Northeast Fisheries Science Center Reference Document 12-30

2011 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2011-April 2012)

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, Massachusetts

December 2012

Northeast Fisheries Science Center Reference Documents

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Information Quality Act Compliance: In accordance with section 515 of Public Law 106-554, the Northeast Fisheries Science Center completed both technical and policy reviews for this report. These predissemination reviews are on file at the NEFSC Editorial Office.

This document may be cited as:

Murphy T, Kitts A, Records D, Demarest C, McPherson M, Walden J, Caless D, Bing-Sawyer E, Steinback S, Olson J. 2012. 2011 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2011-April 2012). US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-30; 111 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://nefsc.noaa.gov/publications/

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	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Total Groundfish Landed Pounds	69,774,688	58,622,152	57,217,538	1,404,614	61,721,659	61,125,954	595,705
Total Non-groundfish Landed Pounds	189,179,795	178,073,284	98,311,723	79,761,561	213,785,250	129,577,903	84,207,347
Groundfish Gross Nominal Revenue	$84,112,835	$82,984,988	$80,750,083	$2,234,905	$90,115,537	$89,144,311	$971,226
Non-groundfish Gross Nominal Revenue	$182,653,074	$211,521,006	$115,875,258	$95,645,749	$240,769,788	$144,778,408	$95,991,380
Total Gross nominal revenue	$266,765,909	$294,505,995	$196,625,341	$97,880,654	$330,885,325	$233,922,719	$96,962,606
Groundfish average price	$1.21/lb	$1.42/lb	$1.41/lb	$1.59/lb	$1.46/lb	$1.46/lb	$1.63/lb
Non-groundfish average price	$0.97/lb	$1.19/lb	$1.18/lb	$1.20/lb	$1.13/lb	$1.12/lb	$1.14/lb
Number of active vessels*	957	890	440	456	805	446	366
Number of groundfish trips	26,056	13,441	11,159	2,282	15,929	13,642	2,287
Number of non-groundfish trips	39,943	41,753	16,791	24,962	36,386	17,002	19,384
Number of days absent on groundfish trips	24,237	17,614	16,057	1,558	20,724	19,227	1,498
Number of days absent on non-groundfish trips	31,241	31,552	15,446	16,106	27,913	14,973	12,940
Total Crew Positions	2,260	2,190			2,129		
Total Crew-trips	144,035	126,661			127,695		
Total Crew-days	172,410	161,178			165,624		
Aggregate owners' share of net revenue	$94,363,231	$105,605,398			$120,543,548		

*Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilities during the fishing year.

EXECUTIVE SUMMARY

This report provides an evaluation of the economic and social performance of active limited access Northeast groundfish vessels for the 2011 fishing year (May 2011 through April 2012). Table 1 contains a summary of major trends for the fishery for the period 2009-2011. The report focuses on changes during 2009-2011, with a brief discussion for some performace indicators of trends from 2007 onward.

Several changes were evident over the past three fishing years. Groundfish landings and gross revenues improved in 2011, but were not as high as in 2009. The groundfish fleet has become increasingly dependent on non-groundfish for landings and revenue, especially common pool vessels. The number of vessels and vessel affiliations in the groundfish fishery continues to decline. Nonetheless, most measures of economic performance indicate that economic performance of the groundfish fleet has generally improved for those vessels and vessel affiliations still active in the fishery. Although there are fewer active participants in the fishery in 2011, nominal revenues were not any more concentrated among the remaining vessels and vessel affiliations than in 2010.

Several downward trends were reversed in fishing year 2011. Total groundfish landings totaled 61.7 million pounds in 2011, higher than in 2010, but lower than in 2009. Groundfish revenues, in both nominal and real terms, were higher in 2011 than in either 2009 or 2010. Groundfish average price was also higher in 2011 than during the previous two fishing years. The growth in groundfish revenues in 2011 resulted from both increased groundfish landings and increased average price, and primarily reflected the groundfish landings by sector vessels. In contrast, groundfish landings and groundfish revenues in 2011 declined by more than 56% for common pool vessels.

Non-groundfish landings and gross revenues have increased steadily; between 2009 and 2011, non-groundfish landings rose by 13% and non-groundfish revenues by 31.8%. This has occurred despite reduced effort on non-groundfish trips. Both common pool and sector vessels experienced non-groundfish landings and revenue growth. Common pool vessels were heavily dependent on earnings from non-groundfish landings in 2011, with 99% of their total revenues generated from non-groundfish landings, compared with 61.9% for sector vessels.

In 2011, the number of active vessels possessing a limited access groundfish permit declined to 1,279; 103 fewer vessels than in 2010 and 152 fewer than in 2009. Active common pool vessels in 2011 (518) declined 19% from 2010 (640 vessels), although the number of active sector vessels increased by 19 in 2011 (772 vs 753 in 2010). Eligibilities held in Confirmation of Permit History (CPH) increased steadily during 2009-2011, with more eligibilities held in CPH in 2011 (168) than in 2010 (94) or 2009 (81). In contrast, the number of vessel affiliations with revenue from any species and with revenue from at least one groundfish trip steadily declined during 2009-2011.

Changes in fishing effort between 2010 and 2011 (number of trips; number of days absent from port) for active limited access groundfish vessels differed between groundfish and non-groundfish trips; effort generally increased on groundfish trips, but decreased on non-groundfish trips. The number of groundfish trips increased in 2011 for all vessel-size categories, except for the largest vessels, 75' and longer. As well, the number of days absent from port on groundfish trips increased in 2011 in each vessel-size category. However, despite these increases, groundfish effort in 2011 was lower than in 2009. For non-groundfish trips, effort in 2011 was the lowest in the past three fishing years.

Economic performance, as indicated by gross nominal revenue per vessel and vessel owners' share of nominal net revenue per vessel, increased between 2009 and 2011. Average nominal revenue per vessel for all species was higher in 2011 across all vessel-length categories than in either 2009 or 2010. Average groundfish revenue per vessel was higher for larger vessels in 2011 than in the two previous years; for smaller vessels, it was higher in 2011 than in 2010 but lower than in 2009. Average vessel owners' share of nominal net revenue per vessel was higher in 2011 than during 2009 and 2010 across vessel class sizes, and for both sector and common pool vessels. The net revenue estimates provided in this report do not account for any of the costs associated with leasing quotas from vessel owners, or any of the revenues gained by the leasing out of these quotas.

The distribution and concentration among vessels and vessel affiliations of nominal revenues in 2011 from both all species and from groundfish changed little from 2010. Slightly less revenue in 2011 was concentrated in the top 10% and 20% earning brackets, although vessels and vessel affiliations in these two groups still accounted for greater than 65% of the all species and groundfish total nominal revenues. As in the past two years, all species and groundfish nominal revenues in 2011 were more concentrated among active vessel affiliations than among active vessels.

Limited access common pool and sector performance in 2011 was compared using some of the performance indicators. However, this comparison is not useful for evaluating the relative performance of days-at-sea and sector–based management because of fundamental differences between these vessel groups not accounted for in the analyses. All measures of gross nominal revenue per trip and per day absent in 2011 were higher for the average sector vessel and lower for the average common pool vessel, except for average revenue per day on a groundfish trip for vessels under 30' in length and for vessels 75' and above. The owner of the average common pool vessel earned less net nominal revenue per day than the average sector vessel owner, except for groundfish trips on vessels under 30' in length and on vessels 50' to less than 75' in length, and on non-groundfish trips on vessels 30' to less than 50' in length. In addition, vessel owners' share of nominal net revenue per vessel was higher for the average sector vessel than for the average common pool vessel.

In 2011, the total number of pounds leased in the market for ACE was about 36% higher than in 2010. An estimated 30.8 million pounds (live weight) of ACE was leased within and between sectors in 2011, having a value of approximately $15.1 million. Approximately 14.5 million pounds of ACE was transferred among MRIs within a vessel affiliation. Three resources, eastern and western Georges Bank haddock, and American plaice, appeared to trade between sectors with an average price of $0. Eastern Georges Bank cod and Gulf of Maine cod generated the highest lease prices, between $1.10 and $1.25 per pound, while pollock traded at the lowest non-zero price, at $0.06 per pound.

Employment trends for vessel crew are mixed. Total crew positions declined 3% in both 2010 and 2011. Total crew-trips and total crew days increased slightly in 2011 (1-3%, respectively), but were lower than in 2009. New Hampshire experienced the largest percentage declines in crew employment.

1. INTRODUCTION

The Northeast Multispecies Fishery, referred to as the groundfish fishery, is managed by the New England Fishery Management Council. The groundfish fishery is carried out using both fixed and trawl gears.[1] 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. Prior to Fishing Year 2010, the groundfish fishery was managed using effort controls, including Days at Sea (DAS). Amendment 13 to the groundfish Fishery Management Plan (FMP) was implemented in May 2004; it redefined initial allocations of DAS and allowed vessels to engage in DAS leasing and DAS transfers under certain conditions. Amendment 13 also introduced the "Sector Allocation" program, which gave fishermen the opportunity to voluntarily form sectors that would be constrained by quotas rather than DAS. Sectors could request exemption from many of the traditional input controls such as trip limits. This set the stage for Amendment 16 to the Northeast Multispecies Fishery Management Plan (FMP), implemented on 1 May 2010.

Fishing year 2011 was the second year in which the groundfish fishery operated under the new catch share management program implemented by Amendment 16. Amendment 16 was designed to comply with catch limit requirements and stock rebuilding deadlines required under the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSA). The new groundfish management program contained two significant changes. The first consisted of "hard quota" annual catch limits (ACLs) for all 20 stocks in the groundfish complex. The second expanded the use of 'sectors', which are groups of fishing vessels allotted a share (quota) of the total groundfish ACL (sectors are allocated subdivisions of ACLs called Annual Catch Entitlements (ACE)). Sectors received ACE for nine of 13 groundfish species in the FMP and became exempt from many of the traditional effort controls. [2]

Each limited access groundfish permit has a potential sector contribution (PSC) that, based on that permit's fishing history, is a percentage of the total quota allocation for each allocated groundfish stock. When a fisherman becomes a sector member, his PSC is pooled with those of the other members of that sector. The pooled PSCs of the sector become the sector's ACE. Fishermen may hold limited access eligibilities, which are linked to a Moratorium Rights Identifier (MRI), in Confirmation of Permit History (CPH). CPH permits are limited access groundfish eligibilities that are not attached to an actual vessel. An important consequence of Amendment 16 is that it allowed fishermen with permits in CPH to join sectors, or to remain in the common pool with the option of leasing DAS, which was granted by Amendment 13. When a fisherman holding a CPH joins a sector, the PSC associated with those permits becomes part of that sector's ACE. This is significant because it means that a fisherman can lease the PSC associated with his CPH permits to other sector members, or his sector can lease the PSC to other sectors through ACE trading.

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[1] Fixed gear includes gillnet and hook gears including bottom longline, tub trawls, and rod and reel.

[2] The nine allocated species are American plaice (*Hippoglossoides platessoides*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), pollock (*Pollachius virens*), redfish (*Sebastes fasciatus*), white hake (*Urophycis tenuis*), winter flounder (*Pseudopleuronectes americanus*), witch flounder (*Glyptocephalus cynoglossus*), and yellowtail flounder (*Limanda ferruginea*). The four non-allocated groundfish species are halibut (*Hippoglossus hippoglossus*), ocean pout (*Zoarces americanus*), windowpane flounder (*Scophthalmus aquosus*), and wolffish (*Anarhichas lupus*). All references to groundfish species include these 13 species unless there is specific mention of the nine allocated species. Non-groundfish species are any species other than the 13 groundfish species listed here.

Owners of multiple vessels may opt to fish the quota associated with their groundfish permits on fewer vessels (including a single vessel) to reduce the costs associated with operating multiple vessels. In 2010, approximately half (46%) of the vessels with limited access groundfish permits opted to remain in the common pool, probably because of their small individual potential contribution to a sector's total ACE. Common pool vessels act independently of one another; each vessel is constrained by the number of DAS it can fish, by trip limits, and by time and area closures designated in the FMP. These restrictions help ensure that the groundfish catch by common pool vessels does not exceed the common pool's allocation of the total ACL before the end of the fishing year.

Nineteen sectors operated in 2011.[3] Three of these are "lease only" sectors,[4] which hold eligible permits with accumulated ACE or DAS that they can make available to fishermen that intend to actively fish for groundfish. Each sector establishes its own rules for using its allocations, but the allocated catch restrictions are applicable to the sector as a unit (i.e., not to individual vessels in the sector). In 2011, sectors were allocated about 99% of the commercial groundfish sub-ACL and the common pool was allocated about 1%. Sectors received ACE for the same nine groundfish species in 2011 as they did in 2010. In 2011, about 41% of vessels with limited access groundfish permits were common pool vessels.

This report provides an evaluation of the economic and social performance of the groundfish fishery for fishing year 2011 (1 May 2011 – 30 April 2012). In this report, all references to year are for the fishing year. The report presents year to year comparisons for the three year period of 2009-2011 to evaluate performance. In some cases, changes over the five year period of 2007-2011 are discussed.[5] In addition, the performance of sector and common pool vessels is compared within 2010 and 2011, and changes in performance of sector and common pool vessels between 2010 and 2011 are noted.

This report falls under the fisheries performance measures program developed by the NEFSC Social Sciences Branch in 2009 with extensive consultation from stakeholders in the Northeast region (see Clay et al. 2010; Plante 2010). The Social Sciences Branch released the first performance report for the FY2010 groundfish fishery in 2011(see Kitts et al. 2011).

The performance measure categories are: financial viability, distributional outcomes, stewardship, governance, and well-being. There are multiple indicators within each category. The Northeast indicators are part of a NMFS-wide process of developing social and economic indicators for all US fisheries.[6] This report includes a subset of indicators that are sufficiently developed for reporting. These cover aspects of financial viability (landings, revenue, number of vessels and effort, and average vessel performance) and distributional outcomes (employment and fleet diversity). Nominal revenues are based on landings and ex-vessel (first sale) prices and—together with fishing effort, operating costs, and quantities of fishing inputs—provide an indication of vessel performance. Employment opportunity is measured by the number of crew

[3] These sectors were: The GB Cod Fixed Gear Sector, the Maine Permit Bank Sector, the Northeast Coastal Communities Sector, Northeast Fishery Sectors II through XIII, the Port Clyde Community Groundfish Sector, Sustainable Harvest Sectors 1 and 3, and the Tri-State Sector.The Georges Bank Cod Hook Sector (operating since 2004) and the Georges Bank Cod Fixed Gear Sector (implemented in 2006) operated as separate sectors prior to fishing year 2010, when all members of the Georges Bank Cod Hook Sector joined the Georges Bank Cod Fixed Gear Sector.

[4] The Northeast Fishery Sector IV, Sustainable Harvest 3, and Maine Permit Bank Sectors are lease only sectors.

[5] Data for fishing years 2007 and 2008 are provided in Kitts et al. 2011.

[6] Contact Rita.Curtis@noaa.gov for more information on this national effort. A National Catch Shares Report is expected to be released by the end of 2012.

positions, crew-trips, and crew-days. Fleet diversity is measured by vessel size and vessel revenue categories, and by distribution of nominal revenue among individual vessels and vessel affiliations. Over time, additional indicators will be available for reporting as the NEFSC Social Sciences Branch's research and the National Performance Measures Program continue to develop.

Amendment 16 contains several broad goals and objectives, carried over from Amendment 13. This report does not provide a detailed analysis of progress towards achieving these goals and objectives. However, where possible, it addresses trends related to Goal 2, Goal 4, and Objective 7, particularly for economic efficiency and diversity of the groundfish fleet. [7] For example, changes in economic efficiency may be reflected by changes in revenue per unit effort and revenue per vessel, and by changes in the Malmquist Index. [8] The diversity of the groundfish fleet can be explored by examining trends in (a) the number of vessels and vessel affiliations by vessel length category and by port and state; (b) the geographic distribution of landings and revenues across ports and states; (c) employment indicators across ports and states; and (d) the distribution of nominal revenues among vessels and vessel affiliations.

Other efforts have been, and are being, undertaken in the Northeast to further the understanding of social and economic issues in the fisheries. A study of social capital among groundfish permit holders (Holland, et al. 2010) will be repeated. The NEFSC's Social Sciences Branch (SSB) is also conducting qualitative research using oral histories to better understand the social impacts of regulatory changes in the groundfish fleet. The SSB implemented a revised vessel fixed costs survey in August 2012 that surveyed 1,700 vessel owners in the Northeast, across fisheries stratified by vessel size and gear type. In late 2012, two additional surveys will be implemented: a socio-economic survey of Northeast vessel owners and a socio-economic survey of vessel crew, including hired captains.

See http://www.nefsc.noaa.gov/read/socialsci/fisheriesPerformance.html for more information on these and other Social Sciences Branch projects.

[7] Goal 2 in Amendment 16 is "Create a management system so that fleet capacity will be commensurate with resources status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery". Goal 4 is "Minimize to the extent practicable, adverse impacts on fishing communities and shoreside infrastructure". Objective 7 states "To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation".

[8] The Malmquist Index is a technical measure of the rate at which inputs are transformed into outputs.

1.1. Data and Analytical Approach

The vessels whose activities are evaluated in this report are those with valid limited access multispecies permits during fishing years 2009-2011 and with revenue from landing any species in the fishing year (referred to as groundfish vessels). For 2010 and 2011, activity is summarized by both sector and common pool vessels, as well as all vessels combined. An active vessel is defined as having revenue from the landing of any species within a fishing year. Aggregate performance was then compared for fishing years 2009-2011 and, for selected indicators, for 2007-2011. This report focuses only on vessels with limited access multispecies permits because these are the only vessels whose owners had the choice to either fish as a member of a sector or in the common pool fleet in fishing years 2010 and 2011. The purpose of this report is to examine the performance of these vessels.

Except for Section 5 (ACE Leasing), the evaluation includes only fish landed and sold. Weights are given in landed pounds (after heading/gutting) rather than in live pounds (whole fish) because prices are commonly calculated on a per landed pound basis. Nominal revenues also are based on what is landed and sold. Landings data in this report should not be used to conduct comparisons with sector sub-annual catch limits (ACLs) or the catch monitoring reports issued for sectors because the ACLs are calculated and monitored in live pounds and include both landings and discards. Information on ACE leasing is reported in live pounds.[9]

A groundfish trip is defined as a trip where the vessel owner or operator declared, either through the vessel monitoring system (VMS) or through the interactive voice response system, that the vessel was making a groundfish trip. This includes trips on which groundfish days-at-sea (DAS) were used, including monkfish (*Lophius americanus*) trips that used groundfish DAS. Other trips were also counted as groundfish trips if the dealer or vessel reported that groundfish was landed (e.g., trips with monkfish declarations that were not also using groundfish DAS).

Some statistics are reported by both home port and port of landing. "Home port" does not necessarily identify the port where fish are landed, but rather is the information on "city and state where vessel is moored" provided by vessel owners on the vessel permit applications. Most often, the home port is the port where supplies are purchased and crew is hired, although this does not apply in all cases.[10] Landed port is the actual port where fish are landed. We report by home port and by landed port because the implications of each are different. For example, revenue by home port gives an indication of the benefits received by vessel owners and crew (and some fishing-related businesses such as gear suppliers) based in that port. Revenue by landed port gives an indication of the benefits that other fishing related businesses (primarily businesses that handle fish such as dealers and processors) derive from landings in their port. We

[9] Because this is an economic evaluation and not an evaluation of catch, we focus only on revenue and landed pounds of fish sold, and do not account for discards. Both landings and discards count against the ACE allocated to Sectors, but revenues are only accrued for landings, not discards. However, we do explicitly discuss landings plus discards in Section 5 when evaluating the performance of the ACE lease market.

[10] Alternative port affiliation data are available. Principal port declaration and the vessel owner's mailing address are also entered on the permit application. However, actual landings by port may vary widely from what a vessel owner thinks his principal port of landing will be before the fishing year begins. Also, an owner's mailing address can be different from a vessel's base of operation. Therefore, home port is typically used in social and economic studies to establish port affiliation (as in this report). As the home port listed for a vessel can change over the year depending on what is declared on permits, this report assigns a vessel's home port to be the first home port that is used during FY2011.

identified the top six home ports and landed ports in the Northeast, and also examined changes by home port and landed port at the state level.

Some indicators in the report use a measure of time called a "day absent." A day absent is defined as the number of days (24 hours each) a vessel is "absent" from port, and is calculated by subtracting the sail date/time from the land date/time as entered on vessel logbook records, called vessel trip reports (VTRs). For comparative purposes, many measures have been calculated for both groundfish landings and all species landings. "All species" refers to the total of all species of fish or shellfish landed, including groundfish. The home port and length of a vessel are provided by the vessel owner on the vessel's yearly permit application. Data on vessel landings, nominal prices, and nominal revenues come from seafood dealer reports. Information about the number of fishing trips, and crew size are from VTRs.[11] In addition to mean values, standard deviations are provided to show the degree of variability in the data. Some standard deviations are large relative to the mean, indicating that the values are widely dispersed. Therefore, care should be used when comparing mean values that have large standard deviations.

The figures generated by the Northeast Regional Office (NERO) for monitoring the total catch in the multispecies fishery differ from the figures in this report for several reasons: 1) NERO reports both landings and discards whereas this report examines landings only; 2) NERO reports live pounds since ACLs are specified, and catch is monitored, in live pounds (live weight of fish is higher than landed weight because landed fish are often gutted, headed, etc.); and 3) the year-end figures posted by NERO include both limited access and open access multispecies vessels.

Several performance metrics in this report, including effort and revenue metrics, are examined by vessel size category using four vessel length classes: under 30' in length, 30' to less than 50' in length, 50' to less than 75' in length, and 75' and longer. Many of the vessels in the under 30' vessel length class are considered to be 'skiffs', a colloquial term used by fishermen and fishery managers to refer to small vessels, generally unseaworthy, used only for the attaching of a permit. Although skiffs may appear as inactive vessels in the database, the quota or DAS associated with their permits is commonly transferred to other vessels.

Some of the metrics in this report are presented at both the individual vessel level and at the affiliated vessel level. To evaluate changes at the affiliated vessel level, vessels were grouped according to ownership patterns. Permit applicants are required to list all persons and entities that have an ownership interest in the vessel for which a permit is being registered. Using this database, it is possible to find affiliations among vessels. We define "vessel affiliations" as networks of vessels connected through common owners. Vessels connected to one another through ownership, for the purpose of data analyses, are deemed a single vessel affiliation. For example, two vessels owned by one person are considered to be in one vessel affiliation. Further, a vessel owned in partnership is considered to be in the same vessel affiliation with a second vessel if that second vessel is owned by one of the partners. A vessel affiliation could have multiple vessels and/or multiple owners or it could consist of a single vessel and a single owner.

[11] All data are from the NERO's fishing years 2007 – 2011 Data Matching Imputation System, or "DMIS" database (a combination of seafood dealer reports, vessel trips reports, and quota monitoring reports) as of June 28, 2012. Differences in results reported for fishing years 2009 and 2010 in the FY2010 Groundfish Report (Kitts et al 2011) and in this FY2011 report are due to updates and corrections to the DMIS database.

A vessel affiliation can include vessels in multiple sectors and/or the common pool. It is likely that vessels in the same vessel affiliation are subject to some degree of joint decision making among common owners.

1.2. Sector vs. Common Pool Comparisons

Under Amendment 16 to the Groundfish FMP, quota-based management (involving ACLs for all groundfish stocks) was implemented simultaneous to the expanded voluntary division of the groundfish fishery into two groups: sector vessels and common pool vessels. Hence, changes in fishery performance identified in this report cannot be solely attributable to either "hard ACLs" or "catch shares," but reflect the concurrent implementation of both regimens.

Although some comparisons are made in this report between the performance of limited access sector and common pool vessels, there are fundamental differences in the characteristics of sector and common pool vessels, and in the ACE and DAS allocations.[12] Differences in common pool and sector performance may therefore simply reflect these basic differences rather than any induced by regulatory changes. Comparisons between common pool and sector vessels should not be considered as an evaluation of DAS management vs. sector management. A large number of common pool vessels have few or no DAS, while some common pool vessels have small vessel exemption permits (Category C) or hand gear permits (HA) excluding them from DAS constraints. Common pool vessels are regulated not only by DAS, but also by additional measures, some of which changed during the 2010 fishing year. Finally, vessels opting into the common pool landed significantly less groundfish during the landings qualification period of 1996 through 2006 than those electing to operate in sectors, which resulted in the common pool being allocated only 1-2% of the total ACL for all stocks.

2. LANDINGS AND NOMINAL REVENUES

Nominal revenues are an important indicator of financial performance, all other things being equal. In commercial fishing, gross nominal revenues are a function of the amount of fish landed and the price paid at the time of sale. Prices paid by dealers vary by species and may fluctuate as a result of short and long term market changes. Annual changes in gross nominal revenues can result from three different factors: changes in prices paid for fish at the dock, changes in quantity of landings, and changes in the species composition of the landings. Flexibility to target specific species and/or market categories at times when market values are high can be important in maximizing gross fishing revenues. Information is provided below on landings, overall nominal revenues, and nominal prices in 2011 compared to those in 2009 and 2010. Aggregate revenues in Table 2 are also provided in 2009 (real) dollars using the GDP Implicit Price Deflator.

[12] These may include differences in physical characteristics of the vessel, different fishing histories, and different attitudes about Sector management. Also, fishermen presumably opted to join a sector or remain in the common Pool based on their analysis of the advantages and disadvantages to them of each regimen.

2.1. Landings

Total landings of all species on all trips were 275.5 million pounds in 2011, higher than in 2009 (259 million pounds) and 2010 (236.7 million pounds) (Table 2). Total groundfish landings on all trips increased to 61.7 million pounds in 2011, compared with 58.6 million pounds in 2010 and 69.8 million pounds in 2009. The increase in groundfish landings in 2011 is attributed to sector vessels (which landed 61.1 million pounds of groundfish in 2011 vs. 57.2 million pounds in 2010), as common pool vessel landings of groundfish markedly declined between 2010 and 2011 (1.4 million pounds vs. 0.6 million pounds). Total non-groundfish landings on all trips in 2011 were 213.8 million, a 3-year high. Both sector vessels and common poll vessels landed more non-groundfish in 2011 than in 2010. Although both groundfish and non-groundfish landings increased in 2011, groundfish landings rose by only 5% whereas non-groundfish landings increased by 20%. As a result, groundfish landings accounted for 25% of the total landings in 2010, but only 22% of total landings in 2011 (Table 2).

Total landings in 2011 of all species on groundfish trips were 90.7 million pounds, more than in 2010 (81.7 million pounds) but less than in 2009 (101.7 million pounds) (Table 3). Groundfish landings on groundfish trips showed a similar pattern, increasing between 2010 and 2011 (58.4 to 61.5 million pounds) but lower than in 2009 (69.6 million pounds).[13] From 2010 to 2011, groundfish landings on groundfish trips by sector vessels increased by 6.9% (57.1 to 61.0 million pounds, while groundfish landings on groundfish trips by common pool vessels declined by 63.6% (1.29 to 0.47 million pounds). Non-groundfish landings on groundfish trips were higher in 2011 than 2010 (29.2 vs. 23.3 million pounds) but lower than in 2009 (32.1 million pounds). In 2011, both sector vessels and common pool vessels had higher non-groundfish landings on groundfish trips than in 2010 (31% and 6% increases, respectively).

In general, catch share programs are expected to increase the flexibility of fishermen by eliminating the "race to fish". Fishermen may choose to spread their landings over the year, and even attempt to "time" the market to take advantage of periods where prices are expected to be high. Prior to 2010, if vessels in the groundfish fishery were in a race to fish, one would have expected to see cumulative landings (by month for both all species and groundfish) steeply increase in the early months of fishing year 2009 and subsequently flatten out. However, Figures 1 and 2 suggest that in fishing year 2009 (before Amendment 16 was implemented) cumulative landings by month for both all species and groundfish did not exhibit this pattern. In 2011, cumulative landings by month of all species were higher than in 2009 and 2010, but the general trajectory is the same in all three years suggesting little change in landings rate by month (Figure 1). Total cumulative landings by month in 2011 of groundfish species were lower than in 2009 but slightly higher than in 2010 – but the monthly landings rates are similar across all three years (Figure 2). Thus, transition to catch share based management has not significantly altered the rate of all species or groundfish landings from month to month. Nevertheless, it is possible that changes in monthly landings patterns of individual species have occurred, but these changes may have been masked by the aggregation of individual species landings into all species and groundfish landings.

Sector vessels accounted for 69% of landings of all species on all trips in 2011, with common pool vessels accounting for the remaining 31% of the total (Figure 1 and Table 2).

[13] Note that almost 100% of groundfish landings occurred on groundfish trips. For that reason, groundfish landing values for all trips and groundfish trips are nearly identical.

Sector vessels accounted for 99% of landings of groundfish on all trips in 2011, with common pool vessels landing the other 1% (Figure 2 and Table 2). This pattern is consistent with the overall percentage of groundfish pounds allocated to sectors, which remained at 97% in 2010 and 2011 (Table 4).[14]

At the allocated groundfish species level, all species showed modest increases in landings in 2011 vs. 2010, except for haddock landings which declined by 51% (Figure 3).

2.2. Gross Nominal Revenues

Total gross revenues in 2011 were $330.9 million, a 3-year high, and 24% greater than in 2009 (Table 2).[15] Both groundfish and non-groundfish revenues in 2011 ($90.1 million and $240.8 million, respectively) also attained 3-year highs. The increase in total groundfish revenues is attributed to sector vessels as common pool groundfish revenues vessels declined by 57% between 2010 and 2011 ($2.23 million vs. $0.97 million). Sector vessels also accounted for nearly all of the increase in total non-groundfish revenues in 2011.

Total nominal revenue from all species on groundfish trips in 2011 was $121.5 million, compared to $110.6 million in 2009 and $105 million in 2010 (Table 3). Both groundfish and non-groundfish revenues on groundfish trips were higher in 2011 ($89.8 million and $31.7 million, respectively) than in 2009 and 2010. Sector vessels accounted for all of the increased groundfish revenues on groundfish trips in 2011, as common pool groundfish revenues on groundfish trips declined by 62% between 2010 and 2011 ($2.05 million vs. $0.78 million). Nominal revenues in 2011 from non-groundfish landings on groundfish trips totaled $31.7 million, a 3-year high and 42% greater than in 2010 (Table 3). In 2011, both sector vessels and common pool vessels had higher non-groundfish nominal revenues on groundfish trips than in 2010.

Cumulative nominal revenues by month in 2011 of all species and of groundfish only show similar trajectories as in 2009 and 2010 (Figures 4 and 5). Sector nominal revenues from all species on all trips in 2011 accounted for 71% of total nominal revenue, while common pool nominal revenues accounted for 29% (Figure 4 and Table 2). However, because of their large share of ACE allocation (Table 4) and subsequent groundfish landings, sector vessels accounted for 99% of groundfish nominal revenues on all trips in 2011, while common pool vessels accounted for 1% (Figure 5 and Table 2).

2.2.1 Nominal Revenues by Landing Port and Home Port

Most Northeast states experienced increases in all species nominal revenues in 2011 (Table 5). Nominal revenues from all species in 2011—by either state port of landing (Table 5) or home port state (Table 6) — were a 3-year high in Massachusetts, New Jersey, New York, and Rhode Island. Groundfish nominal revenues in 2011 in Massachusetts also were a 3-year high. However, for several states, revenues in some categories declined between 2010 and 2011. Both Connecticut and Maine experienced decreases in the nominal value of all species from a home port perspective (Table 6). From a landed state perspective, the nominal value in 2011 of groundfish landings in New York was a 3-year low (Table 7). From both a landed state and

[14] This percentage excludes the portion of the groundfish sub-ACL allocated to recreational fishermen.

[15] To provide a sense of the influence of inflation on revenue changes, revenues in Table 2 are also given in 2009 dollars (deflated by the GDP Implicit Price Deflator).

home port state perspective, the nominal value in 2011 of groundfish landings in New Jersey was also a 3-year low (Table 8).

By port of landing, the nominal value of landings in 2011 of all species at each of the major landing ports in New England (Boston; Chatham; Gloucester; New Bedford; Portland; Pt. Judith) was the highest in the past three years (Table 5). Similarly, the value of groundfish landings in 2011 was a 3-year high in Boston, New Bedford, and Pt. Judith, and increased groundfish revenues in 2011 (relative to 2010) occurred in the three other major New England ports (i.e., Chatham, Gloucester, and Portland) (Table 7)

By home port, the nominal value of landings in 2011 of all species was a 3-year high at each of the major landing ports in New England, except Portland where revenues were slightly lower (-0.4%) than in 2010 (Table 6). The value of groundfish landings in 2011 was a 3-year high in Boston, Gloucester, and New Bedford, and increased from 2010 to 2011 in Chatham. Declines in the value of groundfish landings occurred in 2011 in Portland (-3.6%) and also in Pt. Judith (-14.4%) where the value of groundfish landings in 2011 was a 3-year low (Table 8).

Average 2009-2010 groundfish nominal revenues, by port and county landed, are displayed in Figure 6. Groundfish nominal revenues in 2011, by port and county landed, are illustrated in Figure 7.

2.2.2. Nominal Revenues by Species

A comparison of allocated groundfish landings by species (Figure 3) to allocated groundfish nominal revenue by species (Figure 8) reveals that changes in revenues during 2009-2011 mostly reflect changes in landings.[16] However, there are two obvious exceptions: (1) although landings of cod increased slightly from 2010 to 2011, these were still lower than in 2009. However, because of the higher nominal price paid for cod in 2011, cod revenues in 2011 were a 3-year high; and (2) although haddock landings declined by 51% from 2010 to 2011, higher nominal haddock prices in 2011 resulted in only a 33% reduction in haddock revenue.

In 2011, all nine allocated groundfish species, except haddock, had the highest nominal revenue in the past three years. The combined $14.9 million increase in revenue for these eight species more than compensated for the $6.8 million revenue loss in haddock.

Non-groundfish landings accounted for 80% ($29.2 million) of the $36.4 million overall nominal revenue increase from 2010 to 2011 for all species on all trips (Table 2). The eleven non-groundfish species with the highest landings by limited access groundfish vessels are presented in Table 9. Sea scallop revenues in 2011 by limited access groundfish vessels were $90.3 million, an increase of $18.7 million (26.1%) from 2010. This increase was generated by both higher sea scallop landings and an increase in the average nominal price of sea scallops from $8.63 per pound in 2010 to $10.03 per pound in 2011. Monkfish nominal revenues in 2011 by limited access groundfish vessels were $21.6 million, an increase of $6.7 million (45.3%) from 2010 (Table 9). As with sea scallops, the increased revenues in 2011 were due to higher monkfish landings (+30%) and an increase in average nominal price, from $2.26 per pound in 2010 to $2.52 per pound in 2011. Herring revenues increased $3.5 million (120.6%) in 2011. This increase is attributable entirely to the 30.6 million pound increase in herring landings in 2011, as the average price of herring remained constant from 2010 to 2011. Revenues from lobsters declined by $5.1 million in 2011 reflecting a 1.4 million pound reduction in landings.

[16] Only 9 of the 13 groundfish species are allocated to sectors.

Although the average price for lobster increased slighty in 2011 ($3.93 per pound vs. $3.87 per pound in 2010), this increase was insufficient to offset the decline in landings.

2.3. Prices

In 2011, the nominal average price of all groundfish species (as a group) increased to a 3-year high, while the nominal average price of all non-groundfish species (as a group) declined (Figure 10). The average nominal price for cod, haddock and redfish increased in 2011, with the largest increase being $0.44/lb for haddock (Figure 9). All six of the other allocated groundfish species declined in price in 2011, with witch flounder exhibiting the greatest reduction of $0.44/lb (Figure 9).

The yearly nominal average price of all 13 groundfish species combined rose slightly in 2011 from $1.42/lb to $1.46/lb, after increasing $0.21/lb from 2009 to 2010. In 2011, the yearly nominal average price of the combined non-groundfish species fell to $1.12/lb from $1.17/lb in 2010, but was still higher than the 2009 price of $0.95/lb (Figure 10).

Using simple average nominal prices of all groundfish species combined to compare changes in prices over time may be misleading because this average does not account for annual changes in the quantity and mix of groundfish species landed. A price index was therefore constructed to more accurately reflect price trends of groundfish species. The approach used the "Fisher Ideal" index (Balk 2008), which was constructed from price and quantity data recorded in dealer purchases of all groundfish species. Quarterly data was used in all fishing years from 2007 through 2011. May-July (quarter one) of 2007 was set as the base period, with a value of 1.0.

The index values (Figure 11) show how combined nominal prices have changed in relation to quarter one 2007 nominal prices. A value less than one means that prices are lower compared to the base time period, while a value greater than one indicates that prices have increased relative to quarter one in 2007. In 2011, the quarterly adjusted groundfish price indices increased in quarters 2, 3 and 4, and these three indices are the highest in the 5-year time series except for the 2007 quarter 4 index.

3. NUMBER OF VESSELS AND EFFORT

Effort indicators provide information about the amount of fishing that occurred to produce the landings. In this report, three indicators were used to measure fishing activity and effort: the number of active fishing vessels, the number of fishing trips, and the number of days absent from port.

3.1. Number of Vessels

The number of active groundfish vessels with revenue from any species declined by 15.9% between 2009 (957 vessels) and 2011 (805 vessels) (Table 10), continuing a trend that began much earlier. From 2007 onward, the number of active vessels in the groundfish fleet has been reduced by 25.6%. During 2007-2009, the number of active vessels in the groundfish fleet declined by 11.6% from 1,082 vessels in 2007 to 957 vessels in 2009.[17]

[17] For the number of active vessels in 2007 and 2008, see Kitts et al. 2011.

The reduction in the number of active vessels in the groundfish fleet should be interpreted carefully. Amendment 16 implemented a number of measures that induced the fishery toward fewer vessels, without necessarily requiring owners of non-active vessels to leave the fishery entirely. For example, an owner with a groundfish permit on each of three vessels is now allowed to stack all three permits onto one active vessel. In addition, Amendment 16 allows owners of permits held in confirmation of fishing history (CPH), which are permits that are not associated with an actual fishing vessel, to participate in sectors (i.e., allows the owner of permits in CPH to contribute the landings history for permits in CPH as PSC towards a sector's yearly allocation of ACE). Alternatively, if the eligibility in CPH is in the common pool, the holder of that eligibility can lease DAS to other vessels, with some restrictions. Although there are now fewer active groundfish vessels, both of these circumstances mean that fishermen who previously had active vessels may still be participating in the fishery, gaining revenue as lessors of PSC/ACE or DAS.

Between 2010 and 2011, the number of active groundfish vessels with revenue from any species declined by 85 vessels (9.6%) (Table 10). However, the number of sector vessels increased by 1.4% from 2010 to 2011 (440 to 446 vessels), while the number of common pool vessels declined by 19.7% (456 to 366 vessels). The number of active groundfish vessels with revenue from at least one groundfish trip also declined from 570 vessels in 2009 to 445 vessels in 2010 to 420 vessels in 2011 representing a 3-year reduction of 26.3% (150 vessels). For vessels belonging to a sector, the number of active groundfish vessels with revenue from at least one groundfish trip declined 0.7% from 2010 to 2011 (303 to 301 vessels), while the number of active common pool vessels with revenue from at least one groundfish trip declined by 14.8% (142 to 121 vessels). Eligibilities held in Confirmation of Permit History increased 107% over the three year period, from 81 in 2009 to 168 in 2011. As of 1 May 2011, 88 of these eligibilities were associated with sector vessels and 80 were associated with common pool vessels (Table 10).[18]

In 2011, 1,279 vessels held a limited access groundfish permit; 474 of these vessels (37%) were inactive, with no landings (Table 10). Of these inactive vessels, 326 were sector vessels and 152 were common pool vessels. Here the number of sector vessels plus common pool vessels exceeds the total vessel count because vessels can switch between sector and common pool eligibilities during the fishing year. In 2009 and 2010, the number of inactive vessels was 474 (33%) and 492 (36%), respectively (Table 10).

3.2. Number of Trips, Days Absent and Trip Length

Numbers of fishing trips, days absent from port, and average trip lengths by active vessels were analyzed, in the aggregate and by four vessel length classes, to evaluate vessel activity patterns during 2009-2011 (Table 11). Vessel trip report (VTR) data were used to determine the number and length of trips taken in each fishing year.

Between 2009 and 2011, the total number of groundfish fishing trips and total days absent on groundfish trips for all vessels declined by 38.9% and 14.5%, respectively (26,056 trips in 2009 vs. 15,929 trips in 2011; 24,237 days absent in 2009 vs. 20,724 days absent in 2011). However, the total number of groundfish trips in 2011 was 18.5% higher than in 2010 (13,411 trips). Sector vessels accounted for most of the groundfish trips, accounting for 83% in

[18] Eligibilities held as Confirmation of Permit History are determined as of May 1 in each fishing year. Eligibilities may be transferred from vessel to vessel during the fishing year (Table 10).

2010 and 85.6% in 2011. Both sector and common pool vessels took more groundfish trips in 2011 than in 2010; sector vessels took an additional 2,482 groundfish trips (+22.3%), while common pool vessels took 5 more groundfish trips (+ 0.2%) (Table 11).

The number of days absent from port on groundfish trips during 2009-2011 shows a similar pattern as the number of groundfish trips. In 2011, the total number of days absent from port on groundfish trips (20,724 days absent) was 14.5% lower than in 2009 (24,237 days absent), but 17.7% higher than in 2010 (17,614 days absent) (Table 11). Sector vessels accounted for 92.8% and 91.2% of the days absent from port on groundfish trips in 2011 and 2010, respectively. Sector vessels were absent an additional 3,170 days from port on groundfish trips in 2011 (an increase of 19.7% from 2010), while common pool vessels were absent 60 fewer days on groundfish trips in 2011 than in 2010 (a decline of 3.9%) .

Average trip length for active vessels on groundfish trips increased from 0.94 days in 2009 to 1.31 days in 2010, and remained nearly constant at 1.3 days in 2011, for an overall increase of 0.36 days (38.3%) between 2009 and 2011. Sector vessels on groundfish trips had longer average trip lengths in both 2010 and 2011 (1.44 days and 1.41 days, respectively) than common pool vessels on groundfish trips (0.69 days and 0.66 days, respectively) (Table 11).

The number of non-groundfish trips and days absent from port on non-groundfish trips increased slightly from 2009 to 2010 but declined in 2011. The number of non-groundfish trips increased from 39,942 in 2009 to 41,753 in 2010 (+4.5%), but declined to a 3-year low of 36,386 in 2011 (-12.9%). Common pool vessels accounted for 59.8% of the total number of non-groundfish trips taken in 2010 and for 53.3% in 2011. Sector vessels took 211 more non-groundfish trips in 2011 than in 2010 (an increase of 1.3%), while common pool vessels took 5,578 fewer non-groundfish trips in 2011 in 2010 (a decline of 22.3%) (Table 11).

The total number of days absent from port on non-groundfish trips declined by 10.7% between 2009 and 2011. Although total days absent on non-groundfish trips increased by 1% from 2009 to 2010 (31,241 to 31,522 days absent), total days absent on non-groundfish trips declined in 2011 to a 3-year low of 27,913 (Table 11). Sector vessels accounted for 49% of the total days absent from port on non-groundfish trips in 2010 and for 53.6% in 2011. Both sector vessels and common pool vessels had fewer number of days absent from port on non-groundfish trips in 2011 than in 2010, but the reductions were greater for the common pool. Sector vessels had 473 fewer days absent from port on non-groundfish trips in 2011 than in 2010, a decrease of 3.1%. Common pool vessels had 3,166 fewer days absent from port on non-groundfish trips in 2011 than in 2010, a decrease of 19.7%.

Average trip length on non-groundfish trips declined from 0.84 days in 2009 to 0.79 days in 2010 and was 0.80 in 2011. Average trip length for non-groundfish trips was longer for sector vessels than for common pool vessels, as it was for groundfish trips. In 2011, average trip length on non-groundfish trips was 0.93 days for sector vessels and 0.69 days for common pool vessels (Table 11).

Overall, the aggregate effort measures for groundfish trips indicate that groundfish effort increased in 2011 but was not as high as in 2009. Most of the groundfish effort is by sector vessels. Sector vessels take most of the groundfish trips, and these groundfish trips are longer in duration than those taken by common pool vessels. This is not surprising given that sector vessels hold approximately 99% of total commercial groundfish ACL, while common pool vessels hold 1%. As well, sector vessels tend to be larger vessels than common pool vessels, allowing them to hold more fish during a trip.

Aggregate effort on non-groundfish trips has clearly declined during 2009-2011, despite non-groundfish landings in 2011 being a 3-year high. Although common pool vessels take a much higher proportion of non-groundfish trips than sector vessels, common pool vessels had fewer non-groundfish trips in 2011 than in 2010 and also fewer days absent from port on these trips. In contrast, the number of non-groundfish trips by sector vessels increased slightly between 2010 and 2011.

Average trip length on non-groundfish trips for common pool vessels increased only slightly from 2010 (0.68 days) to 2011 (0.69 days). Measures of effort on groundfish trips and non-groundfish trips for common pool vessels do not suggest a marked shift in effort from groundfish trips to non-groundfish trips. The increase in non-groundfish landings in 2011 was driven by factors other than effort on non-groundfish trips. Possible explanations include increased non-groundfish landings by sector vessels on groundfish trips (which were 30.6% higher in 2011 than in 2010 (Table 3)), and a generally increased availability of non-groundfish species.

Non-groundfish species with nominal revenues at a 3-year high in 2011 include herring, menhaden, monkfish, squid (both *Loligo* and *Illex*), sea scallops, and spiny dogfish. Between 2010 and 2011, nominal revenues increased for herring, *Illex*, monkfish, and sea scallops for both sector and common pool vessels. Menhaden and spiny dogfish nominal revenues increased for sector vessels, but decreased for common pool vessels, while *Loligo* revenues increased for common pool vessels, but decreased for sector vessels. The five largest contributors to the increases in non-groundfish nominal revenue from 2010 to 2011 are sea scallops, monkfish, herring, *Illex,* and *Loligo* (Table 9).

Changes in fishing effort between 2009 and 2011 were also examined by vessel size (length) category (Table 11). In general, the number of groundfish trips taken and days absent from port on groundfish trips declined from 2009 to 2010 in all four vessel categories, but the reduction in groundfish effort by smaller vessels (vessels under 50' in length) was more pronounced than for larger vessels (50' and longer). Between 2010 and 2011, the number of groundfish trips taken and days absent from port increased in all vessel classes, except for the number of groundfish trips taken by the largest vessels (vessels 75' and above).

Over the 3-year period, the largest decline in the number of groundfish trips—in both absolute and percentage terms—occurred in the 30' to <50' vessel length class (19,349 trips to 11,114 trips, a 42.6% reduction). The smallest decline (-9.8%) occurred in the largest vessel (≥75') size class (1,301 trips to 1,173 trips). Vessels less than 30' had the largest percentage decline in the number of days absent from port on groundfish trips over the period, a decrease of 35.6% (57 days absent). Vessels in the 30' to <50' vessel size category exhibited the largest absolute decrease in the number of days absent from port in groundfish trips, with 2,462 fewer days absent in 2011 than in 2009, a 28% decline.

Average trip length on groundfish trips increased within all vessel classes during 2009-2011, but little or no increase occurred between 2010 and 2011 for the middle two vessel categories. Average trip length on groundfish trips in 2010-2011 declined 15.6% for vessels under 30' in length, but increased 16.6% for vessels 75' and longer. In 2011, smaller vessels (those under 50') took more groundfish trips than in 2010, with more days absent from port, but the average groundfish trip length remained constant or decreased. In contrast, the largest vessels (≥75') took fewer groundfish trips in 2011 in 2010, but their average trip duration was greater than in 2010 (Table 11).

In 2011, in all vessel categories, the number of non-groundfish trips and the number days absent from port on non-groundfish trips were the lowest in the past three years. In percentage terms, the largest decline in the number of non-groundfish trips taken (-23.1% between 2009 and 2011) occurred in the smallest-sized vessels(< 30'); in absolute terms, the greatest decline occurred in vessels 50' to <75' (a reduction of 1,170 non-groundfish trips from 2009 to 2011). During 2009-2011, the number of days absent from port on non-groundfish trips declined the most in percentage terms in the under 30' length class (26.9% decline), and most in absolute terms in the largest (≥75') size class, (1550 fewer days absent from port on non-groundfish trips). Average trip length on non-groundfish trips declined slightly during 2009-2011 in all vessel classes, except in the smallest size class (<30') (Table 11).

4. AVERAGE VESSEL PERFORMANCE

A number of different approaches were used to measure changes in the economic performance of fishing vessels. A complete assessment of fishery economic performance requires information from all vessels on all fishing-related costs and on all fishing-related revenues to determine profits. This information would include the cost of purchasing additional ACE or DAS and the revenues from the sales of fish and ACE. Such a complete data set is not available. However, both the Northeast Fishery Observer Program (NEFOP) and the At-Sea Monitors (ASM) Program collect some of fishing-related costs and these data can be used to evaluate financial performance. Information contained in VTR and dealer data can also be used to derive additional performance measures.

Three metrics were used to evaluate financial performance: (1) nominal revenue per vessel, trip, and day; (2) net revenue; and (3) total factor productivity. None of these measures alone provides a complete assessment, but taken together they allow insights into important aspects of economic performance and provide some indication of trends in the economic efficiency of the groundfish fleet.

4.1. Nominal Revenue per Vessel, Trip, and Day

Landings revenue per unit of effort was used as a proxy measure for profitability. Profitability is often measured as the ratio of total revenue divided by total cost, with a ratio greater than one indicating positive profits. Because a complete accounting of costs is not available, effort is used as a proxy for cost. If the costs of inputs used to generate effort are constant, comparing the ratio of revenue per unit of effort in two time periods serves as a proxy for profitability change. With constant input prices and revenue, an increase in effort would increase costs, reducing the revenue per unit effort ratio, and imply reduced profitability between the two time periods. Conversely, increased revenue with constant (or lower) effort would imply increased profitability. However, even with constant effort, the costs of inputs used to generate effort could be increasing.

The nominal revenue per effort metrics used in this report characterize the performance of an average vessel within each vessel size category. However, individual vessel performance can vary substantially, in either direction, from the average. As stated above, changes in nominal revenue per unit effort can also be accompanied by changes in the use (and therefore the cost) of inputs.[19] These caveats should be considered when evaluating the results that follow.

[19] For example, the amount of fuel used could increase because of a change in fishing behavior that may generate an increase in revenue per day absent.

Nominal revenues per vessel increased in 2011 (Table 12). Average all species nominal revenues per vessel on all trips and on groundfish trips attained 3-year highs in 2011 across all vessel classes, and average groundfish nominal revenue per vessel on all trips was higher in 2011 than in 2010 in all vessel size categories.

In 2011, average all species nominal revenue per vessel was also higher across all vessel classes than in 2009 or 2010. In addition, with the exception of the smallest-sized vessels (<30'), sector and common pool vessels exhibited increases in average all species nominal revenue per vessel in 2011. Average groundfish revenue per vessel in 2011 from all trips was a 3-year high in two largest vessel length classes, and all vessel length classes had a higher average groundfish revenue per vessel in 2011 than in 2010. For sector vessels in all size categories, average groundfish revenue per vessel increased in 2011 from 2010; these increases ranged from 8.3% (an increase of $48,660 over 2010) for vessels ≥75' to 221.3% (an increase of $7,138 over 2010) for vessels <30'. In contrast for common pool vessels, average groundfish revenue per vessel declined in 2011 in all vessel length categories, except in the smallest size class. These reductions ranged from 16.3% ($2,509) for common pool vessels in the 30' to <50' size class to 77.8% ($12,330) in the largest (≥75') size class. Common pool vessels in the smallest size group (<30') experienced an increase in 2011 ($2,263 over 2010) in average groundfish revenue per vessel (Table 12).

Average all species nominal revenue per vessel in 2011 on groundfish trips was a 3-year high in all four vessel size classes, ranging from $9,612 in the smallest vessel length class $772,453 in the largest length class (Table 12). In both absolute and percentage terms, vessels in the largest size class had the greatest increase during 2009-2011 in average all species revenue per vessel on groundfish trips gaining an additional $252,974 (+ 48.7%). Vessels in the smallest length class (<30') had the lowest increase between 2009 and 2011 gaining $1,358 (+16.5%). Sector vessels experienced increases across all vessel length classes. For common pool vessels, average all species revenue per vessel on groundfish trips increased between 2010 and 2011 in the two smaller vessel length categories but declined in the larger two groups (Table 12).

Average nominal revenue per trip generally increased in 2011 (Table 13). Except in the smallest vessel size class, average revenue per groundfish trip and per non-groundfish trip in 2011 was the highest in three years. However, average revenue per day on groundfish trips was lower in 2011 than in 2010 in all vessel size classes, while average revenue per day on non-groundfish trips was higher. In the smallest vessel size class, average nominal revenue per groundfish trip declined in 2011 from 2010 for both sector vessels and common pool vessels. In the two middle vessel size classes, average revenue per groundfish trip in 2011 was lower than in 2010 for sector vessels, but higher for common pool vessels. In the largest vessel size class, average revenue per groundfish trip in 2011 for sector vessels was 15.3% higher than in 2010 while for common pool vessels the average revenue per groundfish trip in 2011 was 18.5% lower (Table 13).

Average nominal revenue per day on a groundfish trip increased in all vessel size classes between 2009 and 2010, but declined in 2011 (Table 13). For sector vessels in 2011, the decline in average nominal revenue per day on a groundfish trip occurred in all four vessel size groups. For common pool vessels, average revenue per day on a groundfish trip declined in 2011 in the smallest vessel class, but increased in the other three vessel size groups.

Average nominal revenue per non-groundfish trip increased during 2009-2011, ranging from a 26.7% increase for vessels 30' to <50' in length to a 61.7% increase for vessels ≥75' in length (Table 13). Except for vessels <30' in length, average revenue per non-groundfish trip in

2011 was at a 3-year high in each vessel length class. In the smallest vessel class, average revenue per non-groundfish trip in 2011 was only $1.00 less than in 2010. Increases in average revenue per non-groundfish trip occurred in both sector and common pool vessels in the 50' to <75' size class and in the ≥75' length group. In the <30' length class, average revenue per non-groundfish trip increased in 2011 for sector vessels but declined for common pool vessels. In the 30' to <50' length class, average revenue per non-groundfish trip increased in 2011 for common pool vessels, but declined for sector vessels.

In 2011, average nominal revenue per day on a non-groundfish trip was the highest in the past three years in every vessel size class (Table 13). In percentage terms, the increases during 2009-2011 ranged from 25% in the 30' to <50' length class, to 89% in the≥ 75' group. However, the standard deviation on average revenue per day on a non-groundfish trip for vessels 75' and longer in 2011 is relatively high, suggesting that the 2011 average ($17,463 compared to $9,322 in 2010 and $9,239 in 2009) may have been influenced by a few extreme values. Increases in average revenue per day on a non-groundfish trip occurred in 2011 for both sector and common pool vessels in the two largest vessel size groups. In the under 30' length class, average revenue per day in 2011 on non-groundfish trips was higher than in 2010 for sector vessels, but lower for common pool vessels. In contrast, in the 30' to <50' length class, average revenue per day in 2011 on non-groundfish trips was higher than in 2010 for common pool vessels, but lower for sector vessels.

4.2. Net Revenues

As previously noted, a full accounting of all business costs for all fishing vessels is not currently possible because of lack of complete data from the fleet. Hence, to estimate nominal net revenues, an alternative approach was employed using trip costs[20] collected by Northeast Observers and At-Sea-Monitors. Net revenue is defined as gross revenue less trip costs. Typically, net revenue is then split between the vessel owner and the crew. Two types of net revenue analysis are provided: (1) yearly changes in average nominal net revenue per day; and (2) yearly changes in aggregate nominal net revenues for various vessel categories (vessel size and home port state categories).

Actual annual financial profit is the sum of the owner's share of net revenue for all trips made over a year less annual fixed costs.[21] While analysis of the owner's share of net revenue is just one component of annual financial profit, it is indicative of economic performance (at least in the short run). See Figure 12 for a graphical depiction of the components of annual financial profit and the relationship between owner's share and profit.

Trip costs used in these analyses include: fuel, oil, ice, supplies, bait, food, water, and damage. There may be additional trip costs (e.g., communications costs or trucking fees) that must be covered. One important cost that has not been included in the estimation of net revenue is the cost incurred by some vessels to purchase additional groundfish ACE in 2010 and 2011, or to purchase DAS during 2007 – 2009 (and 2010 and 2011 for common pool vessels). In addition, the contribution of lease revenues to net revenues for fishermen that lease out quota to other fishermen are not considered. Existing data makes estimation of leasing costs and revenues difficult for several reasons: (1) Within-sector PSC leases for 2010, provided voluntarily by sectors, do not identify the vessels engaged in the trade. Data for 2011

[20] Trip costs are typically costs that vary with the amount of fishing effort such as fuel, bait, fishing hooks, etc.

[21] Fixed costs are typically costs that do not vary with the amount of fishing effort such as insurance.

were not uniformly provided; [22] (2) Between-sector leases are formally reported, and document the stock, total weight and, often but not always, any compensation; and (3) lessors (fishermen that lease quota to other fishermen) are difficult to identify since the pool of available quota (uncaught ACE) far exceeds the requirements of lessees. The lease market for quota is discussed in Section 5.

4.2.1 Estimation of Owner's Share of Nominal Net Revenue

Because not all trips are observed, and therefore actual trip cost information is not available for all trips, trip costs must be estimated for the universe of trips using cost information from the sampled trips. To do this, trip cost data obtained from the Northeast Observer Program were used to create frequency distributions of trip costs per day absent for 95 vessel types, based on gear used, vessel length, trip duration (single vs. multi-day trips), and fishing year (Table 14). For un-observed trips where actual trip costs were not available (or the data were insufficient to link a vessel trip report (VTR) record with an observed trip), the appropriate vessel type mean value from the per day trip cost distributions was multiplied by the actual trip length (days absent) recorded in the VTR. The result is an estimate of the cost for each of the unobserved trips. From these data, an estimate of nominal net revenue was obtained by subtracting the cost estimate from the actual nominal revenue received for the trip (all species landed). For trips where there was a direct match between the observed data and VTR data, actual trip costs were used.

An additional trip cost not collected by observers—but reported by most sectors in their 2010 and 2011 year-end reports—is the sector organizational cost charged to sector members. Based on the information in these reports (which are submitted to NMFS), an average charge of $0.04 per pound of landed groundfish was applied to the 2010 and 2011 landings of sector vessels.

One-half of the net revenues were assumed to be payments to crew (crew share), with the other half assumed to be retained by the vessel owner (owner share).[23] Information is not available to determine if a vessel was operated by the owner and carried no additional crew (in which case, no crew payments would have been made). Because of the assumed 50% split of net revenue between vessel owner and crew, the crew's share of nominal net revenue is therefore identical to the owner's share. To avoid repetition, estimated crew shares do not accompany all of the owner's share discussions and tables. One exception to this is information about crew share per day per crew member (see Table 16 and the related discussion in Section 7.4 below).

4.2.2 Average Nominal Net Revenue Per Day

Results of average vessel owners' share of nominal net revenue per day, by trip type (groundfish vs. non-groundfish) and vessel size category, are reported in Table 15. From 2009 to

[22] Much of the 2011 data provided by sectors in their annual reports is traceable to individual MRIs. However, this data was provided in an uneven fashion across sectors which makes it difficult to sort out. The SSB is still in the process of analyzing those data. If the results are sufficiently reliable, we will publish a supplemental report with new estimates of 2011 net revenue that incorporate PSC leasing costs and proceeds.

[23] If net revenues were negative, crew payments were assumed to be zero. A variety of crew and owner share arrangements are used in the groundfish fishery, with different percentage splits between owner and crew, different costs deducted from net revenue, and different points within the formula where the split occurs (e.g., some vessel owners divide gross revenue first and then deduct certain costs from the crew's share of the gross revenue). The 50:50 share arrangement was chosen because it is commonly used.

2010, average owners' share per day on both groundfish and non-groundfish trips increased across all vessel length classes. In all vessel size categories in 2011, average vessel owners' share of nominal net revenue per day per trip declined from 2010 for groundfish trips, and increased for non-groundfish trips.

Reductions in 2011 of the average owners' share per day on groundfish trips ranged from 4.6% ($2,327 in 2010 vs. $2,219 in 2011) in the largest size vessel class (≥ 75') to 40% ($821 in 2010 to $493 in 2011) in the smallest size vessel class (< 30') and under. For sector vessels, these declines occurred in all four vessel classes; for common pool vessels, declines occurred in the smallest and largest vessel length classes. Sector vessel owners' shares per day in 2011 were higher than common pool owners' shares on groundfish trips for vessels 30' to less than 50' in length, and for vessels 75' and longer. In the other two vessel length classes, common pool average vessel owners' shares per day were higher in 2011 than sector vessel owners' shares per day (Table 15).

On non-groundfish trips in 2011, the average owners' share was higher than in 2010 for both sector and common pool vessels in all four vessel size classes (Table 15). Increases in 2011 ranged from 12.3% ($375 in 2010 vs. $421 in 2011) for vessels in the 30' to <50' size class to 82.7% ($3,256 in 2010 vs. $5,947 in 2011) for vessels in the ≥75' size class. The average sector vessel owners' share on non-groundfish trips was higher in 2011 than the average common pool owners' share in all vessel size categories, except in the 30' to <50' length class.

On average, vessel owners' shares of nominal revenue per day per groundfish trip were lower in 2011 than in 2010. Declines in owners' share of nominal revenue per day per groundfish trip can occur because of (a) reduced average nominal revenues per day per groundfish trip; (b) increases in per day trip costs; or (c) both reasons. Table 13 provides data on average revenue per day for groundfish and non-groundfish trips by vessel length class, and Table 17 provides data on average trip costs per day by vessel length class. The decline in owners' share per day on groundfish trips in 2011 (Table 15) reflects both lower nominal revenue per day on groundfish trips in 2011 than in 2010 (see Table 13) and higher trip costs per day in 2011 than in 2010 (Table 17). From 2010 to 2011, declines in average nominal revenue per day on a groundfish trip ranged from 5.4% ($7,531 in 2010 to $7,146 in 2011) for vessels in the largest sized length class (≥ 75') to 22.9% ($2,489 in 2010 to $1,918 in 2011) for vessels in the smallest size length class (Table 13). In 2011, average nominal revenue per day per groundfish trip was lower than in 2010 for sector vessels in all length classes, and for common pool vessels in the <30' length category. Average trip costs per day on groundfish trips were higher in 2011 than in 2010 in all vessel length classes, ranging from 10.0% higher for vessels in the ≥75' length class ($2,408 in 2011 vs. $2,189 in 2010) to 25.9% higher for vessels in the 50' to <75' size group ($1,300 in 2011 vs. $1,033 in 2010) (Table 17). One significant factor affecting trip costs has been the increased cost of fuel. Average nominal fuel prices increased by about 87% from the beginning of fishing year 2009 through fishing year 2011 (Figure 13).[24]

The results discussed above apply only when average values are considered. However, there is variability in the components that make up average owners' shares, in both trip costs and revenue. To provide a sense of the degree of variability and the resulting impact on owners' shares, a simulation using @RISK software was performed.[25] For each trip in the landings data base for which actual trip cost information was lacking, a value was randomly drawn from the

[24] Fuel price data from the Northeast Fisheries Science Center Observer Program

[25] Palisade Corporation, http://www.palisade.com

appropriate per day trip cost distributions described in Table 14.[26] This process (which provided the resulting average vessel owners' shares) was repeated 5,000 times. The simulation results (shown in Table 18) give a range of values based on the characteristics of the underlying cost distributions. Most of the owners' share distributions have maximum values that are closer to the mean than are the minimum values because the per day cost distributions used to estimate the owners' share distributions are skewed by random high damage costs.[27,28] Critical values at the 90% confidence level are also provided in Table 18 to give a more realistic indication of possible values. For example, with 90% confidence, sector vessels 30' to < 50' in length in 2010 had per day between $2,672 and $2,905.[29]

4.2.3 Average Net Revenue Per Vessel

Average vessel owners' share of nominal net revenues may also be expressed at the vessel level rather than per day. The two largest vessel size categories had the largest increase in owners' share of nominal net revenue between 2009 and 2010 and also between 2010 and 2011 (Table 19). Average owners' share per vessel for vessels in the 50' to < 75' length class increased by 25.1% between 2009 and 2010 ($141,074 vs. $176,505, respectively) and then increased by 17.1% between 2010 and 2011 ($176,505 vs. $206,771, respectively). For vessels in the ≥ 75' length class, the increase in average owners' share per vessel was 30.9% between 2009 and 2010 and 17.3% between 2010 and 2011 ($394,366 vs. $462,679, respectively). Owners' shares for vessels in the 30' to < 50' size class declined by 4.1% from 2009 to 2010, but increased by 25.0% between 2010 and 2011. Average owners' shares for vessels in the smallest size class (<30') increased from -$3,838[30] in 2009 to -$1,389 in 2010 and then to $681 in 2011. Across all vessel length categories, average owners' shares were higher for sector vessels than for common pool vessels (Table 19).

The number of vessels within each vessel length category that had annual net revenue greater than zero was examined to provide additional information about how many vessels were able to cover their variable costs. For the three largest vessel length categories, the percentage of vessels with positive annual net revenues changed little between 2009 and 2011 (Table 20). In the smallest vessel size class, the percentage of vessels with a positive owners' share per vessel increased from 29.1% in 2009 to 42.5% in 2010 to 53.6% in 2011. For sector vessels, the the percentage of vessels with positive annual net revenues increased markedly between 2010 and 2011 for vessels in the < 30' category (27.3% to 71.4%), decreased slightly for vessels in the 30' to < 50' category (85.8% to 79.9%), and exhibited no change for vessels in the two largest length categories. For common pool vessels, the percentage of vessels with a positive owners' share per vessel was higher in 2011 than in 2010 in three of the four vessel size categories: < 30' category (51.0% in 2011 vs. 45.2% in 2010); 30' to < 50' category (64.6% in 2011 vs. 59.4% in 2010; and the ≥75' category (100% in 2011 vs. 90.0% in 2010). For common

[26] A Latin hypercube approach was used.

[27] For example, Table 18 shows that in 2010 sector vessels in the 30' to < 50' vessel size category on groundfish trips had minimum owners' shares per day of $508. This is $2,304 less than the mean of $2,812, whereas the maximum owners' shares per day of $2,963 is only $151 more than the mean.

[28] The estimated cost of lost or damaged fishing gear (or any other damage to the vessel) is recorded by observers.

[29] The simulation results reported in Table 18 have mean values that are slightly different from the mean values reported in Table 17.

[30] Vessels < 30' are most likely owner-operated and carry no crew. Therefore, owner shares for these vessels are probably under-estimated as crew payments were deducted.

pool vessels in the 50' to < 75' category, the percentage of vessels that were able to cover their variable costs was identical (at 86%) in 2010 and 2011.

Comparisons among the different length classes should not be made. For example, the percentage of vessels with positive net revenues in the < 30' category are much lower (about 50%) than the percentage in the ≥75'category (~100%). This information alone does not necessarily imply that the largest vessels are better off than the smallest vessels. Large vessels have fixed costs (such as insurance and maintenance) that are much higher than the fixed costs of smaller vessels. Large vessels must generate higher net revenues to cover these higher fixed costs.

In fishing years 2010 and 2011, both dockside monitoring (DSM) and at-sea monitoring (ASM) costs were paid for by the National Marine Fisheries Service.[31] Total ASM costs were $4.3 million in 2010 and, using preliminary data, are estimated to be $4.6 million in 2011. DSM costs are estimated at $464,743 in 2010 based on a variable charge per landed pound of groundfish.[32] In 2011, DSM was conducted until mid-September when the program was discontinued. Had DSM continued through the full fishing year, the estimated cost would have been $553,282, using the same variable charge per landed pound of groundfish as used to estimate the 2010 costs. In future years, the fishing industry is expected to cover these costs.[33] Using the ASM costs provided by the Northeast Fisheries Science Center Observer Program and the estimates of DSM costs, the potential impact on sectors was estimated using vessel activity in 2010 and 2011. Had sector vessels paid for DSM and ASM costs in 2010[34], the average 2010 owners' share would have been reduced: (a) by 13.6% for vessels <30'; (b) by 13.3% for vessels 30' to < 50' (the vessel size category with the greatest number of active sector vessels); (c) by 4% for vessels 50' to < 75'; and (d) by 5.4% for vessels ≥75' (Table 19). Results for 2011 (assuming DSM continued for the full fishing year) are similar (Table 19) except that the estimated reduction in average owners' share per vessel for sector vessels < 30' is just 1.0%.

4.2.4 Aggregate Nominal Net Revenues

Owners' share of nominal net revenues aggregated by fleet segments (vessel size and homeport state) reflect the combined result of shifts in average vessel performance and the shifts of activity among fleet segments. Total owners' shares increased from $94.4 million to $105.6 million between 2009 and 2010, and then to $120.5 million in 2011 (a 27.6% increase over two years) (Table 21). Increases in aggregate owners' shares occurred in all of the vessel size categories in 2011, and in 2010 occurred in three of the four vessel size categories (the 30'- <50' category exhibited a decline).

The estimated impact of sector vessels paying for ASM/DSM costs on aggregate owners' shares by vessel size category is shown in Table 21. The differences between total aggregate

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[31] Sector vessels paid DSM costs up-front, and were later reimbursed.

[32] < 2K lbs: $0.093, 2K to 5K lbs: $0.03, 5K to 10K lbs: $0.016, 10K to 15K lbs: $0.01, 15K to 20K lbs: $0.009, >= 20k lbs: $0.006.

[33] "While NOAA has decided not to centrally fund dockside monitoring for sectors during the 2011 and 2012 fishing years, as it did in 2010, the requirement for the fishing industry (both common pool and sectors) to pay for dockside monitoring beginning in 2013 technically remains in place" (http://www.nero.noaa.gov/nero/hotnews/NR1120/DSM%20press%20release%207_18-11.pdf). The recent disaster declaration for groundfish may further delay this requirement.

[34] For this analysis, total ASM costs for each sector were divided according to the amount of groundfish landed by active vessels in each sector.

owners' shares in 2010 and 2011 for sector vessels without ASM/DSM costs ($72.8 million in 2010 and $85.4 million in 2011) and those sector vessels with ASM/DSM costs ($68.0 million in 2010 and $80.2 million in 2011) represent the combined ASM/DSM cost in these two years, *i.e.,* $4.8 million in 2010 and $5.2 million in 2011. The proportional effect of these costs on total owner's shares differed by vessel size category (Table 21), and were lower in 2011 than in 2010. The two larger vessel size classes had reductions in owners' shares between 5.3% to 6.5%, while vessels in the 30' to <50' category had reductions of 12.3-13.0%. These higher percent reductions may reflect that 30' to <50' category vessels have a proportionally larger share of groundfish nominal revenue relative to their total nominal revenue than vessels in the larger size categories. As such, vessels in the 30' to <50' category assume a larger relative proportion of ASM/DSM costs.

Aggregate vessel owners' shares by home port state increased in both 2010 and 2011 in all states, except for New Hampshire in 2010 (with an increase in 2011 but still under 2009 levels) and for Connecticut in 2011 (Table 22). The home port state with the largest aggregate owners' shares, Massachusetts ($61.9 million in 2011), had the lowest percentage increase (6.8% in 2010 and 14.7% in 2011). The home port state with the smallest aggregate owners' shares, Connecticut ($2.0 million in 2010), had the largest percentage increase (54.3%) in 2010. Rhode Island had the largest percentage increase in 2011 (24.2%).

Had sector vessels been responsible for ASM/DSM costs, aggregate owners' shares in New Hampshire would have had the largest percentage decline, by 14.0% in 2010 and 11.1% in 2011 (Table 22).

These results should not be used to predict future costs as ASM coverage rates will change over time.

4.3. Vessel Productivity

Productivity is a key economic indicator and a critical factor in economic growth. With a single output and single input, productivity is typically measured as the ratio of output produced to the input used. With a more complicated production process, productivity is measured as aggregate output divided by aggregate input, and is called Total Factor Productivity (TFP). TFP is the most general measure of productivity, and changes in TFP can be measured at the firm level or at the aggregate industry level.

Fishing vessels typically catch multiple species on a trip using multiple inputs. For example, vessels use labor (crew), capital stock (vessel length and horsepower), and energy (fuel) on fishing trips to harvest a variety of fish and shellfish species. Because of this multiple output, multiple-input fishing technology, index numbers which combine outputs and inputs into a single number are necessary to measure TFP.

A Malmquist Index (MI) was therefore constructed to examine changes since 2007 in TFP for groundfish vessels.[35] A value greater than one for the MI indicates an improvement in

[35] The Malmquist Index (MI), which was introduced by Caves, Christensen and Diewert (1982), is an index well suited for measuring TFP change. Because only outputs and inputs are needed to construct the MI, this index is particularly advantageous for estimating changes in productivity of fishing vessels. Other productivity metrics require data on output and input prices. Although price data for landed species are extensive, data on input prices are only available for a subset of vessels. Since both input and output quantities are readily available for all vessels, the Malmquist index approach was chosen to estimate TFP change.

Landings for each vessel were aggregated into three broad output groups: roundfish, flatfish, and all other species. Inputs included vessel length, gross tonnage, horsepower, days absent, and average crew size. The MI was

productivity, while a value less than one signifies a decline in productivity. Yearly MI values were then used to construct a Malmquist Chained Index (MCI) with 2007 as the base year[36] (Table 23).

For common pool vessels, productivity—as measured by the MCI—declined in 2008, remained constant in 2009, declined again in 2010, and then slightly increased in 2011 (Table 23). Overall, the productivity of common pool vessels declined by 25% (1.0 to 0.75) between 2007 and 2011. For sector vessels, productivity increased in both 2008 and 2009, declined slightly in 2010, and was increased slightly in 2011. Overall, the productivity of sector vessels increased by 13% between 2007 and 2011 (Table 23). Increased landings of groundfish and non-groundfish in 2011 contributed to the recent productivity increase for both sector and common pool vessels

5. ACE LEASING

Every limited access groundfish permit has a potential sector contribution (PSC) based on its fishing history. The PSC is a percentage share of the total allocation for each allocated groundfish stock. Every limited access groundfish permit also has a tracking identification number called a Moratorium Right Identifier (MRI). PSC is technically allocated to MRIs, which are subsequently linked vessels through Northeast Multispecies limited access fishing permits. When a fisherman joins a sector, his PSC is pooled and becomes the sector's annual catch entitlement (ACE). Each sector determines how to distribute its ACE among its members. All groundfish catches on sector fishing trips count toward that sector's ACE. ACE is transferable between sectors via approved annual leases, while PSC is transferable within sectors using informal lease arrangements. ACE and PSC are generally leased because one fisherman, or a sector, wishes to catch more than their initial allocation for a particular stock. Importantly, some sectors or fishermen may choose to lease most or all of their ACE/PSC rather than catch it.[37] ACE and PSC leases result in transfer payments within the industry. If there are no transaction costs—that is, no costs associated with these transfers—the payments are not a cost to the industry.[38] Every pound of ACE or PSC leased represents a cost to the lessee and a reimbursement to the lessor, both of whom are industry members or, in some cases, permit banks. A frictionless lease market[39] allows industry members to better align their allocated PSC portfolio with their actual catch. The ability to lease allows fisherman to use improved

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calculated for three gear groups: trawl, hook, and gillnet. Lack of sufficient observations precluded calculation of the MI for other gear groups. Vessels in each gear group were then stratified into the common pool group or the sector group for all years of analysis, depending on which group they belonged in 2011. Next, the average productivity change per vessel in each fishing group was calculated. Individual vessel index numbers were then aggregated to derive an overall index value. The contribution of each vessel's productivity to the overall value was weighted by its nominal revenue.

[36] A chain index uses successive years of data. For example, the MCI for 2010 is calculated as MCI2010 = MI2010 x MI2009 x MI2008 x MI2007. The interpretation of this allows one to compare productivity in 2010 against a given base year, such as 2007 in our case.

[37] When this occurs, it is presumed that the benefit from leasing quota exceeds the expected benefit from catching it (revenues from landing ACE less the cost of catching the ACE). Often, ACE is transferred to achieve an optimal balance of species/stocks as many species/stocks are caught jointly.

[38] Transfer costs include, for example, payments to a broker, the cost associated with finding buyers or sellers, and the opportunity costs associated with leases that did not occur because of poor market information or other factors.

[39] A lease market with no transaction costs.

technology such as selective gears to target stocks for which they may not have been allocated sufficient PSC. But the benefits of leasing decrease as transaction costs increase; imperfect information on lease quantities and prices, for example, may cause fishermen to hold PSC when they should lease, or vice versa. Other structural aspects of the sector system such as operating rules that require multiple rights-of-refusal within sectors and/or between affiliated sectors may increase transaction costs, decrease market liquidity, and reduce efficiency in this nascent market. This section evaluates how ACE and PSC moved within and between Sectors, with an emphasis on market structure and size, prices, total transfers, and transaction costs.

5.1. Market Structure, Size and Characteristics

Two forms of leasing exist: ACE leasing between sectors, and PSC leasing within sectors. Although by regulation ACE is pooled within sectors, many sectors assign catch allowances to member vessels based on PSC allocations. If this is standard practice for all sectors, catching more fish than an individual PSC allocation requires either a lease of ACE (between-sector) or of PSC (within-sector).[40] Within-sector PSC leases are informal, and data in 2011 were not uniformly collected.[41] Between-sector leases are formally reported, and document the stock, total weight and, often but not always, any compensation. Catch and individual allocation data at the MRI level can be combined with between-sector lease data to estimate the size of these two components of the lease market.

In 2011, 256 sector-affiliated MRIs had catch that exceeded individual PSC allocations for at least one stock, down from 282 MRIs in 2010 (Table 24). The MRI leases in 2011 involved 30.8 million pounds of ACE and/or PSC. A similar comparison at the vessel affiliation level[42] indicates that 193 affiliations leased over 16.5 million pounds in 2011 (Table 25). Among the major home ports, Gloucester, MA had the largest number of lessees with 44. The largest number and percentage (114 lessees; 45%) of the 256 lessees identified in 2011 were attached to vessels in the 30' to <50' vessel length category (Table 26).

The difference between the 30.8 million pounds leased at the MRI level and the 16.5 million pounds at the vessel affiliation level (i.e., a difference of 14.3 million pounds) represents the transfer of ACE among MRIs within a vessel affiliation. A vessel affiliation can be a single owner with multiple MRIs and these "leases" may, in some cases, simply be transfers of ACE from one MRI to another.

While lessee fishermen and/or ownership groups can be determined by comparing catch to allocated PSC at the MRI level, the fishermen on the other side of these transactions (the lessors) are more difficult to identify. Fishermen who failed to convert their allocated PSC into catch are readily identifiable (of 822 sector-based MRIs, 521 had zero catch in FY 2011), but these permits create a pool of potential ACE/PSC that is much larger than the aggregate lessee requirements (Table 28). Furthemore, many active fishermen leased ACE/PSC for particular stocks while targeting others, so those with zero catch are not the sole pool of potential lessors. Nonetheless, some broad conclusions are possible. For example, although the largest

[40] In 2011 this became more difficult as 2010 carryover was allocated to sectors, and the method of re-allocation within a sector is not reported. For the purposes of this analysis, it was assumed that the total amount of sector-level carryover was re-allocated to individual sector members proportional to their unused PSC from the previous year.

[41] Sector end-of-year reporting contains detailed intra-sector lease data for most sectors, but the information is not comprehensive and in 2010 is not traceable to individual MRIs. Data for 2011 does provide information about MRIs and is being analyzed (see Footnote 22).

[42] Groups of vessels connected by common ownership. Note that these data may not be comprehensive, as vessel affiliation data are not currently collected on CPH permits.

vessel size category (≥75') was allocated 37% of all ACE in 2011, vessels in this size class caught 49% of the total catch, indicating a broad shift of ACE/PSC from smaller to larger vessels (Table 27).

The distribution of catch and ACE among vessel size categories differed considerably among the 16 allocated stocks in 2011 (Figure 14), but the smallest vessel size category, most likely inactive skiffs, was a primary source of leased ACE/PSC. Additionally, CPH permits were also a significant source of leased ACE/PSC.

The inter-sector lease market in 2011 had a total volume of 17.8 million pounds, two million pounds more than in 2010 (15.7 million ponds) (Table 29). In 2011, proportionally less Georges Bank haddock, plaice, and redfish was traded than in 2010, while proportionally more was traded of cod, white hake, and yellowtail flounder (Figure 15).

5.2. Prices

Price and quantity data for the between-sector component of the market (Table 30) were used in a hedonic price model to estimate the lease values in 2011 for all 16 stocks of leased ACE (Table 31).[43] Statistically significant prices were estimated for 13 of the 16 stocks. Three stocks, Eastern and Western Georges Bank haddock and American plaice, were traded at a price no different from zero.[44] Eastern Georges Bank cod and Gulf of Maine cod traded at the highest lease prices, between $1.10 and $1.25 per pound. Pollock traded at the lowest (non-zero) price at $0.06 per pound. For stocks with non-zero values in both 2010 and 2011, ACE lease prices were higher in 2011 than in 2010 for Eastern Georges Bank cod and white hake, up slightly for Gulf of Maine cod, and lower for all other stocks. The largest reduction (-75%) in lease price between 2010 and 2011 was for Georges Bank yellowtail flounder, declining from $0.93 in 2010 to $0.23 in 2011 (Table 31).

All prices derived from single stock leases in 2011 (Table 32) were within 15% of the hedonic model lease prices, except Georges Bank yellowtail flounder which traded about 30% higher on single-stock leases ($0.30 vs. $0.23). Relative to single stock lease values, the hedonic model predicted higher lease prices for cod but lower prices for all other stocks. Comparison of the ratios of ACE lease prices to ex-vessel prices for 2010 and 2011, where the data allowed for such a comparison, indicates that these ratios declined for most stocks, remained constant for Cape Cod and Gulf of Maine yellowtail flounder, and increased for Eastern Georges Bank cod from 2010 to 2011 (Table 33).

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[43] ACE leases between Sectors take three forms: (1) single-stock leases with single-value cash compensation (single stock leases); (2) multi-stock leases with single-value cash compensation (bundled leases); and (3) single or multi-stock leases with single or multi-stock compensation (swap leases). The hedonic model decomposes the lease arrangements into constituent parts representing the sixteen individual stocks, where a price (P) is a function of various quantities of the sixteen stocks for which ACE is traded.

The specification of the model is $P = \beta_0 + \beta_1\chi_1 + \ldots + \beta_n\chi_n + \varepsilon$. The weights, β, are the portion of the total price (P) attributable to each quantity of ACE stock leased (x) and represent the marginal price of ACE lease. In this case, n is the sixteenth ACE stock. Additional variables were added to estimate the contribution of bundled and swap leases, as well as the effects on prices for ACE leased by Northeast Fishery Sector IV and State permit banks. To include swap leases in the model, price was set at zero dollars and one side of the swap recorded negative lease quantities while the side other recorded positive quantities. By using swap, bundle, and single-stock lease data, comprehensive estimates of ACE lease values can be obtained.

[44] This could be because the quota were truly valueless (which was likely the case for Georges Bank haddock) or because the data were insufficient to allow the model to estimate a non-zero price.

Prices based only on one portion of the lease market (between sector ACE leases) may be biased due to structural issues affecting the lease markets.[45] Further information on intra-sector PSC leasing contained in the sector end-of-year reports may provide insight on whether ACE and PSC lease markets cleared at similar prices.

5.3. Transfer Payments

At the MRI level, the total estimated value of ACE/PSC lease market transfers in 2011 was $15.1 million, 30% higher than in 2010 ($11.5 million) (Table 34). When collapsed to vessel affiliations, the total transfer payment from leasing in 2011 was $9.1 million, implying that 40% of value of the leasing occurred within vessel affiliations (Table 35). The proportion of leases within and between vessel affiliations varied considerably at the homeport and state level (Table 36). In Boston, for example, about 75% of the leasing transactions in 2011 occured within vessel affiliations, while in Gloucester, Portland, and Point Judith between 44% to 50% of the transfer payments occured between vessel affiliations. Overall, the pool of owners leasing within their affiliations is a significant factor in fleet-level consolidation.

5.4. Transactions Costs

The transfers described thus far do not represent a cost to the industry as a whole. Any costs associated with ACE and PSC leasing result from two primary sources: the direct costs of getting buyers (lessees) and sellers (lessors) to negotiate lease prices and quantities, and the indirect costs associated with leases that would have made both buyers and sellers better off but which did not happen. Together, these two sources are considered transaction costs. It was not possible, however, to estimate the value of transaction costs for three reasons. The first is a structural impediment. Although ACE is held at the sector level, leases occur almost universally at the individual permit (MRI) and/or vessel affiliation level. This means that lease market data are opaque, leaving only the lessee side of the transaction discernible from official NOAA records. Second, while most sectors include some perspective on some forms of transaction costs in their annual reports, comprehensive data are lacking on all the costs associated with orchestrating leases between individuals, firms, and sectors. Such costs may include fees paid to sector managers or brokers, costs associated with advertising ACE availability, or the cost of time spent searching for—and completing—suitable leases. The third reason is that data are not available on which to base estimates for the cost of lost leasing opportunities, the largest type of transaction cost in this market.[46] These lost leasing opportunities result from search frictions and/or structural market impediments that prevent or impair lease negotiations. That is to say,

[45] Most Sectors maintain rights of first refusal when a Sector member wishes to lease ACE out of the Sector, and the Northeast Fishery Sectors maintain an additional second-refusal right for all members of their affiliated Sectors. These structures place frictions in the market by concentrating liquidity into small pools before opening the market to all participants. The impact of these arrangements on lease prices is uncertain , but within-Sector markets may clear at lower prices than between-Sector markets, and therefore estimates based on between-Sector transactions may be biased upwards. However, this is not certain as the large pool of available ACE for most stocks should be sufficient to meet leasing demand and erode any between-Sector price premium. Permit banks and similar privately- funded ACE leasing organizations may chose to lease ACE at below market rates, which might create an additional upward bias on the price estimates. These leases typically take place within Sectors, and therefore the proportion of total ACE leased out by such entities is unknown. Such lease arrangements are not factored into the price estimates reported here because no data are available for them.

[46] Leases that would have left both lessee and lessor better off had they occurred.

it is not possible to estimate which fishermen or vessel affiliations wanted to lease quota but could not, and what the impact of any inability to match buyers and sellers may have been on the potential for increasing the catch of non-binding stocks. Because only 41% of the total allocated ACE/PSC in 2011 was caught and less than 80% of these allocations were caught for 9 of the 16 stocks (Table 37), it might seem that the potential for efficiency gains from improving lease markets is large. In fact, the inability of sectors to catch their allocated ACE is not likely attributable to any one factor. Although search frictions and/or structural impediments may exist, lost leasing opportunities may also be affected by fish availability, imperfect quota setting, insufficient technology to target particular stocks, expectations about future market conditions, and other types of factors.

6. DISTRIBUTIONAL ISSUES

Management and regulatory changes may induce changes in the relative distribution of vessel types and vessel locations in a fishery. The measures discussed to this point have provided information about aggregate activity and average vessel performance by port of landing, home port, and vessel length class. Of equal importance is the actual number of individual vessels and vessel affiliations, how the distribution of vessels has changed geographically, and how the mix of vessel types (in terms of vessel length class and nominal revenue class) has changed over time. This information provides insight on diversity in the fishery. As well, the distribution of nominal revenue among vessels and among vessel affiliations is important for evaluating distributional impacts.

Considerable attention has been given to consolidation in the groundfish fishery, and whether the degree of consolidation has been heightened by Amendment 16. There is concern also that consolidation may generate a loss of diversity in the fishery. The term "consolidation" can be used to refer to many possible events including: a reduction in the number of vessel affiliations (i.e. ownership groups), a reduction in the number of active vessels, a narrower range of vessel sizes, or fewer landed or home ports. To avoid confusion, this report uses the term "consolidation" to mean fewer active vessels or fewer active vessel affiliations earning the same or larger total nominal revenues for all species and groundfish. In discussing how nominal revenues for all species and groundfish are distributed among existing active vessels and active vessel owners in a given fishing year, we either use the term "concentration" or refer to revenue distributions as being relatively more or less equally distributed.

6.1. Number of Active Vessels by Home Port

As noted previously (Section 3.1 and Table 10), the total number of active vessels in the groundfish fishery has been declining since 2007, resulting in a 25.6% reduction in active vessels between 2007 and 2011. The number of vessels with revenue from any species on all trips declined 11.6% between 2007 and 2009 (1,082 to 957 vessels) and 15.9% between 2009 and 2011 (957 to 805 vessels) (Table 10). By home port state (Table 38), the largest percentage decline between 2009 and 2011 in the number of active vessels with revenue from any species occurred in Maine (23%: 114 to 88 vessels). By major home port, the largest percentage declines in active vessels from 2009 to 2011 occurred in Boston (21%: 67 to 53 vessels), New Bedford (20%: 87 to 70 vessels), and Gloucester (17%: 115 to 95 vessels) (Table 38).

Between 2009 and 2011, the total number of vessels with revenue from at least one groundfish trip declined by 26% (570 to 420 vessels) (Table 39). By home port state, the largest

percentage declines from 2009 to 2011 occurred in Connecticut (38%: 8 to 5 vessels) and in New Jersey (35%: 26 to 17 vessels). In absolute terms, Massachusetts had the largest loss in the vessels with revenue from at least one groundfish trip between 2009 and 2011 (312 to 224 vessesls, a reduction of 88 vessels or 28%). By major home port, the greatest percentage reductions occurred in Gloucester (29%: 98 to 70 vessels), New Bedford (29%: 52 to 37 vessels) and Boston (26%: 46 to 34) (Table 39).

6.2. Number of Active Vessels by Vessel Size

The number of active vessels in all vessel size categories declined annually between 2009 and 2011 within all vessel size categories, except within the ≥75' length category where the number of vessels remained constant between 2010 and 2011 (Figure 16). The largest percentage decline in the number of active vessels between 2009 and 2011 occurred in the <30' vessel size category (32%: 78 to 53). This decline is likely influenced by the presence of skiffs in this vessel length category; permit holders may be transferring quota associated with these skiffs onto other vessels they own, or leasing their quota to other fishermen. The 30' to < 50' vessel size category, which has the largest number of active vessels with revenue from any species on all trips, experienced a 16% decline (500 to 419 vessels) during the past 3 years. The 50' to < 75' vessel size category, containing the second largest number of vessels, experienced an 11% reduction from 2009 to 2011 (247 to 220 vessels). Finally, the ≥75' vessel category experienced a 9% reduction in the number of active vessels between 2009 and 2011 (132 to 120 vessels) (Figure 16).

In all vessel size categories, the number of active groundfish vessels (with revenue from any species on groundfish trips only) declined between 2009 and 2010 and further declined in 2011, except for the ≥75' category which had a slight increase in 2011 (Figure 17). The largest percentage decline in the number of active groundfish vessels between 2009 and 2011 occurred in <30' vessel size category (42%: 33 to 19). Again, this decline may reflect the presence of skiffs in this length category. The 30' to < 50' vessel size category, which has the largest number of active groundfish vessels, experienced a 29% decline (308 to 220 vessels) during the past 3 years. The 50' to < 75' vessel size category, containing the second largest number of active groundfish vessels, experienced a 26% reduction from 2009 to 2011 (156 to 115 vessels). Finally, the ≥75 vessel category experienced a 7% reduction in the number of active groundfish vessels between 2009 and 2011 (73 to 68 vessels) (Figure 17).

6.3. Number of Vessel Affiliations

The number of vessel affiliations, or networks of vessels connected by common owners, declined during 2007-2011, but at a slower rate than the number of vessels. The number of active vessel affiliations declined 19.7% between 2007-2011, with a 9% reduction between 2009 and 2011 (934 to 846 affiliations) (Table 40). Between 2009 and 2010, the number of vessel affiliations declined 3% (934 to 910 affiliations) and declined further by 7% (910 to 846 affiliations) between 2010 and 2011. However, changes in the number of vessel affiliations do not necessarily mean there are more or fewer individuals involved in the fishery. Changes in vessel ownership among existing individuals can also result in changes in the number of vessel affiliations. The combination of these two possible scenarios are reflected in the results discussed here (Table 40).

The number of vessel affiliations in possession of at least one active vessel declined 15% from 2009 to 2011 (768 to 655 affiliations) (Table 40). Between 2009 and 2010, the number of vessel affiliations with an active vessel declined 5% (768 to 726 affiliations), and between 2010 to 2011 further declined by 10% (726 to 655 affiliations) (Table 40).

The number of vessel affiliations that had at least one vessel that reported revenue on at least one groundfish trip declined by 20% between 2009 and 2010 (450 to 359 affiliations) and by 6% between 2010 and 2011 (359 to 339 affiliations) for a 3-year reduction of 25% (Table 40).

In 2011, 191 vessel affiliations (23%) were inactive (no landings) compared to 184 inactive vessel affiliations (20%) in 2010 and 166 inactive vessel affiliations in 2009 (18%). (Table 40).

The number of vessel affiliations with a single active vessel steadily declined between 2009 and 2011 from 646 to 620 to 564 (a 13% reduction overall) (Table 41). The number of vessel affiliations with 2 active vessels also declined each year, from 97 in 2009 to 79 in 2010 to 62 in 2011 (a 36% reduction overall). In contrast, the number of vessel affiliations with 3 active vessels increased during 2009-2011 from 16 to 17 to 21 (a 31% increase overall). For vessel affiliations with 4 to 6 active vessels—and with 7 to 9 active vessels—no net change in the number of vessel affiliations occurred between 2009 and 2011. Vessels affiliations with 10+ active vessels changed from 2 in 2009 to 1 in 2010 and 2011.

The average number of active vessels per active vessel affiliation changed only slightly during 2009-2011, varying between 1.25 in 2009 to 1.23 in 2010 and 2011 (Table 41).

The implication of making comparisons between the number of active vessels (Table 10) and the number of vessel affiliations with active vessels (Table 41) is that some of the reductions in active vessels may be caused by vessel affiliations using fewer vessels to harvest fish, or selling their vessels from the fishery. Since the average number of active vessels per active vessel affiliation remained almost constant from 2009 to 2011, the reduced number of active vessels in 2010 and 2011 most likely reflects an overall attrition of active affiliations (ownership groups) rather than consolidation at the affiliation level.

6.4. Distribution of Nominal Revenue among Vessels

Groundfish revenues were not evenly distributed among groundfish vessels (or groundfish vessel nominal revenue categories) during 2009-2011 (or probably at any time). Between 2009 and 2010, the amount of overall revenue concentrated in the top earning categories increased. In 2011, however, there was little change in the amount of overall nominal revenue concentrated in the top earning categories.

Distribution of nominal revenue during 2009-2011 was examined in two ways:

1. Active vessels in each year were divided into eight nominal revenue categories. The smallest nominal revenue category included vessels earning less than $50,000 in each year for all trips and species landed. The highest nominal revenue category included vessels earning $1 million or more (Figure 18).

2. Active vessels were ranked by nominal revenue from highest to lowest, and then categorized into 10 brackets, each containing 10% of the total number of vessels (Tables 42 and 43).

Between 2009 and 2011, the number of vessels in the six lowest nominal revenue categories (includes vessels that earned from $1 to $699,999) declined from 862 to 636, a 26% reduction. In this same period, the number of vessels in the top two nominal revenue categories increased from 96 to 169, a 76% increase. Between 2010 and 2011, the number of vessels in the largest nominal revenue category ($1.0 million and greater) increased for both sector and common pool vessels (+21 and +5 vessels, respectively) (Figure 18).

During 2009-2011, the top 20% of vessels annually accounted for more than 60% of the total nominal revenue from all species (60.6% in 2009; 65.8% in 2010; and 64.8% in 2011) (Table 42). In this same time period, little change occurred in the proportional share of the bottom three nominal revenue earning categories for all species nominal revenues (1.4% - 2.1%).

Between 2009 and 2010, groundfish nominal revenues became more concentrated in the highest-earning 20% of vessels, increasing from 68.2% to 79.4% (Table 43). In 2011, this concentration declined slightly to 78.6%. The share of groundfish nominal revenues earned by vessels in the bottom three nominal revenue categories during 2009-2011 varied between 0.1% and 0.3%.

The distribution of common pool groundfish nominal revenue is concentrated in the top 10% of vessels (Table 43), which accounted for 77.1% of this revenues in 2010 and 71.5% in 2011. However, in both years, common pool groundfish nominal revenues accounted for a very small percentage of the total groundfish nominal revenues: 2.7% in 2010 and 1.1% in 2011.

When the number of vessels in a nominal revenue category changed between years (Figure 18), this may reflect that vessels have either left the fleet or moved into a different nominal revenue category (either higher or lower). Since the overall number of active vessels declined from 2009 to 2011, some vessels *have* certainly left the fishery or become inactive (Table 10).

6.5. Distribution of Nominal Revenue among Vessel Affiliations

All species and groundfish nominal revenues were not evenly distributed among vessel affiliations during 2009-2011.

Distribution of nominal revenue was examined in two ways:

1. Vessel affiliations with at least one active vessel in each year were divided into eight nominal revenue categories. The smallest nominal revenue category included affiliations earning less than $50,000 for all trips and species landed. The highest nominal revenue category included affiliations earning $1 million or more (Figure 19).

2. Vessel affiliations were ranked by nominal revenue from highest to lowest, and then categorized into 10 brackets, each containing 10% of the total number of vessel affiliations (Tables 44 and 45).

As noted in Section 6.3, the total number of vessel affiliations with active vessels declined annually between 2009 and 2011 (Table 40). A similar sequential annual decline in the number of vessel affiliations also occurred in four of the eight revenue categories: <$50K, $100K-200K, $200K-$300K, and $500K-$700K (Figure 19) . The only revenue category in which the number

of vessel affiliations progressively increased during 2009-2011 was the ≥ 1.0 million category, which experienced a 59% increase in vessel affiliations over the three year period.

During 2009-2011, the top 20% of vessel affiliations annually accounted for between 68% and 73% of the total nominal revenue from all species (68.2% in 2009; 73.1% in 2010; and 72.9% in 2011) (Table 44). In this same time period, only slight changes occurred in the proportional share of the total nominal all-species revenues in the bottom three earnings brackets of vessel affiliations (1.3% - 1.7%).

Between 2009 and 2010, groundfish nominal revenues became more concentrated in the top 20% of vessel affiliatuions, increasing from 76.7% to 85.7% (Table 45). In 2011, this concentration declined slightly to 85.3%. The share of groundfish nominal revenues earned by vessel affiliations in the bottom three revenue brackets during 2009-2011 varied between 0.1% and 0.2%. In the other five revenue earnings brackets, the shares of groundfish revenues were no different—or little different—between 2010 and 2011 (Table 45).

6.6. Distribution of Nominal Revenue Using Lorenz Curves and Gini Coefficients

Lorenz curves provide a graphical interpretation of how revenue is dispersed among the income levels of a population[47]. For any given point on the Lorenz curve, the vertical axis value is the share of total nominal revenue accounted for by all vessels that earned revenue equal to or less than the proportion of the population indicated by the horizontal axis value.

The Gini coefficient can be derived from the Lorenz curve, and reflects the degree of deviation between the Lorenz curve and the 45 degree line that represents perfect equality[48]. Gini coefficient values are bounded by 0 and 1, where 0 indicates perfect equality and 1 indicates maximum inequality.

It is important to note that nominal revenues have not been equally distributed for some time. For active vessels, the Gini coefficient for all species revenues was 0.593 in 2007 and 0.588 in 2008. For groundfish nominal revenues, it was 0.663 in 2007 and 0.678 in 2008. For active vessel affiliations, the Gini coefficient was 0.680 in 2007 and 0.675 in 2008 for all species nominal revenues, and for groundfish nominal revenues, it was 0.751 in 2007 and 0.765 in 2008.[49] Prior to 2009, groundfish nominal revenues were clearly less equally distributed than all species nominal revenues among both active vessels and active vessel affiliations. As well, both all species and groundfish nominal revenues were less equally distributed among vessel affiliations than vessels.

Between 2009 and 2010, the Gini coefficient for all species nominal revenue by active vessels increased from 0.589 to 0.630, indicating an increase in inequality (Figure 20). In 2011, the Gini coefficient declined to 0.619, suggesting less inequality than in 2010 but more than in 2009 (Figure 20).

The distribution of all species nominal revenue at the affiliated vessel level exhibits followed a similar pattern. Between 2009 and 2010, the Gini coefficient increased from 0.666 to

[47] A Lorenz curve is constructed by ranking vessels in order of increasing nominal revenue and then plotting the cumulative proportion of the population on the horizontal axis versus the cumulative share of nominal revenue on the vertical axis.

[48] The Gini coefficient is equal to twice the area between the diagonal and the Lorenz curve.

[49] Kitts *et al.* 2011, 25-26.

0.703 for all species nominal revenue. In 2011, the Gini coefficient for all species revenues was a little lower at 0.699, indicating slightly less inequality among vessel affiliations in 2011 than in 2010 but more than in 2009 (Figure 21). Across the complete time series, all of the vessel affiliation Gini values are higher than their corresponding vessel Gini values.

During 2009-2011, the distribution of groundfish nominal revenue was more unequal than the distribution of all species nominal revenues, among both vessels and vessel affiliations. The Gini coefficient for groundfish nominal revenues among vessels increased from 0.685 to 0.763 between 2009 and 2010, but declined to 0.746 in 2011 (Figure 22). Groundfish nominal revenue inequality among vessel affiliations followed a similar pattern. The Gini coefficient among vessel affiliations increased from 0.762 to 0.830 between 2009 and 2010, but declined to 0.822 in 2011 (Figure 23). Gini coefficients greater than 0.75 generally indicate extreme inequality, which suggests that the distribution of groundfish nominal revenues is highly skewed among both vessels and vessel affiliations, but much more so among vessel affiliations than among vessels.

6.7. Consolidation and Concentration of Nominal Revenue among Vessels

Another way of analyzing the distribution of revenue is to evaluate the number of vessels that earn various shares of the overall revenue. When fewer vessels earn the same or larger amounts of nominal all species and groundfish revenues, then consolidation has occurred. To assess whether changes in the concentration of revenue have occurred, annual changes in the proportion of vessels by nominal revenue quartile were examined adjusting for yearly changes in the total number of vessels. The number of vessels accounting for 25%, 50%, 75%, and 100% of the nominal revenue from all species on all trips was tabulated for each year from 2009 to 2011 (Table 46).

Although the total number of vessels with revenue from all species declined by 15.9% during 2009-2011 (from 957 to 805 vessels), the percentage of vessels accounting for the top 25% of all species nominal revenues was relatively constant, i.e., 5.0 % in 2009, 4.4% in 2010, and 4.8% in 2011 (Table 46). Similarly, while the number of vessel that accounted for the top 50% of all species nominal revenue declined by 22% between 2009 and 2011, the percentage of vessels that accounted for the top 50% of all species nominal revenue varied slightly from 14.2.% in 2009 to 12.2% in 2010 tp 13.2% in 2011.

Over the 2009-2011 period, all species nominal revenue has been consolidated onto fewer vessels. However, in 2011, the degree of concentration appears to have stabilized or even slightly declined. That is, slightly higher percentages of the groundfish fleet accounted for 50% and 75% of the all species nominal revenue in 2011 than in 2010 (Table 46).

The total number of vessels with groundfish nominal revenues on all trips declined from 601 to 450 vessels between 2009 and 2011, a reduction of 25% (Table 47). Although the number (and percentage) of vessels accounting for the top 25%, 50% and 75% of groundfish nominal revenues declined between 2009 and 2010, the number of vessels in the top 25% and and top 50% groups increased in 2011 (by 2 and 1 vessels, respectively). As well, the percentage of the fleet represented in all three top groups increased in 2011 (*i.e.,* to 3.3% in the top 25%; to 8.7% in the top 50%; and to 17.8% in the top 75%) (Table 47).

Between 2009 and 2011, consolidation of groundfish nominal revenues onto fewer vessels clearly occurred. However, in 2011 the concentration of groundfish nominal revenues in the groundfish fleet appears to have leveled off, as is also the case for all species revenue in 2011.

As noted earlier with regard to the revenue categories, annual changes in the number of vessels in a quartile category may reflect that vessels have left the fleet or moved into a different nominal revenue category (either higher or lower). Because the total number of vessels with groundfish revenues declined during 2009-2011, some vessels must have left the fleet but it is difficult to easily identify these vessels and to acertain in which revenue quartiles they belonged.

6.8. Consolidation and Concentration of Nominal Revenue among Vessel Affiliations

While consolidation of nominal revenues has occurred at the vessel level, the vessel-level analyses do not provide information about consolidation at the ownership/business entity level. An analysis at the affiliated vessel level evaluates whether revenues were concentrated among fewer business entities rather than fewer vessels. For example, if the same number of vessel affiliations used fewer vessels, a vessel-level analysis would show consolidation whereas an affiliated vessel level analysis would not. That is, when a vessel leaves the fishery, it may be because its owner (or owners) consolidated quota onto another vessel or vessels, rather than the owner(s) leaving fishing altogether.

To evaluate consolidation and concentration of nominal revenues among owners, the number of vessel affiliations accounting for 25%, 50%, 75%, and 100% of the nominal revenue from all species (and separately, groundfish) on all trips was tabulated (Tables 48 and 49, respectively).

From 2009 to 2010, the total number of vessel affiliations with all species nominal revenue declined in the 25%, 50% and 75% quartiles, as did the percentage of total species revenues accounted for these quartiles (Table 48). Although the number of vessel affiliations declined further in 2011 in the 50% and 75% quartiles (by 2 and 16 affiliations, respectively), the percentage of total species revenues accounted for in the 25%, 50% and 75% quartiles either increased (for the 50% quartile) or remained about the same (25% and 75% quartiles).

During 2009-2011, the degree of concentration of all species nominal revenue among vessel affiliations followed a pattern similar to the concentration of all species nominal revenue among vessels, i.e., increasing between 2009 and 2010, and then decreasing slightly in 2011 (Table 48).

Patterns of consolidation and concentration of groundfish nominal revenues among vessel affiliations during 2009-2011 were similar to those for all species revenues (Table 49). Between 2009 and 2010, the total number of vessel affiliations with revenue from groundfish declined overall (476 to 392) and also in the 25%, 50%, and 75% quartiles, as did the percentage of total groundfish revenues accounted within these three quartiles. In 2011, the number of vessel affiliations in the 25%-75% quartiles was nearly identical to 2010 (only changing by one affiliation each in the 50% and 75% quartiles) but the percentage of total groundfish revenues accounted for within each of these quartiles was either the same, or higher, than in 2010 (Table 49).

Sections 6.6 – 6.8 provide different ways of looking at the issues of consolidation and the concentration of all species and groundfish nominal revenues among active vessels and vessel affiliations. In 2009, all species nominal revenues and groundfish nominal revenues were not equally distributed among active vessels or vessel affiliations. As well, groundfish nominal revenue distributions were more unequal than all species nominal revenue distributions for both active vessels and vessel affiliations. In 2010, these revenue distributions became further concentrated, or even more unequal, than in 2009. In 2011, both the number of active vessels

and vessel affiliations declined indicating that there were fewer vessels and fewer groups of owners than in the two previous years. Therefore, consolidation of revenues on fewer vessels and vessel affiliations continued. However, both all species and groundfish nominal revenues were no less equally distributed (or more concentrated) in 2011 than in 2010 among active participants in the fishery. In fact, in some cases, the revenues in 2011 were slightly more equally distributed.

In 2011, inequality in the distribution of all species and groundfish nominal revenues was no more skewed than in 2010 and, in some cases, was a little less skewed. However, both all species and groundfish nominal revenues have been unequally distributed for many years, and this inequality increased between 2009 and 2010. In addition, the distributions of groundfish nominal revenues continue to be more unequal than the distributions of all species revenues among both active vessels and active vessel affiliations. Distributions of both all species and groundfish nominal revenues are more concentrated at the active vessel affiliation level than at the active vessel level. These findings apply to the distribution of nominal revenues among the active participants that have remained in the groundfish fishery; they tell us nothing about those participants that have (a) left the groundfish fishery; (b) shifted effort into other fisheries; (c) entered into Confirmation of Permit History; or (d) left fishing entirely.

7. EMPLOYMENT

Changes in employment levels can result from changes in fishery regulations. If new management approaches such as catch shares foster vessel consolidation or reductions in fishing effort, working conditions may be affected including pay, time spent at sea, and the number of jobs. Although NMFS does not track employment in the fishing industry in the Northeast, Vessel Trip Reports contain information about crew size on fishing trips and on the duration of trips. While these reports do not identify the actual number of individuals employed (e.g., crew often work for more than one vessel owner), the VTR data can be used to determine the number of crew positions available and the length of time that crew spend at sea.

7.1. Number of Crew Positions

The number of crew positions, measured by summing the average crew size of all active vessels on all trips, declined annually between 2009 and 2011 from 2,260 to 2,129 (a 6% decline) (Table 50). The number of crew positions in the 50' to < 75' and ≥75' vessel size categories increased from 2010 to 2011 but remained lower than in 2009. The number of crew positions in the <30' and 30' to < 50' vessel categories declined between 2009 and 2011, by 25% and 7%, respectively. By home port state, the number of crew positions increased from 2009 to 2011 in Connecticut and New York (in CT, by 6%: 38 to 41 positions in CT; in NY, by 3%: 205 to 211 positions (Table 51). In all other homeport states, crew positions declined between 2009 and 2011, with positions on vessels home ported in New Hampshire declining by the highest percentage (12%: 114 to 100 crew positions). Declines in the number of crew positions in other home port states ranged from 5% to 10% between 2009 and 2011.

7.2. Number of Crew Trips

Although the number of crew positions is an indicator of the availability of jobs, this measure is uninformative about the number of trips available for crew to work[50]. To account for this distinction, a crew-trip indicator was derived. Because most crew members are paid on a per trip basis, this crew-trip indicator provides a measure of the total opportunities for crew to earn a share of the landings revenues.

Total crew trips were calculated by summing the crew size of all trips taken in each fishing year across both vessel size category (Table 50) and home port state (Table 51). Total crew trips declined from 144,035 in 2009 to 126,661 in 2010, but increased to 127,695 in 2011 (an 11% reduction overall) (Table 50). Crew trips declined annually between 2009 and 2011 in all vessel size categories, except in the 30'- <50 vessel class where crew trips increased by 2% between 2010 and 2011. The largest percentage decline in crew trips between 2009 and 2011 occurred in the <30' vessel size class (18% decline). Vessels home ported in New York and Rhode Island experienced a small increase in the number of crew trips between 2009 and 2011 (2% in NY and 1% in RI). In all other homeport states, the number of crew trips declined from 2009 to 2011, with the largest percentage decline in New Hampshire (25% decline).

7.3. Number of Crew Days

Crew days, calculated by multiplying a trip's crew size by the days absent from port, were summed across vessel size categories and home port states to provide additional information about the time crew spend at sea to earn a share of the revenues. Because the number of trips affects the crew-days indicator, this indicator is also a measure of work opportunity. Conversely, crew days can be viewed as an indicator of time invested in the pursuit of "crew share" (the share of trip revenues received at the end of a trip). The time spent at sea has an opportunity cost. For example, if crew trips and crew earnings remain constant, a decline in crew days would reveal a benefit to crew in that less time was forgone for the same amount of earnings.

The ratio of crew days to crew trips accounts for these factors. The absolute value of this ratio does not, in itself, provide information about opportunities for crew. However, annual changes in the ratio are informative. For example, a declining trend in the ratio would imply a reduction in time spent per "earning opportunity" (a crew trip).

Because average trip length remained relatively constant within vessel size categories during 2009 to 2011 (Table 11), percent changes in crew-days during these years closely mirror the percent changes in crew-trips across both vessel length classes and home port states. As a result, the ratio of crew days to crew trips has also remained relatively constant across vessel size categories and home port states over the time series (Tables 50 and 51). This suggests that the time spent per earning opportunity has not changed significantly during 2009-2011.

Crew-based changes do not indicate, by themselves, whether crew incomes have changed. Crew income is influenced by many factors including a vessel's revenue/cost sharing formula, the amount of revenue a vessel receives from fish sales, the costs of fishing, the number of vessels actively fishing, and the intensity of fishing.

[50] For example, a vessel with three crew members that makes 10 trips a year is considered equivalent (with respect to crew positions) to a vessel with three crew members that makes 60 trips per year.

7.4. Changes in Crew Net Revenues

The average share of nominal net revenue that individual crew members receive per day absent provides information about how they may be faring financially. This is a function of gross revenue, trip costs, the crew share system used (which, however, does not vary in this analysis), trip length, and the number of crew on the trip. All of this is captured in average crew's share of nominal net revenue per day per crew member (Table 16). Since individual crew members are not tracked with a unique crew identifier, aggregating beyond average crew pay per day absent per crew member is not meaningful because the number of individuals sharing in the earnings is unknown.

Average crew shares per day and per crew member increased across all vessel length categories on both groundfish and non-groundfish between 2009 and 2010, but remained stable or declined in 2011 (Table 16). The only exceptions to this occurred in the two largest vessel size categories where average crew shares on non-groundfish trips increased in 2011. Changes between 2010 and 2011 in average crew shares per day and per crew member were mixed for sector and common pool vessels (Table 16).

7.5 Total Employment

The contribution of common pool and sector vessels to total employment in the Northeast extends well beyond providing job opportunities for crew members and captains. Commercial harvesting businesses purchase goods and services from supporting businesses to operate and maintain their vessels; these transactions fund additional jobs that are indirectly dependent upon commercial harvesting activities. Supporting businesses must also purchase goods and services from their own suppliers, triggering a series of additional indirect multiplier effects. Disposable income spending by crew members, captains, vessel owners, and employees of supporting businesses generate even more jobs in the Northeast.

How changes in the economic performance of the groundfish fleet during 2009-2011 have affected total regional employment is not clear using available data. Changes in nominal fish prices, catch-per-unit effort, operating costs (fuel, maintenance, etc.), the number of active vessels, crew jobs and wages, owner profits, and the economic condition of the wider regional economy all affect the number of jobs supported by the limited access groundfish fleet. Although some of these data are available, comprehensive information is currently missing on how total vessel costs, crew wages, the number of active crew members, and overall owner profits have changed from 2009-2011. Plans are underway to obtain these data, but for now only a qualitative assessment can be provided of changes in the contribution of common pool and sector vessels to total employment in the Northeast.

Analyses of the available data indicate that the number of vessels, fishing effort, and crew opportunities declined overall during 2009-2011, but with increases in some metrics between 2010 and 2011. The declines imply lower overall fleet operating expenditures, which likely translated into job reductions in 2010 and 2011 that are directly associated with fishing activity such as shore-side support businesses and possibly crew positions. However, in evaluating total employment, regional employment effects attributable to income spending by owners and crew members must also be taken into account. In 2011, a combination of higher landings (Table 2) and higher aggregate nominal groundfish prices (Figure 11) generated an increase in overall gross nominal revenues for the limited access groundfish fleet. This increase, in combination with an assumed reduction in overall fleet operating expenditures (resulting mainly from fewer

participating vessels and lower overall effort) implies higher earnings in 2011 for the limited access groundfish fleet. In general, increased earnings result in increased purchases of locally-produced goods and services not directly related to fishing, which, in turn, create new jobs in retail and service-oriented businesses.

The spending patterns of owners, captains, and crew members differ greatly from the goods and services purchased to operate a groundfish vessel. Groundfish fleet expenditures support a number of manufacturing and support businesses that are often located far from the actual port of landing (i.e., fuel refineries, gear suppliers, electronics manufacturers, maintenance facilities, etc.). Personal consumption expenditures support a few of these same industries, but also support a wide array of retail and service-oriented establishments (i.e., merchandise stores, restaurants, hospitals, real estate, etc.), which typically are locally-operated businesses. As groundfish incomes rise, more spending remains within the region, thereby allowing new jobs to be created in the local economy.

A complete and precise evaluation of how changes in the economic performance of the groundfish fleet affected overall employment in the Northeast in 2011 would require a comparison of

(a) the decline in regional employment resulting from lower operating costs and crew opportunities, with

(b) the increase in regional jobs generated from higher income expenditures.

Nonetheless, because of the changed flow of expenditures from manufacturing and support businesses to retail and service sector establishments, the employment structure of the Northeast economy shifted between 2009 and 2011. Retail and service sector employment likely expanded at the expense of groundfish harvesting jobs and supporting businesses.

8. CONCLUDING REMARKS

Our analyses of fishery performance measures of the limited access Northeast Multispecies (Groundfish) Fishery revealed some notable changes in the fishery during 2009-2011. Some trends observed in last year's groundfish performance report have been halted or show signs of reversing. After declining in 2010, groundfish landings and groundfish nominal revenues increased in 2011, but were not as high as in 2009. The number of groundfish trips and the number of days absent on groundfish trips during 2010 and 2011 showed the same pattern as groundfish landings and revenues. All species and groundfish nominal revenue were increasingly concentrated among top earning vessels and owners in 2009 and 2010, but stabilized or were less concentrated in 2011. Additional changes in 2011 include: (1) declines in the number of non-groundfish trips and in the number of days absent from port on non-groundfish trips, and (2) a decrease in nominal average price of non-groundfish.

Trends that continued in 2011 include: (1) increases in non-groundfish and total nominal revenues to 3-year highs; (2) increases in the nominal average groundfish price; (3) consolidation of nominal revenues on fewer vessels and among fewer vessel affiliations; and (4) increased economic performance as indicated by increases in the aggregate owners' share of net revenue.

Employment trends for vessel crew are mixed. All employment indicators declined in 2010, but some modest increases occurred in 2011.

In 2011, the groundfish fishery landed more product than in either 2009 or 2010, and groundfish and non-groundfish revenues in 2011 (in both nominal and real terms) were the highest in the last three years.

New studies that are underway (or will be shortly) will provide more information on the impacts occurring in the groundfish fishery, as well as other Northeast fisheries. A fixed cost survey of 1,700 Northeast vessel owners was implemented in August 2012, and staff from the NEFSC Social Sciences Branch will soon be analyzing these data examining both net revenue and profit. The Branch is also launching two socio-economic surveys—one for vessel owners and one for vessel crew— to better understand how regulations across fisheries affect fishermen in their work and also in their daily lives as individuals and community members. These data will enable further development of governance, stewardship, and well-being performance indicators. In addition, the socio-economic survey of vessel crew will provide needed demographic data on crew (which currently do not exist) and help to better understand how compensation to crew may be changing as fishing regulations change. The Branch is also continuing its work interviewing sector managers on topics such as the membership composition, sector organization and government, regulatory problems, and other issues. Branch staff are also engaged in qualitative research on the social impacts of fishing regulations and gathering information using oral histories from fishermen. Additional studies will be pursued and implemented as funding permits.

9. ACKNOWLEDGEMENTS

The authors would like to acknowledge the work of the Analysis and Program Support Division at the Northeast Regional Office for their role in preparing the groundfish data using the DMIS tool, and for calculating many of the performance indicators in this report. Special thanks go to Hannah Goodale and J. Michael Lanning. We also thank the following reviewers for their valuable suggestions: Fred Serchuk and Teri Frady.

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Table 2. Total landings and revenue from all trips by fishing year (May through April)

	2009	2010			2011		
Landed Pounds		**Total**	**Sector Vessels**	**Common Pool**	**Total**	**Sector Vessels**	**Common Pool**
Groundfish	69,774,688	58,622,152	57,217,538	1,404,614	61,721,659	61,125,954	595,705
Non-Groundfish	189,179,795	178,073,284	98,311,723	79,761,561	213,785,250	129,577,903	84,207,347
Total Pounds	258,954,482	236,695,436	155,529,262	81,166,175	275,506,910	190,703,858	84,803,052
Gross Revenue							
Groundfish	$84,112,835	$82,984,988	$80,750,083	$2,234,905	$90,115,537	$89,144,311	$971,226
(in 2009 dollars*)	($84,112,835)	($81,949,793)	($79,742,768)	($2,207,026)	($87,100,771)	($86,162,037)	($938,734)
Non-Groundfish	$182,653,074	$211,521,006	$115,875,258	$95,645,749	$240,769,788	$144,778,408	$95,991,380
(in 2009 dollars*)	($182,653,074)	($208,882,391)	($114,429,774)	($94,452,618)	($232,714,966)	($139,934,925)	($92,780,041)
Total Revenue	$266,765,909	$294,505,995	$196,625,341	$97,880,654	$330,885,325	$233,922,719	$96,962,606
(in 2009 dollars*)	($266,765,909)	($290,832,185)	($194,172,542)	($96,659,644)	($319,815,737)	($226,096,962)	($93,718,775)

* Deflated by the calendar year 2009 Q2 GDP Implicit Price Deflator

Table 3. Total landings and nominal revenue from groundfish trips by fishing year (May through April)

	2009	2010			2011		
Landed Pounds		**Total**	**Sector Vessels**	**Common Pool**	**Total**	**Sector Vessels**	**Common Pool**
Groundfish	69,636,949	58,391,974	57,097,553	1,294,421	61,509,893	61,038,536	471,357
Non-Groundfish	32,097,865	23,261,094	18,460,782	4,800,312	29,217,930	24,108,605	5,109,326
Total Pounds	101,734,814	81,653,068	75,558,335	6,094,733	90,727,824	85,147,141	5,580,683
Gross Nominal Revenue							
Groundfish	$83,938,187	$82,580,260	$80,525,901	$2,054,358	$89,783,226	$89,005,793	$777,433
Non-Groundfish	$26,644,523	$22,393,248	$18,307,881	$4,085,367	$31,736,942	$26,263,446	$5,473,497
Total Nominal Revenue	$110,582,710	$104,973,508	$98,833,782	$6,139,726	$121,520,169	$115,269,239	$6,250,930

Table 4. Annual catch limits for groundfish species in 2010 and 2011 [Mt, live weight]

	2010			2011*		
Stock	**Groundfish sub-ACL**	**Preliminary common-pool sub-ACL**	**Preliminary sector sub-ACL**	**Groundfish sub-ACL**	**Preliminary common-pool sub-ACL**	**Preliminary sector sub-ACL**
GB cod	3,430	103	3,327	4,301	99	4,202
GOM cod**	7,240	178	4,389	7,649	188	4,637
GB hadk	40,440	202	40,238	30,840	129	30,711
GOM hadk**	1,149	13	812	1,086	8	770
GB ytail	964	21	943	1142	17.4	1124.6
SNE ytail	310	63	247	524	107	417
CC ytail	779	31	748	940	38	902
Plaice	2,848	71	2,777	3,108	78	3,030
Witch	852	19	833	1,236	27	1,209
GB winter	1,852	26	1,826	2,007	28	1,979
GOM winter	159	20	138	159	20	138
SNE winter	520	520	0	726	726	0
Redfish	6,848	62	6,786	7,541	68	7,473
White hake	2,566	44	2,522	2,974	35	2,939
Pollock	2,748	47	2,701	13,952	138	13,814
N. window	110	110	0	110	110	0
S. window	154	154	0	154	154	0
Ocean pout	239	239	0	239	239	0
Halibut	30	30	0	33	33	0
Wolffish	73	73	0	73	73	0

*Shaded figures indicate values updated in Framework Adjustments 45 or 46. All other values come from Framework Adjustment 44.

**A portion of the groundfish sub-ACL for these stocks is allocated to recreational fishermen.

Table 5. Nominal value of landings of all species by state and port of landing (May through April, all trips)

		Year		
		2009	2010	2011
CT		$3,889,498	$4,377,165	$6,097,183
MA		$160,983,064	$173,965,055	$193,357,856
	BOSTON	$11,102,887	$14,101,130	$15,227,275
	CHATHAM	$8,004,697	$7,446,986	$9,229,543
	GLOUCESTER	$39,897,196	$39,887,668	$42,763,418
	NEW BEDFORD	$84,311,039	$95,123,801	$109,051,700
ME		$17,659,326	$19,042,372	$18,736,245
	PORTLAND	$7,487,227	$6,328,361	$7,610,979
NH		$7,704,110	$6,890,430	$7,251,776
NJ		$19,029,268	$24,257,850	$28,587,649
NY		$18,301,798	$21,415,592	$24,380,609
RI		$27,708,619	$30,447,319	$37,490,240
	POINT JUDITH	$19,603,791	$22,101,499	$28,467,411
Other Northeast		$11,490,226	$14,110,212	$14,983,768
Grand Total		$266,765,909	$294,505,995	$330,885,325

Table 6. Nominal value of landings of all species by home port state and home port (May through April, all trips)

		Year		
		2009	**2010**	**2011**
CT		$3,800,090	$5,648,620	$5,100,690
MA		$141,687,542	$149,292,375	$168,775,312
	BOSTON	$26,564,377	$27,787,196	$31,813,827
	CHATHAM	$6,437,385	$6,481,122	$8,964,621
	GLOUCESTER	$23,806,263	$25,033,998	$26,453,728
	NEW BEDFORD	$58,919,273	$64,417,309	$77,392,560
ME		$26,447,333	$31,499,881	$29,662,348
	PORTLAND	$10,456,352	$12,851,861	$12,798,426
NH		$9,783,221	$7,620,337	$9,019,290
NJ		$17,305,810	$20,268,432	$24,430,892
NY		$22,785,161	$27,395,361	$31,935,086
RI		$30,251,534	$35,223,852	$41,599,051
	POINT JUDITH	$19,628,164	$22,892,042	$28,504,604
Other Northeast		$14,705,218	$17,557,136	$20,362,657
Grand Total		$266,765,909	$294,505,995	$330,885,325

Table 7. Nominal value of landings of groundfish by state and port of landing (May through April, all trips)

		Year		
		2009	**2010**	**2011**
CT		$41,798	$13,325	$45,811
MA		$71,268,258	$73,486,766	$77,685,402
	BOSTON	$8,920,827	$11,644,984	$12,435,220
	CHATHAM	$3,228,082	$2,164,801	$2,407,478
	GLOUCESTER	$30,197,053	$27,794,782	$29,852,674
	NEW BEDFORD	$23,977,626	$29,215,023	$29,802,463
ME		$6,003,495	$4,314,852	$5,972,458
	PORTLAND	$5,014,718	$3,422,839	$4,866,836
NH		$4,451,183	$3,274,855	$4,282,142
NJ		$35,154	$27,981	$22,846
NY		$305,749	$257,038	$78,269
RI		$2,003,585	$1,607,596	$2,008,901
	POINT JUDITH	$1,860,697	$1,504,990	$1,938,986
Other Northeast		$3,613	$2,575	$19,708
Grand Total		$84,112,835	$82,984,988	$90,115,537

Table 8. Nominal value of landings of groundfish by home port state and home port (May through April, all trips)

		Year		
		2009	**2010**	**2011**
CT		$126,014	$55,765	$46,904
MA		$59,388,704	$59,185,073	$65,602,383
	BOSTON	$13,714,782	$14,446,670	$17,451,057
	CHATHAM	$2,785,261	$2,370,328	$2,571,543
	GLOUCESTER	$16,842,112	$16,834,660	$17,084,038
	NEW BEDFORD	$16,176,038	$18,156,259	$20,410,953
ME		$13,583,364	$14,835,741	$15,123,972
	PORTLAND	$8,337,136	$10,553,104	$10,173,901
NH		$6,051,384	$3,698,187	$4,613,408
NJ		$421,836	$312,300	$123,597
NY		$756,858	$1,103,817	$1,326,821
RI		$3,085,052	$3,216,976	$2,891,420
	POINT JUDITH	$2,288,876	$2,371,699	$2,029,798
Other Northeast		$699,624	$577,130	$387,031
Grand Total		$84,112,835	$82,984,988	$90,115,537

Table 9. Nominal value and landed pounds of top eleven non-groundfish species* landed by limited access groundfish vessels (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
HERRING, ATLANTIC	$3,434,062	$2,887,611	$1,331,795	$1,555,816	$6,369,746	$3,021,805	$3,347,941
(CLUPEA HARENGUS)	33,978,259	25,764,815	10,227,797	15,537,018	56,372,358	22,423,670	33,948,688
SKATES(RACK)	$7,104,671	$4,987,841	$3,657,503	$1,330,337	$6,543,826	$4,838,628	$1,705,198
(RAJIDAE)	24,570,804	16,971,171	11,502,603	5,468,569	19,694,680	14,024,300	5,670,380
MENHADEN	$751,152	$1,325,429	$192,752	$1,132,677	$1,985,945	$1,250,414	$735,531**
(BREVOORTIA TYRANNUS)	10,690,429	18,568,358	1,983,817	16,584,541	22,278,749	14,832,219	7,446,530**
HAKE, SILVER	$8,469,907	$11,138,757	$8,542,696	$2,596,061	$10,781,911	$8,162,032	$2,619,879
(MERLUCCIUS BILINEARIS)	17,131,138	17,467,396	13,731,207	3,736,190	16,406,068	13,021,438	3,384,629
SQUID (LOLIGO)	$14,916,603	$18,017,856	$15,763,176	$2,254,681	$20,144,791	$15,420,391	$4,724,400
(LOLIGO PEALEI)	15,805,159	16,531,121	14,527,997	2,003,125	15,725,053	12,207,789	3,517,264
SCALLOP, SEA	$60,923,741	$71,612,613	$33,749,492	$37,863,121	$90,321,367	$47,839,882	$42,481,485
(PLACOPECTEN MAGELLANICUS)	9,516,450	8,299,108	3,960,112	4,338,996	9,007,734	4,768,314	4,239,420
SQUID (ILLEX)	$1,473,893	$1,639,236	$1,381,614	$257,622	$4,187,007	$3,548,926	$638,082
(ILLEX ILLECEBROSUS)	8,963,047	6,324,303	5,160,472	1,163,831	11,098,568	8,928,661	2,169,907
LOBSTER	$29,547,961	$34,453,495	$13,801,908	$20,651,587	$29,375,211	$16,340,807	$13,034,404
(HOMARUS AMERICANUS)	8,509,174	8,897,093	3,691,931	5,205,162	7,472,527	4,296,854	3,175,673
DOGFISH SPINY	$1,949,278	$1,643,263	$1,221,346	$421,917	$1,993,602	$1,587,699	$405,903

(SQUALUS ACANTHIAS)	8,320,829	7,517,460	5,478,064	2,039,396	8,971,670	7,294,223	1,677,447
SCUP	$3,849,887	$4,763,207	$3,285,555	$1,477,651	$6,833,021	$5,302,799	$1,530,222
(STENOTOMUS CHRYSOPS)	6,276,826	7,967,585	5,333,769	2,633,815	10,542,792	8,202,302	2,340,490
MONKFISH	$14,432,148	$14,896,249	$10,724,178	$4,172,071	$21,637,981	$15,886,164	$5,751,817
(LOPHIUS AMERICANUS)	7,809,814	6,596,421	4,041,504	2,554,917	8,571,214	5,478,913	3,092,301

* Sorted descending by landings over three years.
** Values declined from six month report due to data reporting issues from carrier vessel reports

Table 10. Number of vessels by fishing year (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
		As of May 1 each Fishing Year:					
Total groundfish limited access eligibilities	**1463**	**1440**	**762**	**678**	**1421**	**828**	**593**
Eligibilities held as Confirmation of Permit History	**81**	**94**	**22**	**72**	**168**	**88**	**80**
		During any part of the fishing year*:					
Total eligible vessels	1,459	1,408	765	654	1,321	781	551
Eligible vessels that did not renew a limited access groundfish permit	28	26	12	14	42	9	33
Vessels with a limited access groundfish permit	1,431	1,382	753	640	1,279	772	518
... those with revenue from any species	957	890	440	456	805	446	366
... those with revenue from at least one groundfish trip	570	445	303	142	420	301	121
... those with no landings	474 (33%)	492 (36%)	313 (42%)	184 (29%)	474 (37%)	326 (42%)	152 (30%)

* On May 1st of the fishing year the number of vessels will equal to the number of eligibilities not in Confirmation of Permit History (CPH). Over time the number of vessels will differ from the number of eligibilites because these eligibilities can be transferred from vessel to vessel during the fishing year.

Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilites during the fishing year.

These numbers exclude groundfish limited access eligibilities held as Confirmation of Permit History (CPH). Starting in 2010, Amendment 16 authorized CPH owners to join sectors and to lease DAS. For purposes of comparison, CPH vessels are not included in the data for either sector or common pool.

Table 11. Effort by active vessels (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Less than 30'							
Number of Groundfish Trips	435	137	2	135	274	15	259
Number of non-groundfish Trips	1,784	1,703	370	1,333	1,372	258	1,114
Number of days absent on groundfish trips	160	61	1	60	103	7	96
Number of days absent on non-groundfish trips	573	537	123	414	419	81	337
Average trip length on groundfish trips (standard deviations)	0.37 (0.18)	0.45 (0.13)	0.40 (0.09)	0.45 (0.13)	0.38 (0.12)	0.45 (0.04)	0.37 (0.13)
Average trip length on non-groundfish trips (standard deviation)	0.34 (0.20)	0.33 (0.13)	0.34 (0.09)	0.32 (0.14)	0.32 (0.10)	0.32 (0.10)	0.32 (0.10)
30' to<50'							
Number of Groundfish Trips	19,349	9,240	7,509	1,731	11,114	9,401	1,713
Number of non-groundfish Trips	23,216	25,204	9,678	15,526	21,585	10,443	11,142
Number of days absent on groundfish trips	8,794	5,067	3,958	1,109	6,332	5,216	1,116
Number of days absent on non-groundfish trips	8,657	9,540	3,633	5,906	8,215	3,683	4,532
Average trip length on groundfish trips (standard deviations)	0.46 (0.96)	0.55 (0.66)	0.53 (0.64)	0.64 (0.71)	0.57 (0.71)	0.56 (0.72)	0.65 (0.68)
Average trip length on non-groundfish trips (standard deviation)	0.42 (0.47)	0.41 (0.35)	0.40 (0.36)	0.41 (0.35)	0.40 (0.33)	0.38 (0.29)	0.42 (0.36)

Table 11. continued. Effort by active vessels (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
50' to <75'							
Number of Groundfish Trips	4,971	2,829	2,442	387	3,368	3,067	301
Number of non-groundfish Trips	12,090	12,321	5,456	6,865	10,920	5,036	5,884
Number of days absent on groundfish trips	8,278	5,656	5,305	351	6,713	6,447	266
Number of days absent on non-groundfish trips	12,681	12,545	6,491	6,053	11,498	6,414	5,084
Average trip length on groundfish trips (standard deviations)	1.67 (2.27)	2.00 (2.36)	2.18 (2.48)	0.91 (0.81)	2.00 (2.41)	2.11 (2.50)	0.88 (0.64)
Average trip length on non-groundfish trips (standard deviation)	1.08 (1.67)	1.03 (1.55)	1.20 (1.59)	0.89 (1.51)	1.06 (1.61)	1.28 (1.73)	0.87 (1.47)
75' and above							
Number of Groundfish Trips	1,301	1,235	1,206	29	1,173	1,159	14
Number of non-groundfish Trips	2,853	2,523	1,287	1,236	2,507	1,264	1,243
Number of days absent on groundfish trips	7,006	6,831	6,792	38	7,576	7,558	19
Number of days absent on non-groundfish trips	9,330	8,930	5,199	3,731	7,780	4,795	2,986
Average trip length on groundfish trips (standard deviations)	5.41 (3.03)	5.54 (2.76)	5.64 (2.69)	1.32 (2.14)	6.46 (2.72)	6.53 (2.67)	1.33 (1.49)
Average trip length on non-groundfish trips (standard deviation)	3.37 (3.37)	3.59 (3.49)	4.10 (3.47)	3.05 (3.43)	3.13 (3.19)	3.83 (3.34)	2.43 (2.87)

Table 11. continued. Effort by active vessels (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
All Vessels							
Number of Groundfish Trips	26,056	13,441	11,159	2,282	15,929	13,642	2,287
Number of non-groundfish Trips	39,943	41,753	16,791	24,962	36,386	17,002	19,384
Number of days absent on groundfish trips	24,237	17,614	16,057	1,558	20,724	19,227	1,498
Number of days absent on non-groundfish trips	31,241	31,552	15,446	16,106	27,913	14,973	12,940
Average trip length on groundfish trips (standard deviations)	0.94 (1.85)	1.31 (2.08)	1.44 (2.23)	0.69 (0.76)	1.30 (2.14)	1.41 (2.28)	0.66 (0.66)
Average trip length on non-groundfish trips (standard deviation)	0.84 (1.57)	0.79 (1.47)	0.96 (1.69)	0.68 (1.30)	0.80 (1.45)	0.93 (1.65)	0.69 (1.24)

Table 12. Average nominal revenue per vessel (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Less than 30'							
Average all species revenue per vessel (standard deviation)	$11,794 ($26,993)	$15,108 ($37,176)	$27,329 ($72,082)	$12,702 ($26,973)	$16,688 ($42,648)	$63,875 ($119,964)	$10,909 ($15,320)
Average groundfish revenue per vessel (standard deviation)	$5,319 ($10,808)	$1,594 ($2,650)	$3,226 ($3,904)	$1,384 ($2,482)	$3,952 ($6,205)	$10,364 ($)	$3,647 ($6,187)
Average all species revenue per vessel on groundfish trips (standard deviation)	$8,254 ($15,086)	$7,218 ($27,117)	$5,650 ($3,448)	$7,360 ($28,365)	$9,612 ($20,545)	$10,803 ($)	$9,549 ($21,106)
30' to <50'							
Average all species revenue per vessel (standard deviation)	$138,469 ($123,665)	$140,631 ($132,974)	$174,597 ($142,536)	$110,062 ($115,600)	$167,124 ($154,484)	$198,910 ($165,416)	$129,572 ($129,618)
Average groundfish revenue per vessel (standard deviation)	$91,857 ($108,777)	$73,996 ($111,122)	$107,829 ($123,183)	$15,347 ($43,801)	$89,556 ($138,308)	$128,065 ($152,340)	$12,838 ($40,545)
Average all species revenue per vessel on groundfish trips (standard deviation)	$125,968 ($120,559)	$109,730 ($121,462)	$144,519 ($134,469)	$48,879 ($55,964)	$146,848 ($157,002)	$183,868 ($173,746)	$71,651 ($67,436)

Table 12. Continued. Average nominal revenue per vessel (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
50' to <75'							
Average all species revenue per vessel	$376,010	$446,016	$519,465	$355,617	$538,517	$638,051	$398,312
(standard deviation)	($300,744)	($412,173)	($374,917)	($439,018)	($473,649)	($478,634)	($431,388)
Average groundfish revenue per vessel	$154,718	$193,093	$271,727	$14,200	$225,497	$302,268	$6,815
(standard deviation)	($218,273)	($301,702)	($332,657)	($28,132)	($343,008)	($369,358)	($12,297)
Average all species revenue per vessel on groundfish trips	$225,705	$272,433	$346,012	$46,623	$327,935	$400,538	$46,597
(standard deviation)	($263,064)	($349,235)	($373,172)	($44,216)	($395,925)	($413,692)	($46,117)
75' and above							
Average all species revenue per vessel	$806,582	$1,059,317	$1,164,897	$850,798	$1,268,946	$1,315,674	$1,163,807
(standard deviation)	($470,773)	($608,966)	($583,829)	($610,851)	($668,481)	($651,817)	($702,495)
Average groundfish revenue per vessel	$348,967	$475,690	$585,504	$15,842	$491,516	$634,164	$3,512
(standard deviation)	($395,294)	($558,304)	($568,564)	($46,859)	($551,052)	($549,924)	($9,048)
Average all species revenue per vessel on groundfish trips	$519,479	$735,206	$767,687	$85,585	$772,453	$834,114	$20,195
(standard deviation)	($440,570)	($606,343)	($602,922)	($94,144)	($616,560)	($600,651)	($17,427)

Table 13. Average nominal revenue per trip and day absent (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Less than 30'							
Average revenue per groundfish trip	$645	$1,264	$5,650	$1,199	$702	$720	$700
(standard deviation)	($887)	($1,921)	($3,448)	($1,834)	($1,054)	($459)	($1,079)
Average revenue per non-groundfish trip	$369	$515	$782	$442	$514	$1,427	$307
(standard deviation)	($528)	($808)	($901)	($766)	($818)	($1,406)	($377)
Average revenue per day on groundfish trip	$1,948	$2,489	$13,642	$2,321	$1,918	$1,592	$1,937
(standard deviation)	($2,663)	($3,502)	($5,664)	($3,209)	($2,156)	($947)	($2,206)
Average revenue per day on non-groundfish trip	$1,236	$1,635	$2,589	$1,361	$1,659	$4,487	$1,002
(standard deviation)	($1,962)	($2,929)	($4,025)	($2,473)	($2,557)	($4,178)	($1,312)
30' to < 50'							
Average revenue per groundfish trip	$1,997	$2,848	$2,933	$2,511	$2,877	$2,887	$2,808
(standard deviation)	($3,099)	($2,749)	($2,836)	($2,314)	($2,591)	($2,631)	($2,358)
Average revenue per non-groundfish trip	$1,292	$1,542	$1,777	$1,406	$1,637	$1,668	$1,611
(standard deviation)	($2,949)	($2,198)	($1,889)	($2,344)	($2,122)	($1,720)	($2,443)
Average revenue per day on groundfish trip	$5,799	$6,748	$7,083	$5,238	$6,223	$6,434	$5,343
(standard deviation)	($22,795)	($7,943)	($8,366)	($5,411)	($7,375)	($7,713)	($5,244)
Average revenue per day on non-groundfish trip	$3,533	$4,374	$5,368	$3,772	$4,418	$4,902	$3,985
(standard deviation)	($10,150)	($13,486)	($19,016)	($8,448)	($8,594)	($10,070)	($6,918)

Table 13. continued. Average nominal revenue per trip and day absent (May through April)

	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
50' to < 75'							
Average revenue per groundfish trip (standard deviation)	$7,183 ($10,432)	$11,339 ($14,662)	$12,585 ($15,361)	$3,485 ($3,331)	$11,382 ($15,173)	$12,138 ($15,684)	$3,703 ($2,258)
Average revenue per non-groundfish trip (standard deviation)	$4,824 ($12,727)	$5,726 ($17,457)	$6,391 ($15,593)	$5,184 ($18,820)	$7,187 ($21,242)	$9,039 ($24,458)	$5,684 ($18,086)
Average revenue per day on groundfish trip (standard deviation)	$6,046* ($36,399)	$7,210 ($8,186)	$7,600 ($8,425)	$4,746 ($5,923)	$6,542 ($5,716)	$6,662 ($5,836)	$5,323 ($4,129)
Average revenue per day on non-groundfish trip (standard deviation)	$5,735 ($16,087)	$5,899 ($26,718)	$6,519 ($17,327)	$5,398* ($32,372)	$7,529 ($26,012)	$7,993 ($14,285)	$7,155 ($32,516)
75' and above							
Average revenue per groundfish trip (standard deviation)	$27,950 ($20,270)	$37,383 ($24,433)	$38,067 ($24,120)	$8,854 ($20,285)	$43,463 ($23,598)	$43,901 ($23,393)	$7,212 ($5,118)
Average revenue per non-groundfish trip (standard deviation)	$23,618 ($43,283)	$30,622 ($57,266)	$35,413 ($58,706)	$25,862 ($55,412)	$38,199 ($70,515)	$43,953 ($71,359)	$32,526 ($69,233)
Average revenue per day on groundfish trip (standard deviation)	$6,115 ($16,025)	$7,531 ($9,727)	$7,583 ($9,832)	$5,381 ($2,214)	$7,126 ($5,067)	$7,049 ($4,691)	$13,478 ($17,617)
Average revenue per day on non-groundfish trip (standard deviation)	$9,239 ($26,537)	$9,322 ($21,557)	$9,043 ($17,810)	$9,598 ($24,721)	$17,463* ($136,011)	$21,138* ($188,629)	$13,832 ($40,087)

Table 14. Per day trip cost distributions (in $).

Gear Type	Vessel Length	Trip Duration	Fishing Year	Function Name	Mean*	Standard Deviation	Skewness
Gillnet	< 40'	Day	2007	Log logistic	156	213	0.00
Gillnet	< 40'	Day	2008	Log normal	134	99	2.61
Gillnet	< 40'	Day	2009	Pearson6	99	59	1.47
Gillnet	< 40'	Day	2010	Pearson6	140	76	1.39
Gillnet	< 40'	Day	2011	Log logistic	228	171	27.90
Gillnet	< 40'	Multi-day	2007	Pearson5	204	87	2.08
Gillnet	< 40'	Multi-day	2008	Gamma	201	135	1.35
Gillnet	< 40'	Multi-day	2009	Weibull	143	72	0.56
Gillnet	< 40'	Multi-day	2010	Log logistic	172	175	0.00
Gillnet	< 40'	Multi-day	2011	Log logistic	250	97	0.53
Gillnet	>= 40'	Day	2007	Log normal	216	159	2.62
Gillnet	>= 40'	Day	2008	Pearson6	201	120	1.46
Gillnet	>= 40'	Day	2009	Log normal	169	103	2.06
Gillnet	>= 40'	Day	2010	Log logistic	225	179	91.27
Gillnet	>= 40'	Day	2011	Log logistic	276	204	17.10
Gillnet	>= 40'	Multi-day	2007	Gamma	349	164	0.94
Gillnet	>= 40'	Multi-day	2008	Weibull	284	118	0.32
Gillnet	>= 40'	Multi-day	2009	Weibull	143	72	0.56
Gillnet	>= 40'	Multi-day	2010	Weibull	326	152	0.47
Gillnet	>= 40'	Multi-day	2011	Log logistic	401	229	4.67
Hand Gear			07 - 11	Logistic	288	114	0.00
Longline	< 40'	Day	07 - 09	Pearson5	449	0	0.00
Longline	< 40'	Day	2010	Inverse gauss	275	173	1.89
Longline	< 40'	Day	2011	Weibull	206	94	1.35
Longline	< 40'	Multi-day	07 - 11	Normal	675	406	0.00
Longline	>= 40'	Day	2007	Pearson5	844	0	0.00
Longline	>= 40'	Day	2008	Pearson5	595	0	0.00
Longline	>= 40'	Day	2009	Pearson5	287	0	0.00
Longline	>= 40'	Day	2010	Inverse gauss	403	466	3.47
Longline	>= 40'	Day	2011	Log logistic	428	0	0.00
Longline	>= 40'	Multi-day	2007	Weibull	627	236	0.21
Longline	>= 40'	Multi-day	2008	Weibull	733	295	0.28
Longline	>= 40'	Multi-day	2009	Weibull	782	365	0.47
Longline	>= 40'	Multi-day	2010	Gamma	715	410	1.15
Longline	>= 40'	Multi-day	2010	Normal	760	362	0.00
Pots/traps			07 - 11	Log logistic	1,222	5,272	0.00
Purse seine			2007	Pearson5	721	302	2.03
Purse seine			2008	Inverse gauss	1,488	855	1.72
Purse seine			2009	Pearson5	1,059	1,562	0.00
Purse seine			2010	Weibull	527	295	0.74
Purse seine			2011	Beta general	754	484	0.88
Scallop dredge	< 50'		2007	Gamma	330	124	0.75
Scallop dredge	< 50'		2008	Log normal	365	190	1.70
Scallop dredge	< 50'		2009	Weibull	272	111	0.30

Scallop dredge	< 50'		2010	Gamma	293	101	0.69
Scallop dredge	< 50'		2011	Log logistic	429	901	0.00
Scallop dredge	50' to 75'		2007	Weibull	930	460	0.55
Scallop dredge	50' to 75'		2008	Inverse gauss	804	567	2.12
Scallop dredge	50' to 75'		2009	Weibull	791	367	0.46
Scallop dredge	50' to 75'		2010	Weibull	924	512	0.72
Scallop dredge	50' to 75'		2011	Weibull	1,091	665	1.20

* All distributions have a minimum of zero and a maximum of infinity

Table 14. continued. Per day trip cost distributions (in $).

Gear Type	Vessel Length	Trip Duration	Fishing Year	Function Name	Mean*	Standard Deviation	Skewness
Scallop dredge	>= 75'		2007	Weibull	1,610	534	0.07
Scallop dredge	>= 75'		2008	Weibull	1,461	703	0.51
Scallop dredge	>= 75'		2009	Weibull	1,333	432	0.05
Scallop dredge	>= 75'		2010	Weibull	1,515	455	-0.03
Scallop dredge	>= 75'		2011	Normal	2,002	648	0.00
Trawl	< 50'	Day	2007	Pearson6	216	123	1.66
Trawl	< 50'	Day	2008	Log normal	253	155	2.06
Trawl	< 50'	Day	2009	Gamma	163	96	1.17
Trawl	< 50'	Day	2010	Gamma	287	137	0.95
Trawl	< 50'	Day	2011	Log logistic	356	179	3.79
Trawl	< 50'	Multi-day	2007	Inverse gauss	262	238	2.73
Trawl	< 50'	Multi-day	2008	Pearson5	352	288	9.92
Trawl	< 50'	Multi-day	2009	Log logistic	109	51	3.43
Trawl	< 50'	Multi-day	2010	Weibull	367	253	1.10
Trawl	< 50'	Multi-day	2011	Weibull	437	321	1.43
Trawl	50' to 75'	Day	2007	Log logistic	379	288	29.49
Trawl	50' to 75'	Day	2008	Gamma	334	166	1.00
Trawl	50' to 75'	Day	2009	Log logistic	299	226	26.97
Trawl	50' to 75'	Day	2010	Log logistic	330	173	4.33
Trawl	50' to 75'	Day	2011	Log logistic	483	257	3.94
Trawl	50' to 75'	Multi-day	2007	Weibull	1,212	637	0.64
Trawl	50' to 75'	Multi-day	2008	Weibull	1,141	712	0.92
Trawl	50' to 75'	Multi-day	2009	Weibull	802	488	0.87
Trawl	50' to 75'	Multi-day	2010	Weibull	911	572	0.93
Trawl	50' to 75'	Multi-day	2011	Pearson5	1,154	715	1.09
Trawl	>= 75'	Day	2007	Weibull	679	229	0.09
Trawl	>= 75'	Day	2008	Log logistic	605	161	1.43
Trawl	>= 75'	Day	2009	Log logistic	500	94	0.95
Trawl	>= 75'	Day	2010	Weibull	687	235	0.10
Trawl	>= 75'	Day	2011	Log logistic	939	342	1.13
Trawl	>= 75'	Multi-day	2007	Weibull	1,607	564	0.13
Trawl	>= 75'	Multi-day	2008	Weibull	1,526	632	0.32
Trawl	>= 75'	Multi-day	2009	Weibull	1,283	469	0.17
Trawl	>= 75'	Multi-day	2010	Log logistic	1,691	855	3.96
Trawl	>= 75'	Multi-day	2011	Log logistic	1,989	825	1.87
Other	< 50'		07 - 09	Gamma	326	197	1.21
Other	< 50'		2010	Gamma	167	109	1.31
Other	< 50'		2011	Inverse gauss	177	199	3.87
Other	50' to 75'		07 - 11	Log normal	463	312	2.97
Other	>= 75'		2007	Weibull	2,635	1,738	1.02
Other	>= 75'		2008	Gamma	2,607	1,617	1.24
Other	>= 75'		2009	Weibull	2,046	770	0.21
Other	>= 75'		2010	Log logistic	3,051	2,384	56.14
Other	>= 75'		2011	Pearson5	3,240	1,536	1.61

* All distributions have a minimum of zero and a maximum of infinity

Table 15. Average vessel owners' share of nominal net revenue per day.

	Vessel Size Category	2009	2010			2011		
			Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Groundfish	< 30'	$418	$821	confidential	$750	$493	$474	$494
	30' to < 50'	$2,261	$2,694	$2,817	$2,162	$2,542	$2,571	$2,382
	50' to < 75'	$2,722	$3,103	$3,290	$1,927	$2,720	$2,719	$2,925
	75' plus	$2,084	$2,327	$2,335	$1,967	$2,219	$2,230	$1,338
Non-groundfish	< 30'	-$754	-$432	-$200	-$496	-$158	$711	-$360
	30' to < 50'	$129	$375	$561	$260	$421	$364	$474
	50' to < 75'	$1,613	$1,947	$2,248	$1,709	$2,338	$2,554	$2,153
	75' plus	$2,680	$3,256	$3,141	$3,376	$5,947	$8,514	$3,337

Table 16. Average crew share of nominal net revenue per day per crew member (including captain).

	Vessel Size Category	2009	2010			2011		
			Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Groundfish	< 30'	$388	$444	confidential	$377	$320	$123	$331
	30' to < 50'	$1,096	$1,215	$1,261	$1,014	$1,098	$1,112	$1,022
	50' to < 75'	$1,164	$1,268	$1,336	$837	$1,084	$1,097	$1,012
	75' plus	$551	$611	$610	$650	$560	$561	$455
Non-groundfish	< 30'	$88	$214	$207	$216	$227	$519	$159
	30' to < 50'	$498	$568	$652	$516	$527	$507	$546
	50' to < 75'	$666	$776	$858	$711	$905	$954	$864
	75' plus	$855	$1,125	$733	$1,533	$1,963	$3,141	$765

Table 17. Average trip costs per day.

	Vessel Size Category	2009	2010 Total	2010 Sector Vessels	2010 Common Pool	2011 Total	2011 Sector Vessels	2011 Common Pool
Groundfish	< 30'	$845	$655	confidential	$630	$789	$567	$801
	30' to < 50'	$627	$715	$736	$627	$832	$856	$699
	50' to < 75'	$1,242	$1,033	$1,063	$845	$1,300	$1,350	$892
	75' plus	$1,609	$2,189	$2,201	$1,699	$2,408	$2,417	$1,706
Non-groundfish	< 30'	$1,741	$1,781	$2,369	$1,618	$1,479	$2,782	$1,176
	30' to < 50'	$2,231	$2,351	$2,420	$2,309	$2,338	$2,552	$2,137
	50' to < 75'	$1,121	$1,207	$1,068	$1,317	$1,536	$1,452	$1,608
	75' plus	$1,758	$1,981	$2,062	$1,897	$2,293	$2,503	$2,079

Table 18. @RISK simulation results – owners' shares per day (in $).

Trip Type	Vessel Length	Fishing Year	Min	Mean	Max	Std Dev	Skewness	Critical Values (90% Confidence) 5%	95%
Groundfish	< 30'	2009	-36,418	389	1,222	665	-36.41	-38	717
Groundfish	< 30'	2010 – Total	-1,053	807	1,545	172	-0.81	509	1,062
Groundfish	< 30'	2010 – CP	-126,903	5,521	6,664	2,888	-24.85	3,832	6,464
Groundfish	< 30'	2011 – Total	-327	737	1,479	170	-0.55	437	991
Groundfish	< 30'	2011 – Sectors	-3,381	479	1,254	197	-3.34	172	734
Groundfish	< 30'	2011 – CP	-3,610	480	1,281	206	-3.45	160	744
Groundfish	30' to < 50'	2009	-864	2,254	2,505	128	-4.48	2,045	2,404
Groundfish	30' to < 50'	2010 – Total	548	2,689	2,845	90	-5.42	2,550	2,782
Groundfish	30' to < 50'	2010 – Sectors	508	2,812	2,963	93	-6.04	2,672	2,905
Groundfish	30' to < 50'	2010 – CP	-1,192	2,155	2,349	111	-8.18	1,996	2,270
Groundfish	30' to < 50'	2011 - Total	-1,902	2,535	2,733	135	-10.39	2,344	2,657
Groundfish	30' to < 50'	2011 - Sectors	-2,680	2,565	2,765	146	-12.54	2,367	2,689
Groundfish	30' to < 50'	2011 - CP	-2,008	2,374	2,648	143	-9.02	2,179	2,506
Groundfish	50' to < 75'	2009	-8,582	2,711	3,248	383	-8.84	2,180	3,060
Groundfish	50' to < 75'	2010 – Total	1,667	3,100	3,384	138	-1.27	2,846	3,277
Groundfish	50' to < 75'	2010 – Sectors	1,875	3,287	3,571	142	-1.21	3,025	3,470
Groundfish	50' to < 75'	2010 – CP	122	1,919	2,240	141	-2.11	1,673	2,094
Groundfish	50' to < 75'	2011 - Total	954	2,713	3,137	185	-1.55	2,387	2,952
Groundfish	50' to < 75'	2011 - Sectors	884	2,712	3,158	197	-1.52	2,365	2,965
Groundfish	50' to < 75'	2011 - CP	1,033	2,919	3,195	133	-2.61	2,690	3,074
Groundfish	75' +	2009	1,334	2,080	2,582	194	-0.23	1,749	2,390
Groundfish	75' +	2010 – Total	-7,883	2,310	3,027	436	-5.38	1,635	2,744
Groundfish	75' +	2010 – Sectors	-8,052	2,318	3,044	444	-5.38	1,632	2,762
Groundfish	75' +	2010 – CP	-834	1,962	2,618	251	-0.63	1,541	2,350
Groundfish	75' +	2011 - Total	-3,801	2,205	3,087	397	-2.62	1,539	2,686
Groundfish	75' +	2011 - Sectors	-3,787	2,215	3,099	397	-2.62	1,551	2,696
Groundfish	75' +	2011 - CP	-4,955	1,320	2,163	429	-2.91	611	1,809

Non-groundfish	< 30'	2009	-70,779	-817	702	1,680	-19.14	-2,497	100
Non-groundfish	< 30'	2010 – Total	-75,851	-513	982	1,772	-20.23	-2,216	387
Non-groundfish	< 30'	2010 – Sectors	-136,945	-409	1,307	3,159	-21.24	-3,276	864
Non-groundfish	< 30'	2010 – CP	-58,919	-541	967	1,393	-19.38	-1,915	274
Non-groundfish	< 30'	2011 - Total	-43,794	-226	1,243	1,036	-19.46	-1,188	439
Non-groundfish	< 30'	2011 - Sectors	-169,514	439	2,236	3,850	-22.48	-2,710	1,818
Non-groundfish	< 30'	2011 - CP	-14,591	-380	1,099	459	-7.90	-1,025	170
Non-groundfish	30' to < 50'	2009	-136,794	-9	1,518	3,193	-20.75	-3,013	1,280
Non-groundfish	30' to < 50'	2010 – Total	-144,526	228	1,822	3,359	-21.06	-2,870	1,563
Non-groundfish	30' to < 50'	2010 – Sectors	-151,878	407	2,014	3,524	-21.22	-2,821	1,796

Table 18. continued. @RISK simulation results – owners' shares per day (in $).

Trip Type	Vessel Length	Fishing Year	Min	Mean	Max	Std Dev	Skewness	Critical Values (90% Confidence) 5%	95%
Non-groundfish	30' to < 50'	2010 – CP	-139,943	117	1,701	3,257	-20.95	-2,906	1,418
Non-groundfish	30' to < 50'	2011 - Total	-139,703	259	1,778	3,254	-20.97	-2,811	1,541
Non-groundfish	30' to < 50'	2011 - Sectors	-161,792	174	1,829	3,756	-21.11	-3,358	1,628
Non-groundfish	30' to < 50'	2011 - CP	-119,000	339	1,735	2,784	-20.78	-2,282	1,460
Non-groundfish	50' to < 75'	2009	-9,757	1,585	2,022	334	-12.34	1,192	1,854
Non-groundfish	50' to < 75'	2010 – Total	-9,024	1,922	2,369	305	-12.89	1,547	2,189
Non-groundfish	50' to < 75'	2010 – Sectors	-2,516	2,234	2,618	214	-4.72	1,907	2,475
Non-groundfish	50' to < 75'	2010 – CP	-14,195	1,675	2,186	402	-16.45	1,249	1,982
Non-groundfish	50' to < 75'	2011 - Total	-5,661	2,316	2,950	326	-5.37	1,829	2,666
Non-groundfish	50' to < 75'	2011 - Sectors	-1,958	2,541	3,189	319	-2.69	2,007	2,916
Non-groundfish	50' to < 75'	2011 - CP	-11,898	2,122	2,786	398	-11.77	1,619	2,485
Non-groundfish	75' +	2009	-4,231	2,659	3,214	259	-8.50	2,332	2,955
Non-groundfish	75' +	2010 – Total	-3,485	3,224	3,864	384	-4.44	2,608	3,609
Non-groundfish	75' +	2010 – Sectors	-5,657	3,110	3,881	457	-4.01	2,339	3,576

Non-groundfish	75' +	2010 – CP	-9,970	3,344	3,939	384	-11.39	2,836	3,682
Non-groundfish	75' +	2011 - Total	1,099	5,923	6,540	289	-2.54	5,424	6,291
Non-groundfish	75' +	2011 - Sectors	4,604	8,491	9,234	339	-1.93	7,899	8,927
Non-groundfish	75' +	2011 - CP	-2,464	3,312	3,916	258	-3.75	2,883	3,632

Table 19. Average owners' share per vessel.

		2010			2011		
Vessel Size Category	**2009**	**Total**	**Sector Vessels**	**Common Pool**	**Total**	**Sector Vessels**	**Common Pool**
< 30'	-$3,838	-$1,389	-$784	-$1,497	$681	$12,352	-$748
30' to < 50'	$41,132	$39,438	$60,108	$20,286	$49,299	$63,493	$30,279
50' to < 75'	$141,074	$176,505	$207,233	$135,372	$206,771	$248,674	$148,196
75' plus	$301,340	$394,366	$425,599	$333,464	$462,679	$474,363	$436,390

	2010 * 2011 - including ASM/DSM costs*			
Vessel Size Category	**2010**	**Percent Reduction**	**2011**	**Percent Reduction**
< 30'	$-891	13.6%	$12,230	1.0%
30' to < 50'	$52,118	13.3%	$55,882	12.0%
50' to < 75'	$198,055	4.4%	$238,307	4.2%
75' plus	$402,434	5.4%	$449,032	5.3%

*For Sector Vessels

Table 20. Percent of vessels with owners' share per vessel greater than zero.

		2010			2011		
Vessel Size Category	**2009**	**Total**	**Sector Vessels**	**Common Pool**	**Total**	**Sector Vessels**	**Common Pool**
< 30'	29.1%	42.5%	27.3%	45.2%	53.6%	71.4%	51.0%
30' to < 50'	74.3%	71.8%	85.8%	59.4%	73.0%	79.9%	64.6%
50' to < 75'	94.0%	93.5%	99.2%	86.0%	93.7%	99.2%	86.0%
75' plus	98.4%	96.6%	100.0%	90.0%	100.0%	100.0%	100.0%

Table 21. Aggregate owners' shares by vessel size category.

Vessel Size Category	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
< 30'	-$303,172	-$101,408	-$8,621	-$92,787	$38,515	$75,174	-$36,660
30' to < 50'	$20,524,947	$18,575,451	$13,524,353	$5,051,098	$20,261,689	$14,538,866	$5,722,823
50' to < 75'	$35,268,575	$40,596,111	$26,111,316	$14,484,795	$46,109,854	$32,327,659	$13,782,196
75' plus	$38,872,881	$46,535,244	$33,196,692	$13,338,553	$54,133,490	$38,423,441	$15,710,049
Grand Total	$94,363,231	$105,605,398	$72,823,740	$32,781,659	$120,543,548	$85,365,141	$35,178,408

Vessel Size Category	2010 * 2011 - including ASM/DSM costs*			
	2010	Percent Reduction	2011	Percent Reduction
< 30'	$-9,796	13.6%	$73,378	2.4%
30' to < 50'	$11,726,510	13.3%	$12,796,888	12.0%
50' to < 75'	$24,954,945	4.4%	$30,979,895	4.2%
75' plus	$31,389,886	5.4%	$36,371,602	5.3%
Grand Total	$68,061,545	6.5%	$80,221,764	6.0%

*For Sector Vessels

Table 22. Aggregate owners' shares by home port state.

Home Port State	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
CT	$1,297,002	$2,000,816	$1,043,518	$957,298	$1,822,860	$973,791	$849,069
MA	$50,532,052	$53,964,583	$40,726,525	$13,238,058	$61,906,441	$48,277,794	$13,628,646
ME	$9,155,179	$10,813,699	$9,245,949	$1,567,750	$10,070,111	$8,923,786	$1,146,325
NH	$3,460,731	$2,561,430	$2,387,704	$173,726	$3,063,829	$2,725,014	$338,814
NJ	$6,644,358	$7,856,624	$326,823	$7,529,802	$9,711,871	$1,348,590	$8,363,282
NY	$8,002,727	$9,757,637	$5,619,028	$4,138,610	$11,449,017	$6,208,231	$5,240,786
RI	$9,794,137	$12,065,701	$9,831,613	$2,234,088	$14,991,078	$12,587,341	$2,403,738
All Other States	$5,477,045	$6,584,909	$3,642,581	$2,942,328	$7,528,341	$4,320,593	$3,207,748
Grand Total	$94,363,231	$105,605,398	$72,823,740	$32,781,659	$120,543,548	$85,365,141	$35,178,408

Home Port State	2010 * 2011 - including ASM/DSM costs*			
	2010	Percent Reduction	2011	Percent Reduction
CT	$1,041,308	0.2%	$970,529	0.3%
MA	$37,504,083	7.9%	$44,677,897	7.5%
ME	$8,406,042	9.1%	$8,042,028	9.9%
NH	$2,052,474	14.0%	$2,422,012	11.1%
NJ	$322,152	1.4%	$1,342,171	0.5%
NY	$5,540,017	1.4%	$6,122,620	1.4%
RI	$9,575,183	2.6%	$12,329,744	2.0%
All Other States	$3,620,287	0.6%	$4,314,526	0.1%
Grand Total	$68,061,545	6.5%	$80,221,526	6.0%

* For Sector Vessels

Table 23. Malmquist Chained Index (2007=1) of productivity change for common pool and sector vessels

	2007	2008	2009	2010	2011
Common	1.0	0.93	0.93	0.72	0.75
Sector	1.0	1.09	1.15	1.12	1.13

Table 24. Number of MRIs leasing ACE and/or PSC by homeport state

Home Port State/City		2010		2011	
		n	Live lbs	n	Live lbs
CT		2	15,322	1	8,310
MA		181	16,349,529	161	22,144,700
	Boston	31	3,233,604	32	5,802,828
	Chatham	28	726,842	19	871,421
	Gloucester	55	3,595,418	50	4,642,813
	New Bedford	29	7,016,315	32	8,573,384
ME		36	4,451,744	41	5,706,207
	Portland	13	3,303,341	12	4,046,493
NH		22	821,597	19	1,759,428
NJ		1	3,703	.	.
NY		6	90,570	5	171,066
RI		29	895,404	26	997,007
	Point Judith	25	770,587	22	850,898
OTHER NORTHEAST		5	39,159	3	31,301
Grand Total		282	22,663,326	256	30,818,018

Table 25. Number of Vessel Affiliations leasing ACE and/or PSC by homeport state

Home Port State/City		2010		2011	
		n	Live lbs	n	Live lbs
CT		2	15,315	1	8,310
MA		106	5,871,885	102	10,501,470
	Boston	8	261,142	11	1,279,930
	Chatham	20	518,536	16	754,688
	Gloucester	41	1,918,864	44	3,850,315
	New Bedford	13	2,521,740	12	3,812,072
ME		28	2,165,280	32	3,753,987
	Portland	10	1,574,553	10	2,845,327
NH		17	806,123	16	1,234,033
NJ		1	3,623	8	.
NY		4	151,321	5	170,188
RI		27	640,790	27	926,343
	Point Judith	23	536,724	22	813,435
OTHER NORTHEAST		5	7,521	2	82
Grand Total		190	9,658,235	193	16,594,413

*vessel affiliations assigned to the state/port in which the majority of permits are homeported

Table 26. Number of lessee MRIs by vessel size category

Vessel Size Category	2010	2011
< 30'	3	6
30'to < 50'	138	114
50' to < 75'	83	80
75' plus	58	56
Grand Total	282	256

Table 27. Total allocated ACE and catch by vessel size category.

Vessel Size Category	2010				2011			
	Allocated ACE		Catch		Allocated ACE		Catch	
	Pounds (mil)	*% of total*	Pounds (mil)	*% of total*	Pounds (mil)	*% of total*	Pounds (mil)	*% of total*
< 30'	42.17	*24%*	0.07	*0%*	40.23	*25%*	0.33	*0%*
30' to < 50'	24.93	*14%*	11.52	*18%*	24.08	*15%*	13.82	*20%*
50' to < 75'	38.61	*22%*	19.33	*29%*	37.95	*24%*	21.76	*31%*
75' plus	66.41	*39%*	34.68	*53%*	59.04	*37%*	34.37	*49%*
CPH	7.22	*4%*	0.00	*0%*	11.56	*7%*	0.00	*0%*
Grand Total	172.13		65.60		161.30		70.29	

Table 28. ACE and PSC lease markets by stock (live pounds)

	2010		2011	
	Lessor Availability[1]	Lessee Requirement[2]	Lessor Availability[1]	Lessee Requirement[2]
Cod, GB East	529,418	374,586	309,342	235,587
Cod, GB West	4,247,221	3,176,679	6,702,629	3,775,453
Cod, GOM	5,426,792	3,877,575	6,868,627	5,166,943
Haddock, GB East	22,586,599	446,814	18,795,585	9,984
Haddock, GB West	49,427,505	1,078,499	44,580,541	172,746
Haddock, GOM	1,335,849	393,712	1,337,940	584,208
Plaice	4,243,830	1,491,631	5,171,690	1,674,756
Pollock	26,886,808	3,063,035	21,973,748	5,920,571
Redfish	11,663,286	1,416,648	13,711,013	2,274,642
White hake	3,560,086	2,725,332	4,210,810	4,100,427
Winter flounder, GB	2,647,934	1,665,791	3,050,907	2,607,884
Winter flounder, GOM	211,445	95,892	545,772	138,177
Witch flounder	1,081,383	785,473	1,774,673	1,113,744
Yellowtail flounder, CC/GOM	1,155,906	816,783	1,543,747	1,101,034
Yellowtail flounder, GB	1,053,098	908,610	1,674,587	1,330,464
Yellowtail flounder, SNE	360,950	184,240	664,759	492,396
Grand total	136,418,109	22,501,300	132,916,369	30,699,015

[1] Sum of uncaught ACE

[2] Difference between summed catch and allocated ACE

Table 29. 2011 monthly volume of between-sector ACE leases by stock (live pounds)

	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	2011 total	*2010 total (for reference)*
Cod, GB East	37,635	12,852	19,396	25,126	16,653	2,279	662	1,315	20,496	1,344	6,562	12,622	156,942	*142,288*
Cod, GB West	498,273	81,713	159,587	647,102	195,575	432,683	233,989	302,927	100,699	61,182	91,537	14,800	2,820,067	*2,146,442*
Cod, GOM	268,846	135,784	97,884	879,993	123,966	199,058	187,582	112,096	272,013	236,244	162,531	85,232	2,761,229	*2,115,195*
Haddock, GB East	2,320	46,632	25,260	70,303	28,389	18,570	0	49	119,170	0	68,754	0	379,447	*945,811*
Haddock, GB West	5,483	41,930	20,353	279,593	74,146	40,802	0	410,128	262,729	0	145,794	6	1,280,964	*1,787,990*
Haddock, GOM	99,272	17,106	8,070	98,284	2,535	42,627	6,911	76,932	20,075	98,638	167,506	14,272	652,228	*510,807*
Plaice	2,933	25,569	34,850	103,656	37,208	229,004	39,000	80,469	91,496	10,740	6,103	2,855	663,883	*799,484*
Pollock	118,723	409,930	106,283	1,479,919	0	218,719	177,074	466,172	205,288	47,958	156,716	7,901	3,394,683	*3,240,773*
Redfish	10,007	9,244	360	107,468	1,925	77,486	280	3,211	268,436	10,927	16,975	7,945	514,264	*1,139,517*
White hake	291,714	135,776	61,560	685,005	203,575	117,233	235,668	121,284	103,348	112,593	136,761	128,301	2,332,818	*1,409,496*
Winter flounder, GB	3,345	8,788	80,329	91,189	1,672	22,034	40,394	66,309	65,765	18,004	16,812	53,449	468,090	*247,090*
Winter flounder, GOM	2,576	3,070	1,345	20,729	9,883	33,709	4,825	4,887	6,895	6,757	6,485	6,490	107,651	*78,819*
Witch flounder	43,614	43,792	15,066	177,561	17,963	101,821	101,674	72,310	34,495	45,602	47,092	9,814	710,804	*392,939*
Yellowtail flounder, CC/GOM	25,127	50,359	10,381	119,131	11,283	40,216	46,000	81,774	84,761	55,610	93,121	59,407	677,170	*376,961*
Yellowtail flounder, GB	47,783	59,253	48,327	94,343	12,161	28,536	50,617	41,495	35,995	22,527	75,780	80,101	596,918	*249,780*
Yellowtail flounder, SNE	481	7,199	7,514	34,933	3,871	39,309	39,608	43,440	49,093	25,667	56,887	22,246	330,248	*104,581*
Grand total	1,458,132	1,088,997	696,565	4,914,335	740,805	1,644,086	1,164,284	1,884,798	1,740,754	753,793	1,255,416	505,441	17,847,406	*15,687,973*

Table 30. Number of between-sector ACE lease transactions, by month and fishing year

	2010			2011		
Month	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model
May	.	.	.	125	125	37
June	30	.	.	107	107	74
July	138	17	2	72	72	32
August	59	.	.	171	171	98
September	67	.	.	70	70	47
October	127	25	7	140	140	109
November	65	65	12	75	75	62
December	101	101	23	118	118	73
January	70	70	37	140	140	105
February	115	115	63	111	111	78
March	93	93	64	151	151	105
April	82	82	56	84	84	76
Grand Total	947	568	264	1,239	1,239	859

Table 31. ACE lease prices from hedonic model

	2010			2011			lease value
	value	std error		value	std error		change
Cod, GB East	$1.03	0.15	***	$1.25	0.15	***	*21%*
Cod, GB West	$0.85	0.03	***	$0.65	0.01	***	*-24%*
Cod, GOM	$1.06	0.04	***	$1.10	0.02	***	*3%*
Haddock, GB East	$0.00			$0.00	.		
Haddock, GB West	$0.00			$0.00	.		
Haddock, GOM	$0.87	0.04	***	$0.39	0.05	***	*-56%*
Plaice	$0.37	0.07	***	$0.00			
Pollock	$0.00			$0.06	0.01	***	
Redfish	$0.00			$0.24	0.06	***	
White hake	$0.38	0.03	***	$0.45	0.02	***	*21%*
Winter flounder, GB	$0.00			$0.76	0.07	***	
Winter flounder, GOM	$0.00			$0.70	0.24	***	
Witch flounder	$1.23	0.17	***	$0.63	0.07	***	*-49%*
Yellowtail flounder, CC/GOM	$0.53	0.15	***	$0.41	0.06	***	*-23%*
Yellowtail flounder, GB	$0.93	0.32	***	$0.23	0.05	***	*-75%*
Yellowtail flounder, SNE	$0.85	0.18	***	$0.36	0.11	***	*-58%*
Lease-only Sector[1]	-$0.16	0.05	***	$0.00			
observations	171			502			
R-squared	0.9			0.93			

[1]Premium or discount per pound of fish traded

***p < 0.01, **p < 0.05, *p < 0.10

Table 32. ACE lease prices from weighted mean values for single stock leases

	2010			2011		
	n	price	std dev	n	price	std dev
Cod, GB East	9	$0.93	0.06	26	$1.13	0.59
Cod, GB West	24	$0.80	0.09	39	$0.64	0.20
Cod, GOM	36	$1.02	0.35	81	$0.99	0.28
Haddock, GB East	0	$0.00	.	0	$0.00	.
Haddock, GB West	0	$0.00	.	0	$0.00	.
Haddock, GOM	4	$0.82	0.34	33	$0.45	0.11
Plaice	1	$0.15	.	9	$0.09	0.07
Pollock	0	$0.00	.	11	$0.06	0.07
Redfish	3	$0.09	0.53	1	$0.27	.
White hake	23	$0.31	0.16	84	$0.46	0.19
Winter flounder, GB	1	$0.85	.	9	$0.76	0.41
Winter flounder, GOM	12	$0.71	0.46	19	$0.72	0.26
Witch flounder	15	$1.07	0.30	44	$0.66	0.26
Yellowtail flounder, CC/GOM	8	$0.53	0.22	51	$0.41	0.13
Yellowtail flounder, GB	3	$0.89	0.19	16	$0.30	0.23
Yellowtail flounder, SNE	6	$0.76	0.17	21	$0.39	0.11

Table 33. Ex-vessel and ACE lease prices for FY 2010 and 2011

	2010			2011		
	ex-vessel price	ACE lease price	ACE lease/ex-vessel	ex-vessel price	ACE lease price	ACE lease/ex-vessel
Cod, GB East	$2.14	$1.03	*48%*	$2.18	$1.25	*57%*
Cod, GB West	$2.14	$0.85	*40%*	$2.18	$0.65	*30%*
Cod, GOM	$1.89	$1.06	*56%*	$2.26	$1.10	*49%*
Haddock, GB East	$1.23			$1.65		
Haddock, GB West	$1.23			$1.65		
Haddock, GOM	$2.43	$0.87	*36%*	$2.60	$0.39	*15%*
Plaice	$1.45	$0.37	*26%*	$1.42		
Pollock	$0.93			$0.89	$0.06	*6%*
Redfish	$0.57			$0.65	$0.24	*37%*
White hake	$1.32	$0.38	*28%*	$1.25	$0.45	*36%*
Winter flounder, GB	$1.98			$1.76	$0.76	*43%*
Winter flounder, GOM	$1.74			$1.52	$0.70	*46%*
Witch flounder	$2.42	$1.23	*51%*	$1.98	$0.63	*32%*
Yellowtail flounder, CC/GOM	$1.18	$0.53	*45%*	$0.90	$0.41	*45%*
Yellowtail flounder, GB	$1.28	$0.93	*73%*	$1.25	$0.23	*19%*
Yellowtail flounder, SNE	$1.35	$0.85	*63%*	$1.52	$0.36	*24%*

Table 34. Transfer payments from ACE and PSC leasing by stock at MRI level

	2010			2011		
	Lessee requirement	*Lease price*	*Estimated payment transfers*	Lessee requirement	*Lease price*	*Estimated payment transfers*
Cod, GB East	374,586	$1.03	$386,293	235,587	$1.25	$294,329
Cod, GB West	3,176,679	$0.85	$2,694,905	3,775,453	$0.65	$2,445,403
Cod, GOM	3,877,575	$1.06	$4,119,463	5,166,943	$1.10	$5,678,979
Haddock, GB East	446,814	$0.00	$0	9,984	$0.00	$0
Haddock, GB West	1,078,497	$0.00	$0	172,746	$0.00	$0
Haddock, GOM	393,712	$0.87	$343,693	584,208	$0.39	$225,881
Plaice	1,491,631	$0.37	$556,466	1,674,756	$0.00	$0
Pollock	3,063,035	$0.00	$0	5,920,571	$0.06	$339,205
Redfish	1,416,646	$0.00	$0	2,274,642	$0.24	$538,450
White hake	2,725,313	$0.38	$1,022,999	4,100,427	$0.45	$1,858,194
Winter flounder, GB	1,665,791	$0.00	$0	2,607,884	$0.76	$1,975,129
Winter flounder, GOM	95,892	$0.00	$0	138,177	$0.70	$96,158
Witch flounder	785,473	$1.23	$967,481	1,113,744	$0.63	$705,849
Yellowtail flounder, CC/GOM	816,783	$0.53	$434,532	1,101,034	$0.41	$448,837
Yellowtail flounder, GB	908,610	$0.93	$847,946	1,330,464	$0.23	$311,509
Yellowtail flounder, SNE	184,240	$0.85	$155,962	492,396	$0.36	$176,472
Grand Total	22,501,277		$11,529,740	30,699,015		$15,094,395

Table 35. Transfer payments from ACE and PSC leasing by stock at Vessel Affiliation level

	2010			2011		
	Lessee requirement	*Lease price*	*Estimated payment transfers*	Lessee requirement	*Lease price*	*Estimated payment transfers*
Cod, GB East	247,751	$1.03	$255,494	179,297	$1.25	$224,004
Cod, GB West	2,059,679	$0.85	$1,747,309	2,320,750	$0.65	$1,503,175
Cod, GOM	2,198,629	$1.06	$2,335,783	3,109,781	$1.10	$3,417,955
Haddock, GB East	16,365	$0.00	$0	-	$0.00	$0
Haddock, GB West	24,693	$0.00	$0	14,785	$0.00	$0
Haddock, GOM	256,583	$0.87	$223,985	458,289	$0.39	$177,195
Plaice	596,783	$0.37	$222,635	728,683	$0.00	$0
Pollock	576,861	$0.00	$0	2,140,382	$0.06	$122,628
Redfish	267,541	$0.00	$0	690,876	$0.24	$163,543
White hake	1,229,415	$0.38	$461,485	2,772,252	$0.45	$1,256,304
Winter flounder, GB	558,233	$0.00	$0	1,540,367	$0.76	$1,166,626
Winter flounder, GOM	61,795	$0.00	$0	73,180	$0.70	$50,926
Witch flounder	381,044	$1.23	$469,339	602,150	$0.63	$381,620
Yellowtail flounder, CC/GOM	483,633	$0.53	$257,295	665,797	$0.41	$271,412
Yellowtail flounder, GB	551,879	$0.93	$515,032	938,140	$0.23	$219,652
Yellowtail flounder, SNE	141,430	$0.85	$119,724	386,551	$0.36	$138,538
Grand Total	9,652,315		$6,608,080	16,621,279		$9,093,579

Table 36. Transfer payments from ACE and PSC leasing by lessee home port state

Home Port State/City		2010				2011			
		Estimated transfer payments				Estimated transfer payments			
		between MRIs		*between vessel affiliations*		*between MRIs*		*between vessel affiliations*	
		n	value	*n*	value	*n*	value	*n*	value
CT		2	$14,155	2	15,315	1	$3,063	1	$3,063
MA		181	$8,849,396	106	4,427,692	161	$11,806,051	102	$6,450,755
	Boston	31	$1,621,326	8	198,973	32	$3,009,774	11	$675,762
	Chatham	28	$550,640	20	469,406	19	$606,448	16	$580,379
	Gloucester	55	$2,663,733	41	1,540,227	50	$2,599,491	44	$2,447,400
	New Bedford	29	$2,666,692	13	1,666,161	32	$3,855,779	12	$2,094,084
ME		36	$1,688,192	28	1,007,729	41	$1,912,330	32	$1,388,393
	Portland	13	$979,966	10	599,310	12	$1,115,736	10	$928,620
NH		22	$465,015	17	686,293	19	$814,790	16	$734,056
NJ		1	$3,178	1	3,178	.	$0	8	$0
NY		6	$28,575	4	63,985	5	$104,524	5	$104,339
RI		29	$420,251	27	398,387	26	$449,691	27	$412,935
	Point Judith	25	$389,529	23	353,724	22	$387,553	22	$367,553
OTHER NORTHEAST		5	$30,722	5	6,661	3	$3,945	2	$37
Grand Total		282	$11,496,307	190	6,590,747	253	$15,091,332	193	$9,093,579

* Vessel affiliation assigned to the state in which the majority of permits held are homeported

Table 37. Catch and ACE at the stock level (live lbs) (stocks with > 80% ACE conversion highlighted in bold font)

	2010			2011		
	Allocated ACE	Catch	% caught	Allocated ACE*	Catch	% caught
Cod, GB East	**717,441**	**562,610**	***78%***	**431,334**	**357,578**	***83%***
Cod, GB West	6,563,099	5,492,557	*84%*	9,604,207	6,727,837	*70%*
Cod, GOM	**9,540,389**	**7,991,172**	***84%***	**11,242,220**	**9,561,153**	***85%***
Haddock, GB East	26,262,695	4,122,910	*16%*	21,122,565	2,336,964	*11%*
Haddock, GB West	62,331,182	13,982,173	*22%*	50,507,974	6,101,400	*12%*
Haddock, GOM	1,761,206	819,069	*47%*	1,796,740	1,061,841	*59%*
Plaice	6,058,149	3,305,950	*55%*	7,084,289	3,587,356	*51%*
Pollock	35,666,741	11,842,969	*33%*	32,350,451	16,297,273	*50%*
Redfish	14,894,618	4,647,978	*31%*	17,369,940	5,951,045	*34%*
White hake	**5,522,677**	**4,687,905**	***85%***	**6,708,641**	**6,598,273**	***98%***
Winter flounder, GB	**4,018,496**	**3,036,352**	***76%***	**4,679,039**	**4,241,177**	***91%***
Winter flounder, GOM	293,736	178,183	*61%*	750,606	343,152	*46%*
Witch flounder	1,824,125	1,528,215	*84%*	2,839,697	2,178,941	*77%*
Yellowtail flounder, CC/GOM	**1,608,084**	**1,268,961**	***79%***	**2,185,802**	**1,743,168**	***80%***
Yellowtail flounder, GB	**1,770,451**	**1,625,963**	***92%***	**2,474,662**	**2,176,921**	***88%***
Yellowtail flounder, SNE	**517,372**	**340,662**	***66%***	**963,033**	**795,267**	***83%***
Grand Total	179,350,461	65,433,630	*36%*	172,111,201	70,059,346	*41%*

*includes FY2010 carryover

Table 38. Number of vessels with revenue from any species (all trips).

Home Port State/City		Year						
			2010			2011		
		2009	Total*	Sector Vessels	Common Pool	Total*	Sector Vessels	Common Pool
CT		13	12	4	8	11	4	7
MA		482	444	264	183	396	262	134
	BOSTON	67	57	41	16	53	41	12
	CHATHAM	42	43	31	12	39	28	11
	GLOUCESTER	115	109	70	39	95	68	27
	NEW BEDFORD	87	69	48	22	70	53	17
ME		114	103	63	40	88	70	20
	PORTLAND	17	17	15	2	16	15	1
NH		62	57	37	22	52	34	20
NJ		63	58	2	56	52	6	46
NY		97	95	15	80	92	16	76
RI		95	87	43	45	84	44	41
	POINT JUDITH	50	46	33	14	45	34	12
OTHER NORTHEAST		35	39	13	26	37	14	23
Grand Total		957	890	440	456	805	446	366

*Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilites during the fishing year.

Table 39. Number of vessels with revenue from at least one groundfish trip.

Home Port State/City		Year						
			2010			2011		
		2009	Total*	Sector Vessels	Common Pool	Total*	Sector Vessels	Common Pool
CT		8	7	3	4	5	2	3
MA		312	238	189	49	224	186	38
	BOSTON	46	35	33	2	34	34	0
	CHATHAM	28	26	23	3	26	23	3
	GLOUCESTER	98	74	59	15	70	55	15
	NEW BEDFORD	52	33	29	4	37	32	5
ME		65	43	38	5	47	43	4
	PORTLAND	15	15	14	1	15	15	0
NH		42	32	26	6	29	23	6
NJ		26	21	1	20	17	1	16
NY		47	40	8	32	43	9	34
RI		60	55	34	21	49	32	17
	POINT JUDITH	32	31	28	3	28	27	1
OTHER NORTHEAST		12	10	5	5	8	5	3
Grand Total		570	445	303	142	420	301	121

*Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilites during the fishing year.

Table 40. Number of vessel affiliations by fishing year.

	2009	2010	2011
Affiliations issued limited access groundfish permits	934	910	846
With limited access groundfish permit and revenue from any species	768	726	655
With limited access groundfish permit and revenue from at least one groundfish trip	450	359	339
Number and percent inactive (no landings) affiliations	166 (18%)	184 (20%)	191 (23%)

Table 41. Number and percentage of vessel affiliations by number of active vessels owned.

Number of active vessels per vessel affiliation	2009	2010	2011
1	646 (84.1%)	620 (85.4%)	564 (86.1%)
2	97 (12.6%)	79 (10.9%)	62 (9.5%)
3	16 (2.1%)	17 (2.3%)	21 (3.2%)
4 to 6	6 (0.8%)	7 (1.0%)	6 (0.9%)
7 to 9	1 (0.1%)	2 (0.3%)	1 (0.2%)
10 +	2 (0.3%)	1 (0.1%)	1 (0.2%)
Average number of active vessels per active vessel affiliation	1.25	1.23	1.23

Table 42. Distribution of nominal revenue from all species (all trips) among vessels.

Percent Bracket	Year						
	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Top 10%	$108,433,508 (40.6%)	$130,741,787 (44.4%)	$72,290,885 (36.8%)	$52,574,978 (53.7%)	$139,711,874 (42.2%)	$84,682,084 (36.2%)	$51,464,843 (53.1%)
20%	$53,318,667 (20.0%)	$63,028,746 (21.4%)	$40,107,794 (20.4%)	$17,010,266 (17.4%)	$74,863,588 (22.6%)	$48,717,506 (20.8%)	$18,411,644 (19.0%)
30%	$35,162,654 (13.2%)	$36,121,629 (12.3%)	$27,711,509 (14.1%)	$10,662,553 (10.9%)	$43,072,530 (13.0%)	$35,164,021 (15.0%)	$10,563,796 (10.9%)
40%	$24,425,917 (9.2%)	$23,618,730 (8.0%)	$19,220,390 (9.8%)	$7,536,184 (7.7%)	$26,992,771 (8.2%)	$22,536,743 (9.6%)	$7,186,227 (7.4%)
50%	$18,101,612 (6.8%)	$16,718,613 (5.7%)	$13,096,781 (6.7%)	$5,189,971 (5.3%)	$18,318,562 (5.5%)	$15,015,807 (6.4%)	$4,470,522 (4.6%)
60%	$13,032,252 (4.9%)	$12,071,608 (4.1%)	$9,352,557 (4.8%)	$3,008,724 (3.1%)	$13,115,413 (4.0%)	$10,604,960 (4.5%)	$2,854,611 (2.9%)
70%	$8,897,498 (3.3%)	$7,830,267 (2.7%)	$6,939,196 (3.5%)	$1,178,195 (1.2%)	$8,406,883 (2.5%)	$7,766,184 (3.3%)	$1,293,696 (1.3%)
80%	$4,160,709 (1.6%)	$3,371,259 (1.1%)	$4,858,936 (2.5%)	$494,700 (.5%)	$4,702,629 (1.4%)	$5,451,904 (2.3%)	$474,307 (.5%)
90%	$1,060,112 (.4%)	$874,511 (.3%)	$2,675,534 (1.4%)	$188,906 (.2%)	$1,460,531 (.4%)	$3,106,618 (1.3%)	$201,605 (.2%)
Bottom 10%	$172,981 (.1%)	$128,844 (.0%)	$371,759 (.2%)	$36,177 (.0%)	$240,545 (.1%)	$876,891 (.4%)	$41,355 (.0%)
Grand Total	$266,765,909	$294,505,995	$196,625,341	$97,880,654	$330,885,325	$233,922,719	$96,962,606
Number of Vessels*	957	890	440	456	805	446	366

* Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilites during the fishing year.

Table 43. Distribution of nominal revenue from groundfish (all trips) among vessels.

Percent Bracket	Year						
	2009	2010			2011		
		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Top 10%	$39,951,016 (47.5%)	$47,703,341 (57.5%)	$37,055,678 (45.9%)	$1,724,136 (77.1%)	$49,660,560 (55.1%)	$38,177,170 (42.8%)	$694,571 (71.5%)
20%	$17,424,677 (20.7%)	$18,136,059 (21.9%)	$17,374,325 (21.5%)	$310,903 (13.9%)	$21,189,407 (23.5%)	$21,206,304 (23.8%)	$130,183 (13.4%)
30%	$11,389,097 (13.5%)	$8,561,237 (10.3%)	$10,827,760 (13.4%)	$98,770 (4.4%)	$9,341,713 (10.4%)	$12,008,165 (13.5%)	$75,282 (7.8%)
40%	$7,666,568 (9.1%)	$4,843,595 (5.8%)	$6,070,344 (7.5%)	$51,498 (2.3%)	$5,515,970 (6.1%)	$6,481,667 (7.3%)	$32,804 (3.4%)
50%	$4,542,799 (5.4%)	$2,452,110 (3.0%)	$4,208,636 (5.2%)	$27,029 (1.2%)	$2,721,464 (3.0%)	$4,869,405 (5.5%)	$20,941 (2.2%)
60%	$2,119,260 (2.5%)	$919,971 (1.1%)	$2,619,715 (3.2%)	$13,746 (.6%)	$1,233,113 (1.4%)	$3,192,306 (3.6%)	$11,031 (1.1%)
70%	$765,280 (.9%)	$269,729 (.3%)	$1,593,698 (2.0%)	$6,248 (.3%)	$350,422 (.4%)	$1,796,440 (2.0%)	$4,335 (.4%)
80%	$199,384 (.2%)	$81,450 (.1%)	$773,590 (1.0%)	$1,833 (.1%)	$84,050 (.1%)	$1,041,914 (1.2%)	$1,397 (.1%)
90%	$49,521 (.1%)	$16,051 (.0%)	$208,121 (.3%)	$612 (.0%)	$17,408 (.0%)	$352,626 (.4%)	$555 (.1%)
Bottom 10%	$5,234 (.0%)	$1,444 (.0%)	$18,216 (.0%)	$129 (.0%)	$1,431 (.0%)	$18,314 (.0%)	$129 (.0%)
Grand Total	$84,112,835	$82,984,988	$80,750,083	$2,234,905	$90,115,537	$89,144,311	$971,226
Number of Vessels*	601	485	315	170	450	308	143

*Note sector vessels plus common pool counts may exceed total vessel count because vessels may switch between sector and common pool eligibilites during the fishing year.

Table 44. Distribution of nominal revenue all species (all trips) among vessel affiliations.

Percent Bracket	2009	2010	2011
Top 10%	$136,331,475	$166,073,660	$181,381,179
	(51.1%)	(56.4%)	(54.8%)
20%	$45,695,476	$49,236,310	$59,978,544
	(17.1%)	(16.7%)	(18.1%)
30%	$28,958,505	$27,406,545	$32,106,697
	(10.9%)	(9.3%)	(9.7%)
40%	$19,606,834	$18,617,166	$20,674,131
	(7.3%)	(6.3%)	(6.2%)
50%	$14,509,445	$13,223,127	$14,380,706
	(5.4%)	(4.5%)	(4.3%)
60%	$10,524,217	$9,552,897	$10,268,524
	(3.9%)	(3.2%)	(3.1%)
70%	$7,027,039	$6,565,052	$6,836,784
	(2.6%)	(2.2%)	(2.1%)
80%	$3,141,252	$2,903,185	$3,839,607
	(1.2%)	(1.0%)	(1.2%)
90%	$841,770	$813,151	$1,204,822
	(0.3%)	(0.3%)	(0.4%)
Bottom 10%	$129,898	$114,856	$214,332
	(0.0%)	(0.0%)	(0.1%)
Grand Total	$266,765,909	$294,505,950	$330,885,325
Number of Vessel Affiliations	767	725	655

Table 45. Distribution of groundfish nominal revenue among vessel affiliations.

Percent Bracket	2009	2010	2011
Top 10%	$50,799,510	$59,986,914	$63,314,902
	(60.4%)	(72.3%)	(70.3%)
20%	$13,675,928	$11,137,981	$13,525,730
	(16.3%)	(13.4%)	(15.0%)
30%	$8,805,607	$5,754,929	$6,416,908
	(10.5%)	(6.9%)	(7.1%)
40%	$5,708,819	$3,400,650	$3,807,240
	(6.8%)	(4.1%)	(4.2%)
50%	$3,181,942	$1,744,491	$1,924,459
	(3.8%)	(2.1%)	(2.1%)
60%	$1,280,732	$659,315	$813,325
	(1.5%)	(0.8%)	(0.9%)
70%	$492,277	$226,158	$241,440
	(0.6%)	(0.3%)	(0.3%)
80%	$130,297	$61,300	$57,800
	(0.2%)	(0.1%)	(0.1%)
90%	$34,392	$12,151	$12,499
	(0.0%)	(0.0%)	(0.0%)
Bottom 10%	$3,331	$1,099	$1,234
	(0.0%)	(0.0%)	(0.0%)
Grand Total	$84,112,835	$82,984,988	$90,115,537
Number of Vessel Affiliations	475	392	366

Table 46. Number of vessels with revenue from all species (on all trips) by cumulative quartiles (ordered high revenue to low).

Percent of all species revenue	2009	2010	2011
Top 25%	48	39	39
	(5.0%)	(4.4%)	(4.8%)
Top 50%	136	109	106
	(14.2%)	(12.2%)	(13.2%)
Top 75%	299	241	222
	(31.2%)	(27.1%)	(27.6%)
100%	957	890	805
	(100%)	(100%)	(100%)

Table 47. Number of vessels with revenue from groundfish (on all trips) by cumulative quartiles (ordered high revenue to low).

Percent of groundfish revenue	2009	2010	2011
Top 25%	20	13	15
	(3.3%)	(2.7%)	(3.3%)
Top 50%	66	38	39
	(11.0%)	(7.8%)	(8.7%)
Top 75%	148	84	80
	(24.6%)	(17.3%)	(17.8%)
100%	601	485	450
	(100%)	(100%)	(100%)

Table 48. Number of vessel affiliations with revenue from all species by cumulative (on all trips) quartiles (ordered high revenue to low)

Percent of all species revenue	2009	2010	2011
Top 25%	15	12	12
	(2.0%)	(1.7%)	(1.8%)
Top 50%	72	55	53
	(9.4%)	(7.6%)	(8.1%)
Top 75%	197	157	141
	(25.7%)	(21.7%)	(21.5%)
100%	767	725	655
	(100%)	(100%)	(100%)

Table 49. Number of vessel affiliations with revenue from groundfish by cumulative (on all trips) quartiles (ordered high revenue to low)

Percent of groundfish revenue	2009	2010	2011
Top 25%	5	2	2
	(1.1%)	(0.5%)	(0.5%)
Top 50%	28	15	16
	(5.9%)	(3.8%)	(4.4%)
Top 75%	89	44	43
	(18.7%)	(11.2%)	(11.7%)
100%	476	392	366
	(100%)	(100%)	(100%)

Table 50. Changes in employment indicators by vessel size category (May through April, all trips)

Vessel Size		Year 2009	2010	2011
Less than 30'				
	Total CREW POSITIONS	105	91	79
	Total CREW-TRIPS	3,412	2,846	2,783
	Total CREW-DAYS	1,186	985	931
	Crew-days/Crew-trips	0.35	0.35	0.33
30' to < 50'				
	Total CREW POSITIONS	883	883	819
	Total CREW-TRIPS	81,122	68,495	69,860
	Total CREW-DAYS	36,464	32,004	33,914
	Crew-days/Crew-trips	0.45	0.47	0.49
50' to < 75'				
	Total CREW POSITIONS	712	678	680
	Total CREW-TRIPS	43,460	40,097	39,934
	Total CREW-DAYS	65,118	59,042	61,201
	Crew-days/Crew-trips	1.50	1.47	1.53
75' and above				
	Total CREW POSITIONS	560	537	551
	Total CREW-TRIPS	16,041	15,223	15,118
	Total CREW-DAYS	69,641	69,146	69,578
	Crew-days/Crew-trips	4.34	4.54	4.60
All Sizes				
	Total CREW POSITIONS	2,260	2,190	2,129
	Total CREW-TRIPS	144,035	126,661	127,695
	Total CREW-DAYS	172,410	161,178	165,624
	Crew-days/Crew-trips	1.20	1.27	1.30

Table 51. Changes in employment indicators by home port state (May through April, all trips).

Home Port State		Year		
		2009	2010	2011
CT				
	Total CREW POSITIONS	38	39	41
	Total CREW-TRIPS	1,780	1,911	1,466
	Total CREW-DAYS	3,317	3,614	3,067
	Crew-days/Crew-trips	1.86	1.89	2.09
MA				
	Total CREW POSITIONS	1,152	1,104	1,063
	Total CREW-TRIPS	67,534	55,236	56,788
	Total CREW-DAYS	86,234	77,422	82,238
	Crew-days/Crew-trips	1.28	1.40	1.45
ME				
	Total CREW POSITIONS	216	220	204
	Total CREW-TRIPS	15,338	15,047	13,732
	Total CREW-DAYS	14,414	14,427	14,148
	Crew-days/Crew-trips	0.94	0.96	1.03
NH				
	Total CREW POSITIONS	114	109	100
	Total CREW-TRIPS	10,746	8,050	8,040
	Total CREW-DAYS	5,925	3,813	4,663
	Crew-days/Crew-trips	0.55	0.47	0.58

Table 51. continued. Changes in employment indicators by home port state (May through April, all trips)

Home Port State		Year 2009	2010	2011
NJ				
	Total CREW POSITIONS	159	140	143
	Total CREW-TRIPS	11,813	11,009	10,688
	Total CREW-DAYS	10,708	9,801	9,364
	Crew-days/Crew-trips	0.91	0.89	0.88
NY				
	Total CREW POSITIONS	205	201	211
	Total CREW-TRIPS	15,477	15,164	15,780
	Total CREW-DAYS	15,479	15,020	15,439
	Crew-days/Crew-trips	1.00	0.99	0.98
RI				
	Total CREW POSITIONS	253	243	238
	Total CREW-TRIPS	16,429	15,599	16,614
	Total CREW-DAYS	24,167	25,454	24,938
	Crew-days/Crew-trips	1.47	1.63	1.50
OTHER NORTHEAST				
	Total CREW POSITIONS	123	133	128
	Total CREW-TRIPS	4,918	4,645	4,587
	Total CREW-DAYS	12,166	11,626	11,767
	Crew-days/Crew-trips	2.47	2.50	2.57
Total				
	Total CREW POSITIONS	2,260	2,190	2,129
	Total CREW-TRIPS	144,035	126,661	127,695
	Total CREW-DAYS	172,410	161,178	165,624
	Crew-days/Crew-trips	1.20	1.27	1.30

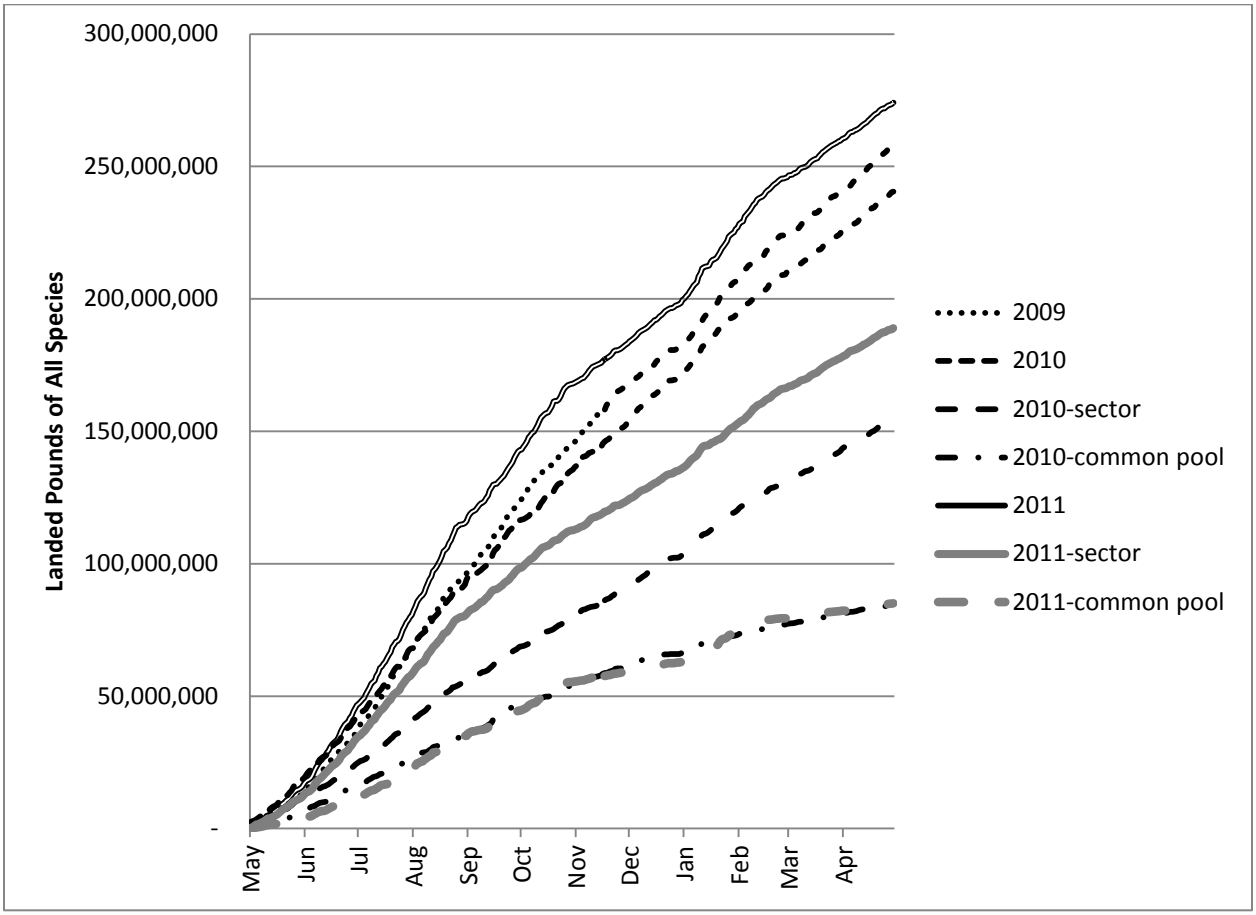


Figure 1. Cumulative landings of all species (all trips).

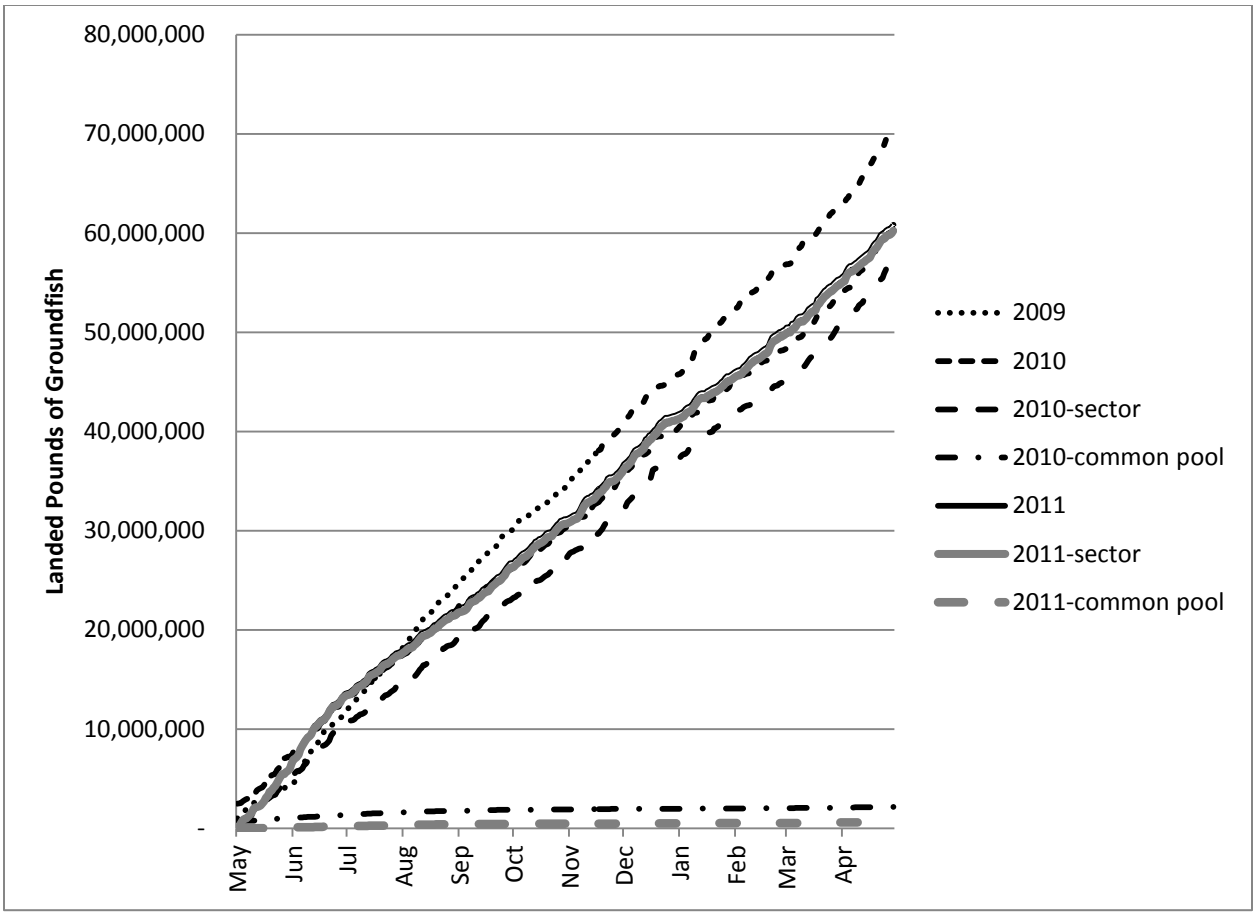


Figure 2. Cumulative landings of groundfish (all trips).

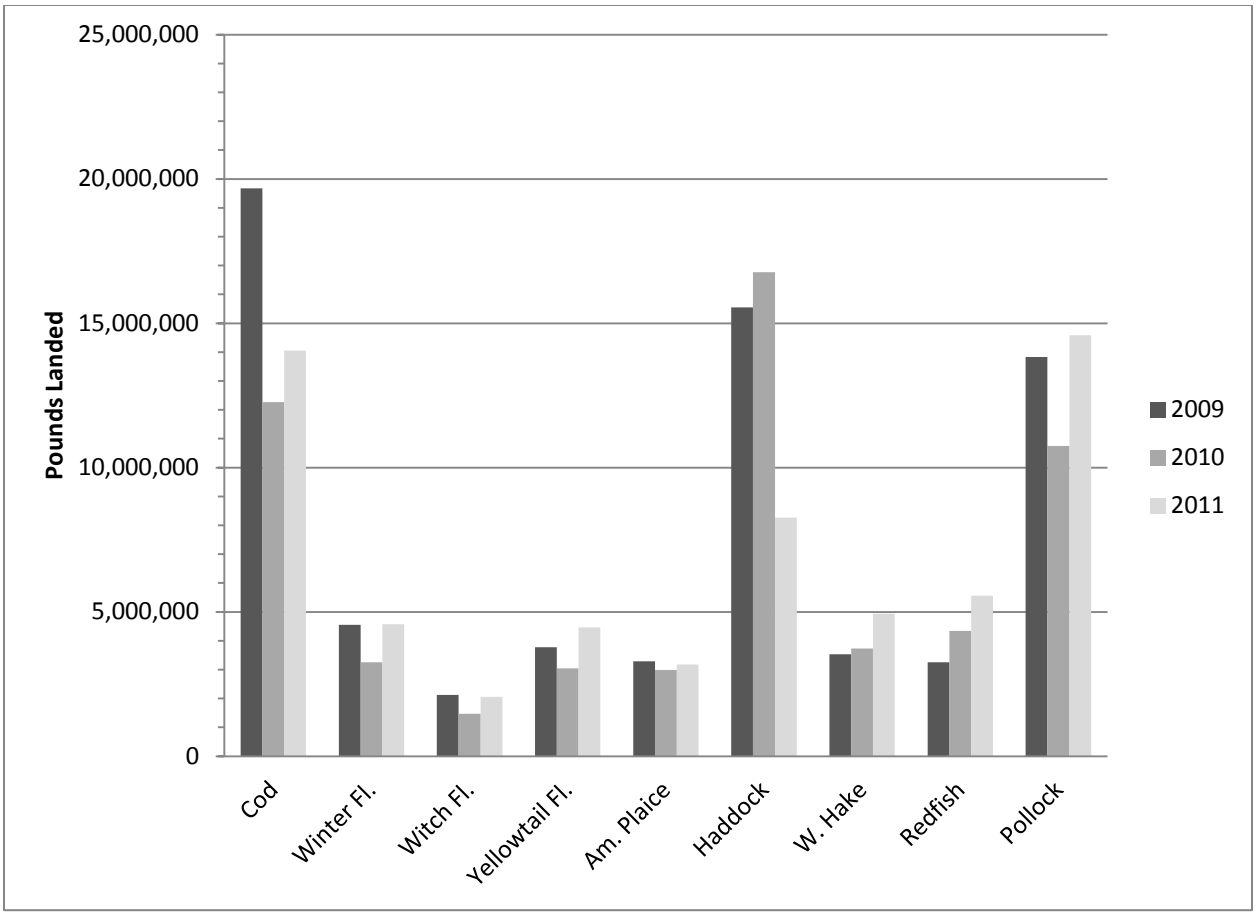


Figure 3. Allocated groundfish landings by species (all trips) for top 9 species.

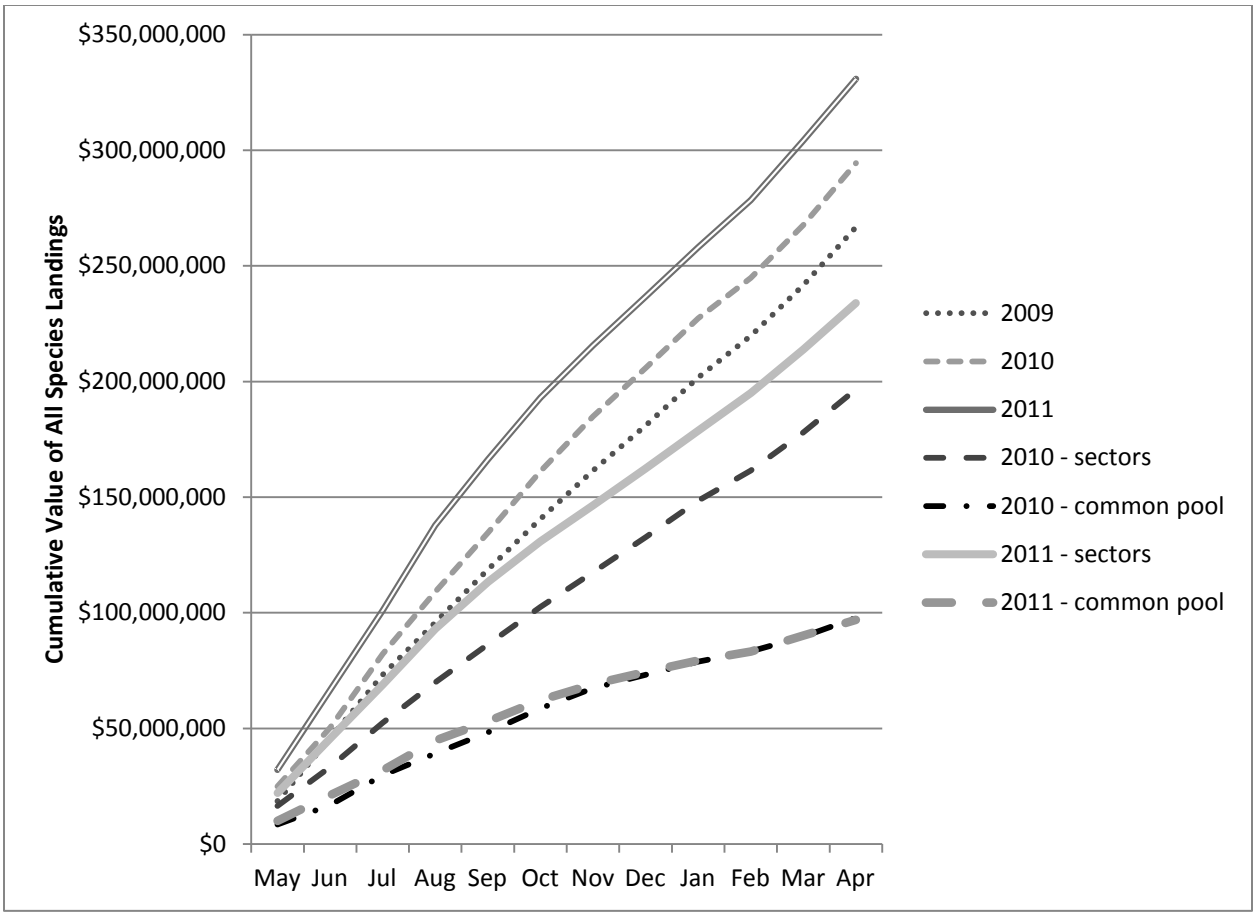


Figure 4. Cumulative nominal revenue from all species (all trips).

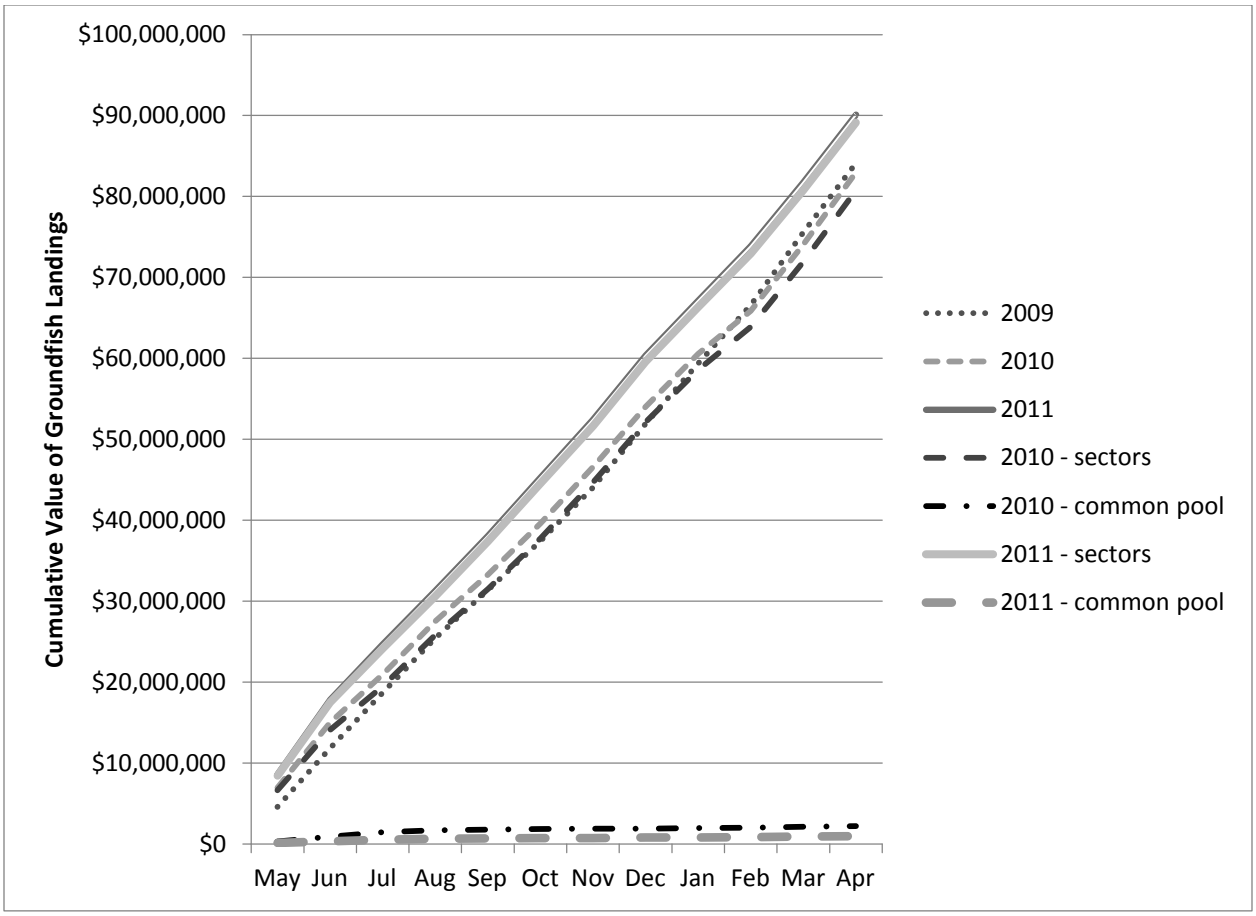


Figure 5. Cumulative nominal revenue from groundfish (all trips).

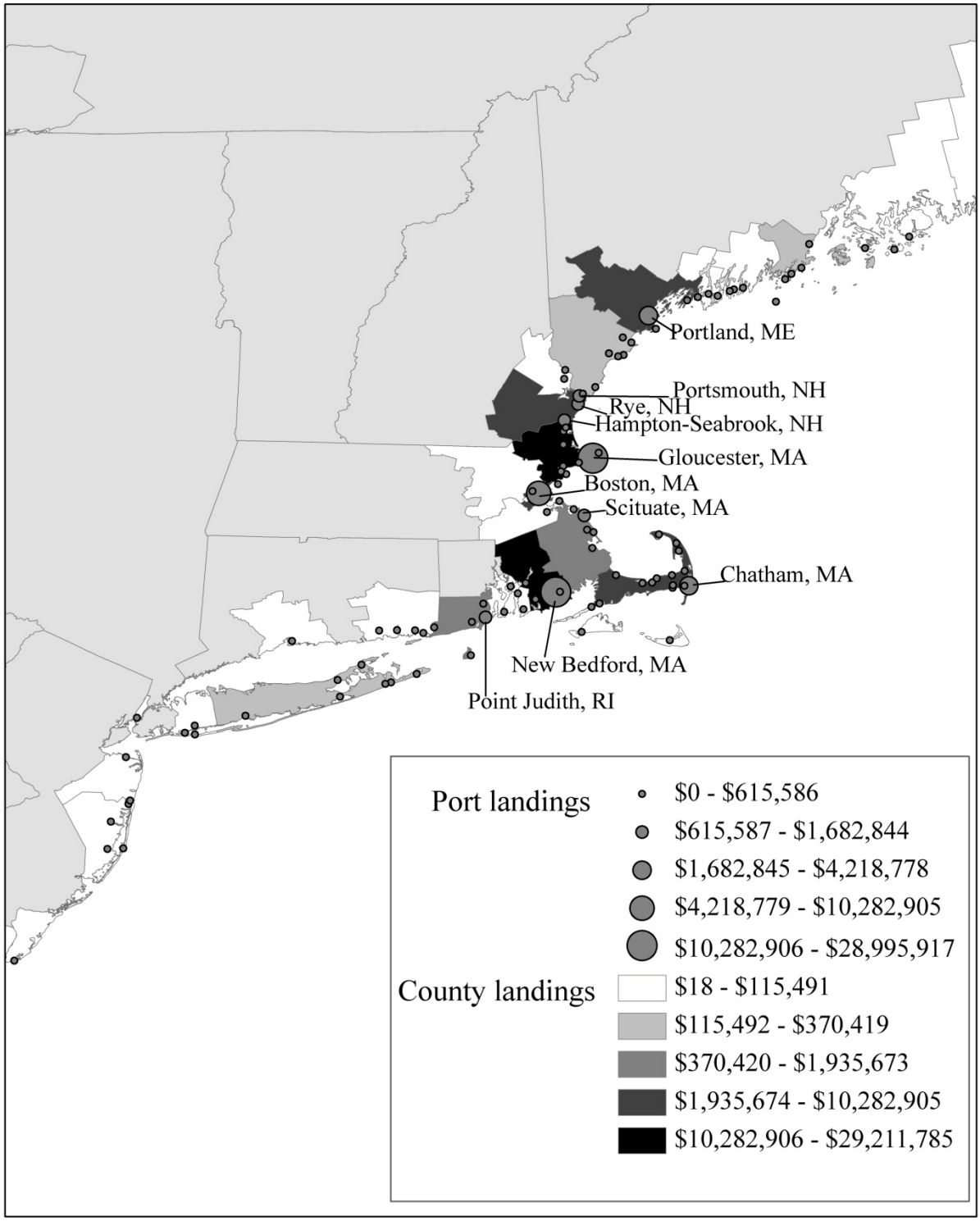


Figure 6. Average 2009 - 2010 nominal value of groundfish landings by port and county landed.

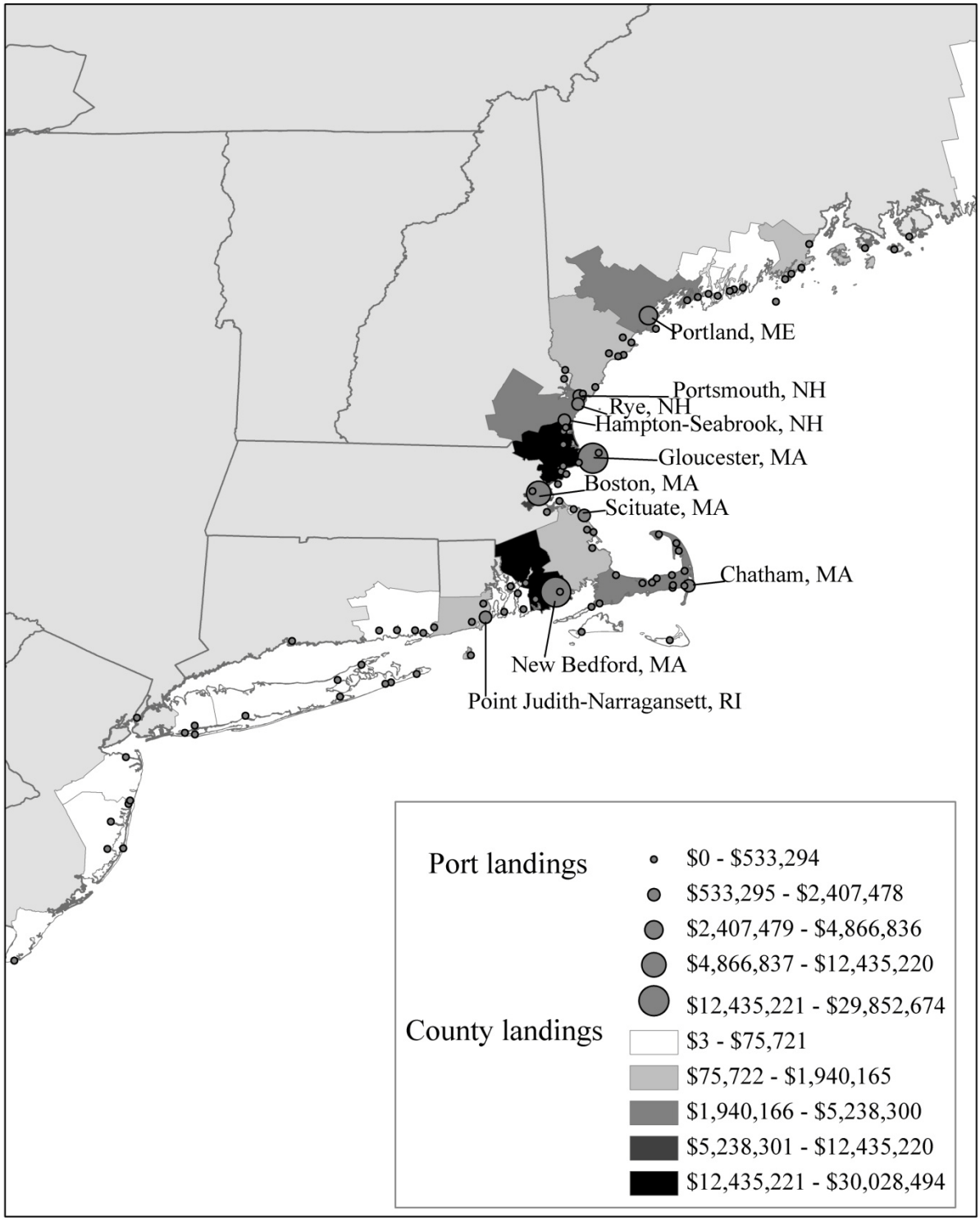


Figure 7. 2011 Nominal value of groundfish landings by port and county landed.

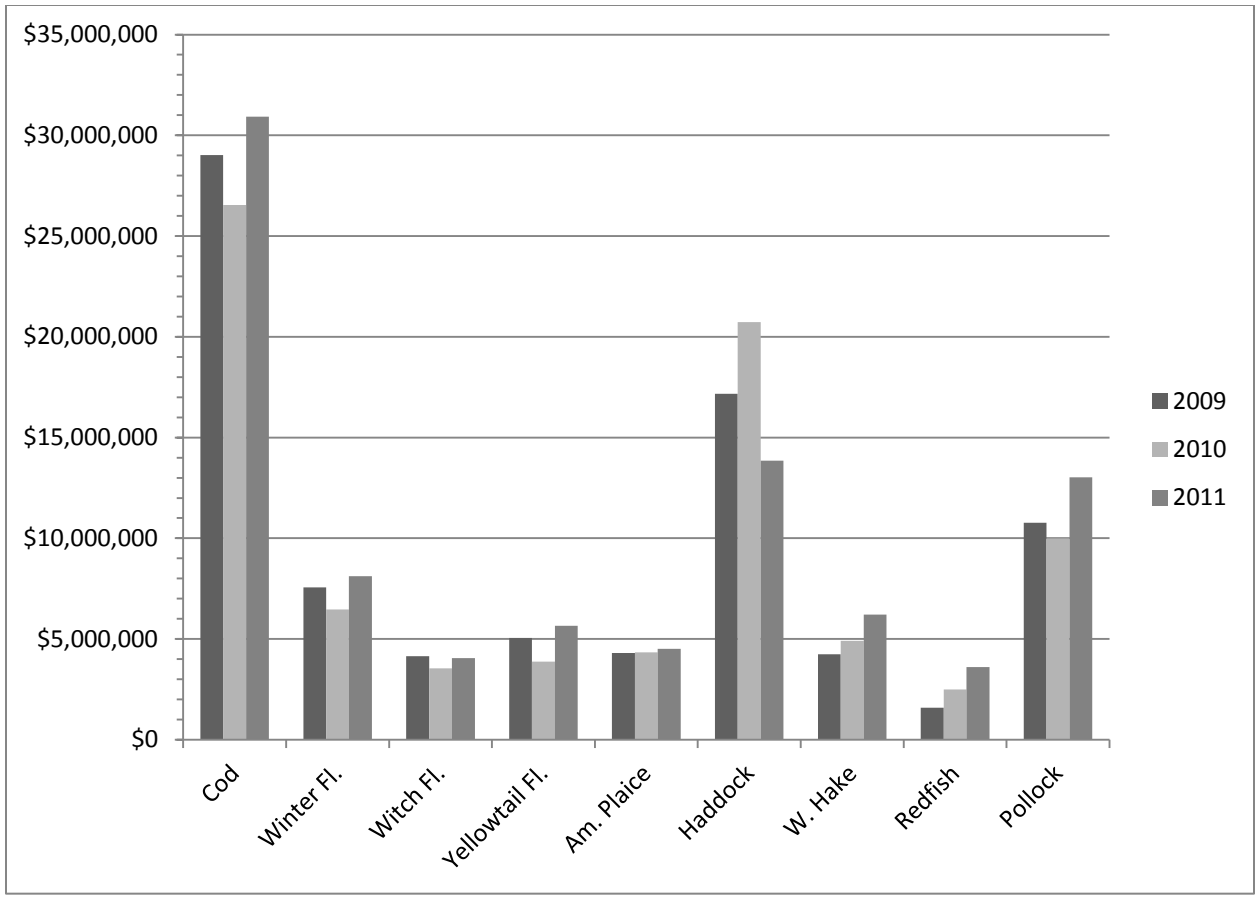


Figure 8. Allocated groundfish nominal revenue by species (all trips) for top 9 species.

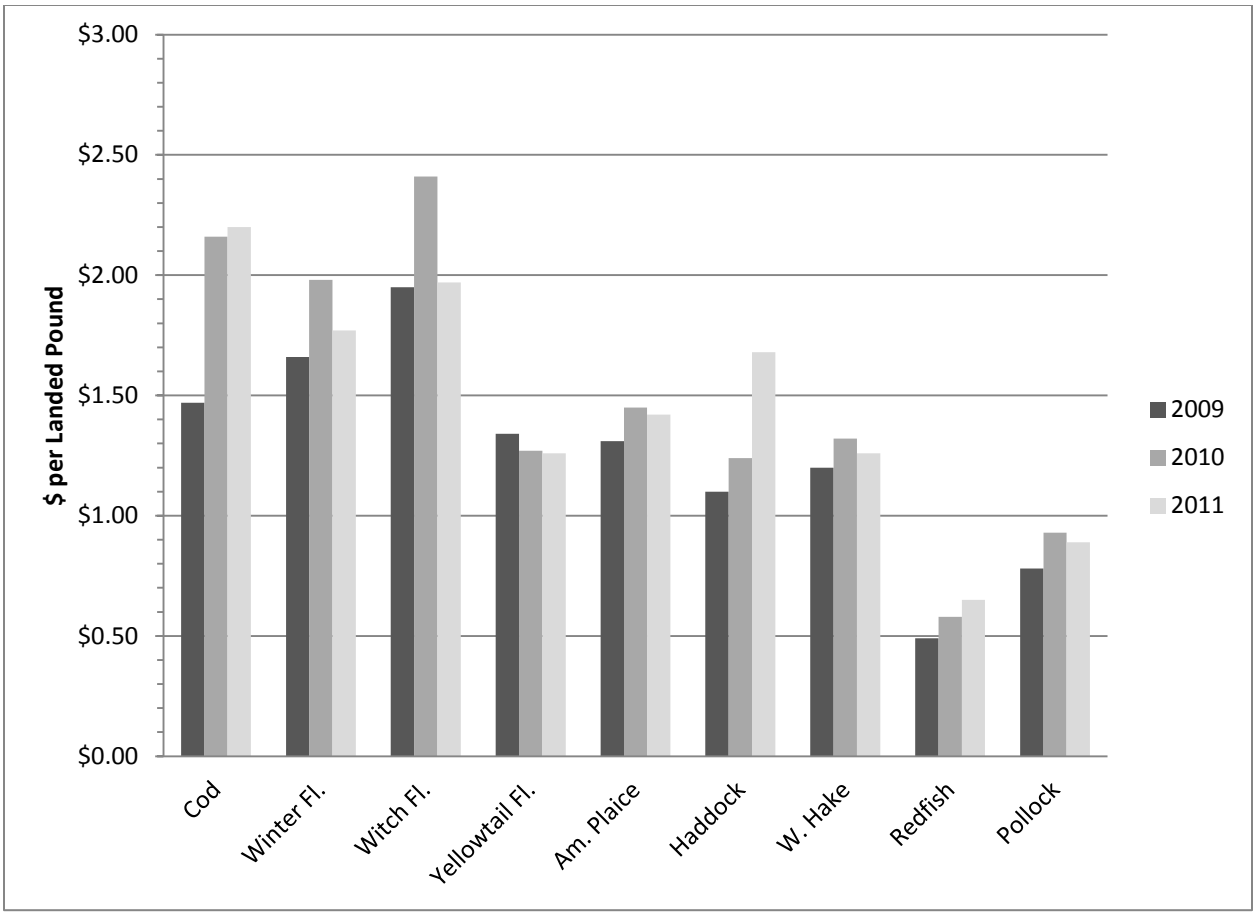


Figure 9. Yearly average nominal price by allocated groundfish species for top 9 species.

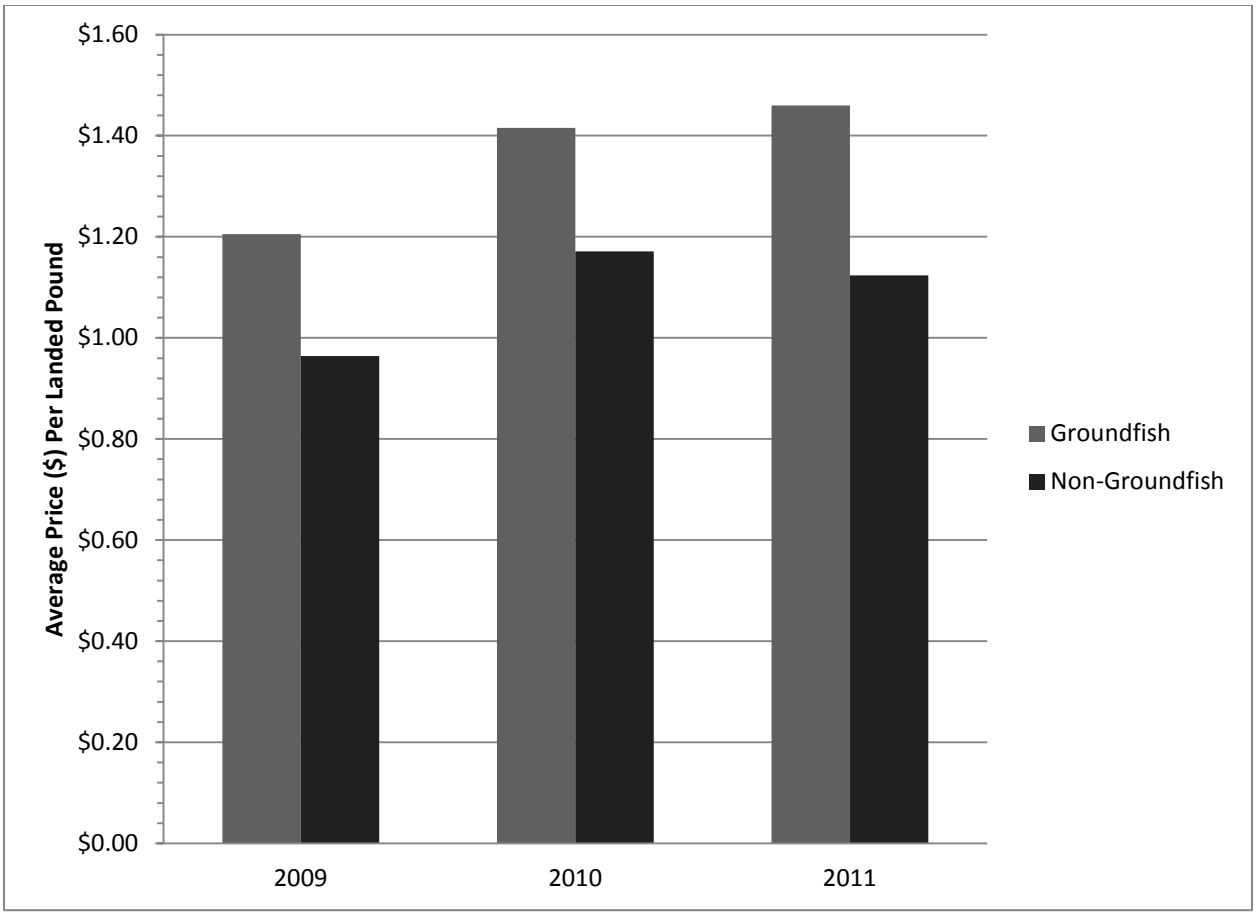


Figure 10. Yearly nominal average price of combined groundfish and non-groundfish species.

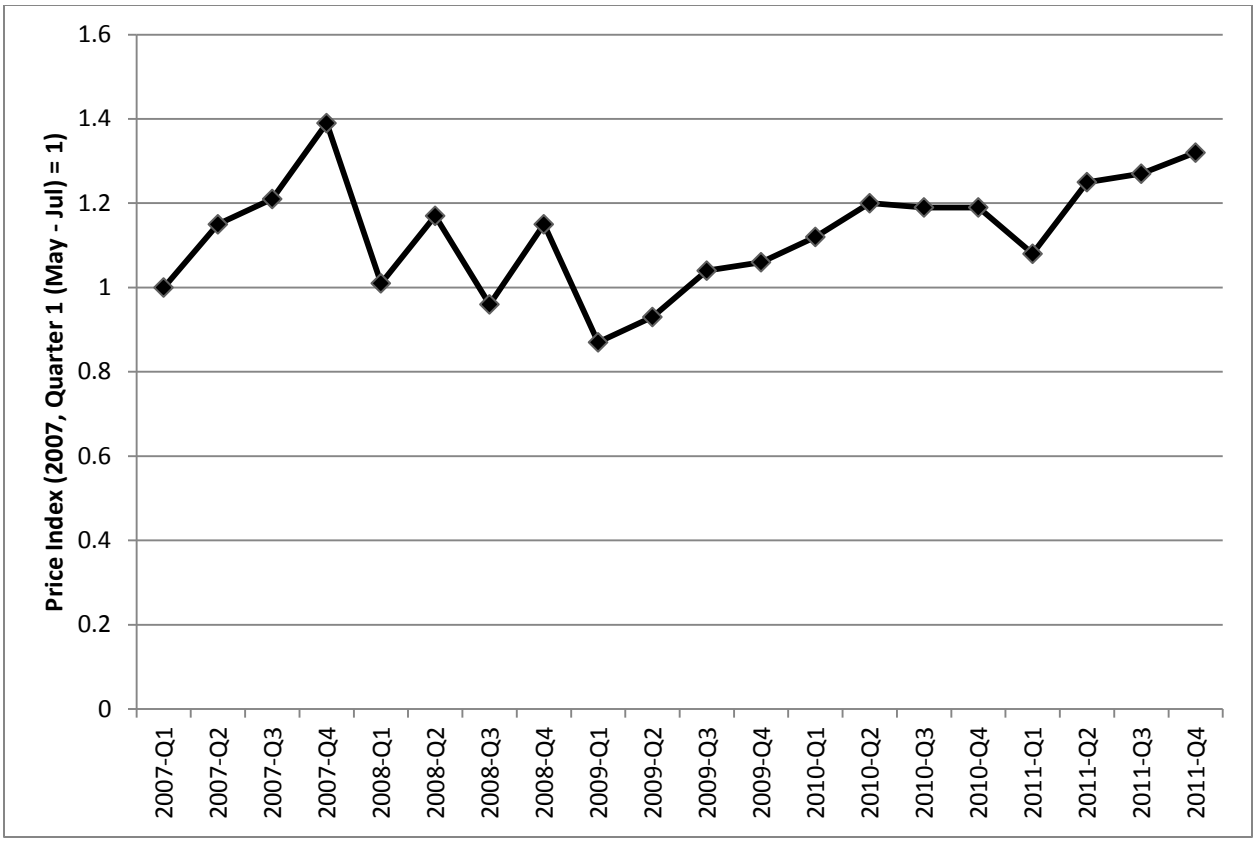


Figure 11. Quantity adjusted groundfish price index (base period = May through July, 2007).

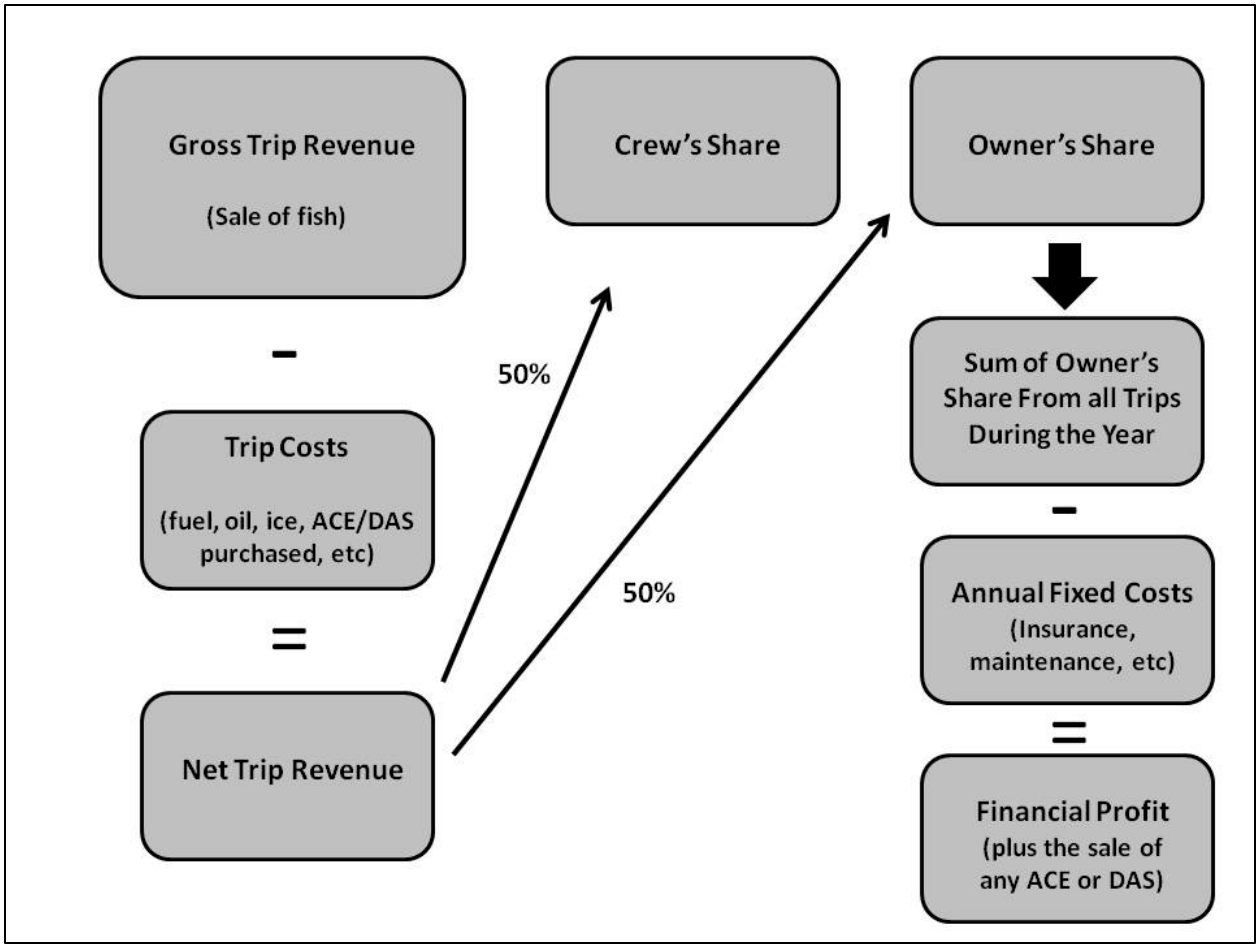


Figure 12. Components of annual financial profit.

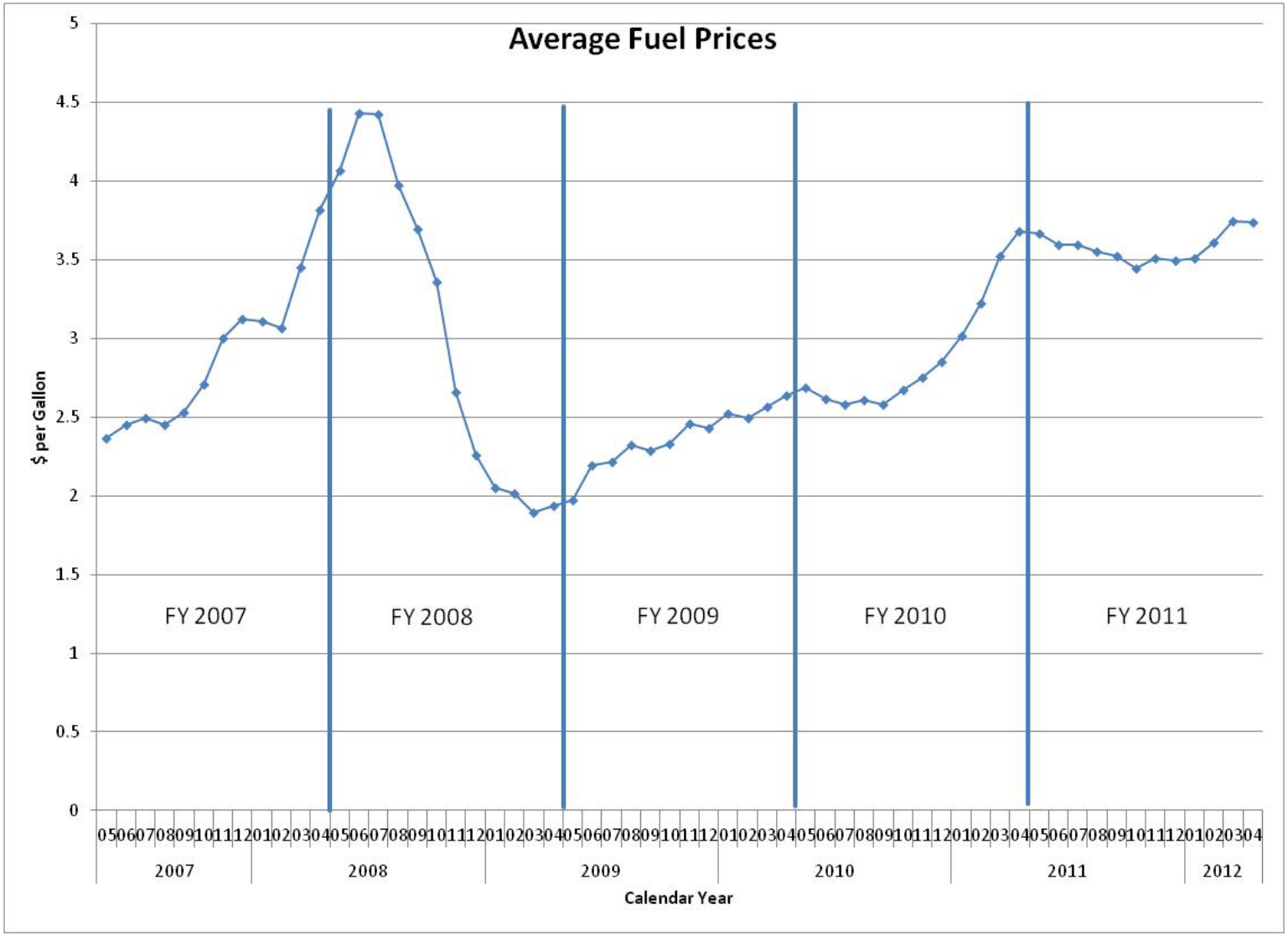
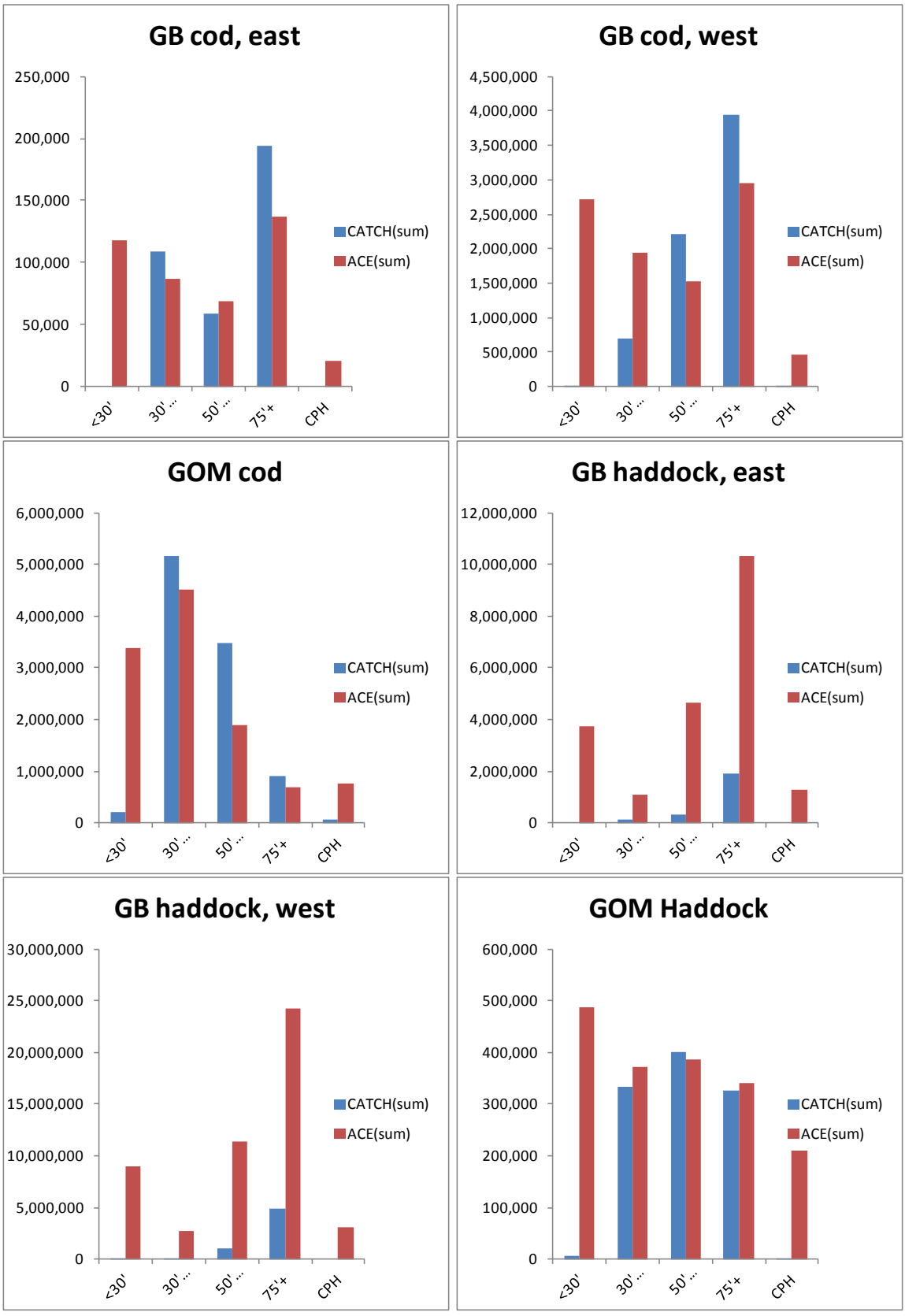
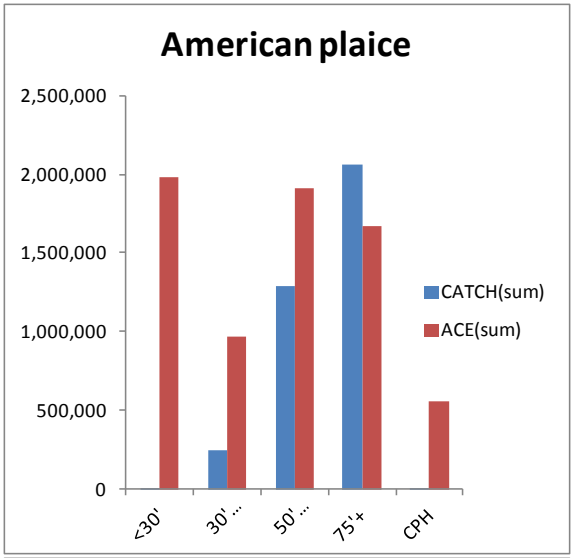


Figure 13. Average nominal fuel prices.


GB cod, east
250,000
200,000
150,000
100,000
50,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)
GB cod, west
4,500,000
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)
GOM cod
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)
GB haddock, east
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)
GB haddock, west
30,000,000
25,000,000
20,000,000
15,000,000
10,000,000
5,000,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)
GOM Haddock
600,000
500,000
400,000
300,000
200,000
100,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


American plaice
2,500,000
2,000,000
1,500,000
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500,000
0
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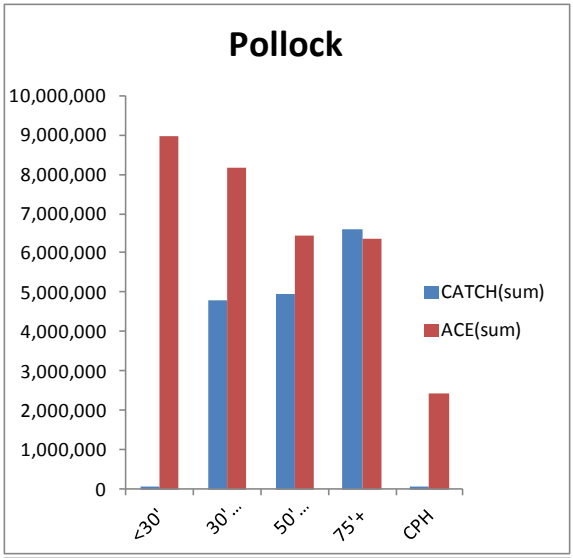
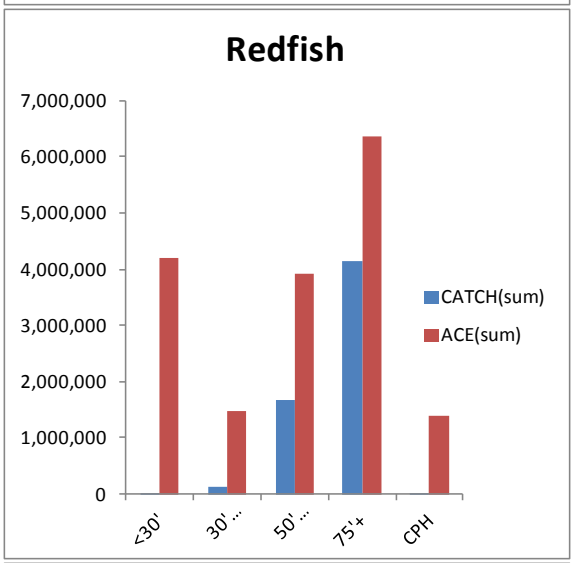
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


Pollock
10,000,000
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


Redfish
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6,000,000
5,000,000
4,000,000
3,000,000
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1,000,000
0
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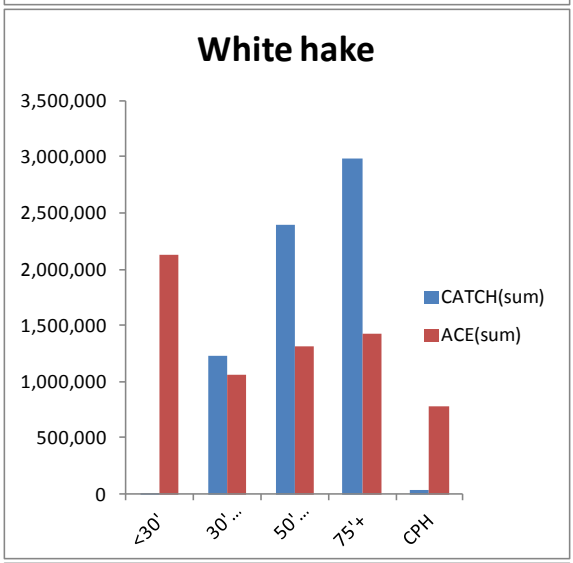
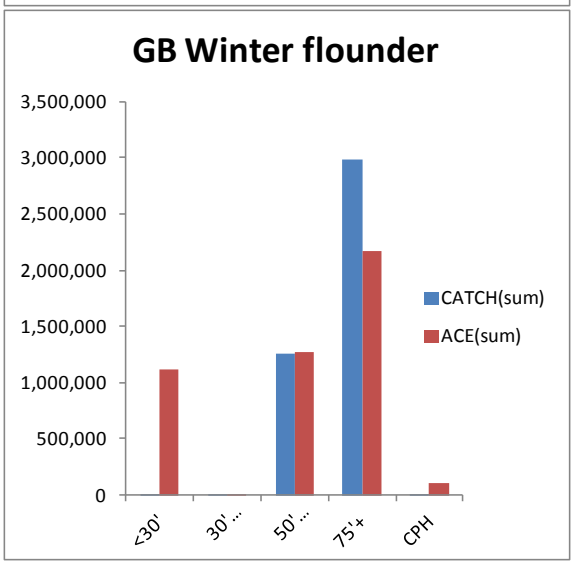
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


White hake
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


GB Winter flounder
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
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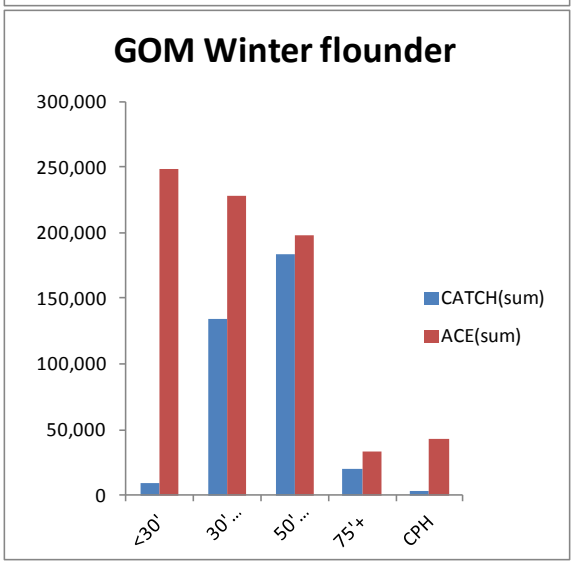
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)


GOM Winter flounder
300,000
250,000
200,000
150,000
100,000
50,000
0
<30'
30' ...
50' ...
75'+
CPH
CATCH(sum)
ACE(sum)

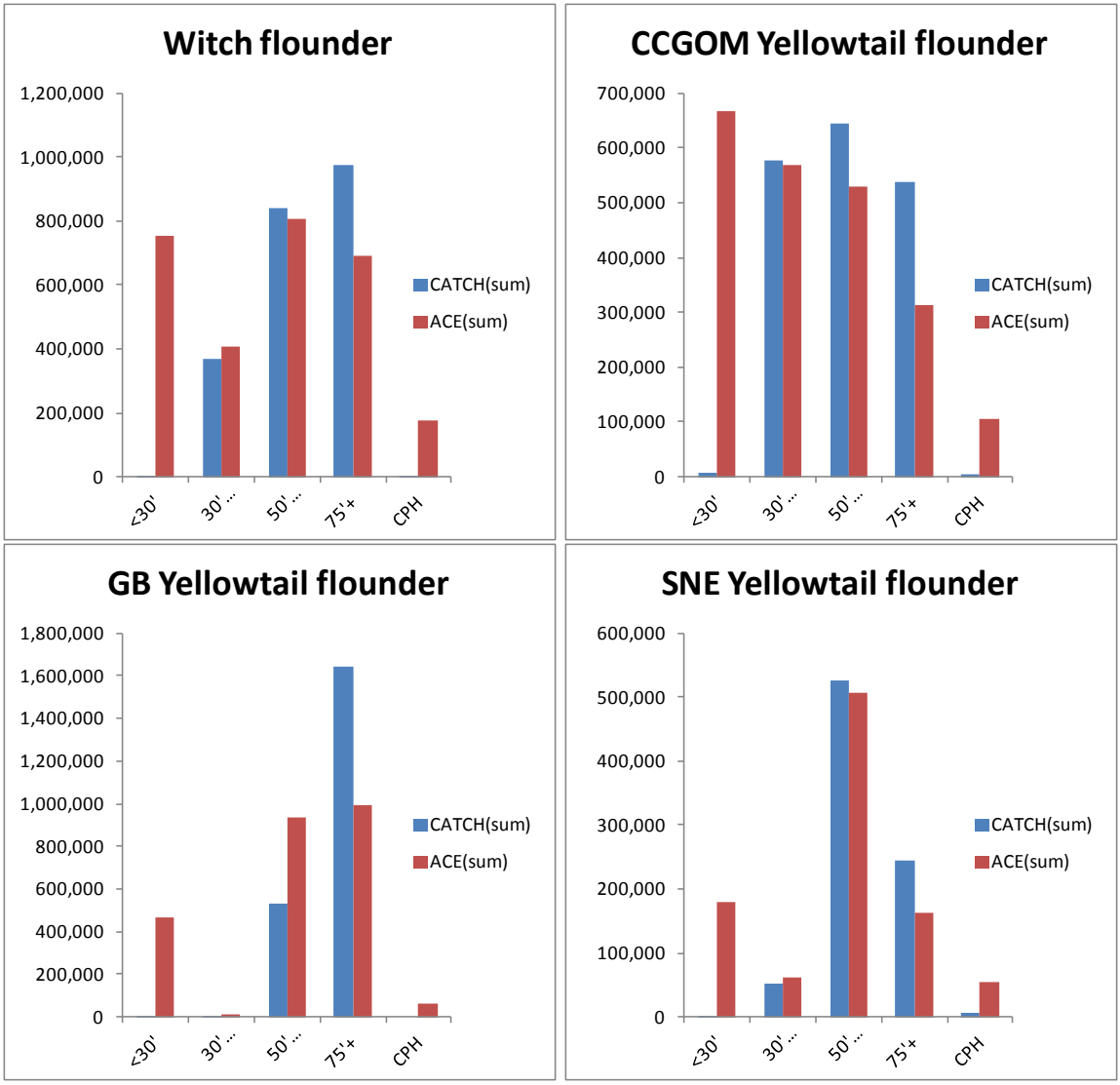


Figure 14. 2011 catch and allocated ACE by vessel size category for individual stocks

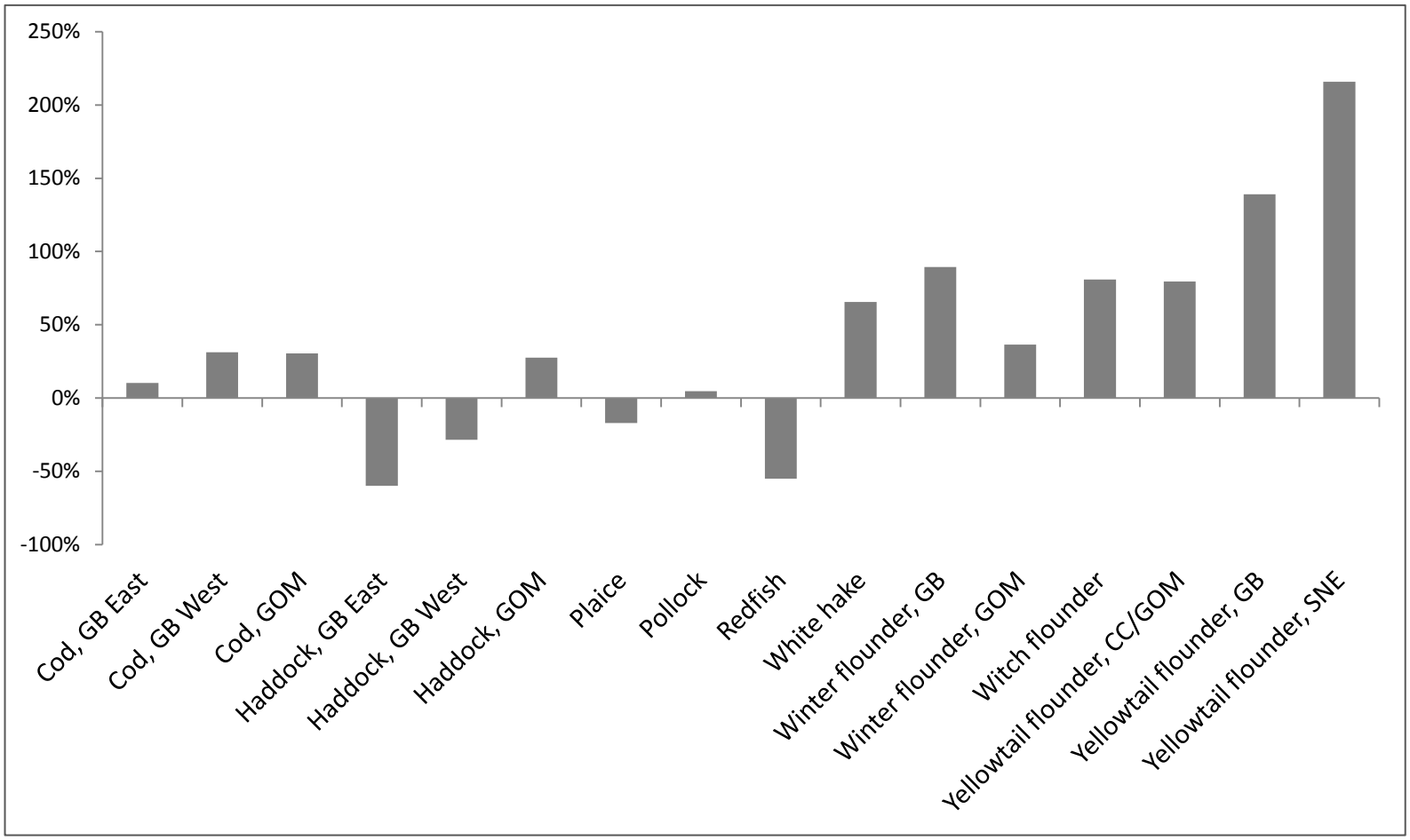


Figure 15. Percent change in ACE lease volume by stock, FY 2010 to FY 2011

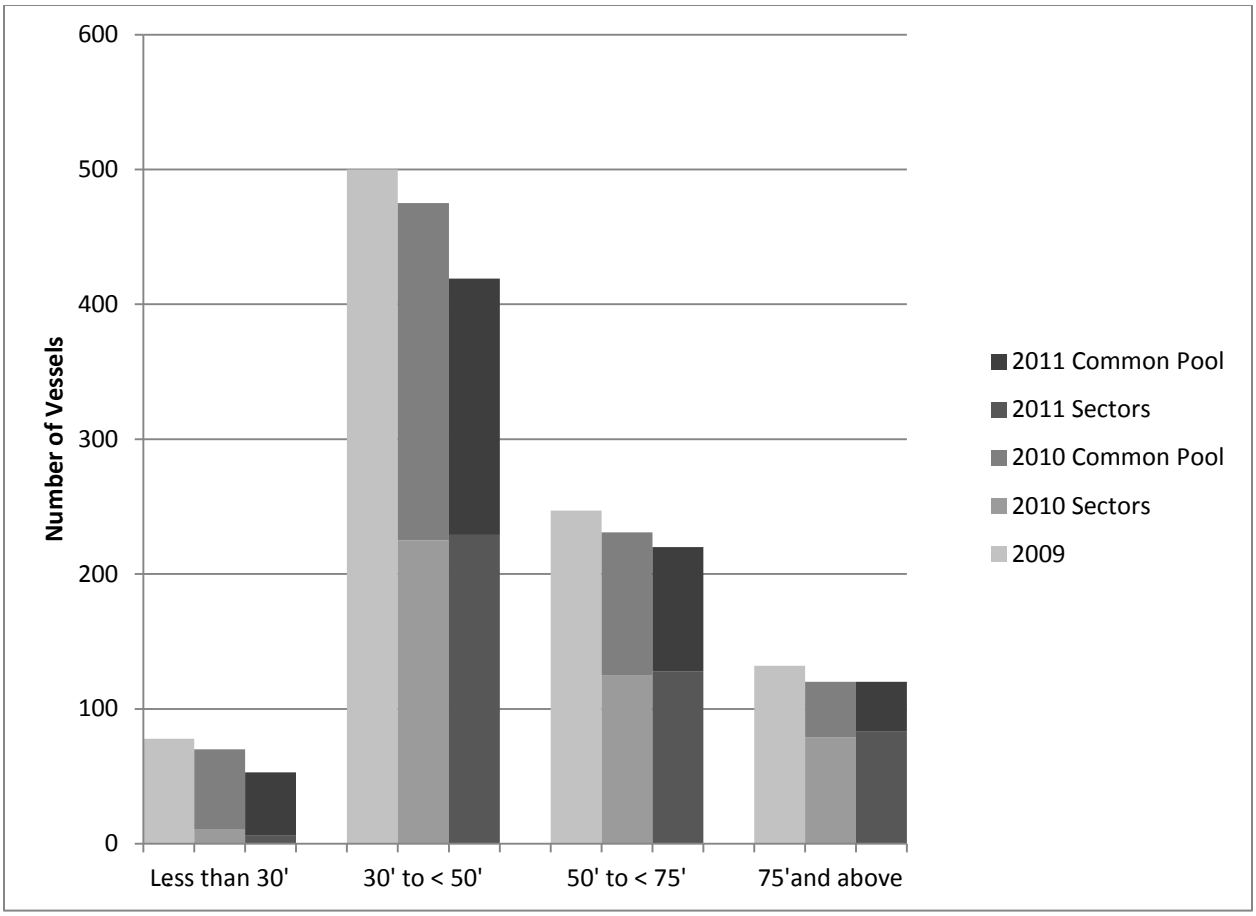


Figure 16. Number of vessels with revenue from any species by vessel size category (all trips).

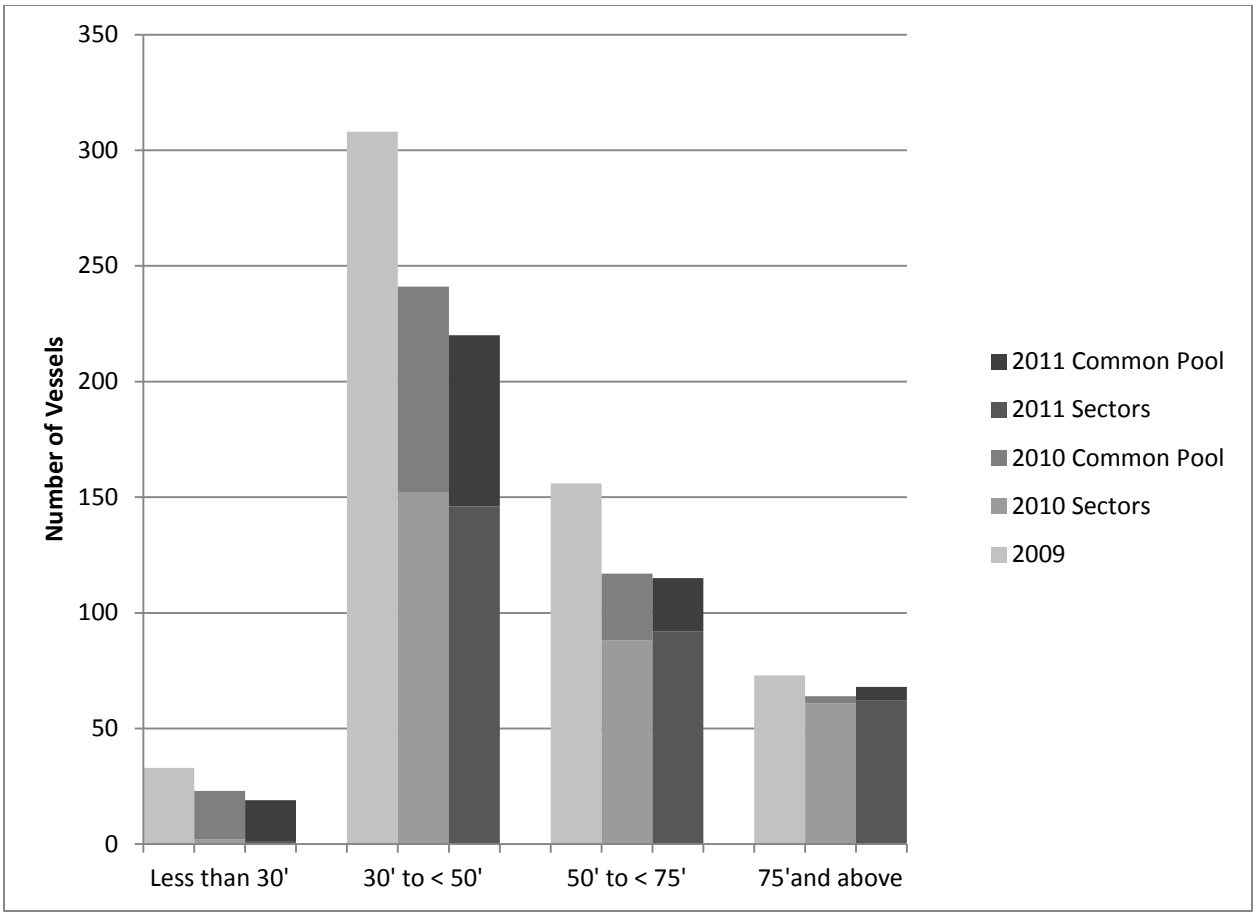


Figure 17. Number of vessels with revenue from any species on at least one groundfish trip by vessel size category.

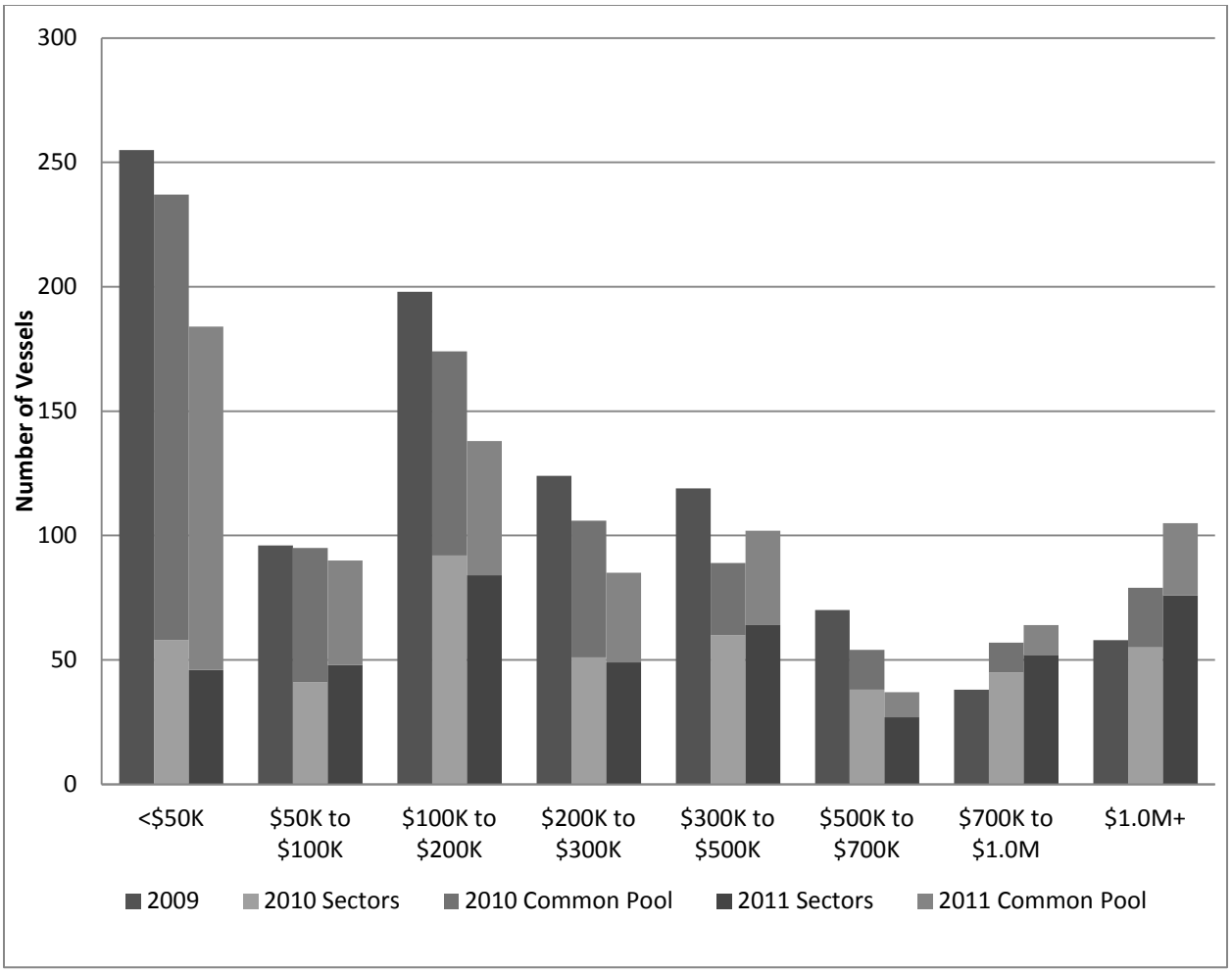


Figure 18. Number of vessels with revenue from any species by total nominal revenue category (all trips)

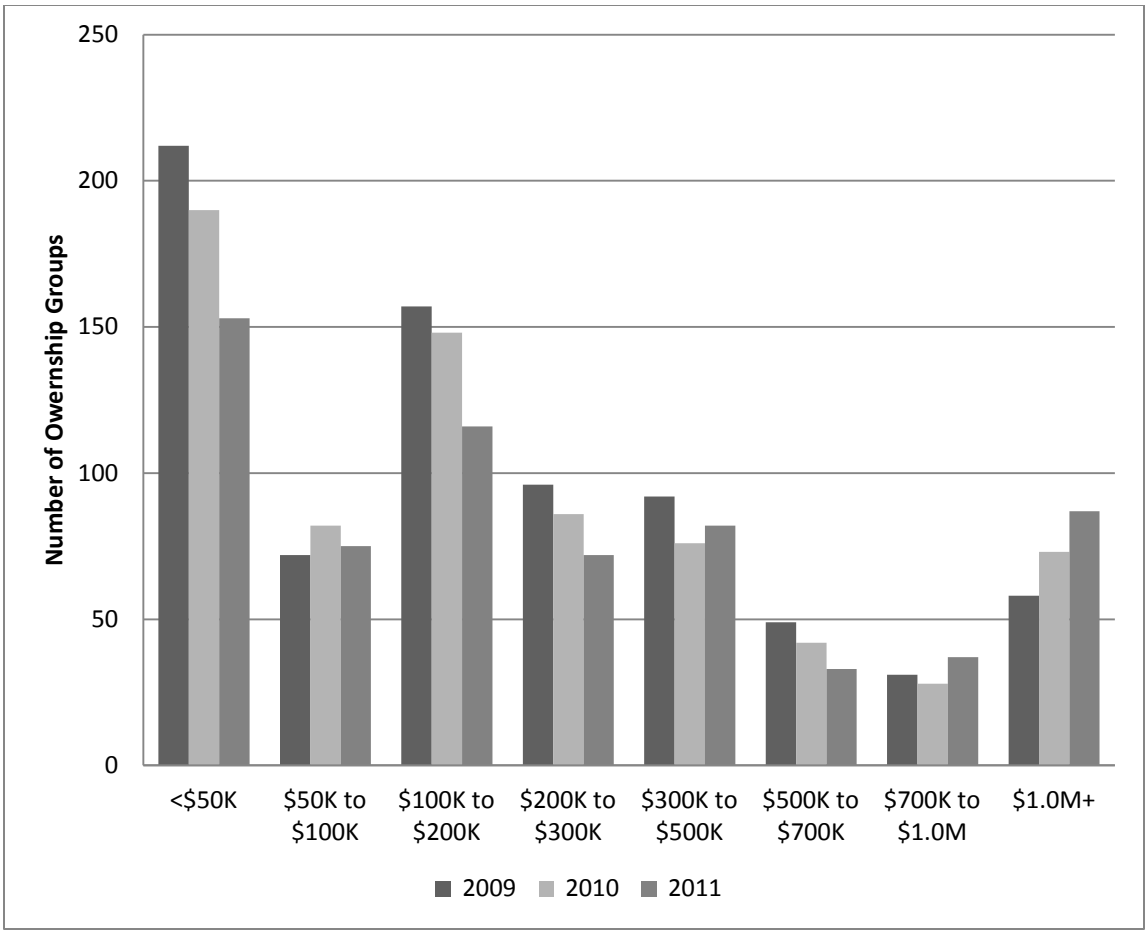


Figure 19. Number of vessel affiliations with revenue from any species by total nominal revenue category.

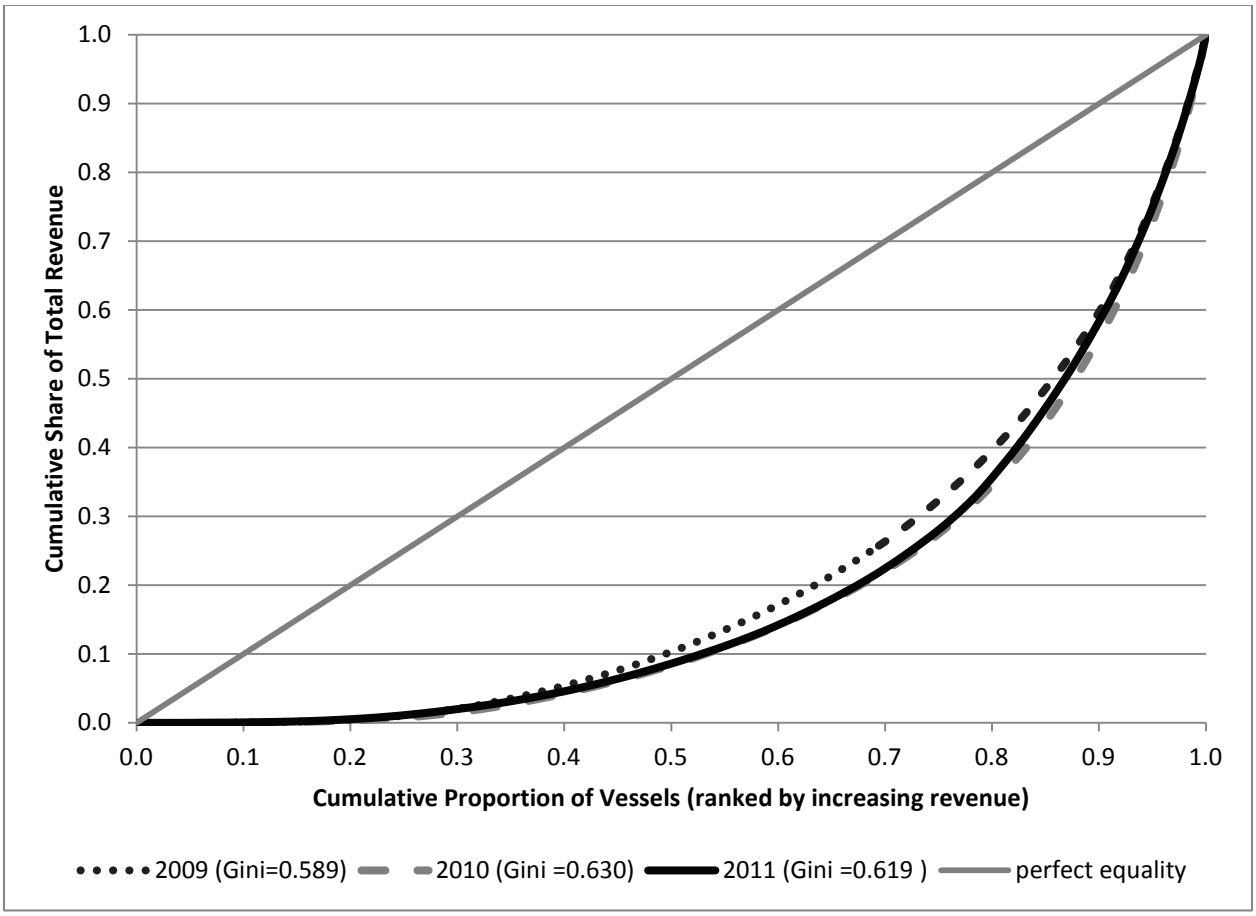


Figure 20. Lorenz curves and Gini values at the active vessel level for all species nominal revenues.

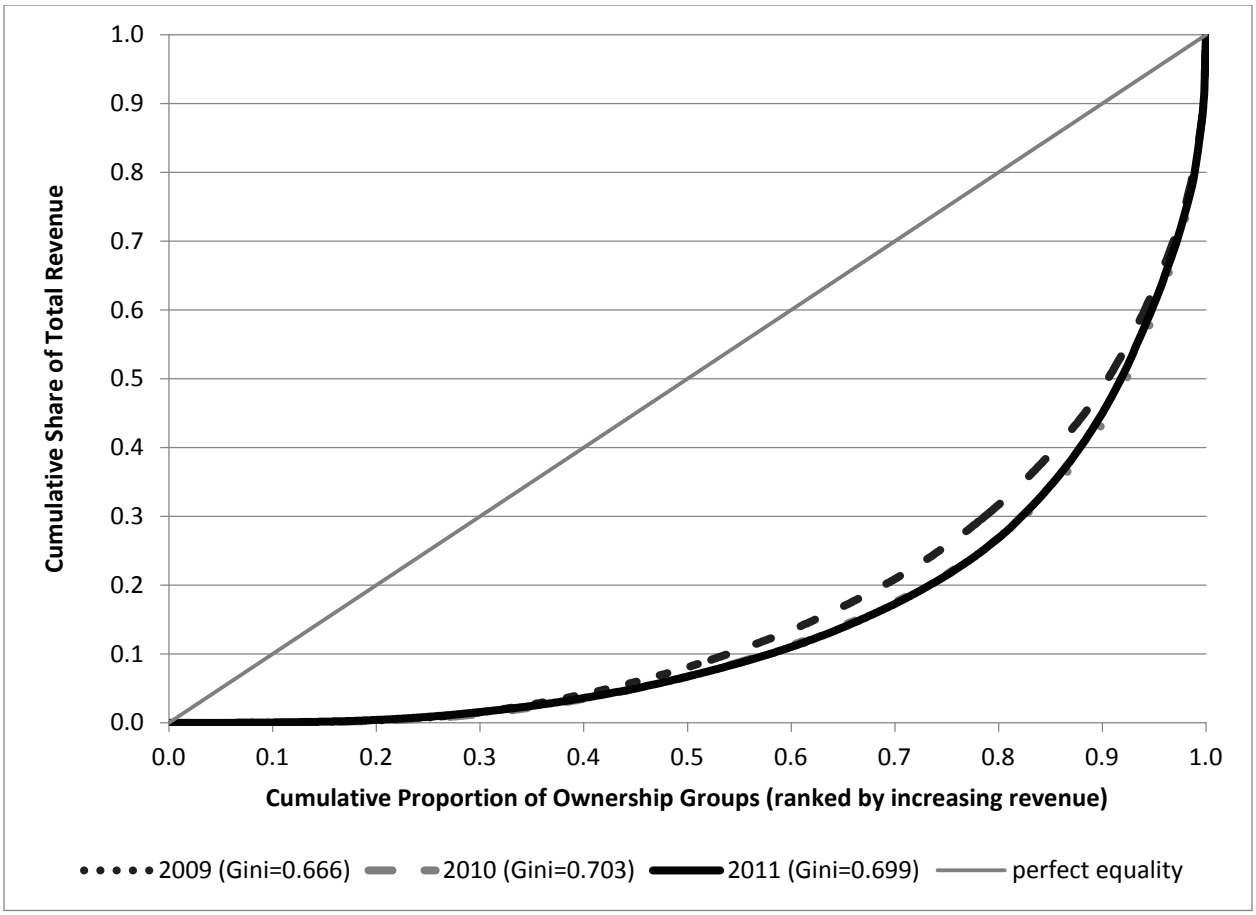


Figure 21. Lorenz curves and Gini values at the affiliated vessel level for all species nominal revenues (from active vessels).

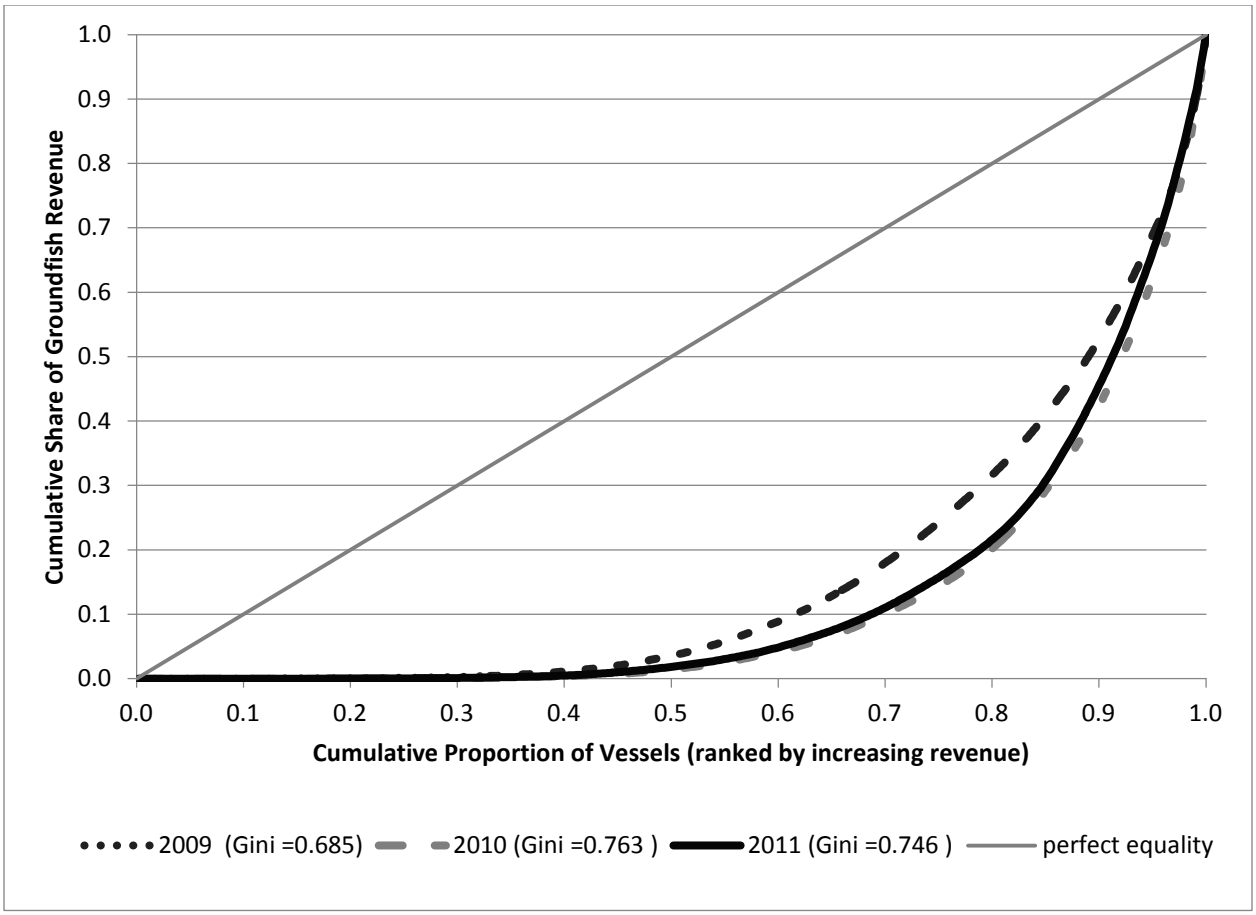


Figure 22. Lorenz curves and Gini values at the active vessel level for groundfish nominal revenues.

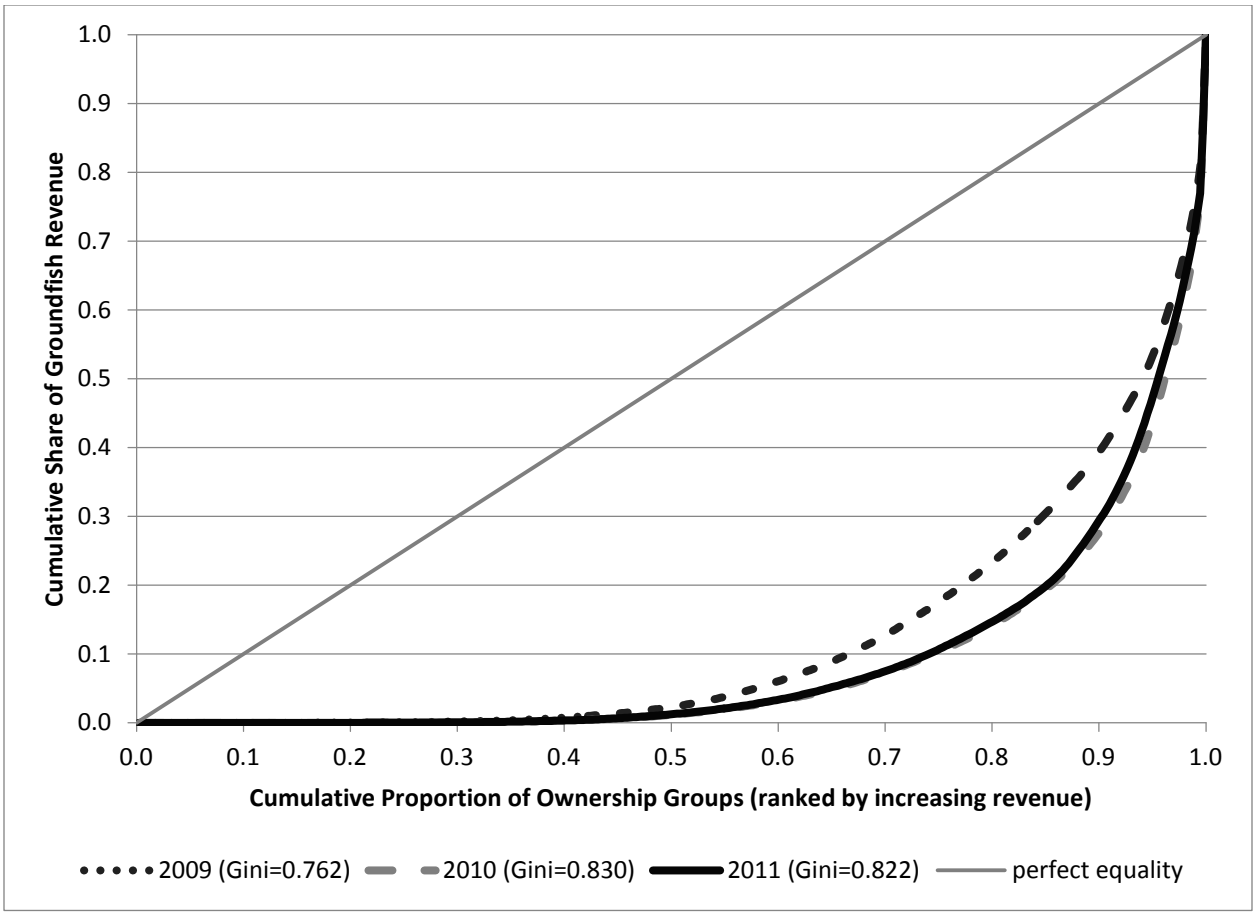


Figure 23. Lorenz curves and Gini values at the affiliated vessel level for groundfish nominal revenues (from active vessels

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