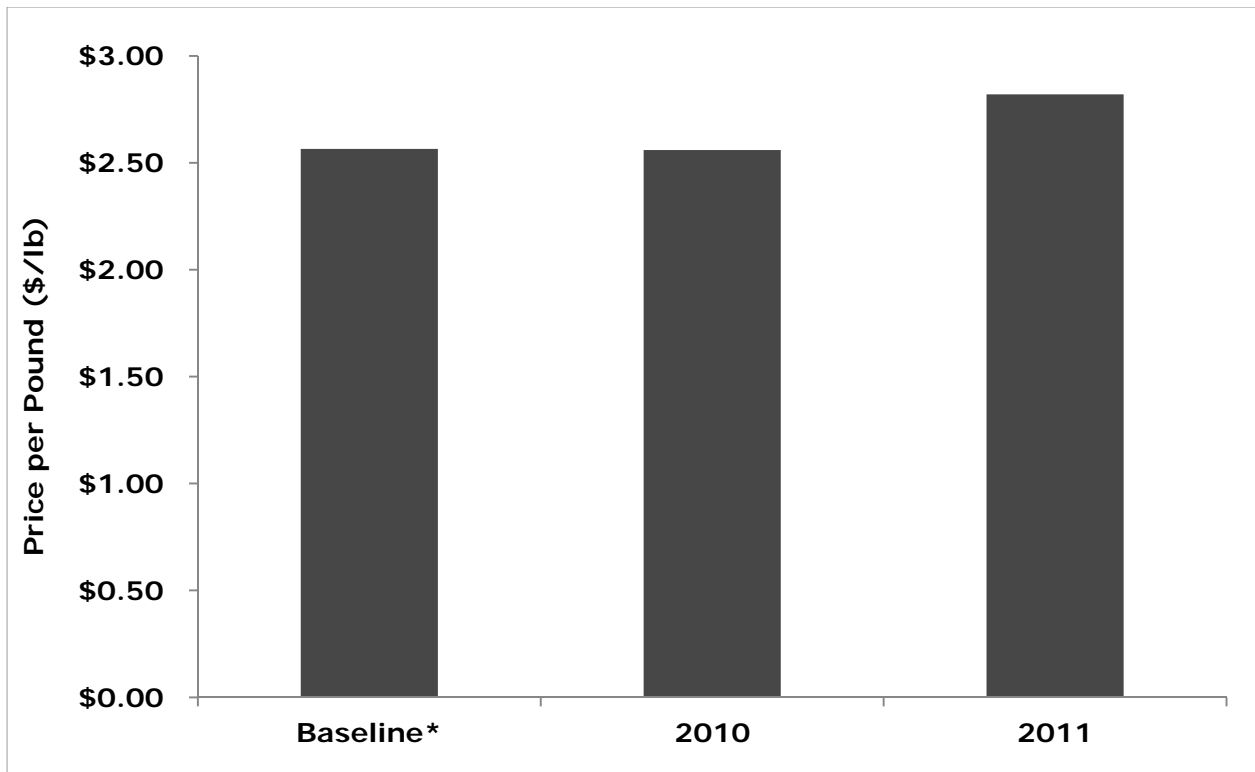


Figure 44. Average golden tilefish price per pound (inflation-adjusted 2010 dollars) in the Mid-Atlantic Golden Tilefish IFQ Program

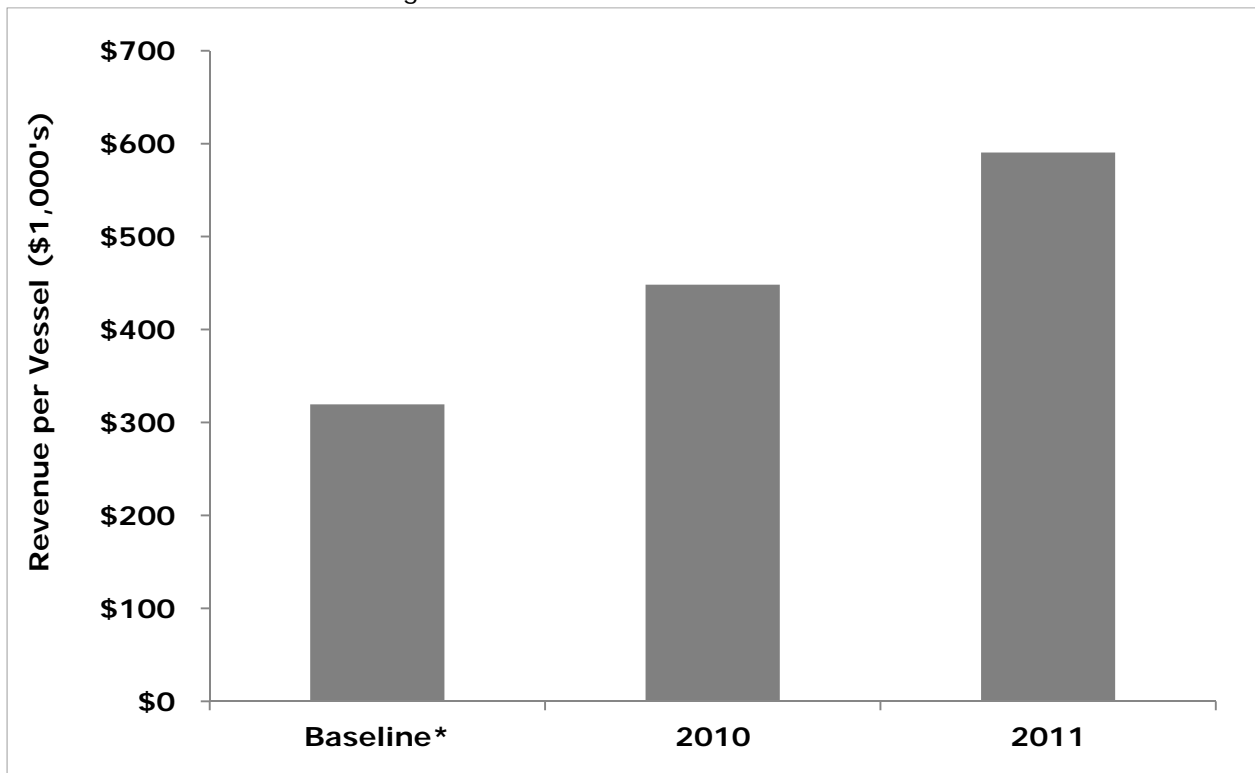


Figure 45. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Mid-Atlantic Golden Tilefish IFQ Program

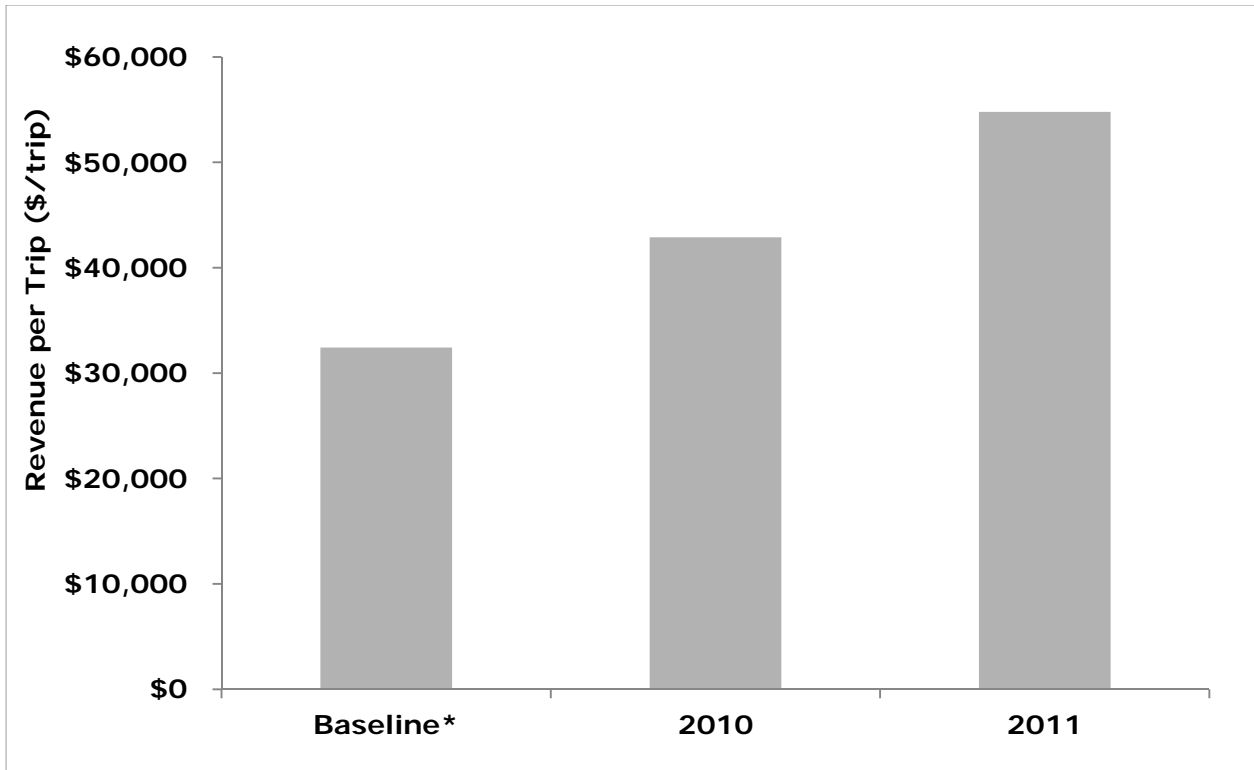


Figure 46. Revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Mid-Atlantic Golden Tilefish IFQ Program

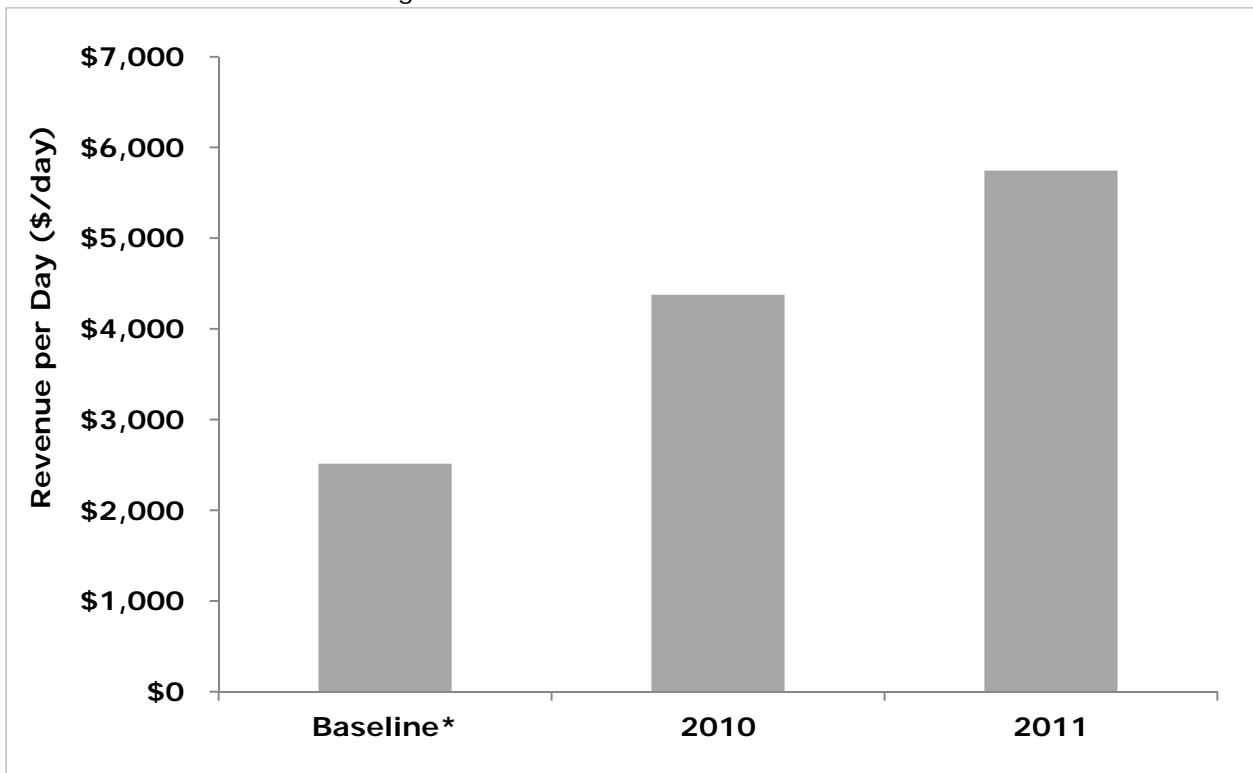


Figure 47. Revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Mid-Atlantic Golden Tilefish IFQ Program

## **Northeast Multispecies Sectors Program**

### **a. Management History**

The Northeast multispecies fishery, hereafter, referred to as the groundfish fishery, is managed by the New England Fishery Management Council (NEFMC) and NOAA Fisheries. The groundfish fishery is prosecuted using both fixed (gillnet and hook gears including bottom longline, tub trawls and rod and reel) and otter trawl gears. The groundfish resource is distributed throughout waters of the Gulf of Maine and Georges Bank and to a lesser extent Southern New England and the Mid-Atlantic bight. In all, a total of 19 stocks are managed under the Northeast Multispecies FMP (Groundfish Plan) including three Georges Bank stocks of cod, haddock, and yellowtail founder that are jointly managed between the US and Canada under a transboundary resource sharing arrangement.

The Groundfish Plan was implemented in 1986 with a combination of minimum fish sizes and area-based controls intended to reduce effort and provide spawning protection for haddock and yellowtail founder. These measures and a series of Plan amendments were not sufficient to meet biological objectives, which eventually led to implementation of Amendment 5 in 1994. Amendment 5 included a moratorium on issuing groundfish permits and introduced an effort control program based on scheduled reductions in days-at-sea (DAS) supplemented by a number of indirect effort controls. Amendment 5 exempted some permit categories from the moratorium and exempted a substantial number of vessels from DAS controls. Nearly all of these exemptions were removed two years later with the implementation of Amendment 7 in 1996. Among a number of other measures taken at the time, Amendment 7 also accelerated the DAS reduction schedule established under Amendment 5. In the same year that Amendment 7 was implemented, the Magnuson-Stevens Act was reauthorized and amended to include a requirement to end overfishing. As a result, Councils were also required to revise each FMP to end overfishing and to rebuild overfished stocks. In meeting these new requirements, the NEFMC developed Amendment 9 (implemented in 1999) which established reference points for all groundfish stocks. In 1999, the NEFMC submitted a Report to Congress, which stated that a number of key groundfish stocks were found to be in need of rebuilding. This finding initiated what would eventually become Amendment 13.

Implemented in 2004, Amendment 13 fundamentally redefined initial allocations of DAS and how DAS may be used in the groundfish fishery. More importantly, Amendment 13 introduced a new program called "Sector Allocation." Sector allocation provided fishermen with the ability to voluntarily form a sector that would be bound by a quota instead of the DAS-based effort controls of Amendment 13. The sector quota allocation is based on the aggregated catch histories of the fishermen that join a sector. Additionally, sectors would be allowed to request exemptions from certain regulations, and in the subsequent year, the sector's quota would not be reduced (provided the sector did not exceed its own quota) if the target catch for the stock as a whole was exceeded by the rest of the groundfish fleet. At the time Amendment 13 was implemented only one sector (the Georges Bank Cod Hook Sector) had been submitted to the Council for approval. A second sector (the Georges Bank Cod Fixed Gear Sector) was approved in 2006.

Prior to 2010, the Groundfish Plan established an annual Target Total Allowable Catch (TTAC) for each groundfish stock. The TTAC's were set based on desired fishing mortality rates and were used as a means for determining the need for adjustments to the effort control program in the subsequent year. Exceeding a TTAC did not result in a cessation of fishing although, for some stocks, an in-season adjustment may be triggered to reduce the likelihood that the TTAC would be exceeded. It would not be until the 2007 Magnuson-Stevens Act reauthorization requiring the setting of Annual Catch Limits (ACLs) that the NEFMC would transition from effort controls as the primary management tool coupled with catch targets to output-based controls using sector allocation as the primary management tool. The transition from effort controls to sector

allocation was finalized through Amendment 16, implemented in 2010. Although Amendment 16 retained the underlying principle that sectors remain voluntary, the Amendment changed the qualification period for potential sector contribution (PSC) and provided a means for trading assigned quota or annual catch entitlement (ACE) between sectors. Under Amendment 13 sectors were able to request an allocation for specific stocks. Amendment 16 changed this provision, requiring that sectors be allocated all stocks for which the sector qualifies. Amendment 16 further specified which of the 19 stocks would be allocated to sectors and which stocks would not be allocated. The allocated stocks include Acadian redfish, pollock, white hake, witch flounder, American plaice, winter flounder (Georges Bank and Gulf of Maine), yellowtail flounder (Georges Bank, Cape Cod/Gulf of Maine, and Southern New England/Mid-Atlantic), cod (Gulf of Maine and Georges Bank) and haddock (Gulf of Maine and Georges Bank).

In keeping with the voluntary nature of the sector allocation program, vessel owners may choose to join a sector or remain in the so-called "common pool". Vessel owners that elect to remain in the common pool are principally regulated by DAS supplemented by a suite of additional effort controls such as possession limits, gear restrictions, and area closures. The common pool is also subject to an ACL. Since all vessel permits are assigned a PSC based on catch history, whether or not the permit is enrolled in a sector, the common pool ACL for all stocks is determined by the combined PSC for all permitted vessels in the common pool. In-season accountability measures may be made to specified effort control measures to prevent the common pool ACL from being exceeded.

## **b. Objectives**

In addition to revising and enlarging the role sectors would play in the groundfish fishery, Amendment 16 specified the processes for setting ACLs and Accountability Measures, developed an effort control program for individuals that chose not to join a sector, as well as a substantial number of administrative changes. As such, the goals and objectives for Amendment 16 were broader than that of the sector allocation program alone and were unchanged from that of Amendment 13. These goals were:

Goal 1: Consistent with the National Standards and other required provisions of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable law, manage the northeast multispecies complex at sustainable levels.

Goal 2: Create a management system so that fleet capacity will be commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.

Goal 3: Maintain a directed commercial and recreational fishery for northeast multispecies.

Goal 4: Minimize, to the extent practicable, adverse impacts on fishing communities and shoreside infrastructure.

Goal 5: Provide reasonable and regulated access to the groundfish species covered in this plan to all members of the public of the United States for seafood consumption and recreational purposes during the stock rebuilding period without compromising the Amendment 13 objectives or timetable. If necessary, management measures could be modified in the future to insure that the overall plan objectives are met.

Goal 6: Promote stewardship within the fishery.

The stated objectives of Amendment 16 were:

Objective 1: Achieve, on a continuing basis, optimum yield (OY) for the U.S. fishing industry.

Objective 2: Clarify the status determination criteria (biological reference points and control rules) for groundfish stocks so they are consistent with the National Standard guidelines and applicable law.

Objective 3: Adopt fishery management measures that constrain fishing mortality to levels that are compliant with the Sustainable Fisheries Act.

Objective 4: Implement rebuilding schedules for overfished stocks, and prevent overfishing.

Objective 5: Adopt measures as appropriate to support international transboundary management of resources.

Objective 6: Promote research and improve the collection of information to better understand groundfish population dynamics, biology and ecology, and to improve assessment procedures in cooperation with the industry.

Objective 7: To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation.

Objective 8: Develop biological, economic and social measures of success for the groundfish fishery and resource that insure accountability in achieving fishery management objectives.

Objective 9: Adopt measures consistent with the habitat provisions of the Magnuson-Stevens Act, including identification of Essential Fish Habitat and minimizing impacts on habitat to the extent practicable.

Objective 10: Identify and minimize bycatch, which include regulatory discards, to the extent practicable, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

However, in addition to these broader goals and objectives the NEFMC took the following goals into consideration in the design of the sector allocation process and determination of sector contribution shares:

1. Address bycatch issues;
2. Simplify management;
3. Give industry greater control over their own fate;
4. Provide a mechanism for economics to shape the fleet rather than regulations (while working to achieve fishing and biomass targets); and
5. Prevent excessive consolidation that would eliminate the day boat fishery

### **c. Key Events and Features**

Under the Groundfish Plan a sector is defined as being a "...group of persons (three or more persons, none of which have an ownership interest in the other two persons in the sector) holding limited access vessel permits who have voluntarily entered into a contract and agree to certain fishing restrictions for a specified period of time, and has been granted a Total Allowable Catch (TAC) in order to achieve objectives consistent with applicable FMP goals and objectives." Any such group may request authorization from the NEFMC to operate for the upcoming fishing

year. Once a sector has been authorized by the Council the sector must then be approved by NOAA Fisheries. The approval process includes a requirement to submit a sector Operations Plan that articulates how the sector will distribute its allocation, report and monitor catches, the permit numbers that will be committed to the sector, the regulations from which the sector will request an exemption, and other details that affect the manner in which the sector intends to operate. Individual vessel owners must decide whether or not to join a sector and which sector they will join. The PSC of any vessel that has been committed to a sector must remain with the sector for the entire fishing year even if the vessel itself is sold to another owner. This provision is necessary since it is the combined PSC by all enrolled permits brought into the sector at the beginning of the fishing year that determines the ACE that is assigned to the sector. If a vessel owner does not elect to join a sector then the vessel must fish under the effort control measures for the entire fishing year. Note that it is possible for an individual that owns multiple vessels to place some vessels in more than one sector and some vessels in the common pool.

Since sectors are approved to operate for only one fishing year, the number of sectors may change from one year to the next. This also means that the membership and number of permits that are committed to sectors as well as the number that may opt for the common pool is also subject to change. In the first year of the sector allocation program, a total of 17 different sectors were authorized by the NEFMC and approved by NOAA Fisheries. The number of permits that were enrolled in these sectors represented 54% (765) of all eligible limited access permits, but accounted for nearly 98% of the total sub-ACL allocated to the commercial fishery. One of the 17 sectors was formed by an industry association as a lease-only sector. Any lease-only sector may hold eligible permits with accumulated ACE that can then be made available to vessels in sectors that actively fish for groundfish. During 2011, the number of sectors approved to operate increased to 19 including three lease-only sectors; one of which was a permit bank operated by the State of Maine. The number of eligible permits enrolled in sectors increased to 56% (781) of eligible permits, accounting for approximately 99% of the sub-ACL allocated to the commercial fishery.

#### **d. Recent Trends**

The Baseline Period refers to the average of the three years (2007-2009) prior to implementation of the sector allocation program in 2010. All data are reported in terms of the groundfish fishing year which begins on May 1 and ends on April 30. This means, for example, that the Baseline Period covers the fishing years beginning on May 1, 2007 and ending on April 30, 2009.

- i. Catch and Landings – Annual Catch Limits and catch are reported in live or whole weight. Landed quantities are reported in gutted weight.

Under the Groundfish Plan, the total ACL for each stock is specified in terms of live weight, and total catch (which includes landings and discards) is monitored. A small portion of the total ACL is set aside to account for catches in non-directed fisheries. Sub-ACLs with accompanying Accountability Measures are allocated to account for several sources of mortality including bycatch of haddock in the Atlantic herring fishery, yellowtail flounder in the scallop fishery, state waters, recreational catch, and to the commercial fishery. The sub-ACL allocated to the commercial fishery is sub-divided into a sector sub-ACL or ACE and a common pool sub-ACL. The aggregate ACL allocated to sectors during fishing year 2010 was 179 million pounds and 162 million pounds in 2011. The decline in the 2011 total ACL was anticipated since the ACLs for both 2010 and 2011 were specified under Framework Adjustment 44 to the Groundfish Plan. A substantial portion of the reduced ACL in 2011 is due to the lower Georges Bank haddock ACL as the impact of the extraordinarily large 2003 year class diminishes over time. However, the actual ACE available to sectors during 2011 included carryover of unused ACE from 2010. Including



carryover, the total ACE in 2011 was 179 million pounds, the same as it was during 2010 (Figure 48).

During the 2007-2009 Baseline Period, TTACs averaged a combined 268 million pounds. This Baseline Period average was constructed to approximate the TAC that would be comparable to stocks that were allocated to sectors during 2010 and 2011. The Baseline Period average is significantly higher for several reasons. First, the influence of the 2003 year class of Georges Bank haddock during the Baseline Period was substantially larger than during 2010 or 2011. Second, the fishing mortality rates required for rebuilding differed during the Baseline Period. Last, the target TACs set during the Baseline Period were not required to explicitly account for scientific or management uncertainty. It is probable that had the processes implemented under Amendment 16 been in place during the Baseline Period, the target TACs would have been lower during this period.

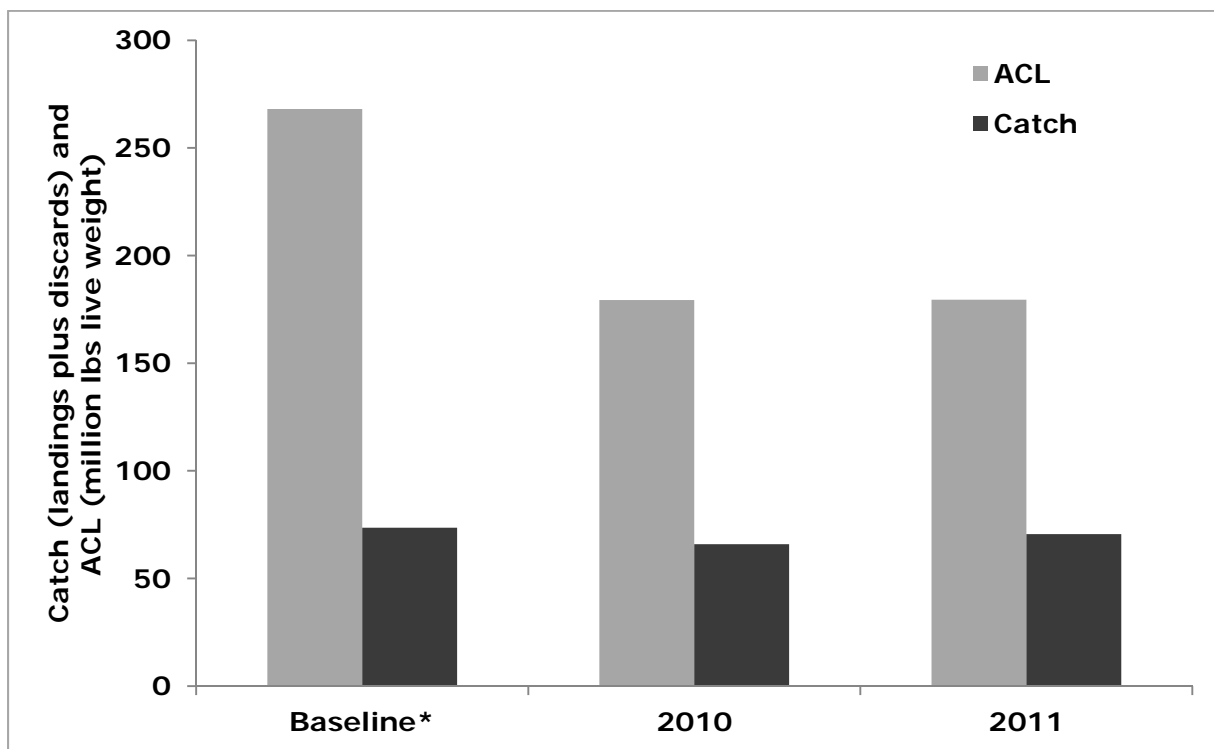


Figure 48. Catch and Baseline Period target TAC and ACLs in the Northeast Multispecies Fishery

Total catch averaged 74 million pounds during the 2007-2009 Baseline Period (Figure 48) for an average utilization rate of 27% (Figure 49). Utilization of the ACE assigned to sectors during 2010 was just under 37% and increased to just over 39% during 2011. This improvement in utilization rate was due to the fact that total catch increased while the 2011 ACE including carryover was the same as it was during 2010. Compared to the Baseline Period, the improved utilization rate in both 2010 and 2011 was partially due to the sector allocation program and partially due to the change in ACL. However, the lower ACL in 2010 and 2011 had a larger influence on the utilization rate than the sector allocation program since the lower ACL (-33%) was substantially greater than the change in catch in both 2010 and 2011.

During the Baseline Period, at least one of the TTACs was exceeded for the allocated groundfish stocks in each year. Specifically, the Southern New England/Mid-Atlantic yellowtail flounder TAC

was exceeded in both 2007 and 2008, the white hake TTAC was exceeded in 2008, and both Gulf of Maine cod and pollock TTACs were exceeded in 2009. None of the sector sub-ACLs were exceeded in either 2010 or 2011.

Landings of groundfish averaged 68 million pounds during the 2007-2009 Baseline Period (Figure 50). Landings declined to 57 million pounds in 2010, but increased to 61 million pounds in 2011. Note that Baseline Period landings only include species that were allocated to sectors during 2010 and 2011. Additionally, Baseline Period landings were estimated only for the vessels that had elected to be in a sector during 2010. This means that the Baseline Period average landings are comparable to landings in 2010 and 2011. Landings during fishing year 2011 improved by 6.9%, but were still about 10% lower than the 2007-2009 average.

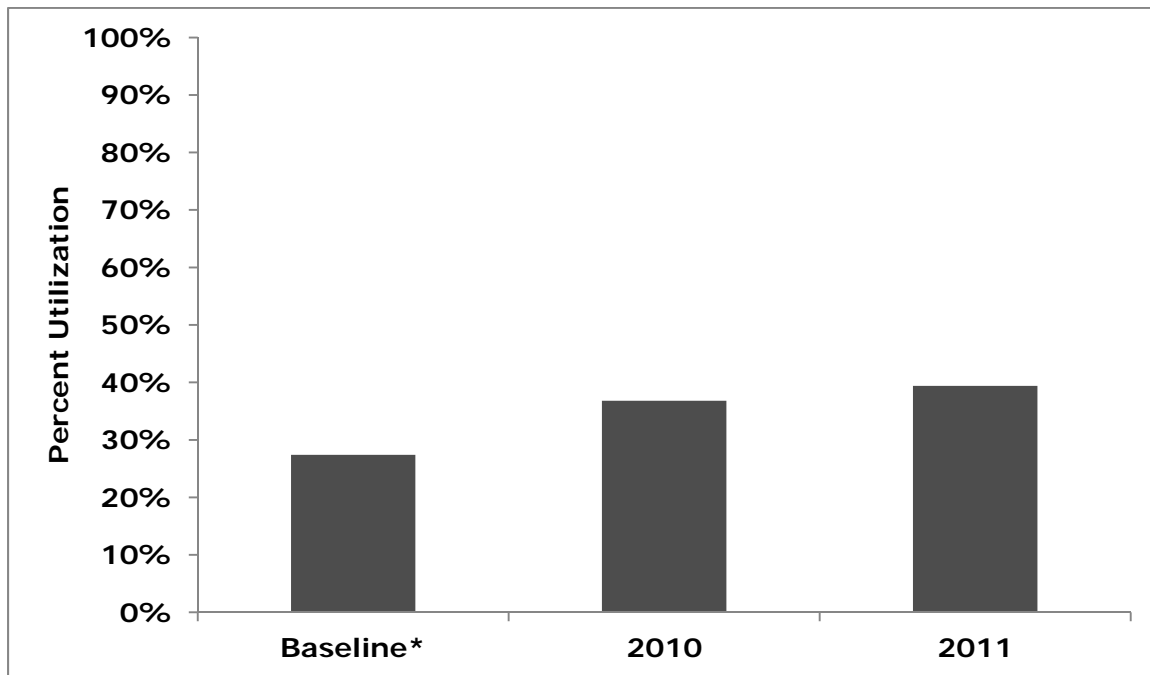


Figure 49. Utilization of Baseline Period catch target and utilization of annual catch entitlement in the Northeast Multispecies Fishery

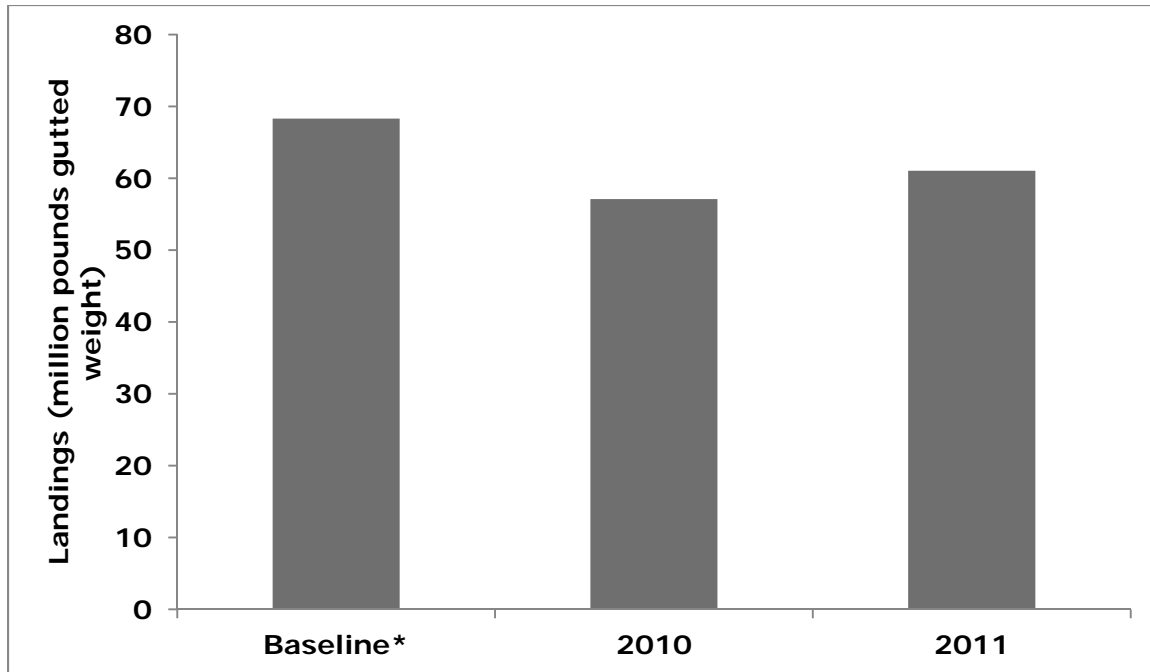


Figure 50. Landings of allocated groundfish species in the Northeast Multispecies Fishery

ii. Effort

There were a total of 1,401 limited access permits held by vessel owners during the 2007-2009 Baseline Period (Figure 51). These permits represent the potential universe of vessel permits that may be enrolled in a sector. In 2010, the number of eligible vessel permits increased slightly to 1,408, but declined to 1,321 in 2011. During 2010, there were 765 (54% of all eligible) vessel permits with PSC that elected to join a sector. In 2011, the number of vessel permits with PSC that enrolled in a sector increased to 781 or 59% of all eligible vessel permits (Figure 51).

On average, 612 limited access vessels participated in the groundfish fishery (vessels that landed groundfish on at least one trip) during the 2007-2009 Baseline Period (Figure 52). The total number of participating vessels (i.e., sector plus common pool) declined to 445 vessels in 2010 and declined again in 2011 to 420 vessels. The number of active sector vessels was 303 in 2010, while the number of active sector vessels went down slightly to 301 in 2011. In each of these years, the number of active sector vessels as a percent of vessel permits enrolled in sectors was nearly identical at 39.6% and 39.0% in 2010 and 2011, respectively. This level of participation was higher compared to the common pool participation rate, which was 22% in both 2010 and 2011.

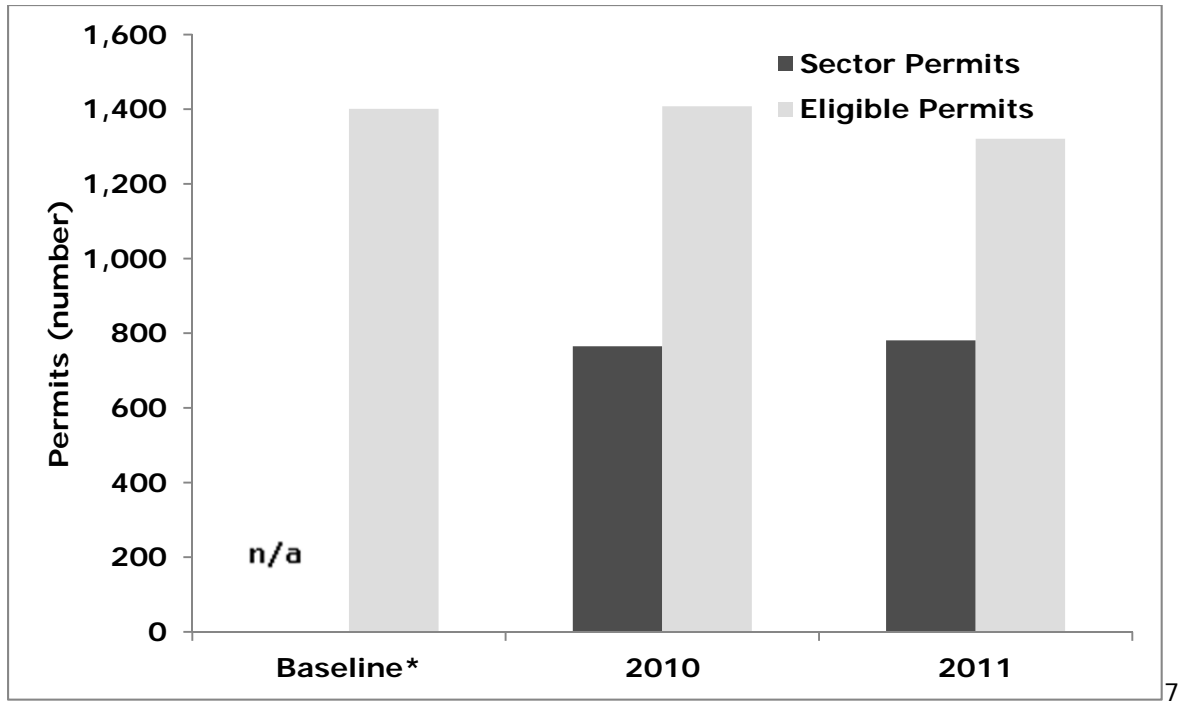


Figure 51. Number of eligible limited access permits and number of sector permits enrolled in the Northeast Multispecies Fishery

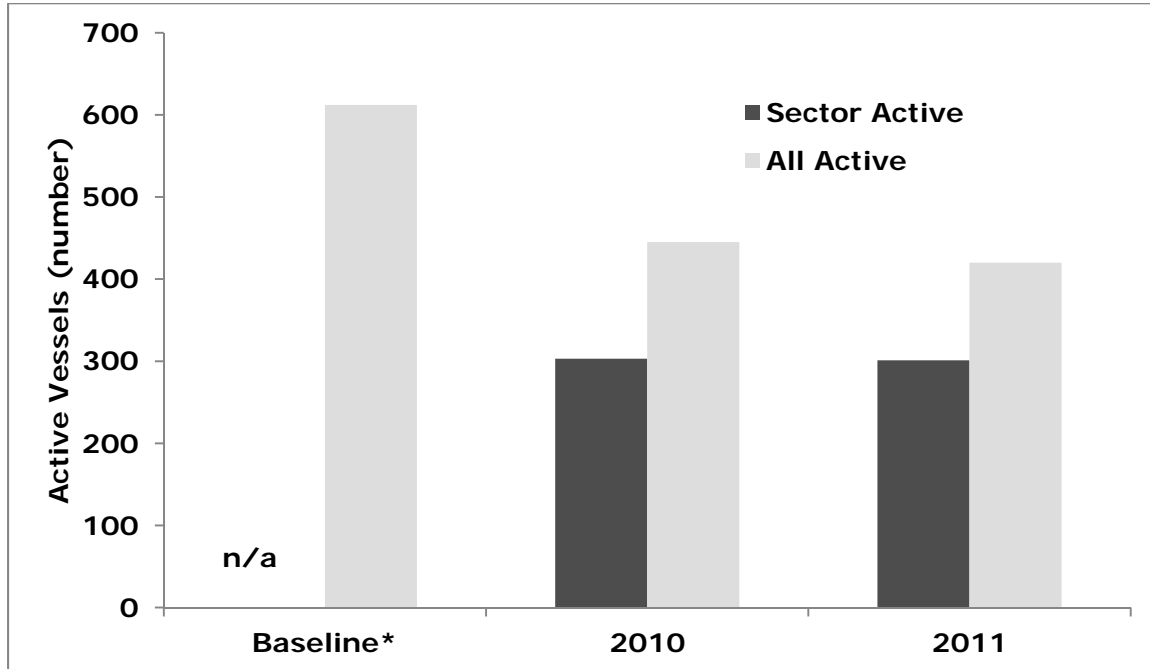


Figure 52. Active vessels (sector plus common pool) and active sector vessels fishing quota in the Northeast Multispecies fishery

On average, 26,500 trips were taken on which allocated groundfish species were landed during the Baseline Period ( Figure 53). During 2010, sector vessels took 11,160 groundfish trips. The number of groundfish trips taken during 2011 increased 22% to 13,600 compared to 2010. Total days absent on groundfish trips averaged 26,750 days during the Baseline Period (Figure 54). Total days absent by sector vessels during 2010 were 16,000 days while days absent during 2011 totaled 19,000 days. During 2007-2009, trip duration averaged 24-hours. On average groundfish trip duration for sector vessels was higher during 2010 and 2011, averaging 1.4 days or 33.6 hours per trip.

Taken as a whole, the groundfish fishery is a year-round fishery. Furthermore, it is a multispecies fishery with a high degree of substitutability among species in seafood markets. This means that even in-season adjustments affecting one species or stock have comparatively little impact on the availability of fresh fish to the market throughout the year. With the exception of the three stocks included in the U.S./Canada resource sharing understanding, the target TACs set for the rest of the groundfish fishery were used as a tool to gauge whether or not the Groundfish Plan would need to be adjusted so as not to shut down the fishery during the year. Consequently, the fishery was effectively open for 365 days during the 2007-2009 Baseline Period (Figure 55). The sector allocation program did not change the season length.

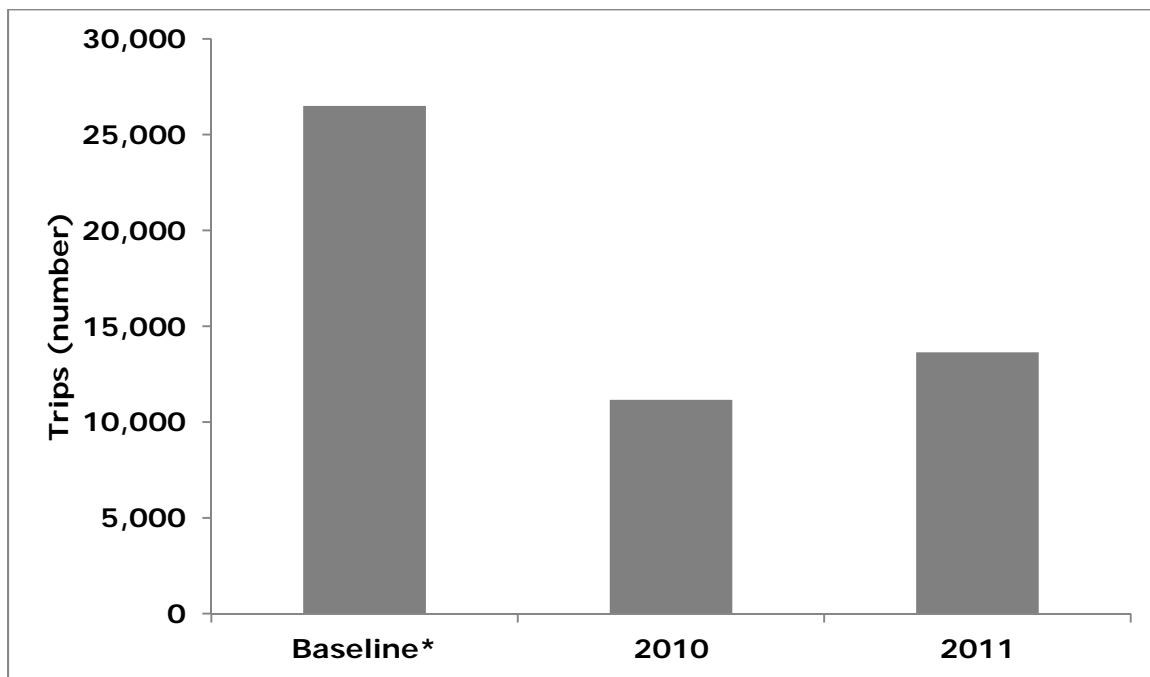


Figure 53. Number of trips taken by sector vessels harvesting groundfish in the Northeast Multispecies Fishery

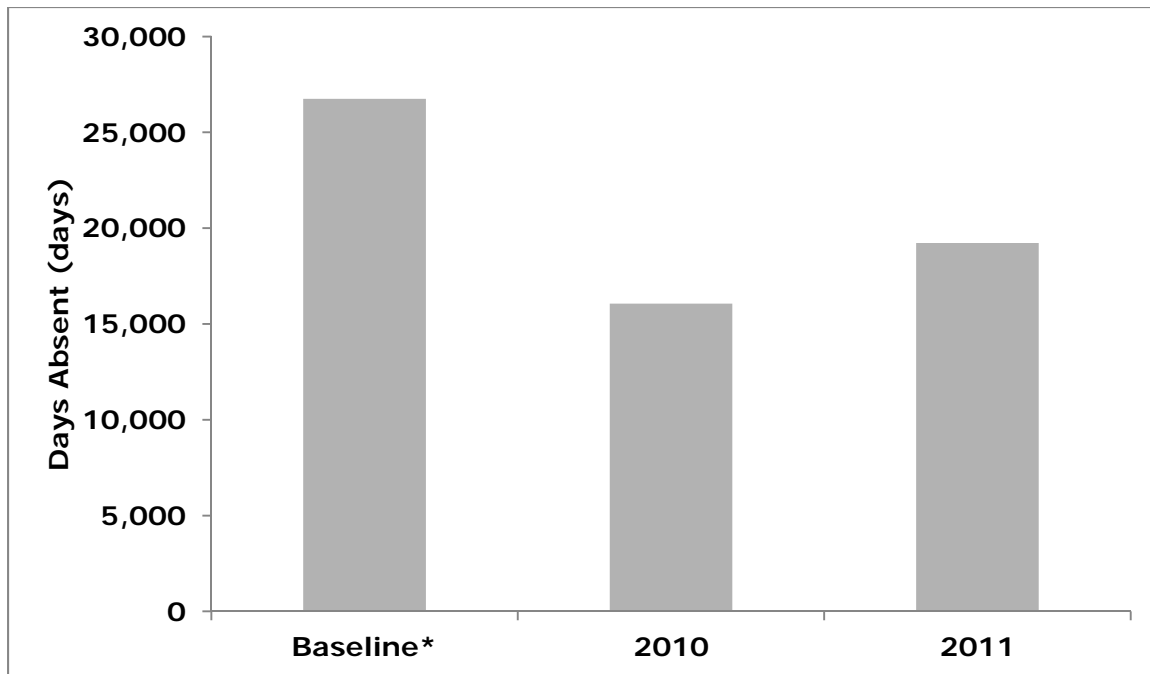


Figure 54. Number of days at sea on groundfish trips by all vessels during the Baseline Period and number of days absent on trips fishing quota in the Northeast Multispecies Fishery

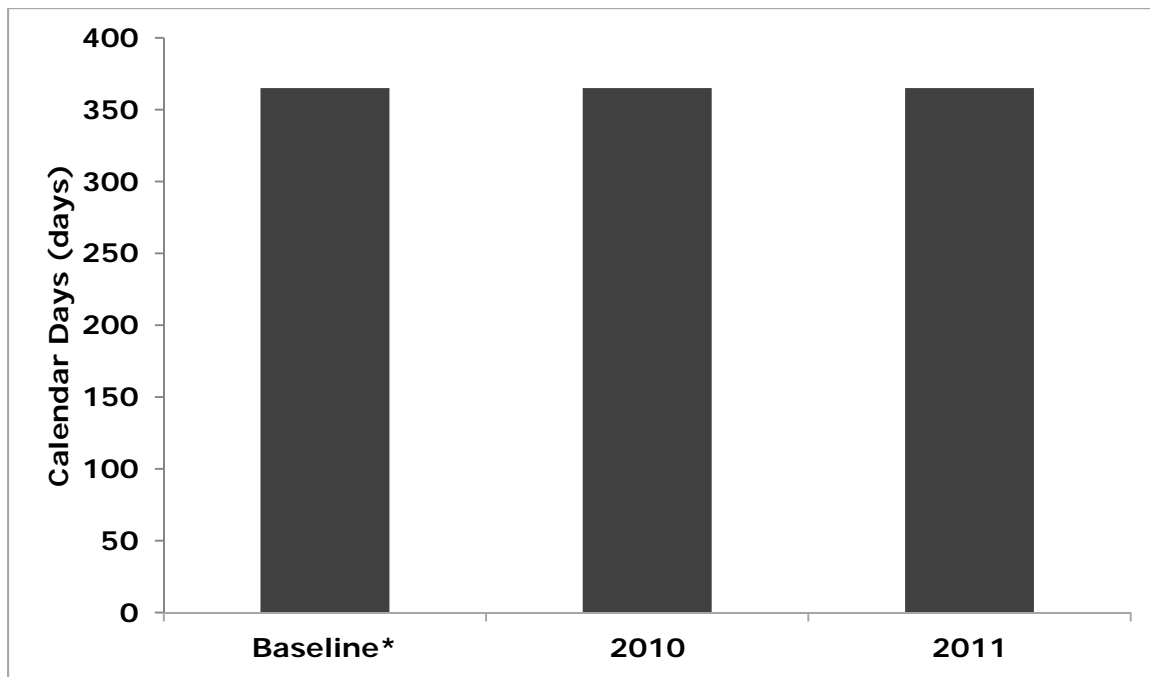


Figure 55. Season length (days) for sector vessels harvesting groundfish in the Northeast Multispecies Fishery

- iii. Revenue – All revenue data have been adjusted for inflation using the GDP deflator indexed for 2010.

Total groundfish revenue averaged \$89 million during the Baseline Period ( Figure 56). During the first year of the sector allocation program, groundfish revenue declined by 10% to \$81 million. In 2011, groundfish revenue increased 8% over 2010 levels to \$87 million, 97% of the Baseline Period. A substantial amount of revenue is earned from non-groundfish species while fishing for groundfish. Earnings from non-groundfish species comprised 28%, 19%, and 21%, respectively during the Baseline Period and fishing years 2010 and 2011. Total revenue from groundfish trips averaged \$124 million during the Baseline Period. Total sector groundfish trip revenue was \$99 million during 2010 and \$113 million during 2011.

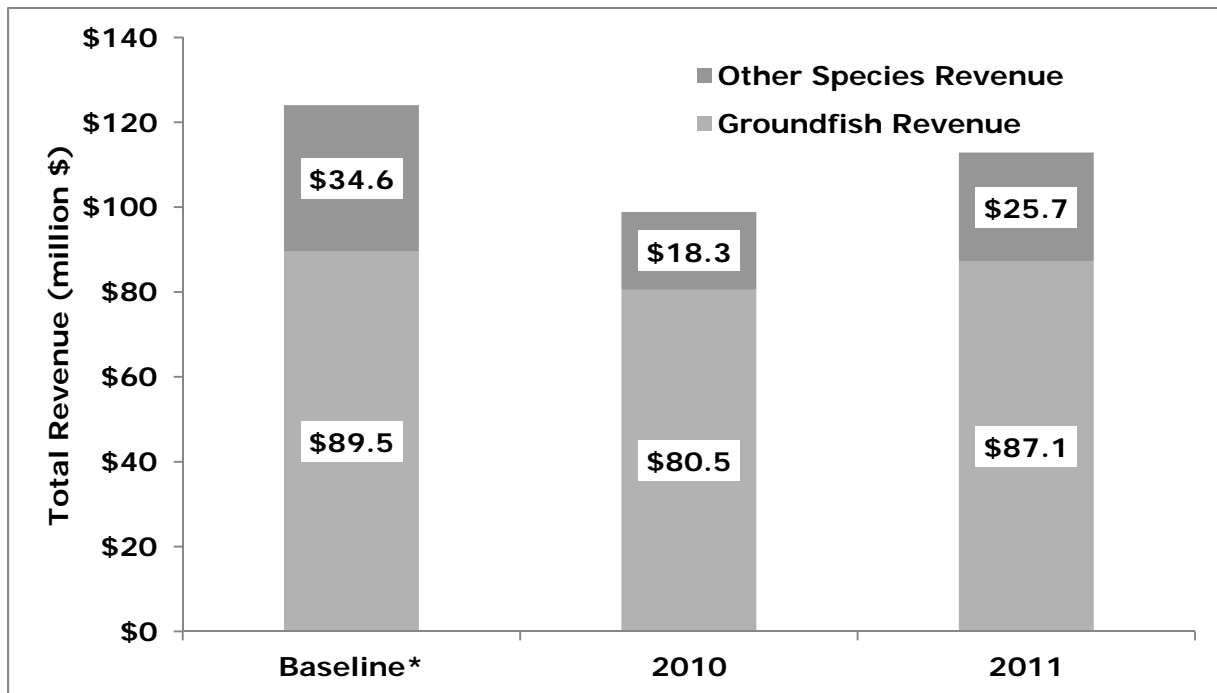


Figure 56. Total groundfish and non-groundfish revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Northeast Multispecies Fishery

The average price for all combined groundfish species was \$1.31 per pound during the Baseline Period (Figure 57). Average price during 2010 increased to \$1.41 per pound and was \$1.43 per pound in 2011.

Groundfish revenue per active vessel on groundfish trips averaged \$146,000 during the Baseline Period ( Figure 58), while total groundfish trip revenue per active vessel averaged \$203,000. Groundfish revenue per active sector vessel increased in both 2010 and 2011 to \$266,000 and \$289,000, respectively. Similarly total revenue per sector vessel on groundfish trips increased to \$326,000 in 2010 and \$375,000 in 2011. Compared to the Baseline Period, the improvement in revenue per vessel in 2010 was primarily due to the reduced number of vessels. Revenue per sector vessel increased during 2011, which had more to do with the increase in groundfish trip revenue than the small reduction in the number of active sector vessels.

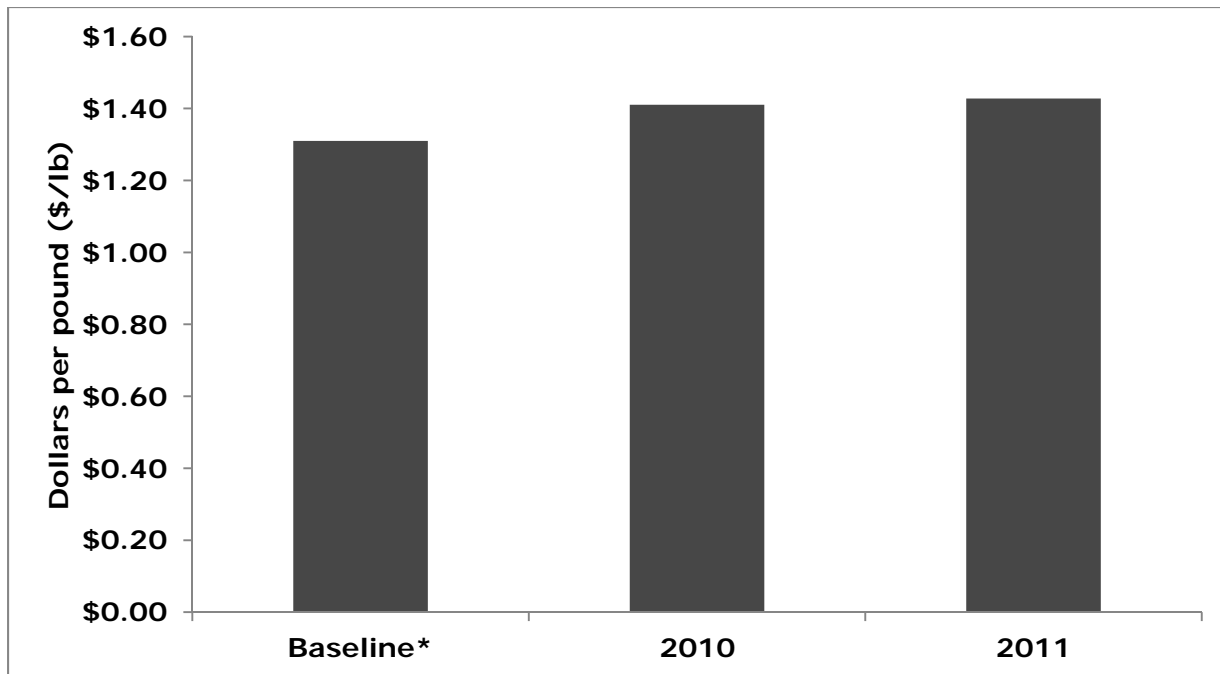


Figure 57. Average combined groundfish price per pound (inflation-adjusted 2010 dollars) in the Northeast Multispecies Fishery

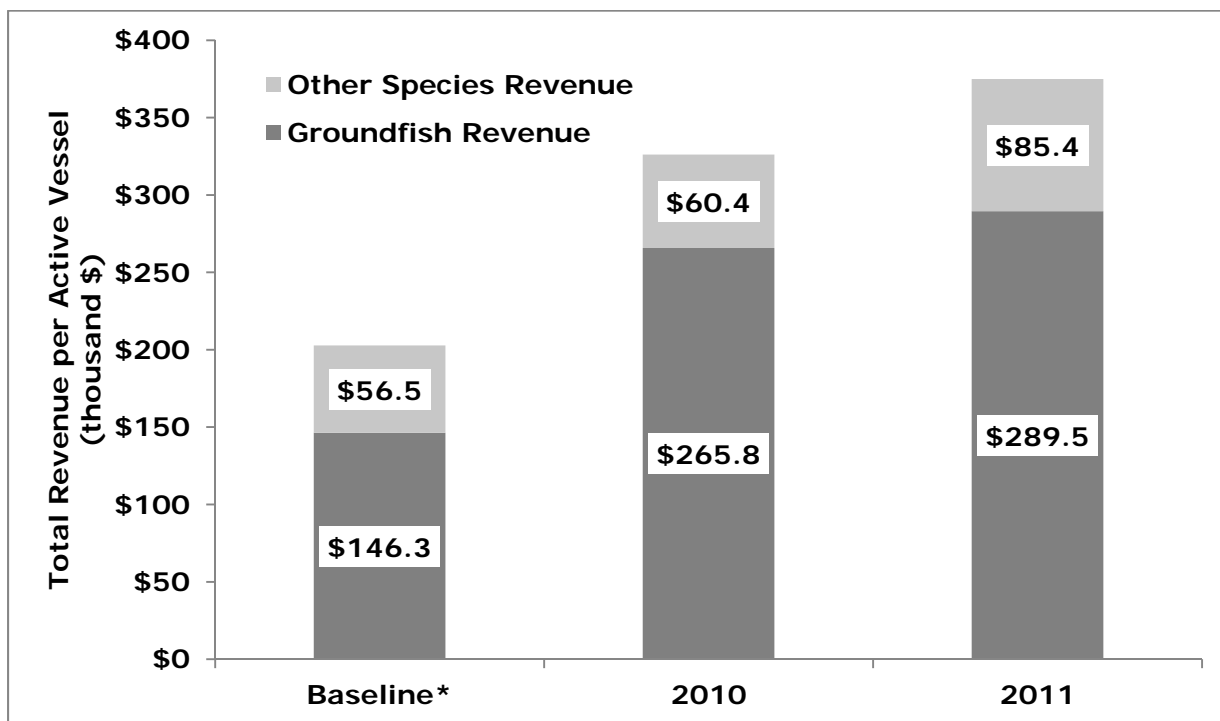


Figure 58. Groundfish and non-groundfish revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Northeast Multispecies Fishery



Average groundfish revenue per trip and other revenue per trip were \$3,400 and \$1,300, respectively during the Baseline Period. Compared to the Baseline Period, sector vessel groundfish revenue per trip was higher in 2010 (\$7,200 per trip) and 2011 (\$6,388). Similarly, total revenue per groundfish trip was higher than the Baseline Period in both 2010 (\$8,900) and 2011 (\$8,300). The improvement in average trip revenue was primarily due to the substantial reduction in the number of trips taken during 2010 (58% fewer trips) and 2011 (49% fewer trips). Average groundfish trip revenue was higher during 2010 as compared to 2011 as the total number of groundfish trips taken by sector vessels in 2011 increased proportionally more than the 2011 increase in total groundfish trip revenue (Figure 59).

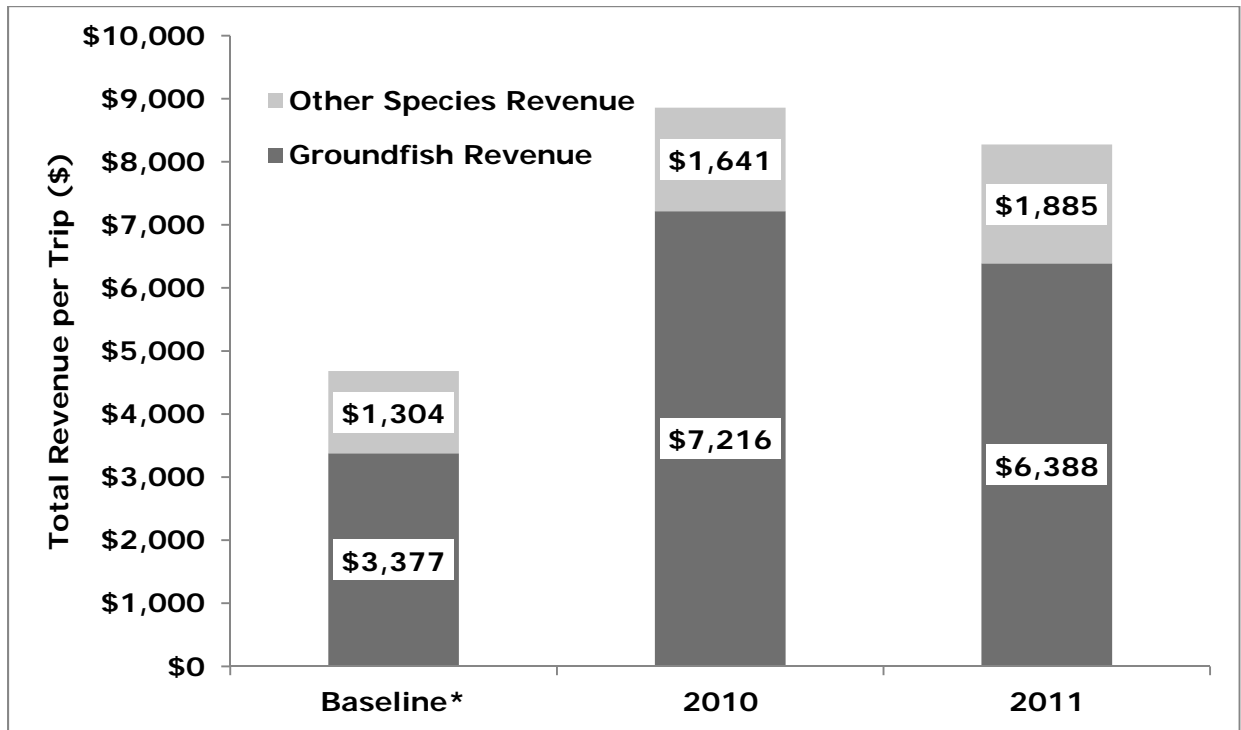


Figure 59. Groundfish and non-groundfish revenue (inflation-adjusted 2010 dollars) per trip that sector vessels fish quota in the Northeast Multispecies Fishery

The pattern for groundfish revenue per day and total revenue per day is identical to that found for revenue per trip. Specifically, both groundfish revenue and total revenue per day during 2010 and 2011 were higher than during the Baseline Period (Figure 60). Also, revenue per day during 2010 was higher than revenue per day during 2011 because days absent on groundfish trips in 2011 increased proportionally more than total revenues on groundfish trips.

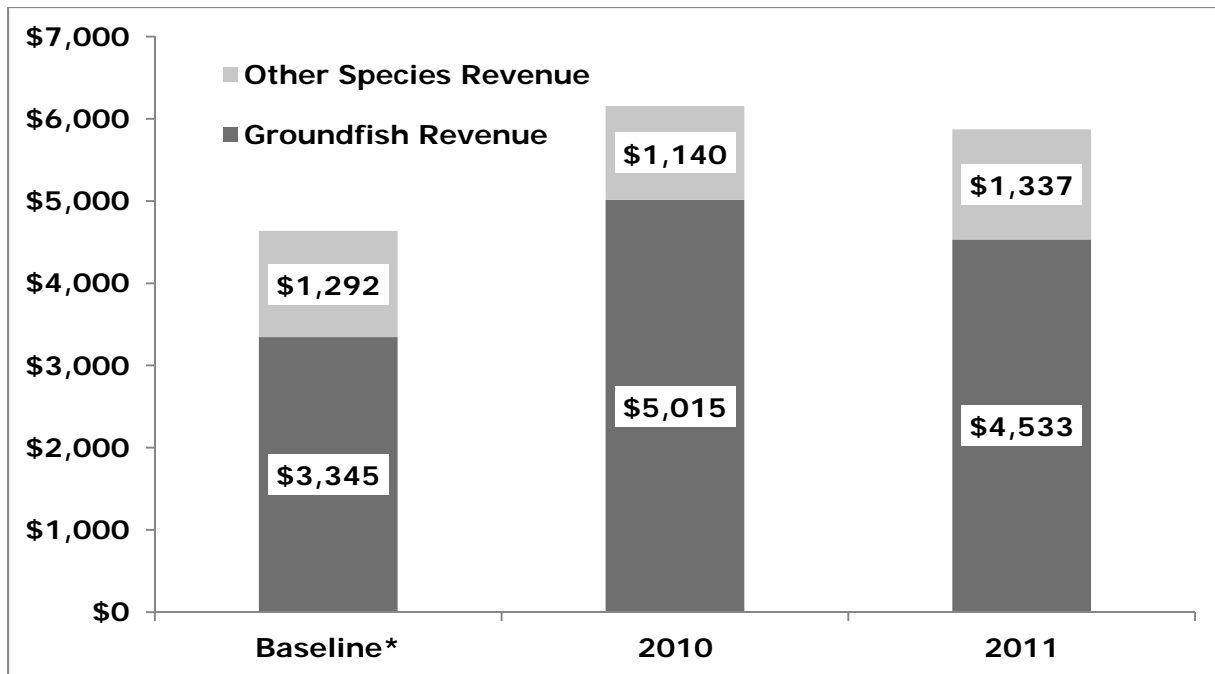


Figure 60. Groundfish and non-groundfish revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Northeast Multispecies Fishery

## **Southeast Region**

In the Southeast United States (U.S.), there are three catch share programs: South Atlantic Wreckfish ITQ, Gulf of Mexico Red Snapper IFQ and Gulf of Mexico Grouper-Tilefish IFQ. The Wreckfish ITQ Program was designed by the South Atlantic Fishery Management Council and implemented by NOAA Fisheries Service in 1992. Due to the low number of participants, the Wreckfish ITQ Program is not covered in this report because landings data are confidential for most years in the past decade.

The Gulf of Mexico Red Snapper IFQ and the Gulf of Mexico Grouper-Tilefish IFQ Programs were created under the authority of the Reef Fish FMP and are jointly managed by NOAA Fisheries Southeast Regional Office and the Gulf of Mexico Fishery Management Council. The Reef Fish FMP was implemented in 1984 and the primary purpose was to rebuild declining reef fish stocks. The original FMP established gear and size restrictions, as well as data reporting requirements. The Reef Fish FMP manages 31 separate species, including 11 species of snappers (queen snapper, mutton snapper, blackfin snapper, red snapper, cubera snapper, gray snapper, lane snapper, silk snapper, yellowtail snapper, wenchman and vermilion snapper), 11 species of groupers (speckled hind, yellowedge grouper, goliath grouper, red grouper, warsaw grouper, snowy grouper, black grouper, yellowmouth grouper, gag grouper, scamp and yellowfin grouper), three species of tilefishes (goldface tilefish, blueline tilefish and tilefish), four species of jacks (greater amberjack, lesser amberjack, almaco jack and banded rudderfish), gray triggerfish and hogfish. As of September 10, 2012, there have been 32 approved plan amendments, two plan amendments that are awaiting approval/implementation, and two Secretarial Amendments to the Reef Fish FMP. The purposes of these amendments to the original Reef Fish FMP have included reducing harvest, reducing bycatch and addressing overcapacity in the commercial fishing sector. Plan amendments have also addressed overcapacity and harvest limits in the for-hire sector of the reef fish fishery. Amendment 26 established the Gulf of Mexico Red Snapper IFQ Program in 2007 and Amendment 29 implemented the Gulf of Mexico Grouper-Tilefish IFQ Program in 2010.

Table 4 displays a snapshot of the Economic Performance Indicators for the Southeast Catch Share Programs. More detailed results are presented below for these programs.

**Table 4. Southeast Region Fishery Performance Measures by Catch Share Program**

	<b>Red Snapper IFQ (2010)</b>	<b>Grouper- Tilefish IFQ (2010)</b>
<b>Catch and Landings</b>		
Quota allocated to program (gutted weight in pounds)	3,190,991	9,030,000
Aggregate landings (gutted weight in pounds)	3,056,117	4,443,376
% utilization	96%	49%
ACL exceeded	No	No
<b>Effort</b>		
Entities holding share (number)	425	766
Active vessels (number)	384	468
Days at sea (days)	12,906	21,936
Trips (number)	3,221	4,747
Season length (days)	365	365
<b>Revenue</b>		
Catch share program revenue (\$)	10,276,144	14,342,930
Non-catch share program revenue (\$)	10,806,276	12,924,625
Average price (\$/pound)	3.36	3.23
Catch share revenue per active vessel (\$/vessel)	26,761	30,647
Non-catch share revenue per vessel (\$/vessel)	28,141	27,617
Catch share revenue per day at sea (\$/day)	796	654
Non-catch share revenue per day at sea (\$/day)	837	589
Catch share revenue per trip (\$/trip)	3,190	3,021
Non-catch share revenue per trip (\$/trip)	3,355	2,723
<b>Other</b>		
Excessive share cap	Yes	Yes
Cost recovery fee collected (\$)	308,285	430,294

## **Gulf of Mexico Red Snapper IFQ Program**

### **a. Management History**

Prior to the 2007 implementation of the Gulf of Mexico Red Snapper IFQ Program, commercial fishermen raced to harvest the quota before it was met and the season was closed. Limited access fishing permits, trip limits, closed seasons and a quota were the primary management tools used to constrain commercial harvest. Overfishing, overcapacity and short fishing seasons led to unsafe fishing seasons, created market gluts and reduced ex-vessel prices. High bycatch and discard rates often occurred. The red snapper stock has been overfished since the late 1980s and was subject to overfishing until 2010.

In 2010, the Deepwater Horizon accident and resulting oil spill resulted in large closures of the Gulf of Mexico, including state and federal waters. Large areas off of Louisiana, Alabama, Mississippi and Florida were closed to fishing during May through November, 2010. The commercial red snapper sector was less affected by the area closures because fishermen were able to transfer quota allocation during the closure period to fishermen fishing in other areas of the Gulf of Mexico and use their quota allocation once areas were reopened. Furthermore, the red snapper commercial quota increased in 2010.

### **b. Objectives**

The primary objectives of the IFQ Program are to reduce overcapacity and to the extent possible mitigate derby fishing conditions. Ending the race to fish was anticipated to help end overfishing and rebuild Gulf of Mexico red snapper, eliminate seasonal closures, increase market stability, increase flexibility and efficiency of fishing operations, and improve safety at sea, management, enforcement and compliance.

### **c. Key Events/Features**

The Gulf of Mexico Fishery Management Council designed the Gulf of Mexico Red Snapper IFQ Program to allow eligibility based on those owners who held a valid red snapper license and reported landings on a Class 1 or Class 2 license. Initial shares were based on the amount of red snapper landings reported in federal logbooks from 1990 – 2004 (Class 1 License Holders) and 1998 – 2004 (Class 1 Historical Captain License Holders and Class 2 License Holders).

Eligible participants received quota shares expressed as a percentage of the overall commercial quota. The shares allowed those eligible participants to an annual allocation which determines the amount of fish they can harvest in that year. Quota shares and allocation can be transferred at any time to any participant who has an IFQ account with NOAA Fisheries. Quota share sales are permanent and are conducted via the IFQ website. Quota shares and allocation transfers are conducted independently. Quota share transfers require the approvals of both the transferor and transferee while allocation transfers require approval of just the transferor.

When red snapper are landed, dealers must report the gutted weight and price of landed fish for each IFQ Program vessel account. This transaction is not complete until confirmed by the quota shareholder. In addition, vessel owners are required to submit catch reports for individual trips via logbooks. The Southeast Regional Office also produces an annual IFQ Program report (available at <http://sero.noaa.gov/sf/GulfReefFishIFQ.htm>). The five-year review of the Gulf of Mexico Red Snapper IFQ Program's performance is currently being conducted, with completion expected in 2013.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development

Quota Program. The cost recovery fee can be a maximum of 3% of the ex-vessel value of the program species. Fees collected for cost recovery in the Gulf of Mexico Red Snapper IFQ Program have ranged from \$250,000 – \$315,000 (3% of the corresponding year’s revenue) over the duration of the IFQ Program (Figure 61). IFQ Program dealers are responsible for collecting the cost recovery fee from IFQ Program shareholders at the time of each sales transaction. IFQ Program dealers are then responsible for submitting the cost recovery fees to NOAA Fisheries on a quarterly basis through the IFQ Program.

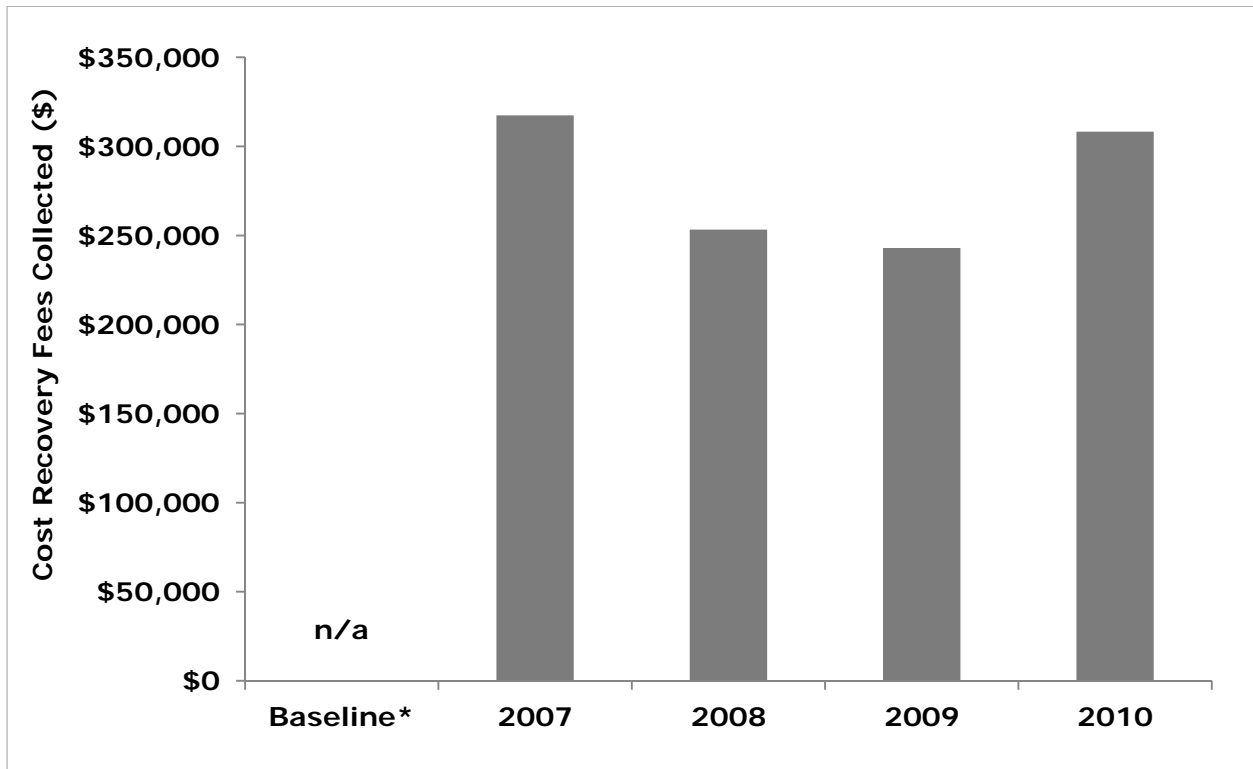


Figure 61. Cost recovery fees (inflation-adjusted 2010 dollars) collected in the Gulf of Mexico Red Snapper IFQ Program

The purpose of excessive quota share caps is to prevent individual shareholders from controlling production as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. The Magnuson-Stevens Act requires fishery managers to ensure that IFQ Program shareholders do not acquire an excessive share of the quota. A 6.0203% excessive share cap is in place on quota share only; there is no cap for quota pounds. The Southeast Regional Office tracks quota shares and quota pounds in real-time through the online IFQ system. Share transfers that would exceed the share caps are prohibited.

**d. Recent Trends**

The Baseline Period refers to the average of the three years prior to implementation of the Gulf of Mexico Red Snapper IFQ Program (2004 – 2006).

- i. Catch and Landings – All pounds are in gutted weight.

Coincident with the introduction of the IFQ Program in 2007, the red snapper rebuilding plan was revised, reducing the commercial quota by a third (from 4.2 million gutted weight pounds in the

Baseline Period to 3.0 million gutted weight pounds in 2007; Figure 62). In 2008, the commercial quota was further reduced to 2.3 million gutted weight pounds and remained constant at this level through 2009. In 2010, the quota was raised to 3.2 million gutted weight pounds. Red snapper landings followed a similar trend: landings fell by 29% to 2.9 million gutted weight pounds in 2007, compared to the Baseline Period of 4 million gutted weight pounds (Figure 62). Landings were constant in 2008 and 2009 (2.2 million gutted weight pounds), but increased by 37% to 3.1 million gutted weight pounds in 2010. Utilization of the quota has basically remained constant from the Baseline Period through 2010 at 96-97% (Figure 63). During the Baseline Period (2004 – 2006), the red snapper Annual Catch Limit (ACL) was exceeded once in 2006. The ACL has not been exceeded since implementation of the IFQ Program.

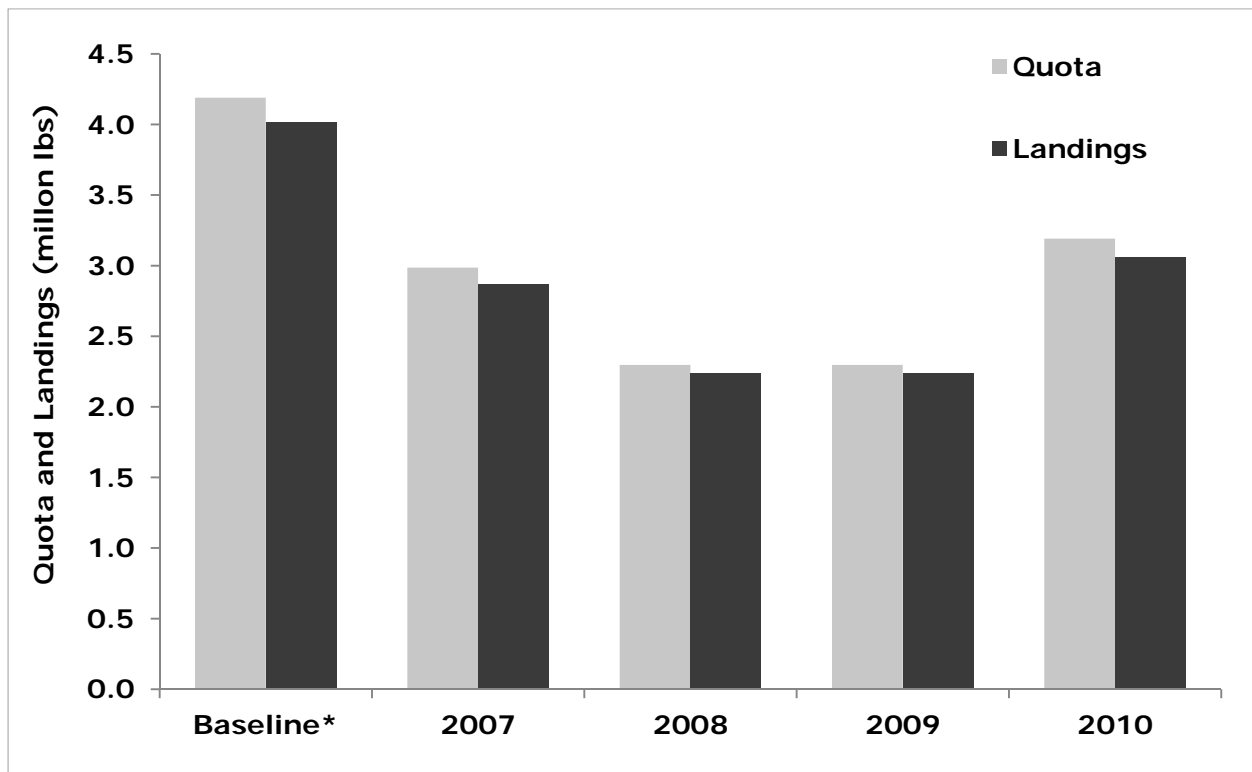


Figure 62. Quota and landings in the Gulf of Mexico Red Snapper IFQ Program

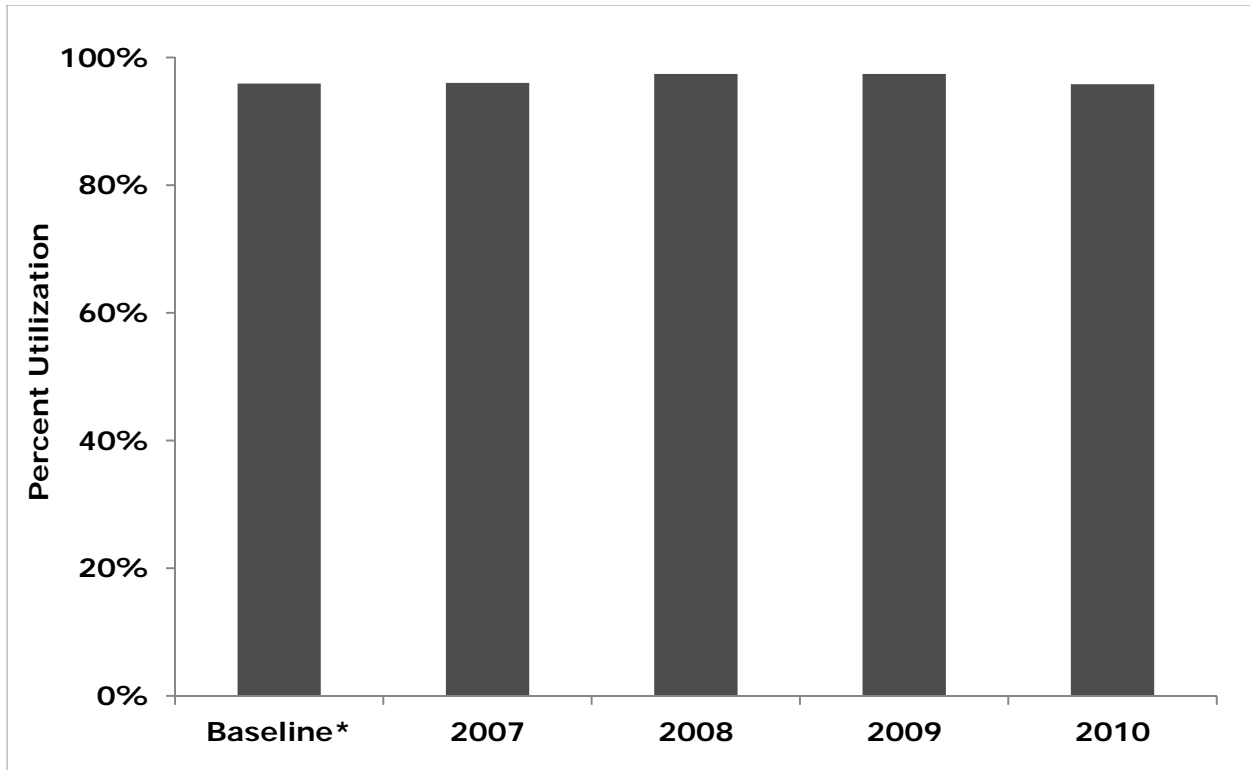


Figure 63. Utilization of available quota in the Gulf of Mexico Red Snapper IFQ Program

ii. Effort

The initial number of entities holding IFQ Program quota share decreased by 21% from 2007 to 2010 (Figure 64). The states of Florida (48%) and Texas (32%) have the most red snapper shareholders. In the first year of the Gulf of Mexico Red Snapper IFQ Program, the number of active vessels decreased by a third (36%) compared to the Baseline Period (Figure 65). In 2010, the number of active vessels was only 20% less than the number of vessels in the Baseline Period, increasing 31% from 2009 levels (Figure 65). Initially, red snapper fishermen spent 17% fewer days fishing in 2007 compared to the Baseline Period and 4% fewer days fishing in 2010 compared to the Baseline Period (Figure 66), increasing 37% from 2009 levels. However, in 2010 fishermen spent 16% more days fishing compared to 2007. The greater number of active vessels and days spent fishing was in part due to higher quotas in 2010, as well as implementation of the Gulf of Mexico Grouper-Tilefish IFQ Program, which resulted in more vessels participating in the IFQ Program. In the first year of the Gulf of Mexico Red Snapper IFQ Program, the number of trips decreased by one-half compared to the Baseline Period (Figure 67). Since 2007, the number of trips increased by 21% to 3,221 trips.

The introduction of the Gulf of Mexico Red Snapper IFQ Program and removal of harvesting windows resulted in a longer fishing season. The season length increased by 202% from 121 days in the Baseline Period to the entire year during the IFQ Program (Figure 68). However, despite having a year round season, actual days fished by IFQ fishermen are constrained by the amount of IFQ quota they possess.



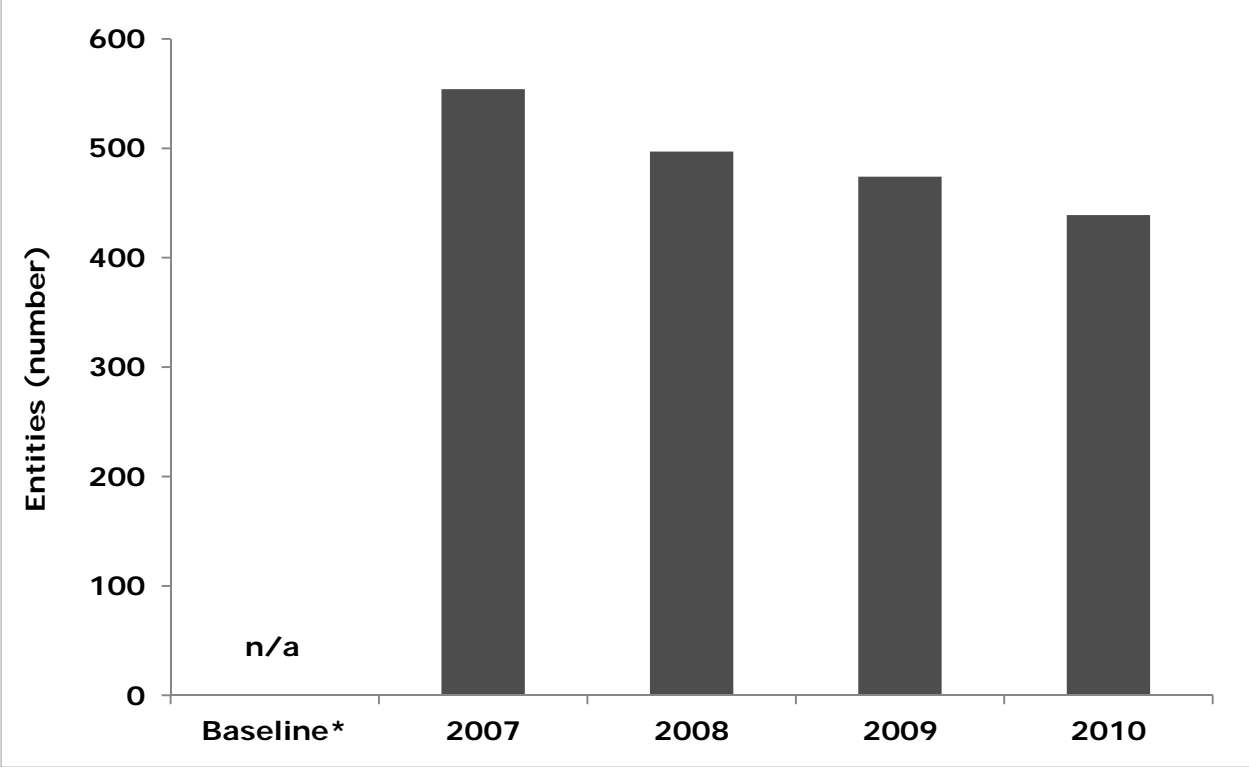


Figure 64. Number of entities holding share in the Gulf of Mexico Red Snapper IFQ Program

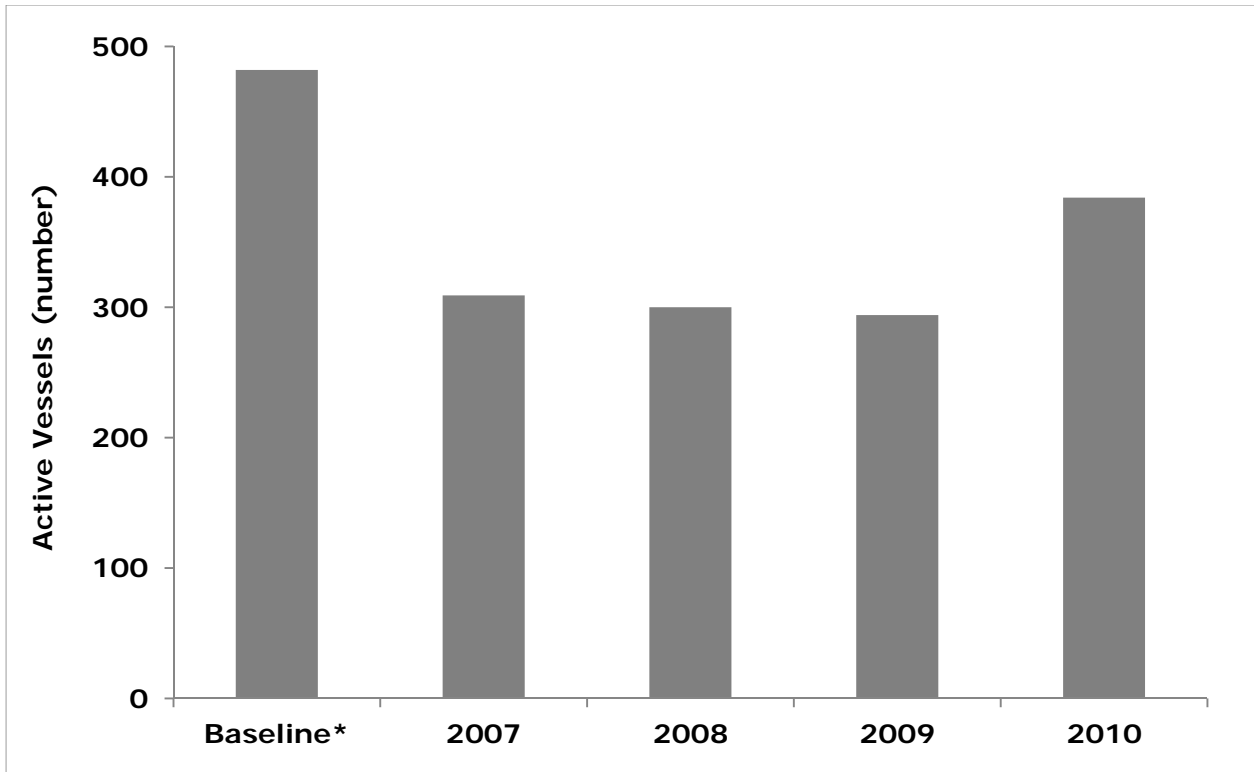


Figure 65. Active vessels fishing quota in the Gulf of Mexico Red Snapper IFQ Program

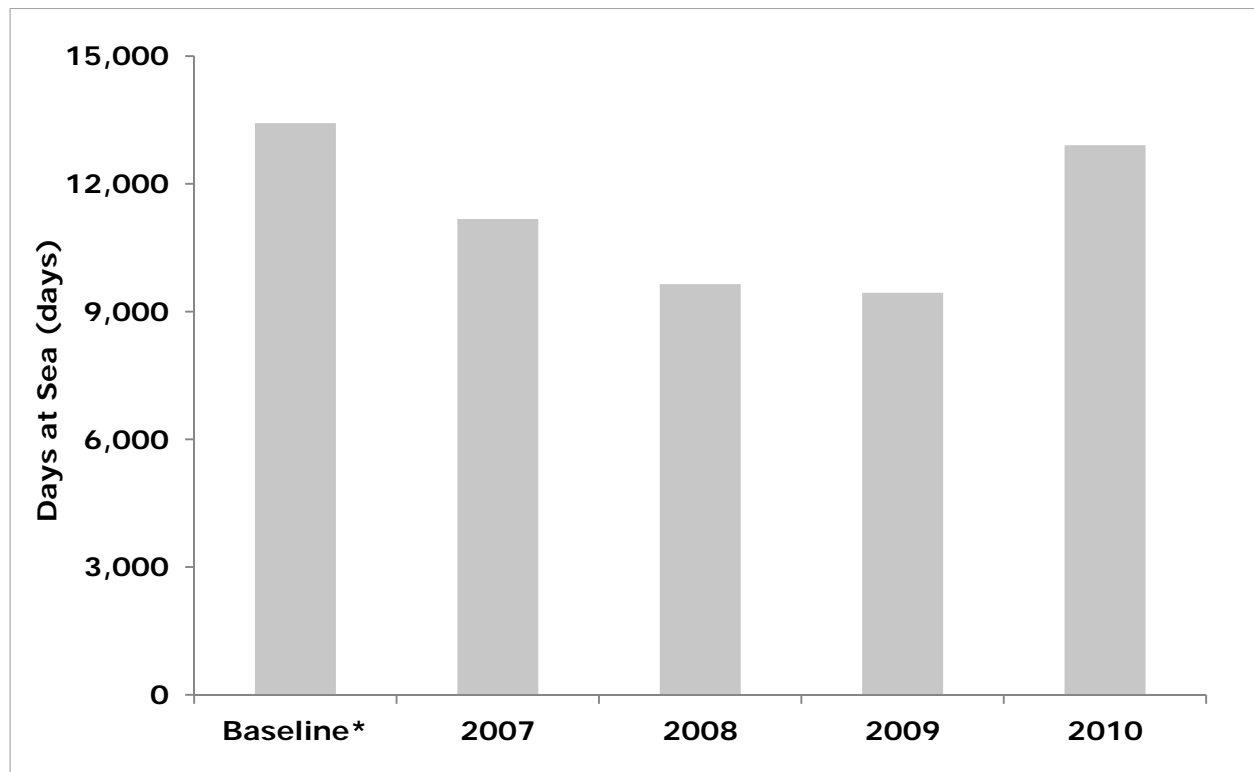


Figure 66. Number of days at sea on trips fishing quota in the Gulf of Mexico Red Snapper IFQ Program

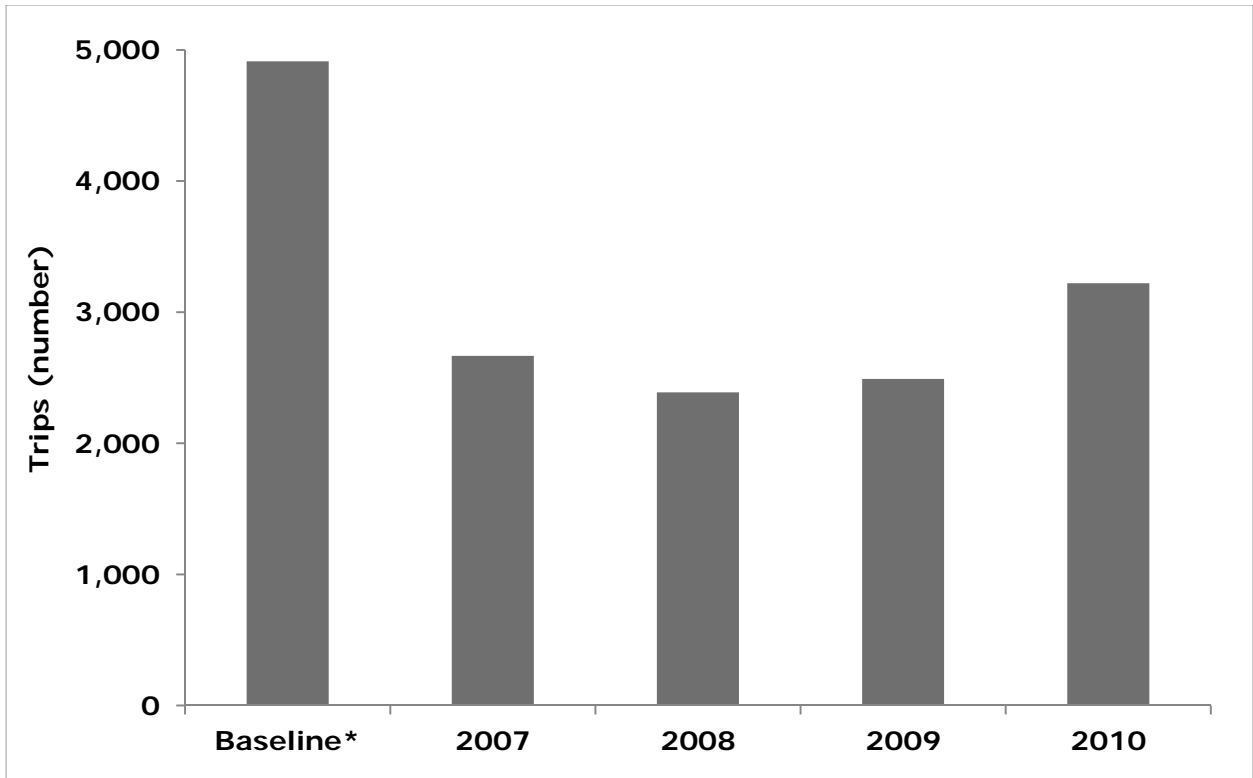


Figure 67. Number of trips harvesting red snapper in the Gulf of Mexico Red Snapper IFQ Program

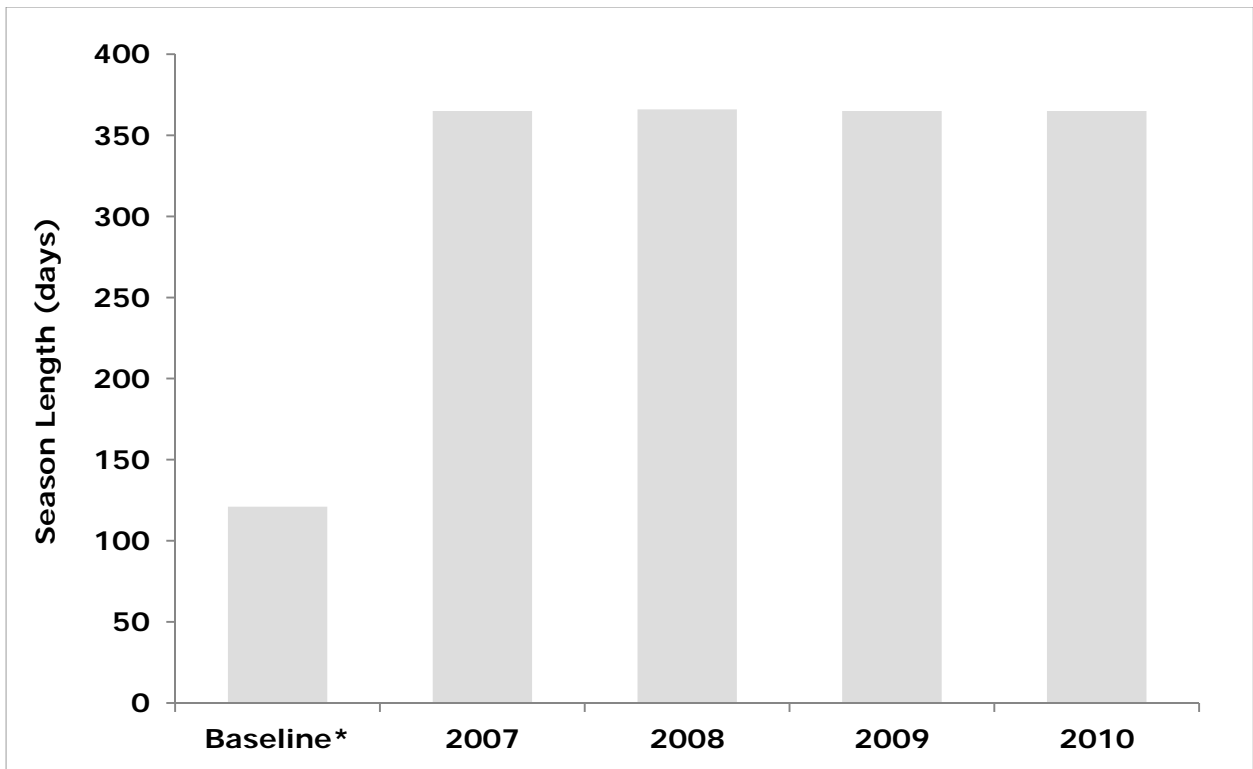


Figure 68. Season length (days) in the Gulf of Mexico Red Snapper IFQ Program

- iii. Revenue – All revenue and cost recovery data have been adjusted by the GDP Deflator Indexed for 2010.

In the first year of the Gulf of Mexico Red Snapper IFQ Program, the commercial quota was reduced by 29%. Accordingly, revenue from red snapper landings fell by 21% in 2007 compared to the Baseline Period (Figure 69). In 2010, the red snapper quota was raised and ex-vessel revenue also increased by a third to \$10.3 million. During the Baseline Period, revenue from species other than red snapper was \$7.6 million, approximately 36% of the revenue on red snapper trips. In 2007 – 2010, non-red snapper revenue was \$9 – 11 million and constituted 46 – 55% of the revenue on red snapper trips.

The average price for red snapper was \$3.32 per pound in the Baseline Period. Since the inception of the IFQ Program, average prices for red snapper have fluctuated from \$3.36 – \$3.77 per pound (Figure 70). Estimates of the average ex-vessel red snapper price per pound can be difficult to interpret due to reporting issues. Since implementation of the IFQ Program, there have been an increased number of transactions reporting ex-vessel prices less than what would be expected. This increase in lower prices is partly due to some dealers subtracting costs associated with allocation transfers and goods and services prior to reporting ex-vessel prices. In 2011, a new rule clarified that dealers must report ex-vessel prices as the price paid prior to deductions for allocation transfers. Importantly, these lower prices may have led to underestimation of red snapper revenue<sup>10</sup>, thus the revenue-based indicators for this program should be viewed with caution. Methods to correct the price and revenue estimates are under development.

Despite the 29% cut in quota, revenue per vessel increased in 2007 relative to the Baseline Period (Figure 71). Red snapper revenue per vessel decreased in 2008, 2009, and 2010; however, revenue per vessel in 2010 is only 3% less than the Baseline Period despite the quota being 1 million pounds less than during the Baseline Period and the issue with reported prices. Total revenue (including landings from red snapper and non-red snapper landings) per vessel increased by 46% to \$63,680 in 2007 compared to the Baseline Period. Total revenue per vessel decreased in subsequent years (2008, 2009, 2010), but 2010 total revenue per vessel (\$54,902) was still 26% greater than the Baseline Period.

Red snapper revenue per day decreased by 5% in the first year of the IFQ Program compared to the Baseline Period. Since 2007, the decreasing revenue per day trend has continued through 2010 where revenue per day is 20% less than the Baseline Period (Figure 72). Total revenue (including landings from red snapper and non-red snapper landings) per day at sea increased in 2007 and 2008 and was 24% higher in 2008 relative to the Baseline Period. Total revenue per day decreased in both 2009 and 2010; however, total revenue per day in 2010 (\$1,634) is 4% greater than the Baseline Period (\$1,564).

Red snapper revenue per trip follows a similar trend: initial increase (46%) in the first year of the IFQ Program, followed by decreases in revenue per trip in subsequent years (Figure 73). Total revenue (including landings from red snapper and non-red snapper landings) per trip was \$7,378 in 2007, a 73% increase from the Baseline Period. In 2010, total revenue per trip was \$6,545. While the 2010 total revenue per trip is lower than previous years under the IFQ Program, it is still 53% greater than the Baseline Period. While red snapper revenue per trip decreased in subsequent years of the IFQ Program, total revenue and total revenue per trip or day increased because fishermen are catching more vermilion snapper to offset red snapper quota decreases.

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<sup>10</sup> Low reported prices may be affecting ex-vessel price and revenue estimates for grouper-tilefish landings as well.

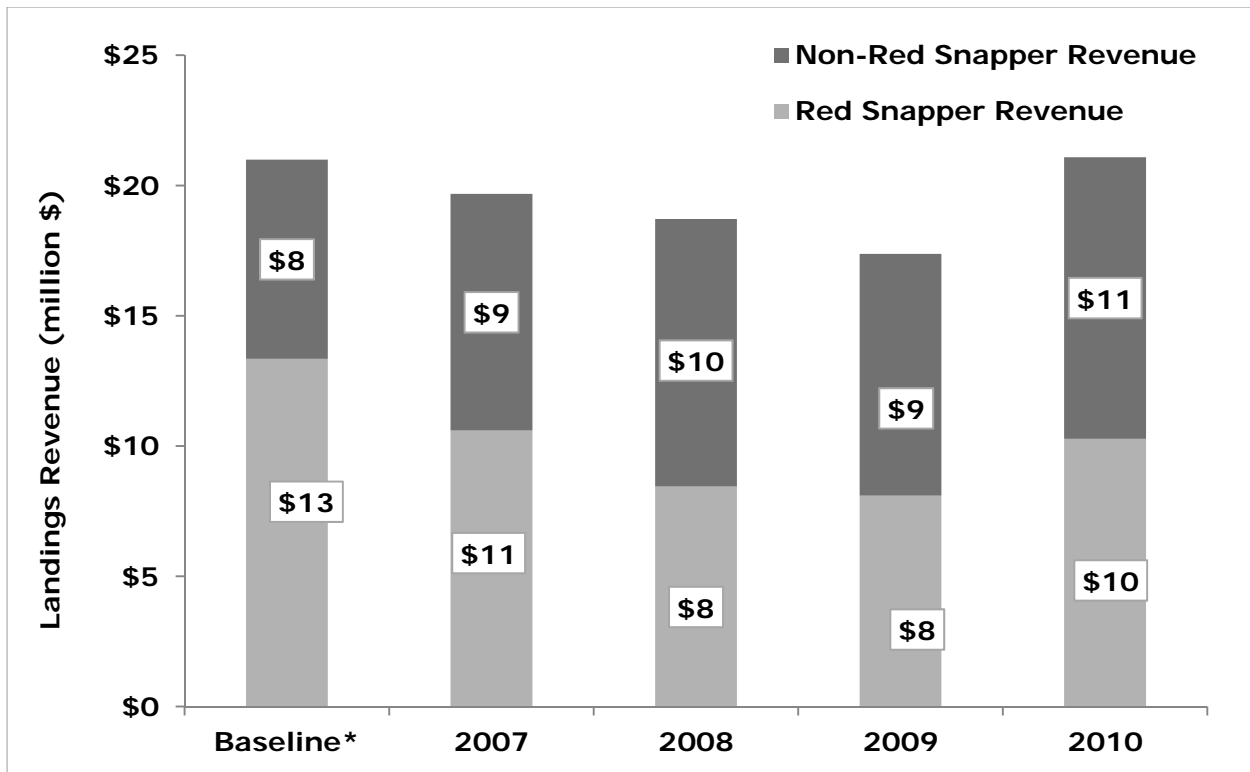


Figure 69. Total red snapper and non-red snapper revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Gulf of Mexico Red Snapper IFQ Program

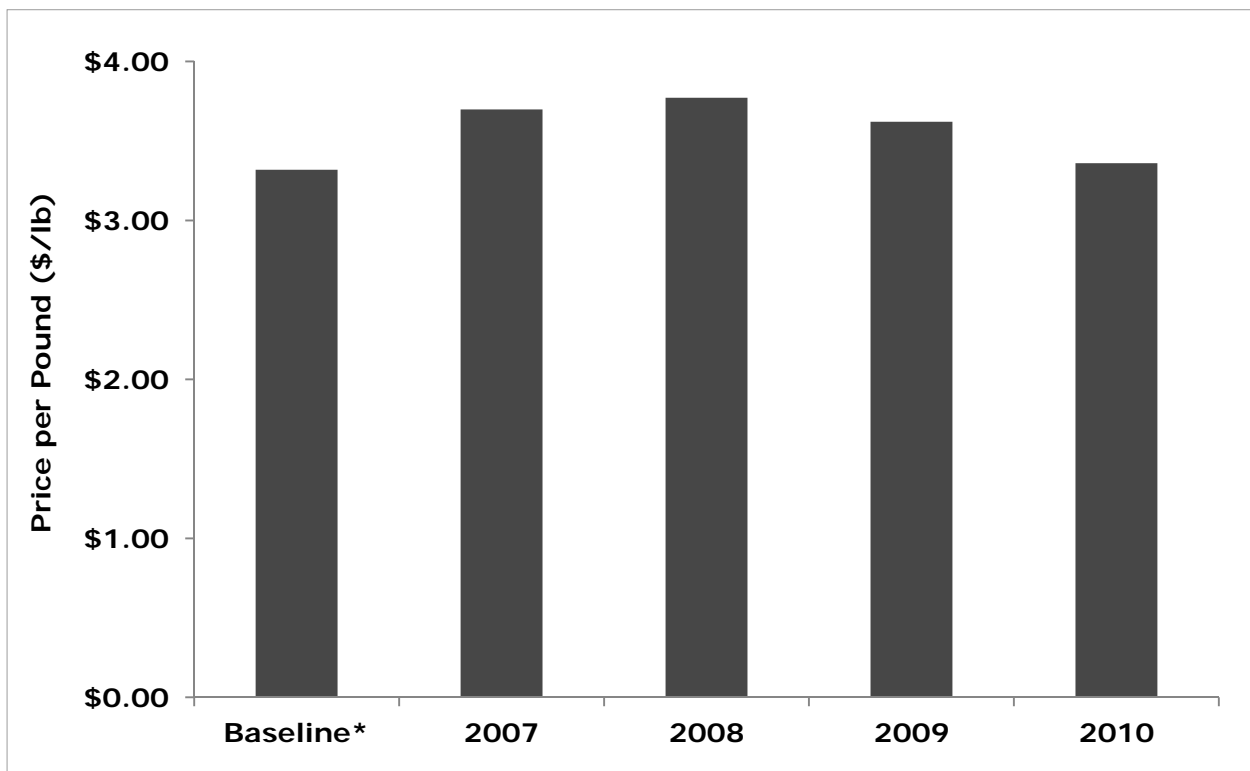


Figure 70. Average red snapper price per pound (inflation-adjusted 2010 dollars) in the Gulf of Mexico Red Snapper IFQ Program

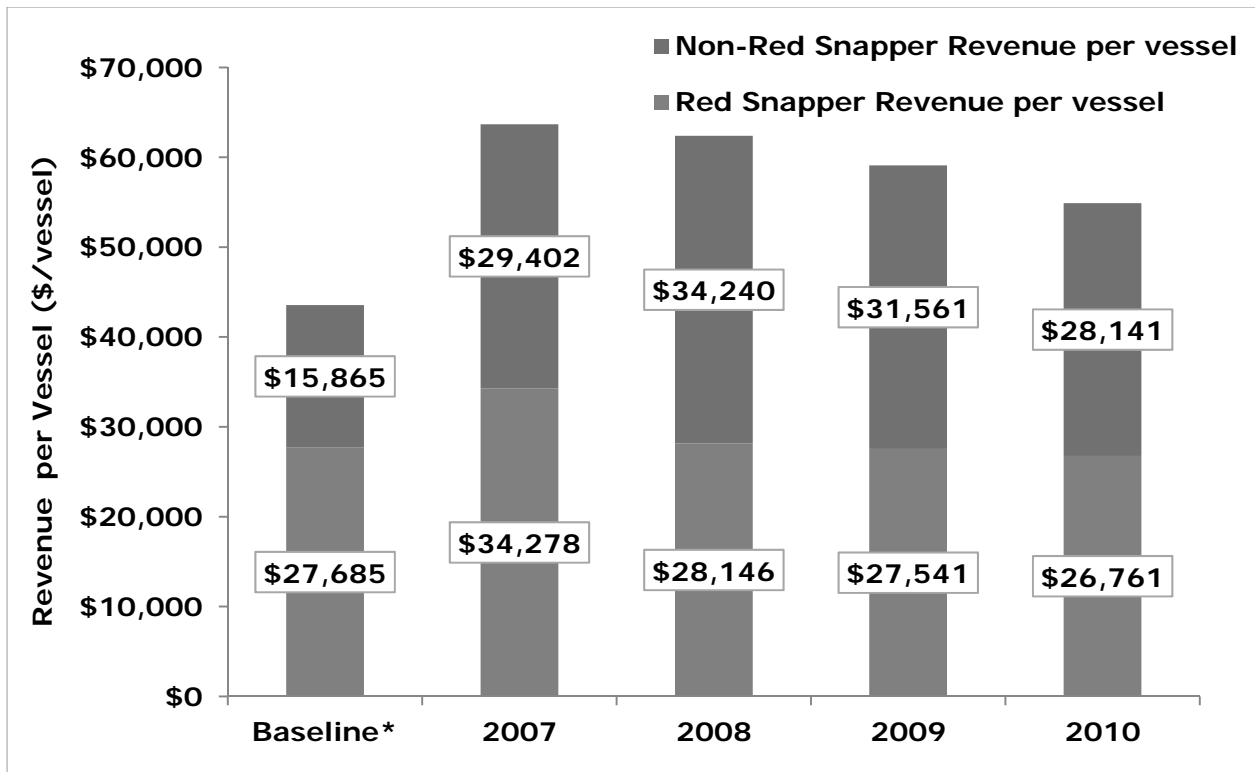


Figure 71. Red snapper and non-red snapper revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Gulf of Mexico Red Snapper IFQ Program

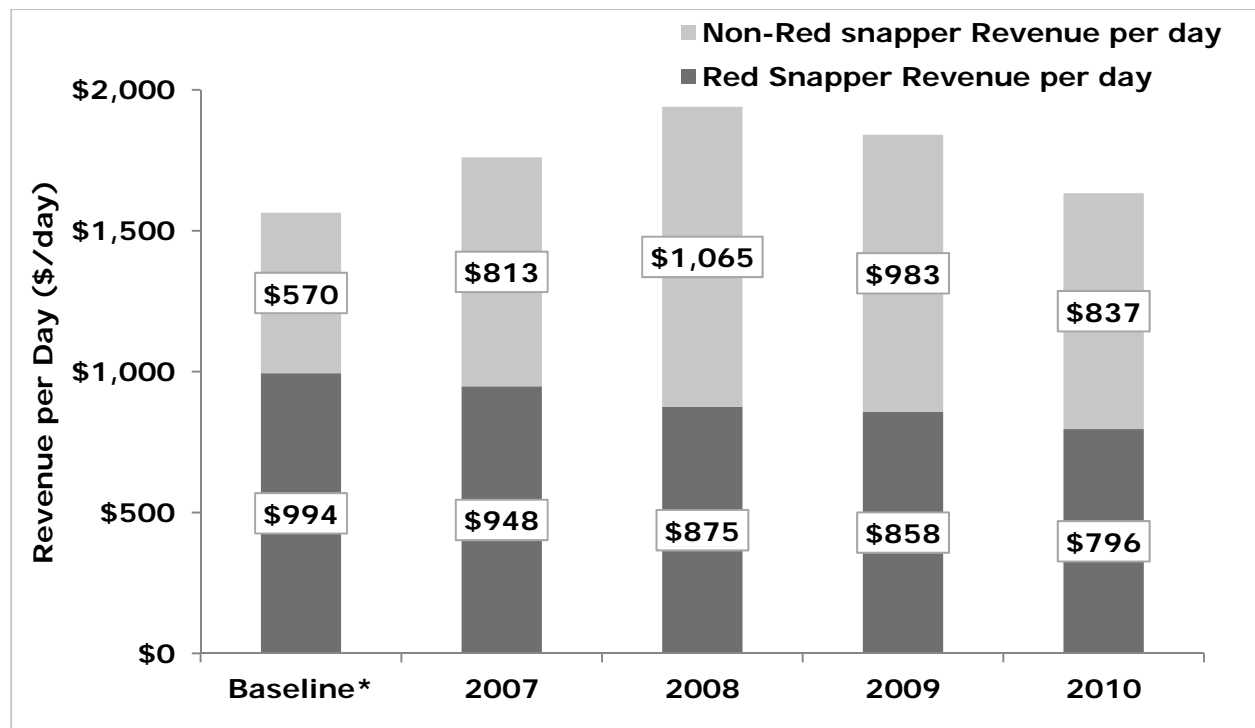


Figure 72. Red snapper and non-red snapper revenue (inflation-adjusted 2010 dollars) per day at sea that vessels fish quota in the Gulf of Mexico Red Snapper IFQ Program

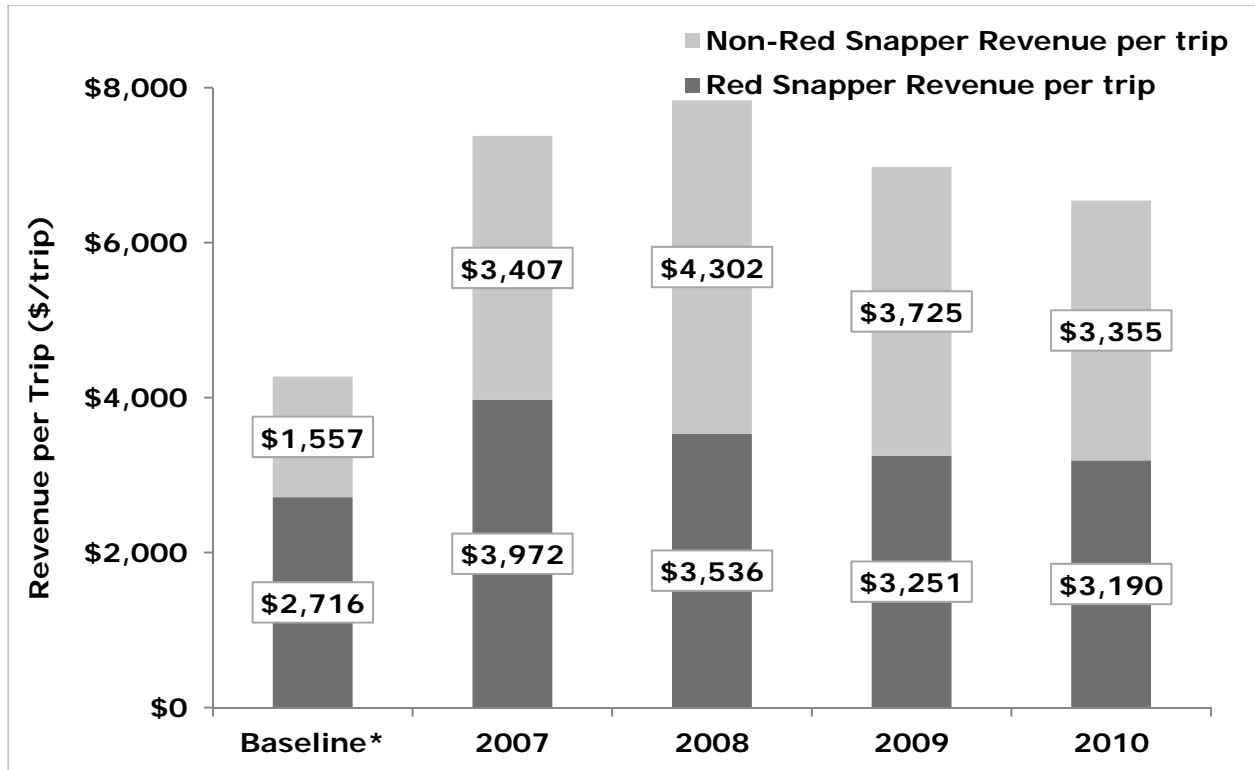


Figure 73. Red snapper and non-red snapper revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Gulf of Mexico Red Snapper IFQ Program

## **Gulf of Mexico Grouper-Tilefish IFQ Program**

### **a. Management History**

Regulations prior to the implementation of the IFQ Program resulted in a race to fish that led to early closures and quota overages of some species. Quotas for deepwater groupers and tilefishes were met in four to six months and the shallow-water grouper quota was met six to 10 weeks prior to the end of the 2004 and 2005 fishing years. Limited access fishing permits, trip limits, closed seasons and quotas were the primary management tools. The gag stock was overfished and also experiencing overfishing.

In 2010, the Deepwater Horizon accident and resulting oil spill resulted in large closures of the Gulf of Mexico, including state and federal waters. Large areas off of Louisiana, Alabama, Mississippi and Florida were closed to fishing during May through November 2010. Landings of groupers and tilefishes were reduced off the coasts of these Gulf States.

### **b. Program Objectives**

The Gulf of Mexico Grouper-Tilefish IFQ Program has five management units: red grouper, gag grouper, other shallow water groupers (including black grouper, yellowfin grouper, scamp and yellowmouth grouper), deepwater groupers (including yellowedge grouper, warsaw grouper, snowy grouper, speckled hind and misty grouper) and tilefishes (including goldface tilefish, blueline tilefish and other tilefish). In 2012, the following species were removed from the Gulf of Mexico Grouper-Tilefish IFQ Program: rock hind, red hind, misty grouper, anchor tilefish and blackline tilefish.

The Grouper-Tilefish IFQ Program was implemented to reduce overcapacity and mitigate the race to fish the grouper-tilefish segment of the commercial reef fish fishery. Ending the race to fish was anticipated to help end overfishing and rebuild Gulf of Mexico grouper and tilefish stocks, eliminate seasonal closures, increase market stability, increase flexibility and efficiency of fishing operations, and improve safety at sea, management, enforcement and compliance.

### **c. Key Events/Features**

The Gulf of Mexico Fishery Management Council determined eligibility for the grouper-tilefish program to be those owners who held a valid Gulf of Mexico reef fish permit on October 1, 2009. Initial IFQ quota share percentages were based on the average landings by management unit reported in federal logbooks from 1999 – 2004, with the allowance to drop one year of landings data.

Eligible participants received quota shares expressed as a percentage of the overall commercial quota. The shares provided those eligible participants an annual allocation which determines the amount of fish they can harvest in that year. Quota shares and allocation can be transferred annually to other eligible permit holders. Quota share sales are permanent and are conducted via the IFQ website. Quota shares and allocation transfers are conducted independently. Quota share transfers require the approvals of both the transferor and transferee, while allocation transfers require approval of just the transferor.

When groupers and tilefishes are landed, dealers must report the weight and price of landed fish for each IFQ vessel. This transaction is not complete until confirmed by the quota shareholder. In addition, vessel owners are required to submit catch reports for individual trips via logbooks. The Southeast Regional Office also produces an annual IFQ report (available at <https://ifq.sero.nmfs.noaa.gov/>). The five-year review of the Gulf of Mexico Grouper-Tilefish IFQ Program's performance is planned for 2015.



Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The cost recovery fee can be a maximum of 3% of the ex-vessel value of the program species. Fees collected for cost recovery in the Gulf of Mexico Grouper-Tilefish IFQ Program were \$430,294 (3% of revenue) in 2010 (Figure 74). IFQ dealers are responsible for collecting the cost recovery fee from IFQ shareholders at the time of each sales transaction. IFQ Program dealers are then responsible for submitting the cost recovery fees to NOAA Fisheries on a quarterly basis through the IFQ Program electronic reporting system.

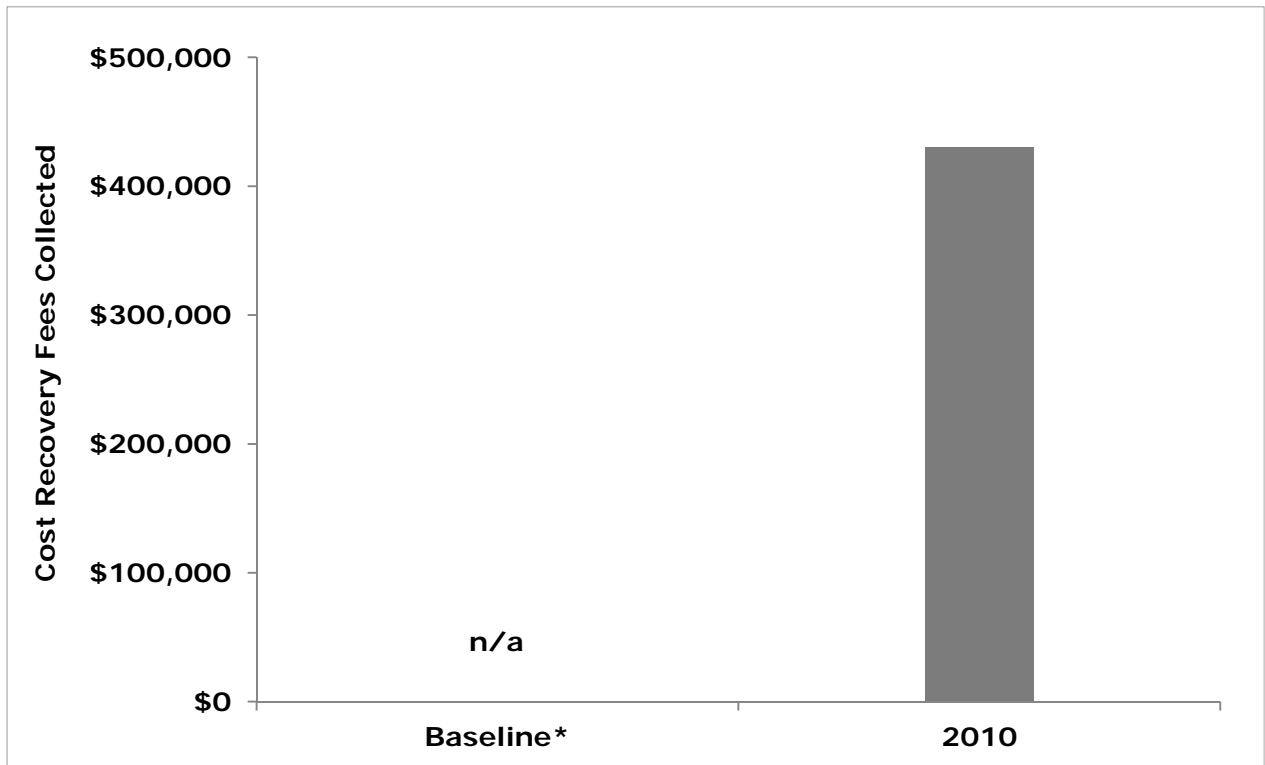


Figure 74. Cost recovery fees (inflation-adjusted 2010 dollars) collected in the Gulf of Mexico Grouper-Tilefish IFQ Program

The purpose of excessive quota share caps is to prevent individual shareholders from controlling production as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. The Magnuson-Stevens Act requires fishery managers to ensure that IFQ Program shareholders do not acquire an excessive share of the quota. The quota share caps established are 4.33% for red grouper; 2.35% for gag grouper; 7.27% for shallow water groupers; 14.7% for deepwater groupers and 12.2% for tilefishes. An allocation share cap is set equal to the sum of the maximum allocations associated with the five grouper-tilefish share caps. The allocation cap is calculated based on the current fishing year's quotas. The Southeast Regional Office tracks quota shares and allocation in real-time through the online IFQ system. Share or allocation transfers that would exceed the share caps are prohibited.

**d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the implementation of the IFQ Program (2007 – 2009).

i. Catch and Landings – Pounds are in gutted weight.

With the introduction of the IFQ Program in 2010, commercial quota closures were eliminated, as fishermen were allocated percentages of the grouper-tilefish quotas based on historical participation. The quota allocated to IFQ Program shareholders in 2010 was 800,000 pounds less (8% reduction) than the quota in the Baseline Period (Figure 75). The commercial sector landed 70% of the quota assigned to species within Gulf of Mexico Grouper-Tilefish IFQ Program management units during the Baseline Period; whereas, less than 50% of the commercial sector quota was landed in 2010 (Figure 76). Trips landing grouper-tilefish may also land red snapper if the vessel owner has red snapper quota allocation. Accordingly, trips attributed to the Gulf of Mexico Grouper-Tilefish IFQ Program may also be attributed to the Gulf of Mexico Red Snapper IFQ Program. The quotas were exceeded for deepwater groupers and tilefishes during the Baseline Period; however, the quotas were not exceeded for any of the five management units in 2010.

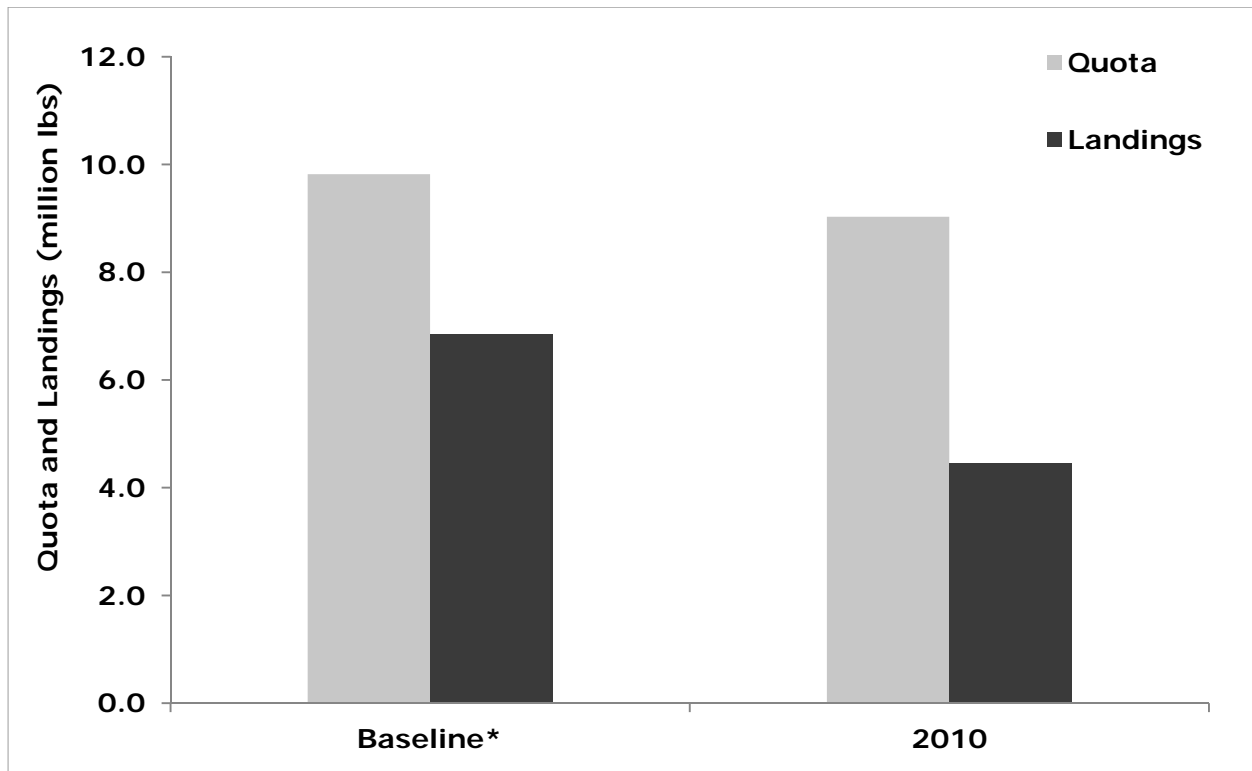


Figure 75. Quota and landings in the Gulf of Mexico Grouper-Tilefish IFQ Program

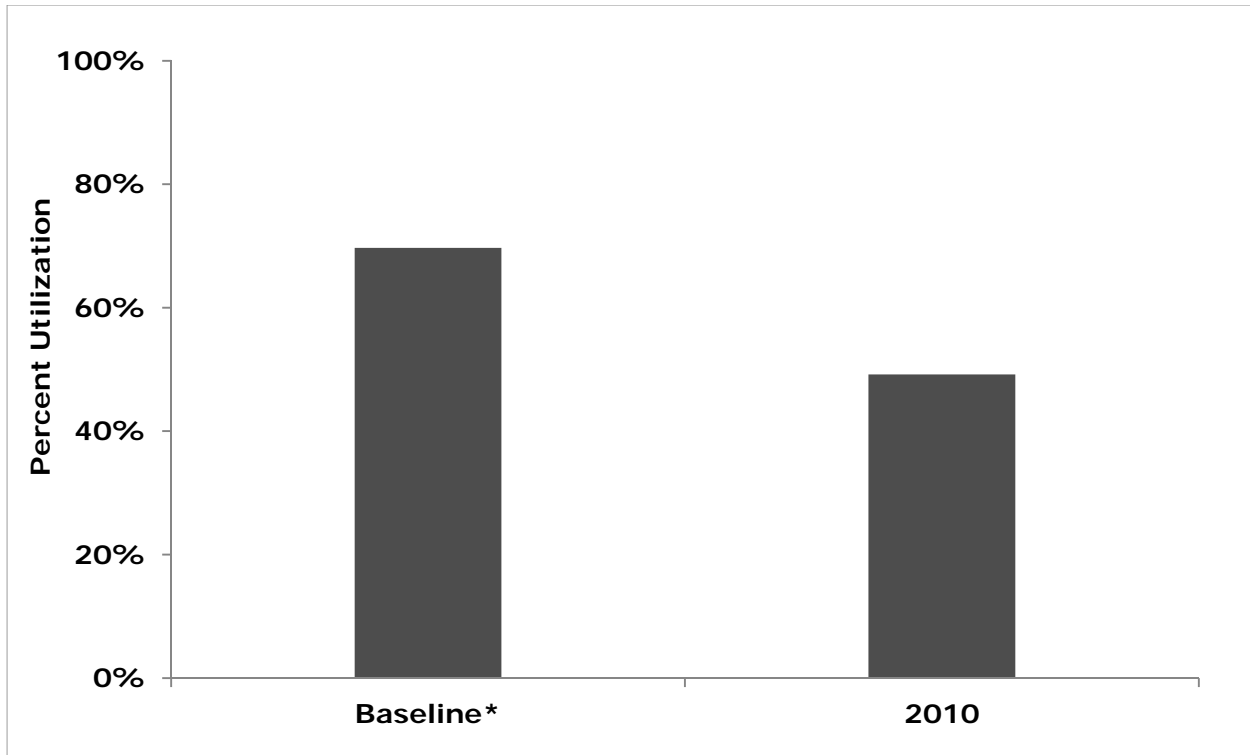


Figure 76. Utilization of available quota in the Gulf of Mexico Grouper-Tilefish IFQ Program

ii. Effort

In the initial year of the IFQ Program, 766 entities held Grouper-Tilefish shares (Figure 77). The number of active vessels decreased by 26% from 631 vessels in the Baseline Period to 468 vessels in 2010 (Figure 78). The number of trips landing grouper-tilefish also decreased by a quarter in 2010 when compared to the Baseline Period (Figure 79). Days spent fishing for grouper-tilefish decreased by 35% from approximately 34,000 days in the Baseline Period to 22,000 days in 2010 (Figure 80). Prior to the implementation of the Gulf of Mexico Grouper-Tilefish IFQ Program, the season length varied across species. During the Baseline Period, fishermen were allowed to fish for shallow-water groupers throughout the year; however, the average season length was 153 days for deepwater groupers and 124 days for tilefishes. Implementation of the IFQ Program allowed the fishing season to be open for the entire year for the five grouper-tilefish management units (Figure 81). However, despite having a year round season, actual days fished by IFQ fishermen are constrained by the amount of IFQ quota they possess.

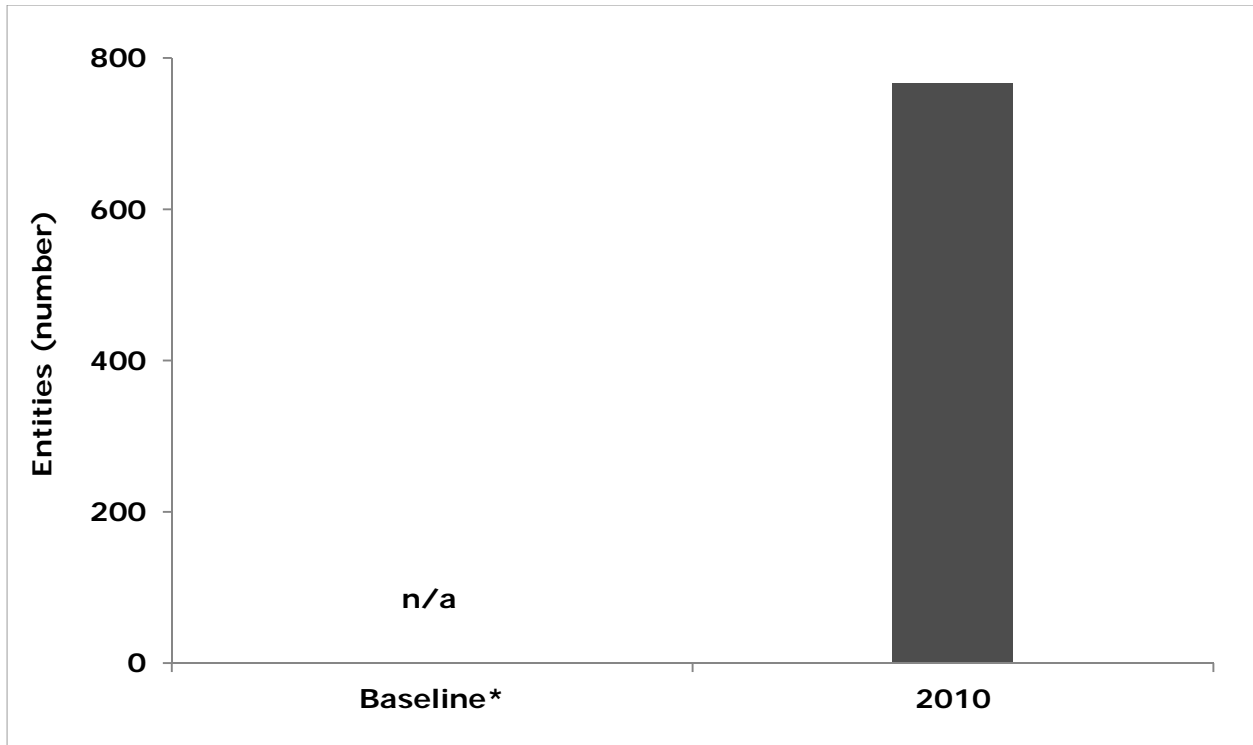


Figure 77. Number of entities holding share in the Gulf of Mexico Grouper-Tilefish IFQ Program

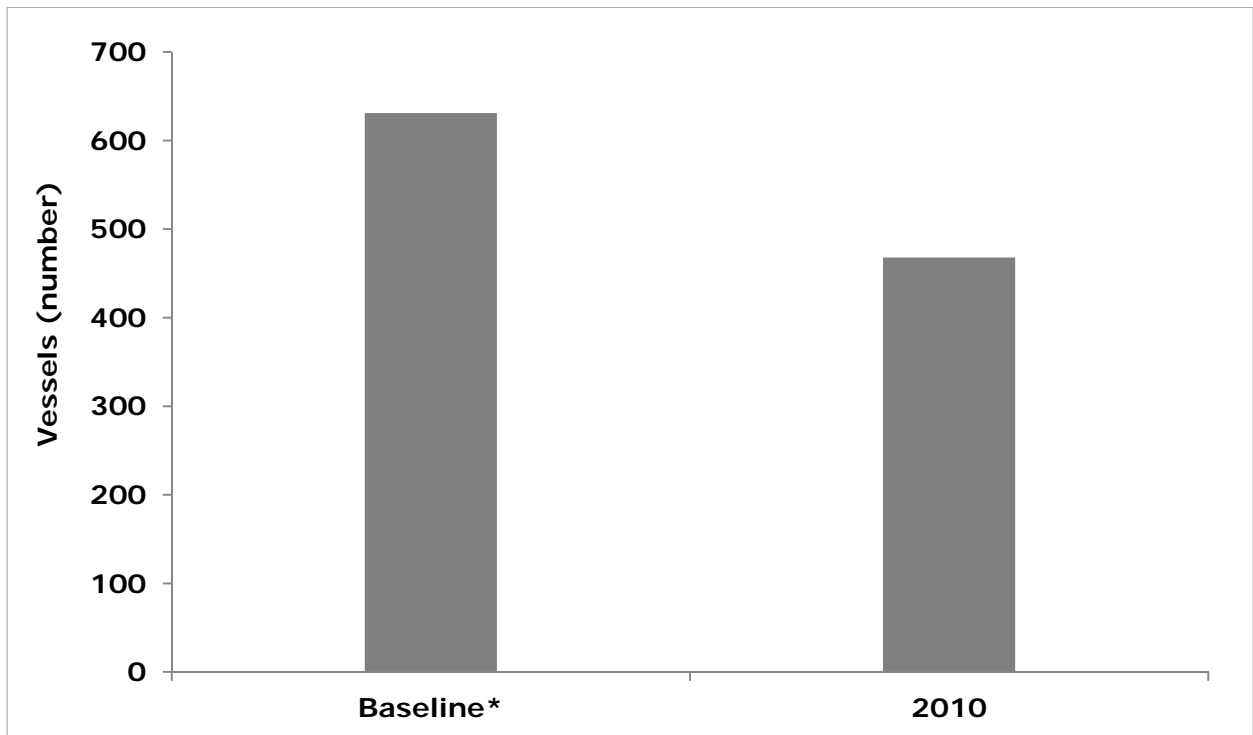


Figure 78. Active vessels fishing quota in the Gulf of Mexico Grouper-Tilefish IFQ Program

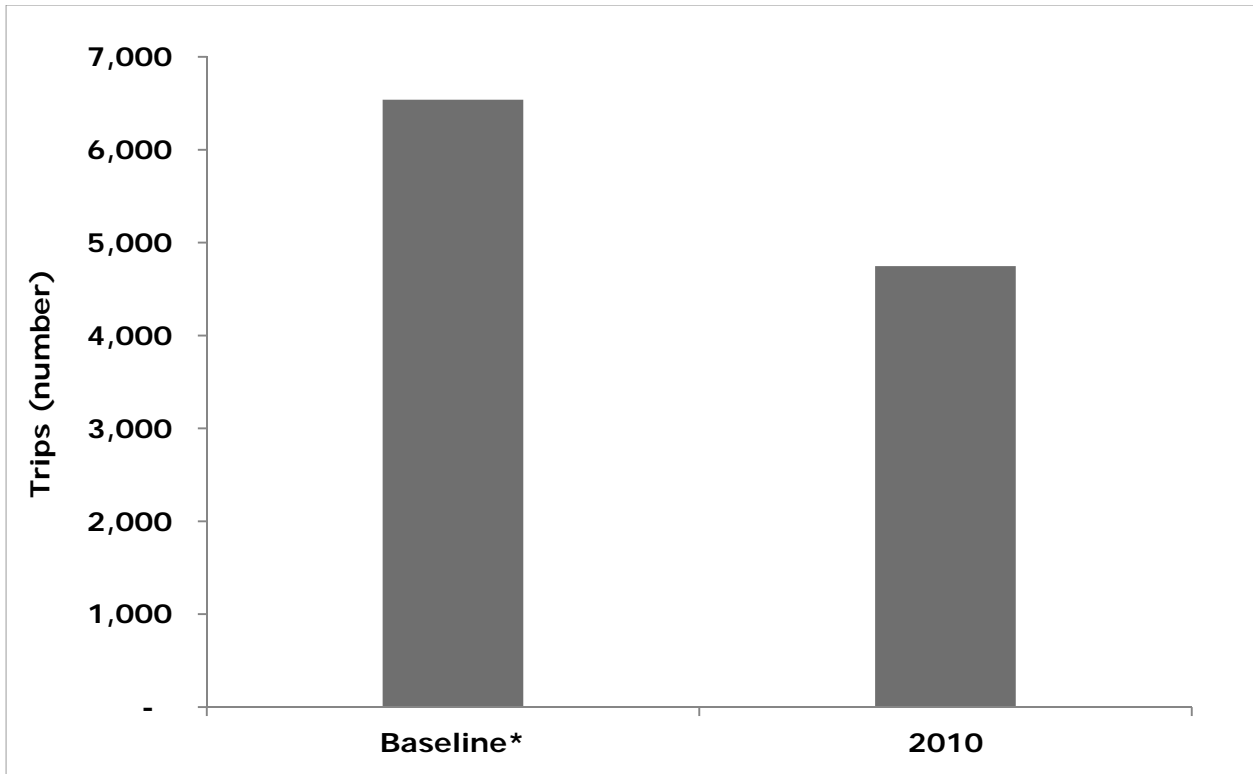


Figure 79. Number of trips harvesting grouper-tilefish in the Gulf of Mexico Grouper-Tilefish IFQ Program

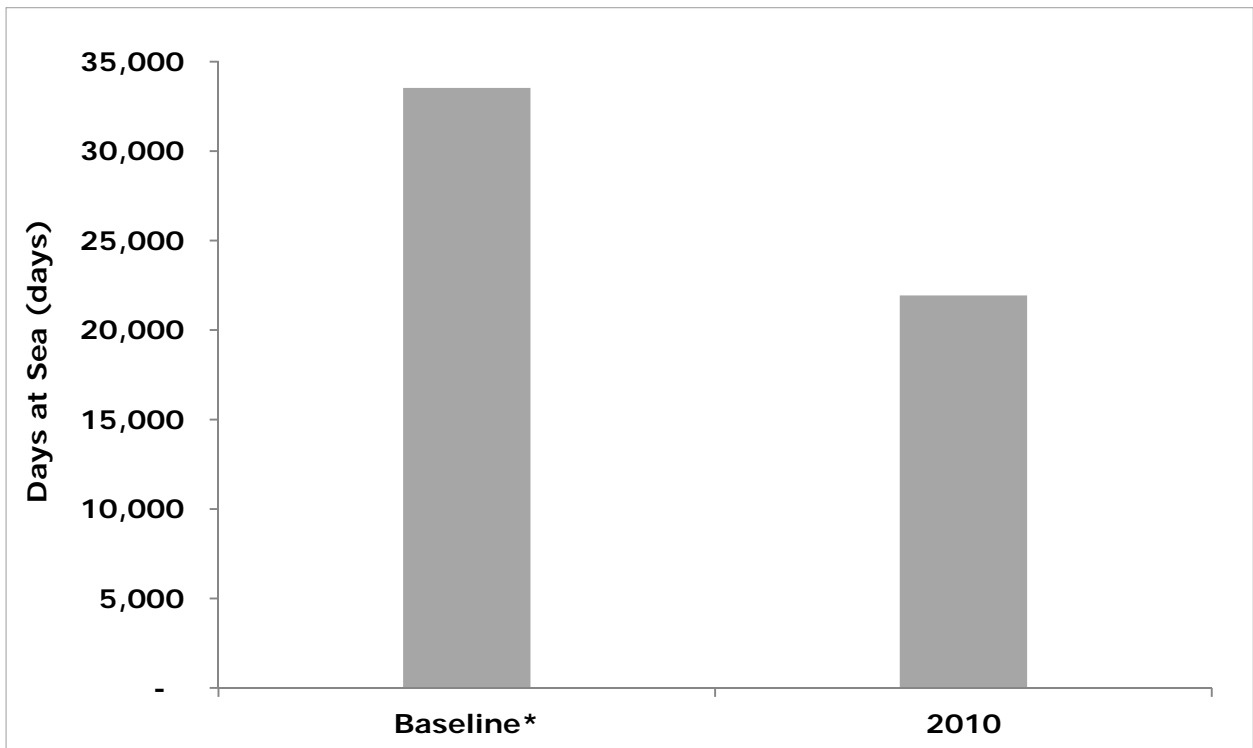


Figure 80. Number of days at sea on trips fishing quota in the Gulf of Mexico Grouper-Tilefish IFQ Program

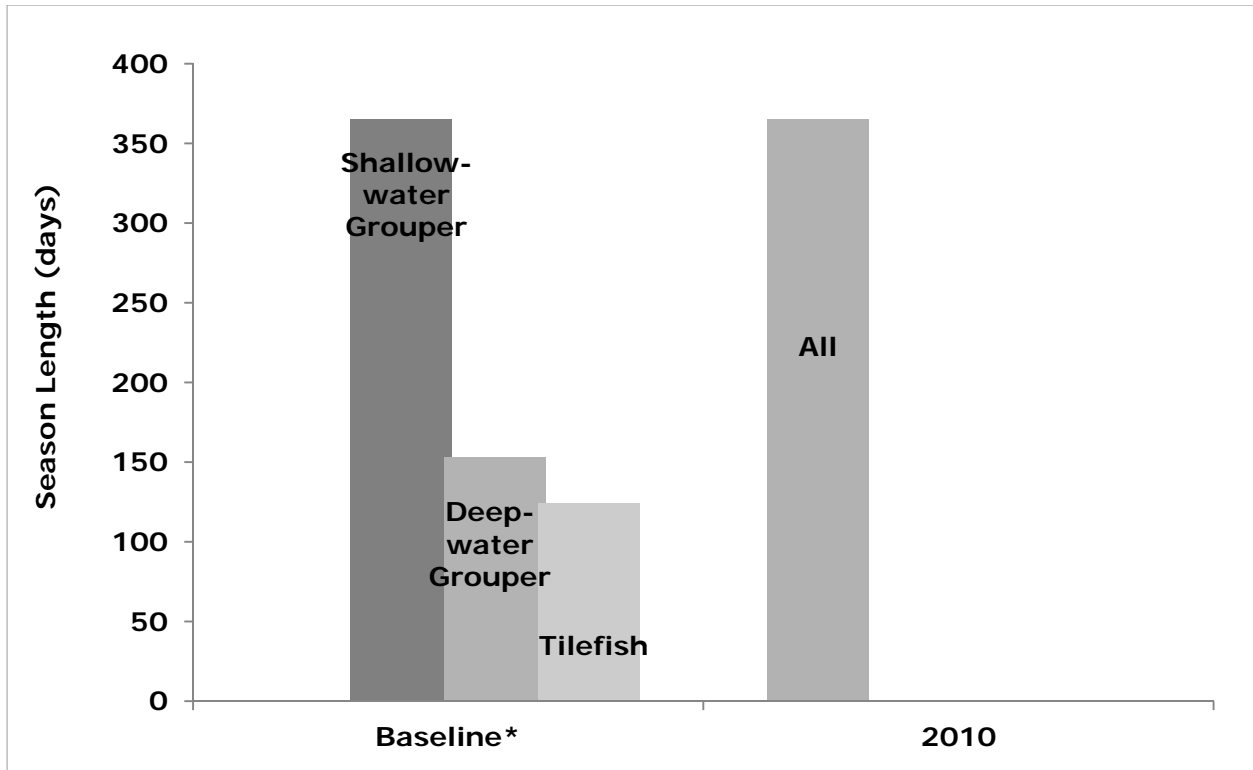


Figure 81. Season length (days) in the Gulf of Mexico Grouper-Tilefish IFQ Program

- iii. Revenue – All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Grouper-tilefish revenue was \$14 million in 2010, approximately a third less than the revenue during the Baseline Period (Figure 82). Revenue from species other than grouper-tilefishes was also reduced by 10% in 2010 when compared to the Baseline Period. Revenue from non-grouper-tilefish species comprised 40% and 47% of the total revenue during the Baseline Period and in 2010, respectively. Average prices for grouper-tilefishes increased slightly from \$3.16 in the Baseline Period to \$3.23 in 2010 (Figure 83). Estimates of the average ex-vessel price per pound of groupers and tilefishes may be underestimated due to changes in reporting practices since implementation of the IFQ Program.

Grouper-tilefish revenue per vessel decreased by about 10% to \$30,000 in 2010 compared to the Baseline Period (Figure 84); however, non-grouper-tilefish revenue per vessel increased by 20% to \$28,000 in 2010. The increase in non-grouper-tilefish revenue per vessel offset the decreased grouper-tilefish revenue per vessel meaning that total revenue of grouper-tilefish vessels increased slightly by 2% to \$58,000 in 2010.

Grouper-tilefish revenue per day was approximately the same in 2010 (\$654) when compared to the Baseline Period (\$645; Figure 85). However, non-grouper-tilefish revenue per day increased by 36% to \$589. Grouper-tilefish revenue per trip decreased by about 10% in 2010 (\$3,000) when compared to the Baseline Period (\$3,300; Figure 86). However, non-grouper-tilefish revenue per trip increased by 22% to \$2,700.

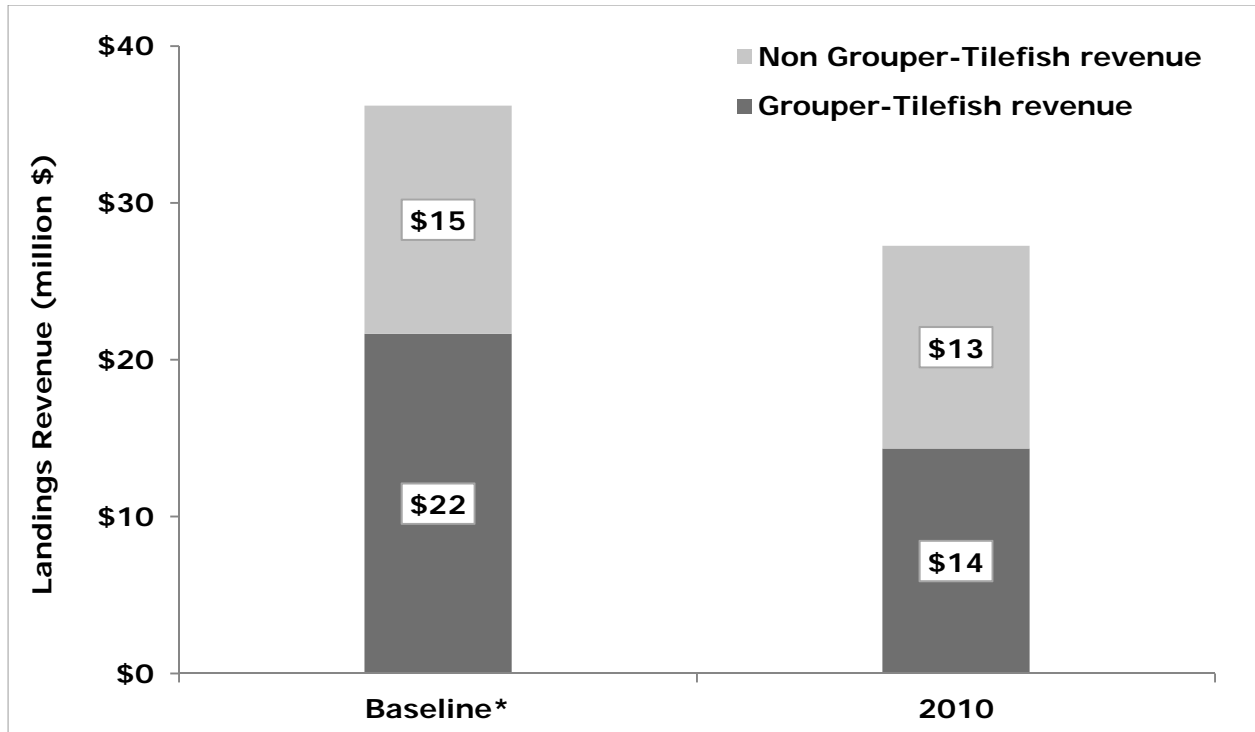


Figure 82. Total grouper-tilefish and non-grouper-tilefish revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Gulf of Mexico Grouper-Tilefish IFQ Program

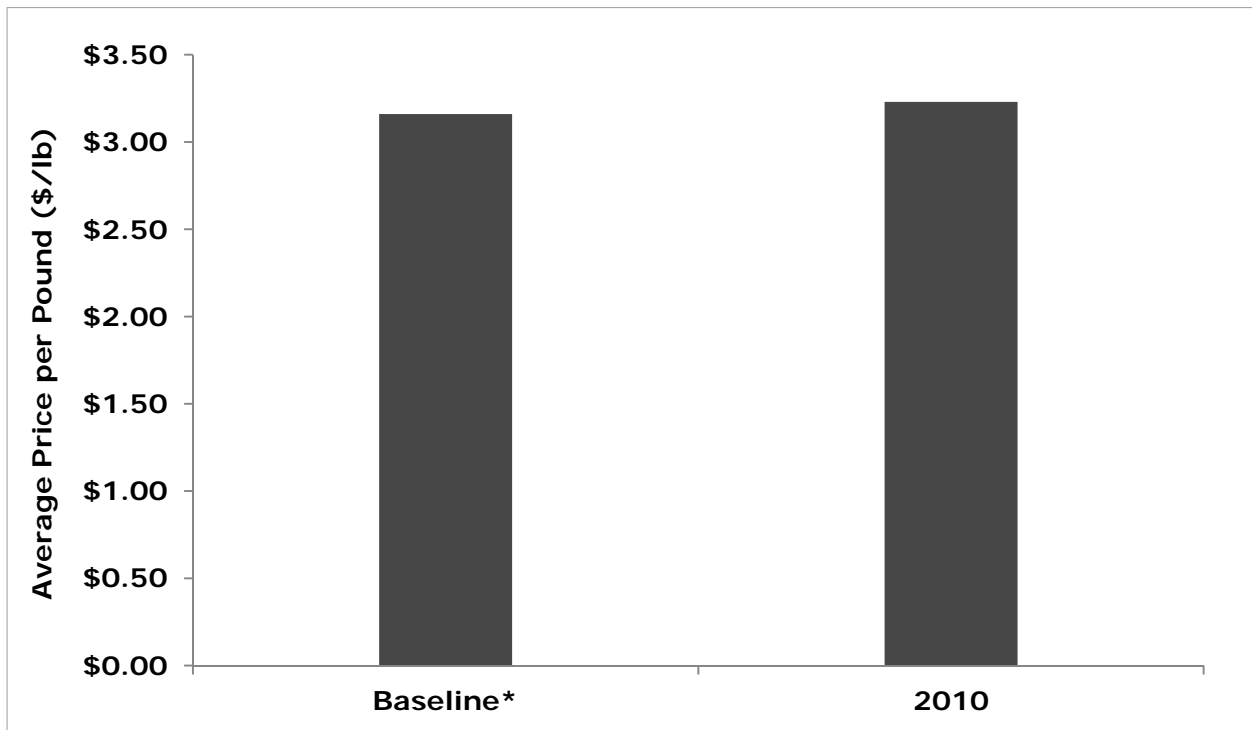


Figure 83. Average combined grouper-tilefish species price per pound (inflation-adjusted 2010 dollars) in the Gulf of Mexico Grouper-Tilefish IFQ Program

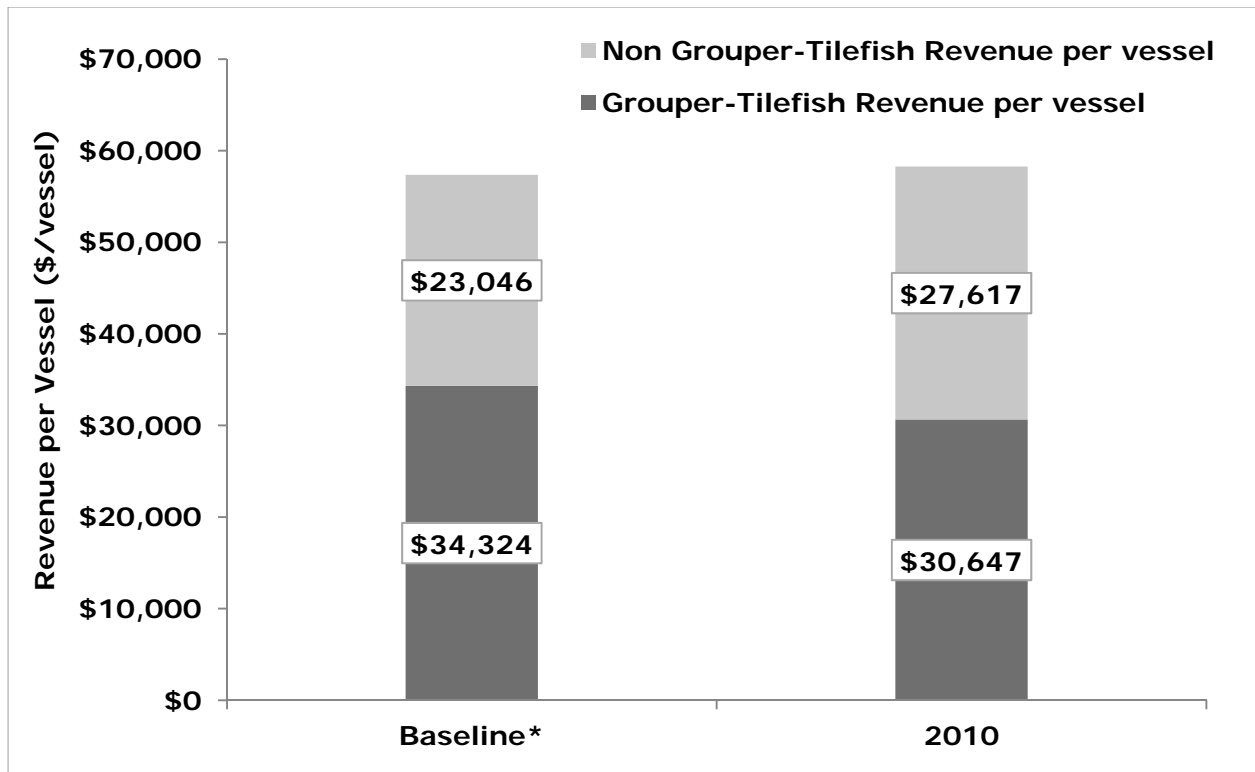


Figure 84. Grouper-tilefish and non-grouper-tilefish revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Gulf of Mexico Grouper-Tilefish IFQ Program

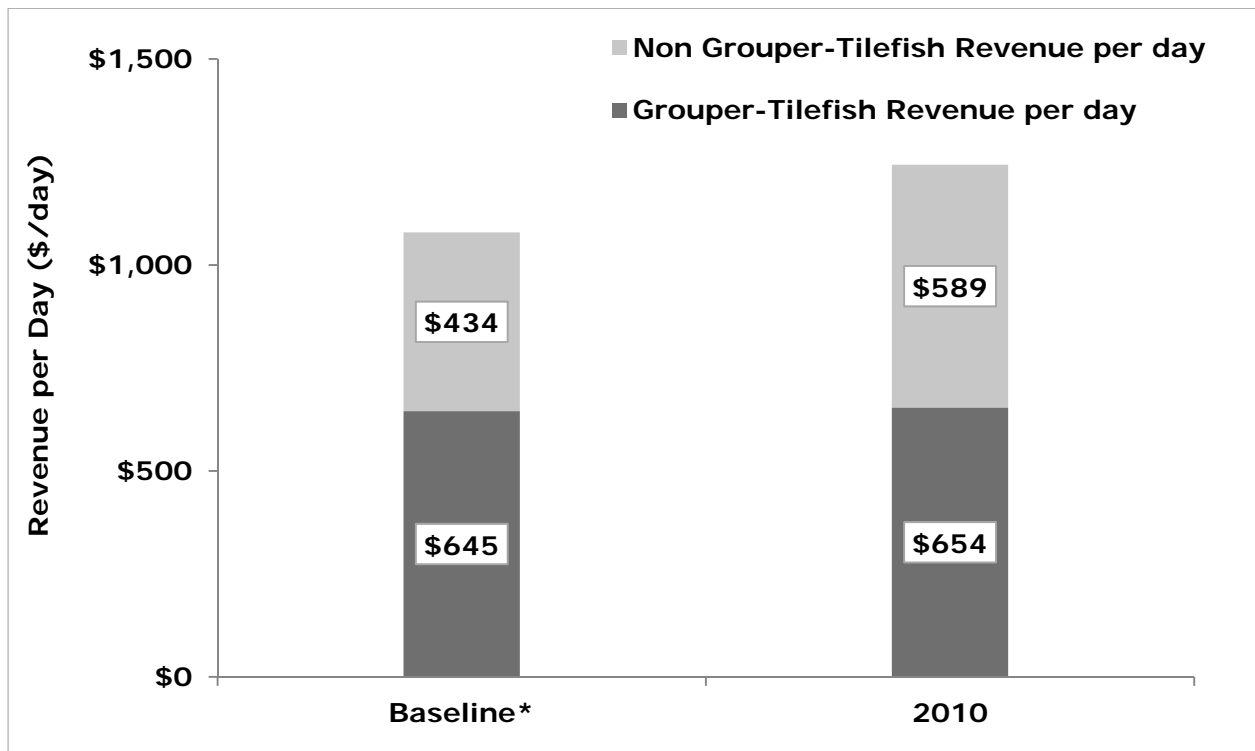


Figure 85. Grouper-tilefish and non-grouper-tilefish revenue (inflation adjusted 2010 dollars) per day at sea fishing quota in the Gulf of Mexico Grouper-Tilefish IFQ Program



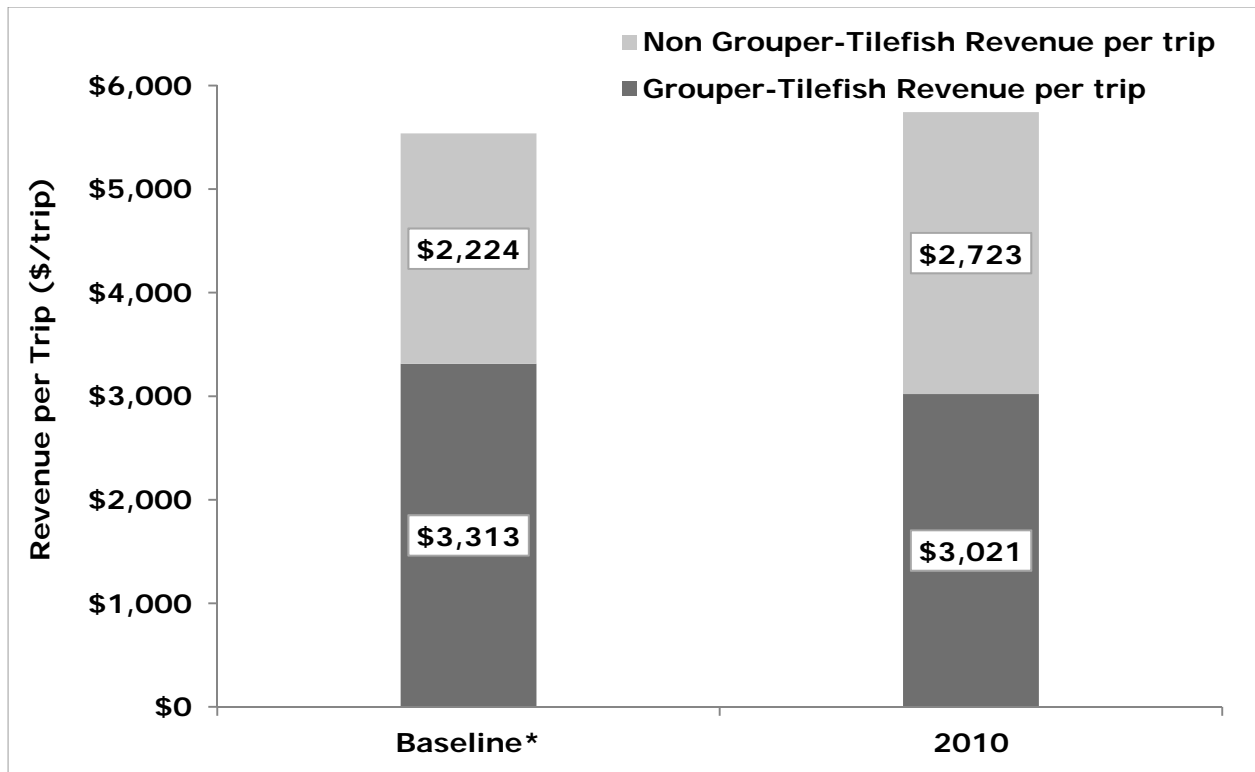


Figure 86. Grouper-tilefish and non-grouper-tilefish revenue (inflation adjusted 2010 dollars) per trip that vessels fish quota in the Gulf of Mexico Grouper-Tilefish IFQ Program



## **Northwest Region**

Two catch share programs have been implemented for Northwest Region fisheries, both of which were developed by the Pacific Fisheries Management Council (PFMC). The Pacific Coast Sablefish Permit Stacking Program was implemented in 2001 while the Pacific Groundfish Trawl Rationalization Program's first year of operation was 2011. Each of these programs were developed to address problems of overcapacity and to improve the economic efficiency of the affected fishing fleets. The Pacific Coast Sablefish Permit Stacking Program allows individual vessel owners to stack up to three individual sablefish endorsed allocation permits onto a single vessel. The program maintains an owner on-board requirement and does not allow transfer of permits to partnerships or corporations. The Pacific Groundfish Rationalization Program is, in effect, two catch share programs: an Individual Fishing Quota (IFQ) for the shoreside trawl fishery and a cooperative management structure for the at-sea Pacific whiting fishery.

In the shoreside trawl IFQ fishery, 138 quota share permits and corresponding online quota share accounts were issued by NOAA Fisheries that allocate percentages of 29 species or species groups to each individual owner. Quota shares were initially allocated to 166 limited entry trawl permit holders (limited entry permits held by catcher processors did not receive quota share) and to 10 shoreside whiting processors. Thirty-six limited entry permits also have Mothership catcher-vessel endorsements and catch history assignments which are used in the Mothership Cooperative fishery. Motherships are large vessels that process whiting at-sea and receive landings from smaller catcher vessels that fish nearby. These initial allocations were consolidated into 138 quota share permits/accounts because many of these permits were owned by the same entity. At the start of the year, when the shoreside trawl IFQ sector allocations for each species are set, NOAA Fisheries allocates the total sector allocation to each quota share owner proportionally by their ownership percentage of each species (as quota pounds). These pounds must be moved to a vessel account in order to be fished.

The at-sea whiting fishery has two components: a mothership and a catcher-processor sector. There are six mothership permits and 37 mothership-catcher-vessel endorsements affixed to limited entry permits that have corresponding catch history assignments (an allocation percentage of the mothership at-sea whiting). At the beginning of each year, the mothership catcher-vessel endorsed limited entry permits obligate their assigned catch history to a mothership permit, and have the option to participate in a cooperative or the non-cooperative fishery. The cooperative structure allows members to decide who goes fishing when and who lands with which mothership vessel. Catcher-processors are large vessels that both catch and process whiting (unlike motherships that do not catch fish). There are ten catcher-processor endorsed limited entry permits and the cooperative structure allows the permit owners to divide the catcher-processor allocations as they see fit.

In this report performance measures are reported for the shorebased IFQ fishery, which comprises the non-whiting trawlers and whiting trawlers. Although many of the same vessels participate in the whiting and non-whiting component of the shoreside fishery, the two are, by and large, distinct fisheries. Thus, for purposes of reporting, the whiting trawl and non-whiting trawl fisheries are reported separately. Performance measures for the at-sea catcher-processor and the mothership cooperatives are not reported.

A snapshot of the performance indicators for the most recent year of available data for each catch share program is reported in Table 5. More detailed descriptions of each catch share program including the management history, program objectives, key events or features, and recent trends in fishery performance are reported in subsequent sections starting with the Northwest sablefish permit stacking program.

**Table 5. Northwest Region Fishery Performance Measures by Catch Share Program**

	<b>Sablefish Permit Stacking Program (2011)</b>	<b>Groundfish Trawl Rationalization (2011)</b>	
		<b>Whiting Trawl IFQ</b>	<b>Non-Whiting Trawl IFQ</b>
<b>Catch and Landings</b>			
Quota allocated to Program (pounds)	3,522,951	205,778,378	168,978,027
Aggregate landings (pounds)	3,168,586	199,326,215	38,078,027
% Utilization	90%	97%	23%
Total ACL exceeded	N	N	N
<b>Effort</b>			
Entities holding share (number)	114	78	128
Active vessels (number)	100	26	94
Days at Sea (days)	2,583	2,949	4,881
Trips (number)	698	894	1,480
Season length (days)	214	200	355
<b>Revenue*</b>			
Catch Share Program revenue (\$)	12,661,962	21,889,458	30,561,256
Non-Catch Share Program revenue (\$)	524,591	54,781	926,689
Average price (\$/pound)	4.00	0.11	0.80
Catch Share revenue per active vessel (\$)	126,620	841,902	325,120
Non-catch share revenue per vessel (\$)	5,246	2,107	9,858
Catch Share revenue per day at sea (\$)	4,902	7,423	6,261
Non-Catch Share revenue per day at sea (\$)	203	19	190
Catch Share revenue per trip (\$)	18,140	24,485	20,649
Non-Catch Share revenue per trip (\$)	752	61	626
<b>Other</b>			
Excessive share cap	Y		Y
Cost recovery fee collected (\$)	NA		NA

\* All revenue and cost recovery values have been adjusted for inflation using the GDP deflator indexed for 2010.

## **Pacific Coast Sablefish Permit Stacking Program**

### **a. Management History**

Sablefish or “Black Cod” is one of many groundfish species managed by the PFMC. Sablefish is a high value species targeted by the limited entry trawl fishery, the limited entry groundfish fixed gear (non-trawl gears which include pots and hook and line) fishery, the open access fixed gear fishery, and the tribal fishery. Limited entry in the West Coast groundfish fishery was established in 1994. The limited entry groundfish trawl and limited entry groundfish fixed gear fisheries receive about 80% of the sablefish allocation on the West Coast. The Pacific Coast Sablefish Permit Stacking Program manages 85% of the sablefish allocated to the limited entry groundfish fixed gear fishery (referred to as the primary sablefish fishery), and the remaining 15% of the sablefish quota allocated to the limited entry groundfish fixed gear fishery is harvested in a daily sablefish fishery which is not managed with a catch share program. As a result, the values provided in this report reflect only sablefish harvested in the primary fishery managed through the permit stacking program and since the Pacific Coast Sablefish Permit Stacking Program was implemented only for the limited entry groundfish fixed gear sector, the discussion focuses on this sector. The Pacific Coast Sablefish Permit Stacking Program covers approximately 30% of all commercially harvested sablefish on the West Coast including tribal fisheries. While any vessel with a limited entry sablefish permit may participate in the daily fishery, only vessels having one or more sablefish endorsed limited entry groundfish fixed gear permits can participate in the primary sablefish fishery (where up to three permits may be “stacked” on one vessel).

At the request of non-trawl industry representatives, the PFMC pursued a mixed seasonal and regional approach to management of the limited entry groundfish fixed gear fishery based on differences in the manner in which the fishery was prosecuted among northern (above 36° N) and southern (below 36° N) fishery participants. The former had traditionally landed the majority of sablefish on directed trips while the latter tended to land sablefish in a daily trip limit fishery. The fixed gear fishery was managed by a quota with separate allocations to the northern and southern fisheries resulting in fishing derbies. The Northern fishery was closed after two to three weeks from 1992-1994, but closed after only five days in 1996. In an attempt to reduce the derby effects, in 1997, vessels were assigned equal harvest limits, effectively an Individual Quota (IQ). However, the Magnuson-Stevens Act moratorium on implementing any individual quota-based programs was still in effect at that time and the PFMC adopted a short season of 10 days. The result was that some vessels were unable to harvest their assigned quota. In 1998, the PFMC modified the program by creating a three-tiered quota assignment, but still set a 10-day season. Permits in each tier (Tier 1, Tier 2, and Tier 3 in order of highest to lowest) were assigned the same quota where eligibility for each tier was based on landings history.

The tiered allocation system meant that some vessel operators had to reduce their fishing activity while others were able to expand. The system provided limited capability for fishing vessel owners to scale their business plans up or down resulting in reduced efficiency. The short season made it difficult to match harvest with market demand resulting in market gluts that lowered product value followed by periods when no product was available at all. The short season was also thought to result in higher accident rates as fishermen had a short window in which to take their allotted quota.

The Magnuson-Stevens Act moratorium on new individual quota programs expired in 2000, but was extended through 2002 via a Congressional appropriations bill, with an exception for a permit stacking program for the fixed gear sablefish fishery. The Permit Stacking Program enabled vessel owners to “stack” up to three sablefish endorsed permits onto a single vessel. In effect, this meant that vessel owners could use the equivalent of three IFQ Program’s allocations with set amounts on one vessel. Perhaps more importantly, the program enabled the season to be extended to seven months (April 1 to October 31). Implementation of the Pacific Coast Sablefish Permit Stacking Program began during 2001 and 2002 was the first year of complete

implementation of the program for the primary sablefish fishery within the limited entry groundfish fixed gear fishery.

## **b. Objectives**

The Pacific Coast Sablefish Permit Stacking Program was developed by the PFMC as Amendment 14 to the Pacific Groundfish Fishery Management Plan. The program objectives included:

- Rationalization of the fixed gear fleet and promote economic efficiency
- Maintain or direct benefits toward fishing communities
- Prevent excessive concentration of harvest privileges and promote equity
- Mitigate the re-allocation effects of previous harvest regulations and prevent future re-allocation problems from emerging
- Promote safety
- Improve product quality and value

## **c. Key Events/Features**

The Pacific Coast Sablefish Permit Stacking Program (Permit Stacking Program) includes a number of features that were designed to meet its objectives. To prevent concentration of harvest privileges, no more than three permits may be stacked onto a single vessel. Furthermore, permits may not be owned by partnerships or corporations. An owner-on-board requirement assures that the fishery retains its traditional owner-operator character.

Although a 12-month season would be feasible, the formal season adopted by the PFMC is seven months running from April to October. Prior to Amendment 14, which established the Permit Stacking Program, the primary sablefish season was set at no more than 10 days. The Amendment lengthened the season to seven months where it remained through 2011. Given that the quota was not exceeded, there were no early closures so the fishery has remained open the full seven months in all years.

Although cost recovery provisions were included in Amendment 14 as approved by the Council, these provisions have not been implemented. Cost recovery regulations are under development at this time.

Time spent fishing is not routinely collected on a trip-by-trip basis, but is estimated using an average on fishing trips that have an observer on-board the vessel. Trip duration has been virtually constant in every year averaging 3.7 days. This means that performance measures based on days at sea are simply scaled by a constant and, therefore, provide no additional information beyond performance measures at a trip level and are not reported herein.

## **d. Recent Trends**

As noted above, the Pacific Coast Sablefish Permit Stacking Program was implemented for part of 2001 and the first full year of data is for 2002. This means that data for 2001 reflects a mixture of pre- and post-catch share activity. For this reason, the pre-catch share Baseline Period includes the years 1998-2000. Unless stated otherwise, all quantities for the catch share fishery are based on sablefish harvested in the primary limited entry groundfish fixed gear fishery. Quantities do not include sablefish harvested in the daily fishery component of the limited entry fixed groundfish gear fishery.

- i. Catch and Landings - All sablefish quantities are reported in whole weight pounds.

Quota allocated to the Pacific Coast Permit Stacking program averaged 4.1 million pounds during the Baseline Period. (Figure 87) In 2002, the first complete year of the Permit Stacking Program, the sablefish quota was set at 2.6 million pounds. The quota increased in both 2003 and 2004,

averaged about 4.5 million pounds in 2005 and 2006, before being reduced to 3.7 million pounds in both 2007 and 2008. The sablefish quota rebounded to 4.6 million pounds in 2010, and was initially set at 3.0 million pounds in 2011. However, a mid-season adjustment to the Tier 1, Tier 2, and Tier 3 individual allocations resulted in an overall quota increase to 3.4 million pounds. Sablefish landings have tracked assigned quota levels without exceeding the quota in any year of the Permit Stacking Program. Quota utilization averaged 83.6% during the Baseline Period. Quota utilization improved to 85% in 2001 but since full implementation of the permit stacking program quota utilization averaged 91.1% since 2002 (Figure 88). However, during the most recent five years utilization has declined to 88.2% of available quota. Note that quota utilization is biased downward because the calculation is based on landings divided by quota where the quota includes total available catch including landings and discards.

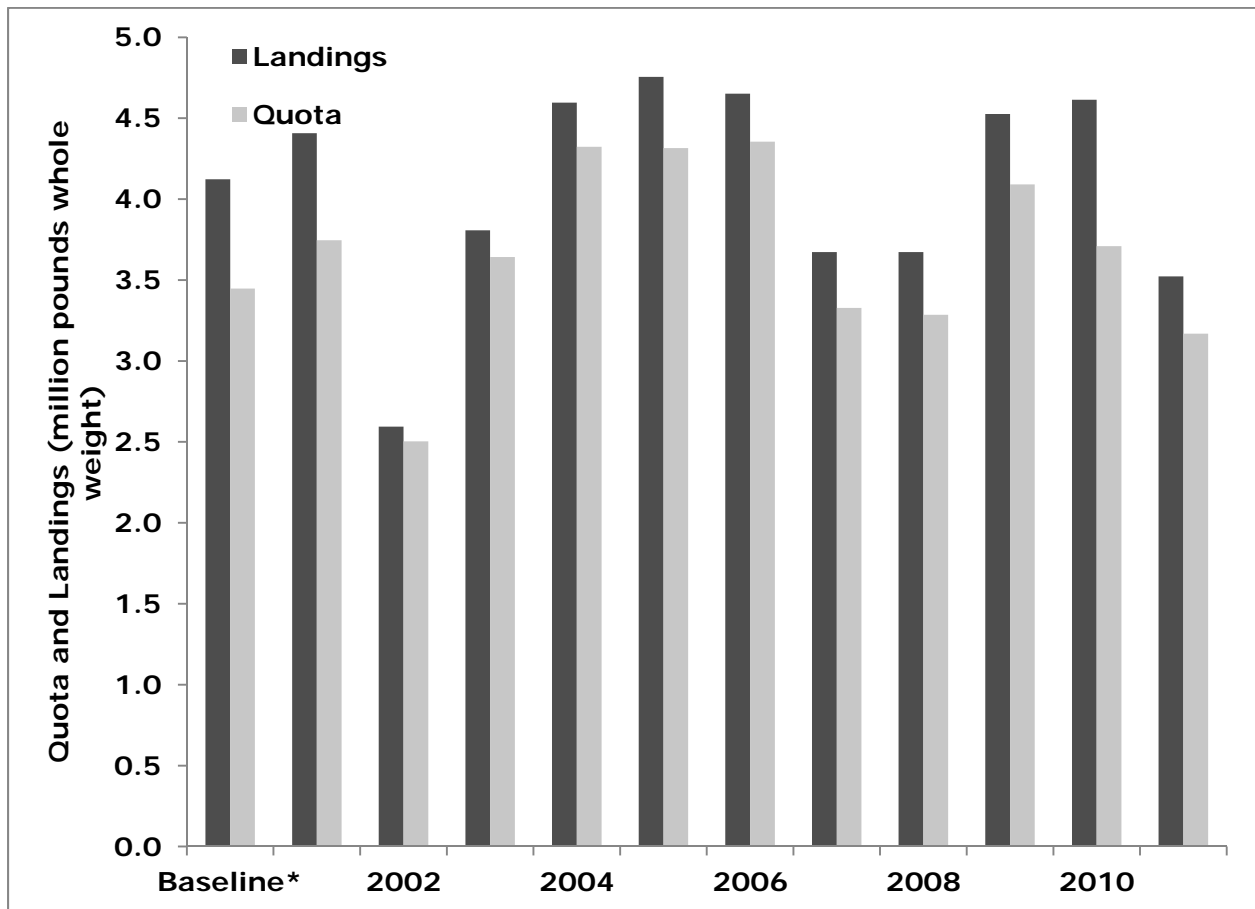


Figure 87. Quota and landings in the Pacific Coast Sablefish Permit Stacking Program

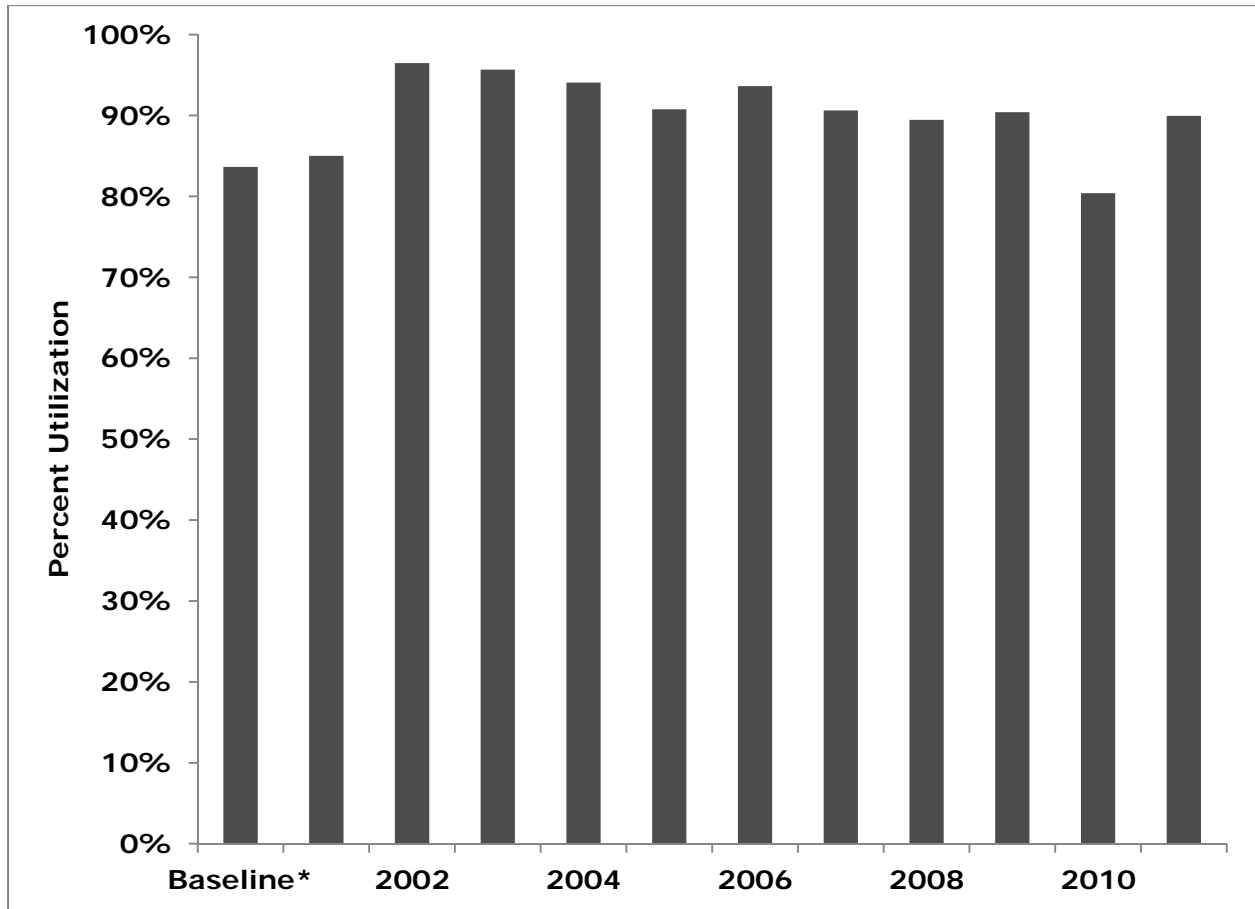


Figure 88. Utilization of available quota in the Pacific Coast Sablefish Permit Stacking Program

ii. Effort

Prior to program implementation there was an average of 154 different owners of a sablefish endorsed limited access fixed gear permit. In the first full year of the Pacific Coast Sablefish Permit Stacking Program, the number of different owners fell to 144 and stayed at that level during 2003 (Figure 89). Since 2003, the number of different owners that were issued a limited access endorsement permit for sablefish declined through 2008 to 113, an average annual rate of 4.3%. The number of unique owners increased to 117 in 2009 and increased again to 124 different owners in 2010. However, the number of entities holding at least one sablefish permit was 114 in 2011.

Of the 154 permit holders that participated in the fishery during the Baseline Period, almost all of them took at least one trip on which sablefish was landed (Figure 89). During the first four years of the Permit Stacking Program, the number of active vessels declined from 101 in 2002 to 80 vessels in 2005. Since 2005, the number of active vessels has been gradually increasing, ranging from 84 vessels in 2008 to 100 vessels in 2011 (Figure 90).

Given the limited season length during the Baseline Period, it comes as no surprise that the number of trips landing sablefish in the primary sablefish fishery increased substantially. On average, vessel owners took 340 trips where primary fishery sablefish were landed during the Baseline Period (Figure 91). With the expanded season, the number of trips taken during 2002,



the first full year of the Permit Stacking Program, increased to 573 and increased again to 621 in 2003. The number of trips declined in consecutive years from 600 trips in 2004 to 469 trips in 2007 before increasing in consecutive years from 2008 to 2011 to a high of 698 trips in 2011.

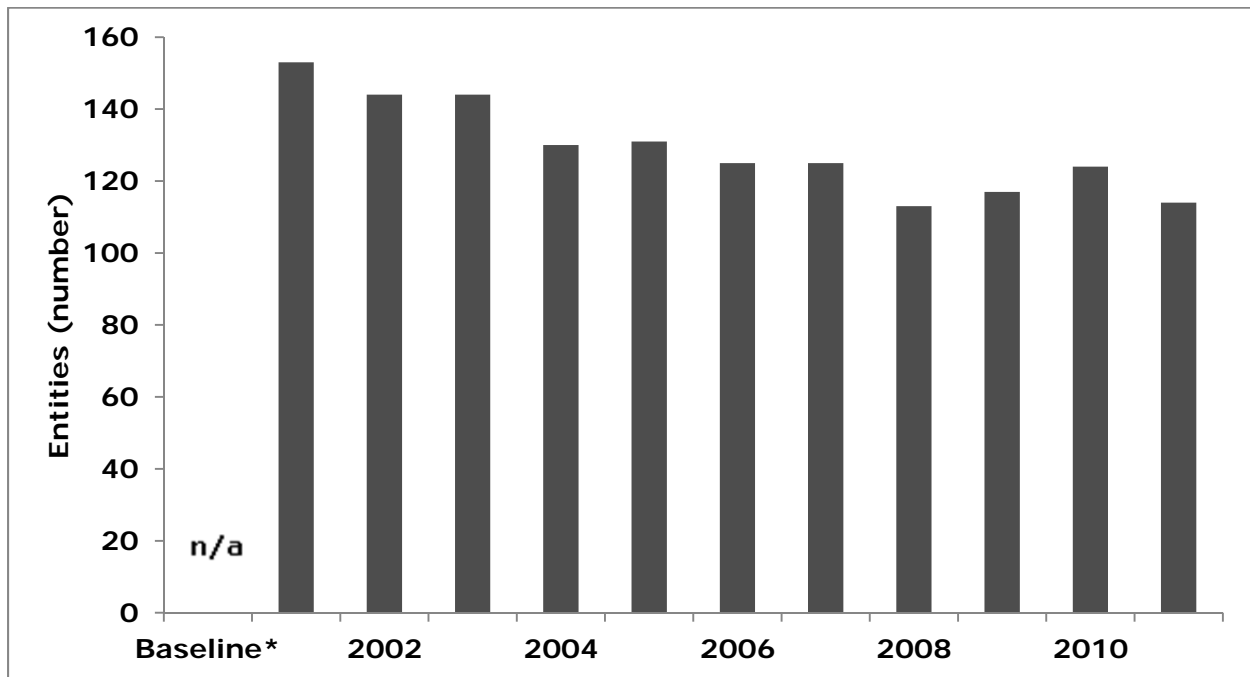


Figure 89. Number of individual limited access sablefish endorsed permit holders in the Pacific Coast Sablefish Permit Stacking Program

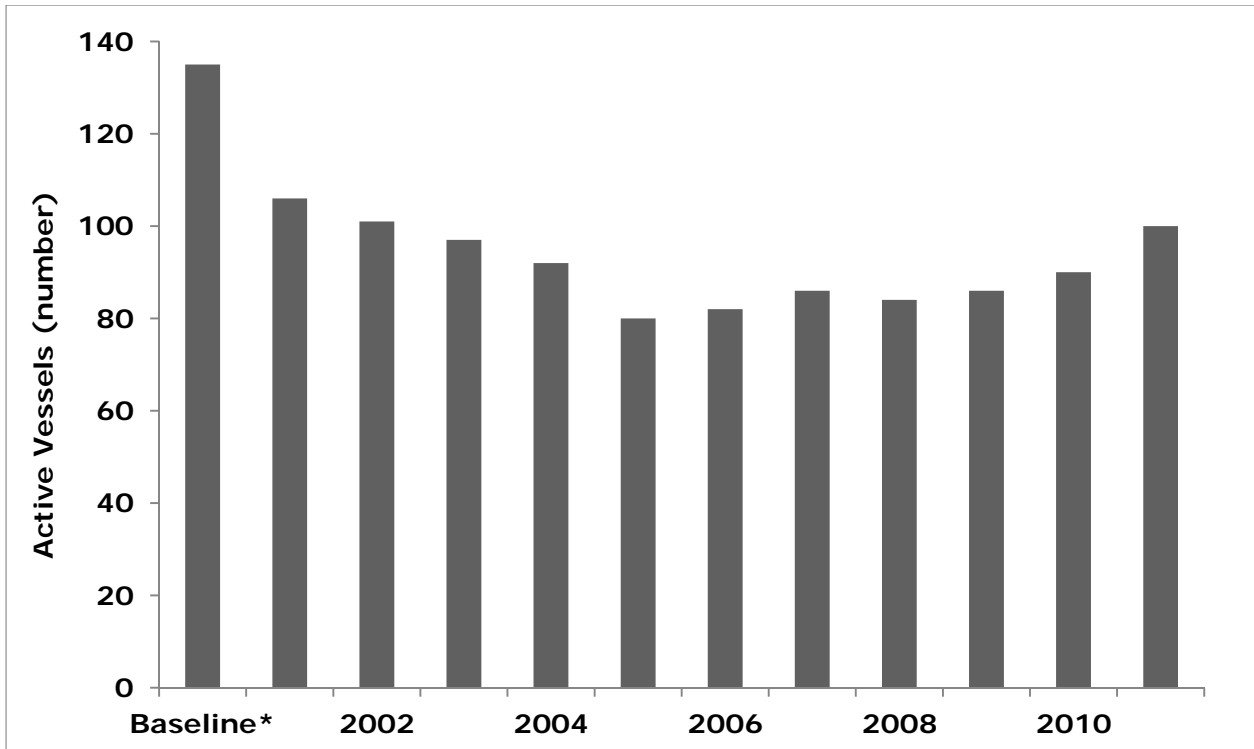


Figure 90. Active vessels fishing quota in the Pacific Coast Sablefish Permit Stacking Program

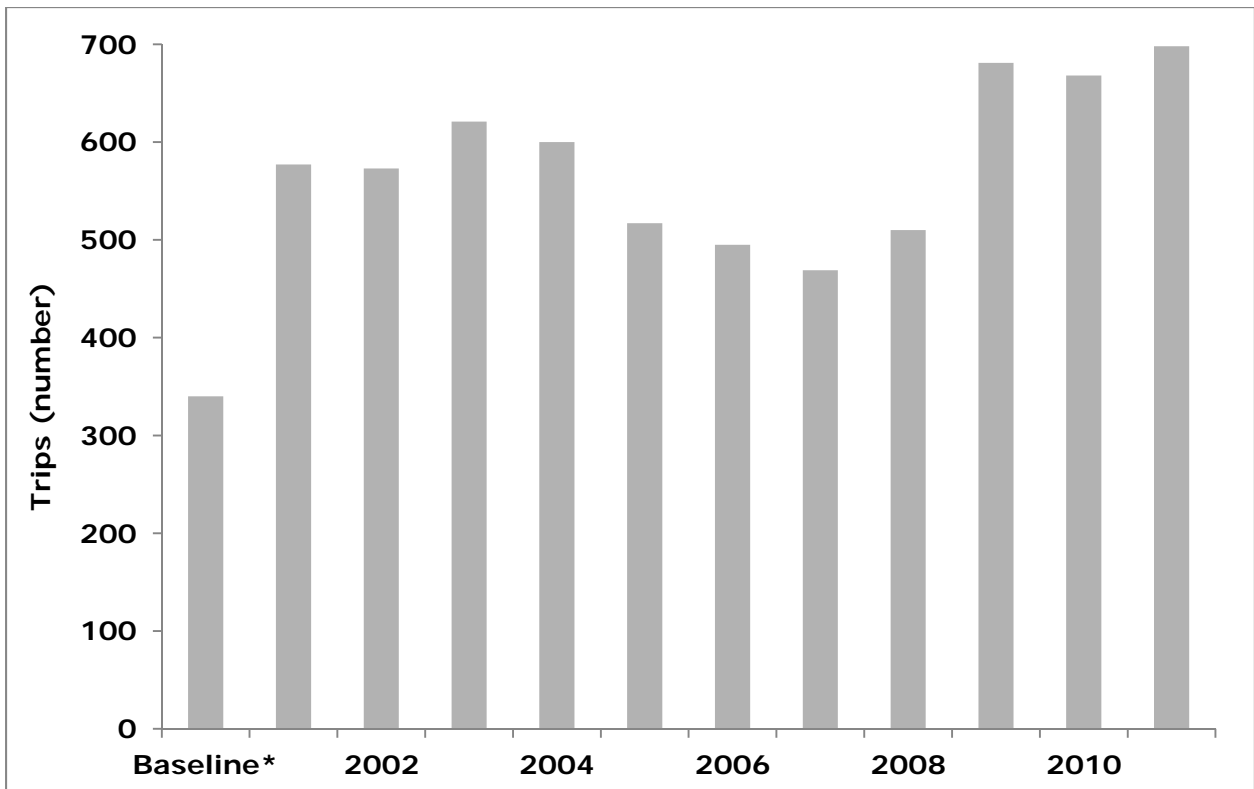


Figure 91. Number of primary fishery trips harvesting Pacific coast sablefish in the Pacific Coast Sablefish Permit Stacking Program

- iii. Revenues – All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Annual primary fishery sablefish revenues averaged \$6.4 million during 1998-2000 (Figure 92). Sablefish revenues fell to \$5.3 million in 2002, the first complete year of the Permit Stacking Program, a reduction of nearly 18%. Notably, the reduction in revenue was half that of the reduction in landings, from an average of 3.5 million to 2.5 million pounds, because the sablefish price increased 55% from an average of \$1.86 per pound during 1998-2000 to \$2.11 in 2002 (Figure 93). This higher price was made possible as the catch share program allowed harvested supplies to be better aligned with market conditions. (West Coast sablefish is mainly exported to Japan and prices are largely determined by the Japanese market.) Since 2002, gross revenues from sablefish have been trending upward at an average annual rate of 12% and were \$12.7 million in 2011. Similarly, average prices have been trending upward particularly since 2004 at an average rate of 8.2%, reaching a high of \$4.00 in 2011.

Sablefish is typically the primary target species in the primary fishery on a substantial number of trips. However, some trip revenue comes from other species that are also caught and sold on trips where sablefish are landed. During the Baseline Period, just over 1% of total revenue on trips in the primary fishery where sablefish were landed came from other species. This reliance on other species for trip revenues increased to 7.9% in the first full year of the Permit Stacking Program and averaged 7.2% of primary fishery total revenue from 2003 to 2008. More recently, other species revenue has averaged 3.4% and was 4% in 2011. Total revenue from all species averaged \$6.5 million during the 1998-2000 Baseline Period (Figure 92). Since the Permit Stacking Program was implemented, total revenue exceeded that of the Baseline Period in all years except 2002. In 2011, total revenue from all species on trips landing sablefish was \$13.2 million, twice that of total revenue during the Baseline Period.

Total revenue per vessel on trips where at least one pound of primary fishery sablefish was landed averaged \$48,253 during the Baseline Period. On these trips, \$47,603 was from primary sablefish and \$650 was from other species (Figure 94). Total revenue per vessel increased to \$56,845 in the first full year of the Program and has been on a general upward trend ever since. Total revenue per vessel increased in consecutive years from 2002 to 2006 before falling to \$95,768 in 2007, still twice as high compared to the 1998-2000 average. More recently, revenue per vessel has increased in three of four years to \$131,866 in 2011, even as the number of active vessels has increased. This means that gross revenue has increased proportionally more than the change in the number of vessels participating in the fishery.

Due to the low number of trips taken during the Baseline Period, on average, total revenue per trip was higher during 1998-2000 at \$19,159 per trip than any other year with the exception of 2006 (Figure 95). However, in the first four years of the Permit Stacking Program, combined sablefish and other species revenue per trip increased in consecutive years, peaking in 2006 at approximately \$21,000. Since 2007, revenue per trip declined but has averaged \$17,645 without trend from 2007 to 2011.

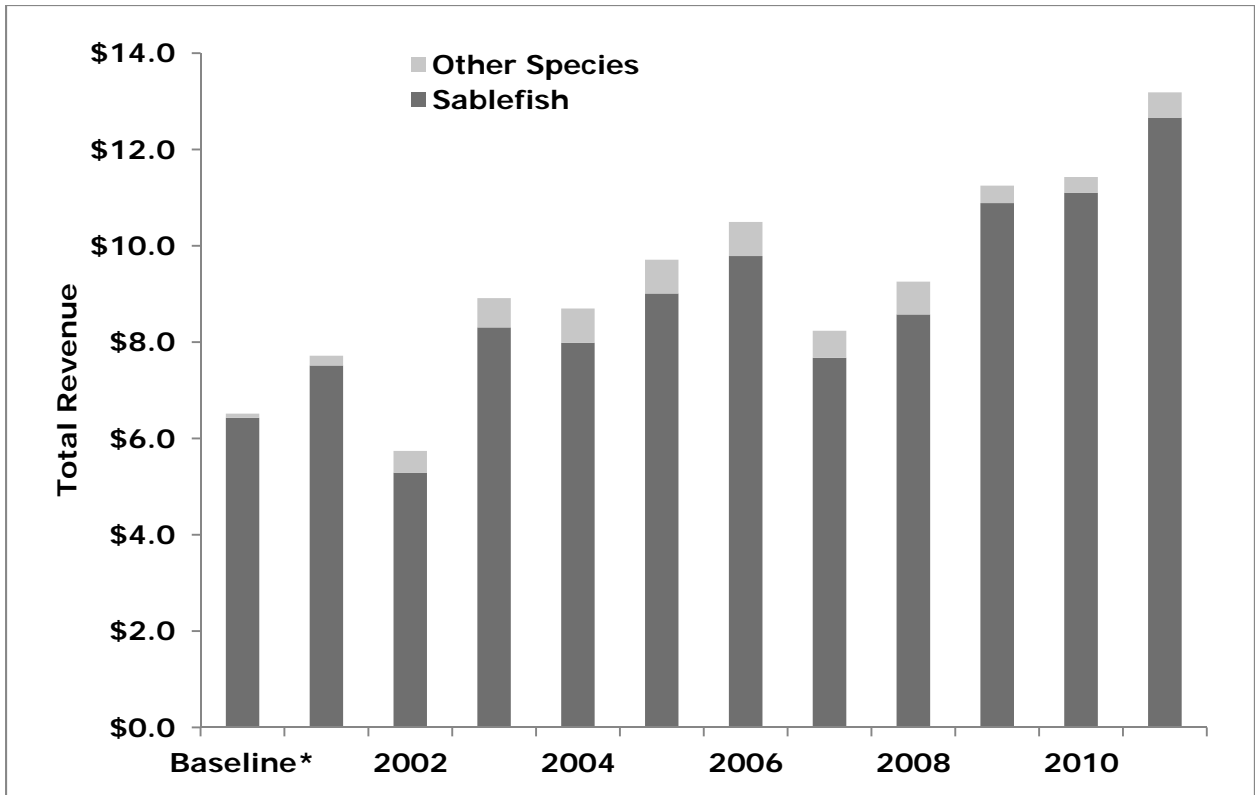


Figure 92. Total sablefish and non-sablefish revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Pacific Coast Sablefish Permit Stacking Program

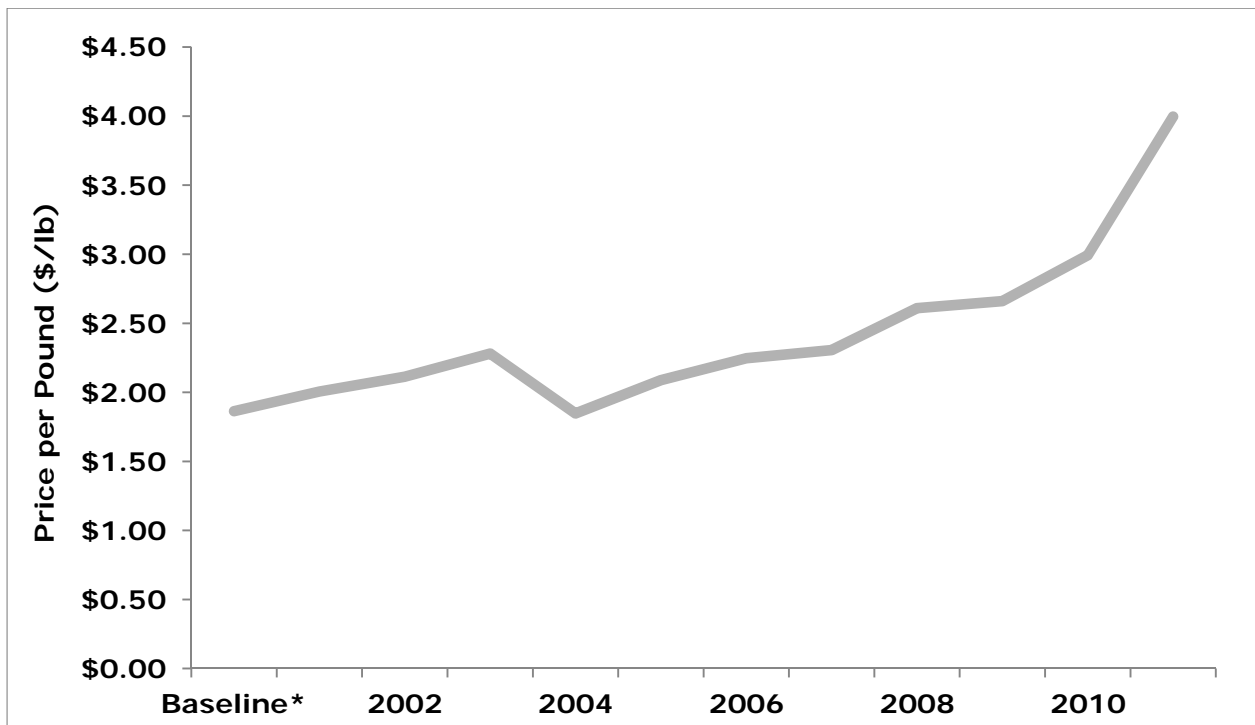


Figure 93. Average Pacific Coast sablefish price per pound (inflation-adjusted 2010 dollars) in the Pacific Coast Sablefish Permit Stacking Program

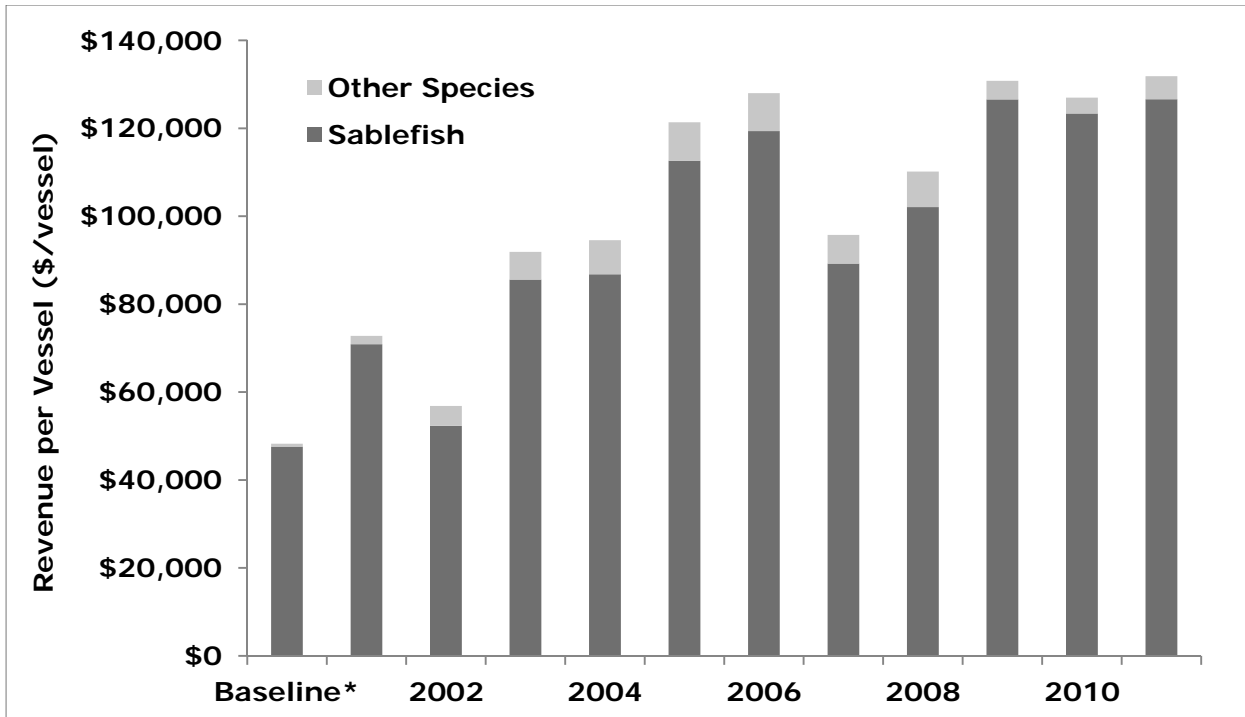


Figure 94. Sablefish and non-sablefish revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Pacific Coast Sablefish Permit Stacking Program

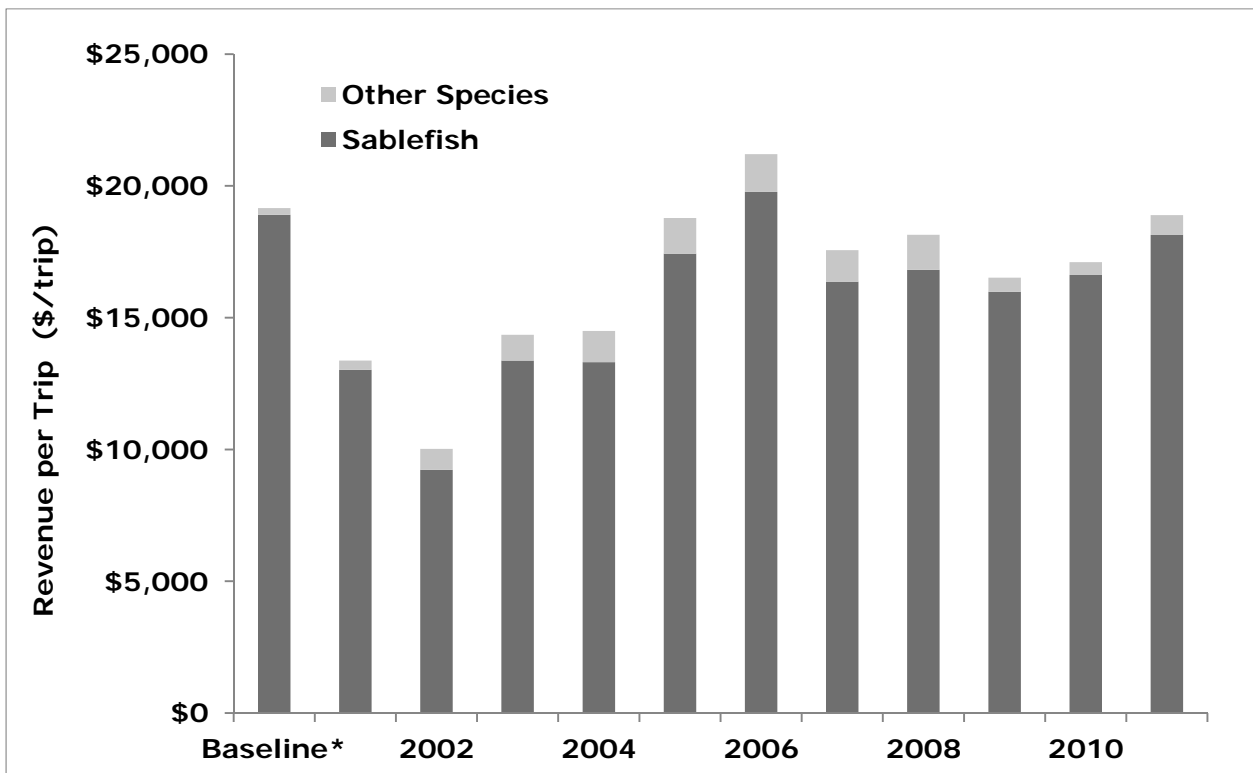


Figure 95. Sablefish and non-sablefish revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Pacific Coast Sablefish Permit Stacking Program

## **Pacific Groundfish Trawl Rationalization Program**

### **a. Management History**

The Pacific groundfish trawl fishery includes several separate components: a non-whiting trawl fishery that targets a variety of flatfish, roundfish, thornyheads, and some rockfish using a bottom trawl, and a whiting fishery that uses a mid-water trawl to almost exclusively harvest whiting. The fishery also encounters numerous other rockfish species as bycatch – several of these rockfish species have been declared overfished. For management purposes, the whiting trawl sector was further subdivided into three sectors: a shorebased sector of fishing vessels that delivers whiting to shorebased processors; a catcher processor sector that harvests whiting and processes it on-board; and motherships, at-sea processors that receive whiting catch from catcher vessels. Under the IFQ Program, the shorebased whiting sector was combined with the non-whiting trawl sector.

Recognizing the differences between the shoreside and at-sea non-whiting and whiting sectors, the PFMC developed an Individual Fishing Quota program (IFQ Program) for the shorebased trawl sector (vessels that land whiting and other groundfish) and a cooperative management structure for the whiting trawl sectors. Prior to the IFQ Program, the non-whiting component of the shorebased trawl sector had been managed through an overall quota combined with trip limits, seasonal closures, gear restrictions, and area restrictions such as the Rockfish Conservation Areas. These measures were adopted to rebuild groundfish and avoid bycatch of overfished stocks of rockfish. However, as these measures became increasingly restrictive, there was growing concern over the economic viability of the non-whiting trawl fishery. Lack of flexibility and individual accountability were cited as pressing management concerns. The shorebased whiting industry also was managed in ways to protect overfished species. As a result, the PFMC adopted an IFQ Program for the shorebased trawl sector and a program of cooperatives for the whiting shorebased and the whiting mothership sectors. Since the whiting catcher-processor sector already was operating under a voluntary cooperative, this sector was largely left unaltered. (If the cooperative disbands, there are regulatory measures in place to convert this sector to an IFQ fishery.) Development of the shorebased trawl IFQ Program and whiting cooperative programs were initiated in 2003 and implemented for the 2011 year. Although the IFQ Program and cooperative programs manage two separate components (shorebased and at-sea) of the groundfish fishery, the programs are referred to collectively as the Pacific Groundfish Trawl Rationalization Program.

The catch share program indicators were developed to measure the performance of the harvesting sector. Since both the mothership and catcher processor components of the Trawl Rationalization Program have a significant processor component, a different set of indicators would be better suited to evaluate program performance for these components of the Pacific groundfish trawl fishery. For this reason the focus of this section is on the shorebased IFQ fishery which comprises the non-whiting and whiting trawlers. However, even though there is substantial overlap in terms of participating vessels the two fisheries are, by and large, distinct fisheries with the shorebased trawl IFQ program and are treated as such below for purposes of reporting.

### **b. Objectives**

The goal of the Pacific Groundfish Trawl Rationalization Program was to “create and implement a capacity rationalization plan that increases net economic benefits, creates individual economic stability, provides for full utilization of the trawl sector allocation, considers environmental impacts and achieves individual accountability of catch and bycatch”.

The plan objectives included

- Provide a mechanism for total catch accounting
- Provide for a viable, profitable, and efficient groundfish fishery
- Promote practices that reduce bycatch and discard mortality and minimize ecological impacts
- Increase operational flexibility
- Minimize adverse effects from an IFQ Program on fishing communities and other fisheries
- Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry
- Provide quality product for the consumer
- Increase safety in the fishery

### **c. Key Events/Features**

The shorebased trawl IFQ Program includes a number of features that are designed to meet program objectives. For example, anticipating that there may be unintended consequences with the IFQ Program, a set-aside of 10% of the available quota was created for use in an adaptive management program. A moratorium was placed on sale of quota shares for the first two years of the program although leasing of quota pounds is allowed. The moratorium allows more time for industry participants to learn more about the value of quota to avoid mistakes (buyer/seller remorse) that may be made before quota values have been established. For the non-whiting trawl component of the IFQ Program, a share cap was established that varied by species (anywhere from 2.5% to 17.7%) as well as an aggregate cap of no more than 2.7% of the total combined quota for all non-whiting IFQ Program species. An ownership cap of 10% was established for whiting. Cost recovery has not yet been implemented for the trawl rationalization program.

### **d. Recent Trends**

All trends discussed below are displayed in Table 6. Since the catch share programs started in 2011, the Baseline Period is the average of 2008-2010. However, due to major changes brought on by the new shorebased IFQ catch share programs, a number of Baseline Period statistics were not sufficiently comparable to provide a meaningful benchmark for comparing catch share program performance over time. These metrics include quota, entities holding share, number of trips, and number of days. This also means that calculated metrics based on missing Baseline Period data are also not calculated. All performance measures are shown in Table 6.

- i. Catch and Landings - All weights are reported by round-weight pounds (i.e., whole).

The combined quota for the trawl IFQ program was 375 million pounds for 206 million pounds was whiting and 169 million pounds was groundfish species other than whiting species. Aggregate landings of whiting during the Baseline Period (2008-2010) averaged 113 million pounds but were 199 million pounds in 2011. In 2011, 97% of the available whiting quota was harvested. By contrast, 23% of the non-whiting trawl quota was harvested during 2011 as aggregate landings were 38 million pounds, down from 51 million pounds during the Baseline Period.

- ii. Effort

Quota shares were initially allocated to 166 limited entry trawl permits (limited entry permits held by catcher processors did not receive quota share) and to 10 shorebased whiting processors. These initial allocations were consolidated into 138 quota share permits/accounts because many of these permits were owned by the same entity. Of these quota accounts most received a quota share for both whiting and non-whiting while the remainder received quota share for only whiting or non-whiting but not both. In 2011, there were a total of 78 entities

holding whiting quota share and 128 entities that held non-whiting quota share. During 2011, 26 vessels (33% of entities holding share) participated in the shorebased whiting trawl IFQ while 94 (73% of entities holding share) vessels participated in the non-whiting trawl IFQ. Compared to the Baseline Period the number of active vessels during 2011 in both the shorebased whiting and non-whiting trawl fishery declined, 27% (from 36 to 26 vessels in 2011) and 18% (from 115 to 94 vessels in 2011) in the whiting fishery and non-whiting fishery, respectively.

On average, 579 whiting trips were taken during the Baseline Period and the season length averaged 141 days. In 2011, the whiting trawl IFQ fishery remained open for an additional 59 days and the number of trips increased to 894. The season length for the non-whiting IFQ trawl fishery was nearly identical to that of the Baseline Period, but total trips declined by 40% from 2,447 to 1,480.

- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Overall, the combined revenue from the whiting and non-whiting shorebased trawl IFQ increased in 2011 by 38% from \$38 million in the Baseline Period to \$52 million in 2011. The majority of this increase was due to the whiting fishery as revenue from the whiting fishery increased from \$9 million to \$22 million, an increase of 139%. Aggregate catch share program revenue in the non-whiting IFQ fishery also increased but by a more modest 6%.

The average price per pound in 2011 increased from \$0.08 per pound during the Baseline Period to \$0.11 per pound in 2011 even though aggregate whiting landings were much higher. The average price for non-whiting catch share species increased from \$0.57 per pound in the Baseline Period to \$0.80 per pound in 2011. This price increase (42%) was sufficient to offset the 25% reduction in non-whiting IFQ landings resulting in an increase in the non-whiting trawl fishery revenue noted above.

Fishermen often target and land other fish species on groundfish trips. The Pacific Trawl Rationalization Program covers a substantial number of species. However, there are some groundfish species that are taken in such minor amounts, it was deemed that they should continue to be managed by trip limits and not be a direct part of the IFQ Program; therefore, there is a small amount of revenue from non-catch share species. In the whiting fishery, revenue from species other than whiting were less than 1% in the both the Baseline Period and in 2011. In the non-whiting IFQ fishery, revenue from non-catch share program species averaged 4% of total revenue on catch share program trips during the Baseline Period and was 3% of revenue in 2011. Performance indicators that include non-catch share program revenues are reported in Table 6, however, given the small value received from non-catch share program species, discussion of the remaining performance measures including revenue per vessel, revenue per trip, and revenue per day will focus only on catch share revenues.

Catch share program revenue per active vessel in the whiting IFQ fishery more than tripled in 2011 compared to the Baseline Period from \$254,000 to \$842,000. This large change was due to the combined effect of more than doubled revenue in the whiting IFQ fishery and a one-third reduction in active vessels in 2011. Whiting revenue per trip increased in 2011 by 55% from an average of \$15,800 during the Baseline Period to \$24,500 per trip. This increase in revenue per trip was lower than that of revenue per active vessel because the number of whiting IFQ trips in 2011 increased by 40%.

Revenue per active vessel also increased in the non-whiting groundfish trawl IFQ fishery from \$250,000 during the Baseline Period to \$325,000, an increase of approximately 30%. Catch share program revenue per trip increased by 75% from \$11,700 during the Baseline Period to \$20,600 in 2011. The change in revenue per trip exceeded that of revenue per active vessel in the non-whiting groundfish trawl IFQ program because of the combined effects of a modest 6%



increase in revenues and a 40% reduction in the number of non-whiting IFQ trips taken during 2011.

**Table 6. Summary Performance Metrics for Year 1 (2011) of the Pacific Groundfish Trawl Rationalization Program**

	Whiting Trawl IFQ		Non-Whiting Trawl IFQ	
	Baseline Period (2008-2010)	2011	Baseline Period (2008-2010)	2011
<b>Catch and Landings</b>				
Quota allocated to Program (pounds)	NA	205,778,378	NA	168,978,027
Aggregate Landings	113,287,740	199,326,215	50,800,790	38,074,314
% Utilization	NA	97%	NA	23%
ACL exceeded	NA	N	NA	N
<b>Effort</b>				
Entities holding share (number)	NA	78	NA	128
Active Vessels	36	26	115	94
Days at Sea (days)	NA	2,949	NA	4,881
Trips (number)	579	894	2,447	1,480
Season length (days)	141	200	365	355
<b>Revenue</b>				
Catch share program revenue	9,143,017	21,889,458	28,787,608	30,561,256
Non-Catch share program revenue	11,778	54,781	1,140,876	926,689
Average CS Species Price (\$/pound)	0.08	0.11	0.57	0.80
Catch share program Revenue per active vessel (\$/vessel)	253,973	841,902	250,327	325,120
Non-catch share program Revenue per active vessel (\$/vessel)	327	2,107	9,921	9,858
Catch share program revenue per day at sea (\$/vessel)	NA	7,423	NA	6,261
Non-catch share program Revenue per day at sea(\$/vessel)	NA	19	NA	190
Catch share program Revenue per trip (\$/vessel)	15,791	24,485	11,764	20,649
Non-catch share program Revenue per trip (\$/vessel)	20	61	466	626
<b>Other</b>				
Excessive Share Cap	NA	Yes	NA	Yes
Cost Recovery Fee Collected (\$)		NA		NA



## **Alaska Region**

There are six catch share programs in the Alaska region: the Western Alaska Community Development Quota (1992), Alaska Halibut and Sablefish Individual Fishing Quota (IFQ) Program (1995), Bering Sea and Aleutian Islands American Fisheries Act Pollock Cooperatives (1999), Bering Sea and Aleutian Islands Crab IFQ Program (2005), Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80; 2008), and Central Gulf of Alaska Rockfish Cooperatives (2012). The Alaska Halibut and Sablefish IFQ Program was jointly implemented, but performance of the individual components of the fisheries are quite distinct; therefore, assessment of the Alaska Halibut and Sablefish IFQ Programs are presented separately.

This report does not assess the Western Alaska Community Development Quota or the Central Gulf of Alaska Rockfish Cooperatives Programs and, therefore only assesses four of the Alaska Region's catch share programs. The North Pacific Council established the Western Alaska Community Development Quota (CDQ) Program, per Section 305(i)(1)(C) of the Reauthorized Magnuson-Stevens Act. The CDQ Programs allocate a percentage of all Bering Sea and Aleutian Islands groundfish, prohibited species, halibut and most crab to 65 eligible villages in western Alaska that are organized into six CDQ groups. The goals of the CDQ Program are to 1) support economic development in western Alaska; 2) alleviate poverty and provide economic and social benefits to residents; and 3) achieve sustainable and diversified local economies. Although the CDQ Program allocates transferable shares to community entities and has many of the same properties as the other catch share programs included in this report, economic performance metrics are not reported for the CDQ fisheries, due to their unique nature. Also, the Central Gulf of Alaska Rockfish Cooperatives Program was recently implemented in 2012, therefore only Baseline Period data are presented.

There are also three management institutions in Alaska that resemble catch share programs, but are not included in this report: Alaska Weathervane Scallops, the Freezer Longline Coalition and Bering Sea Chinook Salmon Bycatch Management. NOAA Fisheries issues limited access permits in the Alaska Weathervane Scallop fishery, but it is primarily managed by the State of Alaska and while the vessels have formed a voluntary cooperative, the cooperative is not given exclusive harvesting privileges. The Alaska Freezer Longline Coalition is a voluntary cooperative of catcher/processors that catch Pacific cod with longline gear in the Bering Sea and Aleutian Islands. The Longline Catcher Processor Subsector Single Fishery Cooperative Act was signed by President Obama in December 2010 and allows freezer longline vessels participating in the Bering Sea and Aleutian Islands directed Pacific cod fishery to form a single cooperative and requires that NOAA Fisheries implement enabling regulations within two years of receiving a request from holders of at least 80 percent of the eligible licenses. This Cooperatives Program is not included in the report because the vessels participating in this fishery have formed a voluntary cooperative, but the cooperative is not given exclusive harvesting privileges and has not exercised the formal process that would require NOAA Fisheries to write regulations. The Bering Sea Chinook Salmon Bycatch Management system is not included because it was established to minimize bycatch in the pollock fishery and involves the same participants as in the AFA Pollock Cooperatives Program.

Table 7 displays a summary of the Economic Performance Indicators for the Alaska Catch Share Programs. More detailed results are presented below for each of these programs.

**Table 7. Alaska Region Fishery Performance Measures for Catch Share Programs**

	Halibut 2011	Sablefish 2011	AFA Pollock Cooperatives 2010 <sup>a</sup>	Crab IFQ 2011 <sup>b</sup>	Amendment 80 2010 <sup>c</sup>	Gulf of Alaska Rockfish Baseline <sup>d</sup>
<b>Catch and Landings</b>	Pounds	Pounds	Metric Tons	Pounds	Metric Tons	Metric Tons
Quota allocated to Program	30,382,000	26,794,708	706,932	69,034,500	395,470	16,536
Aggregate Landings	29,634,253	24,041,223	704,478	68,047,170	241,094	14,198
% Utilization	97.5%	90.0%	99.6%	98.6%	61.0%	85.9%
ACL exceeded	No	No	No	No	No	No
<b>Effort</b>						
Entities holding share	2,779	838	132	489	27	52
Active vessels (number)	1,052	362	102	78	20	46
Days at Sea (days)	e	e	e	e	e	e
Trips (number)	4,303	1,728	e	552	e	e
Season length <sup>f</sup>	0.69	0.93	0.80	0.53	0.92	0.83
<b>Revenue<sup>g</sup></b>						
Catch Share Program Revenue (\$)	183,830,320	116,736,886	244,362,349	248,837,610	233,971,305	7,605,825
Non-Catch Share Program Revenue (\$)	h	h	h	11,613,773	h	g
Average price (\$/metric tons/\$/pound)	6.20	4.86	347	3.66	939	536
Catch Share Revenue per active vessel (\$/vessel)	174,744	322,478	2,217,818	3,190,226	11,698,565	166,551
Non-Catch Share Revenue per vessel (\$/vessel)	h	h	h	148,895	h	g
Catch Share revenue per trip (\$/trip)	42,721	67,556	e	450,793	e	e
Non-Catch Share revenue per trip (\$/trip)			h	21,039	h	g
<b>Other</b>						
Excessive Share Caps in place	Yes	Yes	Yes	Yes	Yes	Yes
Cost Recovery Fees Collected (\$) <sup>i</sup>	3,045,124	1,852,155	None	6,679,898	None	N/A

<sup>a</sup> American Fisheries Act Pollock Cooperatives

<sup>b</sup> Crab IFQ data are for the IFQ portion of the Bering Sea and Aleutian Islands Crab Rationalization Program and are for the 2010/2011 fishing year.

<sup>c</sup> Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80)

<sup>d</sup> Central Gulf of Alaska Rockfish Program data are for the Baseline Period (2009-2011).

<sup>e</sup> The Alaska Region does not manage by trips or days at sea, therefore these metrics are not reported, with the exception of halibut, sablefish and crab.

<sup>f</sup> The Alaska Region reports a season length index based upon the proportion of days when fishing occurs compared to the number of days when fishing is allowed.

<sup>g</sup> All revenue and cost recovery data have been adjusted by the GDP deflator for 2010.

<sup>h</sup> Since the Region does not manage trips<sup>e</sup> (and therefore cannot be defined), revenue from non-catch share species on catch share trips cannot be calculated.

<sup>i</sup> Cost recovery fees are based upon the prior year's ex-vessel revenue and program administration costs. Accordingly, there is year-to-year variation in the amount of cost recovery fees collected.

## **Alaska Halibut IFQ Program**

### **a. Management History**

The Alaska Halibut and Sablefish IFQ Program is managed under two different management authorities: The Northern Pacific Halibut Act (Halibut Act; 1937), which led to the eventual creation of the International Pacific Halibut Commission (established in 1953); and the Magnuson-Stevens Act (1976), which established the Regional Fishery Management Council system. The International Pacific Halibut Commission (IPHC) is responsible for the biological management of the halibut resource, including biological studies, stock assessments, basic regulatory authority and establishing the allowable biological catch limits. The North Pacific Fishery Management Council (NPFMC) in turn is responsible for establishing Annual Catch Limits (ACLs) and allocating the U.S. catch limits among various user groups.

Halibut fisheries were not overfished prior to the implementation of the IFQ Program; but, the fishery had been overcapitalized since the 1970s. When overcapacity was recognized as a major problem in the halibut fishery, it was unclear which agency or regulatory body had jurisdiction over limiting access. The fishing industry approached the newly formed North Pacific Council in the late 1970s to develop a limited entry program because such a measure was not available through the International Pacific Halibut Commission under the terms of the convention establishing the IPHC. The Council's first groundfish fishery management plan was enacted in 1978 and included provisions for establishing limited entry; however, jurisdictional issues delayed implementation of limited entry within the halibut fishery. This jurisdictional issue was not solved until passage of The Northern Pacific Halibut Act of 1982, which designated that limited entry and allocation decisions were under the jurisdiction of the North Pacific Council. The Council did not re-address limited entry in the halibut fishery until 1990, when these discussions were combined with the discussions of limited entry in the sablefish fishery. The regulatory amendments outlining IFQs as the chosen management tool for halibut and sablefish were published in 1992 and later implemented in 1995.

The Alaska Halibut and Sablefish IFQ Program operates within the Bering Sea and Aleutian Islands and the Gulf of Alaska with multiple area and vessel categories. The IFQ Program has 14 allocations of halibut and sablefish quota based upon species or area combinations. Although halibut and sablefish fisheries are managed under the same IFQ Program, there are some key differences between halibut and sablefish management; therefore, these assessments are presented separately. Halibut are managed by the International Pacific Halibut Commission under the authority of the Halibut Act, while Sablefish are managed by NOAA Fisheries and the North Pacific Council under the authority of the Magnuson-Stevens Act.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The cost recovery fee can be a maximum of 3% of the ex-vessel value; the fee is set annually and can vary with costs and ex-vessel value. Often, the amount billed by NOAA Fisheries differs from the amount collected from Halibut IFQ Program permit holders. IFQ Program permit holders may challenge these fees and some eventually pay based on their demonstrated value received rather than on the standard NOAA Fisheries computed value on which billings were based. Cost recovery in the Alaska Halibut IFQ Program started with a 2001

collection based on the 2000 fishing year. The amount collected by species was derived using pro-rata species share of amount billed applied to the amount collected. In 2004, the total amount collected for halibut and sablefish cost recovery was \$3,551,629; 2004 data are not available by species (Figure 96). In 2011, NOAA Fisheries collected \$3.0 million (1.6% of ex-vessel value) for cost recovery in the Alaska Halibut IFQ Program.

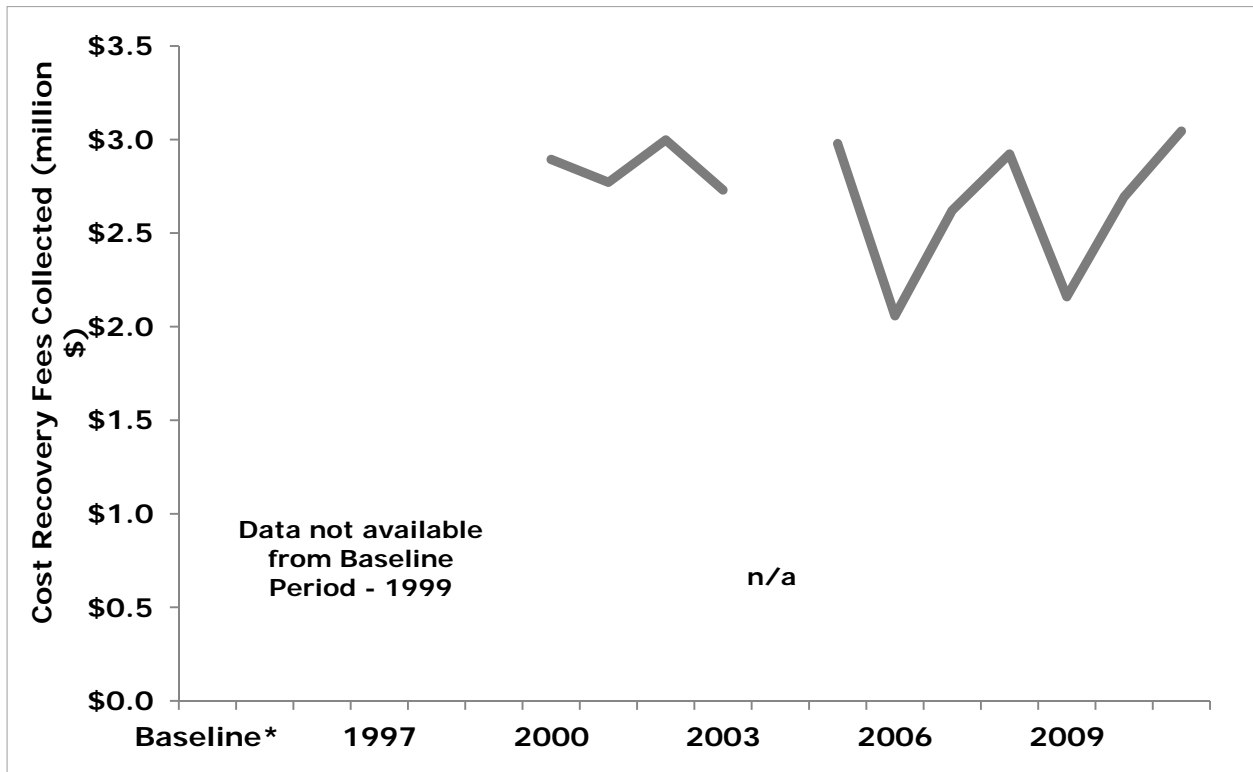


Figure 96. Halibut cost recovery fees (inflation-adjusted 2010 dollars) collected in the Alaska Halibut IFQ Program.<sup>11</sup>

The purpose of excessive quota share caps is to prevent individual shareholders (or entities) from controlling production (and processing) as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. There are excessive share caps in place in the Alaska Halibut IFQ Program. There are multiple types of caps: quota share unit caps apply for specific geographic areas, based upon a percentage of 1996 quota share pools; caps on numbers of blocks depend on whether unblocked quota share also is held. No entity can hold more than 0.5% or 1.5% of either halibut or sablefish shares, respectively, based upon geographic area combinations, unless they have been grandfathered to exceed these limits. Vessel use caps for specific geographic areas also limit the amount of IFQ that can be harvested by individual vessels.

<sup>11</sup> The Cost Recovery Fee Collection Program began in 2000 and 2004 data are not available by species.

## **b. Program Objectives**

The Alaska Halibut and Sablefish IFQ Program was developed by the North Pacific Fishery Management Council and implemented by NOAA Fisheries in 1995. The primary objectives of the IFQ Program are to 1) eliminate gear conflicts; 2) address safety concerns; and 3) improve product quality. A percentage of the halibut and sablefish annual quota is allocated to the Community Development Quota Program.

## **c. Key Events/Features**

The North Pacific Fishery Management Council designed the Alaska Halibut IFQ Program to allow eligibility based upon U.S. citizenship (or being a U.S. entity for non-individuals) and historical participation. Those eligible for initial allocations had to be owners or leaseholders of vessels with landings during 1988-1990. Initial halibut quota shares were based upon the best five of seven years of catch history from 1984 – 1990. Those who wished to receive quota share by transfer after the initial allocation had to demonstrate a minimum amount of active time as harvesting crew in any U.S. commercial fishery or CDQ entities. Other U.S. entities are allowed to purchase the “catcher/processor” (Category “A”) type of quota share, but non-individual entities new to the program may not acquire catcher vessel quota share. Halibut shares are distributed geographically.

Both quota shares (as a percentage of the catch limit) and annual IFQ pounds are designated by vessel length category and operation type: catcher vessel quota shares and freezer boat shares. Quota shares can be sold to other eligible permit holders. Transfers are limited by excessive share provisions. Leasing, or annual transfers of quota pounds without underlying quota share is unrestricted for freezer shares, but very restricted for catcher vessel quota share and IFQ. The program also limits the use of shares outside of designated vessel type and length categories, although over time the ‘fish down’ and ‘fish up’ provisions have somewhat relaxed the vessel length restrictions.

The North Pacific Council also included owner-on-board requirements for use of catcher vessel shares and limits on the use of hired skippers. The North Pacific Council and NOAA Fisheries implemented a loan program to primarily assist entry-level fishermen and fishermen who fish from small vessels. This revolving loan program is funded from a portion of the cost recovery fees collected.

## **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the implementation of the IFQ Program (1992 – 1994).

### **i. Catch and landings**

Halibut quota and landings are 40% lower in 2011 than in the Baseline Period (Figure 97). Upon implementation of this catch share program, there was a 21% reduction in halibut quota and a resulting 33% decrease in halibut landings. Halibut quota trended upward through 2000, when there was a 9% quota reduction (53 million pounds) compared to the previous year (58 million pounds). Quota ranged from 53 million pounds to 59 million pounds from 2000-2004 and then

was reduced a total of 50% from 2005-2011, with the decline from 2010 to 2011 accounting for a third of the reduction (10 million pounds) in quota during this time period. Halibut landings followed a similar trend: landings increased by 60% to 52 million pounds in 2000 compared to 32 million pounds of halibut landed in 1995. However, due principally to the lack of strong new year classes in the fishery, this trend was reversed between 2005 and 2011: halibut quota was reduced by 47% in 2011 (30 million pounds) compared to 2005. Landings decreased accordingly by 46% from 55 million pounds in 2005 to 30 million pounds in 2011.

There is no ACL defined for halibut because it is managed under the Halibut Act and the International Pacific Halibut Commission. The closest surrogate is the statewide catch limit for halibut. During 1992 – 1994 (Baseline Period), some area allocations were exceeded for halibut; therefore, the utilization rate was 102% in this time period. Since implementation of the Halibut IFQ Program, halibut catch limits have not been exceeded and utilization of the available halibut quota has been greater than 90% over the duration of the Alaska Halibut and Sablefish IFQ Program, with the exception of 1995 when utilization was 86% (Figure 98).

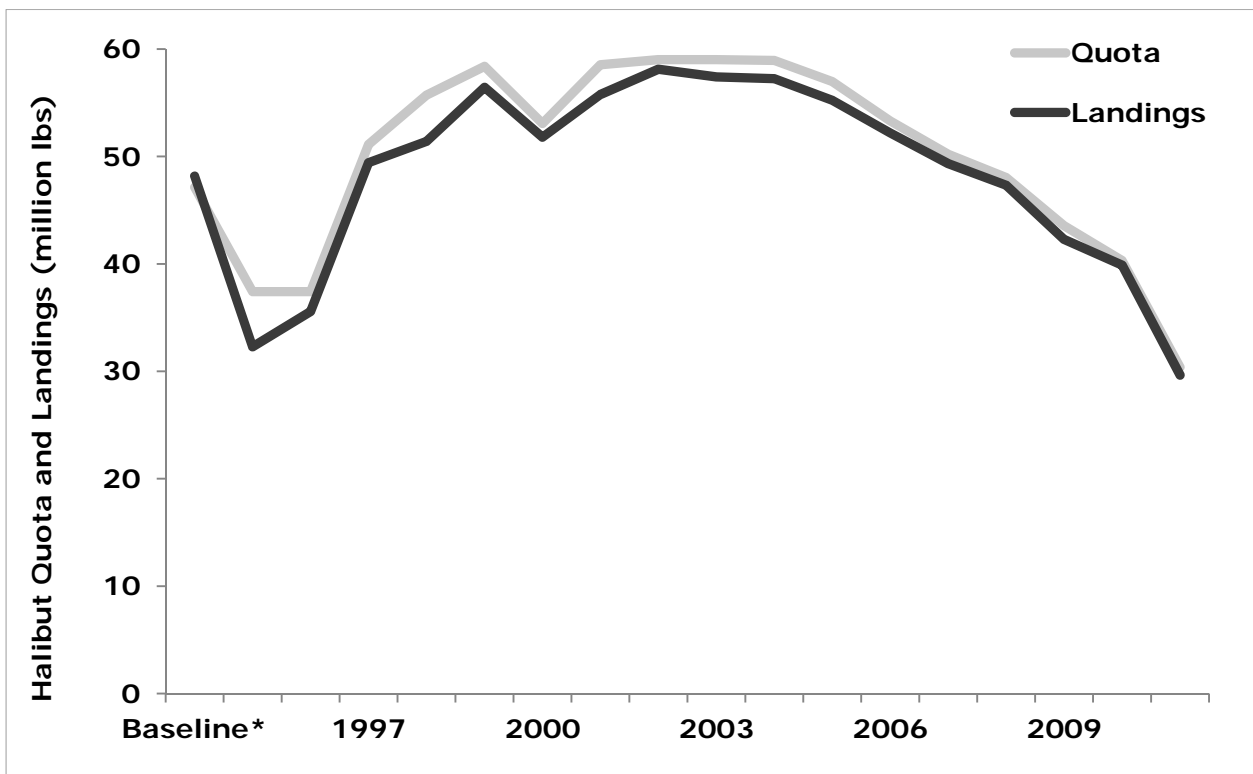


Figure 97. Quota and landings in the Alaska Halibut IFQ Program



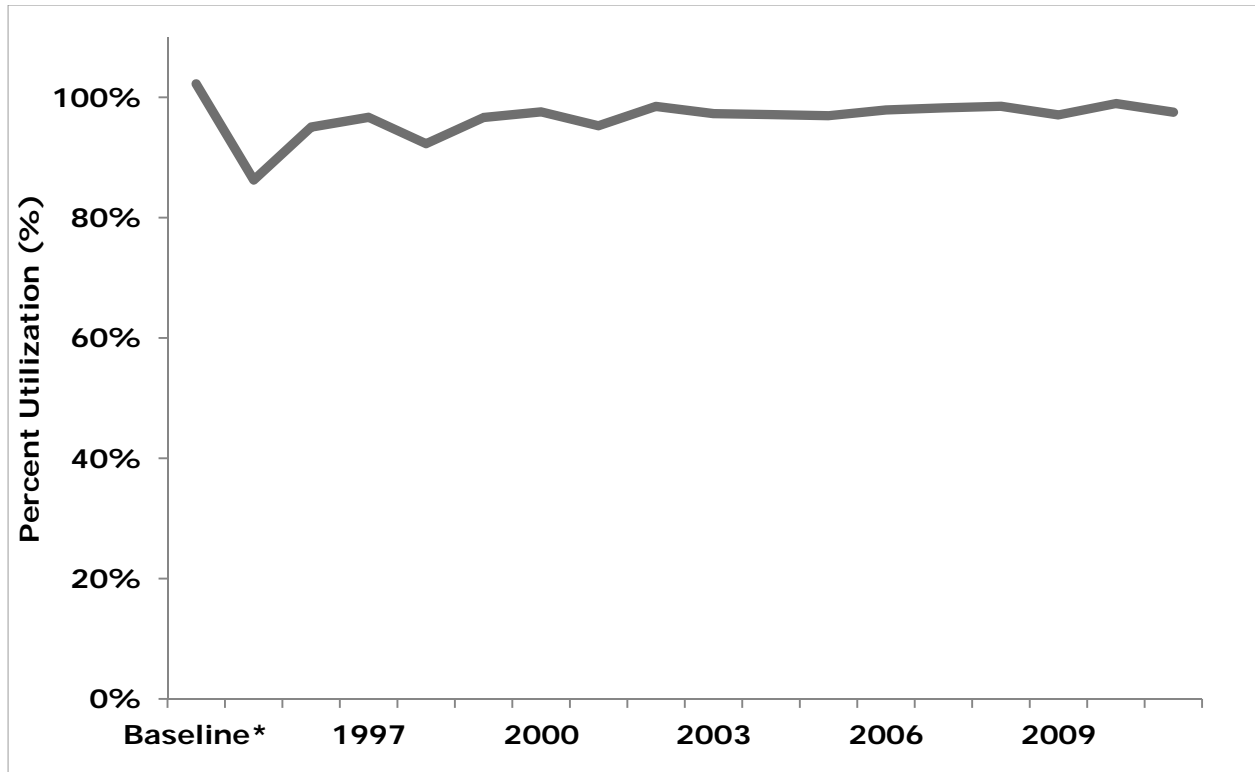


Figure 98. Utilization of available quota in the Alaska Halibut IFQ Program

ii. Effort

There were 4,829 persons (individuals or non-individuals) initially issued quota share before the Halibut IFQ Program began. Over the duration of the IFQ Program, the number of entities holding Halibut quota shares decreased by 42% from 4,829 (in 1995) to 2,779 (in 2011; Figure 99). Active vessels include the number of vessels (including catcher/processors) with any commercial landings of IFQ Program halibut. The Baseline Period value represents the number of unique vessels with landings on State fishing permits. There were 70% fewer vessels landing halibut in 2011 compared to the Baseline Period (Figure 100). In the first year of the Alaska Halibut IFQ Program, there was a 40% reduction in the number of active vessels (2,060 vessels) landing halibut compared to the Baseline Period (3,432 vessels). The number of active vessels then began a fairly steady decline (on average, 1-6% per year) from 1996 to 2011, with the exception of 1998 when there was a 17% reduction in the number of active vessels compared to 1997.

There were 40% fewer trips landing halibut taken in 2011 (4,300) compared to the Baseline Period (7,200; Figure 101). Upon implementation of the Alaska Halibut IFQ Program, the number of trips landing halibut decreased by 11% in 1995 compared to the Baseline Period. There were 3% fewer trips landing halibut in 2000 (6,999 trips) compared to 1995 (6,423 trips). There was a slight decline (7%) in the number of trips landing halibut between 2000 and 2005 (6,700 trips). However, there were one-third fewer trips landing halibut in 2011 (4,300 trips) compared to 2005 (6,700 trips; Figure 101).

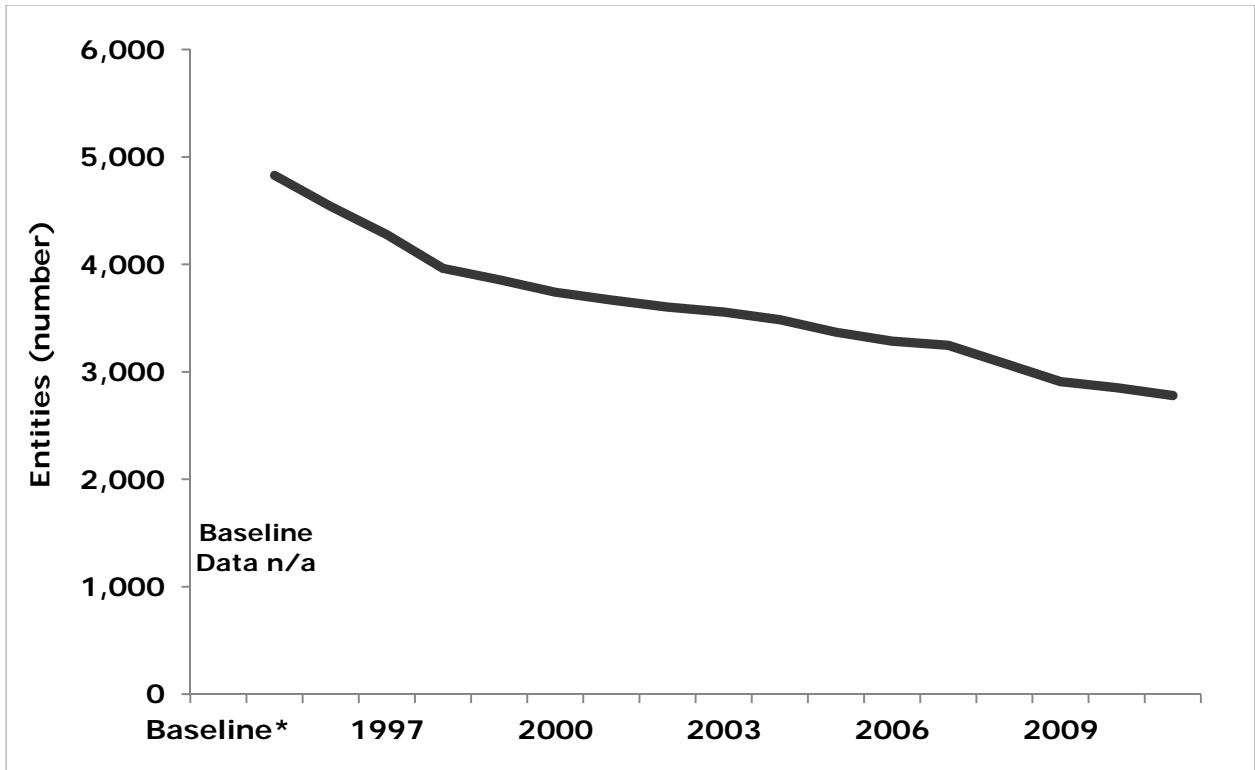


Figure 99. Number of entities holding share in the Alaska Halibut IFQ Program

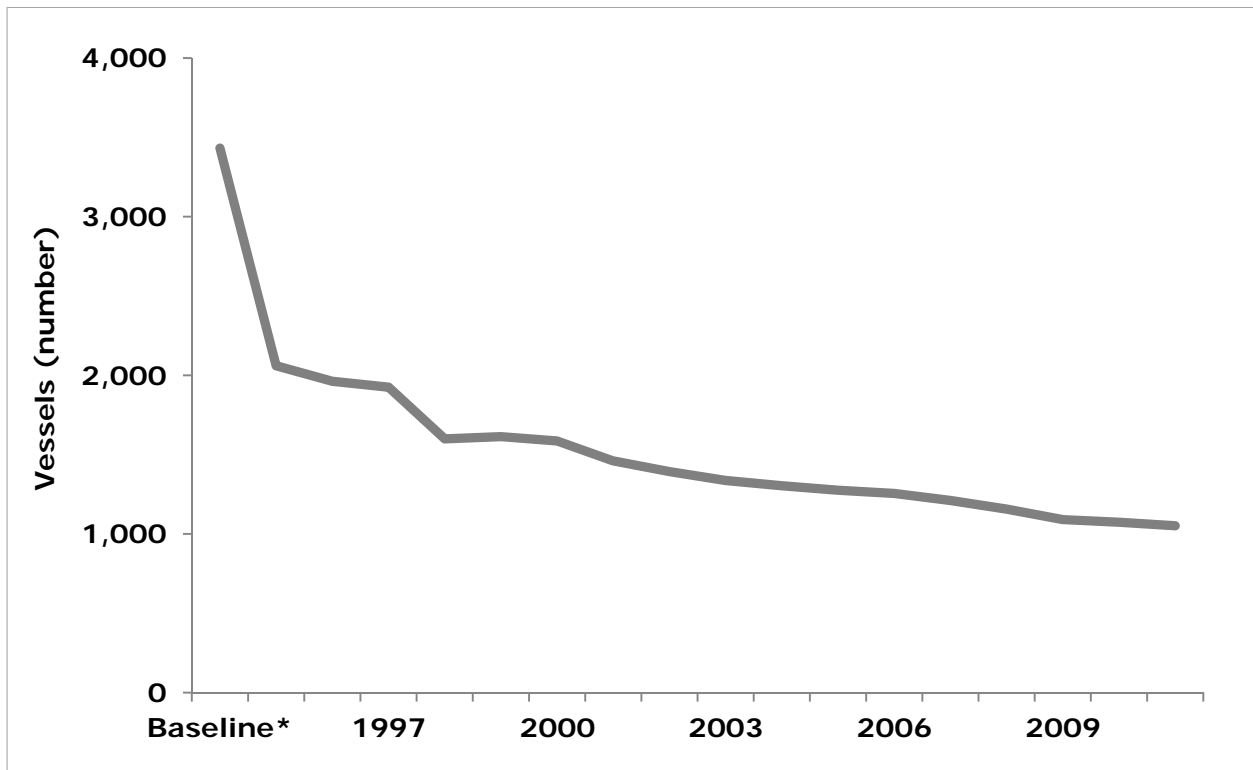


Figure 100. Active vessels fishing quota in the Alaska Halibut IFQ Program

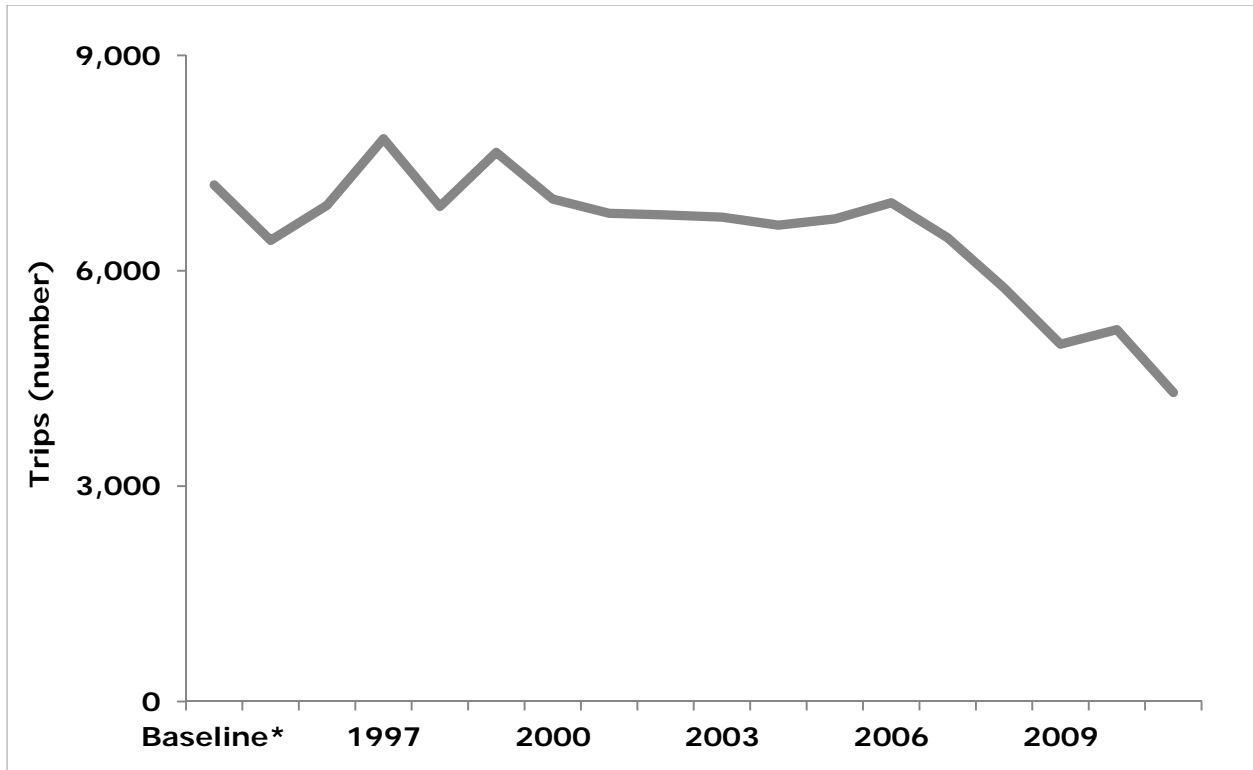


Figure 101. Number of trips harvesting halibut in the Alaska Halibut IFQ Program

The season length index was calculated as the number of active days divided by the number of days in the regulatory season. This index is created by summarizing season utilization over all halibut fishing areas. Using this index provides an indication of the temporal utilization of the halibut resource and changes each year even if the regulatory season length remains constant. As a result, utilizing this unit-less index allows the season length index to be combined over multiple areas to achieve an overall program season length. During the Baseline Period, areas were open to halibut fishing for four days per year the season length index was 0.01 for this period. Upon implementation of the Halibut IFQ Program, the regulatory season length was increased to 246 days and the season length index improved to 0.73. Between 1995 – 2011, the season length index fluctuated between 0.68 -0.75 (Figure 102). Due to the manner in which the Program is managed (and as a result how data are collected), the number of days at sea fishing halibut is not available.

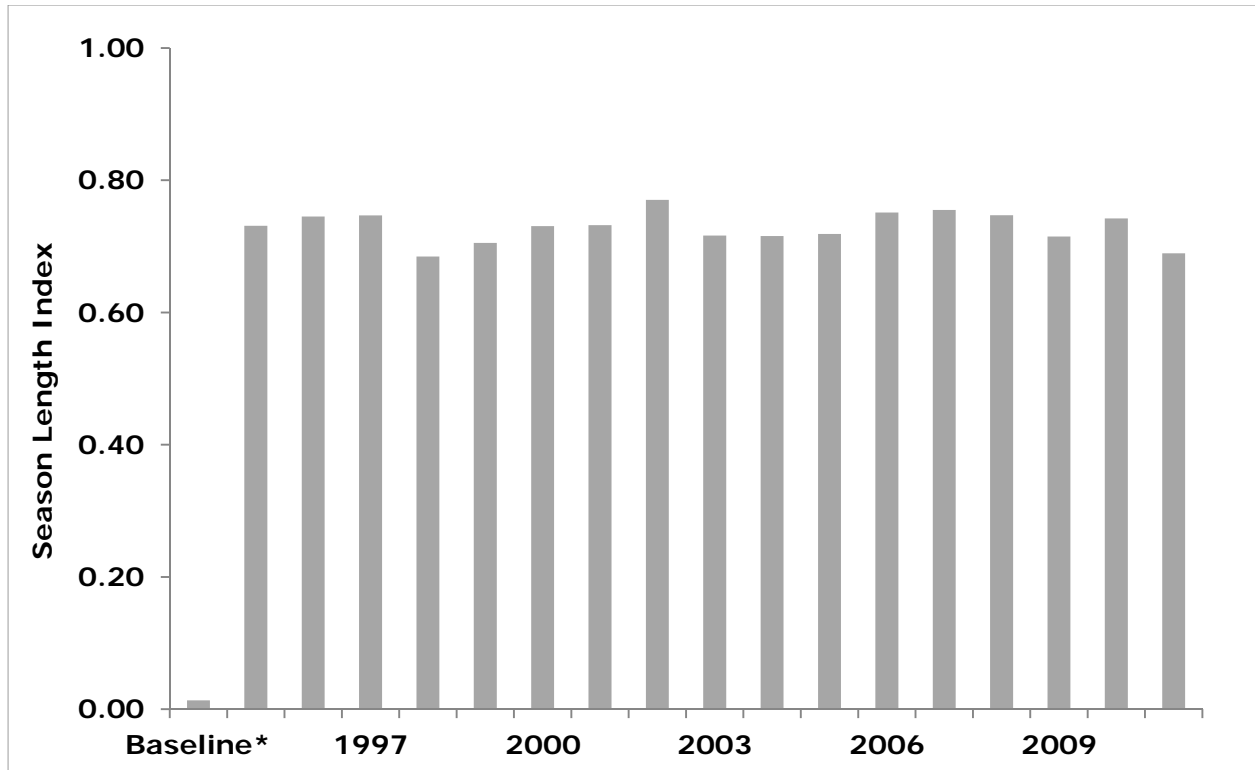


Figure 102. Season length index in the Alaska Halibut IFQ Program

- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

The ex-vessel revenue of IFQ Program commercial landings was estimated by applying the State of Alaska weighted average prices by species and management area to IFQ Program commercial landings. Halibut revenue in 2011 was 110% greater than the Baseline Period (Figure 103). Halibut revenue increased by 4% in the first year of the Alaska Halibut and Sablefish IFQ Program from \$88 million during the Baseline Period to \$92 million in 1995. Revenue generally trended upward between 1995 and 2007 to \$227 million at an average annual rate of 12%, albeit there were sizable declines in 1998 (-37%) and 2001 (-17%). Halibut revenue declined the two following years to \$130 million in 2009, but increased in 2011 to \$183 million. Despite a 40% decline in halibut quota and landings, revenue increased by 109% over the course of the IFQ Program (Baseline Period – 2011).

Similar to revenue, the average price per pound of halibut increased by 239% over the course of the IFQ Program (Figure 104). Halibut average prices increased by 55% from \$1.83 per pound during the Baseline Period to \$2.84 per pound in 1995 (Figure 104). Average prices for halibut continued to increase by 19% between 1995 and 2000 (\$3.17 per pound). Also, the average price per pound of halibut trended upward between 2000 and 2011, notwithstanding a sizable decrease in 2009 (-30%) from the previous year.

Halibut revenue per active vessel in 2011 was a 581% greater than the Baseline Period (Figure 105). Halibut revenue per vessel increased by 73% in the first year of the Halibut and Sablefish IFQ Program from \$26,000 during the Baseline Period to \$60,400 in 1995. Revenue per vessel

grew by 133% between 1995 and 2000 (\$104,000). In 2001, revenue per vessel declined 8% from the previous year, but then trended upward through 2007 to \$185,000. With the exception of 2009 (\$119,000), revenue per vessel exceeded \$170,000 for five of the past six years of the program (2006 – 2011).

Halibut revenue per trip more than quadrupled over the course of the Alaska Halibut and Sablefish IFQ Program (Figure 106). In the first year of the IFQ Program, halibut revenue per trip increased by 16% from \$12,000 during the Baseline Period to \$14,000 in 1995. With the exception of some sizable declines in 1998 (-29%), 2001 (-13%) and 2009 (-28%), halibut revenue per trip generally increased under the IFQ Program.

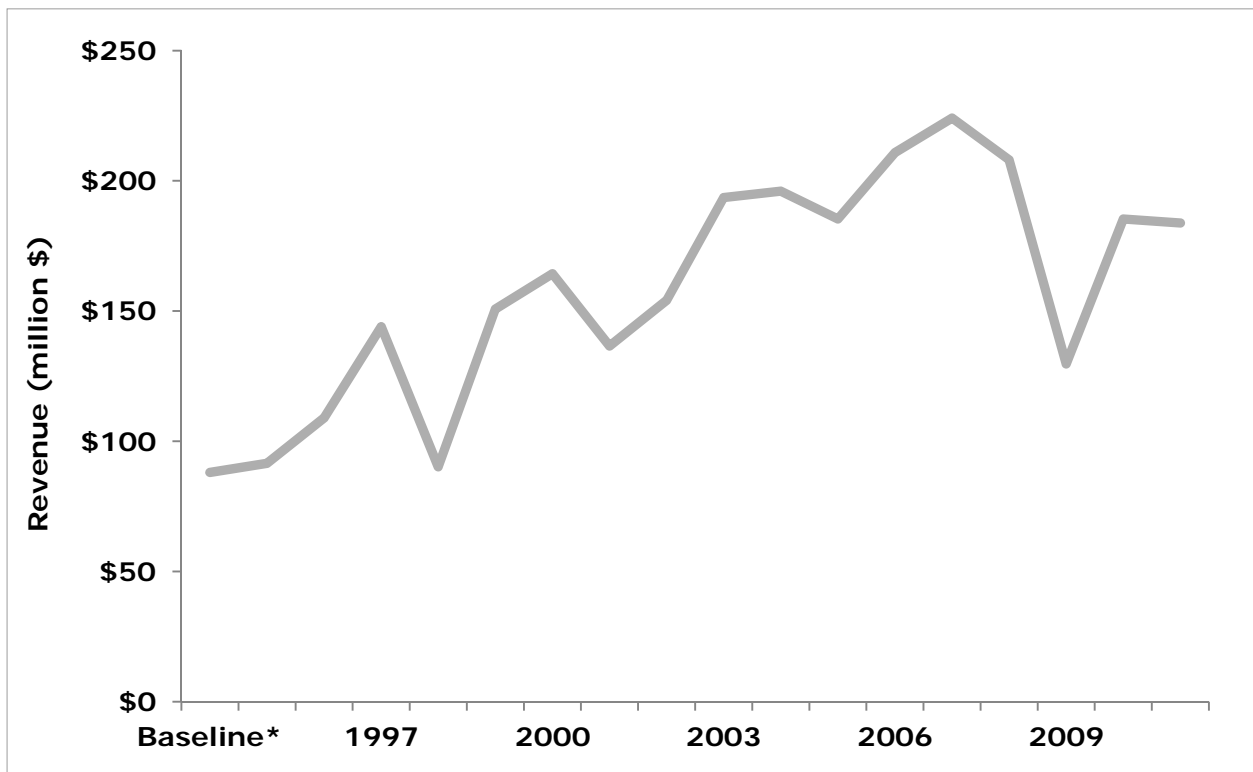


Figure 103. Total halibut revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Alaska Halibut IFQ Program

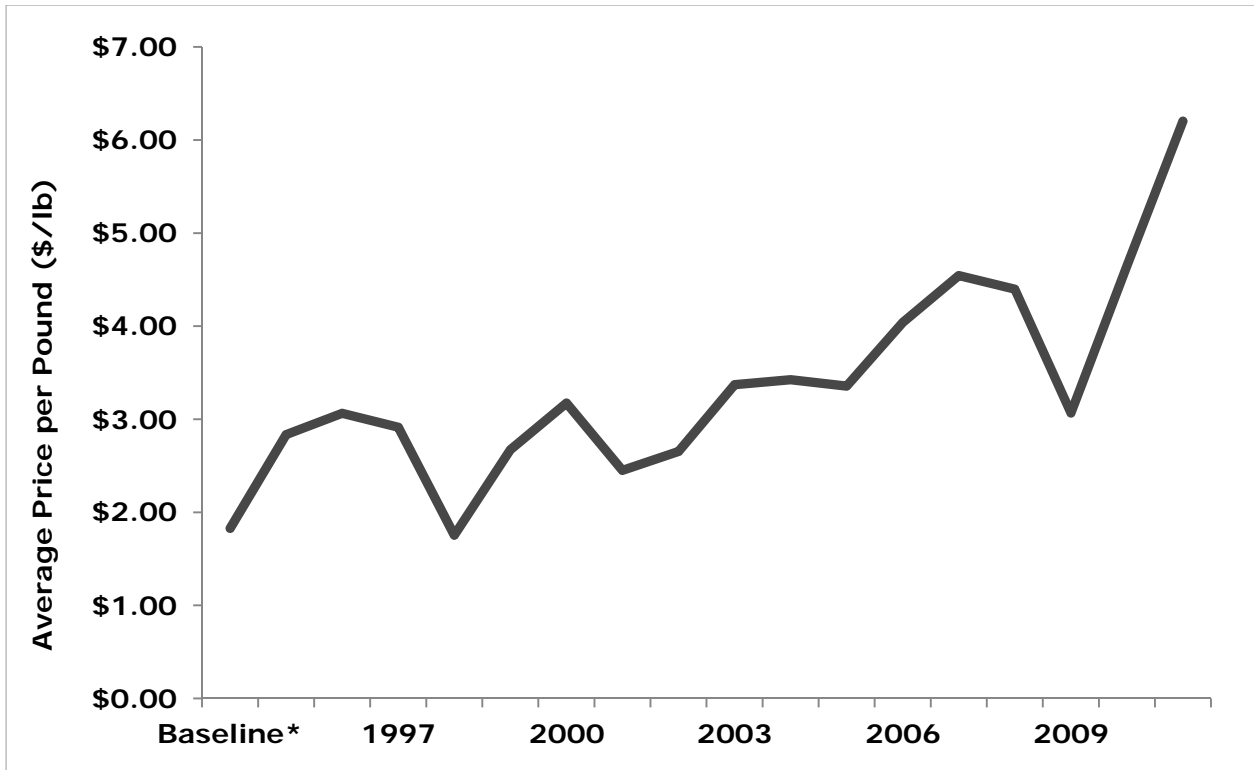


Figure 104. Average halibut price per pound (inflation-adjusted 2010 dollars) in the Alaska Halibut IFQ Program

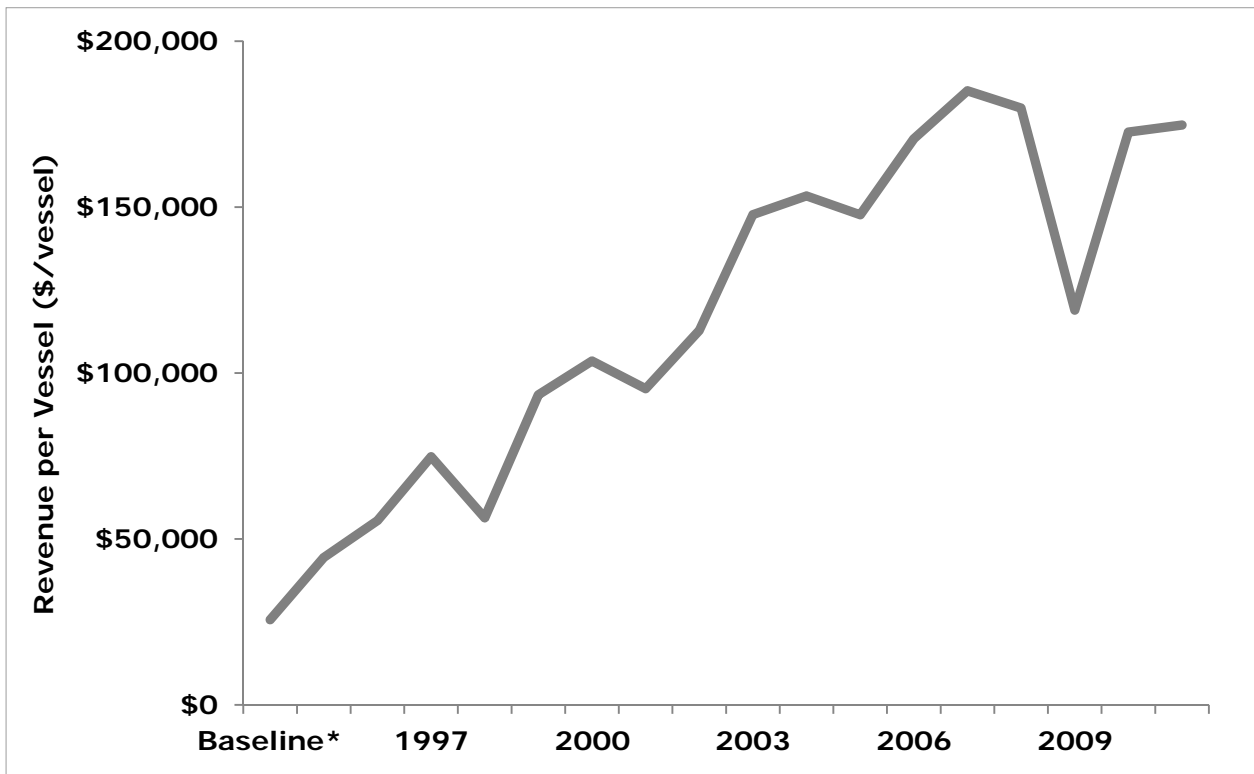


Figure 105. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Alaska Halibut IFQ Program

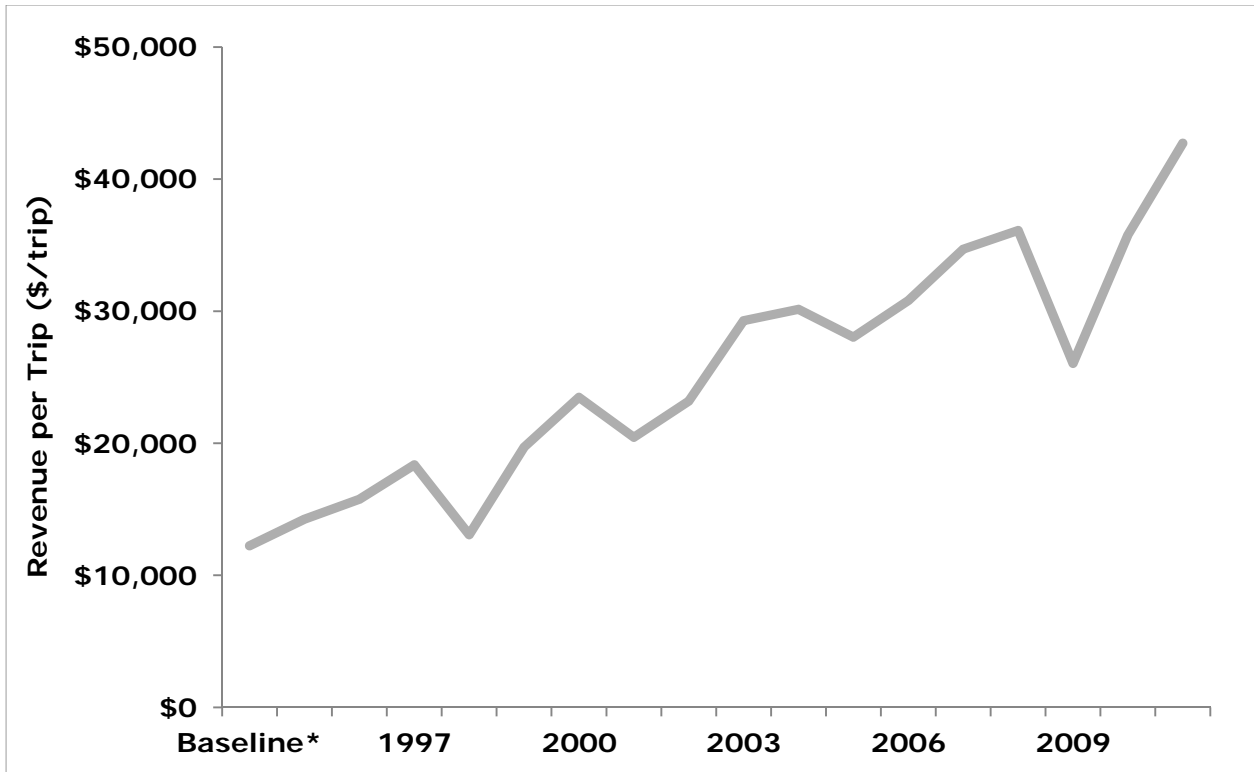


Figure 106. Revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Alaska Halibut IFQ Program

## **Alaska Sablefish IFQ Program**

### **a. Management history**

Sablefish was originally managed under its own fishery management plan (FMP) and was later combined with the groundfish FMP in the Gulf of Alaska (1978) and Bering Sea and Aleutian Islands (1982). Coincident with the exit of foreign harvesters in 1987, the domestic portion of the sablefish fishery grew rapidly during the 1980s. In 1985, the North Pacific Council allocated the vast majority of the sablefish quota to vessels using hook-and-line and pot gear in the Gulf of Alaska, with a small portion allocated to vessels using trawl gear. Pot gear was subsequently phased out in the Gulf of Alaska due to gear conflicts. The North Pacific Council allocated one-half of the sablefish quota in the Bering Sea to the fixed gear fleet and the remainder to trawlers. It was not until 1987 that the Council began to consider proposals for limited entry in the sablefish fishery.

The regulatory amendments outlining IFQ Programs as a management tool for halibut and sablefish were published in 1992 and later implemented in 1995. The Alaska Halibut and Sablefish IFQ Program operates within the Bering Sea and Aleutian Islands and the Gulf of Alaska with multiple area and vessel categories. The IFQ Program has 14 allocations of halibut and sablefish quota based upon species or area combinations. Although these two fisheries are managed under the same IFQ Program, there are some key differences between halibut and sablefish management; therefore, the assessments are presented separately. Sablefish are managed by NOAA Fisheries and the North Pacific Council under the authority of the Magnuson-Stevens Act. Halibut and sablefish are combined in the same IFQ Program to minimize bycatch and discard mortality.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The cost recovery fee can be a maximum of 3% of the ex-vessel value; the fee is set annually and can vary with costs and ex-vessel value. Often, the amount billed by NOAA Fisheries differs from the amount collected from Alaska Halibut and Sablefish IFQ Program permit holders. IFQ Program permit holders may challenge these fees and some eventually pay based on their demonstrated value received rather than on the standard NOAA Fisheries computed value on which billings were based. Cost recovery in the Alaska Halibut and Sablefish IFQ Program started with a 2001 collection based on the 2000 fishing year. The amount collected by species was derived using pro-rata species share of amount billed applied to the amount collected. In 2004, the total amount collected for halibut and sablefish cost recovery was \$3,551,629; 2004 data are not available by species (Figure 107). In 2011, NOAA Fisheries collected \$1.8 million (1.6% of ex-vessel value) for cost recovery in the Alaska Sablefish IFQ Program.



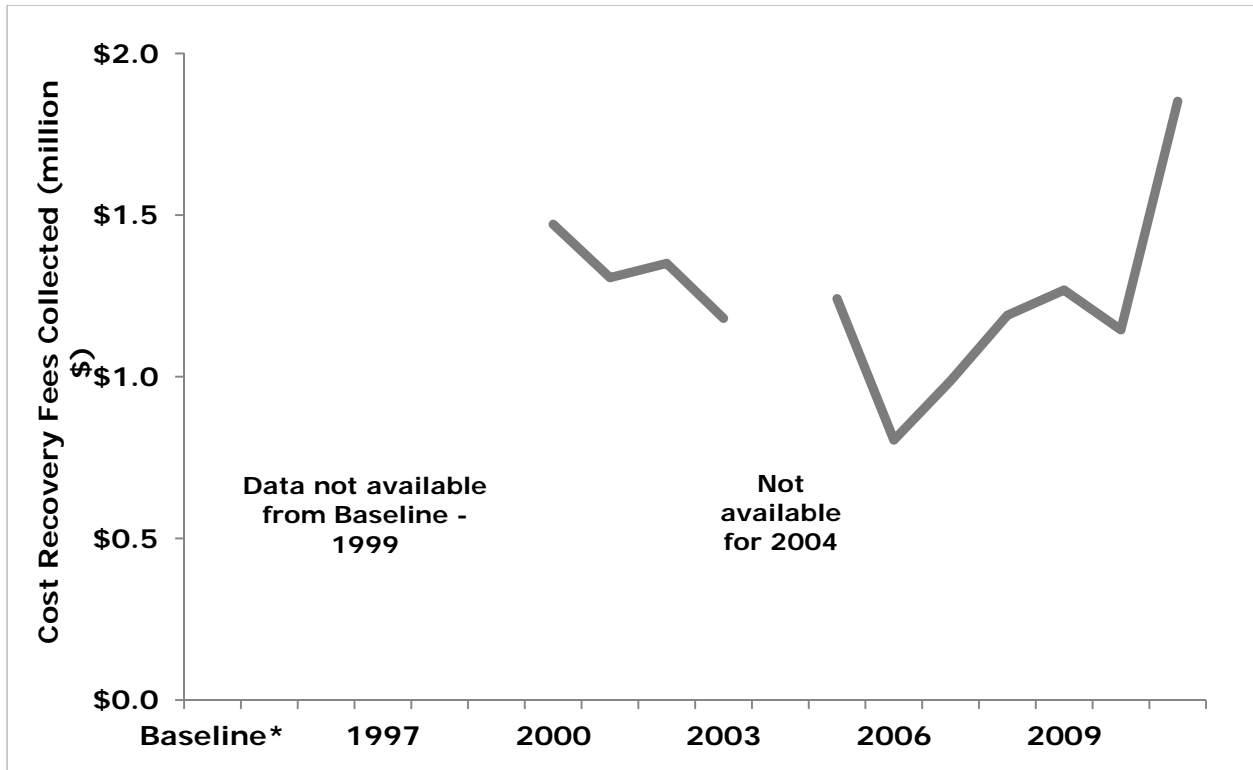


Figure 107. Sablefish cost recovery fees (inflation-adjusted 2010 dollars) collected in the Alaska Sablefish IFQ Program.<sup>12</sup>

The purpose of excessive quota share caps is to prevent individual shareholders (or entities) from controlling production (and processing) as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. There are excessive share caps in place in the Alaska Sablefish IFQ Program. There are multiple types of caps: quota share unit caps apply for specific geographic areas, based upon a percentage of 1996 quota share pools; caps on numbers of blocks depend on whether unblocked quota share also is held. No entity can hold more than 0.5% or 1.5% of either halibut or sablefish shares, respectively, based upon geographic area combinations, unless they have been grandfathered to exceed these limits. Vessel use caps for specific geographic areas also limit the amount of IFQ that can be harvested by individual vessels.

#### **b. Program Objectives**

The Alaska Halibut and Sablefish IFQ Program was developed by the North Pacific Fishery Management Council and implemented by NOAA Fisheries in 1995. The primary objectives of the IFQ Program are to 1) eliminate gear conflicts; 2) address safety concerns; and 3) improve product quality. A percentage of the halibut and sablefish annual quota is allocated to the Community Development Quota Program.

<sup>12</sup> The Cost Recovery Fee Collection Program began in 2000 and 2004 data are not available by species.

### **c. Key Events/Features**

The North Pacific Fishery Management Council designed the Alaska Sablefish IFQ Program to allow eligibility based upon U.S. citizenship (or being a U.S. entity for non-individuals) and historical participation. Those eligible for initial allocations had to be owners or leaseholders of vessels with landings during 1988-1990. Initial sablefish quota shares were based upon the best five of six years of catch history from 1985 – 1990. Those who wished to receive quota share by transfer after the initial allocation had to demonstrate a minimum amount of active time as harvesting crew in any U.S. commercial fishery or CDQ entities. Other U.S. entities are allowed to purchase the “catcher/processor” (Category “A”) type of quota share, but non-individual entities new to the program may not acquire catcher vessel quota share. Sablefish shares are distributed geographically.

Both quota shares (as a percentage of the catch limit) and annual IFQ pounds are designated by vessel length category and operation type: catcher vessel quota shares and freezer boat shares. Quota shares can be sold to other eligible permit holders. Transfers are limited by excessive share provisions. Leasing, or annual transfers of quota pounds without underlying quota share, is unrestricted for freezer shares, but very restricted for catcher vessel quota share and IFQ. The program also limits the use of shares outside of designated vessel type and length categories, although over time the ‘fish down’ and ‘fish up’ provisions have somewhat relaxed the vessel length restrictions.

The North Pacific Council also included owner-on-board requirements for use of catcher vessel shares and limits on the use of hired skippers. The North Pacific Council and NOAA Fisheries implemented a loan program to primarily assist entry-level fishermen and fishermen who fish from small vessels. This revolving loan program is funded from a portion of the cost recovery fees collected.

### **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the implementation of the IFQ Program (1992 – 1994).

#### **i. Catch and landings**

Sablefish quota and landings are approximately 50% lower in 2011 than during the Baseline Period (Figure 108). Upon implementation of the IFQ Program, sablefish quota decreased by 5% from 48 million pounds during the Baseline Period to 46 million pounds in 1995. Landings also decreased from 47 million pounds in the Baseline Period to 41 million pounds in 1995: a 13% reduction. Sablefish quota and landings declined further (by 34% and 33%, respectively) in 2000 (30 million pounds and 28 million pounds, respectively) compared to 1995. Sablefish quota and landings mostly trended upward between 2000 and 2004; average annual quota increases were 7%. In 2005, sablefish quota and landings began a downward trend (average annual decreases were 7%) until 2011 when quota increased by 8% (27 million pounds) compared to 2010 (25 million pounds; Figure 108). Utilization of the available sablefish quota has fluctuated between 88% and 98% over the duration of the Alaska Halibut and Sablefish IFQ Program (Figure 109).

The Annual Catch Limit (ACL) is equivalent to the Acceptable Biological Catch (ABC) for sablefish management purposes. Prior to implementation of the Halibut and Sablefish IFQ Program, sablefish ABCs were specified according to areas, while Total Allowable Catch was allocated by area and gear. During the Baseline Period, the sablefish ABC was exceeded for two out of three years. Over the duration of the Sablefish IFQ Program, the ABC has not been exceeded.

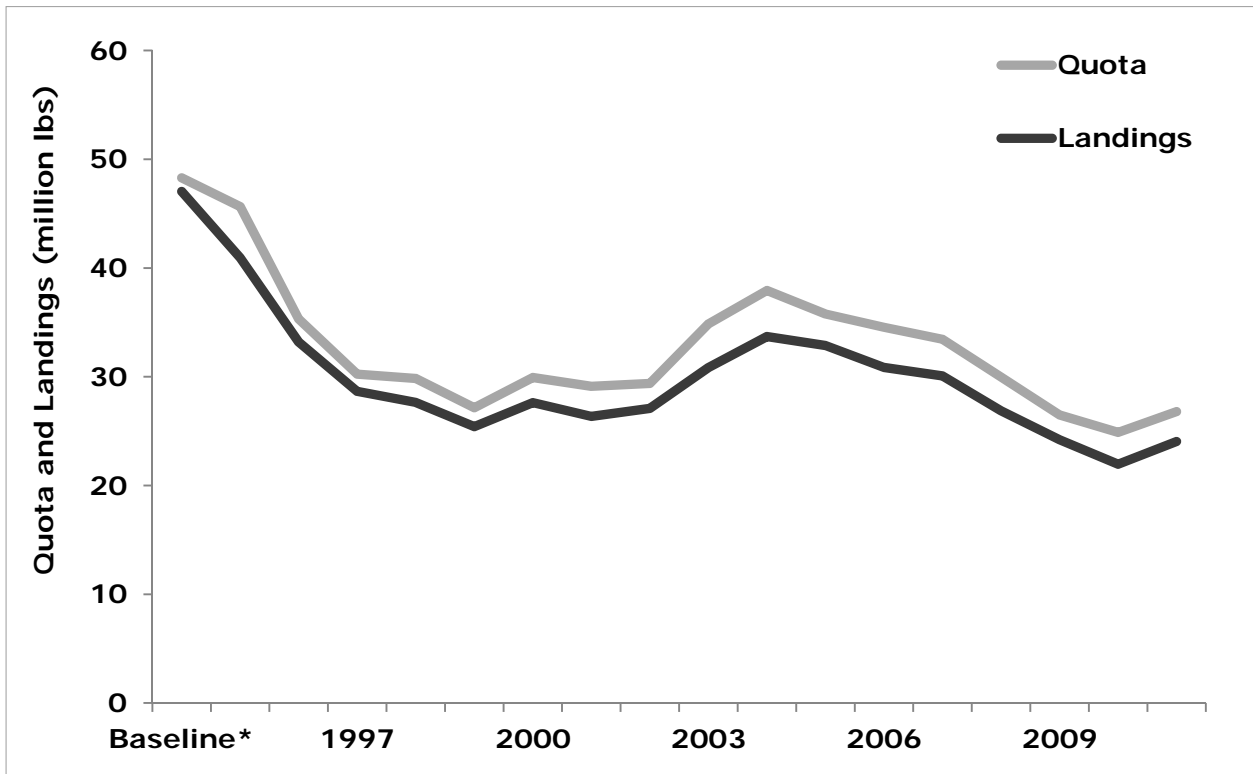


Figure 108. Quota and landings in the Alaska Sablefish IFQ Program

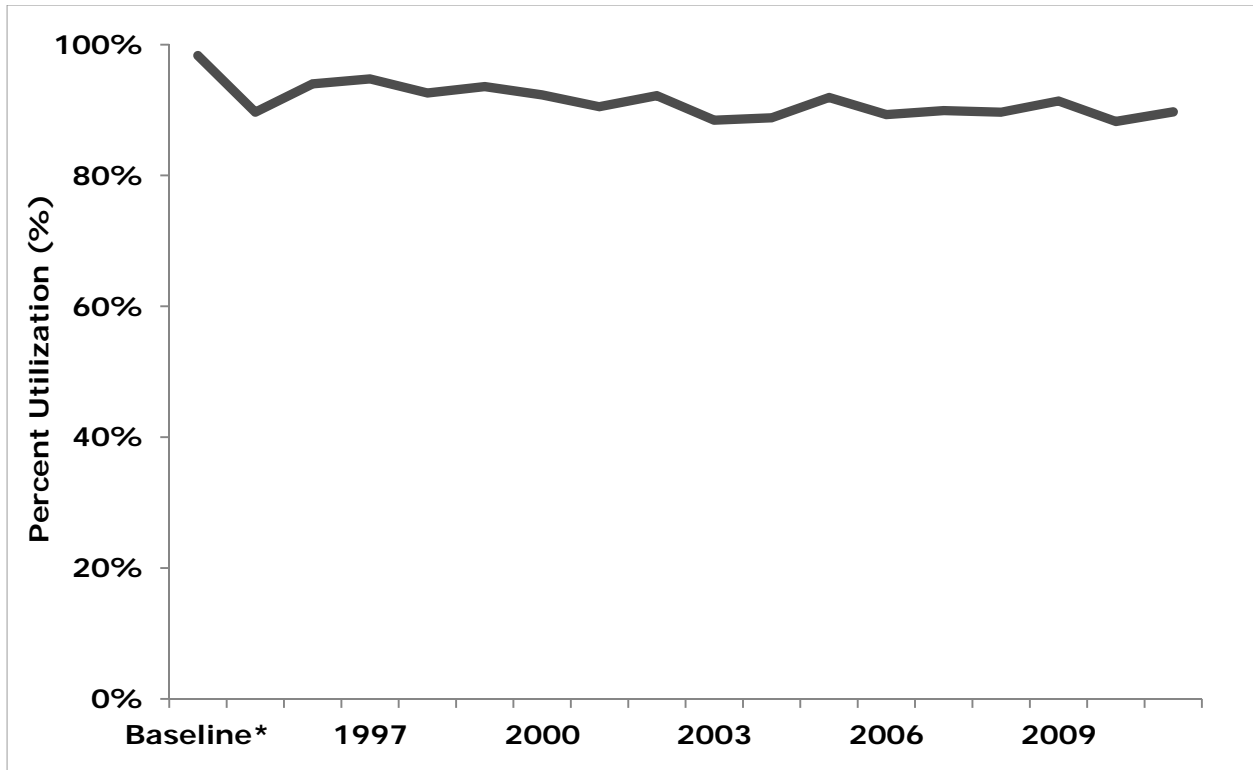


Figure 109. Utilization of available quota in the Alaska Sablefish IFQ Program

ii. Effort

There were 1,054 entities holding Sablefish quota share in 1995 and the number of entities holding Sablefish share decreased by 20% between the Baseline Period (1,054 entities) and 2011 (838 entities; Figure 110).

An active vessel refers to the number of sablefish vessels (including catcher/processors) with any commercial landings of IFQ Program sablefish. The Baseline Period value represents the number of unique vessels with commercial sablefish landings. Two-thirds of the vessels landing sablefish during the Baseline Period are no longer active in the Alaska Sablefish IFQ Program in 2011 (Figure 111). In the first year of the Alaska Sablefish IFQ Program, the number of active vessels landing sablefish decreased by 45% from 1,109 vessels during the Baseline Period to 615 vessels in 1995. Between 1996 and 1998, the average annual decrease in the number of active vessels fishing sablefish was 8%. Since 1998, the decline in active vessels landing sablefish stabilized at a 2% annual rate.

There were 24% fewer trips landing sablefish in 2011 (1,728 trips) compared to 1995 (2,276 trips; Figure 112). The number of trips fell 7% and 9%, respectively, from the previous year in 1996 and 1997 and then remained relatively flat (-6% to 4% annually) through 2006. There were 11% fewer trips landing sablefish in 2011 (1,728 trips) compared to 2006 (1,937 trips).

The season length index was calculated as the number of active days divided by the number of days in the regulatory season. This index is created by summarizing season utilization over all sablefish fishing areas. Using this index provides an indication of the temporal utilization of the

sablefish resource and changes each year even if the regulatory season length remains constant. As a result, utilizing this unit-less index allows the season length index to be combined over multiple areas to achieve an overall program season length. During the Baseline Period, some areas were open to fishing for sablefish for as little as 51 days and the season length index is 0.07. Upon implementation of the IFQ Program, fishing was allowed for 246 days and the season length index was 0.96. Over the course of the Sablefish IFQ Program, the season length index has fluctuated between 0.93 – 0.97 (Figure 113). Due to the manner in which the Program is managed (and as a result how data are collected), the number of days at sea fishing halibut is not available.

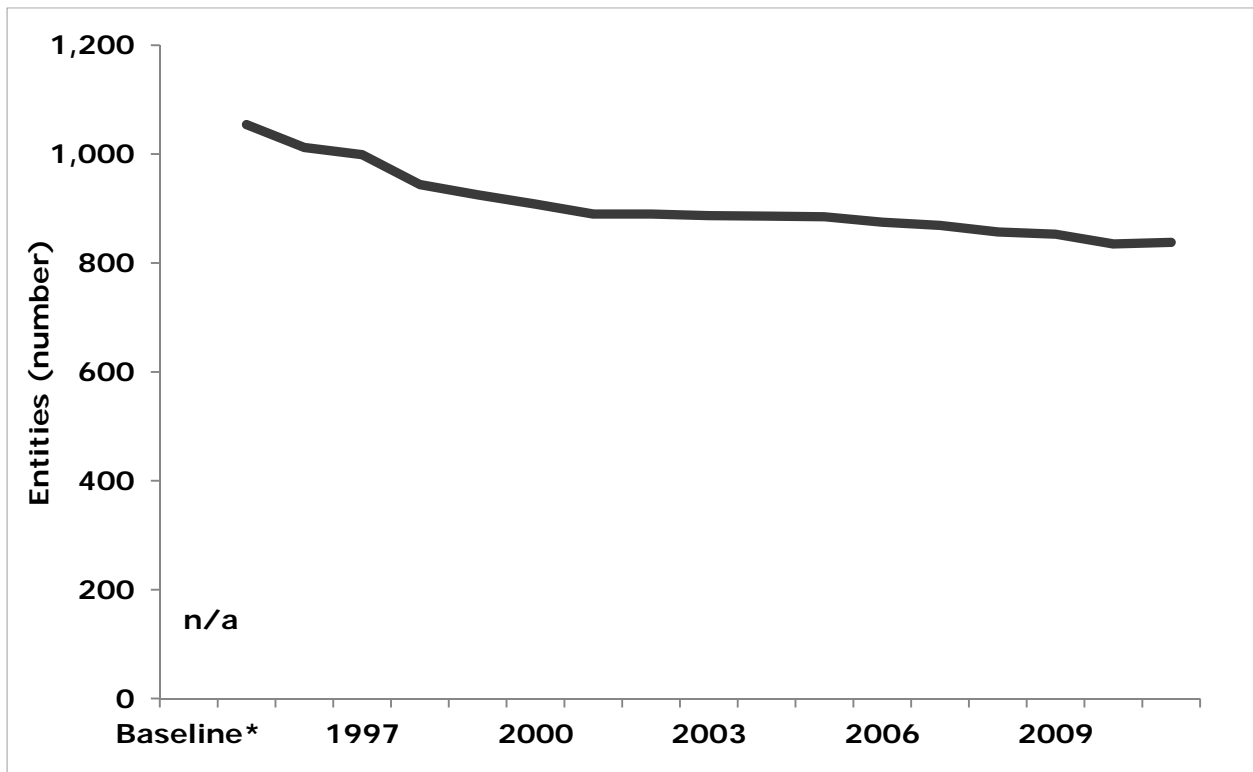


Figure 110. Number of entities holding share in the Alaska Sablefish IFQ Program

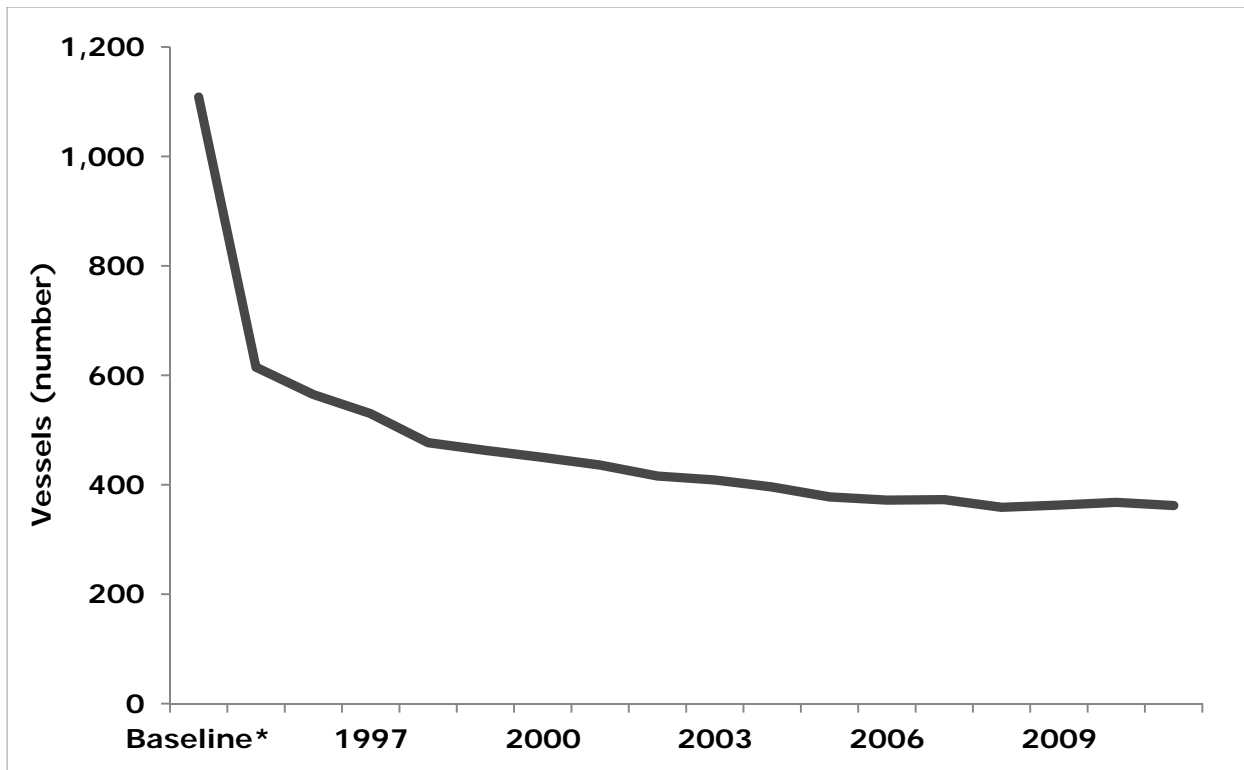


Figure 111. Active vessels fishing quota in the Alaska Sablefish IFQ Program

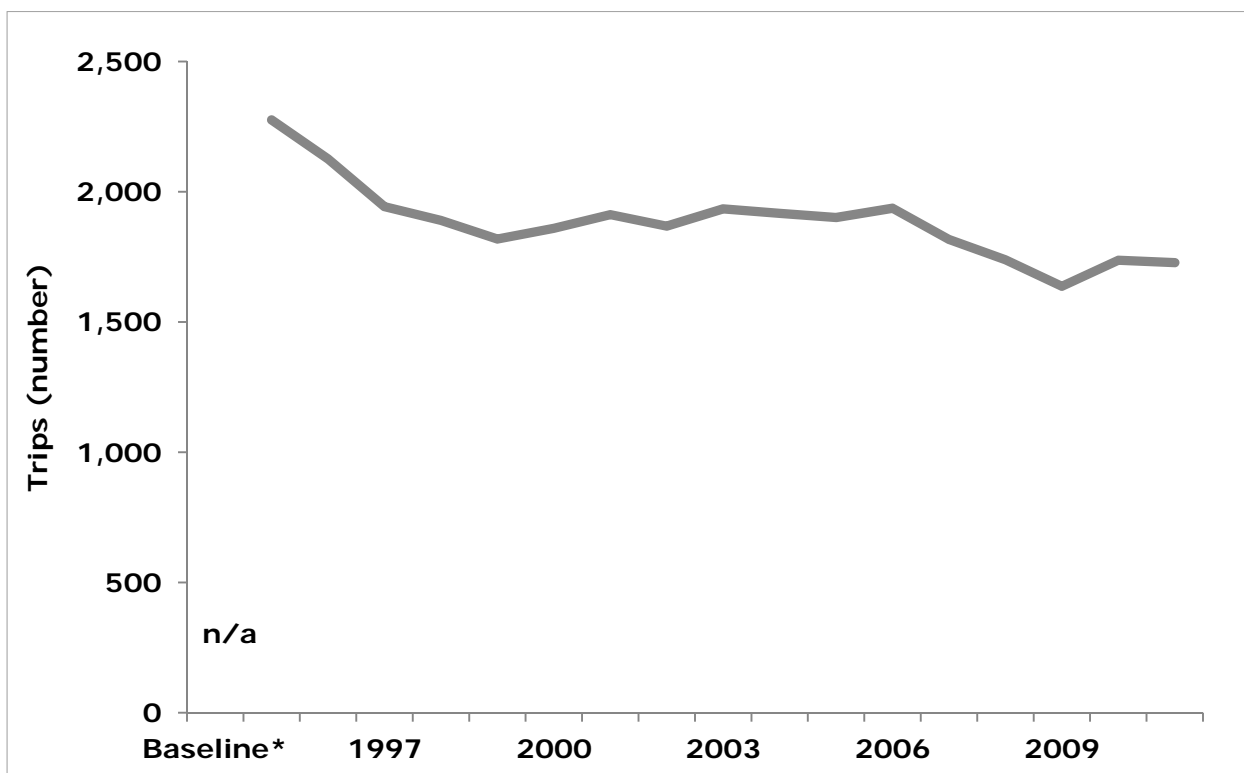


Figure 112. Number of trips harvesting sablefish in the Alaska Sablefish IFQ Program

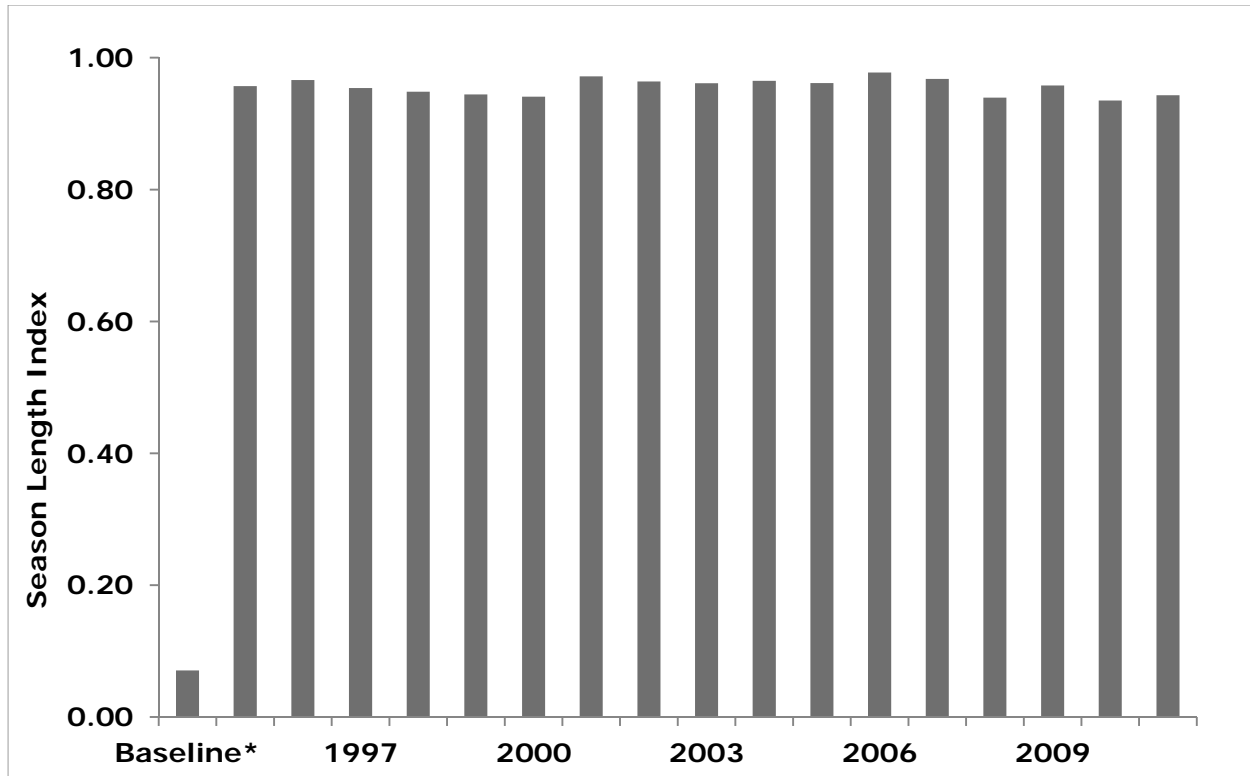


Figure 113. Season length index in the Alaska Sablefish IFQ Program

- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Sablefish revenue initially increased by 26% in 1995 (\$116 million) compared to the Baseline Period (\$92 million; Figure 114). Over the next three years, Sablefish revenue declined to \$58 million in 1998 compared to \$116 million in 1995. There was a substantial increase (48%) in revenue for the period between 1998 (\$58 million) and 2003 (\$86 million). By 2010 (\$82 million), sablefish revenue decreased by 4% when compared to 2003 (\$86 million); however, in 2011, sablefish revenue increased by 43% to \$117 million. The average price per pound of sablefish was 148% greater in 2011 (\$4.86 per pound) than in the Baseline Period (\$1.96 per pound; Figure 115). Average prices varied annually by -2% to 20% over the course of the Sablefish IFQ Program, with exception of some large changes in 1995 (45%), 1998 (-34%), 1999 (20%), 2000 (20%) and 2011 (30%; Figure 115).

Sablefish revenue per vessel increased by 70% over the course of the IFQ Program (Figure 116). Revenue per vessel initially increased by 128% in 1995 (\$189,000) compared to the Baseline Period (\$83,000). Sablefish revenue per vessel trended downward after 1995, with the exception of large annual increases in 1999 (14%), 2000 (34%) and 2003 (27%), which were years with sizable revenue increases and either a declining or stable number of active vessels.

Over the duration of the Sablefish IFQ Program, there was a 32% increase in sablefish revenue per trip in 2011 compared to 1995 (trip estimates were not available for the Baseline Period; Figure 117). Sablefish revenue per trip decreased by 13% from \$51,000 in 1995 to \$45,000 in

1996. Sablefish revenue per trip decreased by 12% between 1995 and 2000 (\$45,000). There was a decrease (7%) in sablefish revenue per trip in 2005 (\$42,000) compared to 2000. In 2011, there was a large annual increase (43%) in revenue per trip (\$68,000) compared to 2010 (\$47,000). This was most likely due to a 8% increase in sablefish quota and a 10% increase in landings, with 1% fewer trips taken (Figure 117).

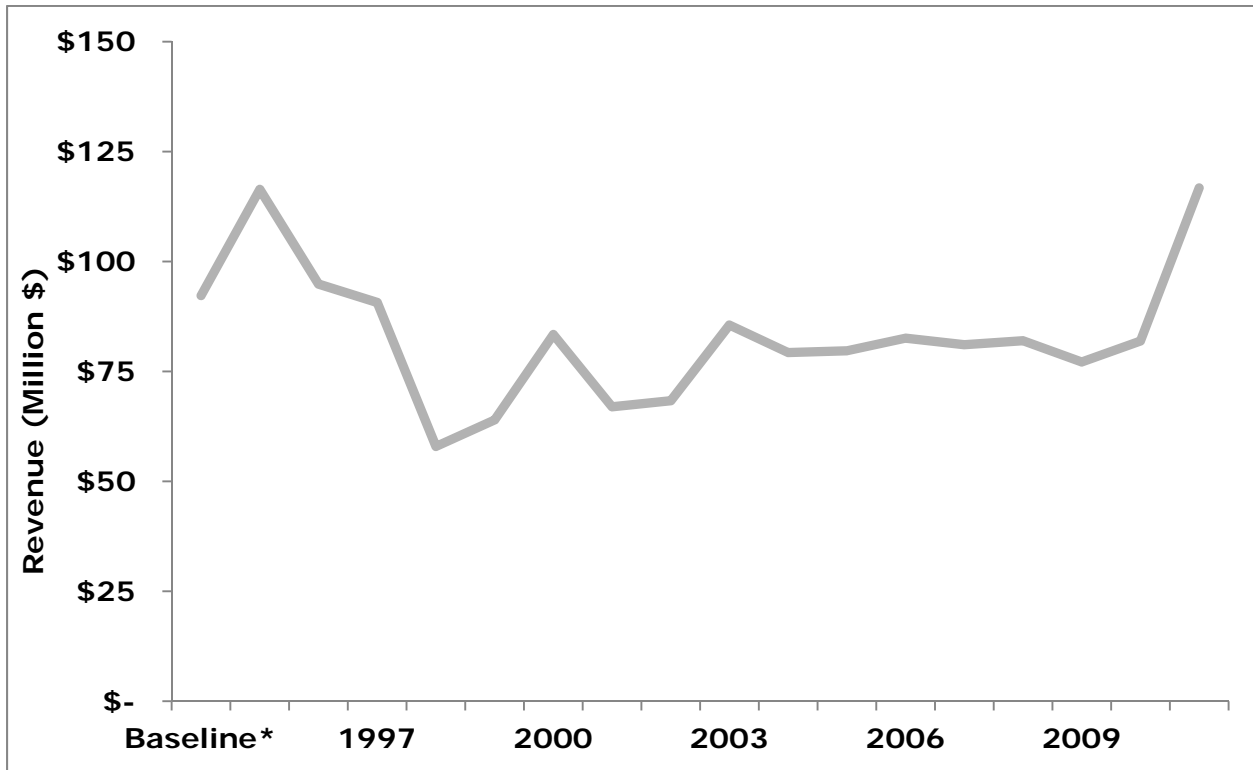


Figure 114. Total sablefish revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Alaska Sablefish IFQ Program



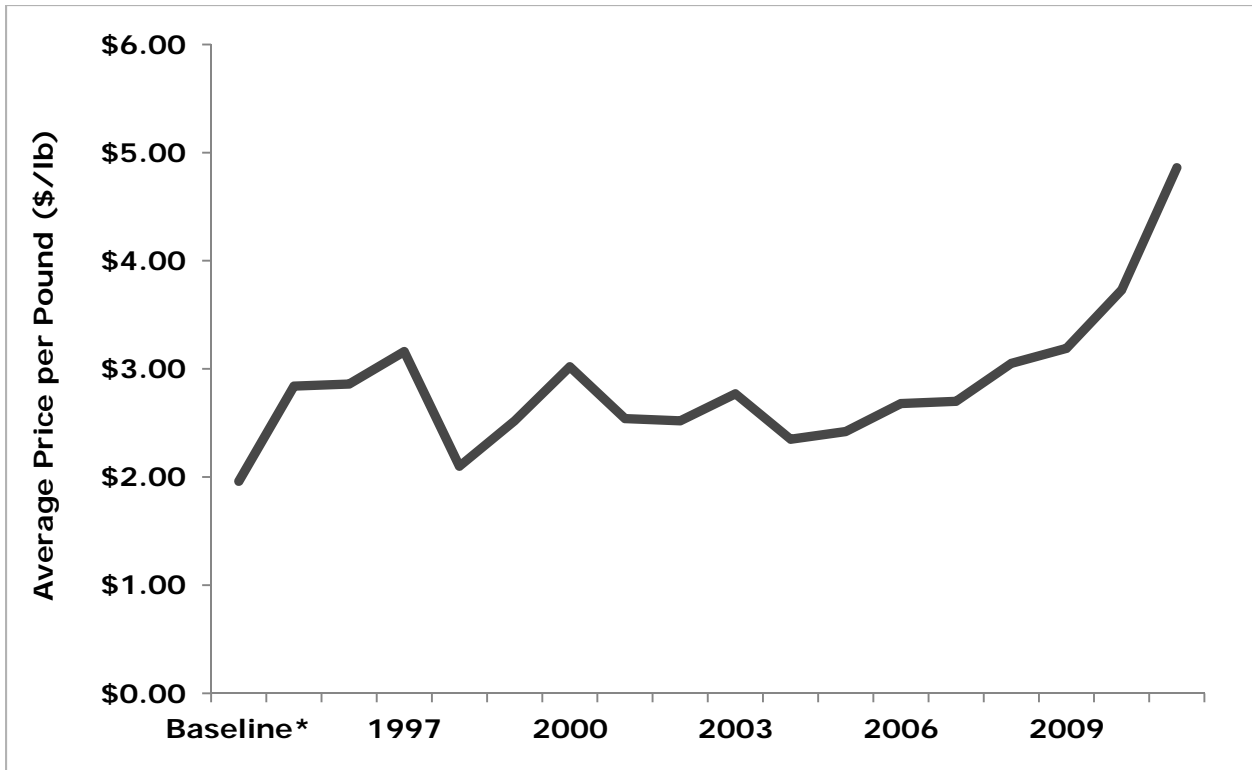


Figure 115. Average sablefish price per pound (inflation-adjusted 2010 dollars) in the Alaska Sablefish IFQ Program

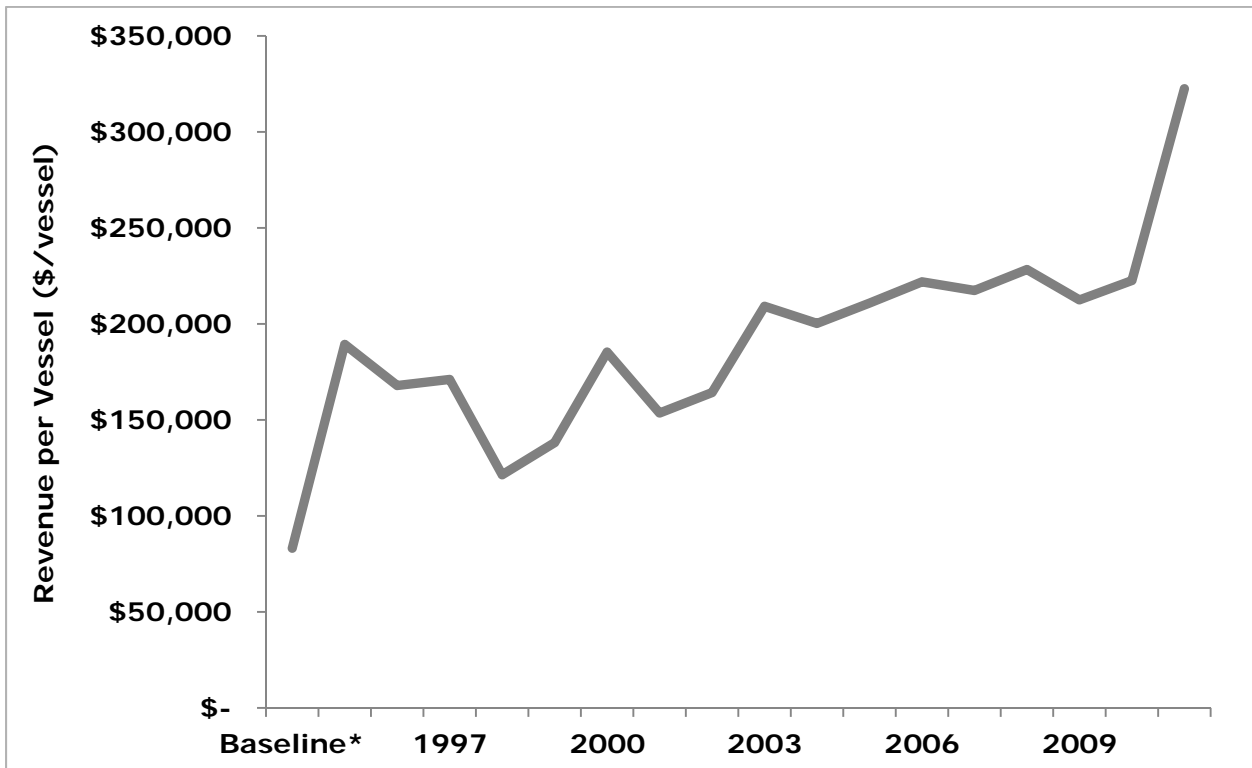


Figure 116. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Alaska Sablefish IFQ Program

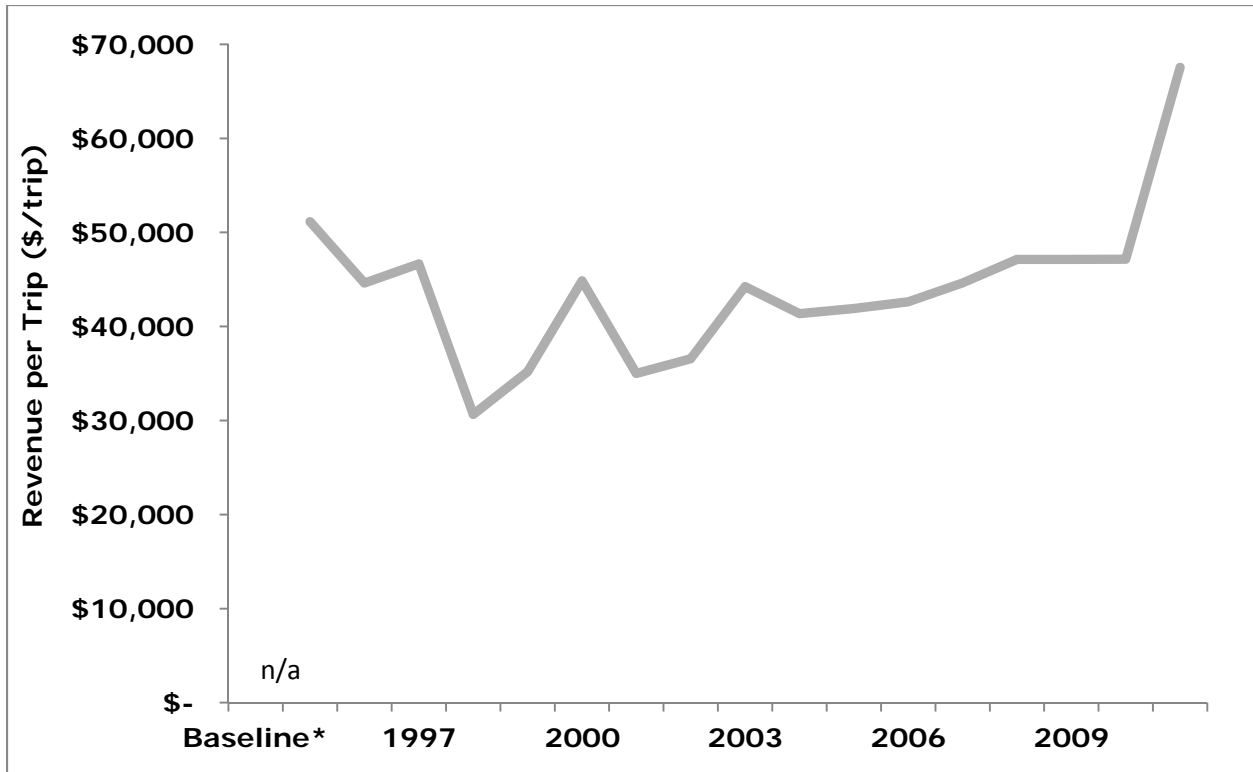


Figure 117. Revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the Alaska Sablefish IFQ Program

## **American Fisheries Act (AFA) Pollock Cooperatives**

### **a. Management History**

The Bering Sea and Aleutian Islands Fishery Management Plan (FMP) was first implemented in 1982 and manages all species of groundfish (including pollock, Pacific cod, flatfish, sablefish, rockfish). The original FMP has been amended over ninety times, where the management focus has shifted from limiting foreign fleets to managing domestic fleets. Amendments have set guidelines and procedures for establishing and apportioning the Total Allowable Catch, implemented gear and size restrictions, amended data reporting requirements and established regulations for at-sea observers.

The American Fisheries Act Pollock (AFA) Cooperatives Program was established by the U.S. Congress under the American Fisheries Act in 1998. Prior to the implementation of the American Fisheries Act Pollock Cooperatives Program in 1999, the fishery was often closed after only two months in order to ensure that the fleet (consisting of catcher/processors, motherships and catcher vessels) did not exceed harvest limits. While the pollock fishery was not overfished or experiencing overfishing prior to implementation of the catch share program, the short season often led to many negative consequences of the "race for fish" and there were frequent allocation disputes between the inshore and offshore fleets.

This catch share program, commonly referred to as AFA Pollock Cooperatives, manages Bering Sea and Aleutian Islands pollock. The AFA established participation requirements and authorized the formation of cooperatives. Other major components of the AFA were minimum U.S. ownership requirements, a permit/vessel buyout, a list of vessels eligible to participate in the Program, processor eligibility requirements, the establishment of three harvest sectors (and their respective allocations) and, allocations to the Western Alaska Community Development Quota Program. When the AFA Pollock Cooperatives Program was implemented, the buyback of the nine decommissioned vessels cost the government \$90 million. The inshore sector agreed to pay back \$70 million by paying \$0.06 per pound of harvested pollock. The cost of the other \$20 million was borne by taxpayers.

### **b. Program Objectives**

The objectives of the AFA Pollock Cooperatives Program were to settle allocation disputes between the inshore and offshore sectors and rationalize the fishery. The AFA Pollock Cooperatives Program manages two allocations of Bering Sea walleye pollock within the Bering Sea and Aleutian Islands. As described in more detail below, the Act defined three sectors – inshore, offshore and motherships – and listed those entities eligible for participation in each sector. There were 111 catcher vessels and eight processing plants eligible for participation in the inshore sector. The Act listed 20 catcher/processors and seven catcher vessels (allowed to deliver to the catcher/processors) eligible for participation in the offshore sector. The Act also specified three eligible motherships and 19 catcher vessels that could deliver to these motherships. A mothership does not fish, but rather processes pollock harvested by a fleet of catcher vessels that transfer their catch at sea to the mothership.

### **c. Key Events/Features**

The AFA Pollock Cooperatives Program was designed to grant eligibility to those meeting the statutory requirements within the American Fisheries Act: meeting minimum pollock landings criteria, U.S. vessel ownership requirements and minimum delivery thresholds for shoreside processors. Eligibility for initial allocations was based upon historic participation with different criteria for inshore, offshore and mothership sectors. The inshore sector (catcher vessels) had to meet landings thresholds for 1996, 1997 and 1998. The offshore sector (catcher/processors) was required to be directly listed in the American Fisheries Act or meet a minimum landings threshold. Motherships were required to be listed in the American Fisheries Act. Shoreside

processors must have met minimum delivery thresholds in 1996 and 1997 to be eligible to receive inshore sector deliveries.

Inshore catcher vessel cooperatives have formed and receive exclusive harvest privilege permits from NOAA Fisheries. Inshore cooperatives can only form between catcher vessels and eligible shoreside processors where the vessel delivered a majority of their catch in the previous year. Vessels in shoreside cooperatives are required to deliver 90 percent of their pollock catch to a member processor. Vessels choosing not to join a cooperative could operate in the highly constrained limited access fishery. The mothership and catcher/processor sectors have formed voluntary cooperatives to manage their allocations and do not receive an exclusive harvest privilege from NOAA Fisheries.

After 10 percent of the Total Allowable Catch is allocated to CDQ groups and an amount (about three percent) established for incidental catch of pollock outside the Program, the remaining quota is divided among the sectors. The inshore sector receives 50% of the remaining total allocation for catcher vessels who deliver their harvests to shore-based processors. The offshore sector receives 40% of the remaining total allocation and includes catcher/processor vessels and those catcher vessels that deliver to catcher/processors. The mothership sector receives 10% of the remaining allocation and includes floating processors. Quota shares and quota pounds (inshore, offshore and mothership sectors) can be sold or leased to other participants in the same sector. Quota shares transfer with the sale of a vessel.

The purpose of excessive quota share caps is to prevent individual shareholders (or entities) from controlling production (and processing) as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. Excessive share caps have been established and no entity can harvest more than 17.5% or process more than 30% of the pollock directed fishery allocation.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. These fees do not cover the entire costs related to Limited Access Privilege Programs, but cannot exceed 3% of the ex-vessel value of fish harvested under the Limited Access Privilege Program. Currently cost recovery fees are not collected for the AFA Pollock Cooperatives Program, but the applicability of cost recovery fees is currently under review and development.

#### **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the implementation of the AFA Pollock Cooperatives Program (1996 – 1998). The performance metrics are calculated for all of the harvest sectors (inshore, offshore and mothership) combined.

##### **i. Catch and landings**

Coincident with the implementation of the AFA Pollock Cooperatives Program in 1999, the commercial quota was reduced by a 20% (from 1.1 million metric tons in the Baseline Period to 850,000 metric tons in 1999; Figure 118). However, the commercial quota increased by 16%, 24% and 6% in the next three years, respectively. The commercial quota remained stable between 2004 and 2007, fluctuating around 1.2 million metric tons. The quota was decreased each successive year from 2007 to 2009, overall falling by nearly one-half between 2006 - 2010 (from 1.3 million metric tons to 706,000 metric tons). Landings in the AFA Pollock Cooperatives

Program followed a similar trend: an initial 17% decrease in landings in 1999 compared to the Baseline Period, followed by 50% higher landings from 1998 – 2002, a period of stable landings from 2002 – 2006, and a 46% decrease in landings from 2006 – 2010 .

Utilization of the available quota was initially 96% in the Baseline Period. Since the implementation of the AFA Pollock Cooperatives Program, utilization of the available quota has been nearly 100% (Figure 119). Salmon bycatch has been a big concern in this fishery and the presence of a catch share program has allowed fishers to take the time to move around and avoid salmon. Without a catch share program, the salmon bycatch problem could be exacerbated. During one year of the Baseline Period, eastern Bering Sea pollock total catch exceeded the annual acceptable biological catch, but catch limits within the AFA Pollock Cooperatives Program have not been exceeded since implementation of the Program.

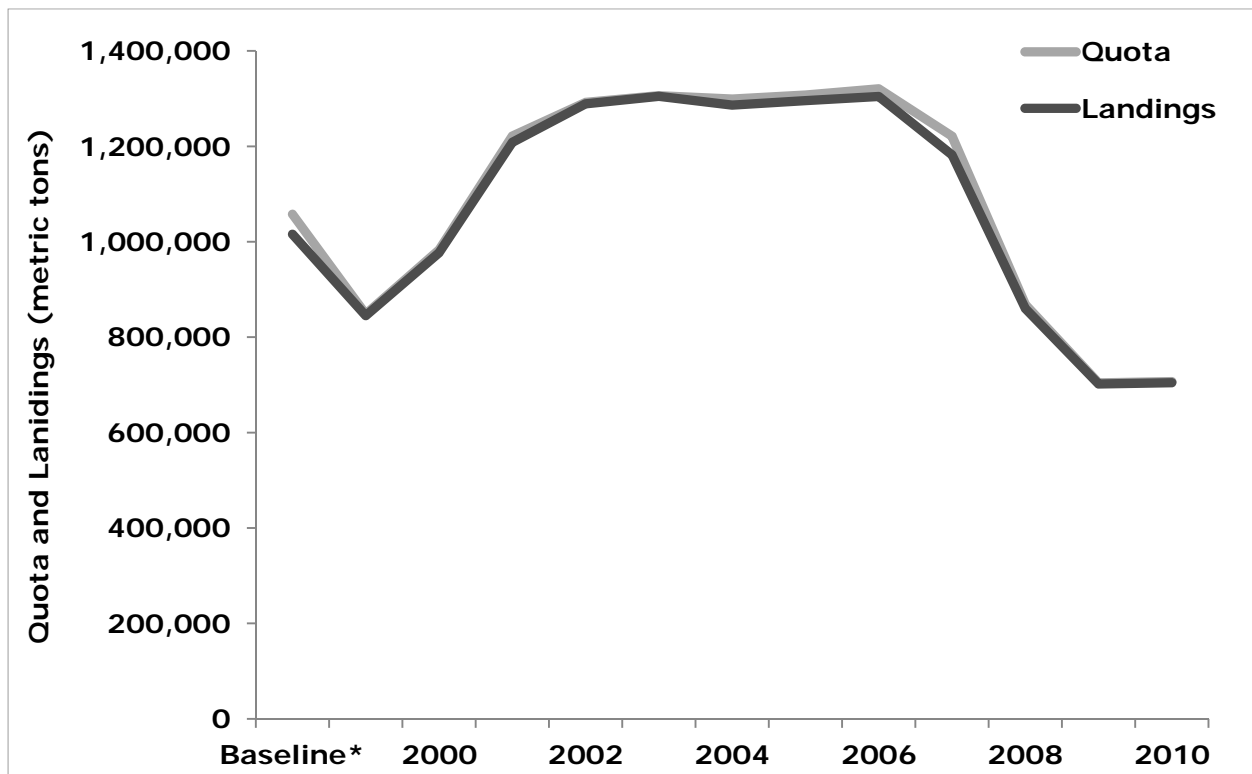


Figure 118. Quota and landings in the AFA Pollock Cooperatives Program

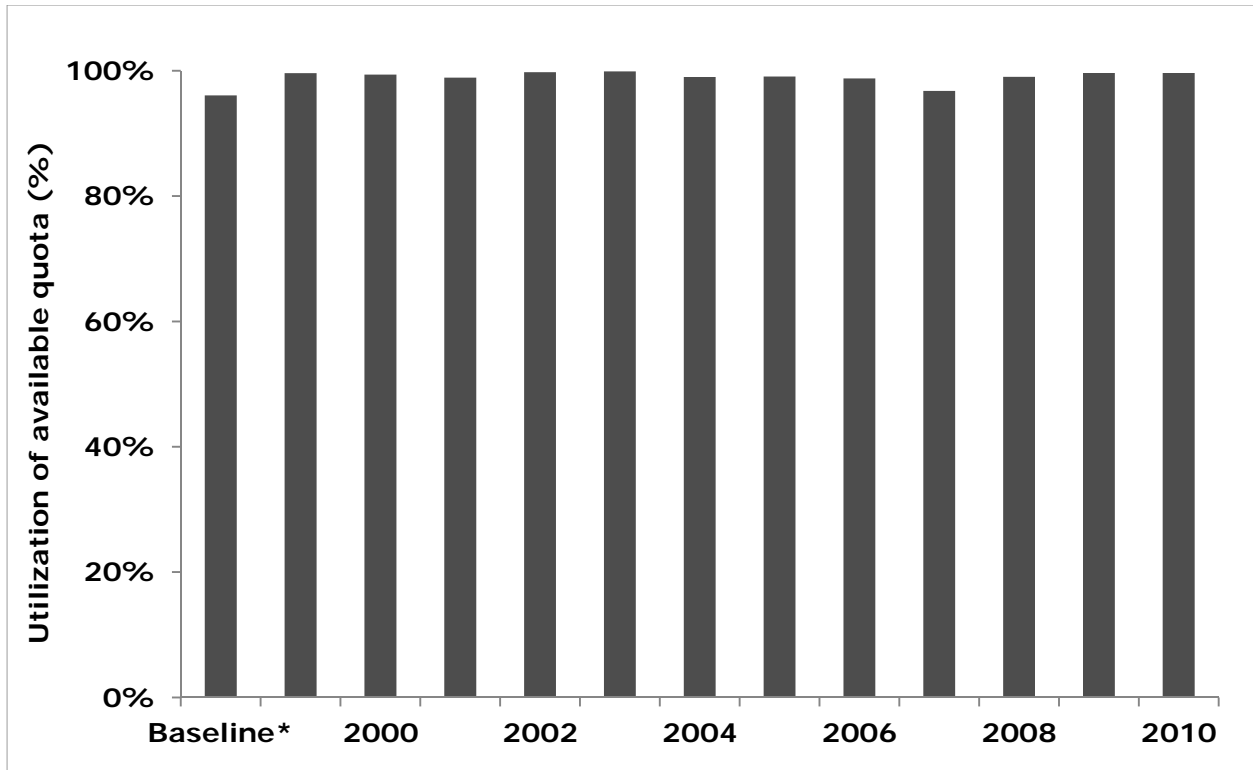


Figure 119. Utilization of available quota in the AFA Pollock Cooperatives Program

ii. Effort

The number of entities holding shares is available only for the time period in which permits were issued (2000 onwards). The AFA defines an entity as a group of affiliated individuals, corporations, or other business concerns that harvest or process pollock in the Bering Sea directed pollock fishery. The number of entities holding pollock share grew by 2% from 130 vessels in 2000 to 132 vessels 2005. The number of entities holding pollock share remained constant at 132 entities between 2006 – 2010 (Figure 120).

Prior to implementation of the AFA Pollock Cooperatives Program, there were 145 active vessels (Figure 121). In the first year of the Program, the number of active vessels declined by 12% to 128 vessels; however, nine of these vessels exited the fishery during the vessel buyback program (that occurred prior to implementation of the AFA Pollock Cooperatives Program). In 2001 (the third year of the Program), the number of active vessels further decreased (by 15%) to 109 active vessels. Since 2001, the number of active vessels participating in the AFA Pollock Cooperatives Program has declined by 20% to 102 vessels in 2010.

The season length index was calculated as the number of active days divided by the number of days in the regulatory season. This index is created by summarizing season utilization over the three sectors within the AFA Pollock Cooperatives Program: inshore (catcher vessels), offshore (catcher/processors) and motherships. Using this index provides an indication of the temporal utilization of the pollock resource and changes each year even if the regulatory season length remains constant. As a result, utilizing this unit-less index allows the season length index to be combined over multiple fleets to achieve an overall program season length. During the Baseline Period, the regulations allowed 103 days of fishing; however, the season length index was 0.36.

Upon implementation of the AFA Pollock Cooperatives Program, fishing was allowed for 174 days and the season length index was 0.61. In 2000, utilization of the regulatory fishing season improved to 0.83. The season length fluctuated between 0.74 – 0.83 for 2000 – 2008. In 2009, the season length index dropped to 0.67 and rebounded the next year to 0.80 (Figure 122). Due to the manner in which the Program is managed (and as a result how data are collected), the number of days at sea is not available.

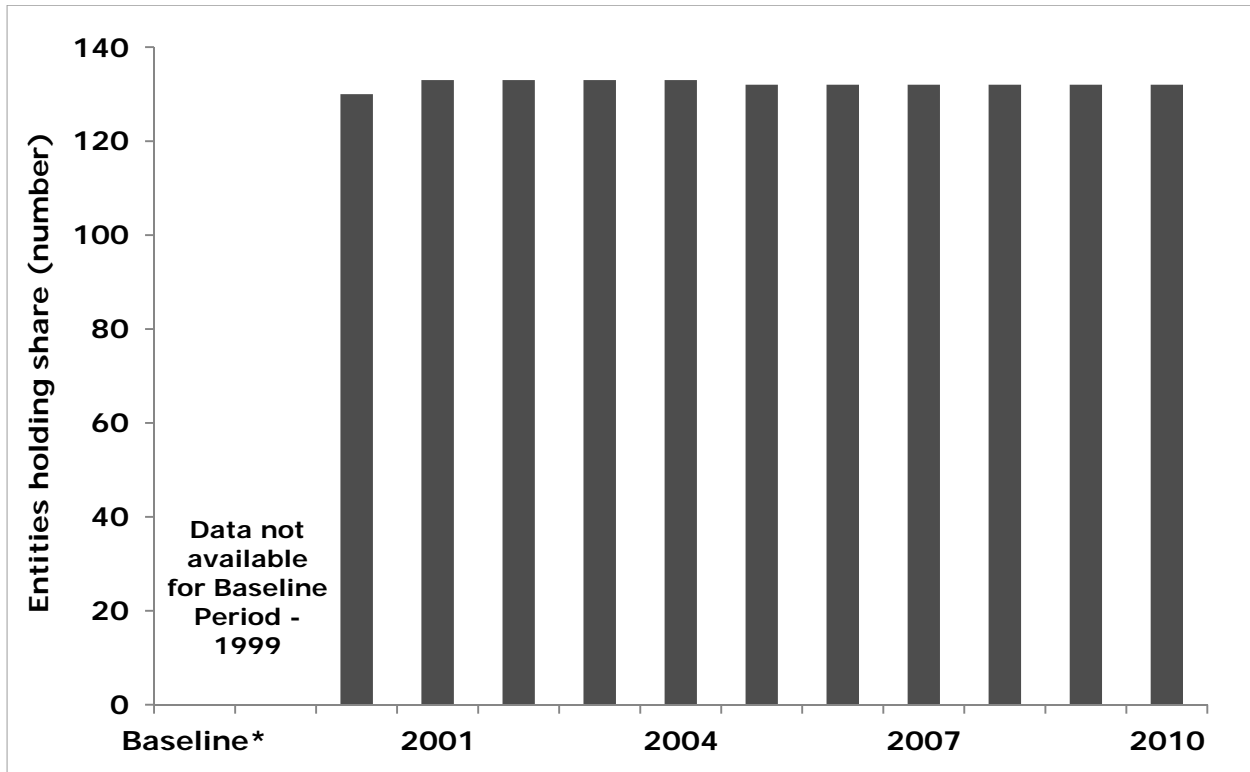


Figure 120. Number of entities holding share in the AFA Pollock Cooperatives Program

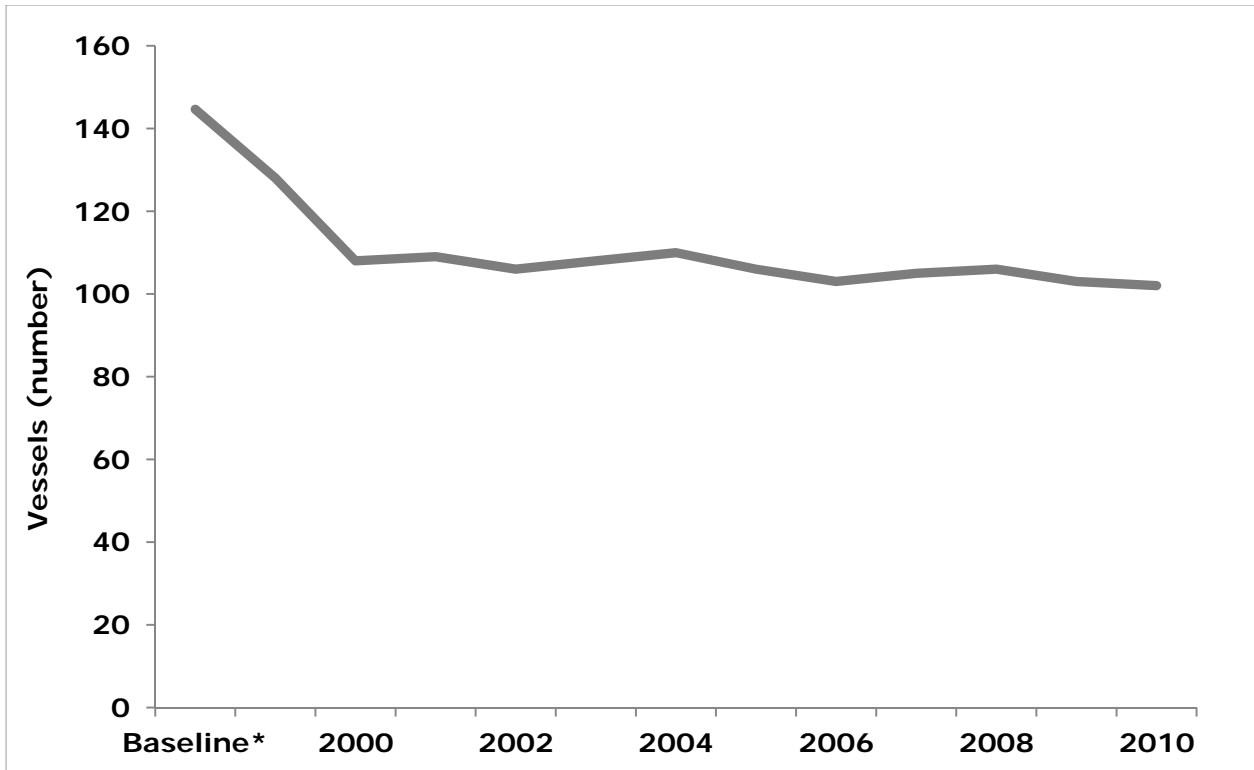


Figure 121. Active vessels fishing quota in the AFA Pollock Cooperatives Program

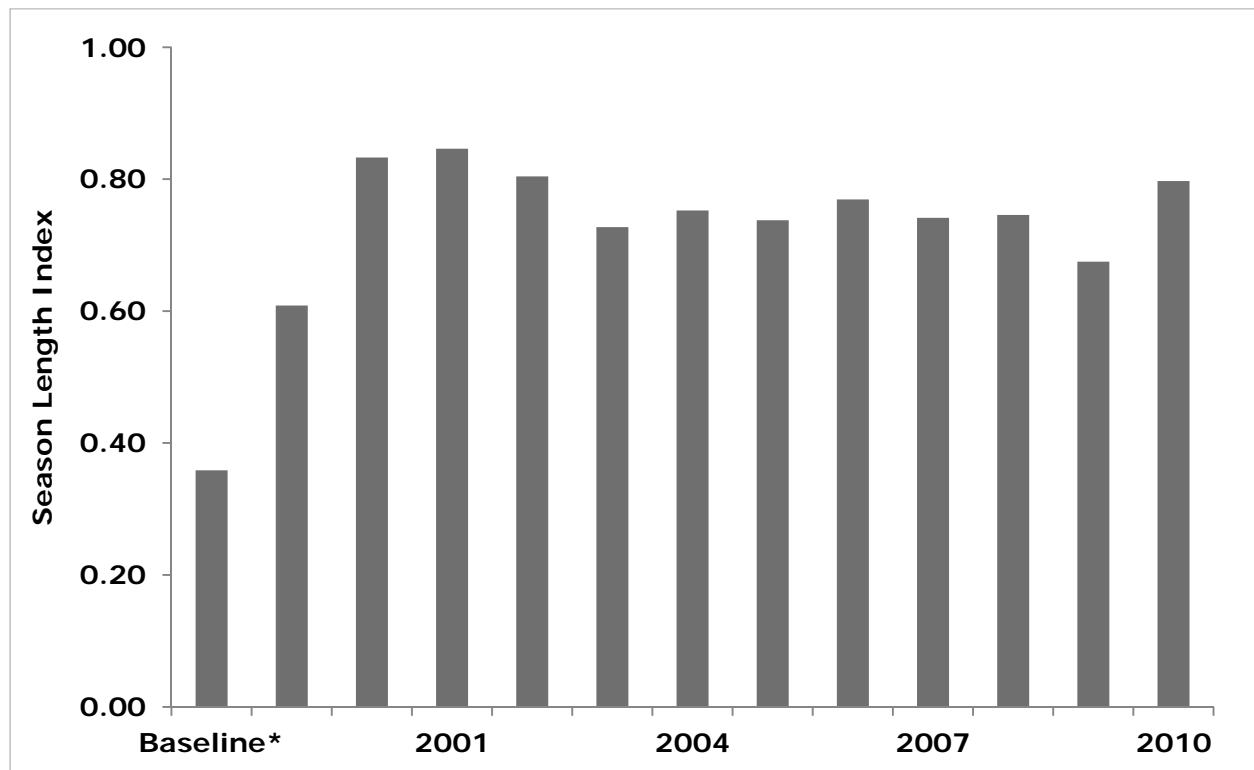


Figure 122. Season length index in the AFA Pollock Cooperatives Program



- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Revenue and price data reflect ex-vessel value and prices. To estimate ex-vessel revenue for the offshore sector, the ex-vessel prices from shoreside processors were applied to at-sea sector retained catch. Revenue from directed pollock sales decreased by 4%, from \$238 million during the Baseline Period to \$229 million in 1999 (Figure 123). Revenue then increased by 53% from 1999 - 2002 to \$373 million. From 2003 – 2008, revenue ranged from \$325 million to \$385 million, with no apparent trend. Revenue declined in both 2009 and 2010, when compared to the previous year. Revenue from directed pollock sales decreased by 36%, from \$383 million in 2008 to \$244 million in 2010.

The price for pollock was, on average, 20% higher during the first eight years of the catch share program (\$280 per metric ton) compared to the Baseline Period (\$234; Figure 124). As quota fell between 2008 and 2010, the average price per metric ton of pollock increased sharply during this period (\$397 or 69% greater than the Baseline Period).

Revenue per active vessel increased in each of the first four years of the AFA Pollock Cooperatives Program (from \$1.8 million to \$3.5 million, a 114% increase; Figure 125). Revenue per active vessel decreased by 7% in 2003 relative to the previous year and averaged \$3.4 million in 2003 – 2008. However, revenue per active vessel declined in both 2009 and 2010, falling 43% in two years; this was due to the fact that Total Allowable Catch was very low. In 2010, revenue per active vessel was \$2.2 million.

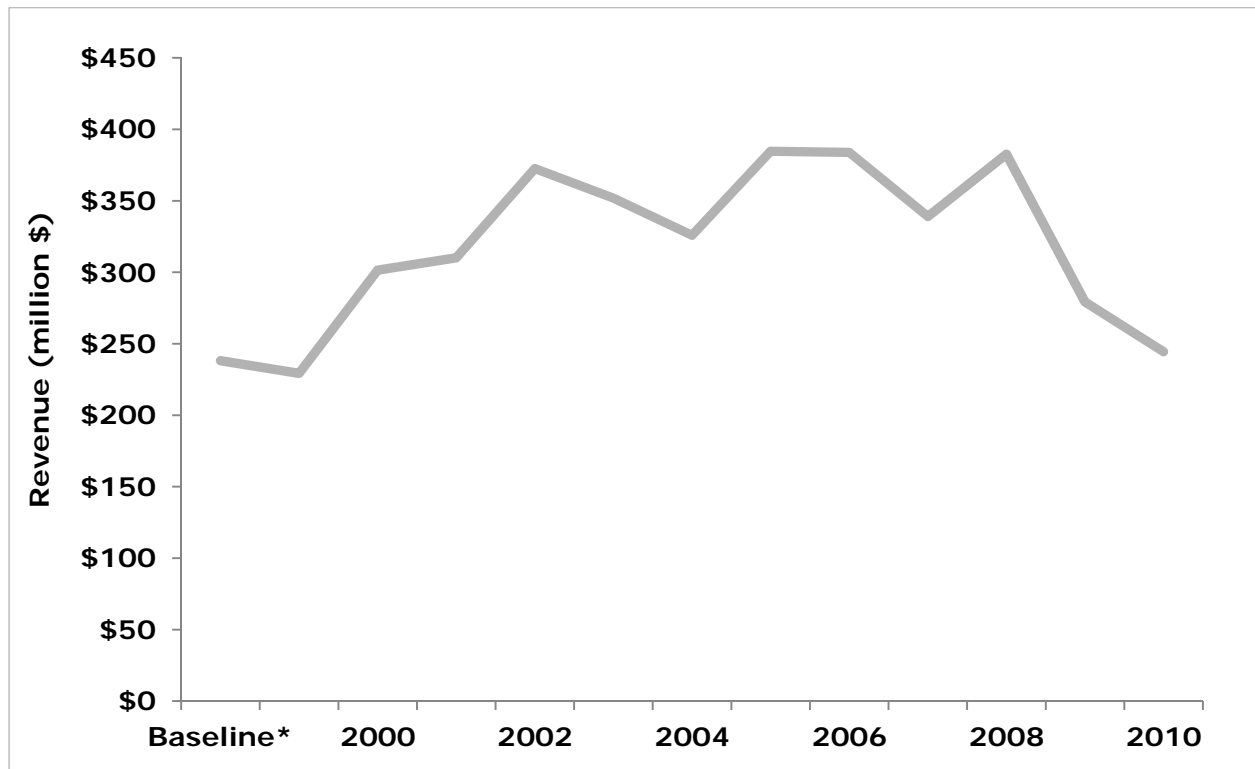


Figure 123. Total revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the AFA Pollock Cooperatives Program

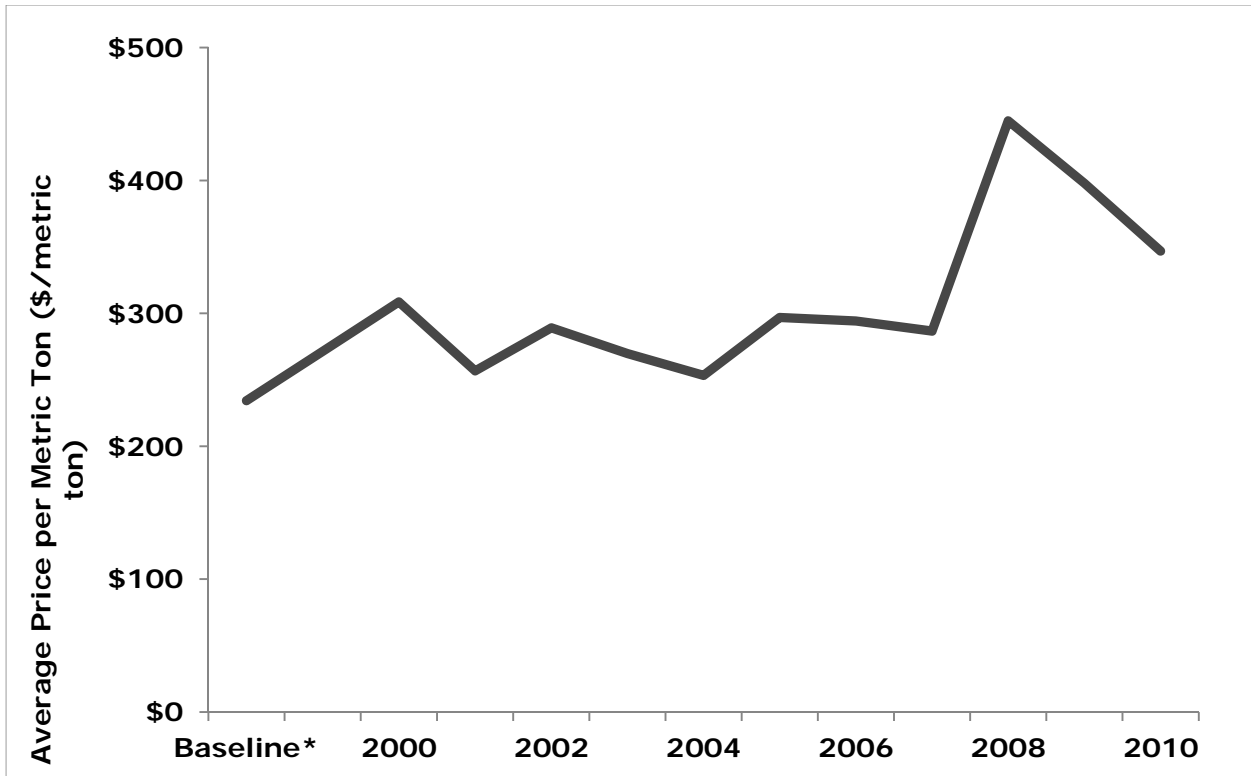


Figure 124. Average pollock price per metric ton (inflation-adjusted 2010 dollars) in the AFA Pollock Cooperatives Program

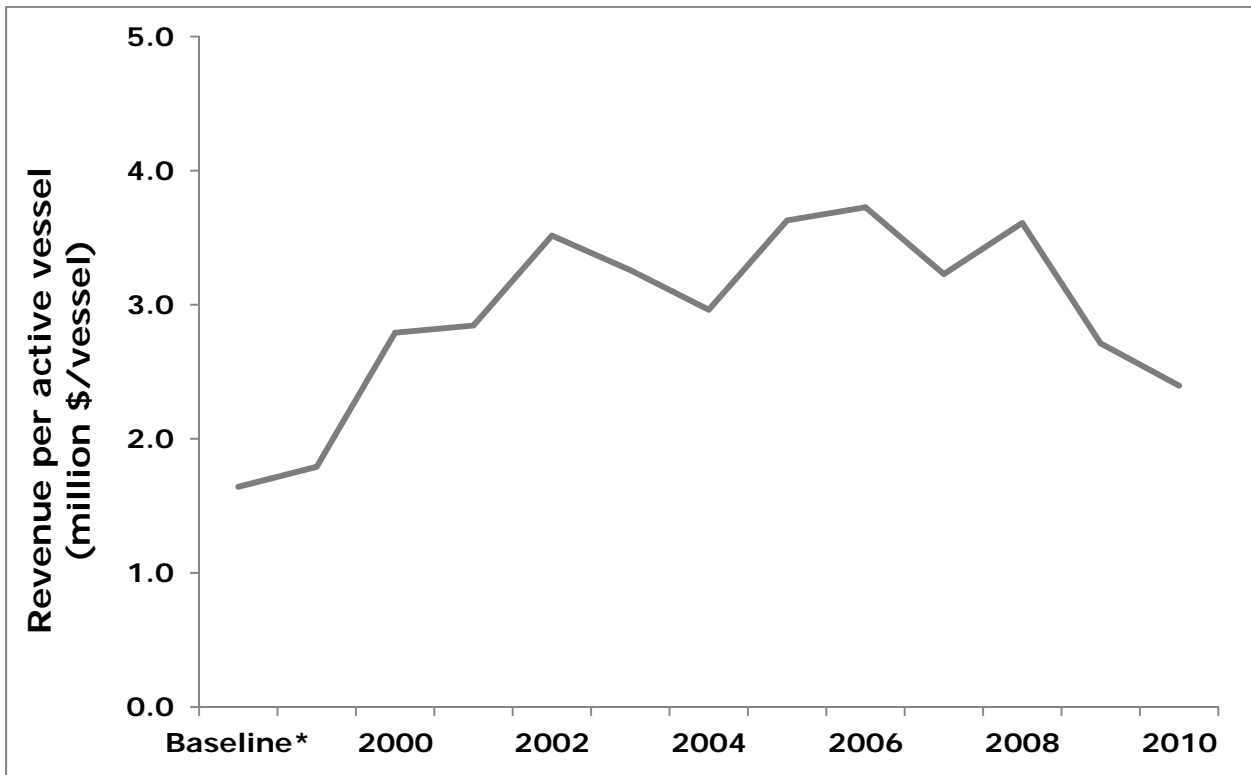


Figure 125. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the AFA Pollock Cooperatives Program

## **Bering Sea and Aleutian Islands Crab Rationalization Program**

### **a. Management History**

The Bering Sea and Aleutian Islands crab fisheries comprise large, industrial vessels using pot gear and a large-scale onshore processing sector. The fishery management plan (FMP) governing these fisheries, the Bering Sea and Aleutian Islands king and Tanner Crab FMP, was approved by the Secretary of Commerce on June 2, 1989. The FMP establishes a State/Federal cooperative management regime that defers crab management to the State of Alaska with Federal oversight. State regulations are subject to the provisions of the FMP, including its goals and objectives, the Magnuson-Stevens Act, the National Standards and other applicable federal laws. The FMP has been amended several times since its implementation to limit access to the fisheries, establish a vessel license limitation program, define essential fish habitat and associated protection measures, amongst other topics.

Managing capacity in these fisheries has been a challenge since the inception of the FMP. Overcapacity in the Bering Sea and Aleutian Islands (BSAI) Crab Fishery required season limitations to control catch levels, with seasons in some fisheries only lasting five days. The resulting "derby fishery" led to unsafe fishing conditions and numerous fatalities for crew, particularly in winter months when most crab fisheries are prosecuted. Harvesting and processing capacity expanded to accommodate highly abbreviated seasons, leading to further economic inefficiencies.

To address overcapacity, the North Pacific Fishery Management Council took a series of actions to limit access to these resources, including a moratorium on new vessels entering the fishery (1996); a vessel license limitation program (2000); a capacity reduction (buyback) program (2004); and, in 2005, the BSAI Crab Rationalization Program. The BSAI Crab Rationalization Program includes most king and Tanner crab fisheries in the Bering Sea and Aleutian Islands. The BSAI Crab Rationalization Program applies to the following Bering Sea and Aleutian Islands crab fisheries: Bristol Bay red king crab, Western Aleutian Islands (Adak) golden king crab, Eastern Aleutian Islands golden king crab, Western Aleutian Islands red king crab, Pribilof Islands red and blue king crab, St. Matthew Island blue king crab, Bering Sea snow crab, Eastern Bering Sea Tanner crab and Western Bering Sea Tanner crab.

Prior to implementation of the BSAI Crab Rationalization Program, the Bering Sea Tanner Crab fishery was closed to fishing due to low stock abundance. Two fisheries (Western Aleutian Islands red king crab and Pribilof Island red and blue king crab) have been closed to fishing throughout the duration of the Crab Rationalization Program. The St. Matthew blue king crab fishery was closed for four of the six years of the IFQ Program. In the second year of the IFQ Program and following a stock assessment, the Bering Sea Tanner Crab fishery was split into the Western and Eastern Bering Sea Tanner Crab fisheries. The Western Bering Sea Tanner crab fishery was closed for two of the five years, while the Eastern Bering Sea Tanner Crab fishery was closed for one year since this split during the IFQ Program.

### **b. Program Objectives**

The North Pacific Fishery Management Council developed the BSAI Crab Rationalization Program over a six-year period. In 2005, the BSAI Crab Rationalization Program was implemented to address the race to harvest, high bycatch and discard mortality, product quality issues and balance the interests of those who depend on crab fisheries. The BSAI Crab Rationalization Program includes share allocations to harvesters and processors. Processor quota was incorporated to preserve the viability of processing facilities in dependent communities and particularly to maintain competitive conditions in ex-vessel markets. Community interests are protected by Community Development Quota (CDQ) and Adak Community allocations, and regional landings and processing requirements, as well as several community protection

measures. The performance indicator information provided herein refers only to the IFQ component of the BSAI Crab Rationalization Program.

### **c. Key Events/Features**

King and Tanner crab are harvested in nine distinct fisheries that are defined by a combination of species and spatial areas. Uniquely, the Council was granted special Congressional authority to allocate processor quota in addition to harvesting quota. IFQ privileges are delineated as quota shares (that provide the holder a percentage of the IFQ allocation), which represents the annual harvestable pounds (derived from the shares) to harvesters, which must be matched with individual processor quota when making a delivery to a processor.

The initial allocation issued harvest shares to license limitation program (LLP) crab license holders and crew who were state permit holders (typically vessel captains) based on creditable historical landings. Processor shares were issued to processors with specific history in the crab fisheries. Harvest quota share and processor quota share are transferable, subject to limitations. Shares issued to LLP crab permit holders comprise 97% of all harvesting quota share; the remaining 3% were issued as captain/crew quota share. Both harvest and processor quota share are split into catcher vessel shares and catcher/processor shares. Annual individual processing quota is issued in the amounts matched to the amounts of catcher vessel LLP harvest quota for the nine fisheries.

This program requires reporting of some economic cost and revenue data from vessel owners. Processors also submit data on crew costs. These data were intended to help determine if the program meets Council objectives over time, including the use of processor quota share.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The Magnuson-Stevens Act also allows for additional collections to cover a loan program that provides assistance for quota share purchase by new entrants and small vessel owners. These fees can be a maximum of 3% of the ex-vessel value of the program species. During the Baseline Period, the cost recovery program was not applicable to the Crab Fishery. The cost recovery fee for the Crab Program varies each year because by regulation, the fee percentage is computed at the start of the fishing season, using prior year costs (Figure 126). This makes it possible to have years in which no fees are collected, as was the case in 2009/10. In 2010/11, \$6.7 million was collected for the cost recovery program, approximately 2.7% of IFQ Crab revenue.

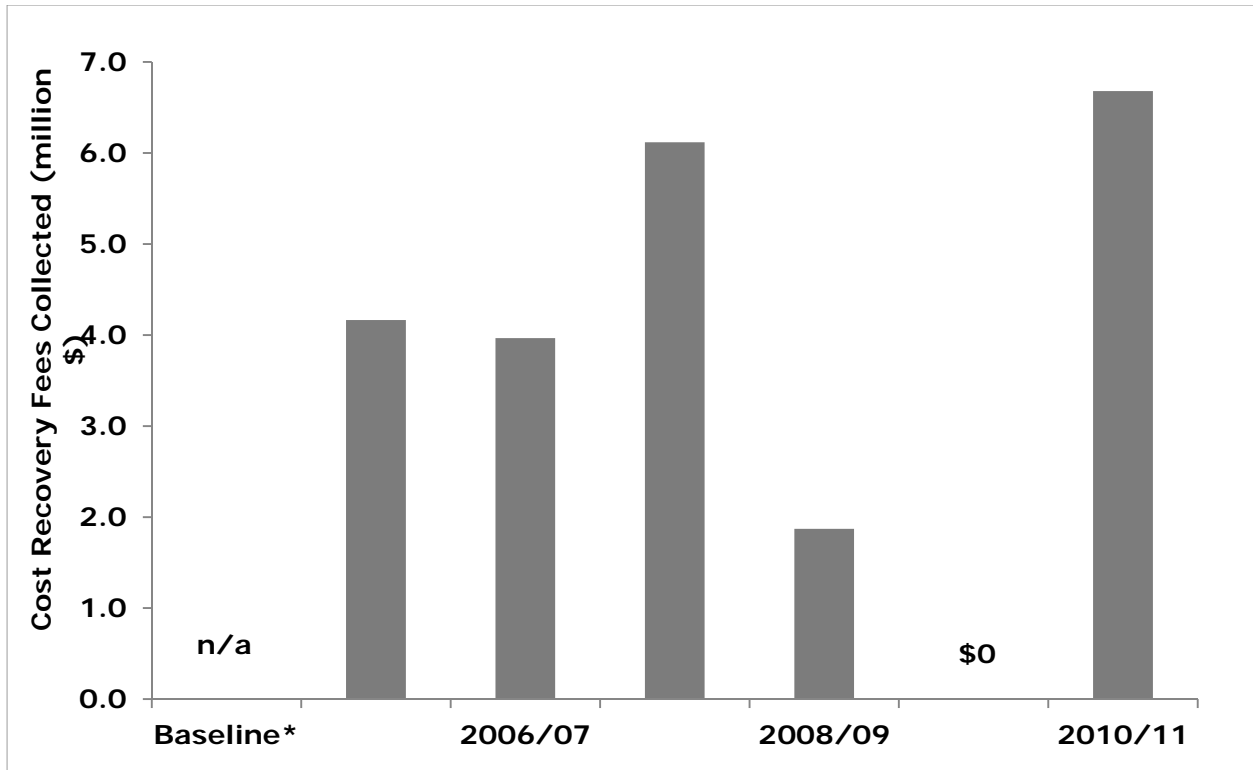


Figure 126. Cost recovery fees (inflation-adjusted 2010 dollars) collected for the IFQ Crab portion of the BSAI Crab Rationalization Program

The purpose of excessive quota share caps is to prevent quota holders from controlling production (and processing) as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. The BSAI Crab Rationalization Program has share caps in place for all harvester and processor quota share holders. The excessive share cap varies from 1-20% of initial harvest quota share based on fishery or area, quota type, and entity type for owner quota share and from 2-20% of initial harvest quota share for crew quota share. Processors may not hold or use more than 30% of processor shares in each fishery.

The management year begins July 1 and ends June 30 of the following year. Annual data are for the fishing year (e.g., the 2006/07 fishing year). Crab quota refers to all of the IFQ fisheries combined.

#### d. Recent Trends

Baseline Period years are defined as the average of 1998/99, 2001/02, and 2004/05 fishing seasons rather than three consecutive years preceding program implementation. This is based on the North Pacific Fishery Management Council's specifications for reference years for the BSAI Crab Rationalization Program Review.

##### i. Catch and landings

Upon implementation of the BSAI Crab IFQ Program, the IFQ component of the Bering Sea and Aleutian Islands crab allowable catch was reduced by 42% to 57 million pounds in 2005/06, compared to the Baseline Period reflecting changes in allowable catch based upon a stock

assessment (Figure 127). The quota was subsequently raised to 85 million pounds in 2007/08. The crab quota was decreased again in 2009/10 based upon stock assessments. Coincident with the decreased quota, landings of IFQ crab decreased by 43% to 55 million pounds in the first year of the program compared to the Baseline Period. Landings increased by 54% to 81 million pounds in 2007/08, compared to the previous year (53 million pounds). Following the mandated decrease in quota in 2009/10, landings decreased by 17% to 64 million pounds, compared to the previous year. Prior to the catch share program, harvest limits were exceeded for Bristol Bay Red king crab, Bering Sea snow crab, and Aleutian Islands golden king crab fisheries. Since the implementation of the catch share program, harvest limits have not been exceeded and utilization of the available Crab IFQ quota has fluctuated from 95% to 99% (Figure 128).

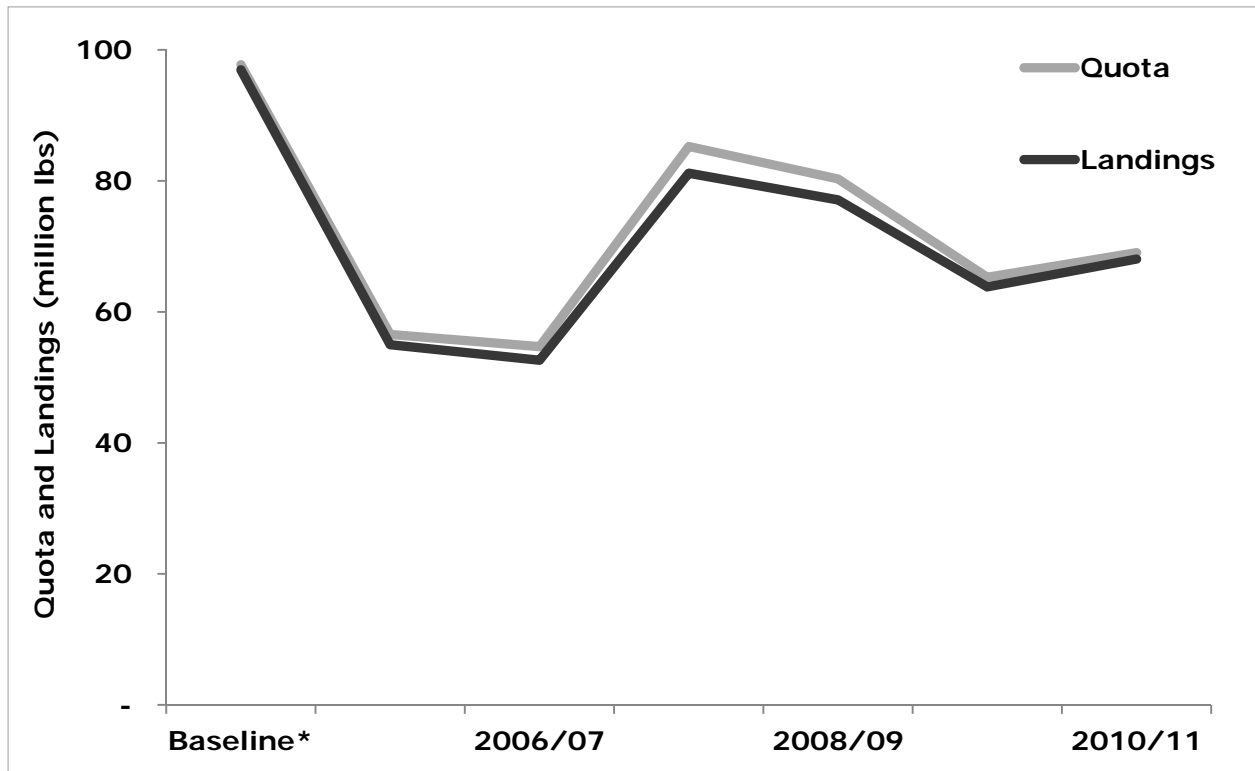


Figure 127. IFQ Crab quota and landings in the BSAI Crab Rationalization Program

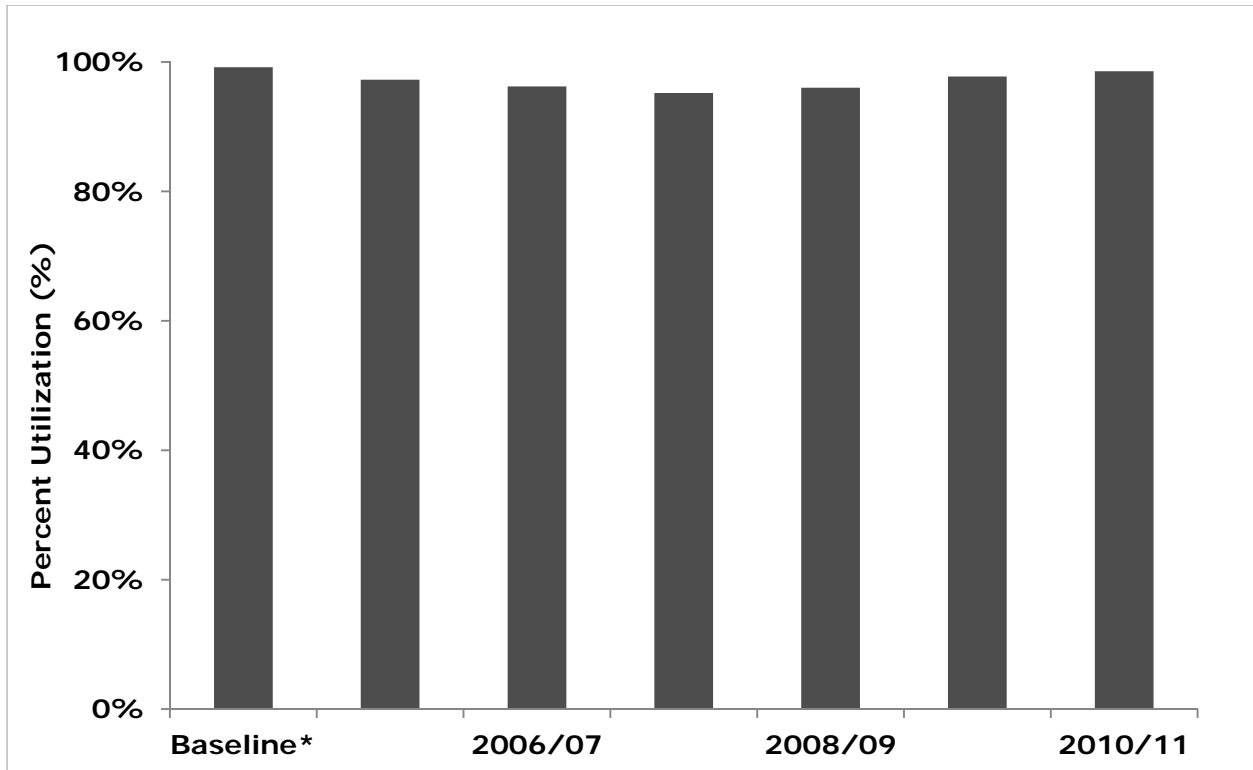


Figure 128. Utilization of available IFQ crab quota in the BSAI Crab Rationalization Program

ii. Effort

During the first year of the catch share program, 491 entities were eligible to hold quota share to fish in a crab fishery (Figure 129). In the first three years of the catch share program, on average there was 1.4% annual decrease in the number of entities holding quota share (from 491 entities to 470 entities). The number of entities holding share increased to 478 entities in 2008/09, 481 entities in 2009/10 and increased an additional 4% (to 489 entities) in 2010/11.

The number of active vessels decreased by 61% (101 vessels in 2005/06) upon implementation of the IFQ Program compared to the Baseline Period (262 vessels; Figure 130). It is important to note that in preparation for the implementation of the Crab Program, the capacity reduction program implemented in 2004 removed approximately 24 vessels from the fishery. The number of vessels active in the crab program continued to decrease to 78 vessels in 2010/11 compared to 88 vessels in 2008/09. Trip information is not available for the Baseline Period. Initially, crab IFQ Program fishermen took 28% fewer trips in 2006/07 (426 trips) compared to 2005/06 (594 trips; Figure 131). The number of trips taken in these fisheries increased 50% in the following year (2007/08) compared to the previous period and then trended downward, declining 14% to 552 trips in 2010/11.

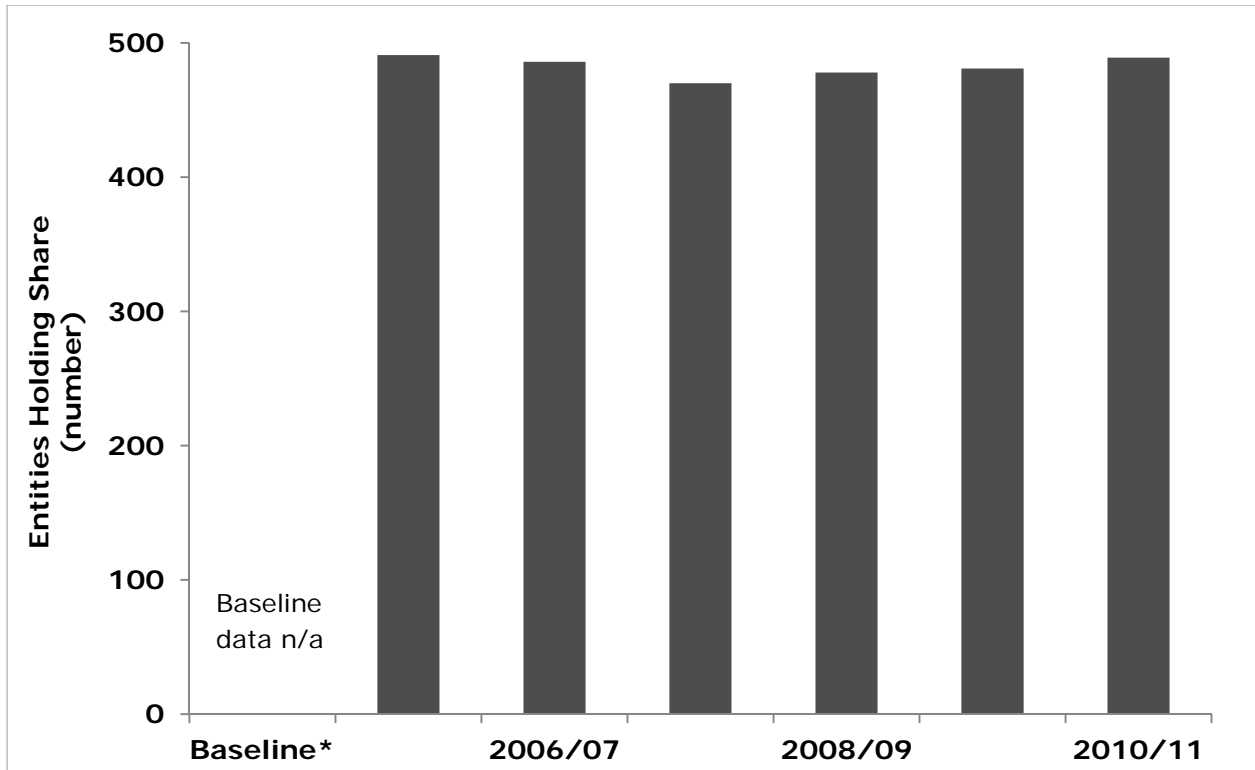


Figure 129. Number of entities holding IFQ crab share in the BSAI Crab Rationalization Program

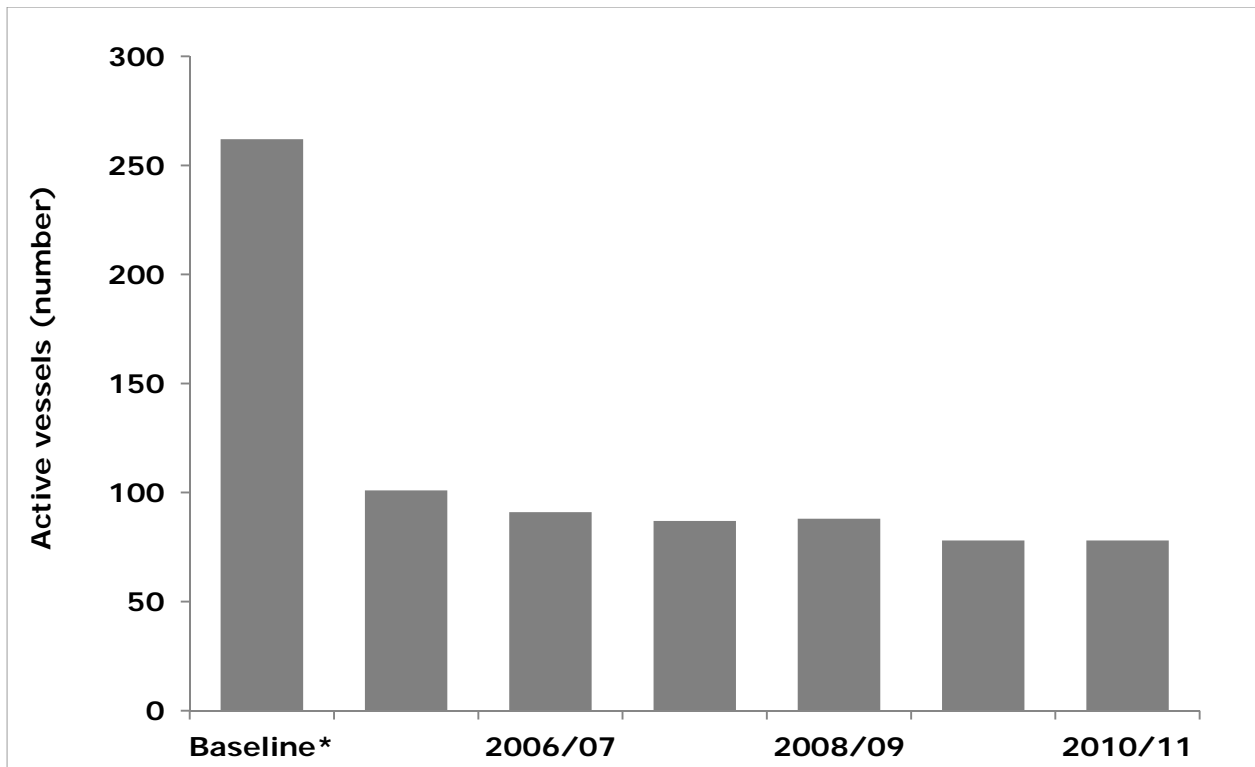


Figure 130. Active vessels fishing IFQ Crab quota in the BSAI Crab Rationalization Program



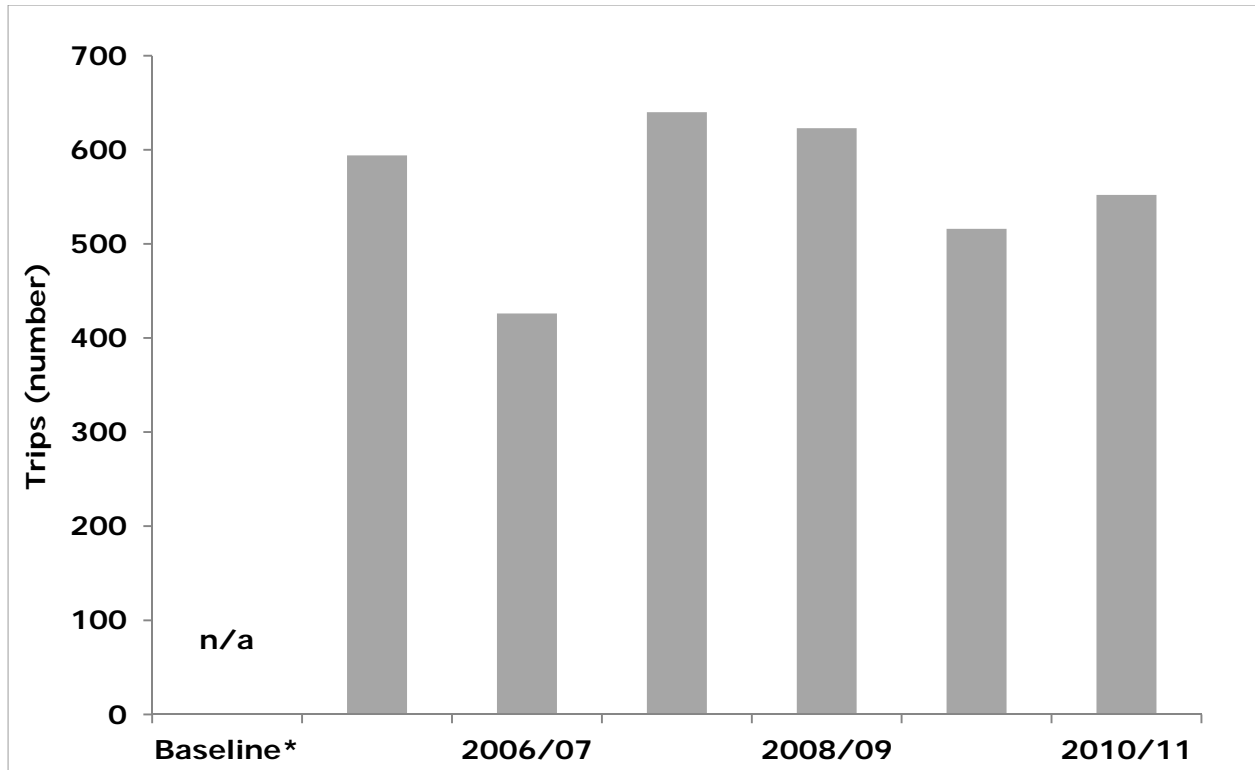


Figure 131. Number of trips harvesting IFQ Crab in the BSAI Crab Rationalization Program

The BSAI Crab Rationalization Program comprises nine distinct fisheries that are defined by a combination of species and spatial areas. Season length varies in length, timing and the fleet's utilization of these resources. The number of days when fishing is allowed in each of these fisheries is displayed below in Table 8. Note that in the 2006/2007 fishing season, the Bering Sea Tanner Crab Fishery was divided into the Eastern Bering Sea Tanner Crab Fishery and the Western Bering Sea Tanner Crab Fishery to reflect differences in stock dynamics. In general, the entire season length is routinely not used due to fishing conditions, sea ice conditions, market forces, processor capacity, processor and harvester interest, and the costs of sustaining remote operations in the Bering Sea.

A season length index was constructed to account for the differences in season length, the fleet's utilization of these seasons and to construct an indicator that accounts for change over time in the active fishing season length across multiple fisheries. The season length index represents the proportion of days when fishing actually occurred compared to the maximum number of days when fishing was allowed. Using this index provides an indication of the temporal utilization of the crab resource and changes each year even if the regulatory season length remains constant. As a result, utilizing this unit-less index allows the season length index to be combined over multiple crab species to achieve an overall program season length. During the Baseline Period, some areas were open to fishing for crab species for as little as 38 days and the season length index is 0.12. Upon implementation of the IFQ Program, the crab fisheries were open for 192 days, on average. With the exception of 2006/07 (0.6), the season length index was 0.74 for the next three fishing seasons. Despite the fact that the regulatory season length was around 200 days in 2009/10 and 2010/11, the season length index dropped to 0.58 (2009/10) and 0.53 (2010/11; Figure 132). Due to the manner in which the Program is managed (and as a result how data are collected), the number of days at sea fishing for crab is not available.

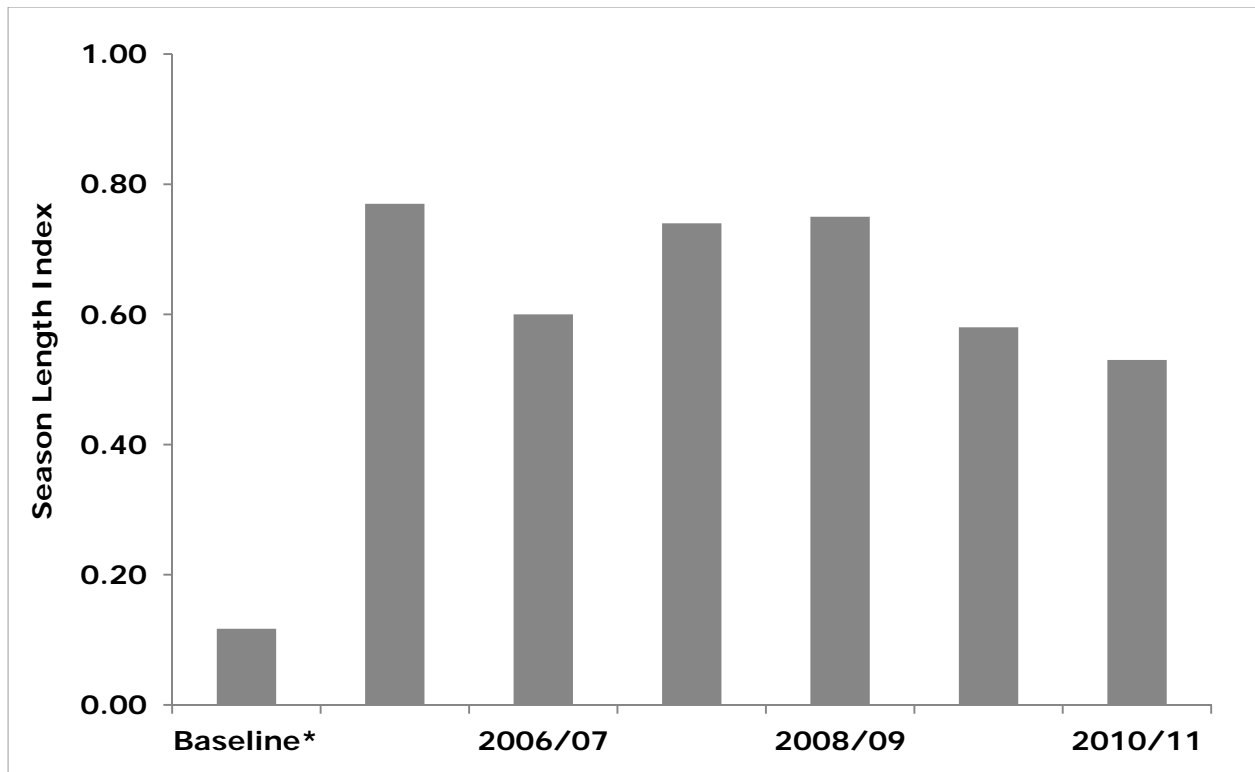


Figure 132. IFQ crab season length index in the BSAI Crab Rationalization Program

Based on stock assessments, several of the Bering Sea and Aleutian Islands crab fisheries have been closed to directed fishing for one or more years following implementation of the Catch Share Program. As of the 2010/11 season, the Pribilof Island red and blue king crab and Western Aleutian Islands red king crab fisheries have been closed to fishing for the duration of the Catch Share Program and were most recently open in 2004/05. The St. Matthew blue king crab fishery was closed for four seasons of the BSAI Crab Rationalization Program. The Western and Eastern Bering Sea Tanner crab fisheries have been closed to fishing since the beginning of the 2009/10 fishing season. In addition, the Bering Sea Tanner crab fishery was closed for all three seasons of the Baseline Period (Table 8). As noted earlier, fishery closures are not a consequence of the catch share program, but rather reflect management decisions based upon biological trends and fluctuations that would have occurred without the presence of a catch share program.

**Table 8. Season length (days) for the managed fisheries within the Crab Rationalization Program**

<b>Year</b>	<b>Bristol Bay Red King Crab</b>	<b>Bering Sea Snow Crab</b>	<b>Eastern Aleutian Islands Golden King Crab</b>	<b>Pribilof Island red and blue king crab</b>	<b>St. Matthew blue king crab</b>	<b>Western Aleutian Islands golden king crab</b>	<b>Western Aleutian Islands red king crab</b>	<b>Bering Sea Tanner Crab*</b>	<b>Western Bering Sea Tanner Crab*</b>	<b>Eastern Bering Sea Tanner Crab*</b>
Baseline Period	5	33	37	14	12	245	273	Closed	-	-
2005/ 06	93	229	274	Closed	Closed	274	Closed	168	-	-
2006/ 07	93	229	274	Closed	Closed	274	Closed	-	168	168
2007/ 08	93	230	275	Closed	Closed	275	Closed	-	169	169
2008/ 09	93	229	274	Closed	Closed	274	Closed	-	168	168
2009/ 10	93	229	274	Closed	110	274	Closed	-	Closed	168
2010/ 11	93	229	274	Closed	110	274	Closed	-	Closed	Closed

\*The Bering Sea Tanner crab fishery was split into the Western and Eastern Bering Sea Tanner crab fisheries in the 2006/2007 season.

- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

The IFQ Program crab quota was reduced in the first year of the program and, accordingly, IFQ Program crab revenue decreased by 26% in 2005/06 (\$137 million) compared to the Baseline Period (\$186 million; Figure 133). When the quota was increased in 2007/08, IFQ Program crab revenue increased 51% relative to the first year of the program. Similarly, IFQ Program crab revenue decreased by 32% to \$141 million in 2009/10 from 2007/08 revenue as the quota declined. Despite these fluctuations, in 2010/11, IFQ crab revenue was 76% greater (\$249 million) compared to the previous year (\$142 million).

Fishermen in the IFQ Program often land crab in community quota allocation programs on the same trips in which IFQ Program crab are caught and landed. These other landings contribute to overall revenue for fishermen. It is not possible to calculate non-IFQ Program crab revenue for the Baseline Period. Non-IFQ crab revenue initially decreased by 39% in 2006/07 to \$9 million from \$15 million in 2005/06. Between 2006/07 and 2009/10, non-IFQ crab revenue decreased by 15% from \$9 million in 2006/07 to \$8 million in 2009/10. By 2010/11, non-IFQ crab revenue increased by 48% from the previous year to \$12 million. The proportion of non-IFQ Program crab revenue to IFQ Program crab revenue is not very substantial, 5-10% of total revenue (Figure 133). Non-IFQ Program crab revenue is almost exclusively from the use of CDQ. CDQ is a share allocation that fluctuates in parallel with IFQ Program crab. Part of the change over time is simply a function of whether CDQ crab pounds were used on the same trips as IFQ Program crab pounds, rather than vessels' taking exclusive CDQ crab trips, which are not accounted for in this report.

As noted earlier, the average price is calculated for all species of crab. The average price per pound of all landed IFQ Program crab species initially increased by 30% in the first year of the IFQ Program compared to the Baseline Period (Figure 134). For the next three years, the average price per pound of IFQ Program crab fluctuated from \$2.44 to \$2.55, increasing to \$3.66 in 2010/11.

IFQ Program crab revenue per vessel increased by nearly 100% in 2005/06 compared to the Baseline Period due to the reduced number of vessels and in spite of the reduced quota (Figure 135). IFQ Program crab revenue per vessel continued to increase by 67% to \$2.4 million in 2007/08 compared to 2005/06. However, revenue per vessel fell the following two years, and in 2009/10 IFQ Program crab revenue per vessel decreased by 24% to \$1.8 million from \$2.4 million in 2007/08. IFQ crab revenue per vessel increased by 76% to \$3.2 million in 2010/11 compared to the previous year. Non-IFQ Program crab revenue per vessel initially decreased by 39% in 2006/07 (\$9.2 million) compared to 2005/06 (\$15 million) and then increased to \$10 million in 2007/08. The next two years there was a decline of 24% in non-IFQ crab revenue per vessel to \$7.8 million in 2009/10. In the following year, non-IFQ crab revenue per vessel increased by 48% to \$11.6 million (Figure 135).

IFQ Program crab revenue per trip increased by 31% to \$302,000 in 2006/07 compared to \$231,000 in 2005/06 (Figure 136). Revenue per trip increased by 7% in the following year (2007/08) only to decline in the two following years to \$274,000. During this time period, non-IFQ Program crab revenue per trip initially decreased by 15% from \$26,000 in 2005/06 to \$22,000 in 2006/07. Non-IFQ crab revenue per trip continued to decline for the next three years to \$15,000 in 2009/10 and subsequently increased by 38% to \$21,000 in 2010/11.

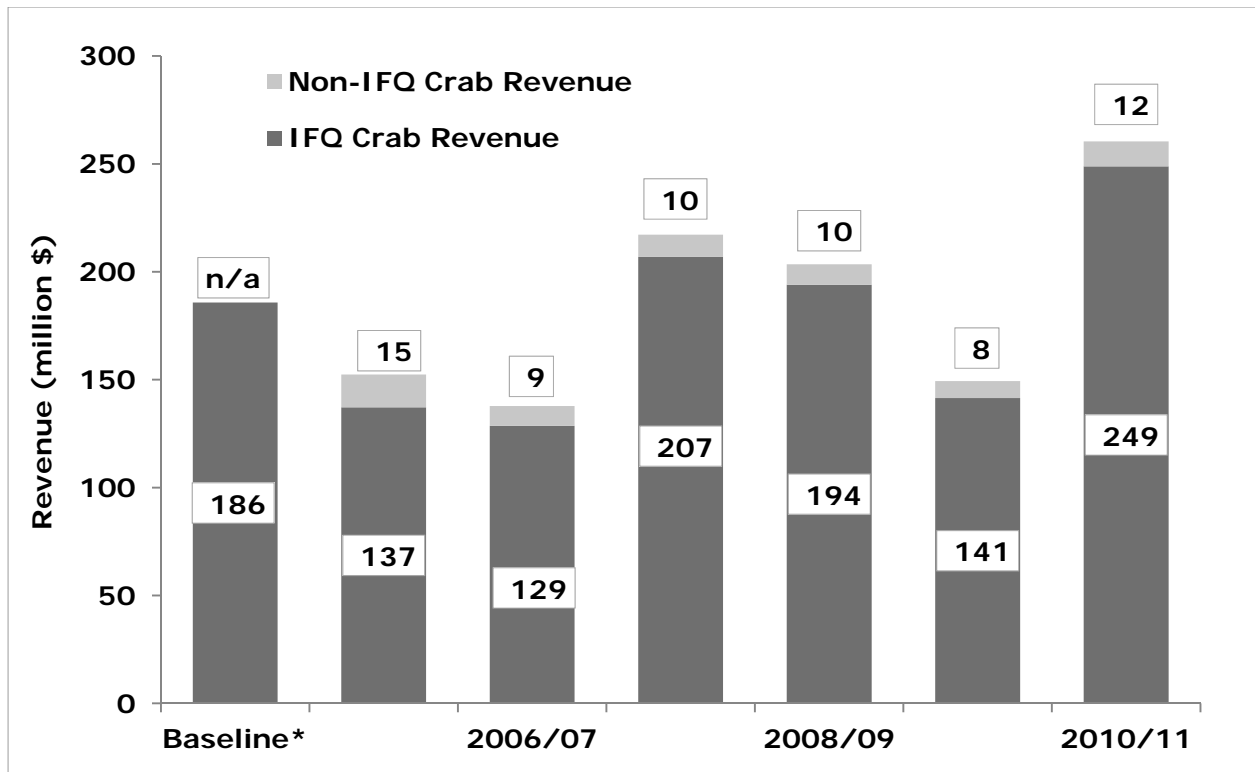


Figure 133. Total IFQ-crab and non-IFQ-crab revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the BSAI Crab Rationalization Program

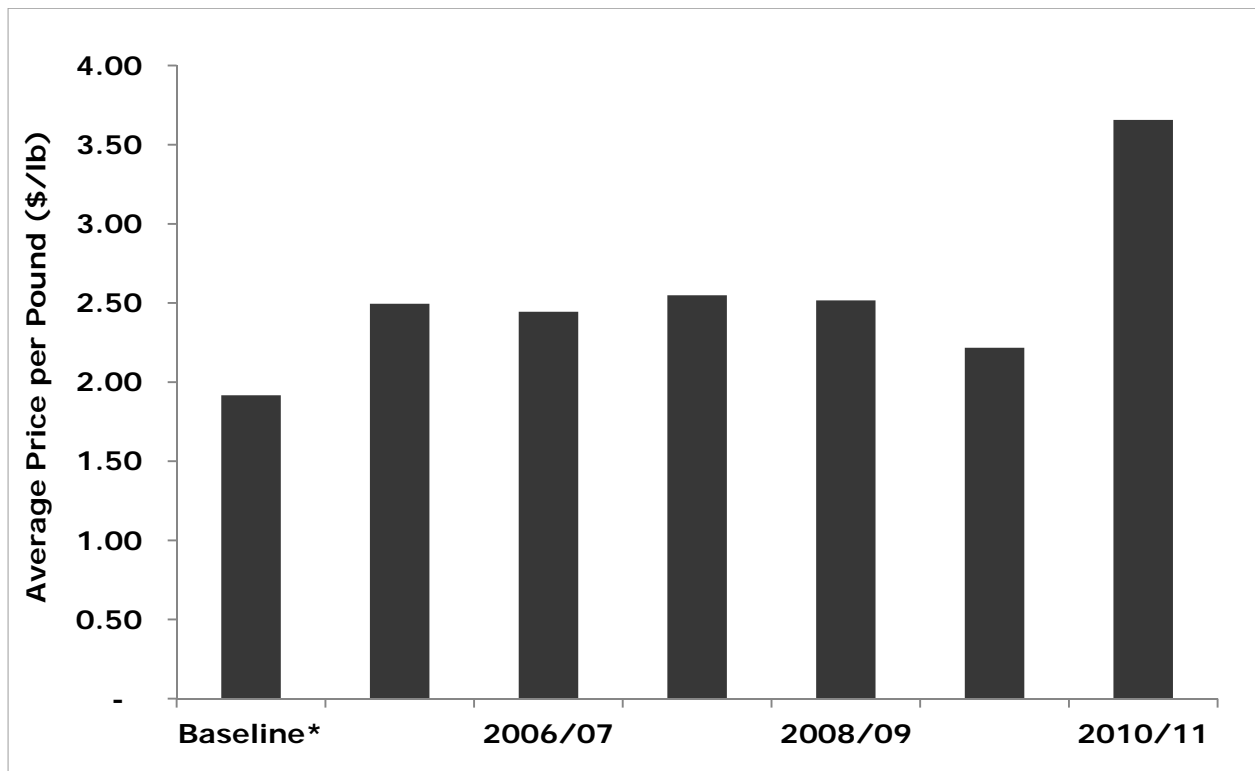


Figure 134. Average combined IFQ crab price per pound (inflation-adjusted 2010 dollars) in the BSAI Crab Rationalization Program

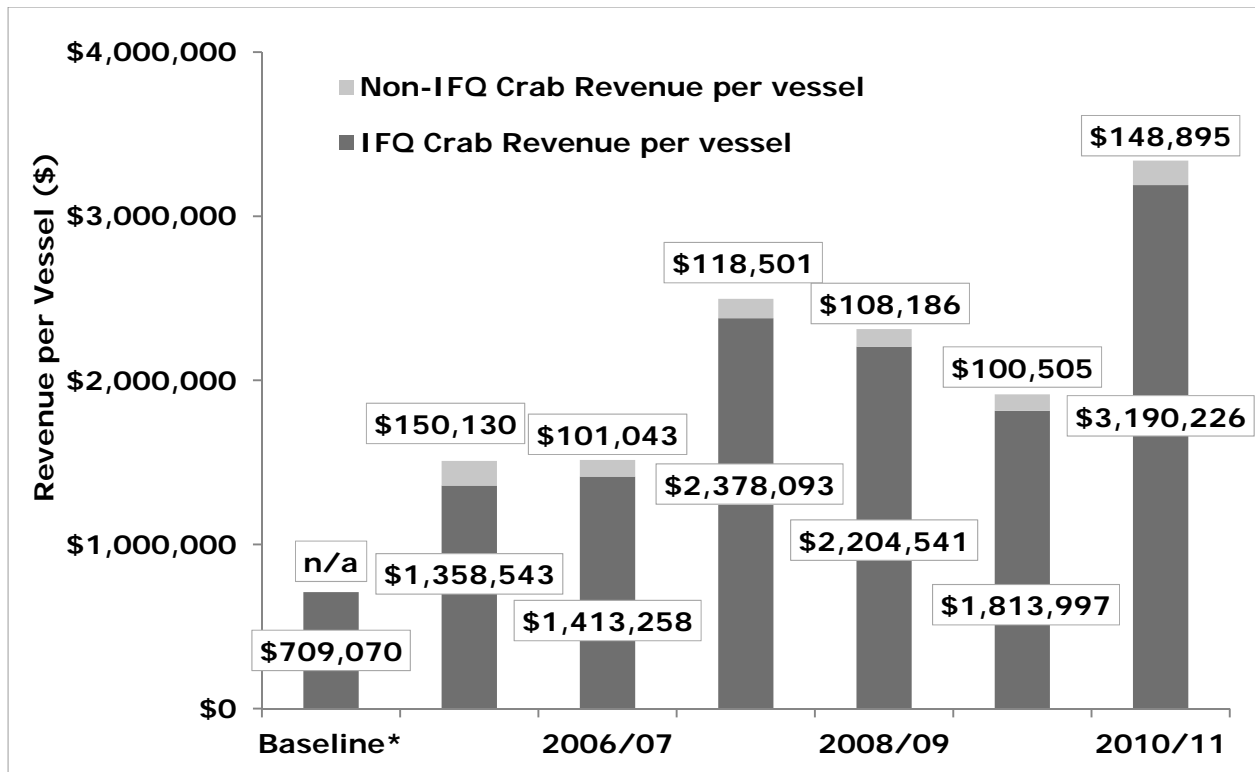


Figure 135. IFQ crab and non-IFQ crab revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the BSAI Crab Rationalization Program

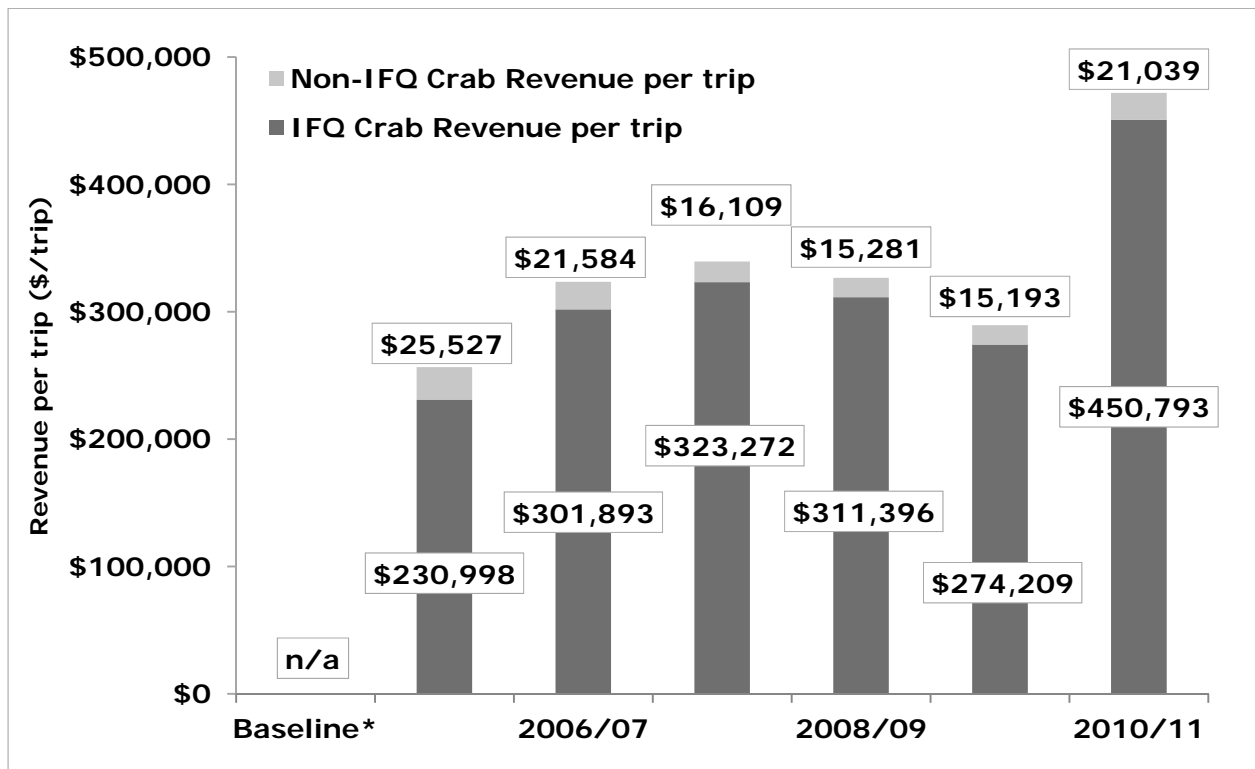


Figure 136. IFQ Crab and non-IFQ crab revenue (inflation-adjusted 2010 dollars) per trip that vessels fish quota in the BSAI Crab Rationalization Program

## **Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80)**

### **a. Management History**

The Bering Sea and Aleutian Islands Groundfish Fishery Management Plan (FMP) was first implemented in 1982 and manages all species of groundfish (pollock, Pacific cod, flatfish, sablefish and rockfish). The original FMP has been amended over ninety times, where the management focus has shifted from limiting foreign fleets to managing domestic fleets. Amendments have set guidelines and procedures for establishing and apportioning the Total Allowable Catch, implemented gear and size restrictions, data reporting requirements and established regulations for at-sea observers.

Bering Sea flatfish, Atka mackerel and Pacific Ocean perch fisheries in the Aleutian Islands are managed under this FMP. These fisheries mainly have been prosecuted by a group of trawl catcher/processors that do not target pollock; this fleet is referred to as the Amendment 80 fleet. Discards and bycatch have long been concerns in this fishery in which lower valued and smaller flatfish were often discarded at sea. The race for fish increased discarding as only the higher-valued species were retained. The North Pacific Fishery Management Council began developing cooperative fishing programs in 2002 as a mechanism to increase retention of all fish species. The Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives Program was developed and implemented by the North Pacific Council in 2008 as Amendment 80 to the Bering Sea and Aleutian Islands Groundfish FMP.

### **b. Program Objectives**

The goal of Amendment 80 is to create economic incentives to improve retention, utilization<sup>13</sup> and reduce bycatch by the commercial fishing vessels using trawl gear in the non-pollock groundfish fisheries. Amendment 80 allocates portions of catches for the six Amendment 80 species: Atka mackerel, Pacific cod, Pacific Ocean perch and three species of flatfish (yellowfin sole, rock sole and flathead sole). There are also allowances outside of the Bering Sea and Aleutian Islands region for sideboards for pollock, Pacific cod, Pacific Ocean perch, northern rockfish, pelagic shelf rockfish and a prohibited species catch allocation for halibut. Sideboards are intended to limit the ability of vessels in rationalized fisheries from exceeding historic levels of participation in other fisheries, which otherwise might exacerbate a "race for fish." Sideboards can be collective catch limits that apply to all vessels in a particular sector. Vessels subject to a sideboard limit are allowed to fish up to that limit but may not exceed it. Amendment 80 vessels that do not join a cooperative are eligible to participate in a limited access fishery.

### **c. Key Events/Features**

Amendment 80 allocates six non-pollock species and five prohibited species in the Bering Sea and Aleutian Islands to the catcher/processor sector and allows qualified vessels to form cooperatives. The Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives fleet comprises medium to large pelagic and bottom trawl vessels with limited factory space and processing capability. From 2008 – 2010, the majority of vessels were in one cooperative, with the remainder being in the limited-access fishery. Since 2011, all of the catcher/processors are in one of two cooperatives. These voluntary harvest cooperatives manage the target allocations, incidental catch allowances and prohibited species allocations amongst themselves.

The North Pacific Fishery Management Council designed the Non-Pollock Groundfish Cooperatives Program to allow eligibility based upon those persons who: 1) did not meet the qualification criteria of an American Fisheries Act trawl catcher/processor sector as defined in section

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<sup>13</sup> *Utilization* in Alaska fisheries refers to increasing the percentage of retained catch to comply with Groundfish Retention Standards. Percent utilization refers to the economic performance indicator defined in this report (see Table 2).

219(a)(7) in the American Fisheries Act; and 2) held a portion of the catch history of Amendment 80 species during the period from 1998 to 2004. Initial allocations were issued to cooperatives and the Amendment 80 limited access sector with catch history.

Amendment 80 quota share holders may, on an annual basis, elect to form a cooperative with other Amendment 80 quota share holders to receive an exclusive harvest privilege for the portion of the catch limit resulting from their aggregated quota share holdings. This cooperative quota is the amount of annual Amendment 80 species catch limit dedicated for exclusive use by that cooperative. Quota shares can be transferred with vessel and catch history, while annual allocations of quota metric tons can be leased annually within and between eligible cooperatives.

Section 304(d)(2) of the Magnuson-Stevens Act authorizes the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The applicability of cost recovery fees to the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives Program (Amendment 80) fleet is currently under review and development.

The purpose of excessive quota share caps is to prevent individual shareholders (or entities) from controlling harvesting (and processing) as well as achieving management objectives, per the Magnuson-Stevens Act and the National Standards. A person or entity may not individually or collectively hold or use more than 30% of the aggregate quota share. An Amendment 80 vessel may not catch more than 20% of the catcher/processor quota assigned to the Amendment 80 sector.

#### **d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the implementation of the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives Program (2005 – 2007).

##### **i. Catch and landings**

The quota for Amendment 80 species increased by 34% to 353,000 metric tons in the first year of the cooperative program compared to the Baseline Period (Figure 137). The Amendment 80 species quota then was increased by approximately 7% and 5% in the next two years of the catch share program. In 2010, the quota was raised to 395,000 metric tons, over 50% greater than the quota during the Baseline Period.

Amendment 80 species landings were 200,000 metric tons during the Baseline Period. Upon implementation of Amendment 80, landings increased by 27% to 254,000 metric tons in 2008 (Figure 137). Landings decreased by 8% to 250,000 metric tons in 2009. Although Amendment 80 species landings in 2010 (241,000 metric tons) were less than the historical high in 2008 (254,000 metric tons), 2010 landings were 20% greater than the Baseline Period (Figure 137).

The Amendment 80 Fleet utilized approximately 76% of the available quota in the Baseline Period; however, quota utilization decreased in each subsequent year of the Program to 61% in 2010 (Figure 138). Quota utilization rates have been low in recent years because the quota allocated to the Amendment 80 Program has increased and vessels have been increasingly constrained by prohibited species catch limits and increasingly, by their allocation of Pacific cod target quota. The combined catch of federally managed groundfish species in the Bering Sea and Aleutian Islands is constrained to a 2 million metric ton cap, which is estimated to be the maximum amount of surplus groundfish production that the ecosystem can sustain. AFA pollock makes up the majority of the 2 million metric ton cap; therefore, the quota for Amendment 80 species is not driven by those species' biology or ABC, but rather by the pollock biomass in any given year. Due to the fact that many vessels and processing plants are dependent on pollock, which is more valuable than the Amendment 80 fishery, fishery managers tend to make sure the



pollock fishery never reaches this ecosystem cap in years of abundant pollock; as a result, the Amendment 80 quota is lowered. Similarly, in years of low pollock abundance, there is more leeway under the ecosystem cap and managers tend to allocate more quota to the Amendment 80 fishery, even though they may not catch this excess quota. Therefore, even with the Amendment 80 vessels having larger aggregate landings, they were not able to drastically increase production to account for the large increase in quota allocation, leading to a decrease in quota utilization over this period. Additionally, beginning in 2008, the harvested proportion of Pacific cod quota allocated to the Amendment 80 fleet was decreased, and as a result the Amendment 80 Cooperatives are further constrained by Pacific cod incidental catch. The Annual Catch Limit has not been exceeded in any year of the catch share program or during the Baseline Period.

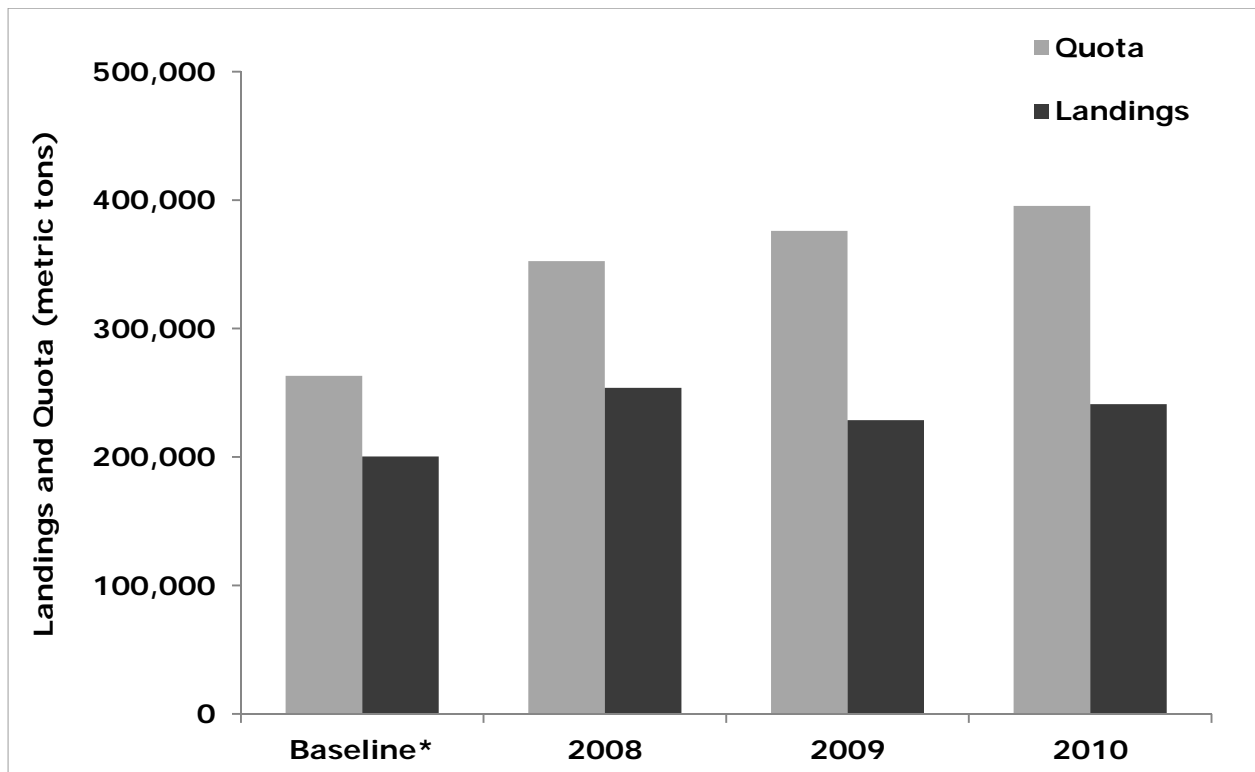


Figure 137. Quota and Landings in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

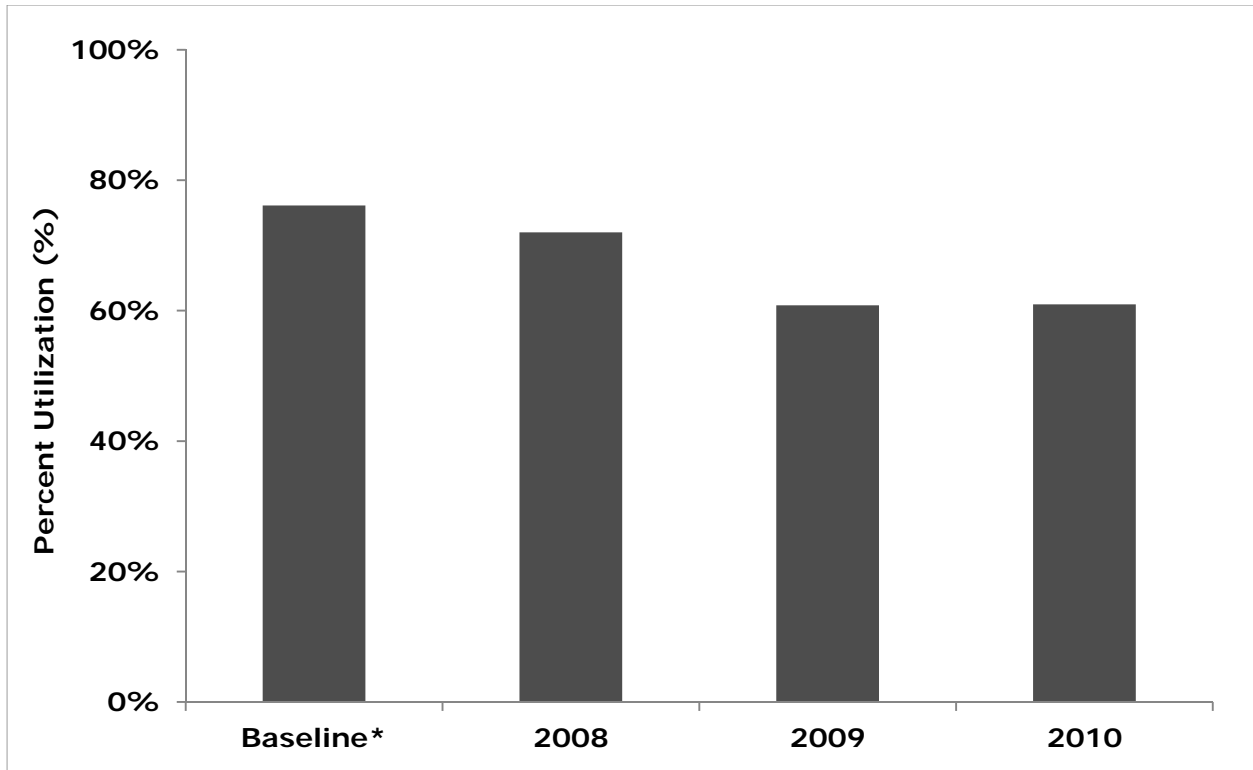


Figure 138. Utilization of available quota in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

ii. Effort

During the Baseline Period\*, there were 28 entities (vessels or Limited License Permit holders) eligible to receive initial quota share for the Program. Upon implementation of Amendment 80, there was a 4% reduction in participating entities (from 28 entities in the Baseline Period to 27) holding quota share in 2008; in 2010, the number of entities remains constant at 27 entities holding quota share (Figure 139). There were 22 active catcher/processor vessels during the Baseline Period (Figure 140). Throughout the duration of the catch share program, the number of active catcher/processor vessels has fluctuated by 5% from 22 active vessels in 2008 to 20 active vessels in 2010.

Entities are defined as vessels since the original quota shares were issued to: (1) the vessel owner and if not available then (2) the LLP license holder. For the non-baseline reporting years counts of unique vessels with quota units were pulled from RAM's online reports:

<http://www.fakr.noaa.gov/sustainablefisheries/amds/80/default.htm>. The Baseline Period number of entities (vessels) were obtained from the regulations in the final rule, table 31: <http://www.fakr.noaa.gov/frules/72fr52668.pdf>.

A season length index was constructed to account for the differences in season length, the fleet's utilization of these seasons and to construct an indicator that accounts for change over time in the active fishing season length across multiple fisheries. The season length index represents the proportion of the number of days when fishing actually occurred for any of the Amendment 80 species compared to the maximum number of days where fishing was allowed during the year. Using this index provides an indication of the temporal utilization of the Amendment 80 species

and changes each year even if the regulatory season length remains constant. As a result, utilizing this unit-less index allows the season length index to be combined over multiple species to achieve an overall program season length. During the Baseline Period, fishing was allowed for Amendment 80 species for 346 days the season length index was 0.75. Upon implementation of the Amendment 80 Program, the regulatory season length did not vary from 346 days, with the exception of Leap Years. The season length index fluctuated between 0.90 – 0.94 (Figure 141). Due to the manner in which the Program is managed (and as a result how data are collected), the number of days at sea fishing halibut is not available.

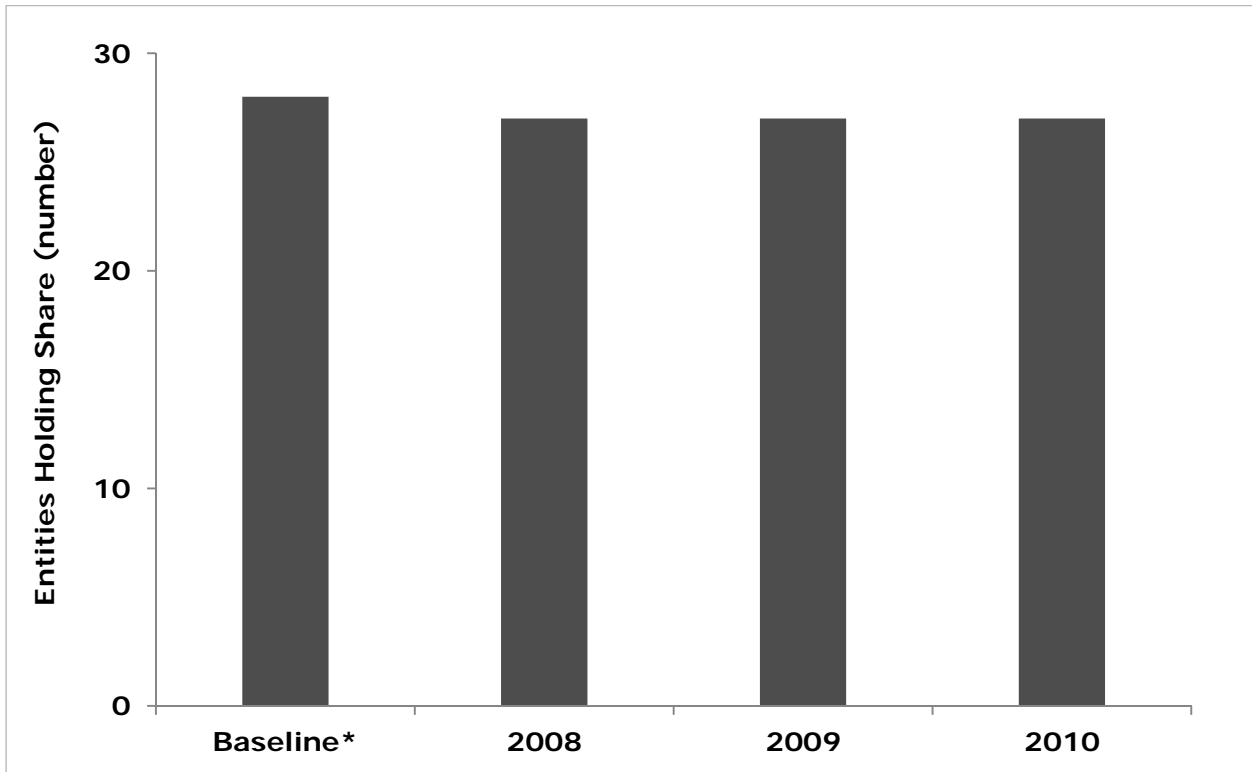


Figure 139. Number of entities holding share in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

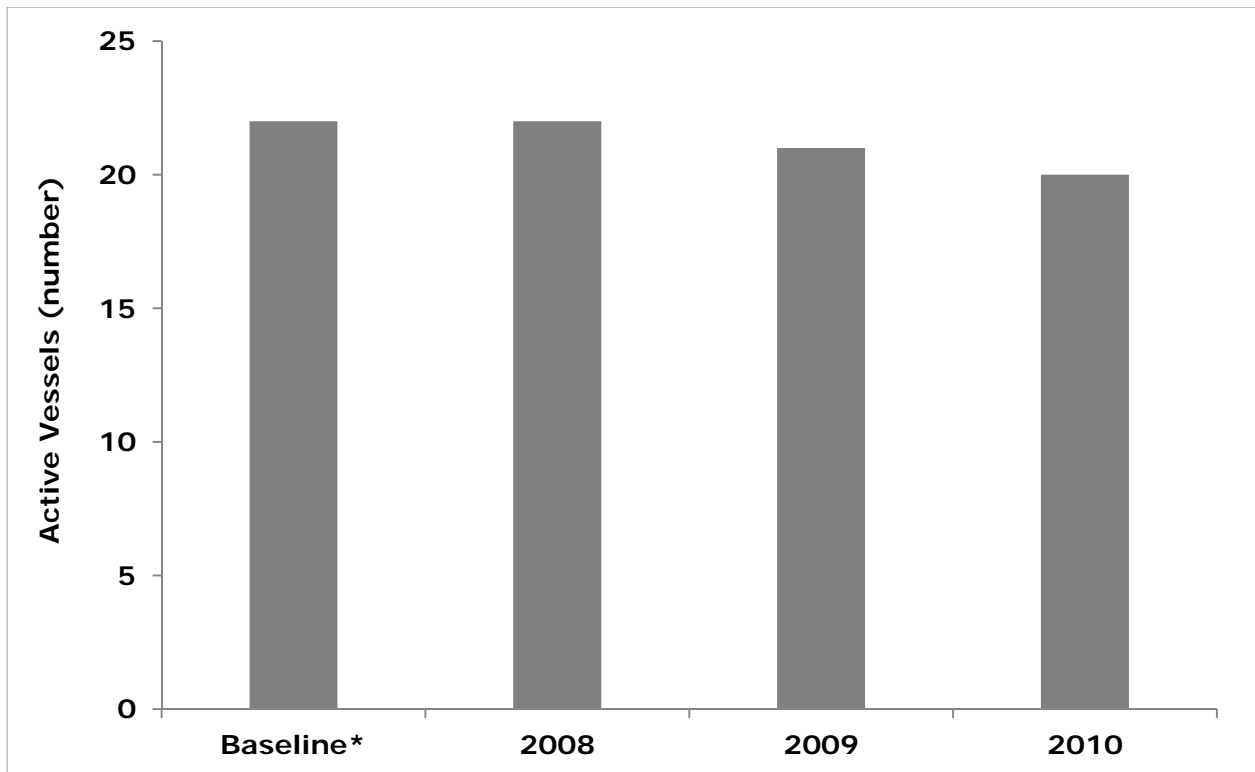


Figure 140. Active vessels fishing quota in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

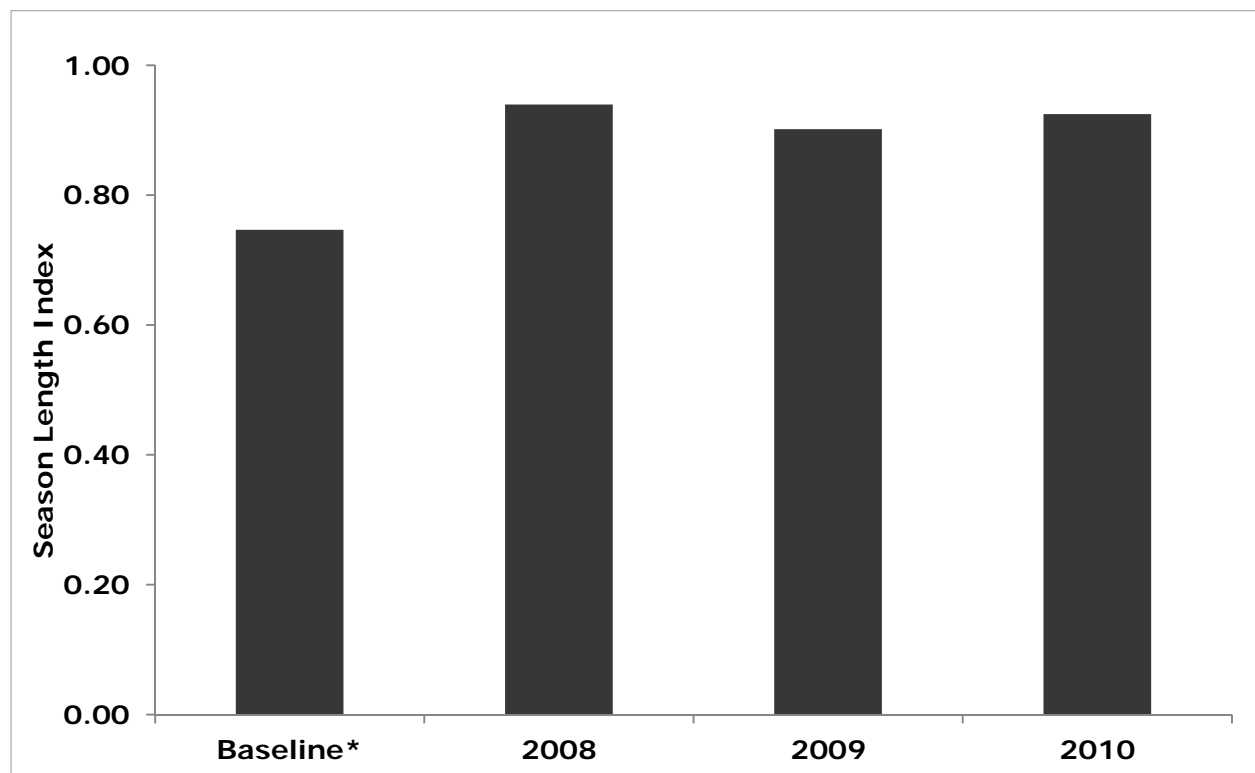


Figure 141. Season length index in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

- iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Due to the nature of the vessels in this fishery (catcher/processors), revenue is reported as the first wholesale value of production. In the first year of the Amendment 80 program, revenue grew by 5% to \$244 million in 2008 compared to the Baseline Period (Figure 142). This increase was largely due to a landings increase. Amendment 80 allowed the fleet to optimally use their allocated prohibited species catch across all target species which allowed them to increase their catch in times of low prohibited species catch. In 2009, revenue decreased by 16% to \$206 million, but in 2010 revenue increased to \$234 million. Despite some fluctuation in Amendment 80 cooperatives' revenue in part due to large swings in global markets and the ability of Amendment 80 vessels to target other species (arrowtooth and Kamchatka flounders) with their share of prohibited species catch, revenue in 2010 (\$234 million) was approximately equal to revenue during the Baseline Period (Figure 142). The average prices per metric ton of Amendment 80 species decreased by 13% in 2010 compared to the Baseline Period (Figure 143). Revenue per active vessel has followed a similar trend to overall revenue (Figure 144). There were initial increases (5%) in revenue per vessel in 2008 compared to the Baseline Period, followed by decreased revenue per vessel in 2009 (-11%) and ending with increased revenue per vessel in 2010 (19%) compared to 2009. Despite the fluctuation in revenue per vessel, the 2010 revenue per vessel (\$11.7 million) in the Amendment 80 program was 36% greater than revenue per vessel during the Baseline Period (\$10.6 million).

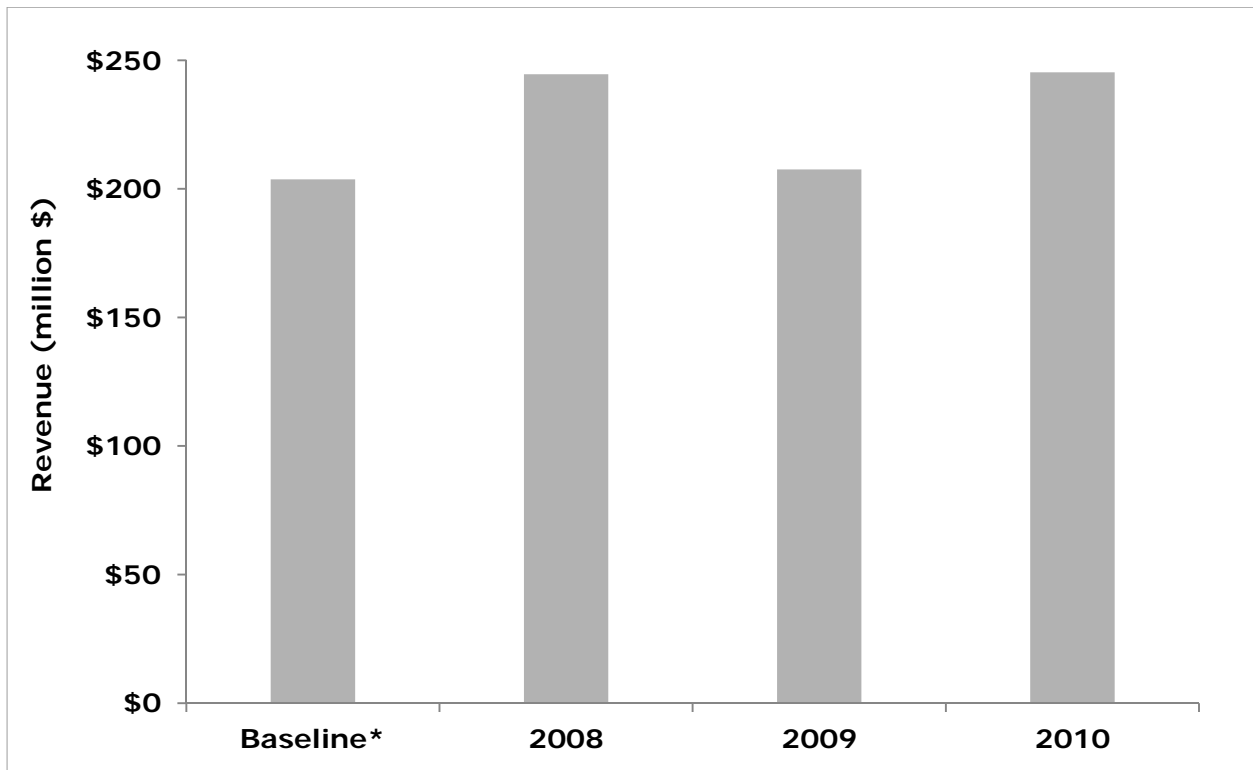


Figure 142. Total revenue (inflation-adjusted 2010 dollars) by vessels fishing quota in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

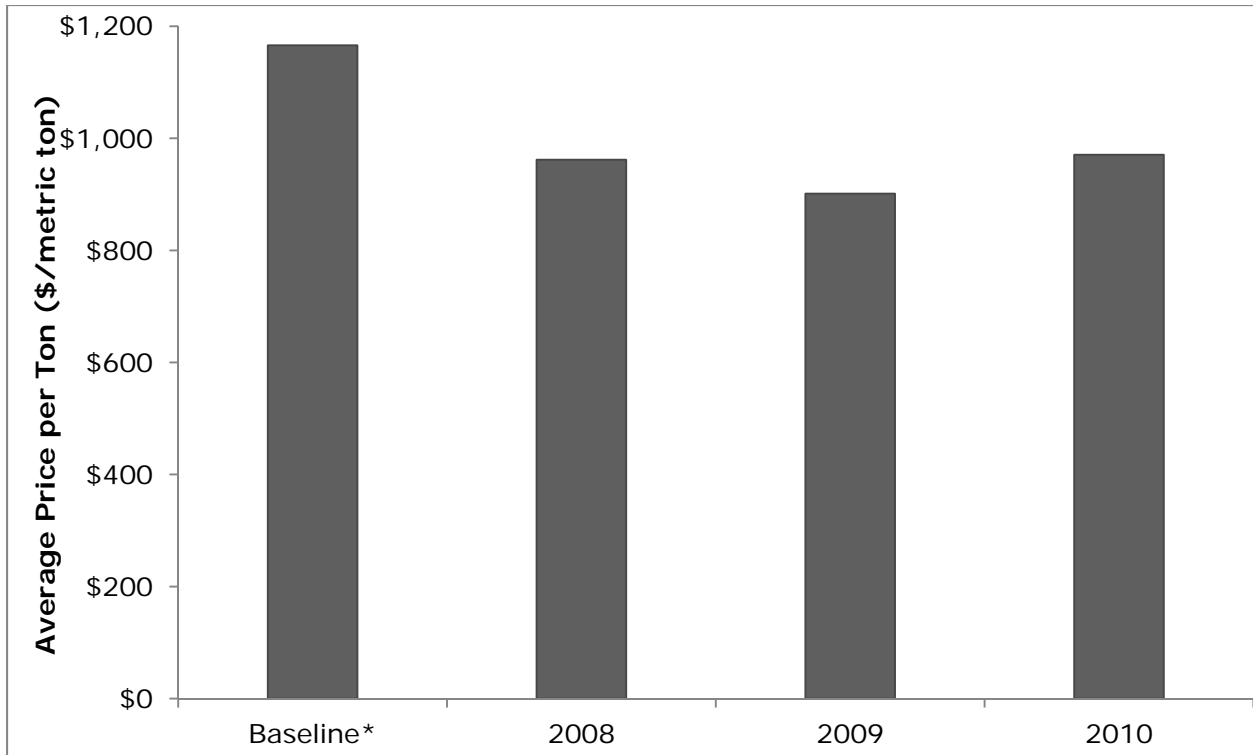


Figure 143. Average combined groundfish price per metric ton (inflation-adjusted 2010 dollars) in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

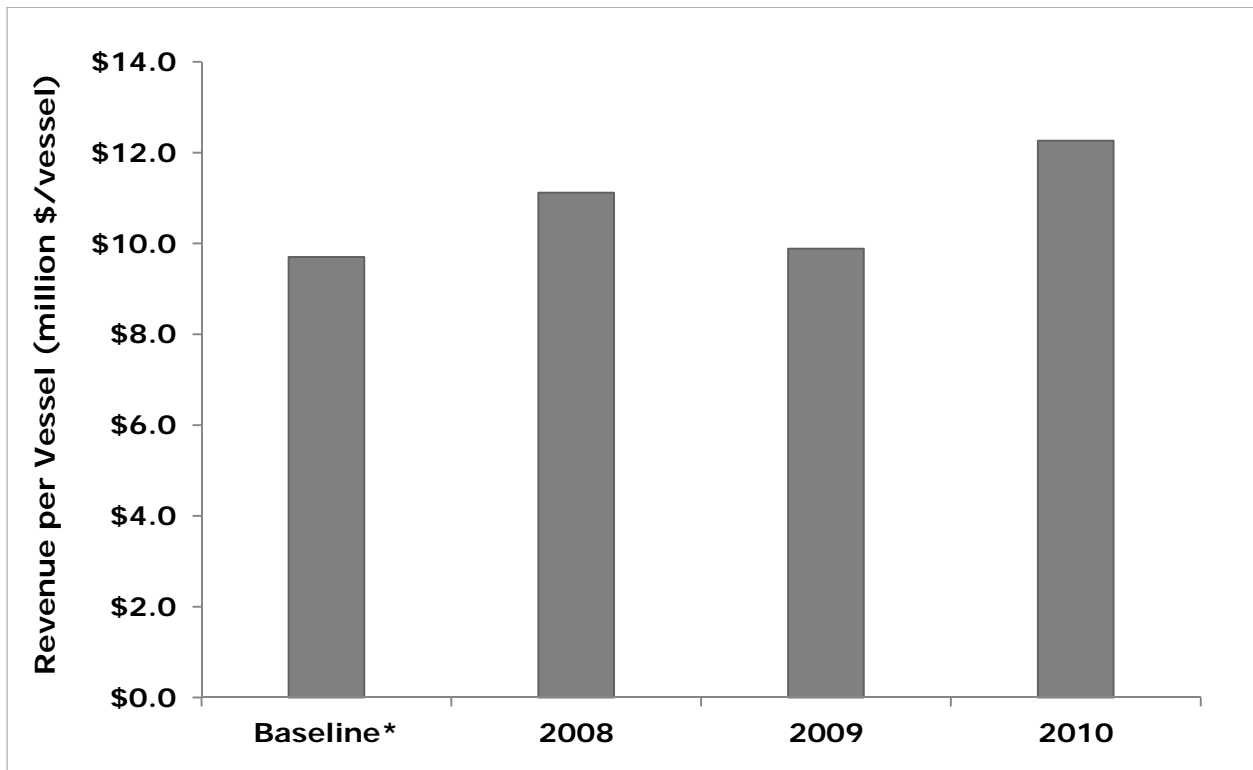


Figure 144. Revenue (inflation-adjusted 2010 dollars) per vessel fishing quota in the Non-Pollock Trawl Catcher/Processor Groundfish Cooperatives (Amendment 80) Program

## **Central Gulf of Alaska Rockfish Cooperatives Program**

### **a. Management History**

The Central Gulf of Alaska Rockfish Pilot Program was initially established as a two-year (2007 – 2008) program by the U.S. Congress and later extended to five years. The North Pacific Fishery Management Council modified the pilot program and implemented the Central Gulf of Alaska Rockfish Program in 2012. While the fishery was not overfished or experiencing overfishing in the years leading up to implementation of the catch share program, the window of fishing opportunity was down to a mere three weeks.

### **b. Objectives**

The objectives of the Rockfish Program are to: 1) reduce bycatch and discards; 2) encourage conservation-minded practices; 3) improve product quality and value; and 4) provide stability to the processing labor force.

### **c. Key Events/Features**

The North Pacific Fishery Management Council designed the Rockfish Program so that only those who held valid limited access permits would be eligible to participate. Harvest privileges for quota shares were allocated based upon a percentage of the catch limit, while annual quota pounds are based upon holdings of quota share units with the allocations split by participating cooperatives. The fleet comprises catcher vessels and catcher/processors.

The Rockfish Program allocates 97.5% of quota share for eight species (including Pacific Ocean perch, northern rockfish, and dusky rockfish as well as other valuable secondary species) and a prohibited species allocation for Pacific halibut to limited access permit holders based upon catch history. Catcher vessel history was based upon license holders' catch history in the Central Gulf of Alaska for 2000-2006. Catcher/processor history was based upon processing history in 2000-2006. Quota share was allocated to limited access permit holders who in turn could join a cooperative. The cooperatives then receive an annual allocation of cooperative quota (pounds), which can be transferred between cooperatives. Catcher/processors are not permitted to receive transfers from catcher vessel cooperatives. All transfers are subject to excessive share limits.

The purpose of excessive quota share caps is to prevent individual shareholders from controlling harvesting (and processing) as well as to achieve management objectives, per the Magnuson-Stevens Act and the National Standards. The North Pacific Fishery Management Council established different excessive share caps in the Rockfish Program for both catcher vessels and catcher/processors. A person cannot hold or use more than 4% of the quota share assigned to the catcher vessel sector. An individual catcher vessel may not harvest more than 8% of the cooperative quota assigned to the catcher vessel sector. A catcher vessel cooperative cannot hold or use more than 30% of the quota share assigned to the catcher vessel sector. A person cannot hold or use more than 40% of the quota share assigned to the catcher/processor sector. An individual catcher/processor may not harvest more than 60% of the cooperative quota assigned to the catcher/processor sector.

Section 304(d)(2) of the Magnuson-Stevens Act requires the Secretary to adopt regulations implementing a cost recovery program to recover the actual costs related to management, data collection and enforcement of a Limited Access Privilege Program or Community Development Quota Program. The maximum fee for cost recovery is 3% of the ex-vessel value of rockfish primary and secondary species. There were no cost recovery fees collected for the 2007 -2011 Rockfish Pilot Program, but cost recovery fees will be collected in the Central Gulf of Alaska Rockfish Program beginning in 2012. There are no fees for the limited entry longline fishery.

**d. Recent Trends**

The Baseline Period refers to the average of the three years prior to the Rockfish Program implementation, 2009-2011. The Baseline Period also coincides with the original Rockfish Pilot Program. Since this program is currently in its first year of implementation, only Baseline Period data are presented.

i. Catch and landings

The quota available in the Rockfish Program was approximately 16,000 metric tons and landings were 14,000 metric tons in the Baseline Period. The rate of utilization of the available quota was 87% during the Baseline Period and the Annual Catch Limit was not exceeded during the Baseline Period (Table 9).

ii. Effort

The fleet comprises catcher vessels as well as catcher/processors which make extended fishing trips in the Central Gulf of Alaska. In the Baseline Period there was an average of 52 limited access license holders eligible to fish rockfish. There were 46 active vessels during the 199-day fishing season in the Baseline Period (Table 9). Trips or days at sea information are not available for the Rockfish Program.

iii. Revenue - All revenue and cost recovery data have been adjusted by the GDP deflator indexed for 2010.

Rockfish landings revenue was \$7.5 million and the average price for the Rockfish Program species was about \$543 per metric ton during the Baseline Period. The Rockfish Program revenue per active vessel was approximately \$165,000 during the Baseline Period (Table 9).

**Table 9. Performance Measures for the Central Gulf of Alaska Rockfish Program**

	<b>Baseline Period (2009 – 2011)</b>
<b>Catch and Landings</b>	
Quota allocated to Rockfish Program	16,536 metric tons
Aggregate landings	14,198 metric tons
% Utilization	85.9%
ACL exceeded	No
<b>Effort</b>	
Entities holding share	52 limited access license holders
Active vessels	46 vessels
Season Length Index	0.83
<b>Revenue</b>	
Rockfish revenue	\$7,605,825
Average price	\$536/metric ton
Revenue per active vessel	\$166,551
<b>Other</b>	
Excessive share cap	Yes
Cost recovery fees collected	NA



## Conclusions

Nationwide there are 15 catch share programs currently in operation of which 12 are assessed in this report. Note that to the extent possible, the report treats the Surfclam ITQ and the Ocean Quahog ITQ, jointly implemented under the Mid-Atlantic Surfclam and Ocean Quahog ITQ, and the Halibut IFQ and the Sablefish IFQ, jointly implemented under the Alaska Halibut and Sablefish IFQ, as separate programs, resulting in 14 distinct assessments included in this report. In addition, only baseline information is provided on the Central Gulf of Alaska Rockfish Cooperatives Program, implemented in 2012, since Year 1 data for the Program is not currently available for assessment. Of the 14 programs included in the report, six have been operating for a decade or more while the remaining eight have been operating for six years or less. In this report, NOAA Fisheries has, for the first time, conducted a comprehensive review of the performance characteristics of catch share programs using a common set of metrics established by NOAA Fisheries' fishery economists, social scientists, policy analysts, and resource managers.

Catch share program design varies widely across different programs and regions. These design features are tailored to accommodate the unique characteristics and management objectives for the fishery of interest. However, a substantial number of catch share programs have several program objectives in common, such as to meet management and conservation requirements, reduce capacity, improve economic efficiency and/or flexibility, and improve safety. Notably, these objectives are those articulated by the Fishery Management Councils themselves as they developed catch share programs in their respective regions. While recognizing that several of the indicators are imperfect proxies, the performance indicators reported herein provide a means for evaluating catch share program performance with respect to these and other program objectives.

In each of the regional sections, the report evaluates each indicator's annual performance for individual catch share programs. This section provides a cross-program comparison to draw general inferences about catch share program performance. Given the differences in Baseline Period years and individual program duration, comparisons are based on four time periods relative to the catch share program Baseline Period. The four time periods are: year 1; the average of years 1-3; the average of years 3-5; and for longer term programs the most recent 5 years. The status of each indicator in year 1 was compared to the Baseline Period. The status of each indicator in years 1-3 were compared to year 1 and whether the year 1-3 status was above or below the Baseline Period. In a similar manner, the year 3-5 indicator status was compared to years 1-3 and the Baseline Period. Likewise the most recent 5 year indicator status was compared to years 3-5 and the Baseline Period. The following summarizes the findings of these comparisons with respect to common catch share program objectives.

Management Context– Quota setting, not exceeding the quota, and fishing season are used to describe the management context for catch share programs. Of these three indicators the latter two, not exceeding the quota and increased season length have desired outcomes for catch share programs consistent with management objectives. By contrast, quota setting is based on biological information that is independent of the management program in place for a fishery; quotas may be expected to increase or decrease based on stock conditions to avoid overfishing and/or to rebuild depleted fisheries. For this reason, each comparison was based only on whether quotas were increasing or decreasing.

Quotas have declined over time or remained below the Baseline Period in the majority of catch share programs. In only the Mid-Atlantic Golden Tilefish and Amendment 80 Programs were quotas set at or above the Baseline Period for all comparisons. The quotas in the AFA Pollock Cooperatives Program was above the Baseline Period during years 1-3 and 3-5, but over the most recent five years have averaged below Baseline Period levels. Quotas for other catch share programs were still below their Baseline Period, but have been increased for two programs during the most recent time period for which data are available. These fisheries include the Gulf

of Mexico Red Snapper IFQ and the Bering Sea and Aleutian Island Crab Rationalization Programs.

Not exceeding the quota is an indicator of compliance or capability to effectively monitor quotas. For this reason, progress toward this management objective was determined by comparing whether quotas were exceeded in any of the time periods relative to the Baseline Period. Not exceeding the quota in any time period would be positive progress toward this management objective, whereas exceeding the quota in any time period would reflect negative progress. In only the Mid-Atlantic Golden Tilefish IFQ Program was the quota exceeded during the first year of the program. The surfclam quota was exceeded on only two occasions (in 1993 and 2001) in the 21 years that the program has been in existence. Quotas were not exceeded in any other years for these and other catch share programs. Thus, the existing catch share programs have been effective in meeting the management objective of not exceeding quotas.

As noted earlier in this report, season length is an indicator of the expanded flexibility to time harvesting to market conditions as well as promoting improved operational conditions and vessel safety. Thus, progress toward meeting this objective was determined by comparing the season length in each progressive time period and to the Baseline Period. Increased season length is particularly relevant for catch share programs that were subject to early closures during the Baseline Period. These catch share programs include the Mid-Atlantic Golden Tilefish IFQ, Gulf of Mexico Red Snapper IFQ, Gulf of Mexico Grouper-Tilefish IFQ, Pacific Coast Sablefish Permit Stacking, Alaska Halibut IFQ, Alaska Sablefish IFQ, AFA Pollock Cooperatives, and BSAI Crab IFQ. In all of these programs season length increased over the Baseline Period during the first year of implementation and have remained above the Baseline Period in all subsequent years. In the more extreme examples, the Pacific Coast Sablefish Permit Stacking Program season went from an average of nine days to 214 days, the Alaska Halibut IFQ Program season went from an average of four days to 246 days and the Alaska Sablefish IFQ Program season went from 51 days to 246 days. Note that the fishing season for halibut is set by the International Pacific Halibut Commission (IPHC) which includes a winter spawning closure which leaves 246 days for the fishing season. The Alaska Sablefish IFQ Program season is set in concordance with the halibut season to eliminate halibut bycatch in the sablefish fishery during a time of year that the halibut season is not open. Since year 1 both the Alaska Sablefish IFQ and the Alaska Halibut IFQ programs have remained open for the full season length set by the IPHC. Thus, for programs that were subject to early season closures, catch share programs have been effective in increasing the length of fishing seasons.

Capacity Reduction and Entities Holding Share—Capacity reduction is a management objective in most catch share programs. Reductions in the number of active vessels in progressive time periods relative to the Baseline periods would represent progress toward meeting this objective. Relative to the Baseline Periods, catch share programs resulted in immediate reductions in the number of vessels that participated in the catch share fishery in the first year of the program. Furthermore, the number of active vessels has remained the same or declined over time. Thus, the program objective of reducing capacity has, by and large, been met. While contraction in the number of entities holding share was an anticipated outcome of catch share programs. To ensure that entities receiving catch shares do not acquire an excessive share of the total limited access privileges allocated under the program, accumulation caps have been established in all but three catch share programs. However, these caps represent an upper limit and not an objective to be obtained. This is why each comparison was based only on whether entities holding share were increasing or decreasing. The number of entities holding share declined in nearly all catch share programs during the first year of implementation. Exceptions include Northeast Multispecies Sectors and AFA Pollock Cooperatives. Entities holding share in Northeast Multispecies Sectors went up during 2011 because the number of vessel permits enrolled in sectors increased, whereas the number of entities holding share in AFA Pollock Cooperatives has remained constant. In the remaining programs, the number of entities holding share has continued to decline below Baseline Period levels. Notably, for the longer term programs (programs that have been in existence for 10 or more years) about half of the total reduction occurred within the first

three years of program existence, and compared to the Baseline Period, the total reduction in percentage terms was larger for programs that had no accumulation cap as compared to programs that did.

Improved Economic Benefits and Efficiency - There are several interrelated performance indicators that provide information on overall economic benefits and economic efficiency. These include utilization of quota, average price, total catch share program revenues and revenue per vessel. Since improving economic efficiency, or more generally, economic benefits is a common management objective, increasing indicator values in progressive time period comparisons relative to Baseline Period levels would represent progress toward meeting these objectives. Quota utilization improved during Year 1 for seven catch share programs and was below the Baseline Period in five of the programs. Quota utilization was above the Baseline Period during the first five years of both the Ocean Quahog and the Surfclam ITQ, but was below the Baseline Period during the most recent five years. By contrast, quota use has been above Baseline Period levels in all comparison years for the Red Snapper IFQ, Pacific Coast Sablefish Permit Stacking, and AFA Pollock Cooperatives. The average price received by active catch share program vessels was above the Baseline Periods in all comparison years for most programs. Exceptions include the surfclam price, and the average price for all combined species managed under the Amendment 80 Non-Pollock Catcher Processor Groundfish Cooperative Program.

Revenues from catch share species decreased in the first year of the program compared to the Baseline Period for a substantial number of catch share programs. Notably, these declines were closely aligned with reductions in quota during the first year of implementation. In the majority of subsequent comparison years, catch share program revenues have been increasing over time. With few exceptions, revenue per vessel increased during the first year of the program and has continued to increase over time or has remained above Baseline Period levels. Taking these four indicators into account economic benefits have improved for most catch share programs relative to Baseline Period levels.