Northeast Fisheries Science Center Reference Document 11-19

2010 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2010 – April 2011)

2nd Edition

CORRECTION November 2, 2011: In the first edition of this report, released on October 24, 2011, the values in Table 23 for live pounds (and associated percent of total) of allocated ACE for vessels 30' to < 50' were mistakenly switched with the values for vessels 75' and greater. This error made it appear that vessels 75' and greater caught more than their allocation. The error in Table 23 was corrected along with the text on page 18 (end of Section 5.1) that discusses Table 23 and a related figure (Figure 13). The yellow highlighted text indicates these corrections.

by Andrew Kitts, Evan Bing-Sawyer, John Walden, Chad Demarest, Matthew McPherson, Peter Christman, Scott Steinback, Julia Olson, and Patricia Clay

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NOAA National Marine Fisheries Service
Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543

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Northeast Fisheries Science Center
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EXECUTIVE SUMMARY

This report provides an evaluation of the economic and social performance of active limited access Northeast groundfish vessels for the 2010 fishing year (May 2010 through April 2011) and provides additional analyses to those contained in the Report for Fishing Year 2010 on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2010 – April 2011) (Kitts et al. 2011). The additional analyses in this report are:

1. inclusion of vessel and sector costs in an evaluation of nominal net revenue change (Section 4.2);
2. incorporation of new vessel ownership information (Sections 6.3-6.8);
3. more revenue distribution metrics (Section 6.6);
4. a measure of vessel productivity (Section 4.3);
5. an evaluation of Annual Catch Entitlement trading (Chapter 5); and
6. a qualitative discussion of potential changes in the number of crew and other jobs (Section 7.4).

These new analyses, and those from the previous report, revealed some notable changes in the fishery between 2007 and 2010; some of these are recent, while others reflect ongoing trends (Table 1).

Three clear changes were evident in 2010 compared with the 2007, 2008 and 2009 fishing years. Combined yearly average nominal prices for all species were higher in 2010 than any other year in the time series. Even though groundfish gross nominal revenues continued to decline in 2010, higher nominal prices resulted in 2010 gross nominal revenues from all species landed being higher than in 2008 or 2009, and nearly equal to 2007. Economic performance, as indicated by gross nominal revenue per unit effort and vessel owners' share of nominal net revenue per day, improved in 2010.

Other performance measures indicated the continuation of existing trends into 2010.

Some of these trends are downward. Since 2008, landings of both groundfish and non-groundfish species have declined by about 14%. Several measures of fishing activity and effort also continued to decline in 2010: there were 17% fewer active vessels in 2010 than in 2007, 10% fewer vessel affiliations (groups of vessels connected by common owners) with active vessels, 48% fewer groundfish trips, 33% fewer days absent on groundfish trips, and fewer crew positions, days, and trips.

Other indicators showed increasing trends. The number of non-groundfish trips increased somewhat (2%) between 2007 and 2010. There has also been an increasing concentration of groundfish gross nominal revenues among top earning vessels and vessel affiliations, as gross nominal revenues have become consolidated on fewer individual vessels and among fewer vessel affiliations. About 68% of gross nominal revenues from groundfish sales during 2007-2009 resulted from landings by 20% of active groundfish vessels. In 2010, 20% of vessels accounted for about 80% of the gross nominal revenues from groundfish sales.

In 2010 there were an estimated 22.2 million pounds (live weight) of ACE leased within and between Sectors with a value of approximately $13.5 million. About half the transfers occurred within vessel affiliations. Prices for leases varied from $0 to $1.26 per live pound depending on the stock, and four of the sixteen stocks appeared to trade with an average value of $0.

Limited access Common Pool and Sector performance 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 groups of vessels which were not accounted for in the analyses. All measures of gross nominal revenue per trip and per day absent in 2010 were higher for the average Sector vessel and lower for the average Common Pool vessel. In addition, vessel owners' share of nominal net revenue per day was higher for the average Sector vessel and lower for the average Common Pool vessel.

For the fishery as whole in 2010, more nominal value was obtained from fewer fish landed and less fishing effort expended than compared to the previous three years.

Table 1. Summary of major trends (includes all vessels with a valid limited access multispecies permit)

	2007	2008	2009	2010		
				Total	Sector Vessels	Common Pool
Groundfish Gross nominal revenue	$89,055,085	$90,131,938	$85,088,241	$83,293,667	$81,025,594	$2,268,073
Non-Groundfish Gross nominal revenue	$209,191,370	$201,347,322	$186,051,595	$214,426,203	$117,238,604	$97,187,599
Total Gross nominal revenue	$298,246,455	$291,479,260	$271,139,836	$297,719,870	$198,264,198	$99,455,672
Groundfish average price	$1.43/lb	$1.28/lb	$1.23/lb	$1.44/lb		
Non-groundfish average price	$1.11/lb	$1.01/lb	$1.00/lb	$1.20/lb		
Number of active vessels	1,082	1,012	973	900	444	456
Number of groundfish trips	27,004	26,468	26,032	14,045	11,770	2,275
Number of non-groundfish trips	46,635	46,721	46,815	47,539	20,061	27,478
Number of days absent on groundfish trips	28,158	27,146	24,947	18,818	17,216	1,602
Number of days absent on non-groundfish trips	35,186	36,134	36,397	35,220	17,785	17,435
Total Crew Positions	2,687	2,544	2,442	2,277		
Total Crew-trips	151,747	144,413	144,730	126,583		
Total Crew-days	199,593	192,422	186,944	169,580		
Aggregate owners' share of net revenue	$102,402,422	$102,367,268	$100,507,394	$111,315,070		

1. INTRODUCTION

On 1 May 2010, a new management program—Amendment 16 to the Northeast Multispecies Fishery Management Plan (FMP)—was implemented for the New England groundfish fishery, 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 of the 20 stocks in the groundfish complex. The second expanded the use of Sectors, a type of catch share program whereby groups of fishing vessels are each 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[1] in the FMP and became exempt from many of the effort controls.

Seventeen Sectors operated in 2010[2]. Each Sector established 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). Vessels with limited access permits that joined Sectors were allocated 98% of the total ACE, based on their collective level of historical activity in the groundfish fishery. Approximately half (46%) of the vessels with limited access groundfish permits opted to remain in the Common Pool - likely due, in part, to their small potential contribution to a Sector's total ACE. Common Pool vessels act independently of one another, with each vessel constrained by the number of DAS it can fish, by trip limits, and by all of the time and area closures. These restrictions help ensure that the groundfish catch of Common Pool vessels does not exceed the Common Pool's allocation of the total ACL for all stocks (about 2% for 2010) before the end of the fishing year.

This report provides an evaluation of the economic and social performance of the groundfish fishery for fishing year 2010 (1 May 2010 – 30 April 2011). In this report, all references to year are for the fishing year. The report presents two types of comparisons to evaluate performance: year-to-year and Sector-to-Common Pool. The first involves comparing indicators of fishing performance for the 2010 fishing year with the fishing performance of fishing years 2007 through 2009. The second involves comparisons of the performance of Sector and Common Pool vessels within the 2010 fishing year.

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 performance measure categories are: financial viability, distributional outcomes, stewardship, governance, and well-being. There are

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[1] 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 wolfish (*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.

[2] It should be noted that two Sectors, the Georges Bank Cod Hook Sector (operating since 2004) and the Georges Bank Cod Fixed Gear Sector (implemented in 2006), operated in 2008 and 2009 but each only had an allocation of Georges Bank cod. In fishing year 2010, all members of the Georges Bank Cod Hook Sector joined the Georges Bank Cod Fixed Gear Sector.

multiple indicators under each category. The Northeast indicators have in turn been part of a NMFS-wide process of developing social and economic indicators for all US fisheries, which has resulted in four national workshops – two based on primary data collected by NMFS and two based on secondary data collected by the US Census and other sources.[3]

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 positions, crew-trips, and crew-days. Changes to the number of all types of fishing related jobs are also evaluated. 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.

Other efforts have been, and are being undertaken, in the Northeast to further the understanding of social and economic issues in the fisheries. These include a study of social capital among groundfish permit holders (Holland, et al. 2010), a rapid assessment[4] of the impacts of sectors on groundfish crew (Mendelson and Joyce 2011), and three upcoming surveys of Northeast fisheries in general – one of vessel owners, one of hired captains and crew, and a revised fixed costs survey. See http://www.nefsc.noaa.gov/read/socialsci/catchshares/ for more information on these and other projects.

1.1. Data and Analytical Approach

The vessels whose activities are evaluated in the study are those with valid limited access multispecies permits during fishing years 2007-2010 and with nominal revenue from landing any species in the fishing year (referred to as groundfish vessels). For 2010, 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 2007-2010.

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 year 2010. 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[5]. Weights are given in landed pounds (after heading/gutting) rather than in live pounds (whole

[3] Contact Rita.Curtis@noaa.gov for more information on this national effort.

[4] A rapid assessment is not meant to provide statistically valid data. Rather, it uses techniques like chain-referral sampling (Bernard 2006:192-194) and semi- and unstructured interviews (Bernard 2006:210-212) to acquire in-depth, local, contextual data that can inform and supplement surveys and other quantitative analyses.

[5] Due to the fact that 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. In our one exception to this rule we explicitly discuss landings plus discards when evaluating the performance of the ACE lease market.

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, since the ACLs are calculated and monitored in live pounds, and include both landings and discards. Information on ACE leasing is reported in live pounds.

A groundfish trip is defined as a trip where the vessel owner or operator declared, either through the vessel monitoring system 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 "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[6]. 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) that are based in that port. Revenue by landed port gives an indication of the benefits that other fishing related business (primarily businesses that handle fish such as dealers and processors) derive from landings in their port. We 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) the 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[7].

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.

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[6] 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 it is in this report).

[7] All data are from the NERO's fishing years 2007 – 2010 "Plan B" database (a combination of seafood dealer reports, vessel trips reports, and quota monitoring reports) as of July 12, 2011.

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 the 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.

There were also some adjustments made to the underlying datasets in the period between the Interim Report and this year-end report that affect all four years evaluated in the reports. Data used for the Interim Report contained a number of groundfish trips that were determined to be non-groundfish trips in the year-end data. There were also some trips by open access vessels in the Interim Report data that were removed from the year-end data. These definition changes result in minor discrepancies between the two reports. The most important of these is that the number of vessels with revenue from at least one groundfish trip at year-end is less than the number of vessels reported in the Interim Report (see Table 8 in the Interim Report and Table 9 in this report). As a result, the landings and nominal revenue values in the Interim Report were slightly overvalued. These minor discrepancies, however, do not change the basic findings of the Interim Report.

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 their permit is being registered. Using this database, it is possible to find affiliations among vessels. We define "vessel affiliations" to be 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. A vessel affiliation can contain vessels in multiple sectors and/or the common pool.

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 are not 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 Common Pool and Sector vessels, it is recognized that there are fundamental differences in the characteristics of Sector and Common Pool vessels and in the ACE and DAS allocations[8]. Differences in Common Pool and Sector performance may therefore simply reflect these basic

[8]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 of each regimen for them.

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[9], some of which changed during the 2010 fishing year[10]. 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 2% of the total ACL for all stocks in 2010.

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 for 2010 in comparison with 2007-2009. Aggregate revenues in Table 2 are also provided in 2007 (real) dollars using the GDP Implicit Price Deflator.

2.1. Landings

Total landings of all species on all trips were about 239.1 million pounds in 2010. This compares to landings ranging from 259.5 million pounds to 277.1 million pounds in the 2007–2009 fishing years. Total groundfish landings on all trips declined from a high of 72.2 million pounds in 2008 to a low of 58.5 million pounds in 2010. Non-groundfish landings on all trips also declined from a high of 205.0 million pounds in 2008 to 180.6 million pounds in 2010 (Table 2).

Total landings of all species on groundfish trips were about 81.4 million pounds in 2010. This compares to landings ranging from 102.4 million pounds to 107.2 million pounds in the 2007–2009 fishing years. Groundfish landings on groundfish trips also declined from a high of

[9] The effort controls regulating Common Pool vessels were established or modified under Amendment 16, as further modified by Framework 44, and include DAS reductions (by 27.5% for vessels with "A" DAS and by 72.5% for vessels with "B" DAS), rolling closures, trip limits, gear restricted areas, and a prohibition on the landing of windowpane flounder, ocean pout, Atlantic wolfish, and SNE/MA winter flounder.

[10] Framework 44 provides the Regional Administrator with the authority to adjust DAS counting and trip limits on an as-needed basis to keep the Common Pool within its sub-ACL for each stock. DAS counting rate changes and a number of trip limit adjustments have occurred. These have included a prohibition on retention of witch flounder and trip limit reductions on GOM cod, GOM haddock, GB yellowtail flounder, GOM winter flounder, GB winter flounder, and white hake.

71.6 million pounds in 2008 to a low of 58.0 million pounds in 2010[11]. Non-groundfish landings on groundfish trips also declined from a high of 39.3 million pounds in 2007 to 23.3 million pounds in 2010 (Table 3).

The cumulative landings by month in 2010 of both all species and groundfish species alone are, while lower, similar to those for 2007–2009 (Figures 1 and 2). Sector vessels were responsible for 65% of landings of all species on all trips in 2010, with Common Pool vessels accounting for the remaining 35% of the total (Figure 1 and Table 2). However, because of their large share of ACE allocations, Sector vessels accounted for 98% of landings of groundfish on all trips in 2010 with Common Pool landings responsible for only 2% (Figure 2 and Table 2).

At the allocated groundfish species level, landings of cod and pollock showed marked declines in 2010. Landings of haddock, redfish, and white hake increased in 2010 compared to 2007–2009 (Figure 3).

2.2. Gross Nominal Revenues

Total nominal revenues from all species on all trips for 2010 were $297.7 million. This compares to nominal revenue that ranged from a low of $271.1 million in 2009 to a high of $298.2 million in 2007. Groundfish nominal revenues from all trips in 2010 were $83.3 million which is lower than 2007 – 2009 nominal revenues which ranged from $85.1 million in 2009 to $90.1 million in 2008. Non-groundfish nominal revenues from all trips in 2010 were $214.4 million, higher than 2007 – 2009 nominal revenues which ranged from $186.1 million in 2009 to $209.2 million in 2007 (Table 2)[12].

Total nominal revenue from all species on groundfish trips in 2010 ($105.1 million) declined from 2007 – 2009 levels which ranged from $111.3 million in 2009 to $129.1 million in 2007. Groundfish nominal revenue in 2010 on groundfish trips was $2 million lower than in 2009 and $7 million lower than the highest year of the series which was 2008. Nominal revenue from non-groundfish landings on groundfish trips declined each year from $41.3 million in 2007 to $22.5 million in 2010 (Table 3).

As with landings, cumulative nominal revenues by month for all trips in 2010, for both all species and groundfish species, follow a similar pattern to those in 2007–2009 (Figures 4 and 5). Sector nominal revenues from all species on all trips in 2010 accounted for 67% of total nominal revenue, while Common Pool nominal revenue accounted for 33% (Figure 4 and Table 2). However, because of their large share of ACE allocations, Sector vessels accounted for 97% of groundfish nominal revenue on all trips in 2010, while Common Pool vessels accounted for the remaining 3% (Figure 5 and Table 2).

2.2.1 Nominal Revenues by Landing Port and Home Port

In Massachusetts, Connecticut, and New York landing ports the nominal value of landings for all species in 2010 was higher than the previous three years. All species value landed in the states of New Hampshire, New Jersey, and Rhode Island in 2010 was similar to the previous three years. Maine overall and Portland in particular had steadily declining landings

[11] 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.

[12] To provide a sense of the influence of inflation on revenue changes, revenues in Table 2 are also given in 2007 dollars (deflated by the GDP Implicit Price Deflator).

from 2007 through 2010. In all major MA landing ports except Chatham, the nominal value of landings for all species in 2010 was higher than or equal to the previous three years (Table 4).

In Massachusetts landing ports overall the nominal value of landings for groundfish in 2010 was higher than the previous three years. Groundfish value landed in all other states steadily declined from 2007, and also declined in the major landing ports of Portland, ME, Chatham, MA and Port Judith, RI. In Boston and New Bedford, MA the nominal value of landings for groundfish in 2010 was higher than in the previous three years (Table 6).

From a home port and home port state perspective, 2010 nominal revenues from all species on all trips by vessels declaring their home ports as Gloucester, MA; New Bedford, MA; and Portland, ME were the highest in the past four years, as were the 2010 all species nominal revenues in the home port states of CT, ME, and NY (Table 5). Similarly, groundfish nominal revenues on all trips for the home ports of New Bedford, MA; and Portland, ME and for Maine overall were higher in 2010 than during the past 3 years. Vessels with a Gloucester, MA homeport designation had groundfish values equal to 2009 values. The increase in home port groundfish and all species nominal revenues in the state of Maine, in contrast to the decline in these values landed in this state, indicates that vessels declaring home ports in ME are landing their catch in other ports. Home ports in Rhode Island overall and in Point Judith experienced declines in groundfish nominal revenue from 2007 through 2010, although the decline between 2009 and 2010 was much less than in the previous years (Table 7).

The average of 2007 through 2009 groundfish nominal revenue landed in all ports and counties is shown in Figure 6. Figure 7 shows groundfish nominal revenues for 2010.

2.2.2. Nominal Revenues by Species

Examination of allocated groundfish landings by species (Figure 3) in relation to allocated groundfish nominal revenue by species (Figure 8) revealed that changes in nominal revenue during 2007-2010 were largely due to changes in landings. Notable differences to this generalization are: (1) landings of cod declined in 2010, but higher nominal prices resulted in cod nominal revenues in 2010 remaining similar to those in 2009; and (2) pollock nominal revenues were slightly lower in 2010 compared to 2009, with higher nominal prices mostly offsetting the drop in landings. Nominal revenues for cod, winter flounder, witch flounder, yellowtail flounder, American plaice, and pollock declined slightly between 2009 and 2010, while nominal revenues from white hake and redfish slightly increased. Haddock nominal revenues increased by 22%, from $17.4 million in 2009 to $21.1 million in 2010. Had haddock nominal revenues not increased, the groundfish nominal revenue from all trips would have declined by 6.5% rather than the actual decline of 2.1%.

Since nominal revenues from groundfish declined in 2010 from 2007-2009 levels and 2010 non-groundfish nominal revenues were the highest in the time series, the ten non-groundfish species (see list in Table 8) with the highest nominal revenues landed by limited access groundfish vessels are summarized to show how nominal revenue shifted among fisheries. Of the $28.4 million increase in non-groundfish nominal revenue between 2009 and 2010, $26.4 million is attributed to the top ten non-groundfish species. An increase of $11.2 million in scallop (*Placopecten magellanicus*) nominal revenue accounts for 39.5% of the total increase in non-groundfish species nominal revenue. This increase in nominal revenue, however, was not due to an increase in landings but to an increase in nominal price since scallop landings declined from 9.6 million pounds in 2009 to 8.5 million pounds in 2010. Average scallop prices received by these vessels rose from $6.39 per pound in 2009 to $8.62 per pound. Lobster (*Homarus*

americanus) nominal revenue accounts for 17.4% ($4.9 million) of the $28.4 million increase in non-groundfish species nominal revenue. The increase in lobster nominal revenue was mostly due to an increase in the average price from $3.47 per pound in 2009 to $3.86 per pound in 2010 and a small increase in landings (8.8 million pounds to 9.2 million pounds). Summer flounder (*Paralichthys dentatus*) nominal revenue accounts for 14.3% ($4.1 million) of the $28.4 million increase in non-groundfish species nominal revenue. This increase is due entirely from an increase in landings from 5.9 million pounds in 2009 to 8.5 million pounds in 2010 since average price fell from $2.09 per pound in 2009 to $1.92 in 2010 (Table 8). Examination of the top ten non-groundfish species suggests that the nominal revenue shift from groundfish to non-groundfish, at least for a number of important species, is not due to an increase in landings but to an increase in nominal average price.

2.3. Prices

While both groundfish landings and nominal revenue were lower in 2010 than in the previous three years, aggregate average nominal groundfish prices were the highest in 2010. Analysis of the average yearly nominal prices of the nine allocated groundfish species during fishing years 2007-2010 revealed notable increases in 2010 nominal prices for cod, witch flounder, and pollock[13] (Figure 9). The only species for which there was a nominal price decrease between 2009 and 2010 was yellowtail flounder.

Nominal yearly average prices of all 13 groundfish species declined from $1.43/lb in 2007 to $1.23/lb in 2009 (Figure 10). In 2010, the combined groundfish average nominal price increased to $1.44/lb. The yearly average nominal price for combined non-groundfish species also increased in 2010 to $1.20/lb from $1.11/lb in 2007 and $1.00/lb in 2009.

Because average nominal prices of all groundfish species combined do not explicitly account for changes in the quantities of groundfish species in each year, a price index was constructed to more accurately display price trends of groundfish species. Price indexes more accurately reflect percentage changes in prices than results from using simple averages. The approach used is a "Fisher Ideal" index (Balk 2008), which is constructed from price and quantity data on dealer purchases of all groundfish species. The index was constructed by using quarterly data for fishing years 2007, 2008, 2009, and 2010. 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.

The price index confirms that nominal groundfish prices increased in 2010. The second, third, and fourth quarter 2010 nominal prices are higher than in all other quarters, except quarters 3 and 4 of 2007 (Figure 11).

[13] Pollock prices were between $1.00-1.40 per pound during May through July 2010 compared to $0.50-1.00 per pound during the same period in 2007 through 2009. The 2010 price increase may, in part, reflect the reduced pollock quota at the start of the 2010 fishing year, which constrained landings. The quota was subsequently increased in mid-July 2010. Prices then declined to $0.80 to $1.00 in August through the remainder of the fishing year. These prices are, however, above 2007-2009 levels during the same time period.

3. NUMBER OF VESSELS AND EFFORT

Effort indicators provide information about the amount of fishing that has 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 vessels steadily declined during the 4 years evaluated in this report (Table 9). The number of active groundfish vessels making any fishing trips declined by 16.8% between 2007 (1,082 vessels) and 2010 (900 vessels). A 7.5% decline (i.e., 73 vessels) occurred between 2009 and 2010. Similarly, from 2007 to 2010 there was a 31.6% decline in the number vessels making at least one groundfish trip (658 to 450), with a 20.5% reduction (116 vessels) between 2009 and 2010. It is not possible to reliably identify the cause for the reduction in the number of active vessels that has been occurring for a number of years, including before 2007. Amendment 16 implemented a number of measures that facilitated the consolidation of fishing effort onto fewer active fishing vessels as a means to reduce the operational expenses for owners of multiple permits. For example, that action allows owners of permits held in confirmation of fishing history (CPH) and not associated with an actual fishing vessel to participate in Sectors (i.e., contribute the CPH's landing history to calculate a Sector's yearly allocation of ACE for most stocks) and lease DAS. Amendment 13 implemented DAS leasing and transfer programs allowing vessels to fish the DAS of multiple other vessels. Further, as noted previously, it is not possible to identify the extent to which inactive vessels in Sectors may benefit if other Sector vessels harvest their allocation.

In 2010, 447 vessels (33%) were inactive (no landings) (Table 9). Of these inactive vessels, 296 were Sector vessels and 151 were Common Pool vessels. The number of inactive vessels in 2010 can be compared to the number of inactive vessels in other years: 331 vessels (32%) in 2007, 398 vessels (28%) in 2008, and 408 vessels (30%) in 2009. Some vessel inactivity may be due to participation in DAS leasing or transfer programs and/or internal Sector management decisions. Data are not currently available to evaluate how inactive vessels in Sectors may have benefited from agreeing to have other vessels catch the Sector's allocation.

3.2. Number of Trips and Days Absent

Numbers of fishing trips and days absent from port by active vessels were analyzed, in the aggregate and by vessel size category (< 30'; 30' to <50'; 50' to <75'; and 75' and above), to evaluate vessel activity patterns during the past 4 years (Table 10). Vessel trip report (VTR) data were used to determine the number and length of trips taken in each fishing year.

Between 2007 and 2010, the total number of groundfish fishing trips and total days absent on groundfish trips declined by 48% and 33%, respectively (27,004 trips in 2007 vs. 14,045 trips in 2010; 28,158 days absent in 2007 vs. 18,818 days absent in 2010) (Table 10). In contrast, during this same four-year period, the number of non-groundfish trips, and days absent on non-groundfish trips, increased slightly (46,635 trips in 2007 vs. 47,539 trips in 2010; 35,186 days absent in 2007 vs. 35,220 days absent in 2010) (Table 10). In interviews by Mendelson and Joyce (2011:8) the non-groundfish species targeted showed distinct regional patterns: "In southern New England, including New Bedford, Chatham and Point Judith, monkfish, skate, and

squid were the primary target species other than groundfish. In Gloucester, Portland and Port Clyde, shrimp is a prominent fishery. Small mesh fisheries and tuna were mentioned throughout the region, and dogfish is a target fishery for several vessels in Chatham and Scituate."

Changes in fishing effort between 2007 and 2010 were also examined by vessel size category. In percentage terms, the largest reductions in groundfish trips and days absent on groundfish trips occurred in the less than 30' vessel size category (63% and 59%, respectively). However, there were only a couple hundred trips per year in this vessel size category. In terms of magnitude, the 30' to < 50' vessel size category had the greatest reductions in groundfish trips and days absent (8,478 reduction in groundfish trips and a 4,091 reduction in days absent on groundfish trips from 2007 to 2010) (Table 9). In contrast, the largest vessel class (75' and above) experienced reductions of 12% in groundfish trips and 5% in days absent on groundfish trips. The 50' to < 75' vessel size category had reductions of about 59% in groundfish trips and about 45% in days absent on groundfish trips. Average trip length on both groundfish and non-groundfish trips was relatively constant within all vessel size classes during the time series (Table 10).

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 on all types of fishing-related costs of all vessels as well as all fishing-related revenues to determine actual profits. This would include the cost of purchasing additional ACE or DAS and revenues from both fish and ACE sales. Such a complete data set is not available. However, both the Northeast Fishery Observer Program and the At-Sea Monitors Program implemented to monitor Sector trips collect some of these costs which can be used to evaluate financial performance. Information contained in VTR and dealer data can also be used in various ways to provide additional performance measures.

The three approaches used for evaluating financial performance were: (1) nominal revenue per vessel, trip, and day; (2) analysis of net revenue; and (3) total factor productivity. None of these measures alone provides a complete assessment but together they provide insights into important aspects of economic performance.

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, it should be remembered that 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

may 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[14]. These caveats should be considered when evaluating these results.

Average all-species nominal revenue per vessel during fishing year 2010 was greater than that in any of the three prior fishing years across all vessel size categories (Table 11). However, there are some differences in average groundfish nominal revenue per vessel by vessel size category.

Vessels in the two smallest size categories are relying more on non-groundfish trips and landings for their revenues. For these length categories, both the 2010 average groundfish nominal revenue per vessel and the 2010 nominal revenue from all species on groundfish trips were among the lowest in the past 4 years. In contrast, the larger vessels have higher averages of groundfish nominal revenue per vessel and nominal revenues from all species on groundfish trips in 2010 than in the previous 3 years. For the two smallest vessel size categories, the average groundfish nominal revenue per vessel was a smaller portion of nominal revenue from all species in 2010 than in the previous three years, which means non-groundfish nominal revenue became a larger portion of the average nominal revenue for these vessels. For the two largest vessel size categories, the proportion of average groundfish nominal revenue per vessel in 2010 was higher than in the previous three years. Furthermore, the average nominal revenue from all species and the average groundfish nominal revenue for Sector vessels were higher than the overall 2010 average (and the averages for Common Pool vessels were lower) (Table 11).

All nominal revenue per trip and nominal revenue per day absent measures for the largest three vessel size categories were higher in 2010 than in 2007-2009 (Table 12). All measures of nominal revenue per trip and per day absent were higher for the average Sector vessel and lower for the average Common Pool vessel. This indicates that Sector vessels may be more profitable, on average, than Common Pool vessels. However, an analysis of costs is needed to measure profits.

4.2. Net Revenues

Since a complete accounting of all business costs for all fishing vessels is not available for assessing actual changes in financial profitability, an alternative approach which uses trip costs[15] collected by Northeast Observers and At-Sea-Monitors was used to estimate nominal net revenues. Net revenue is defined as gross revenue less trip costs. Typically, net revenue is then split between the vessel owner and the crew. In this report, analyses are limited to the owner's share of net revenue. 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.[16] 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

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

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

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

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 are: 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 is not included in the estimation of net revenue is the cost some vessels incurred to purchase additional groundfish ACE in 2010 or DAS during 2007 – 2009 (and 2010 for Common Pool vessels). These costs will be discussed in Section 5.

4.2.1 Estimation of Owner's Share of Nominal Net Revenue

Since 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 information from the sampled trips. To do this, observations of trip costs obtained from the Observer Program were used to create frequency distributions of trip costs per day absent for 78 vessel types based on gear used, vessel length, trip duration (single vs. multi-day trips), and fishing year (Table 13). For un-observed trips where actual trip costs were not available (or data were insufficient to link a VTR trip with an observed trip) the mean value from these per day trip cost distributions were then multiplied by the actual trip length (days absent) recorded in the VTR data. The result is an estimate of the cost of the trip and the actual nominal revenue received for the trip (all species landed). From these data, an estimate of nominal net revenue was obtained. 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 year-end reports - is sector organizational cost charged to sector members. Based on information from these reports submitted by Sectors to NMFS, an average charge of $0.04 per pound of landed groundfish was applied to the 2010 landings by sector vessels.

One-half of the net revenues were assumed to be payments to crew[17] (crew share) with the other half assumed to be retained by the vessel owner (owner share). Information is not available to determine if the vessel was operated by the owner and carried no additional crew (in which case no crew payments would have been made).

Due to the 50% split of net revenue between vessel owner and crew, the crew's share of nominal net revenue would be similar to the owner's share. To avoid repetition, estimated crew shares are not provided. Many crew, however, report lower income under Sector management, "since there are new costs that crew must deduct from their settlements, and thus far, most crewmen are not seeing a mitigating increase in their share due to anticipated higher ex-vessel prices under the sector system" (Mendelson and Joyce (2011:23).

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 14. Average vessel owners' shares per day increased in 2010 from 2007 – 2009 levels in all categories except for vessels less than 30 feet on groundfish trips, where owners' shares per day declined. The

[17] If net revenues were negative, crew payments were assumed to be zero. Also, a variety of other types 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). This share arrangement was chosen because it is commonly used.

largest percentage increase (124.8% from 2009) occurred for vessels 75' and greater on groundfish trips. Both the 30' to < 50' and the 50' to < 75' vessels had just over 15% increases (2010 compared to 2009) in owners' shares per day on groundfish trips. Vessels 30' to < 50' had increases of 42.3% between 2009 and 2010 in owners' shares on non-groundfish trips, while increases for vessels 50' to < 75' were 24.5% and for vessels 75' and greater were 26.6%. Sector vessel owners' shares were greater than Common Pool owners' shares across all vessel size categories on groundfish trips. This was also true for all vessel size classes on non-groundfish trips, except for vessels 75' or greater where the nominal values were nearly equal ($3,287 for Sector vessels and $3,428 for Common Pool vessels).

The increases in 2010 owners' shares appear to be based on increases in nominal revenue per day (see Table 12) and not on reductions in trip costs per day. That is, examination of Table 15 shows that 2010 trip costs per day fall with the range of values for 2007 through 2009. Further, there are not large differences between Sector and Common Pool vessels. These finding are important because it suggests that gains in owners' shares may be due to optimizing landed nominal value, in terms of the mix of species landed and/or the price received, and not from reducing trip costs. Exemption from trip limits for Sector vessels may also be a contributing factor to this result.

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[18] software was performed. For each trip in the landings data base for which actual trip cost information was not available, a value was randomly drawn[19] from the appropriate per day trip cost distributions described in Table 13. This process and the resulting average vessel owners' shares were repeated 5,000 times. Results of the simulation, shown in Table 16, provide a range of values based on the characteristics of the underlying cost distributions. Most of the owners' share distributions have maximum values are that are closer to the mean than are the minimum values[20] since the per day cost distributions, which are used to estimate owners' share distributions, are skewed by random high damage costs[21]. Critical values at the 90% confidence level are provided in Table 16 to provide a more realistic indication of the possible values. For example, with 90% confidence, vessels 30' to < 50' in length in 2010 have per day shares to the vessel owner of between $2,554 and $2,783[22].

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

[19] A Latin hypercube approach was used.

[20] For example, Table 16 shows that vessels in the 30' to < 50' vessel size category on groundfish trips in 2008 had minimum owners' shares per day of $374. This is $1,826 less than the mean of $2,236 whereas the maximum ($2,708) is only $255 greater than the mean.

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

[22] The simulation results reported in Table 16 have mean values that are slightly different from the mean values reported in Table 15.

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 at the daily level as above. The two largest vessel size categories had the largest increase in owners' share of nominal net revenue in 2010 over 2007 – 2009 levels (Table 17). Average owners' share per vessel for vessels 50' to < 75' increased by about 7% to 8% per year from 2007 to 2009 then increased by 24.3% in 2010 ($143,445 to $178,307). For vessels 75' and greater the increase was 2% to 3% per year between 2007 and 2009 and then 29.5% in 2010 ($306,491 to $396,840). Owners' shares in 2010 for vessels 30' to < 50' remained at general 2007 – 2009 levels, though with a 2.9% drop from 2009 ($48,378 to 46,969). Average owners' shares for the smallest vessels, those less than 30', went from about -$1,200[23] in 2007 – 2009 to $1,458 in 2010. Across all vessel size categories, average owners' shares were higher for Sector vessels than for common pool vessels (Table 17).

In fishing year 2010, both dockside monitoring (DSM) and at-sea monitoring (ASM) costs were paid for by the National Marine Fisheries Service.[24] Total ASM costs were $4.4 million in 2010. DSM costs are estimated at $290,000 based on a variable charge per landed pound of groundfish[25]. In future years, the fishing industry is expected to cover these costs. [26] Using the actual 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 2010 conditions. Had Sector vessels paid for DSM and ASM costs in 2010, average 2010 owners' share would have been reduced by 1.5% for vessels less than 30', 12.3% for vessels 30' to < 50' (the vessel size category with the greatest number of active sector vessels), 4.4% for vessels 50' to < 75', and 5.1% for vessels 75' and greater (Table 17).

In terms of trip costs as a percent of total revenue, Sector vessels paying for DSM and ASM costs in 2010 would leave the average percentage unchanged for vessels less than 30', increase the percentage from 38.1% to 42.4% for vessels 30' to < 50', increase the percentage from 23.0% to 25.1% for vessels 50' to < 75', and increase the percentage from 31.0% to 33.2% for vessels 75' and greater. Since all costs, and therefore actual profits, are not known, the true significance of these percentage increases of about 2% to 4% can only be assessed in relation to actual profit margins.

4.2.4 Aggregate Nominal Net Revenues

Owners' share of nominal net revenues aggregated by fleet segments (vessel size and homeport state) show the combined result of shifts in average vessel performance (reported first)

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

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

[25] < 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.

[26] "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). Also, ASM coverage rates are expected to be lower in 2011 than they were in 2010 likely resulting in lower ASM costs.

and the shifting of activity among fleet segments. Total owners' shares increased from around $101 million to $102 million from 2007 – 2009 and then to $111 million in 2010 (a 10.8% increase over 2009) (Table 18). All but one of the four vessel size categories had increases in aggregate owners' shares. The category in which owners' share declined was the 30' to < 50' category where aggregated shares declined from about $25 million in 2007 – 2009 to $22 million in 2010 (12%). The two largest vessel size categories had increases of 14% (50' to 75') and 20% (75' plus). Vessels less than 30' went from negative aggregate values in 2007 – 2009 to $107,859 in 2010 (Table 18).

The estimated impact of Sector vessels paying for ASM/DSM costs on aggregate owners' shares (Table 15) by vessel size category results in the same percentage reductions shown in Table 16 for average owners' shares. The difference between total aggregate owners' shares for Sector vessels without ASM/DSM costs ($75.2 million) and with ASM/DSM costs ($70.5 million) is the combined ASM/DSM cost of $4.7 million. Table 18 shows how the declines in aggregate owners' shares are distributed among vessel size categories. The vessel size category with the potential for the largest impact from assuming these costs under conditions similar to 2010 are those in the 30' to < 50' category (12.3% reduction vs. < 7% in all other categories). This may be due, in part, to having a proportionally larger share of groundfish nominal revenue, as compared to total nominal revenue, than all other vessel size categories. This translates to assuming a larger relative proportion of ASM/DSM costs. In addition, their average trip costs as a percent of total revenue is the largest of all vessel size categories (38.1% as compared to 31% and less for all other categories).

Aggregate vessel owners' shares by home port state show increases across all states except New Hampshire where aggregate shares declined by 26.7% (Table 19). The home port state with the largest aggregate owners' shares, Massachusetts ($57.1 million in 2010), had the lowest percentage increase (5.8%). The home port state with the smallest aggregate owners' shares, Connecticut ($2.0 million in 2010), had the largest percentage increase (50.9%). Increases in other states ranged from 12.4% (Maine) to 24.5% (New York) (Table 19).

Had Sector vessels been responsible for ASM/DSM costs, aggregate owners' shares by state would still have been above 2007 - 2009 levels for all homeport states except for New Hampshire (as noted above) and Massachusetts. The impact of the 7.6% reduction in owners' shares for Sector vessels with a home port in Massachusetts is that the 5.8% increase in owners' shares between 2009 and 2010 would have been canceled out by the additional ASM/DSM costs (Table 19).

These results should not be used to predict future costs since 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 called Total Factor Productivity (TFP). TFP is the most general measure of productivity and TFP change 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 a 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. The Malmquist index (MI), which was introduced by Caves, Christensen and Diewert (1982), is one index number that is well suited for measuring TFP change and is used in this analysis. Because only quantities of outputs and inputs are needed to construct the MI, it is particularly advantageous to use for estimating productivity change for 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.

A Malmquist index was contructed to examine changes in TFP for groundfish vessels beginning in 2007. Landings for each vessel were aggregated into three broad output groups, which were roundfish, flatfish, and all other species. Inputs included in the index calculation were vessel length, gross tonnage, horsepower, days absent, and average crew size.[27] The MI was calculated for three gear groups – trawl, hook, and gillnet.[28] Lack of sufficient observations precluded calculation of the MI for other gear groups. Vessels from each gear group were then stratified into either the Common Pool group or the Sector group for all years of analysis, depending on which group they were part of in 2010.[29] Next, the average productivity change per vessel in each fishing group was calculated. Individual vessel index numbers were then aggregated to get an overall index value. The contribution of each vessel's productivity to the overall value was weighted by its nominal revenue. A value greater than one for the MI indicates an improvement in productivity, while a value less than one means that productivity declined. Yearly MI values were then used to construct a Malmquist Chain Index (MCI) with 2007 as the base year[30] (Table 20).

For Common Pool vessels, productivity declined in 2008, remained at 2008 levels in 2009, and then declined further in 2010, which resulted in an overall decline of 28% from 2007 levels. Sector vessels increased their productivity in both 2008 and 2009, before showing a slight decline in productivity in 2010.

For Sector vessels, the MCI does not show the same upturn in 2010 as do the other indicators of economic performance (revenue per trip/day and net revenues). The MCI only uses quantities of inputs and outputs whereas the other measures use prices. The decline in landed pounds of fish in 2010 certainly influenced the MCI downward. Conversely, the higher value obtained from fewer landed fish influenced nominal revenue per trip/day and nominal net revenues upward. Each of these indicators measures different aspect of economic performance.

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[27] These variables were selected since they were available from VTRs for all trips. Other inputs, such as fuel, are available from observer data but only on a subset of trips.

[28] Vessels were grouped by gear type because differences in fishing practices are more pronounced among gear type than they are among, for example, vessel size category.

[29] Note that affiliation with a pre-2010 Sector (Hook or Fixed Gear Sector) was not used to classify vessels into Sector and Common Pool groups for this analysis.

[30] 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, which we have set as 2007.

An indicator that incorporates all input quantities and prices and output quantities and prices is preferable. In the absence of complete information, multiple indicators were chosen.

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 to vessels through Northeast multispecies limited access fishing permits. When fishermen join a Sector, their 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 catch on Sector fishing trips counts towards 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 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.[31] ACE and PSC leases result in payment transfers within the industry. If there are no transaction costs—that is, no costs associated with these transfers[32]—the payments are not a cost to the industry. Every pound of ACE or PSC leased represents a cost to the lessee (those obtaining ACE/PSC) and a reimbursement to the lessor (those releasing ACE/PSC), both of whom are industry members or, in some cases, permit banks. A frictionless lease market[33] allows industry members to better align their allocated PSC portfolio with their actual catch. It is particularly important to note that the ability to lease allows fisherman to use improved 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 fisherman 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 between affiliated Sectors may increase transaction costs, decreasing market liquidity and reducing 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

There are two forms of leasing: ACE leases between Sectors, and PSC leases within Sectors. Although by regulation ACE is pooled within sectors, most sectors seem to follow the practice of assigning catch allowances to member vessels based on PSC allocations. Assuming that this is the practice of all Sectors, catching more fish than an individual PSC allocation must require either a lease of ACE (between-Sector) or PSC (within-Sector). Within-Sector PSC

[31] Presumably because the benefit from leasing the quota outweighs the expected benefits from catching it (revenues from landing ACE less the cost of catching the ACE). Often, ACE is transferred in order to achieve an optimal balance of species/stocks since many species/stocks are caught jointly.

[32] Transfer costs include, for example, payments to a broker, the cost associated with finding buyers or sellers, or the opportunity costs associated with leases that didn't happen due to poor market information, or other factors.

[33] A lease market with no transaction costs.

leases are informal and data were not uniformly collected for 2010.[34] Between-Sector leases are formally reported, noting 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.

Comparing catch in live pounds to allocated ACE/PSC shows that 281 Sector-affiliated MRIs had catch that exceeded individual PSC allocations for at least one stock. These MRIs are assumed to have been lessees in 2010, leasing in over 22 million pounds of ACE and/or PSC. A similar comparison at the vessel affiliation level[35] shows that, of 384 vessel affiliations with ownership in at least one Sector-based vessel, 225 groups were active lessees, leasing in almost 9.9 million pounds (Table 21). Gloucester, MA had the largest number of lessees with 54 (Table 21). The majority of the 281 lessees identified (131) were attached to vessels in the 30' to <50' vessel size category (Table 22).

While lessee fishermen and/or vessel affiliations can be determined by comparing catch to allocated PSC at the MRI level, the fishermen on the other side of those transactions (lessors) are more difficult to identify. Fishermen who failed convert their allocated PSC into catch may be easily identified (724 Sector-based MRIs had zero groundfish catch), but these permits create a pool of potential ACE/PSC that is much larger than the lessee requirement pool. Further, many active fishermen chose to lease ACE/PSC for particular stocks while targeting others, so those with zero catch are not the sole pool of potential lessors. End-of-year reporting by the Sectors contains information on within-Sector PSC leases, and future analysis of this information may provide a basis for a better understanding the lessor side of the market, but at this time it is not possible to determine which specific vessels were lessors. Some broad conclusions may be reached, however. For example, while 38% of all allocated ACE/PSC was caught by Sector vessels, less than 1% of allocated ACE was caught by the smallest vessel size class. Permits in this category were likely lessors of ACE. For the other three vessel size categories, the proportion of allocated ACE caught was 42% (30' to < 50'), 48% (50' to < 75') and 54% (75' +) (Table 23). Figure 13 shows that the distribution of catch and ACE among vessel size categories changes considerably across the 16 allocated stocks, but confirms the conclusion that the smallest vessel size category, most likely inactive skiffs, were a primary source of leased ACE/PSC and for at least three of the 16 allocated stocks (GB cod west, white hake, and witch flounder), the two largest vessel size categories were the primary net lessees of ACE.

5.2. Prices

Using price and quantity data for the between-Sector component of the market, a hedonic price model was used to estimate prices for all 16 stocks of leased ACE.[36] Statistically significant

[34] Sector end-of-year reporting contains detailed intra-Sector lease data for most sectors but the information is not comprehensive and an analysis has not been completed at this time.

[35] Groups of vessels connected by common ownership.

[36] 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). This 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.

Approximately 1,000 lease transactions took place in 2010 but only 308 contained price data (Table 25). Data were validated by eliminating transactions with implied prices that greatly exceeded or underestimated (+/-

prices were estimated for 12 of the 16 stocks. Four stocks, GB haddock East and West, pollock, and GOM winter flounder, were traded at a price no different from zero.[37] GOM cod and GB winter flounder fetched the highest lease prices, at between \$0.92 and \$1.26 per pound. GB yellowtail flounder recieved the lowest (non-zero) price, at between \$0.10 and \$0.31 per pound.[38] There was no statistical difference in ACE lease prices between leases registered in FY 2010 and those in the first part of FY 2011.[39]

Table 26 contains data on the price model used to create these estimates, as well as three other models based on smaller datasets. High and low values are given using the parameter estimate plus or minus the standard error. All four models are included in this table to provide a better understanding of price sensitivity across models. Table 27 contains estimates from single stock lease data only, and here high and low estimates are the mean value plus or minus one standard deviation. This table is also included to help understand across-model price sensitivity.

Prices based on inter-Sector ACE leasing represent roughly two thirds of the total ACE/PSC lease market by volume, or 15.5 million pounds. Assuming all between-Sector ACE leased was converted to catch, the remaining portion of the lessee requirement forms a lower bound estimate of within-Sector PSC leasing, a total of 6.5 million pounds (Table 24). This is a lower bound estimate for two reasons: (1) fishermen almost certainly leased more ACE on the inter-Sector market than they were able to convert into catch, and (2) likewise, the difference between allocated PSC and catch at the MRI level represents the minimum lessee requirement—fisherman almost certainly also leased more PSC within their Sectors than they were able to

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90%) those prices implied by the mean value of single stock leases. As Table 25 demonstrates, only 175 transactions in 2010 contained data sufficient for use in the model. Prices were estimated for 2010 only and, to improve the estimates, a separate model using 2011 data (those available as of September 25, 2011) was estimated as well.

The specification of the model is $P = \beta_0 + \beta_1\chi_1 + \cdots + \beta_n\chi_n + \varepsilon$. The weights, â, 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 fishing year effects (for models including fishing year 2011 data), and the effects on prices for ACE leased by the Northeast Fishery Sector IV. To include swap leases in the model, price was simply set at zero dollars and one side of the swap recorded negative lease quantities while the other recorded positive quantities. For example, if two Sectors swapped 1,000 lbs of Gulf of Maine (GOM) cod for 1,000 lbs of Georges Bank (GB) East cod, the data would appear as:

Compensation	GOM cod	GB East cod
\$0	1000	-1000

The model infers the value of GOM cod as equal to the value of GB East cod at the time of the transaction, and the assignment of which stock would be recorded with positive and negative quantities is random. By using swap, bundle (again, where one compensation value applies to quantities of multiple stocks) and single-stock lease data it is possible to provide a comprehensive estimate of ACE lease values.

[37] This could be because the quota were truly valueless (likely the case for the GB haddock stocks, as well as pollock) or because data were insufficient to allow the model to estimate a non-zero price (likely the case for GOM winter flounder).

[38] Interestingly, bundled leases trade at a discount of roughly \$0.19 per pound relative to both single stock and swap leases, which traded at statistically similar prices. This indicates that lessors undervalued their ACE when packaging multi-stock transactions and leasing them for one price.

[39] The Northeast Fishery Sector IV leased ACE with approximately a \$0.10 per pound discount relative to open market trades, an estimate that may help interpret the potential for different market clearing prices within- and between-Sectors.

catch. Prices based only on one portion of the lease market (between Sector ACE) may be biased due to structural issues affecting the lease markets.[40] Further investigation of information on intra-Sector PSC leasing contained in the Sector end of year reports will almost certainly be useful in understanding whether or not ACE and PSC lease markets cleared at similar prices.

5.3. Transfer Payments

The total value of both ACE and PSC lease market transfers is estimated to be $13.5 million for leases made at the MRI level. $6.33 million of this is from within-Sector PSC leasing and $7.23 million is from between-Sector ACE leasing (Table 28). These totals mask considerable variation in leasing trends between stocks: roughly 70% of GB West cod leasing was between Sectors, while this was only 15% for GB winter flounder (Figure 14). When collapsed to vessel affiliations, the total transfer payment due to leasing is estimated at just under $7 million, implying that roughly half of the total lease market is taking place within vessel affiliations. The proportion of leases within and between vessel affiliations varies considerably at the homeport and state level. For example, in Boston and New Bedford the vast majority of leasing occurs within vessel affiliations, while in Portland and Point Judith the majority of leasing occurs between vessel affiliations. The relatively high proportion of leasing within vessel affiliations implies industry consolidation due to leasing is happening within vessel affiliations—owners leasing to themselves, rather than to other owners (Table 29).

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 did not happen. Together, these are considered transaction costs. It was not possible to estimate the value of transaction costs for three reasons. The first is a structural impediment. The fact that ACE is held at the Sector level but leases almost universally occur at the individual permit (MRI) and/or vessel affiliation level means that lease market data are opaque, leaving only the lessee side of the transaction obviously discernable from official NOAA records. Second, while most Sectors included some perspective on some forms of transaction costs in their annual reports, no comprehensive data are available on all of the costs associated with orchestrating leases between individuals, firms, or 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 and final reason for being unable to estimate transaction

[40] 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 this 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. This is not certain, however, 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 price estimates reported here since no data are available for them.

costs is that no data are available on which to base estimates of cost of lost leasing opportunities[41], the largest form of transaction cost in this market. Primarily these lost opportunities are due to search frictions and/or structural market impediments that prevent or impair lease negotiation. That is to say, it is not possible to estimate which fishermen or vessel affiliations wanted to lease quota but could not, and, of primary importance, 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. The fact that only 38% of total allocated ACE/PSC was caught, and that less than 80% of these allocations were caught for 10 of the 16 stocks implies at first glance that the potential for efficiency gains from improving lease markets may be large. In fact, the inability of Sectors to catch their allocated ACE is not likely attributable to any one factor (Table 30). For example, it may be due to search frictions and/or structural impediments, but it may also be due to fish availability and/or imperfect quota setting, insufficient technology to target particular stocks, expectations about future market conditions, or other factors altogether. To understand if transaction costs associated with leasing ACE contributed to any under-harvest, the hedonic price model was run with an additional variable to determine if lease prices were different in the two months prior to the end of the 2010 fishing year. In fact, they were. The model estimated that prices dropped by $0.25 per pound across all species[42] in March and April. Given that volumes were also down in these two months it is obvious that, even for stocks where quotas were nearly binding, the demand for ACE decreased as the fishing year drew to a close. If transaction costs were impeding leases, the lease prices would be expected to rise as buyers sought to entice sellers. That the opposite occurred implies that the market had sufficient liquidity, and transaction costs, while potentially significant, were unlikely to be so high as to contribute substantially to the under-harvest.

6. DISTRIBUTIONAL ISSUES

Management and regulatory changes may induce changes in the relative distribution of types and locations of vessels operating in a fishery. The measures provided thus far have provided information about aggregate activity and average vessel performance by port of landing, home port, and vessel size class. Of equal importance is the number of individual vessels and vessel affiliations that underlie this information, how the distribution of vessels has changed geographically, and how the mix of vessel "types," in terms of vessel size class and nominal revenue class, has changed.

Additionally, the distribution of nominal revenue among both individual vessels and among vessel affiliations has important implications for evaluating distributional impacts.

6.1. Number of Active Vessels by Home Port

As noted previously (Section 3.1 and Table 9), the total number of active vessels with revenue from any species on all trips declined 17% between 2007 and 2010 (1,082 to 900 vessels – decline of 70 vessels between 2007 and 2008, 39 between 2008 and 2009, and 73 between 2009 and 2010). By home port state, the largest percentage decline (33%: 18 to 12 vessels) occurred in Connecticut. By home port, the largest percentage declines occurred in Boston (30%), Portland (27%), and New Bedford (24%) (Table 31).

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

[42] +/- $0.04, $p < 0.001$

Between 2009 and 2010, the largest percentage reduction in active vessels, by home port state, occurred in Massachusetts (9%: 488 to 446 vessels) and, by home port, in Boston (15%: 66 to 56 vessels) and New Bedford (11%: 87 to 71 vessels) (Table 31).

Between 2007 and 2010, the total number of vessels with revenue from at least one groundfish trip declined by 32% (658 to 450 vessels – decline of 47 between 2007 and 2008, 45 between 2008 and 2009, and 116 between 2009 and 2010.) (Table 32). By home port state, the largest percentage declines from 2007 to 2010 occurred in New Jersey (51%: 41 to 20 vessels) and in Maine (46%: 78 to 42 vessels). By home port, the greatest percentage reductions occurred in New Bedford (45%: 60 to 33 vessels) and Boston (33%: 54 to 36 vessels).

Between 2009 and 2010, the largest percentage reduction in number of vessels with revenue from at least one groundfish trip, by home port state, occurred in Maine (33%: 63 to 42 vessels) and, by home port, in New Bedford (38%: 53 to 33 vessels) and Gloucester (22%: 96 to 75 vessels) (Table 32).

6.2. Number of Active Vessels by Vessel Size

Declines in the number of active vessels occurred in all vessel size categories between 2007 and 2010 (Figure 15). The 30' to < 50' vessel size category, which has the largest number of active vessels (revenue from any species on all trips), experienced a 17% decline (572 to 476 vessels) during the past 4 years. The 50' to < 75' vessel size category, containing the second largest number of vessels, experienced a 20% reduction during 2007 to 2010 (289 to 230 vessels). The number of active vessels in both the smallest (less than 30') and largest (75' and above) vessel size categories declined by 12% between 2007 and 2010. The decline was consistent across all four years in all vessel size categories (Figure 15).

The 30' to 50' vessel size category also contains the largest number of active groundfish vessels (with revenue from any species on groundfish trips only) (Figure 16). Between 2007 and 2010, this vessel size category experienced a 30% reduction in active groundfish vessels (351 to 246 vessels). The 50' to 75' vessel size category, containing the second largest number of active groundfish vessels, underwent a 39% reduction, declining from 194 vessels in 2007 to 119 vessels in 2010. Between 2007 and 2010, the over 75' vessel size category experienced a 25% decline in active groundfish vessels (84 to 63 vessels), while the number of active groundfish vessels in the < 30' vessel size category declined by 24% (29 to 22 vessels). The decline was consistent across all four years in all vessel size categories except for the 30' to < 50' category in which the largest decline occurred between 2009 and 2010 (Figure 16).

6.3. Number of Vessel Affiliations

The total number of vessel affiliations (networks of vessels connected through common owners) possessing a limited access groundfish permit decreased by 5.1% between 2007 (984 affiliations) and 2009 (934 affiliations) (Table 33). However, between 2009 and 2010, there was an 11.8% increase (110 additional affiliations) in the total number of vessel affiliations. 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 also result in changes in the number of vessel affiliations. It is the combination of these two possible scenarios that are reflected in the results discussed here (Table 33).

The number of vessel affiliations in possession of at least one active vessel steadily declined during the 4 years evaluated in this report (Table 33). The number of vessel affiliations

with active vessels declined by 10.3% between 2007 (816 affiliations) and 2010 (732 affiliations). A 5.2% decline (40 fewer affiliations) occurred between 2009 and 2010.

The number of vessel affiliations that had at least one vessel that reported revenue on at least one groundfish trip steadily declined by 7.8% from 2007 (525 affiliations) to 2009 (484 affiliations). Between 2009 and 2010, however, there was a 16.1% drop (78 fewer affiliations) in this category.

In 2010, 312 vessel affiliations (30%) were inactive (no landings) (Table 33). The number of inactive affiliations in 2010 is nearly twice the number of inactive affiliations in other years: 168 affiliations (17%) in 2007, 171 affiliations (18%) in 2008, and 162 affiliations (17%) in 2009.

The percentage of affiliations that owned a single vessel remained approximately constant at 85% throughout 2007-2010 (Table 34). The percentage of affiliations owning 3 or more vessels remained at about 4% throughout 2007-2010. In fact, the percentages by group size remained relatively constant across the time series (Table 34).

In 2007 there was an average of 1.33 vessels per group, but by 2010 this average had fallen to 1.23 vessels per group. Using the base year average, this is a 6.8% decrease over four years (Table 34).

The implication of making comparisons between the number of active vessels (Table 9) and the number of vessel affiliations with active vessels is that some of the reduction in active vessels may be due to vessel affiliations using fewer vessels to harvest fish or selling them out of the fishery. For example, there was a 16.8% reduction in the number of active vessels between 2007 and 2010 but only a 10.3% reduction in the number of vessel affiliations with active vessels (Table 34). This result is confounded by the fact that there was an increase in the total number of vessel affiliations over the same time period due to either the entry of new owners or the reconfiguration of existing owners among vessel affiliations. However, the reduction in the average number of active vessels per active vessel affiliation (from 1.33 vessels in 2007 to 1.23 vessels in 2010, Table 35) indicates that owners may not be leaving the fishery at the rate suggested by the reduction in the number of active vessels.

6.4. Distribution of Nominal Revenue Among Vessels

Groundfish nominal revenues were not evenly distributed among groundfish vessels (or groundfish vessel nominal revenue categories) during the past 4 years (nor probably at any time). During 2007-2010, the amount of overall nominal revenue concentrated in the top earning categories gradually increased. Distribution of nominal revenue was examined in two ways:

1. Active vessels in each year were divided into eight nominal revenue categories, with the smallest nominal revenue category including vessels earning less than $50,000 for all trips and species landed during the first nine months of 2007–2010, and the highest nominal revenue category including vessels earning over $1 million (Figure 17).

2. 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 35 and 37).

Between 2007 and 2010, the number of vessels in the six lowest nominal revenue categories (includes vessels that earned from $1 to $699,999) declined (Figure 17). The number

of vessels in the top two nominal revenue categories was relatively constant during the past 4 years, except for the pronounced increase in 2010 in the number of vessels in the largest nominal revenue category ($1.0 million and greater). Since the total number of active vessels declined between 2007 and 2010 (Table 12) and nominal revenue per vessel changes from year to year, Figure 17 shows the net result of these two factors on the yearly distribution of vessels in the nominal revenue categories.

During 2007-2009, approximately 60% of the total nominal revenue from all species has been concentrated in the top 20% of vessels (Table 35). In 2010, the top 20% of vessels had 65% of the nominal revenue from all species. In 2010, there was little change in the share of the bottom three nominal revenue earning categories for all-species nominal revenues.

During 2007-2010, groundfish nominal revenues became increasingly more concentrated in the highest-earning 20% of vessels, increasing from 67% in 2007 to 80% in 2010 (Table 36). Most of this increase occurred between 2009 and 2010. As a consequence, the share of groundfish nominal revenues earned by the bottom nominal revenue earning categories declined during this time period.

The distribution of Common Pool groundfish nominal revenue is highly skewed to the top 10% of vessels (Table 36), which accounted for 77% of the Common Pool groundfish nominal revenues in 2010. However, Common Pool groundfish nominal revenues in 2010 represent a very small percentage (3%: $2.3M/$83.3M, Table 2) of the total 2010 groundfish nominal revenues.

When the number of vessels in a nominal revenue category has declined, this may reflect that vessels have dropped out of the fleet OR that vessels moved into a different nominal revenue category in the subsequent year (either higher or lower), or both. When the total number of vessels has declined, some vessels *have* left the fleet or have become inactive.

6.5. Distribution of Nominal Revenue Among Vessel Affiliations

All-species and groundfish nominal revenues were not evenly distributed among vessel affiliations during the past 4 years. 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, with the smallest nominal revenue category including affiliations earning less than $50,000 for all trips and species landed, and the highest nominal revenue category including vessels earning over $1 million (Figure 18).

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 37 and 38).

Between 2007 and 2010, the number of vessel affiliations within most nominal revenue categories did not change substantially (Figure 18). However, between 2009 and 2010 there was a noticeable drop in the number of affiliations in the less than $50K category and a noticeable increase in the number of vessel affiliations with greater than $1 million in all species nominal revenue (Figure 18). Since the total number of vessel affiliations with active vessels declined between 2007 and 2010 (Table 10) and nominal revenue per vessel affiliation changes from year

to year, Figure 18 shows the net result of these two factors on the yearly distribution of vessel affiliations, by nominal revenue category.

During 2007-2009, approximately 69% of the total nominal revenue from all species was concentrated in the top 20% of vessel affiliations (Table 37). In 2010, 72.8% of the total nominal revenue was concentrated in the top 20% of vessel affiliations. Throughout 2007-2010, the share of all-species nominal revenue concentrated in each of the bottom three earning brackets remained the same. From 2007-2009, the share of all-species nominal revenue that was concentrated in each of the top two nominal revenue brackets (the top 20% and top 10%) marginally decreased, while the share of all-species nominal revenue concentrated in each of the remaining middle brackets marginally increased. But in 2010, the share of all-species nominal revenue in the 70%, 60%, 50%, 40%, 30%, and 20% brackets each slightly decreased, while the share of all-species nominal revenue in the top 10% of vessel affiliations increased (from 51.4% to 56.7%).

During 2007-2009, approximately 61% of the total nominal revenue from groundfish was in the top 10% of vessel affiliations (Table 38). But in 2010, 73% of groundfish nominal revenue was in the top 10% of vessel affiliations. All other percent brackets in 2010 declined, in terms of both value and percentage, in comparison to 2007 through 2010 (Table 38).

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. A Lorenz curve is constructed by ranking vessels in order of increasing nominal revenue, and plotting the cumulative proportion of the population on the horizontal axis versus the cumulative share of nominal revenue on the vertical axis. For any given point on the Lorenz curve, the vertical axis value is the share of total nominal revenue accounted for by all vessels who earned revenue less than or equal to that of 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 which represents perfect equality. The Gini coefficient is equal to twice the area between the diagonal and the Lorenz curve. Its values are bounded by 0 and 1, where 0 indicates perfect equality and 1 indicates maximum inequality.

Between 2007 and 2008, the Gini coefficient for all-species nominal revenue by active vessels decreased from 0.593 to 0.588 (Figure 19). In 2009, the Gini coefficient decreased to 0.587. In 2010 (Common Pool and Sector vessels combined) the Gini coefficient increased to 0.625, indicating that between 2009 and 2010 inequality among vessels increased - though it had been decreasing somewhat in previous years (Figure 19).

The distribution of nominal revenue by active vessels at the affiliated vessel level followed a similar pattern (Figure 20). Between 2007 and 2009, the Gini coefficient decreased from 0.680 to 0.665. In 2010, the Gini coefficient increased to 0.698, indicating that between 2009 and 2010 inequality among vessel affiliations increased - though it had been decreasing somewhat in previous years (Figure 20).

The distribution of all-species nominal revenue among vessels can be compared to that among vessel affiliations by comparing Gini coefficients for each corresponding year. Across the complete time series, all of the ownership group Gini values were greater than their corresponding vessel Gini values.

The distribution of groundfish nominal revenues became more unequal in each year among both vessels and vessel affiliations (Figure 21). From 2007 to 2009, the Gini coefficient for groundfish nominal revenues among vessels increased steadily from 0.663 to 0.684 and then moved markedly to 0.760 in 2010 (Figure 21). Groundfish nominal revenue inequality among vessel affiliations also increased over the time series (Figure 22). From 2007 to 2009, the Gini coefficient among vessel affiliations increased from 0.751 to 0.764 and then to 0.832 in 2010 (Figure 22). By most standards, Gini coefficients greater than 0.75 indicate extreme inequality.

As with all-species nominal revenues, groundfish nominal revenues were more unequal among vessel affiliations than they were among vessels. Again, across the complete time series, all of the vessel affiliation Gini coefficients were greater than their corresponding individual vessel Gini coefficients.

6.7. Consolidation of Nominal Revenue Among Vessels

Another way of looking at the distribution of revenue is evaluating the number of vessels that earn portions of the overall revenue. When fewer vessels earn a larger portion of the overall revenue, then consolidation has occurred. Mendelson and Joyce (2011:19) report that crew members interviewed perceive that consolidation is occurring. To examine whether consolidation has occurred, year to year changes in the proportion of vessels by nominal revenue quartile are used while adjusting for the overall decline in total numbers 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 2007 to 2010 (Table 39). From 2007 to 2009, the number of vessels that accounted for the top 25% of all species nominal revenue declined by 6 vessels (55 to 49 vessels), but declined by 10 vessels in 2010 (49 to 39 vessels). However, because the total all species fleet size also decreased between 2007 and 2010 (1,082 to 900 vessels), the percentage of vessels accounting for the top 25% of all species nominal revenues only changed from approximately 5.0 % during 2007-2009 to 4.3% in 2010. From 2007 to 2009, the number of vessels that accounted for the top 50% of all species nominal revenue fell by seven vessels in 2008 and by seven more vessels in 2009 (from 152 in 2007 to 138 in 2009), but declined by 28 vessels to 110 vessels in 2010. This translates into a percentage change of the fleet accounting for 50% of the all species nominal revenues from roughly 14.0% during 2007-2009 to 12.2% in 2010 (Table 39). These results show that nominal revenue has consolidated on fewer vessels in 2010 as compared with the three previous years.

With respect to groundfish nominal revenues, the number of vessels that accounted for the top 25% of groundfish nominal revenue on all trips declined from 24 to 12 during 2007-2010 (Table 40). On a fleet percentage basis, 2.4% of the 2010 fleet accounted for 25% of the groundfish nominal revenues vs. 3.3 to 3.5% of the fleet during 2007-2009. The number of vessels that accounted for the top 50% of groundfish nominal revenue during the past 4 years fell from 82 to 38. On a fleet percentage basis, 7.6% of the 2010 fleet accounted for 50% of the groundfish nominal revenues versus approximately 11% of the fleet during 2007-2009 (Table 40).

As noted earlier with regard to the revenue categories, when the number of vessels in a quartile category drops, this may be due to vessels leaving the fleet OR it may be due to vessels moving into a different revenue quartile in the subsequent year (either higher or lower). Because the total number of vessels declined, some vessels most certainly left the fleet but it is uncertain which vessels these are or to which revenue quartiles they belonged.

6.8. Consolidation of Nominal Revenue Among Vessel Affiliations

While consolidation 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. In other words, sometimes when a vessel leaves the fleet it is because its owner (or owners) has consolidated quota onto another vessel or vessels, rather than that the owner has left fishing.

To evaluate any consolidation 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 41 and 42, respectively). From 2007 to 2009, the number of vessel affiliations that accounted for the top 25% of all-species nominal revenue increased by one group each year (15 to 16 to 17), but declined to 13 affiliations in 2010 (Table 41). However, because the total number of vessel affiliations also decreased between 2007 and 2010 (816 to 732 affiliations), the percentage of vessel affiliations accounting for the top 25% of all species nominal revenues only declined from an average of 2.0% during 2007-2009 to 1.8% in 2010 (Table 41).

From 2007 to 2009, the number of vessel affiliations that accounted for the top 50% of all-species nominal revenue remained at 74, dipping briefly to 72 in 2008. In 2010, this number declined to 57. The accompanying change in the percentage of vessel affiliations accounting for 50% of all-species nominal revenues was from 9.1 to 9.6% during 2007-2009 to 7.8% in 2010 (Table 41).

The percentage of vessel affiliations accounting for 25%, 50% and 75% of groundfish nominal revenues remained approximately the same from 2007 to 2009, but by 2010, these percentages had fallen considerably (Table 42). Between 2009 and 2010, the number of vessel affiliations accounting for 25% of groundfish nominal revenue fell from 6 to 3 (50%), while the number of vessel affiliations accounting for 50% of groundfish nominal revenues fell from 29 to 15 (48.3%). During the same time frame, the number of vessel affiliations accounting for 75% of groundfish nominal revenues fell from 89 to 45 (49.4%) (Table 42).

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, such as pay and 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 the duration of trips. While these data do not identify the actual number of individuals employed (e.g., crew often work for more than one vessel owner), the data can be used to indicate the number of crew positions available and the length of time crew spend at sea.

The Mendelson and Joyce (2011) study targeted groundfish crew, and involved interviews with 57 crewmembers in 10 ports. Interviewees were of various ages, ethnicities, and levels and types of involvement in the fisheries. Results of this qualitative study indicate that

changes in the economic and social well-being of crew are diverse and may vary by region, relationship to the vessel owner, length of time in the industry, and other factors. The study also suggests that incomes of some crew members declined while those of others increased. Many crew also expressed a perception that vessel safety has decreased.

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 from 2,687 positions in 2007 to 2,277 positions in 2010 (a 15% decline) (Table 43). Declines in crew positions occurred within all vessel size categories during 2007-2010, with the largest percentage reduction (21%: 870 to 686 crew positions) occurring in the 50' to <75' vessel size category. Declines in crew positions also occurred across all home port states (Table 44). Vessels with a home port in Connecticut and New Hampshire experienced the largest percentage decline (20%: 52 to 41 crew positions in CT and 139 to 111 crew positions in NH), while vessels home ported in New York had the lowest percentage decline (1%: 204 to 201 crew positions). All other home port states had crew position reductions ranging from 10 to 18% between 2007 and 2010 (Table 44). Crew positions by home port county are shown in Table 45.

These findings are supported by rapid assessment interview data with crew. "Approximately one-third (32%) of the 57 total respondents (n=18) mentioned that they had noted a reduction in crew numbers aboard their vessels in comparison to when they were operating under the Days-at-Sea (DAS) management regime (Mendelson and Joyce 2011:8)." Others noted that it had been occurring since DAS were implemented.. Further, "[w]hen asked about an increase or decrease in crew jobs, many of the 23 respondents around the region agreed that job availability seemed to be decreasing and crew turnover was low. Crew with good sites are staying put, and in bigger ports, the good boats and captains have the ability to find and retain good crew if they want them, but they know they have to keep them busy (*ibid*., p.13)."

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 to work[43]. 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 landing revenues.

Total crew trips were calculated by summing the crew size of all trips taken in each fishing year across vessel size category (Table 43), and also across home port state (Table 44) and home port county (Table 45). Total crew trips declined from 151,747 in 2007 to 126,583 in 2010 (a 17% decline). The largest percentage decline occurred in the 30' to <50' vessel size category (18% decline). The home port state with the largest percentage decline was Connecticut (28% decline).

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

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. Since the number of trips affects the crew-days indicator, the 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 takes account of these factors. The absolute value of the ratio, in and of itself, does not provide information about opportunities for crew. However, changes in the ratio over time are informative. For example, a declining trend would imply a reduction in time spent per "earning opportunity" (a crew trip).

Since average trip length has remained relatively constant within vessel size categories during 2007 to 2010, the crew-days indicator closely tracks the crew-trips indicator in percentage terms across 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, home port states, and home port counties, over the time series (Tables 43, 44, and 45). This means that the time spent per earning opportunity has not changed during the 2007-2010 period.

Crew-based changes, by themselves, do not indicate whether income for crew has changed. Crew income is determined by many factors such as the revenue/cost sharing formula used, 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. According to Mendelson and Joyce 2011:23) "some crew are working more days on the water in the groundfish fishery and other fisheries for the same amount of pay or only slightly more than they worked under the DAS system. Many crew have had to supplement their groundfish income by working in other fisheries or other jobs" - including fish lumpers, processing/shipping, and construction (ibid., p.19).

7.4. 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, and 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 whole 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 from 2007-2010 have affected total regional employment is not clearly evident with 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 have an effect on the number of jobs supported by the limited access groundfish fleet. Although some of these data are available, comprehensive information are currently

missing on how total vessel costs, crew wages, the number of active crew members, and overall owner profits have changed from 2007-2010. Plans are underway to obtain these data, but at the present time only a qualitative assessment of changes in the contribution of Common Pool and Sector vessels to total employment in the Northeast can be provided.

Available information suggests that the number of participating vessels, total fishing effort and crew opportunities declined in 2010 from previous levels. These declines imply lower overall fleet operating expenditures, which likely translated into a reduction in jobs in 2010 directly associated with fishing activity such as shore-side support businesses and possibly crew positions. However, in evaluating total employment the regional employment effects attributable to the income spending of owners and crew members must be also be taken into consideration. In 2010, higher aggregate nominal fish prices resulted in 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 mostly from fewer participating vessels and lower overall effort) implies higher earnings across the limited access groundfish fleet in 2010. In general, a rise in earnings will result in increased purchases of locally produced goods and services not directly related to fishing, which, in turn, creates 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 the same industries, but they also support a wide array of retail and service-oriented establishments (i.e., merchandise stores, restaurants, hospitals, real estate, etc.) that are almost all locally operated businesses. Therefore, as groundfish incomes rise, more spending remains within the region, creating new jobs in the local economy.

Thus, to estimate how changes in the economic performance of the groundfish fleet have affected overall employment in the Northeast in 2010 would require a comparison of the decline in regional employment resulting from lower operating costs and crew opportunities to the increase in regional jobs generated from the rise in income expenditures. Regardless, as a consequence of the shift in the flow of expenditures from manufacturing and support businesses to retail and service sector establishments, the employment structure of the underlying Northeast economy likely shifted in 2010. That is, 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 between 2007 and 2010. Many of these reflect trends apparent since 2007, while other changes are of more recent origin. The measures that reflect continuation of trends into 2010 include: (1) declining landings since 2008 of both groundfish and non-groundfish species; (2) declining groundfish nominal revenue; (3) declining number of active individual vessels and active vessel affiliations; (4) declining number of groundfish trips and days absent; (5) a small increase in the number of non-groundfish trips; (6) increasing concentration of groundfish nominal revenue among top earning vessels and owners; (7) consolidation of nominal revenue on a smaller number of vessels; and (8) declining employment opportunities for crew.

Changes of a more recent origin include: (1) increases in non-groundfish and therefore total nominal revenues; (2) increases in nominal prices of groundfish and non-groundfish species; and (3) increased economic performance in terms of nominal revenue per unit effort and owners' share of nominal net revenue per day, particularly among Sector vessels.

For the fishery as a whole in 2010, more nominal value was obtained from fewer fish landed and less fishing effort expended than compared to the previous three years.

In 2010 there were 22.2 million pounds (live weight) of ACE transferred within and between Sectors with an estimated value of $13.5 million. About half the transfers occurred within vessel affiliations.

Other studies are planned or are underway that will provide more information on the impacts occurring in the groundfish and other fisheries. Two new surveys (one of vessel owners and the other of crew – including hired captains) are currently pending Office of Management and Budget (OMB) approval per the Paperwork Reduction Act (PRA). These surveys, expected to be implemented in late 2011, are designed to provide data to evaluate performance measure indicators we are currently unable to assess. These surveys are expected to be implemented in late 2011. Pending budgets, these will be ongoing surveys providing trend data on all fisheries in the Northeast. Further, nationally NMFS has developed and will be implementing a set of social and economic performance indicators that will allow inter-regional and cross-fishery comparisons throughout the U.S.

Several Sector-specific studies are also in place or poised to begin. These include a set of interviews of all Sector managers on topics such as the membership composition of different sectors, how they are organized and governed, particular problems that sectors have encountered, and other activities in which sectors may be involved. As well, 40 oral histories will be conducted with Sector and non-Sector groundfishermen in RI to obtain a further understanding of the impacts of Sectors on both groups. Additional studies will be designed and implemented as funding permits.

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Table 2. Total landings and revenue from all trips by fishing year.

	2007	2008	2009	2010		
Landed Pounds				**Total**	**Sector Vessels**	**Common Pool**
Groundfish	64,003,776	72,162,445	70,568,091	58,492,204	57,068,055	1,424,149
Non-Groundfish	195,443,873	204,955,406	192,111,087	180,610,957	97,963,463	82,647,494
Total Pounds	259,447,649	277,117,851	262,679,178	239,103,161	155,031,518	84,071,643
Gross Revenue						
Groundfish	$89,055,085	$90,131,938	$85,088,241	$83,293,667	$81,025,594	$2,268,073
(in 2007 dollars*)	($89,055,085)	($88,200,657)	($82,778,058)	($79,797,607)	($77,624,731)	($2,172,876)
Non-Groundfish	$209,191,370	$201,347,322	$186,051,595	$214,426,203	$117,238,604	$97,187,599
(in 2007 dollars*)	($209,191,370)	($197,033,000)	($181,000,214)	($205,426,157)	($112,317,783)	($93,108,373)
Total Revenue	$298,246,455	$291,479,260	$271,139,836	$297,719,870	$198,264,198	$99,455,672
(in 2007 dollars*)	($298,246,455)	($285,233,657)	($263,778,272)	($285,223,764)	($189,942,515)	($95,281,249)

*Deflated by the GDP Implicit Price Deflator

Table 3. Total landings and nominal revenue from groundfish trips by fishing year.

	2007	2008	2009	2010		
Landed Pounds				**Total**	**Sector Vessels**	**Common Pool**
Groundfish	63,222,210	71,633,167	70,080,457	58,045,140	56,757,197	1,287,943
Non-Groundfish	39,307,096	35,529,503	32,334,158	23,330,563	18,431,964	4,898,599
Total Pounds	102,529,306	107,162,670	102,414,615	81,375,703	75,189,161	6,186,542
Gross Nominal revenue						
Groundfish	$87,802,387	$89,392,204	$84,468,730	$82,627,612	$80,583,278	$2,044,334
Non-Groundfish	$41,253,240	$33,020,472	$26,782,828	$22,471,181	$18,266,597	$4,204,584
Total Nominal revenue	$129,055,627	$122,412,676	$111,251,558	$105,098,793	$98,849,875	$6,248,918

Table 4. Nominal value of landings of all species by state and port of landing (all trips).

		Year			
		2007	2008	2009	2010
CT		$3,185,262	$3,882,126	$3,913,109	$4,066,854
MA		$168,405,873	$157,262,537	$163,534,982	$175,529,156
	Boston	$11,375,320	$11,360,821	$11,191,030	$14,048,764
	Chatham	$9,680,874	$9,453,299	$8,121,967	$7,576,276
	Gloucester	$38,638,882	$37,551,870	$40,677,893	$40,026,506
	New Bedford	$88,758,014	$81,042,560	$85,133,834	$95,551,092
ME		$24,665,470	$23,090,252	$18,638,951	$20,237,976
	Portland	$11,982,614	$12,590,656	$7,678,754	$6,956,041
NH		$6,730,907	$6,588,771	$7,732,385	$6,946,241
NJ		$26,200,104	$30,215,885	$19,401,299	$24,776,941
NY		$20,503,691	$19,219,641	$18,388,469	$21,881,620
RI		$36,837,790	$37,661,577	$28,412,695	$30,650,503
	Point Judith	$23,378,659	$27,139,532	$19,996,544	$22,272,815
All Other States		$11,717,358	$13,558,471	$11,117,946	$13,630,579
Grand Total		$298,246,455	$291,479,260	$271,139,836	$297,719,870

Table 5. Nominal value of landings of all species by home port state and home port (all trips).

		Year			
		2007	2008	2009	2010
CT		$4,442,229	$4,398,124	$3,853,337	$5,629,467
MA		$153,859,021	$143,144,848	$143,329,432	$150,217,450
	Boston	$33,918,668	$30,056,944	$26,648,596	$27,688,331
	Chatham	$7,504,169	$7,463,522	$6,633,878	$6,614,323
	Gloucester	$22,954,904	$21,859,698	$23,894,567	$25,178,901
	New Bedford	$60,131,753	$57,639,790	$59,428,586	$64,444,600
ME		$29,366,054	$27,686,181	$27,773,065	$32,336,170
	Portland	$10,016,016	$8,780,058	$10,518,381	$13,287,974
NH		$9,410,291	$10,722,394	$9,813,786	$7,700,941
NJ		$21,538,577	$22,207,440	$17,659,541	$20,532,022
NY		$22,575,984	$25,976,681	$22,877,799	$27,693,790
RI		$40,598,466	$40,302,815	$30,911,245	$35,698,323
	Point Judith	$25,492,588	$27,596,668	$20,036,486	$23,327,426
All Other States		$16,455,833	$17,040,777	$14,921,631	$17,911,707
Grand Total		$298,246,455	$291,479,260	$271,139,836	$297,719,870

Table 6. Nominal value of landings of groundfish by state and port of landing (all trips).

		Year			
		2007	2008	2009	2010
CT		$191,518	$176,088	$41,799	$13,316
MA		$67,378,741	$70,169,866	$72,295,913	$73,336,890
	Boston	$8,336,226	$8,864,771	$8,997,442	$11,598,490
	Chatham	$3,364,594	$3,556,011	$3,228,939	$2,165,564
	Gloucester	$24,260,259	$27,320,124	$30,778,079	$27,777,488
	New Bedford	$26,627,177	$26,373,149	$24,374,142	$29,072,251
ME		$9,917,320	$10,802,145	$5,980,465	$4,738,143
	Portland	$8,857,237	$10,194,963	$4,989,239	$3,853,628
NH		$3,400,649	$4,146,524	$4,453,812	$3,268,992
NJ		$1,132,323	$452,501	$35,524	$29,035
NY		$1,507,235	$1,090,896	$298,146	$293,257
RI		$5,504,269	$3,290,278	$1,979,262	$1,611,478
	Point Judith	$4,607,500	$2,758,541	$1,830,724	$1,508,615
All Other States		$23,030	$3,640	$3,320	$2,556
Grand Total		$89,055,085	$90,131,938	$85,088,241	$83,293,667

Table 7. Nominal value of landings of groundfish by home port state and home port (all trips).

		Year			
		2007	2008	2009	2010
CT		$524,883	$358,968	$126,180	$55,881
MA		$57,987,466	$59,606,706	$59,857,458	$58,983,839
	Boston	$15,831,454	$14,983,619	$13,740,951	$14,372,582
	Chatham	$2,850,929	$2,900,218	$2,786,081	$2,371,125
	Gloucester	$13,882,857	$14,800,824	$16,865,061	$16,845,755
	New Bedford	$16,382,925	$18,091,006	$16,558,128	$18,007,651
ME		$14,005,240	$14,899,028	$14,091,442	$15,259,304
	Portland	$6,708,271	$6,818,518	$8,397,490	$10,982,111
NH		$4,908,606	$7,222,173	$6,067,623	$3,692,642
NJ		$1,235,981	$655,769	$422,172	$313,239
NY		$2,292,744	$1,795,791	$749,263	$1,139,723
RI		$6,933,478	$4,542,460	$3,068,921	$3,247,110
	Point Judith	$4,719,077	$3,293,736	$2,267,160	$2,405,407
All Other States		$1,166,687	$1,051,043	$705,182	$601,929
Grand Total		$89,055,085	$90,131,938	$85,088,241	$83,293,667

Table 8. Nominal value and landed pounds of top ten non-groundfish species landed by limited access groundfish vessels.

	2007	2008	2009	2010		
				Total	Sector Vessels	Common Pool
Herring (***Clupea harengus***)	$4,107,635 36,927,782	$4,188,423 37,781,504	$3,642,324 34,876,891	$2,898,076 25,099,934	$1,335,669 9,842,607	$1,562,407 15,257,327
Scup (***Stenotomus chrysops***)	$3,919,846 4,535,096	$3,801,802 4,632,855	$3,891,283 6,317,584	$4,763,671 7,945,692	$3,295,335 5,331,600	$1,468,336 2,614,092
Shrimp (***Pandalus borealis***)	$3,408,618 6,811,878	$1,702,236 4,192,405	$4,138,528 7,919,181	$6,090,641 8,104,318	$5,257,845 6,986,241	$832,796 1,118,077
Skates	$8,973,263 29,105,056	$7,111,569 26,726,595	$7,376,463 25,167,432	$5,377,679 17,137,971	$3,880,188 11,575,206	$1,497,491 5,562,765
Silver Hake (***Merluccius bilineari***)	$7,212,719 13,845,504	$8,105,391 12,669,754	$8,494,077 17,136,644	$11,147,255 17,489,014	$8,546,189 13,744,640	$2,601,066 3,744,374
Summer flounder (***Paralichthys dentatus***)	$13,198,924 4,950,481	$11,496,883 5,209,218	$12,283,860 5,886,012	$16,350,982 8,527,014	$9,171,613 5,026,065	$7,179,369 3,500,949
Monkfish (***Lophius americanus***)	$22,533,256 11,343,157	$17,997,527 9,378,640	$14,685,784 7,942,219	$15,105,791 6,719,081	$10,731,055 4,044,250	$4,374,736 2,674,831
Loligo Squid (***Loligo pealeii***)	$16,093,877 17,741,499	$22,951,797 24,472,580	$15,086,629 15,818,364	$18,097,449 16,583,870	$15,839,447 14,580,451	$2,258,002 2,003,419
Lobster (***Homarus americanus***)	$38,752,771 7,784,108	$32,736,475 8,172,099	$30,563,034 8,815,031	$35,503,299 9,199,308	$13,931,123 3,723,753	$21,572,176 5,475,555
Scallops (***Placopecten magellanicus***)	$65,180,750 9,854,316	$63,820,802 9,504,737	$61,568,756 9,628,559	$72,781,029 8,447,643	$34,966,393 4,102,087	$37,814,636 4,345,556

Table 9. Number of vessels by fishing year.

	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
Vessels issued limited access groundfish permits as of May 1 each year*	1,413	1,410	1,381	1,347	740	607
With limited access groundfish permit and revenue from any species	1,082	1,012	973	900	444	456
With limited access groundfish permit and revenue from at least one groundfish trip	658	611	566	450	305	145
Number and percent of inactive (no landings) vessels	331 (32%)	398 (28%)	408 (30%)	447 (33%)	296 (40%)	151 (25%)

* 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 2010 data for either Sector or Common Pool.

Table 10. Effort by active vessels.

Vessel Size		2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
Less than 30'							
	Number of groundfish trips	271	236	412	101	1	100
	Number of non-groundfish trips	2,534	2,249	2,287	2,236	514	1,722
	Number of days absent on groundfish trips	101	80	147	41	0.3	41
	Number of days absent on non-groundfish trips	665	680	689	698	209	488
	Average trip length on groundfish trips	0.39	0.35	0.37	0.41	0.33	0.42
	(standard deviation)	(0.17)	(0.14)	(0.18)	(0.10)		(0.10)
	Average trip length on non-groundfish trips	0.35	0.35	0.36	0.37	0.49	0.34
	(standard deviation)	(0.29)	(0.28)	(0.38)	(0.50)	(0.99)	(0.17)
30' to < 50'							
	Number of groundfish trips	18,190	18,452	19,383	9,712	7,953	1,759
	Number of non-groundfish trips	28,883	27,585	27,315	28,476	11,462	17,014
	Number of days absent on groundfish trips	9,598	9,611	9,256	5,507	4,350	1,158
	Number of days absent on non-groundfish trips	11,051	10,431	10,493	11,081	4,555	6,526
	Average trip length on groundfish trips	0.53	0.52	0.48	0.57	0.55	0.66
	(standard deviation)	(0.66)	(0.63)	(0.61)	(0.66)	(0.64)	(0.73)
	Average trip length on non-groundfish trips	0.45	0.43	0.43	0.42	0.43	0.42
	(standard deviation)	(0.52)	(0.55)	(0.50)	(0.37)	(0.37)	(0.38)

Table 10, continued. Effort by active vessels.

Vessel Size	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
50' to < 75'						
Number of groundfish trips	7,018	6,356	4,909	2,895	2,505	390
Number of non-groundfish trips	11,976	12,823	13,425	13,522	6,418	7,104
Number of days absent on groundfish trips	10,706	9,871	8,263	5,878	5,509	370
Number of days absent on non-groundfish trips	13,000	13,543	14,251	13,663	7,358	6,305
Average trip length on groundfish trips	1.55	1.57	1.69	2.03	2.20	0.95
(standard deviation)	(2.16)	(2.17)	(2.28)	(2.42)	(2.54)	(0.77)
Average trip length on non-groundfish trips	1.16	1.11	1.10	1.02	1.15	0.90
(standard deviation)	(1.67)	(1.66)	(1.68)	(1.56)	(1.57)	(1.53)
75' and above						
Number of groundfish trips	1,525	1,424	1,328	1,337	1,311	26
Number of non-groundfish trips	3,242	4,064	3,788	3,305	1,667	1,638
Number of days absent on groundfish trips	7,753	7,585	7,280	7,390	7,357	33
Number of days absent on non-groundfish trips	10,469	11,480	10,964	9,778	5,663	4,115
Average trip length on groundfish trips	5.16	5.38	5.51	5.54	5.62	1.28
(standard deviation)	(3.16)	(3.04)	(3.03)	(2.89)	(2.84)	(2.33)
Average trip length on non-groundfish trips	3.46	2.89	2.96	3.00	3.46	2.54
(standard deviation)	(3.47)	(3.17)	(3.29)	(3.37)	(3.50)	(3.18)

Table 10, continued. Effort by active vessels.

Vessel Size	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
All Vessels						
Number of groundfish trips	27,004	26,468	26,032	14,045	11,770	2,275
Number of non-groundfish trips	46,635	46,721	46,815	47,539	20,061	27,478
Number of days absent on groundfish trips	28,158	27,146	24,947	18,818	17,216	1,602
Number of days absent on non-groundfish trips	35,186	36,134	36,397	35,220	17,785	17,435
Average trip length on groundfish trips	7.63	7.82	8.06	8.55	8.70	3.31
(standard deviation)	(6.15)	(5.98)	(6.10)	(6.07)	(6.02)	(3.93)
Average trip length on non-groundfish trips	5.42	4.78	4.85	4.82	5.52	4.21
(standard deviation)	(5.95)	(5.67)	(5.84)	(5.81)	(6.44)	(5.25)

Table 11. Average nominal revenue per vessel.

Vessel Size	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
Less than 30'						
Average all species revenue per vessel	$13,927	$13,881	$13,528	$16,095	$25,359	$14,273
(standard deviation)	($30,894)	($36,231)	($33,122)	($40,362)	($69,122)	($32,533)
Average groundfish revenue per vessel	$3,608	$2,711	$5,297	$1,531	$3,237	$1,341
(standard deviation)	($8,196)	($4,083)	($10,969)	($2,667)	($3,925)	($2,525)
Average all species revenue per vessel on groundfish trips	$4,969	$3,249	$6,912	$1,381	$3,212	$1,294
(standard deviation)	($10,137)	($4,288)	($12,216)	($1,762)	($0)	($1,756)
30' to < 50'						
Average all species revenue per vessel	$137,040	$141,382	$138,494	$141,688	$175,805	$111,361
(standard deviation)	($131,194)	($140,709)	($123,637)	($131,285)	($142,543)	($112,264)
Average groundfish revenue per vessel	$73,212	$86,507	$90,608	$72,967	$107,464	$15,101
(standard deviation)	($91,485)	($125,943)	($108,822)	($110,601)	($123,324)	($44,142)
Average all species revenue per vessel on groundfish trips	$115,592	$122,958	$124,250	$107,979	$141,990	$50,049
(standard deviation)	($122,914)	($140,855)	($121,155)	($120,920)	($134,910)	($57,225)

Table 11, continued. Average nominal revenue per vessel.

					2010	
Vessel Size	**2007**	**2008**	**2009**	**2010**	**Sector Vessels**	**Common Pool**
50' to < 75'						
Average all species revenue per vessel	$362,439	$376,895	$375,643	$442,281	$515,813	$351,615
(standard deviation)	($300,801)	($290,764)	($300,035)	($409,249)	($380,081)	($427,240)
Average groundfish revenue per vessel	$138,881	$146,447	$148,811	$185,453	$264,713	$13,723
(standard deviation)	($168,856)	($188,581)	($212,589)	($298,155)	($331,537)	($27,719)
Average all species revenue per vessel on groundfish trips	$236,524	$237,499	$229,738	$264,335	$341,173	$46,216
(standard deviation)	($230,306)	($232,670)	($263,157)	($347,190)	($373,999)	($44,807)
75' and above						
Average all species revenue per vessel	$825,786	$822,356	$804,740	$1,052,701	$1,149,027	$857,641
(standard deviation)	($479,668)	($521,618)	($470,408)	($624,147)	($615,885)	($601,889)
Average groundfish revenue per vessel	$326,914	$333,352	$350,478	$475,455	$582,067	$15,693
(standard deviation)	($369,120)	($376,081)	($397,503)	($569,980)	($582,721)	($46,920)
Average all species revenue per vessel on groundfish trips	$505,392	$507,174	$532,348	$746,819	$767,459	$117,292
(standard deviation)	($431,175)	($423,261)	($443,868)	($616,911)	($615,993)	($102,318)

Table 12. Average nominal revenue per trip and day absent.

					2010	
Vessel Size	**2007**	**2008**	**2009**	**2010**	**Sector Vessels**	**Common Pool**
Less than 30'						
Average revenue per groundfish trip	$534	$376	$554	$301	$3,212	$272
(standard deviation)	($523)	($326)	($738)	($399)	($0)	($273)
Average revenue per non-groundfish trip	$478	$543	$543	$797	$1,490	$600
(standard deviation)	($760)	($1,236)	($1,047)	($1,567)	($2,741)	($919)
Average revenue per day on groundfish trips	$1,643	$1,248	$1,771	$776	$9,636	$686
(standard deviation)	($1,993)	($1,085)	($2,591)	($1,211)	($0)	($820)
Average revenue per day on non-groundfish trips	$1,308	$1,510	$1,428	$1,874	$2,717	$1,636
(standard deviation)	($2,130)	($2,609)	($1,925)	($2,871)	($3,248)	($2,709)
30' to < 50'						
Average revenue per groundfish trip	$2,236	$2,213	$2,002	$2,864	$2,925	$2,598
(standard deviation)	($2,943)	($8,060)	($3,197)	($2,762)	($2,851)	($2,324)
Average revenue per non-groundfish trip	$1,325	$1,366	$1,287	$1,546	$1,763	$1,417
(standard deviation)	($2,214)	($3,103)	($2,927)	($2,204)	($1,870)	($2,372)
Average revenue per day on groundfish trips	$5,648	$5,262	$5,253	$6,134	$6,370	$5,121
(standard deviation)	($11,416)	($22,042)	($11,320)	($6,864)	($7,262)	($4,657)
Average revenue per day on non-groundfish trips	$3,359	$3,645	$3,373	$3,904	$4,299	$3,664
(standard deviation)	($5,473)	($7,530)	($9,089)	($7,026)	($6,033)	($7,556)

Table 12, continued. Average nominal revenue per trip and day absent.

Vessel Size	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
50' to < 75'						
Average revenue per groundfish trip	$6,503	$6,555	$7,033	$11,178	$12,386	$3,674
(standard deviation)	($9,774)	($13,167)	($10,369)	($14,504)	($15,191)	($4,261)
Average revenue per non-groundfish trip	$5,010	$5,185	$4,853	$5,691	$6,335	$5,162
(standard deviation)	($12,963)	($12,773)	($12,772)	($17,335)	($15,621)	($18,610)
Average revenue per day on groundfish trips	$6,010	$5,532	$6,960	$7,521	$7,887	$5,231
(standard deviation)	($21,140)	($16,080)	($56,328)	($14,505)	($14,715)	($12,895)
Average revenue per day on non-groundfish trips	$4,811	$5,162	$4,557	$5,341	$5,735	$5,014
(standard deviation)	($38,049)	($16,682)	($8,009)	($22,970)	($11,650)	($29,197)
75' and above						
Average revenue per groundfish trip	$28,090	$28,176	$28,569	$37,761	$38,373	$9,022
(standard deviation)	($20,589)	($20,002)	($20,385)	($24,582)	($24,283)	($21,545)
Average revenue per non-groundfish trip	$23,437	$22,455	$22,384	$29,252	$35,043	$23,893
(standard deviation)	($38,161)	($39,220)	($42,287)	($56,255)	($58,660)	($53,398)
Average revenue per day on groundfish trips	$7,389	$6,049	$6,137	$12,202*	$12,364*	$4,620
(standard deviation)	($37,802)	($13,358)	($16,036)	($147,369)	($148,930)	($3,278)
Average revenue per day on non-groundfish trips	$8,565	$7,791	$7,108	$8,631	$8,661	$8,603
(standard deviation)	($28,926)	($15,309)	($27,563)	($21,281)	($18,614)	($23,462)

* Note the relatively high standard deviation for these values. It may be that a few unusually high observations influenced the mean value.

Table 13. 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	Pearson 6	99	59	1.47
Gillnet	< 40'	Day	2010	Pearson 6	140	76	1.39
Gillnet	< 40'	Multi-day	2007	Pearson 5	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'	Day	2007	Log normal	216	159	2.62
Gillnet	>= 40'	Day	2008	Pearson 6	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'	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
Hand Gear			07 - 10	Weibull	265	24	-0.76
Longline	< 40'	Day	07 - 09	Pearson 5	449	0	0.00
Longline	< 40'	Day	2010	Inverse gauss	275	173	1.89
Longline	< 40'	Multi-day	07 - 09	Weibull	680	305	0.42
Longline	< 40'	Multi-day	2010	Gamma	624	508	1.63
Longline	>= 40'	Day	2007	Pearson 5	844	0	0.00
Longline	>= 40'	Day	2008	Pearson 5	595	0	0.00
Longline	>= 40'	Day	2009	Pearson 5	287	0	0.00
Longline	>= 40'	Day	2010	Inverse gauss	403	466	3.47
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
Pots/traps			07 - 10	Gamma	890	649	1.46
Purse seine			2007	Pearson 5	721	302	2.03
Purse seine			2008	Inverse gauss	1,488	855	1.72
Purse seine			2009	Pearson 5	1,059	1,562	0.00
Purse seine			2010	Weibull	527	295	0.74
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' 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

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

Table 13, 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
Trawl	< 50'	Day	2007	Pearson 6	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'	Multi-day	2007	Inverse gauss	262	238	2.73
Trawl	< 50'	Multi-day	2008	Pearson 5	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' 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'	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	>= 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'	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
Other	< 50'		07 - 09	Gamma	326	197	1.21
Other	< 50'		2010	Gamma	167	109	1.31
Other	50' to 75'		07 - 09	Inverse gauss	396	171	1.30
Other	50' to 75'		2010	Log logistic	289	235	0.00
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

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

Table 14. Average vessel owners' share of nominal net revenue per day.

					2010		
Trip Type	**Vessel Size Category**	**2007**	**2008**	**2009**	**Total**	**Sector Vessels**	**Common Pool**
Groundfish	< 30'	$327	$15	$374	-$80	confidential	-$115
	30' to < 50'	$2,407	$2,243	$2,332	$2,694	$2,798	$2,246
	50' to < 75'	$2,175	$2,069	$2,801	$3,232	$3,405	$2,152
	75' plus	$2,460	$1,884	$2,223	$4,998	$5,074	$1,434
Non-groundfish	< 30'	-$288	-$297	-$297	$37	$557	-$117
	30' to < 50'	$667	$671	$594	$845	$1,147	$661
	50' to < 75'	$1,573	$1,811	$1,644	$2,046	$2,329	$1,813
	75' plus	$3,070	$2,780	$2,653	$3,360	$3,287	$3,428

Table 15. Average trip costs per day.

					2010		
Trip Type	**Vessel Size Category**	**2007**	**2008**	**2009**	**Total**	**Sector Vessels**	**Common Pool**
Groundfish	< 30'	$841	$988	$825	$723	confidential	$702
	30' to < 50'	$766	$714	$575	$728	$760	$588
	50' to < 75'	$1,420	$1,351	$1,248	$1,051	$1,084	$844
	75' plus	$2,103	$1,979	$1,554	$2,135	$2,147	$1,576
Non-groundfish	< 30'	$1,418	$1,515	$1,467	$1,485	$1,546	$1,467
	30' to < 50'	$1,745	$1,861	$1,763	$1,839	$1,789	$1,870
	50' to < 75'	$1,340	$1,235	$1,057	$1,134	$1,044	$1,208
	75' plus	$1,776	$1,904	$1,592	$1,766	$1,897	$1,645

Table 16. @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'	2007	-12,532	309	584	343	-18.40	44	468
Groundfish	< 30'	2008	-10,876	4	380	285	-18.91	-208	160
Groundfish	< 30'	2009	-20,340	357	657	527	-20.58	-2	535
Groundfish	< 30'	2010 - Total	-245	-81	184	50	0.47	-155	8
Groundfish	< 30'	2010 - Common Pool	-260	-116	143	49	0.51	-189	-28
Groundfish	30' to < 50'	2007	-46,035	2,388	2,708	713	-62.73	2,102	2,588
Groundfish	30' to < 50'	2008	374	2,236	2,491	135	-2.18	1,997	2,400
Groundfish	30' to < 50'	2009	808	2,328	2,541	105	-2.76	2,144	2,454
Groundfish	30' to < 50'	2010 - Total	478	2,689	2,845	91	-6.02	2,554	2,783
Groundfish	30' to < 50'	2010 - Sectors	377	2,793	2,950	97	-6.54	2,652	2,889
Groundfish	30' to < 50'	2010 - Common Pool	911	2,244	2,410	79	-2.55	2,111	2,343
Groundfish	50' to < 75'	2007	-7,002	2,159	2,806	448	-5.93	1,517	2,583
Groundfish	50' to < 75'	2008	682	2,057	2,651	278	-0.78	1,538	2,443
Groundfish	50' to < 75'	2009	-5,013	2,791	3,316	365	-6.10	2,248	3,136
Groundfish	50' to < 75'	2010 - Total	1,843	3,228	3,519	138	-1.34	2,980	3,408
Groundfish	50' to < 75'	2010 - Sectors	2,060	3,402	3,698	141	-1.27	3,150	3,588
Groundfish	50' to < 75'	2010 - Common Pool	271	2,145	2,437	143	-2.30	1,901	2,321
Groundfish	75' +	2007	1,527	2,453	3,214	264	-0.18	2,001	2,862
Groundfish	75' +	2008	324	1,877	2,611	260	-0.46	1,412	2,267
Groundfish	75' +	2009	1,455	2,221	2,738	184	-0.22	1,907	2,514
Groundfish	75' +	2010 - Total	-6,886	4,981	5,694	419	-7.17	4,335	5,387
Groundfish	75' +	2010 - Sectors	-7,028	5,057	5,781	427	-7.18	4,402	5,469
Groundfish	75' +	2010 - Common Pool	-267	1,427	2,104	272	-0.30	962	1,849
Non-groundfish	< 30'	2007	-7,315	-317	351	470	-2.42	-1,202	171
Non-groundfish	< 30'	2008	-4,275	-328	400	534	-1.77	-1,392	222
Non-groundfish	< 30'	2009	-5,817	-329	373	516	-1.98	-1,342	203
Non-groundfish	< 30'	2010 - Total	-3,808	3	702	503	-1.85	-997	520
Non-groundfish	< 30'	2010 - Sectors	-4,225	504	1,249	591	-2.10	-687	1,091
Non-groundfish	< 30'	2010 - Common Pool	-3,685	-145	547	478	-1.76	-1,088	352
Non-groundfish	30' to < 50'	2007	-5,517	589	1,555	800	-1.95	-1,014	1,380
Non-groundfish	30' to < 50'	2008	-5,759	591	1,582	841	-1.92	-1,090	1,430
Non-groundfish	30' to < 50'	2009	-5,984	519	1,550	867	-1.89	-1,216	1,381

Table 16, 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 - Total	-5,735	771	1,786	859	-1.91	-946	1,626
Non-groundfish	30' to < 50'	2010 - Sectors	-5,134	1,076	2,052	808	-1.94	-532	1,888
Non-groundfish	30' to < 50'	2010 - Common Pool	-6,099	585	1,635	890	-1.89	-1,194	1,468
Non-groundfish	50' to < 75'	2007	-3,604	1,550	2,059	278	-4.60	1,123	1,858
Non-groundfish	50' to < 75'	2008	503	1,791	2,262	210	-0.83	1,402	2,083
Non-groundfish	50' to < 75'	2009	-2,668	1,627	1,993	218	-5.03	1,309	1,856
Non-groundfish	50' to < 75'	2010 - Total	-1,115	2,031	2,393	188	-2.95	1,715	2,257
Non-groundfish	50' to < 75'	2010 - Sectors	-725	2,319	2,714	192	-2.60	1,992	2,553
Non-groundfish	50' to < 75'	2010 - Common Pool	-1,435	1,795	2,192	194	-2.96	1,474	2,024
Non-groundfish	75' +	2007	2,268	3,057	3,642	211	-0.27	2,693	3,384
Non-groundfish	75' +	2008	1,568	2,756	3,478	259	-0.46	2,301	3,146
Non-groundfish	75' +	2009	-2,231	2,640	3,116	196	-4.60	2,348	2,900
Non-groundfish	75' +	2010 - Total	-4,566	3,340	3,887	303	-6.06	2,863	3,650
Non-groundfish	75' +	2010 - Sectors	-7,625	3,260	3,939	414	-6.19	2,619	3,669
Non-groundfish	75' +	2010 - Common Pool	-1,736	3,414	3,845	211	-5.05	3,082	3,652

Table 17. Average owners' share per vessel.

				2010		
Vessel Size Category	**2007**	**2008**	**2009**	**Total**	**Sector Vessels**	**Common Pool**
< 30'	-$1,275	-$1,238	-$1,221	$1,458	$8,633	-$72
30' to < 50'	$46,176	$48,386	$48,378	$46,969	$66,133	$29,934
50' to < 75'	$124,371	$132,691	$143,455	$178,307	$207,476	$142,623
75' plus	$290,957	$296,330	$306,491	$396,840	$421,160	$347,593

	2010 – including ASM/DSM costs		
Vessel Size Category	**Total**	**Sector Vessels**	**Percent Reduction***
< 30'	$1,435	$8,503	1.5%
30' to < 50'	$43,152	$58,022	12.3%
50' to < 75'	$173,248	$198,283	4.4%
75' plus	$382,585	$399,865	5.1%

* For Sector vessels

Table 18. Aggregate owners' shares by vessel size category.

				2010		
Vessel Size Category	**2007**	**2008**	**2009**	**Total**	**Sector Vessels**	**Common Pool**
< 30'	-$105,805	-$95,330	-$102,533	$107,859	$112,229	-$4,370
30' to < 50'	$26,412,957	$25,547,781	$24,576,155	$22,357,311	$14,813,858	$7,543,453
50' to < 75'	$35,943,209	$35,428,608	$35,576,934	$40,832,220	$26,142,031	$14,690,189
75' plus	$40,152,061	$41,486,210	$40,456,838	$48,017,680	$34,113,950	$13,903,731
Grand Total	$102,402,422	$102,367,268	$100,507,394	$111,315,070	$75,182,068	$36,133,002

	2010 – including ASM/DSM costs		
Vessel Size Category	**Total**	**Sector Vessels**	**Percent Reduction***
< 30'	$106,172	$110,542	1.5%
30' to < 50'	$20,540,297	$12,996,844	12.3%
50' to < 75'	$39,673,796	$24,983,607	4.4%
75' plus	$46,292,829	$32,389,099	5.1%
Grand Total	$106,613,095	$70,480,093	6.3%

* For Sector vessels

Table 19. Aggregate owners' shares by home port state.

Home Port State	2007	2008	2009	2010 Total	2010 Sector Vessels	2010 Common Pool
CT	$1,345,658	$1,356,779	$1,348,222	$2,033,993	$1,042,885	$991,108
MA	$55,411,494	$51,512,892	$53,967,646	$57,108,940	$42,308,296	$14,800,644
ME	$9,942,319	$9,530,923	$10,444,838	$11,736,834	$9,706,283	$2,030,551
NH	$3,224,678	$3,358,524	$3,793,838	$2,781,245	$2,486,447	$294,799
NJ	$7,621,698	$8,834,464	$6,835,198	$8,120,709	$312,927	$7,807,781
NY	$6,658,626	$8,996,905	$8,134,307	$10,128,929	$5,629,663	$4,499,266
RI	$12,443,787	$13,455,803	$10,576,982	$12,838,298	$10,112,119	$2,726,178
All Other States	$5,754,162	$5,320,978	$5,406,364	$6,566,122	$3,583,448	$2,982,675
Grand Total	$102,402,422	$102,367,268	$100,507,394	$111,315,070	$75,182,068	$36,133,002

Home Port State	2010 – including ASM/DSM costs Total	Sector Vessels	Percent Reduction*
CT	$2,031,905	$1,040,797	0.2%
MA	$53,911,632	$39,110,988	7.6%
ME	$10,924,315	$8,893,764	8.4%
NH	$2,448,521	$2,153,722	13.4%
NJ	$8,116,720	$308,938	1.3%
NY	$10,059,680	$5,560,414	1.2%
RI	$12,574,965	$9,848,787	2.6%
All Other States	$6,545,357	$3,562,683	0.6%
Grand Total	$106,613,095	$70,480,093	6.3%

* For Sector vessels

Table 20. Malmquist Chained Index (2007=1) of productivity change for common pool and sector vessels

	2007	2008	2009	2010
Sector Vessels	1.0	1.09	1.15	1.12
Common Pool	1.0	0.93	0.93	0.72

Table 21. Number of lessee MRIs and vessel affiliations leasing ACE and/or PSC in 2010 by homeport state.

		MRI		Vessel Affiliation*	
Home Port State	**Home Port**	**Count**	**Live lbs**	**Count**	**Live lbs**
CT			confidential		confidential
MA		179	15,974,243	129	5,176,507
	Boston	29	3,066,964	10	298,001
	Chatham	18	527,311	18	385,573
	Gloucester	54	3,571,880	40	2,038,789
	New Bedford	33	6,933,931	16	967,394
ME		33	4,547,645	30	3,126,130
	Portland	11	3,374,993	9	2,221,303
NH		20	586,546	21	653,274
NJ			confidential		confidential
NY		10	108,717	9	316,367
RI		28	921,542	27	574,423
	Point Judith	23	788,865	22	461,837
All Other States		7	48,465	6	14,738
Grand Total		281	22,207,066	225	9,895,598

* Ownership group assigned to the state in which the majority of permits held are homeported.

Table 22. Number of lessee MRIs by vessel size category.

Vessel Size Category	Count
< 30'	6
30'to < 50'	130
50' to < 75'	85
75' plus	60
Grand Total	281

Table 23. Total allocated ACE/PSC and catch by vessel size category.

	Allocated ACE		2010 Catch	
Vessel Size Category	**Live lbs**	**% of total**	**Live lbs**	**% of total**
< 30'	40,589,803	23.7%	346,908	0.5%
30' to < 50'	25,410,963	14.8%	10,812,281	16.5%
50' to < 75'	39,899,698	23.3%	19,150,899	29.3%
75' plus	65,296,604	38.1%	35,144,008	53.7%
Grand Total	171,197,069		65,454,096	

Table 24. ACE and PSC lease markets by stock (live pounds).

	Lessor Availability[1]	Lessee Requirement[2]	Between-Sector Leased[3]		Within-Sector Leased[4]	
Cod, GB East	502,821	371,696	142,288	38%	229,408	62%
Cod, GB West	3,983,057	3,106,829	2,146,442	69%	960,387	31%
Cod, GOM	5,251,700	3,807,384	2,115,195	56%	1,692,189	44%
Haddock, GB East	21,227,896	446,813	945,811	212%	-	-
Haddock, GB West	45,914,363	1,046,989	1,787,990	171%	-	-
Haddock, GOM	1,258,466	393,648	510,807	130%	-	-
Plaice	4,015,461	1,515,215	799,484	53%	715,731	47%
Pollock	25,286,865	2,613,334	3,240,773	124%	-	-
Redfish	10,883,027	1,475,946	1,139,517	77%	336,429	23%
White hake	3,317,306	2,976,521	1,409,496	47%	1,567,025	53%
Winter flounder, GB	2,611,258	1,679,593	247,090	15%	1,432,503	85%
Winter flounder, GOM	206,560	94,445	78,819	83%	15,626	17%
Witch flounder	998,440	793,361	392,939	50%	400,422	50%
Yellowtail flounder, CC/GOM	1,129,982	781,742	376,961	48%	404,781	52%
Yellowtail flounder, GB	1,021,116	915,152	249,780	27%	665,372	73%
Yellowtail flounder, SNE	341,722	188,399	104,581	56%	83,818	44%
Grand total	49,389,968	22,207,066	15,687,973	71%	6,519,093	29%

[1] Sum of uncaught ACE
[2] Difference between summed catch and allocated ACE
[3] From NMFS inter-Sector ACE lease database
[4] Assumes all inter-Sector leased ACE converted to catch.

Table 25. Number of between-Sector ACE lease transaction totals, by month and fishing year.

Fishing Year	Month	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model
2010	6	30	0	2
	7	138	2	3
	8	59	0	0
	9	67	0	0
	10	132	12	6
	11	80	27	8
	12	101	23	16
	1	92	59	25
	2	115	63	25
	3	93	64	42
	4	82	56	48
2010 Total		**989**	**306**	**175**
2011	5	126	38	25
	6	107	74	22
	7	72	32	14
	8	196	123	37
	9*	39	30	17
Grand Total		**1,529**	**603**	**290**

* Data through September 25, 2011.

Table 26. ACE lease prices from hedonic model.

Stock	2010-2011 full model Low Estimate	2010-2011 full model High Estimate		2010 full model Low Estimate	2010 full model High Estimate		2010-2011, no bundles Low Estimate	2010-2011, no bundles High Estimate		2010-2011, no swaps Low Estimate	2010-2011, no swaps High Estimate	
Cod, GB East	**$0.86**	**$ 1.12**	***	$0.64	$1.02	***	$0.92	$1.19	***	$0.76	$1.02	**
Cod, GB West	**$0.73**	**$ 0.78**	***	$0.73	$0.78	***	$0.77	$0.81	***	$0.71	$0.75	**
Cod, GOM	**$1.14**	**$1.20**	***	$1.24	$1.30	***	$1.17	$1.21	***	$1.20	$1.26	**
Haddock, GB East	-	-		-	-		-	-		-	-	
Haddock, GB West	-	-		-	-		-	-		-	-	
Haddock, GOM	**$0.88**	**$0.98**	***	$0.28	$1.12	*	$0.88	$0.97	***	$0.88	$0.98	***
Plaice	**$0.29**	**$0.55**	***	-	-		$0.19	$0.50	**	$0.29	$0.54	***
Pollock	-	-		$0.04	$0.08	***	$0.05	$0.08	***	$0.05	$0.08	***
Redfish	**$0.45**	**$0.86**	***	-	-		$0.46	$0.85	***	$0.49	$0.89	***
White hake	**$0.35**	**$0.40**	***	$0.39	$0.45	***	$0.32	$0.37	***	$0.36	$0.40	***
Winter flounder, GB	**$0.92**	**$1.26**	***	$0.65	$1.18	***	-	-		$0.86	$1.20	***
Winter flounder, GOM	-	-		-	-		-	-		-	-	
Witch flounder	**$0.84**	**$1.14**	***	-	-		$0.91	$1.23	***	$0.80	$1.12	***
Yellowtail flounder, CC/GOM	**$0.21**	**$0.49**	**	$0.22	$0.68	**	$0.34	$0.64	***	$0.19	$0.48	**
Yellowtail flounder, GB	**$0.10**	**$0.31**	*	$0.08	$0.30	*	$0.12	$0.32	**	$0.12	$0.32	**
Yellowtail flounder, SNE	**$0.52**	**$0.87**	***	$0.62	$1.32	***	$0.50	$0.89	***	$0.54	$0.88	***
Bundled Trades[1]	**$0.22**	**$0.16**	***	-	-		n/a	n/a		$0.19	$0.13	***
NSC Lease-only Sector[1]	**$0.16**	**$0.05**	**	-	-		-	-		$0.16	$0.06	**
observations	290			115			251			269		
R-squared	0.94			0.96			0.94			0.94		

[1]Premium or discount per pound of fish traded

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

Table 27. ACE lease prices from mean values for single stock leases.

	Simple Mean, 2010			Simple Mean, 2011			Simple Mean, 2010-2011		
Stock	**Low Estimate**	**High Estimate**	***n***	**Low Estimate**	**High Estimate**	***n***	**Low Estimate**	**High Estimate**	***n***
Cod, GB East	$0.88	$1.00	*9*	$0.80	$2.14	*11*	$0.68	$1.78	*20*
Cod, GB West	$0.71	$0.89	*24*	$0.67	$0.83	*8*	$0.70	$0.88	*32*
Cod, GOM	$0.65	$1.33	*35*	$0.80	$1.36	*19*	$0.70	$1.34	*54*
Haddock, GB East	-	-	*0*	-	-	*0*	-	-	*0*
Haddock, GB West	-	-	*0*	-	-	*0*	-	-	*0*
Haddock, GOM	$0.37	$1.05	*4*	$0.58	$0.78	*2*	$0.43	$0.97	*6*
Plaice	$0.15	$0.15	*1*	$0.06	$0.26	*3*	$0.07	$0.23	*4*
Pollock	-	-	*3*	$0.02	$0.18	*7*	$0.02	$0.18	*7*
Redfish	$0.15	$0.91	*6*	$0.27		*1*	$0.09	$0.79	*4*
White hake	$0.20	$0.54	*14*	$0.19	$0.59	*28*	$0.19	$0.57	*50*
Winter flounder, GB	$0.85	$0.85	*1*	$0.53	$1.67	*2*	$0.59	$1.45	*3*
Winter flounder, GOM	$0.31	$1.23	*12*	$0.46	$0.76	*4*	$0.32	$1.14	*16*
Witch flounder	$0.82	$1.36	*0*	$0.44	$1.06	*7*	$0.66	$1.30	*21*
Yellowtail flounder, CC/GOM	$0.32	$0.76	*8*	$0.34	$0.78	*3*	$0.34	$0.74	*11*
Yellowtail flounder, GB	$0.73	$1.11	*3*	$0.09	$0.93	*3*	$0.23	$1.11	*6*
Yellowtail flounder, SNE	$0.58	$0.92	*22*	$0.40		*1*	$0.50	$0.90	*7*

Table 28. Transfer payments from ACE and PSC leasing by stock at MRI level for 2010.

	Leasee requirement	estimated lease price			estimated transfer payments		
		lower bound	*median*	*upper bound*	*lower bound*	*median*	*upper bound*
cod, GB east	371,696	*$ 0.86*	***$ 0.99***	*$ 1.12*	$ 319,811	**$ 367,578**	$ 415,345
cod, GB west	3,106,829	*$ 0.73*	***$ 0.75***	*$ 0.78*	$ 2,263,915	**$ 2,344,599**	$ 2,425,284
cod, GOM	3,807,384	*$ 1.14*	***$ 1.17***	*$ 1.20*	$ 4,348,680	**$ 4,458,447**	$ 4,568,214
haddock, GB east	446,813	*$ -*	***$ -***	*$ -*	$ -	**$ -**	$ -
haddock, GB west	1,046,989	*$ -*	***$ -***	*$ -*	$ -	**$ -**	$ -
haddock, GOM	393,648	*$ 0.88*	***$ 0.93***	*$ 0.98*	$ 344,970	**$ 365,569**	$ 386,169
plaice	1,515,215	*$ 0.29*	***$ 0.42***	*$ 0.55*	$ 433,261	**$ 630,936**	$ 828,610
pollock	2,613,334	*$ -*	***$ -***	*$ -*	$ -	**$ -**	$ -
redfish	1,475,946	*$ 0.45*	***$ 0.65***	*$ 0.86*	$ 659,822	**$ 966,494**	$ 1,273,166
wh_hake	2,976,521	*$ 0.35*	***$ 0.37***	*$ 0.40*	$ 1,035,353	**$ 1,115,511**	$ 1,195,669
winter flounder, GB	1,679,593	*$ 0.92*	***$ 1.09***	*$ 1.26*	$ 1,545,175	**$ 1,828,320**	$ 2,111,466
winter flounder, GOM	94,445	*$ -*	***$ 0.50***	*$ -*	$ -	**$ 47,513**	$ -
witch flounder	793,361	*$ 0.84*	***$ 0.99***	*$ 1.14*	$ 669,668	**$ 788,148**	$ 906,629
yellowtail flounder, CC/GOM	781,742	*$ 0.21*	***$ 0.35***	*$ 0.49*	$ 162,399	**$ 272,273**	$ 382,147
yellowtail flounder, GB	915,152	*$ 0.10*	***$ 0.20***	*$ 0.31*	$ 90,280	**$ 185,199**	$ 280,119
yellowtail flounder, SNE	188,399	*$ 0.52*	***$ 0.70***	*$ 0.87*	$ 98,346	**$ 131,559**	$ 164,772
Grand Total	22,207,066				$ 11,971,679	**$ 13,502,147**	$ 14,937,588

Table 29. Transfer payments from ACE and PSC leasing by lessee home port state.

		Leasing Between MRIs		Leasing Between Vessel Affiliations*	
Home Port State	**Home Port**	**Count**	**Transfer Payment****	**Count**	**Transfer Payment****
CT			confidential		confidential
MA		179	$9,940,646	129	$3,806,840
	Boston	29	$1,788,713	10	$256,609
	Chatham	18	$465,975	18	$271,856
	Gloucester	54	$2,720,345	40	$1,565,628
	New Bedford	33	$3,521,010	16	$617,545
ME		33	$2,440,283	30	$1,786,967
	Portland	11	$1,689,681	9	$1,142,998
NH		20	$430,925	21	$596,998
NJ			confidential		confidential
NY		10	$95,119	9	$247,726
RI		28	$520,683	27	$393,282
	Point Judith	23	$414,837	22	$305,067
All Other States		7	$24,392	6	$8,334
Grand Total		277	$13,458,412	225	$6,863,223

* Median price estimate
** Ownership group assigned to the state in which the majority of permits held are homeported

Table 30. Catch and ACE at the stock level (live lbs) (stocks with > 80% ACE conversion highlighted in bold font).

	Allocated ACE	2010 Catch	% caught
GB cod, East	**690,614**	**559,490**	**81%**
GB cod, West	**6,317,690**	**5,441,462**	**86%**
GOM cod	**9,355,985**	**7,911,669**	**85%**
GB haddock, East	24,875,632	4,094,549	16%
GB haddock, West	59,039,163	14,171,789	24%
GOM hadock	1,683,057	818,239	49%
Plaice	5,836,518	3,336,272	57%
Pollock	34,156,917	11,483,386	34%
Redfish	14,109,702	4,702,621	33%
White hake	**5,292,674**	**4,951,889**	**94%**
GB winter flounder	3,980,218	3,048,553	77%
GOM winter flounder	288,899	176,784	61%
Witch flounder	**1,745,117**	**1,540,038**	**88%**
CC/GOM yellowtail flounder	1,581,720	1,233,481	78%
GB yellowtail flounder	**1,738,477**	**1,632,512**	**94%**
SNE/MA yellowtail flounder	504,685	351,362	70%
Grand Total	171,197,069	65,454,096	38%

Table 31. Number of vessels with revenue from any species (all trips).

		Year					
						2010	
Home Port State/City		2007	2008	2009	2010	Sector Vessels	Common Pool
CT		18	13	13	12	4	8
MA		544	502	488	446	266	180
	BOSTON	80	69	66	56	40	16
	CHATHAM	46	41	44	43	31	12
	GLOUCESTER	124	116	113	110	71	39
	NEW BEDFORD	93	91	87	71	50	21
ME		128	116	115	107	64	43
	PORTLAND	22	18	16	16	14	2
NH		70	65	62	57	37	20
NJ		67	71	63	58	2	56
NY		98	100	96	94	15	79
RI		110	104	95	88	43	45
	POINT JUDITH	58	54	49	47	34	13
All Other States		47	41	41	38	13	25
Grand Total		1,082	1,012	973	900	444	456

Table 32. Number of vessels with revenue from at least one groundfish trip.

Home Port State/City		Year					
						2010	
		2007	2008	2009	2010	Sector Vessels	Common Pool
CT		9	8	8	7	3	4
MA		341	321	312	240	191	49
	BOSTON	54	49	43	36	33	3
	CHATHAM	26	27	28	25	22	3
	GLOUCESTER	95	88	96	75	60	15
	NEW BEDFORD	60	62	53	33	29	4
ME		78	69	63	42	37	5
	PORTLAND	20	16	14	14	13	1
NH		44	42	43	32	26	6
NJ		41	34	25	20	1	19
NY		52	56	44	41	8	33
RI		78	70	60	57	34	23
	POINT JUDITH	43	36	32	33	28	5
All Other States		15	11	11	11	5	6
Grand Total		658	611	566	450	305	145

Table 33. Number of vessel affiliations by fishing year.

	2007	2008	2009	2010
Affiliations issued limited access groundfish permits	984	956	934	1,044
With limited access groundfish permit and revenue from any species	816	785	772	732
With limited access groundfish permit and revenue from at least one groundfish trip	525	511	484	406
Number and percent of inactive (no landings) affiliations	168 (17%)	171 (18%)	162 (17%)	312 (30%)

Table 34. Number and percentage of vessel affiliations by number of active vessels owned.

Number of active vessels per vessel affiliation	2007	2008	2009	2010
1	685 (83.9%)	667 (85.0%)	648 (83.9%)	627 (85.7%)
2	96 (11.8%)	87 (11.1%)	98 (12.7%)	75 (10.2%)
3	23 (2.8%)	17 (2.2%)	17 (2.2%)	20 (2.7%)
4 to 6	7 (0.9%)	8 (1.0%)	6 (0.8%)	7 (1.0%)
7 to 9	2 (0.2%)	3 (0.4%)	1 (0.1%)	2 (0.3%)
10 +	3 (0.4%)	3 (0.4%)	2 (0.3%)	1 (0.1%)
Average number of active vessels per active vessel affiliation*	1.33	1.29	1.26	1.23

* Number of vessels with revenue from any species (Table 9) divided by the number of affiliations with revenue from any species (Table 23)

Table 35. Distribution of nominal revenue from all species (all trips) among vessels.

Percent Bracket	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
Top 10%	$120,071,184 (40.3%)	$115,366,308 (39.6%)	$109,043,586 (40.2%)	$131,382,622 (44.1%)	$73,266,103 (37.0%)	$51,482,840 (51.8%)
20%	$61,814,771 (20.7%)	$60,902,907 (20.9%)	$54,589,638 (20.1%)	$62,439,457 (21.0%)	$39,900,994 (20.1%)	$17,660,840 (17.8%)
30%	$38,959,472 (13.1%)	$39,045,050 (13.4%)	$35,639,365 (13.1%)	$36,699,004 (12.3%)	$28,056,172 (14.2%)	$10,966,001 (11.0%)
40%	$27,555,633 (9.2%)	$26,559,909 (9.1%)	$25,101,710 (9.3%)	$23,758,944 (8.0%)	$18,952,396 (9.6%)	$7,912,825 (8.0%)
50%	$20,132,144 (6.8%)	$19,867,036 (6.8%)	$18,529,646 (6.8%)	$17,157,754 (5.8%)	$13,338,843 (6.7%)	$5,570,203 (5.6%)
60%	$14,465,555 (4.9%)	$14,029,631 (4.8%)	$13,445,015 (5.0%)	$12,461,792 (4.2%)	$9,173,552 (4.6%)	$3,259,790 (3.3%)
70%	$9,317,019 (3.1%)	$9,218,199 (3.2%)	$9,193,437 (3.4%)	$8,547,356 (2.9%)	$7,051,963 (3.6%)	$1,639,206 (1.6%)
80%	$4,422,445 (1.5%)	$4,883,189 (1.7%)	$4,267,064 (1.6%)	$3,971,492 (1.3%)	$5,180,072 (2.6%)	$646,071 (0.6%)
90%	$1,295,445 (0.4%)	$1,398,669 (0.5%)	$1,138,566 (0.4%)	$1,117,157 (0.4%)	$2,922,771 (1.5%)	$265,991 (0.3%)
Bottom 10%	$212,787 (0.1%)	$208,362 (0.1%)	$191,809 (0.1%)	$184,292 (0.1%)	$421,332 (0.2%)	$51,905 (0.1%)
Grand Total	$298,246,455	$291,479,260	$271,139,836	$297,719,870	$198,264,198	$99,455,672
Number of vessels	1,082	1,012	973	900	444	456

Table 36. Distribution of nominal revenue from groundfish (all trips) among vessels.

Percent Bracket	2007	2008	2009	2010	2010 Sector Vessels	2010 Common Pool
Top 10%	$40,863,388 (45.9%)	$42,305,838 (46.9%)	$40,581,567 (47.7%)	$48,012,218 (57.6%)	$36,730,592 (45.3%)	$1,745,680 (77.0%)
20%	$18,765,739 (21.1%)	$19,372,644 (21.5%)	$18,002,925 (21.2%)	$18,568,379 (22.3%)	$17,978,988 (22.2%)	$321,550 (14.2%)
30%	$11,947,066 (13.4%)	$12,094,217 (13.4%)	$11,533,218 (13.6%)	$8,463,421 (10.2%)	$10,800,321 (13.3%)	$104,136 (4.6%)
40%	$7,723,167 (8.7%)	$7,689,129 (8.5%)	$7,638,111 (9.0%)	$4,723,394 (5.7%)	$6,213,012 (7.7%)	$51,467 (2.3%)
50%	$5,123,935 (5.8%)	$4,853,479 (5.4%)	$4,435,202 (5.2%)	$2,354,910 (2.8%)	$4,181,748 (5.2%)	$26,134 (1.2%)
60%	$2,917,968 (3.3%)	$2,511,154 (2.8%)	$1,993,809 (2.3%)	$840,771 (1.0%)	$2,629,156 (3.2%)	$11,277 (0.5%)
70%	$1,295,889 (1.5%)	$948,202 (1.1%)	$677,963 (0.8%)	$248,824 (0.3%)	$1,573,462 (1.9%)	$5,339 (0.2%)
80%	$338,378 (0.4%)	$293,168 (0.3%)	$180,405 (0.2%)	$69,221 (0.1%)	$710,411 (0.9%)	$1,880 (0.1%)
90%	$71,976 (0.1%)	$58,870 (0.1%)	$41,541 (0.0%)	$11,514 (0.0%)	$197,049 (0.2%)	$542 (0.0%)
Bottom 10%	$7,579 (0.0%)	$5,237 (0.0%)	$3,500 (0.0%)	$1,015 (0.0%)	$10,855 (0.0%)	$68 (0.0%)
Grand Total	$89,055,085	$90,131,938	$85,088,241	$83,293,667	$81,025,594	$2,268,073
Number of vessels	711	662	611	497	319	178

Table 37. Distribution of nominal revenue all species (all trips) among vessel affiliations.

Percent Bracket	2007	2008	2009	2010
Top 10%	$158,001,861 (53.0%)	$152,940,440 (52.5%)	$139,445,438 (51.4%)	$168,752,854 (56.7%)
20%	$51,967,713 (17.4%)	$50,204,508 (17.2%)	$46,030,078 (17.0%)	$48,074,454 (16.1%)
30%	$30,435,021 (10.2%)	$30,530,617 (10.5%)	$29,146,407 (10.7%)	$27,888,325 (9.4%)
40%	$20,513,442 (6.9%)	$20,508,275 (7.0%)	$20,071,562 (7.4%)	$18,607,754 (6.3%)
50%	$14,990,002 (5.0%)	$15,143,356 (5.2%)	$14,629,329 (5.4%)	$13,616,270 (4.6%)
60%	$11,057,187 (3.7%)	$10,722,154 (3.7%)	$10,662,697 (3.9%)	$9,696,289 (3.3%)
70%	$6,962,171 (2.3%)	$6,731,098 (2.3%)	$7,159,346 (2.6%)	$6,799,637 (2.3%)
80%	$3,201,604 (1.1%)	$3,464,777 (1.2%)	$3,023,974 (1.1%)	$3,224,076 (1.1%)
90%	$956,641 (0.3%)	$1,058,681 (0.4%)	$838,624 (0.3%)	$921,840 (0.3%)
Bottom 10%	$160,813 (0.1%)	$175,354 (0.1%)	$132,381 (0.0%)	$138,371 (0.0%)
Grand Total	$298,246,455	$291,479,260	$271,139,836	$297,719,870
Number of Vessel affiliations	816	785	772	732

Table 38. Distribution of groundfish nominal revenue among vessel affiliations.

Percent Bracket	2007	2008	2009	2010
Top 10%	$53,720,47 (60.3%)	$56,150,290 (62.3%)	$51,978,756 (61.1%)	$60,658,550 (72.8%)
20%	$14,211,905 (16.0%)	$14,279,106 (15.8%)	$13,705,495 (16.1%)	$11,071,448 (13.3%)
30%	$8,969,310 (10.1%)	$8,521,084 (9.5%)	$8,950,747 (10.5%)	$5,759,407 (6.9%)
40%	$5,557,525 (6.2%)	$5,316,074 (5.9%)	$5,542,487 (6.5%)	$3,293,717 (4.0%)
50%	$3,548,613 (4.0%)	$3,248,560 (3.6%)	$3,051,869 (3.6%)	$1,631,753 (2.0%)
60%	$1,965,199 (2.2%)	$1,728,857 (1.9%)	$1,247,130 (1.5%)	$598,233 (0.7%)
70%	$815,774 (0.9%)	$649,277 (0.7%)	$455,743 (0.5%)	$214,818 (0.3%)
80%	$218,548 (0.2%)	$195,800 (0.2%)	$123,545 (0.1%)	$54,253 (0.1%)
90%	$43,136 (0.0%)	$39,736 (0.0%)	$29,696 (0.0%)	$10,436 (0.0%)
Bottom 10%	$4,658 (0.0%)	$3,154 (0.0%)	$2,773 (0.0%)	$1,052 (0.0%)
Grand Total	$89,055,085	$90,131,938	$85,088,241	$83,293,667
Number of Vessel affiliations	525	511	484	406

Table 39. Number of vessels with revenue from all species (on all trips) by cumulative quartiles (ordered high revenue to low).

Percent of all species revenue	2007	2008	2009	2010
Top 25%	55 (5.1%)	53 (5.2%)	49 (5.0%)	39 (4.3%)
Top 50%	152 (14.0%)	145 (14.3%)	138 (14.2%)	110 (12.2%)
Top 75%	333 (30.8%)	313 (30.9%)	305 (31.3%)	248 (27.6%)
100%	1,082 (100%)	1,012 (100%)	973 (100%)	900 (100%)

Table 40. Number of vessels with revenue from groundfish (on all trips) by cumulative quartiles (ordered high revenue to low).

Percent of groundfish revenue	2007	2008	2009	2010
Top 25%	24 (3.4%)	23 (3.5%)	20 (3.3%)	12 (2.4%)
Top 50%	82 (11.5%)	73 (11.0%)	66 (10.8%)	38 (7.6%)
Top 75%	180 (25.3%)	160 (24.2%)	147 (24.1%)	84 (16.9%)
100%	711 (100%)	662 (100%)	611 (100%)	497 (100%)

Table 41. 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	2007	2008	2009	2010
Top 25%	15 (1.8%)	16 (2.0%)	17 (2.2%)	13 (1.8%)
Top 50%	74 (9.1%)	72 (9.2%)	74 (9.6%)	57 (7.8%)
Top 75%	198 (24.3%)	193 (24.6%)	200 (25.9%)	162 (22.1%)
100%	816 (100%)	785 (100%)	772 (100%)	732 (100%)

Table 42. Number of vessel affiliations with revenue from groundfish by cumulative (on all trips) quartiles (ordered high revenue to low)

Percent of groundfish revenue	2007	2008	2009	2010
Top 25%	4 (0.8%)	6 (1.2%)	6 (1.2%)	3 (0.7%)
Top 50%	32 (6.1%)	29 (5.7%)	29 (6.0%)	15 (3.7%)
Top 75%	100 (19.0%)	90 (17.7%)	89 (18.4%)	45 (11.1%)
100%	525 (100%)	511 (100%)	484 (100%)	406 (100%)

Table 43. Changes in employment indicators by vessel size category (all trips).

		Year			
Vessel Size		**2007**	**2008**	**2009**	**2010**
Less than 30'					
	Total Crew Positions	110	102	106	95
	Total Crew-trips	3,208	3,325	3,619	3,094
	Total Crew-days	1,118	1,149	1,302	1,081
	Crew-days/Crew-trips	0.35	0.35	0.36	0.35
30' to < 50'					
	Total Crew Positions	1,084	1,014	977	928
	Total Crew-trips	83,954	78,858	81,729	68,600
	Total Crew-days	43,429	40,769	39,657	34,346
	Crew-days/Crew-trips	0.52	0.52	0.49	0.50
50' to < 75'					
	Total Crew Positions	870	794	754	686
	Total Crew-trips	47,506	44,381	42,940	39,431
	Total Crew-days	75,518	70,909	69,908	60,939
	Crew-days/Crew-trips	1.59	1.60	1.63	1.55
75' and above					
	Total Crew Positions	624	633	605	566
	Total Crew-trips	17,079	17,849	16,442	15,458
	Total Crew-days	79,527	79,595	76,077	73,214
	Crew-days/Crew-trips	4.66	4.46	4.63	4.74
All Sizes					
	Total Crew Positions	2,687	2,544	2,442	2,277
	Total Crew-trips	151,747	144,413	144,730	126,583
	Total Crew-days	199,593	192,422	186,944	169,580
	Crew-days/Crew-trips	1.32	1.33	1.29	1.34

Table 44. Changes in employment indicators by home port state (all trips).

Home Port State		Year			
		2007	2008	2009	2010
CT					
	Total Crew Positions	52	39	43	41
	Total Crew-trips	2,552	1,982	1,812	1,834
	Total Crew-days	4,261	3,779	3,747	3,718
	Crew-days/Crew-trips	1.67	1.91	2.07	2.03
MA					
	Total Crew Positions	1,402	1,310	1,264	1,154
	Total Crew-trips	69,983	66,005	67,888	55,394
	Total Crew-days	98,094	93,181	94,033	82,358
	Crew-days/Crew-trips	1.40	1.41	1.39	1.49
ME					
	Total Crew Positions	276	250	245	235
	Total Crew-trips	16,470	14,519	15,568	15,147
	Total Crew-days	17,872	15,882	15,905	15,511
	Crew-days/Crew-trips	1.09	1.09	1.02	1.02
NH					
	Total Crew Positions	139	123	119	111
	Total Crew-trips	9,943	9,488	10,804	8,211
	Total Crew-days	6,443	6,135	6,438	4,259
	Crew-days/Crew-trips	0.65	0.65	0.60	0.52

Table 44, continued. Changes in employment indicators by home port state (all trips).

Home Port State		Year			
		2007	2008	2009	2010
NJ					
	Total Crew Positions	167	185	164	150
	Total Crew-trips	13,469	13,896	11,727	11,066
	Total Crew-days	12,035	12,987	11,036	10,476
	Crew-days/Crew-trips	0.89	0.93	0.94	0.95
NY					
	Total Crew Positions	204	214	215	201
	Total Crew-trips	15,358	15,228	15,355	14,751
	Total Crew-days	16,656	15,975	16,612	15,070
	Crew-days/Crew-trips	1.08	1.05	1.08	1.02
RI					
	Total Crew Positions	304	281	264	252
	Total Crew-trips	19,805	17,730	16,477	15,531
	Total Crew-days	32,072	29,690	26,657	26,415
	Crew-days/Crew-trips	1.62	1.67	1.62	1.70
All Other States					
	Total Crew Positions	145	144	128	132
	Total Crew-trips	4,167	5,565	5,099	4,649
	Total Crew-days	12,158	14,794	12,515	11,772
	Crew-days/Crew-trips	2.92	2.66	2.45	2.53
Total					
	Total Crew Positions	2,687	2,544	2,442	2,277
	Total Crew-trips	151,747	144,413	144,730	126,583
	Total Crew-days	199,593	192,422	186,944	169,580
	Crew-days/Crew-trips	1.32	1.33	1.29	1.34

Table 45. Changes in employment indicators by home port county (all trips).

Home Port State	Home Port County		Year 2007	2008	2009	2010
CT	FAIRFIELD	Total Crew Positions	2			
		Total Crew-trips	20			
		Total Crew-days	4			
		Crew-days/Crew-trips	0.18			
	MIDDLESEX	Total Crew Positions	3	3	3	5
		Total Crew-trips	25	20	25	9
		Total Crew-days	13	5	10	5
		Crew-days/Crew-trips	0.51	0.25	0.41	0.57
	NEW HAVEN	Total Crew Positions	2	2	2	2
		Total Crew-trips	117	92	74	61
		Total Crew-days	28	28	23	16
		Crew-days/Crew-trips	0.24	0.31	0.31	0.26
	NEW LONDON	Total Crew Positions	45	34	38	35
		Total Crew-trips	2,390	1,870	1,713	1,764
		Total Crew-days	4,218	3,746	3,714	3,697
		Crew-days/Crew-trips	1.76	2.00	2.17	2.10
MA	BARNSTABLE	Total Crew Positions	214	192	190	190
		Total Crew-trips	12,728	11,393	11,209	10,704
		Total Crew-days	9,736	8,647	8,573	7,744
		Crew-days/Crew-trips	0.76	0.76	0.76	0.72
	BRISTOL	Total Crew Positions	464	435	417	358
		Total Crew-trips	10,266	9,251	8,569	7,024
		Total Crew-days	42,631	41,014	42,730	36,425
		Crew-days/Crew-trips	4.15	4.43	4.99	5.19
	DUKES	Total Crew Positions	10	8	8	8
		Total Crew-trips	356	250	324	264
		Total Crew-days	324	245	365	147
		Crew-days/Crew-trips	0.91	0.98	1.13	0.56
	ESSEX	Total Crew Positions	377	363	354	333
		Total Crew-trips	28,630	28,877	32,281	22,742
		Total Crew-days	18,412	18,599	19,474	17,167
		Crew-days/Crew-trips	0.64	0.64	0.60	0.75
	MIDDLESEX	Total Crew Positions	1	1	1	
		Total Crew-trips	6	11	16	
		Total Crew-days	2	4	8	
		Crew-days/Crew-trips	0.41	0.38	0.52	

Table 45, continued. Changes in employment indicators by home port county (all trips).

Home Port State	Home Port County		Year 2007	2008	2009	2010
MA	NANTUCKET	Total Crew Positions	2	3	3	3
		Total Crew-trips	95	94	63	34
		Total Crew-days	148	192	167	138
		Crew-days/Crew-trips	1.55	2.05	2.65	4.05
	NORFOLK	Total Crew Positions	9	7	9	10
		Total Crew-trips	291	296	277	258
		Total Crew-days	663	636	601	552
		Crew-days/Crew-trips	2.28	2.15	2.17	2.14
	PLYMOUTH	Total Crew Positions	84	89	81	82
		Total Crew-trips	5,389	5,269	5,315	5,225
		Total Crew-days	3,412	2,854	2,985	2,694
		Crew-days/Crew-trips	0.63	0.54	0.56	0.52
	SUFFOLK	Total Crew Positions	237	209	198	167
		Total Crew-trips	12,072	10,412	9,683	8,992
		Total Crew-days	22,719	20,943	19,083	17,441
		Crew-days/Crew-trips	1.88	2.01	1.97	1.94
	WORCESTER	Total Crew Positions	3	3	2	2
		Total Crew-trips	150	152	151	151
		Total Crew-days	47	45	47	49
		Crew-days/Crew-trips	0.32	0.30	0.31	0.33
ME	CUMBERLAND	Total Crew Positions	106	93	96	85
		Total Crew-trips	5,132	4,449	5,631	4,514
		Total Crew-days	9,930	8,530	8,916	9,032
		Crew-days/Crew-trips	1.93	1.92	1.58	2.00
	HANCOCK	Total Crew Positions	28	18	22	25
		Total Crew-trips	1,820	1,098	1,195	1,718
		Total Crew-days	1,420	936	1,071	1,261
		Crew-days/Crew-trips	0.78	0.85	0.90	0.73
	KNOX	Total Crew Positions	27	29	29	31
		Total Crew-trips	1,781	1,700	1,613	1,955
		Total Crew-days	1,444	1,236	1,291	1,112
		Crew-days/Crew-trips	0.81	0.73	0.80	0.57
	LINCOLN	Total Crew Positions	36	37	37	35
		Total Crew-trips	2,177	2,029	2,416	2,180
		Total Crew-days	2,269	2,327	2,150	1,780
		Crew-days/Crew-trips	1.04	1.15	0.89	0.82

Table 45, continued. Changes in employment indicators by home port county (all trips).

Home Port State	Home Port County		Year 2007	2008	2009	2010
ME	SAGADAHOC	Total Crew Positions	23	15	14	14
		Total Crew-trips	637	760	873	866
		Total Crew-days	324	397	430	407
		Crew-days/Crew-trips	0.51	0.52	0.49	0.47
	WASHINGTON	Total Crew Positions	7	7	4	6
		Total Crew-trips	373	424	166	436
		Total Crew-days	168	198	77	163
		Crew-days/Crew-trips	0.45	0.47	0.46	0.37
	YORK	Total Crew Positions	49	50	43	39
		Total Crew-trips	4,550	4,059	3,674	3,478
		Total Crew-days	2,318	2,258	1,970	1,755
		Crew-days/Crew-trips	0.51	0.56	0.54	0.50
NH	ROCKINGHAM	Total Crew Positions	139	123	119	111
		Total Crew-trips	9,943	9,488	10,804	8,211
		Total Crew-days	6,443	6,135	6,438	4,259
		Crew-days/Crew-trips	0.65	0.65	0.60	0.52
NJ	CAPE MAY	Total Crew Positions	35	48	44	38
		Total Crew-trips	1,358	1,705	1,149	1,046
		Total Crew-days	3,296	4,293	3,813	3,527
		Crew-days/Crew-trips	2.43	2.52	3.32	3.37
	CUMBERLAND	Total Crew Positions	3	3		
		Total Crew-trips	23	43		
		Total Crew-days	20	32		
		Crew-days/Crew-trips	0.85	0.74		
	MONMOUTH	Total Crew Positions	39	43	41	43
		Total Crew-trips	3,544	3,764	3,433	3,820
		Total Crew-days	1,749	2,272	1,908	1,982
		Crew-days/Crew-trips	0.49	0.60	0.56	0.52
	OCEAN	Total Crew Positions	90	90	79	69
		Total Crew-trips	8,544	8,384	7,145	6,200
		Total Crew-days	6,970	6,389	5,315	4,967
		Crew-days/Crew-trips	0.82	0.76	0.74	0.80

Table 45, continued. Changes in employment indicators by home port county (all trips).

Home Port State	Home Port County		Year 2007	2008	2009	2010
NY	KINGS	Total Crew Positions			1	1
		Total Crew-trips			39	18
		Total Crew-days			9	4
		Crew-days/Crew-trips			0.22	0.24
	NASSAU	Total Crew Positions	11	12	14	15
		Total Crew-trips	917	1,245	1,115	1,087
		Total Crew-days	593	726	716	696
		Crew-days/Crew-trips	0.65	0.58	0.64	0.64
	NEW YORK	Total Crew Positions	55	51	44	38
		Total Crew-trips	3,652	3,098	2,957	2,901
		Total Crew-days	2,783	2,330	2,479	2,238
		Crew-days/Crew-trips	0.76	0.75	0.84	0.77
	QUEENS	Total Crew Positions	2	2	4	2
		Total Crew-trips	16	18	7	16
		Total Crew-days	4	7	2	7
		Crew-days/Crew-trips	0.25	0.37	0.32	0.46
	SUFFOLK	Total Crew Positions	134	146	149	143
		Total Crew-trips	10,709	10,816	11,178	10,653
		Total Crew-days	13,255	12,896	13,392	12,105
		Crew-days/Crew-trips	1.24	1.19	1.20	1.14
	SUFFOLK/ NASSAU	Total Crew Positions	2	2	3	3
		Total Crew-trips	64	51	59	76
		Total Crew-days	22	16	15	20
		Crew-days/Crew-trips	0.34	0.31	0.25	0.27
RI	BRISTOL	Total Crew Positions	4			
		Total Crew-trips	140			
		Total Crew-days	109			
		Crew-days/Crew-trips	0.78			
	NEWPORT	Total Crew Positions	99	91	85	70
		Total Crew-trips	6,434	5,326	5,185	3,810
		Total Crew-days	9,237	7,323	6,418	5,876
		Crew-days/Crew-trips	1.44	1.37	1.24	1.54
	WASHINGTON	Total Crew Positions	200	189	180	182
		Total Crew-trips	13,231	12,404	11,292	11,721
		Total Crew-days	22,726	22,367	20,238	20,539
		Crew-days/Crew-trips	1.72	1.80	1.79	1.75

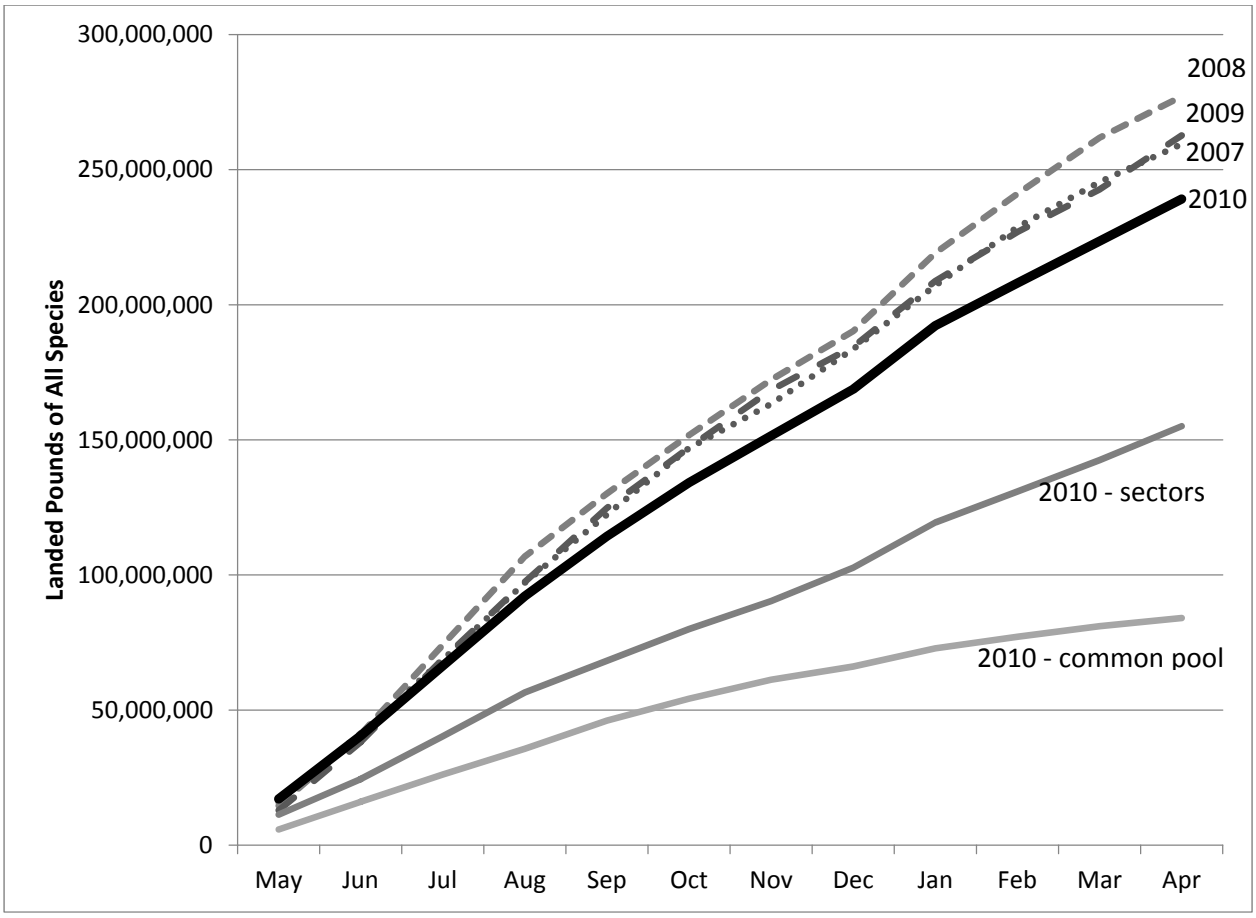

Figure 1. Cumulative landings of all species (all trips).

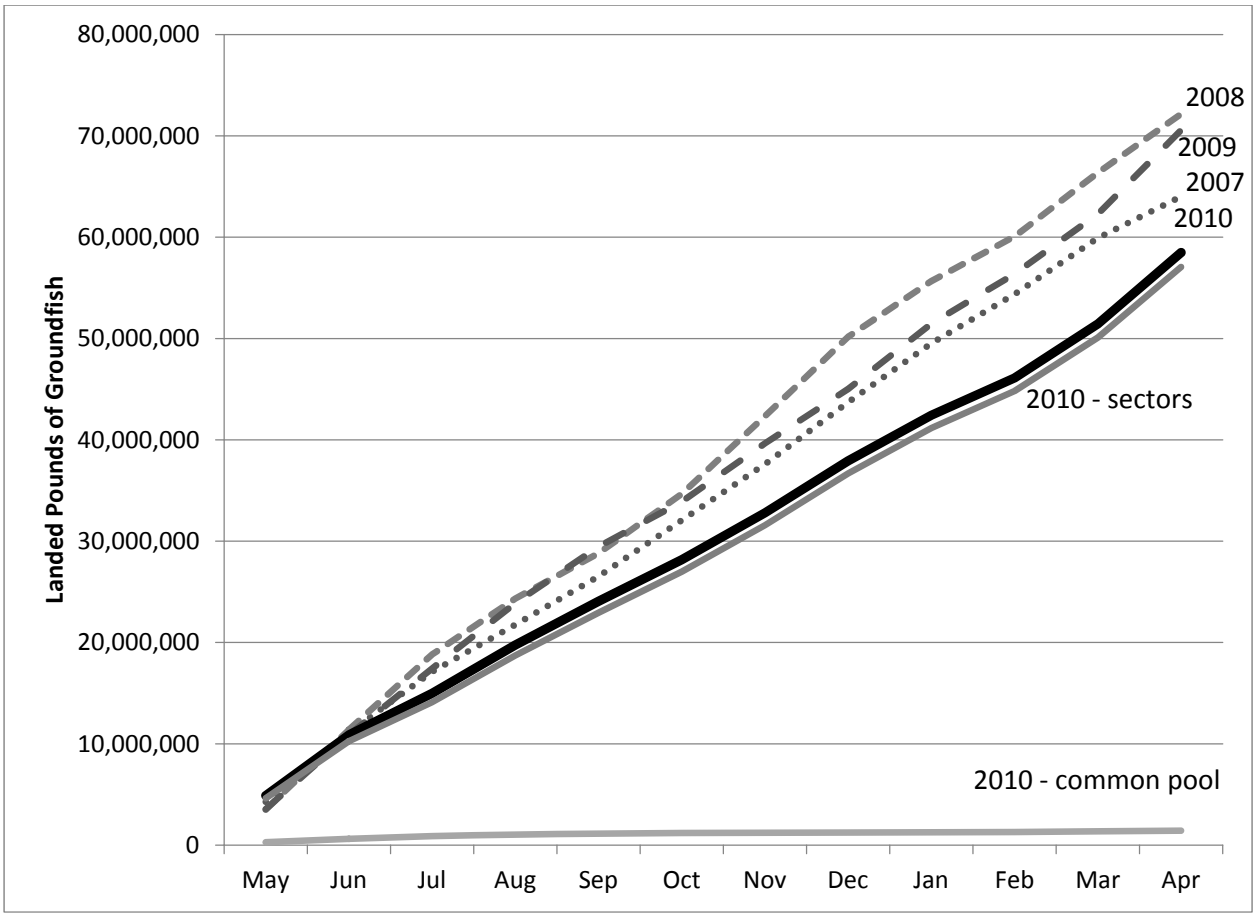

Figure 2. Cumulative landings of groundfish (all trips).

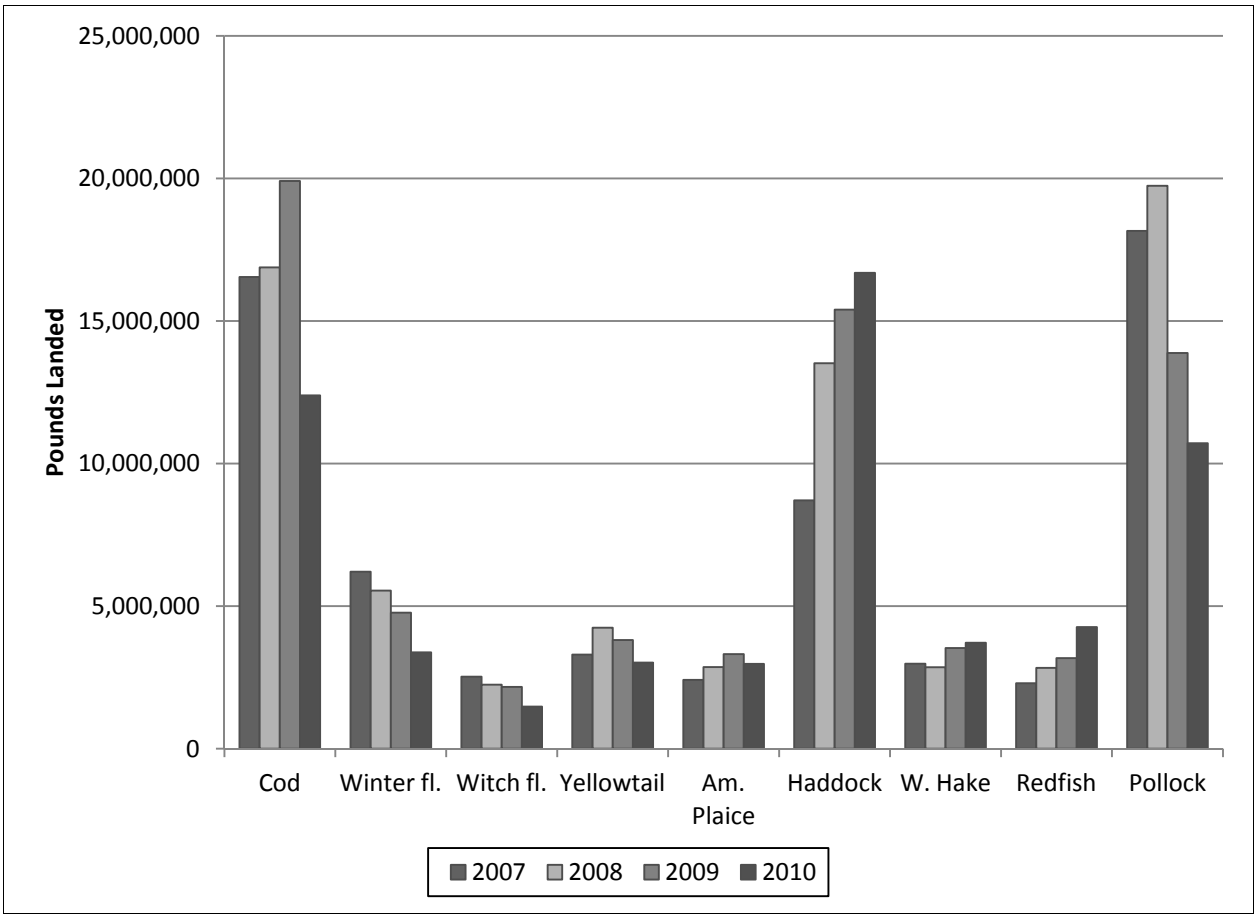

Figure 3. Allocated groundfish landings by species (all trips).

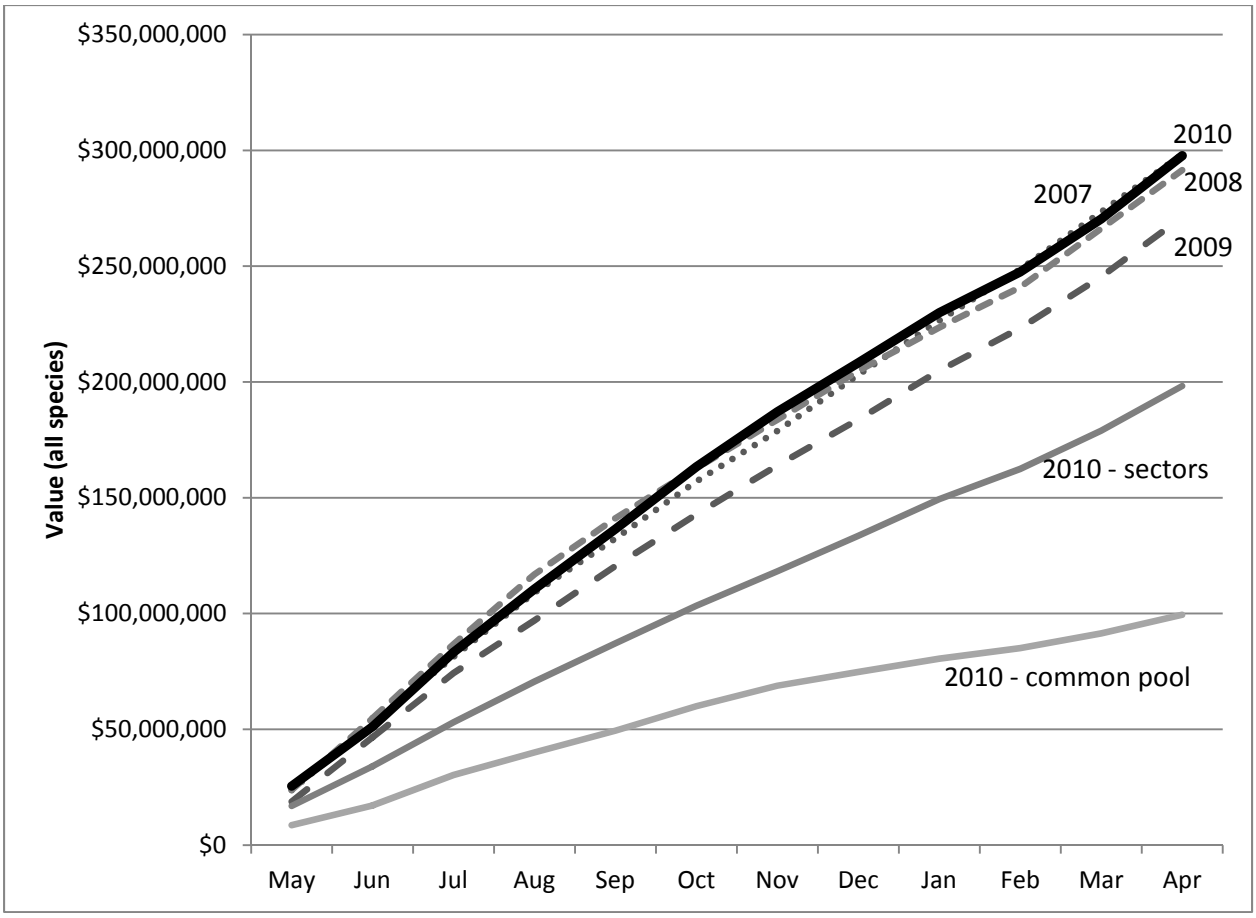

Figure 4. Cumulative nominal revenue from all species (all trips).

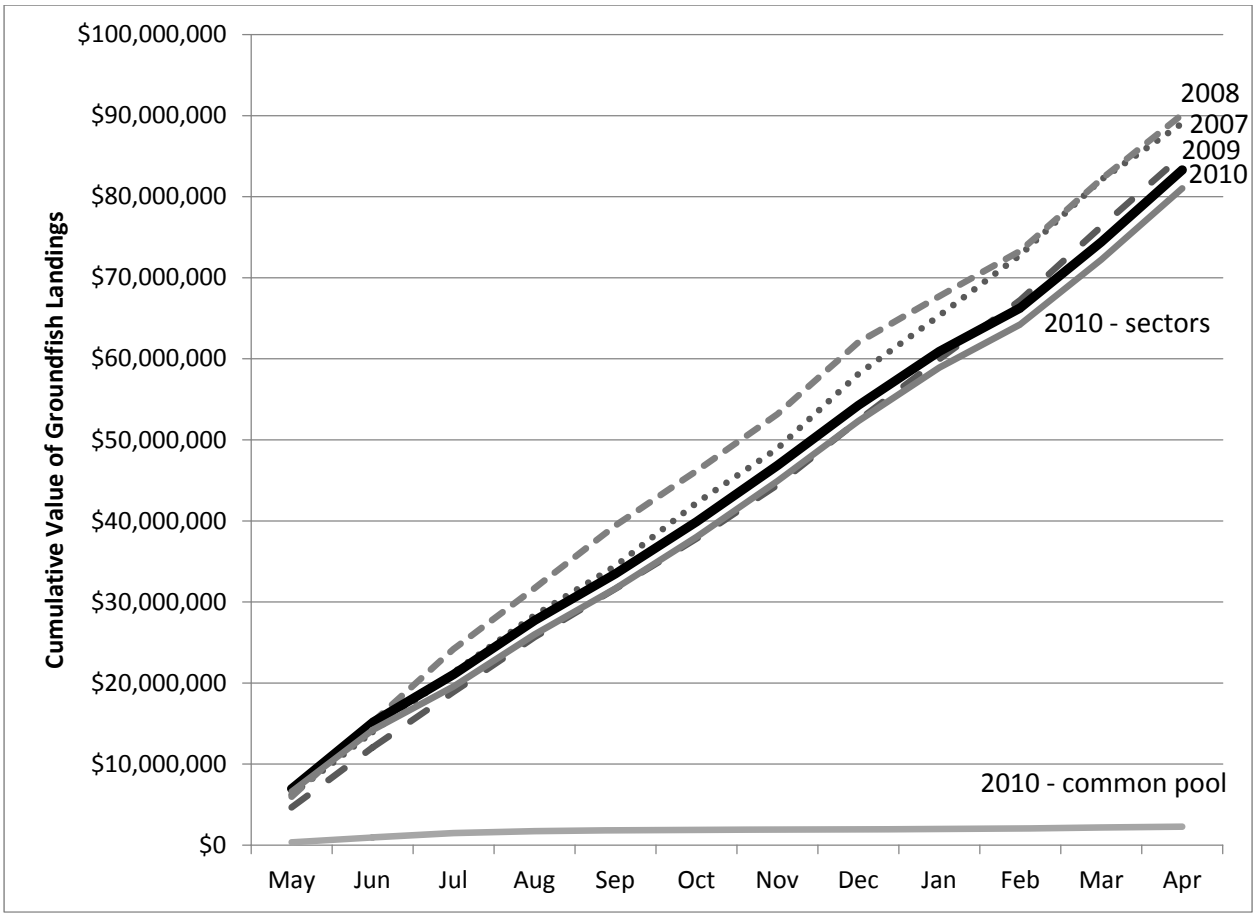

Figure 5. Cumulative nominal revenue from groundfish (all trips).

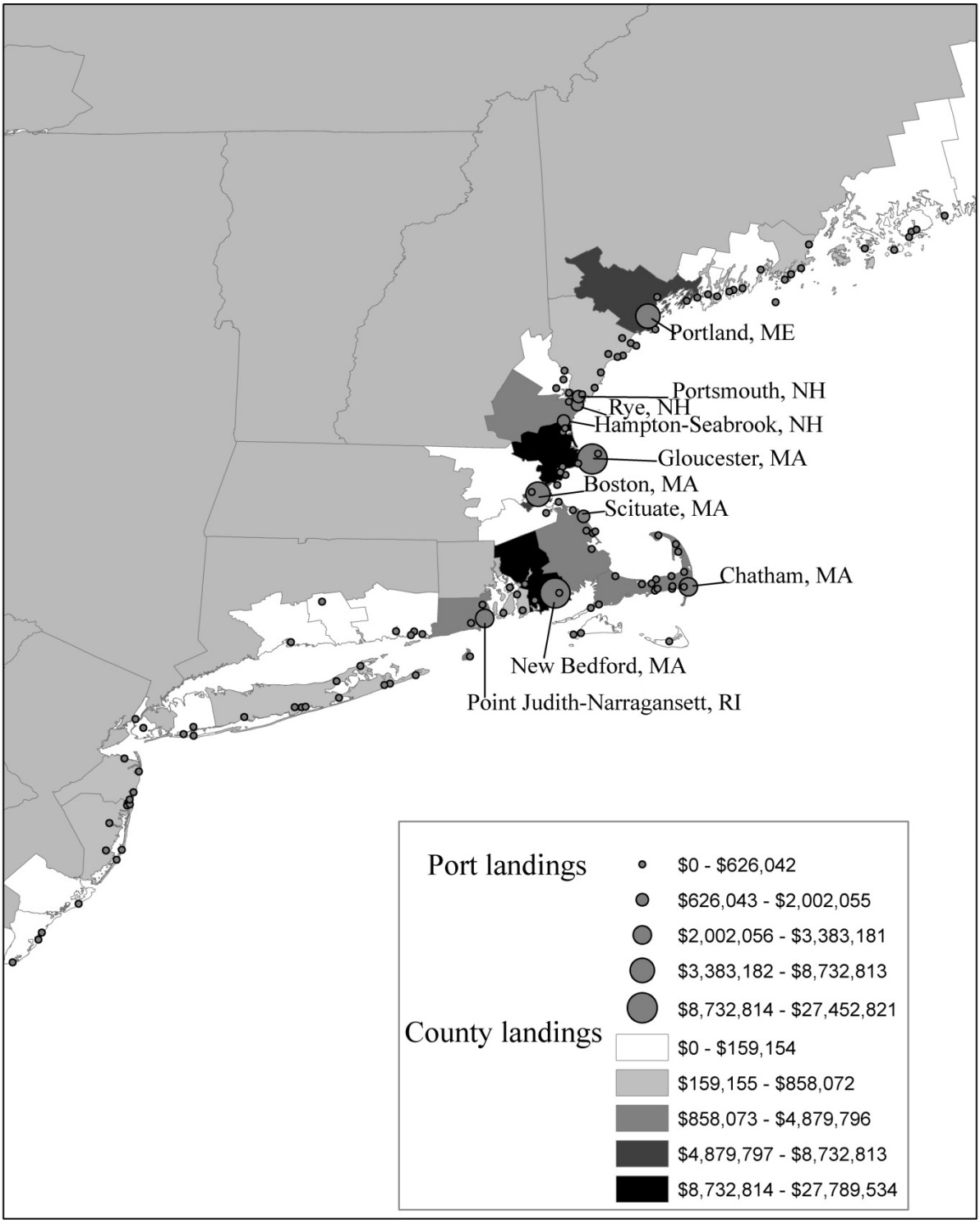

Figure 6. Average 2007 - 2009 nominal value of groundfish landings by port and county landed.

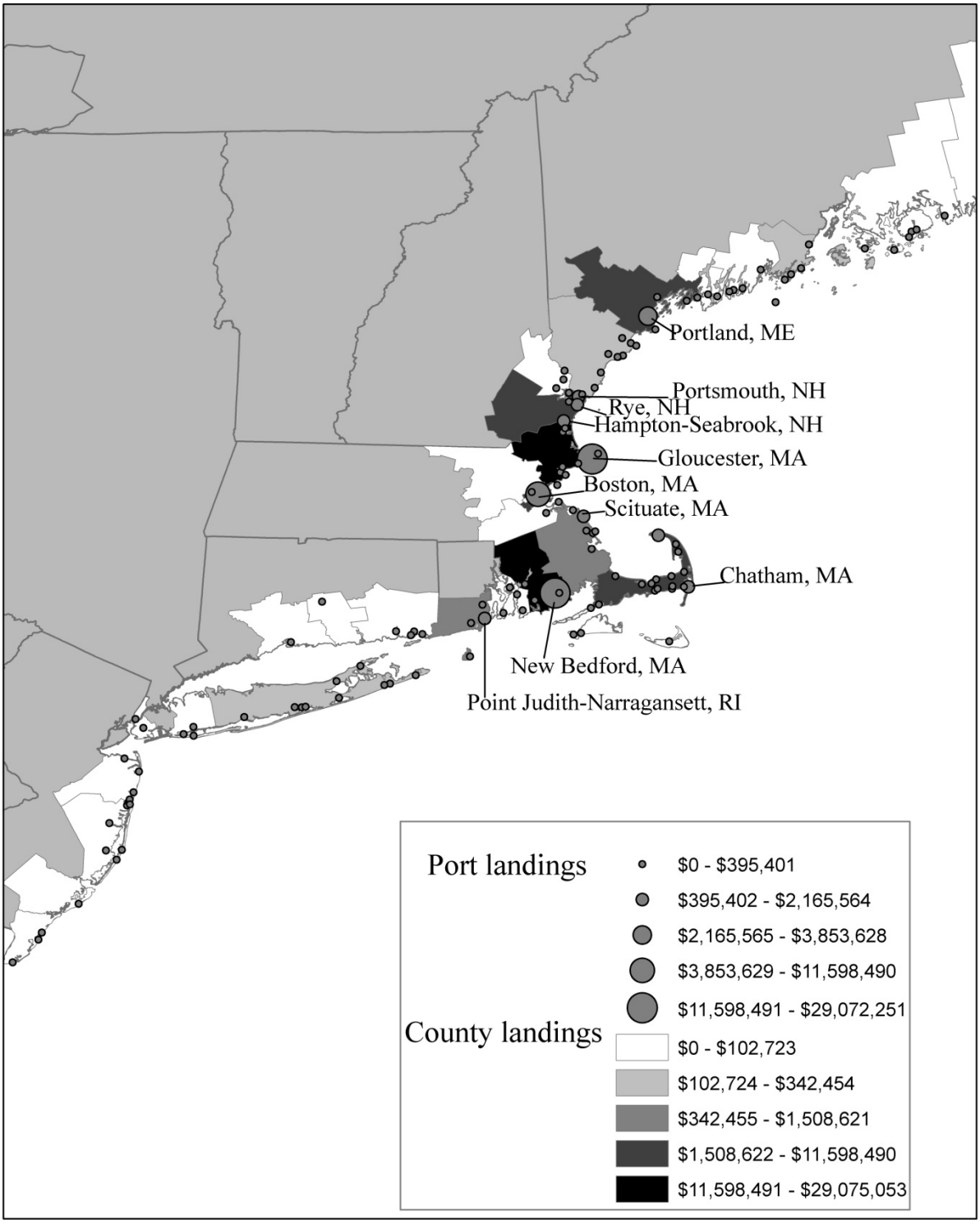

Figure 7. 2010 Nominal value of groundfish landings by port and county landed.

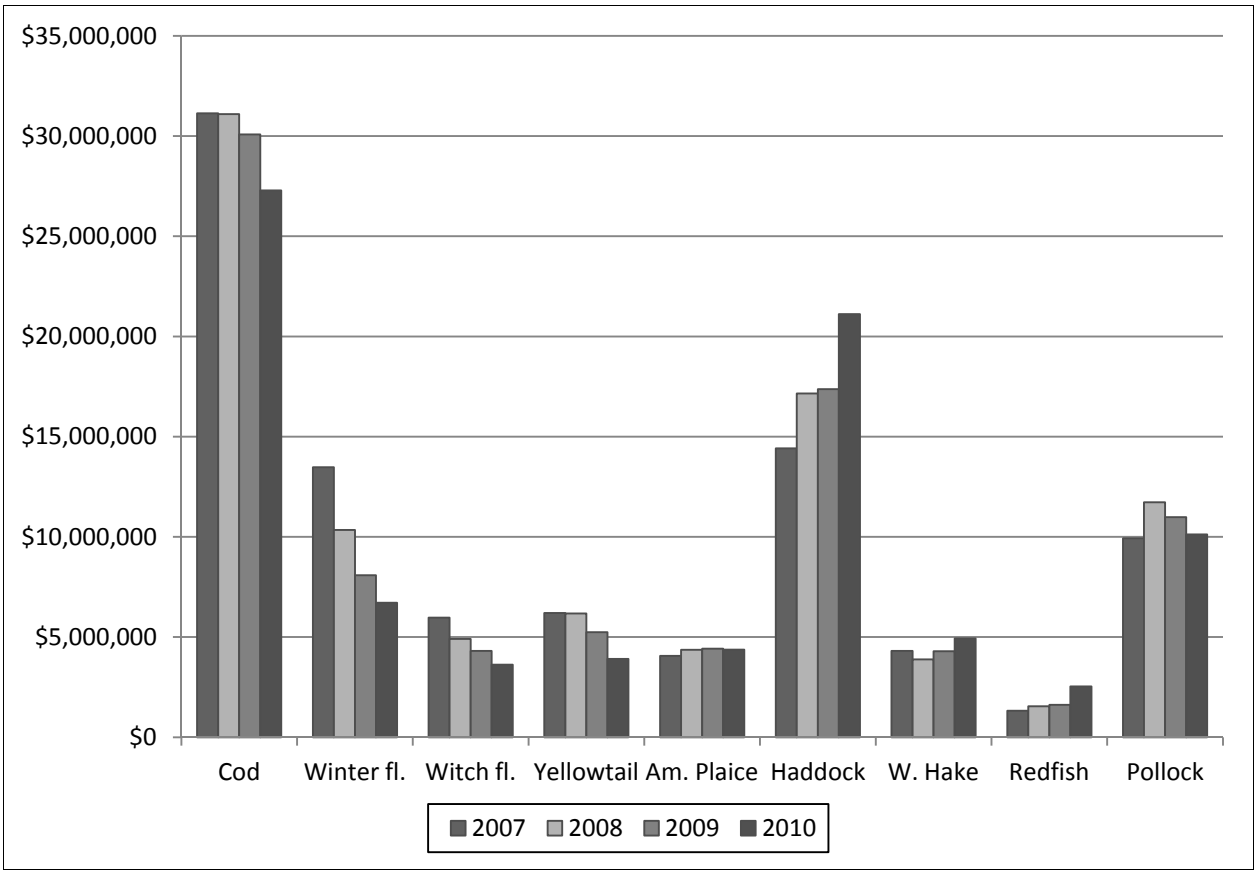

Figure 8. Allocated groundfish nominal revenue by species (all trips).

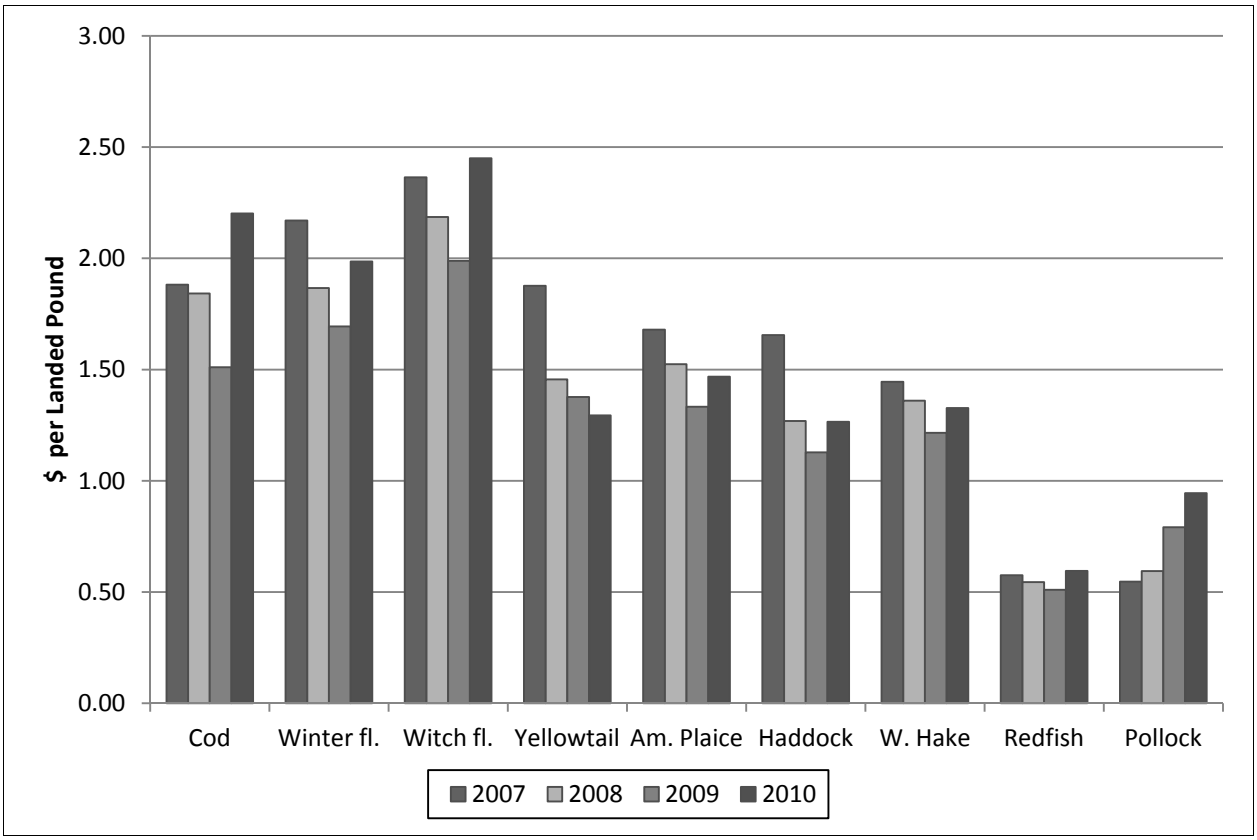

Figure 9. Yearly average nominal price by allocated groundfish species.

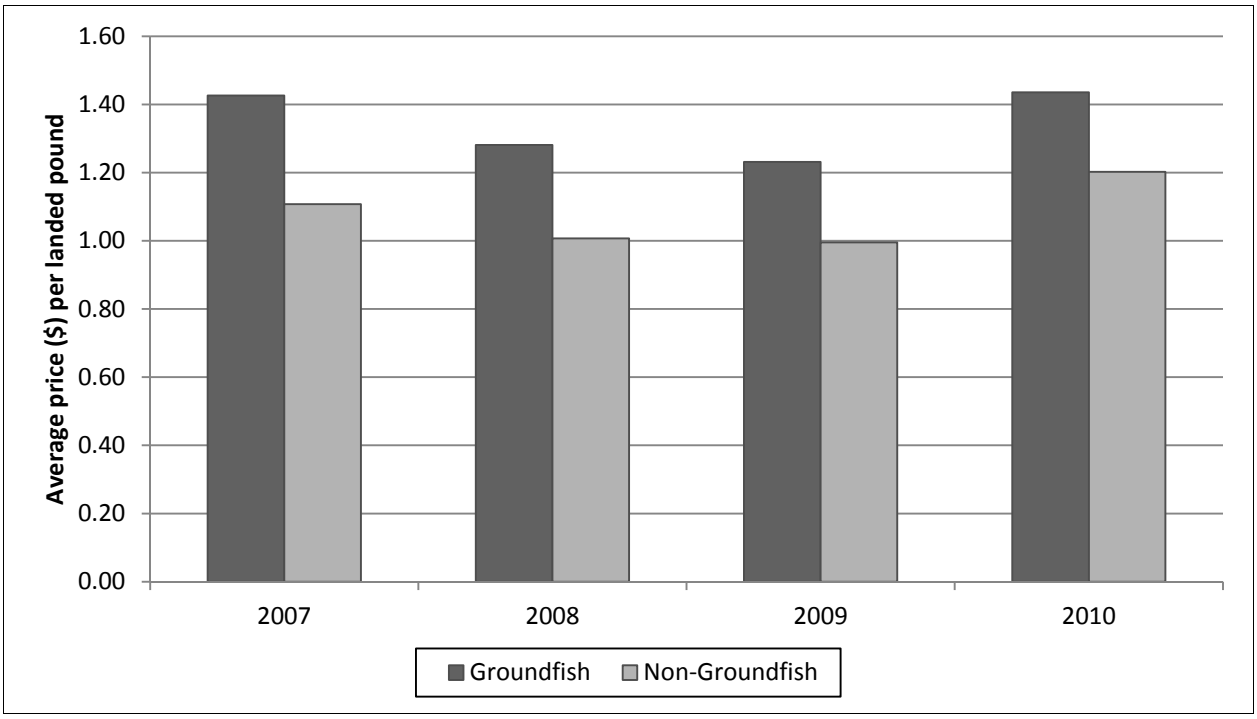

Figure 10. Yearly nominal average price of combined groundfish and non-groundfish species.

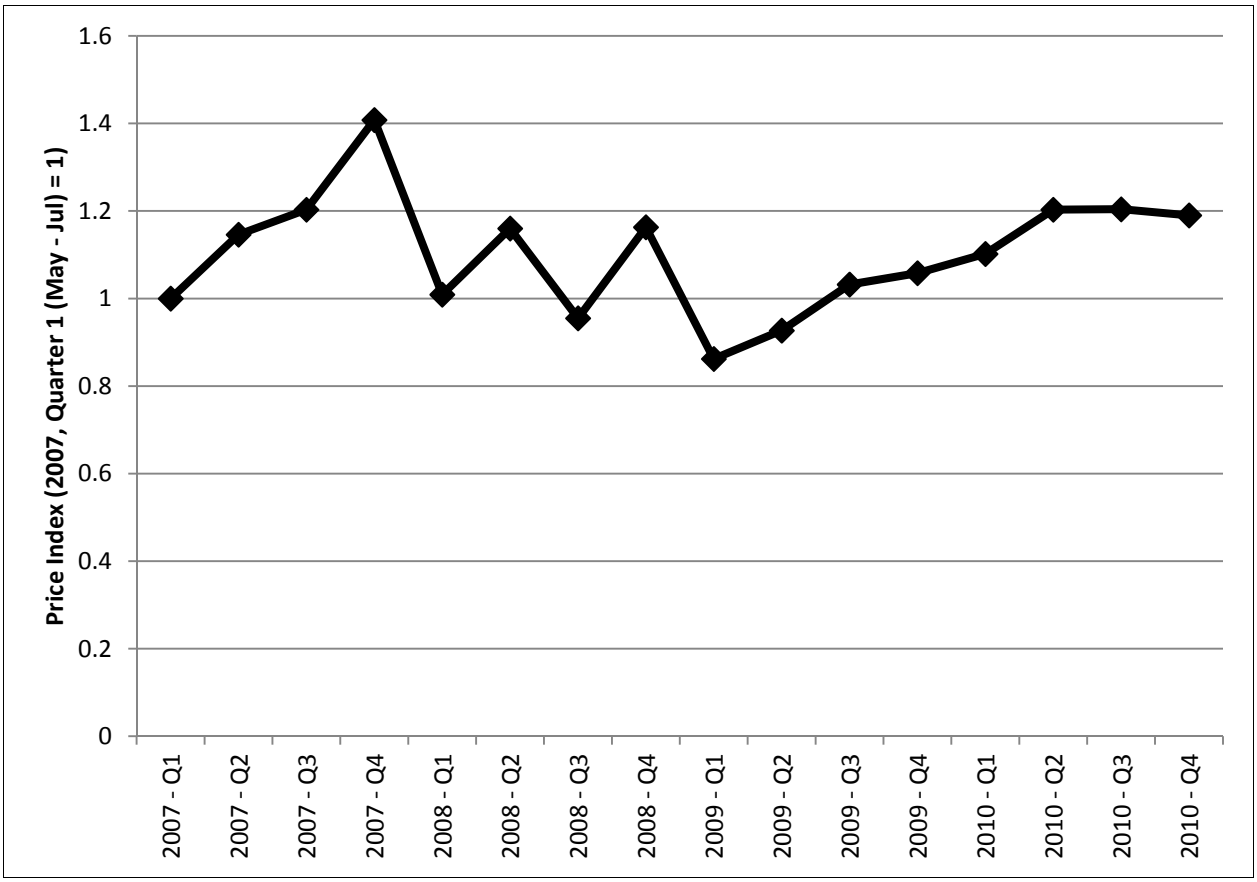

Figure 11. Quantity adjusted groundfish price index (base period = May through July, 2007).

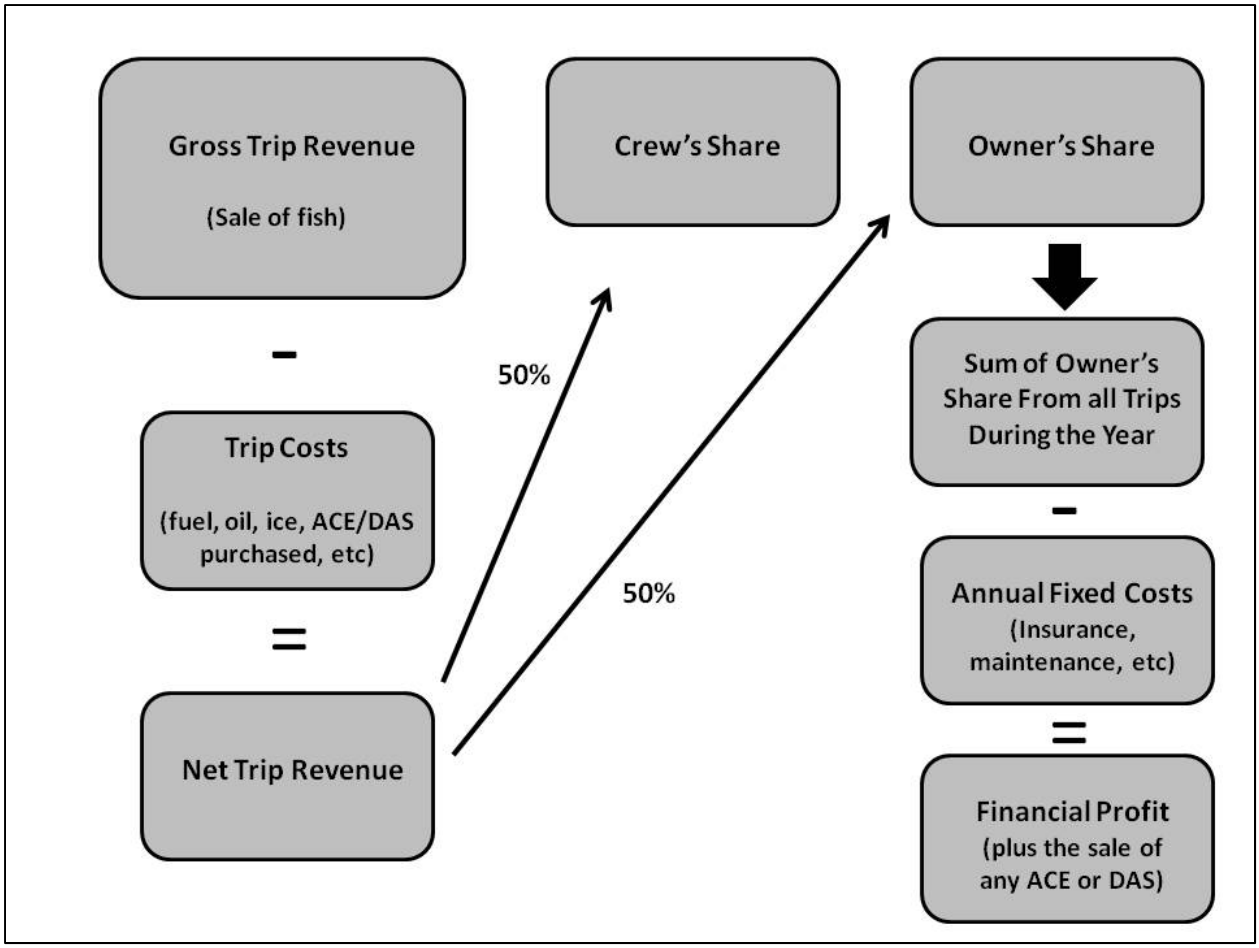

Figure 12. Components of annual financial profit.

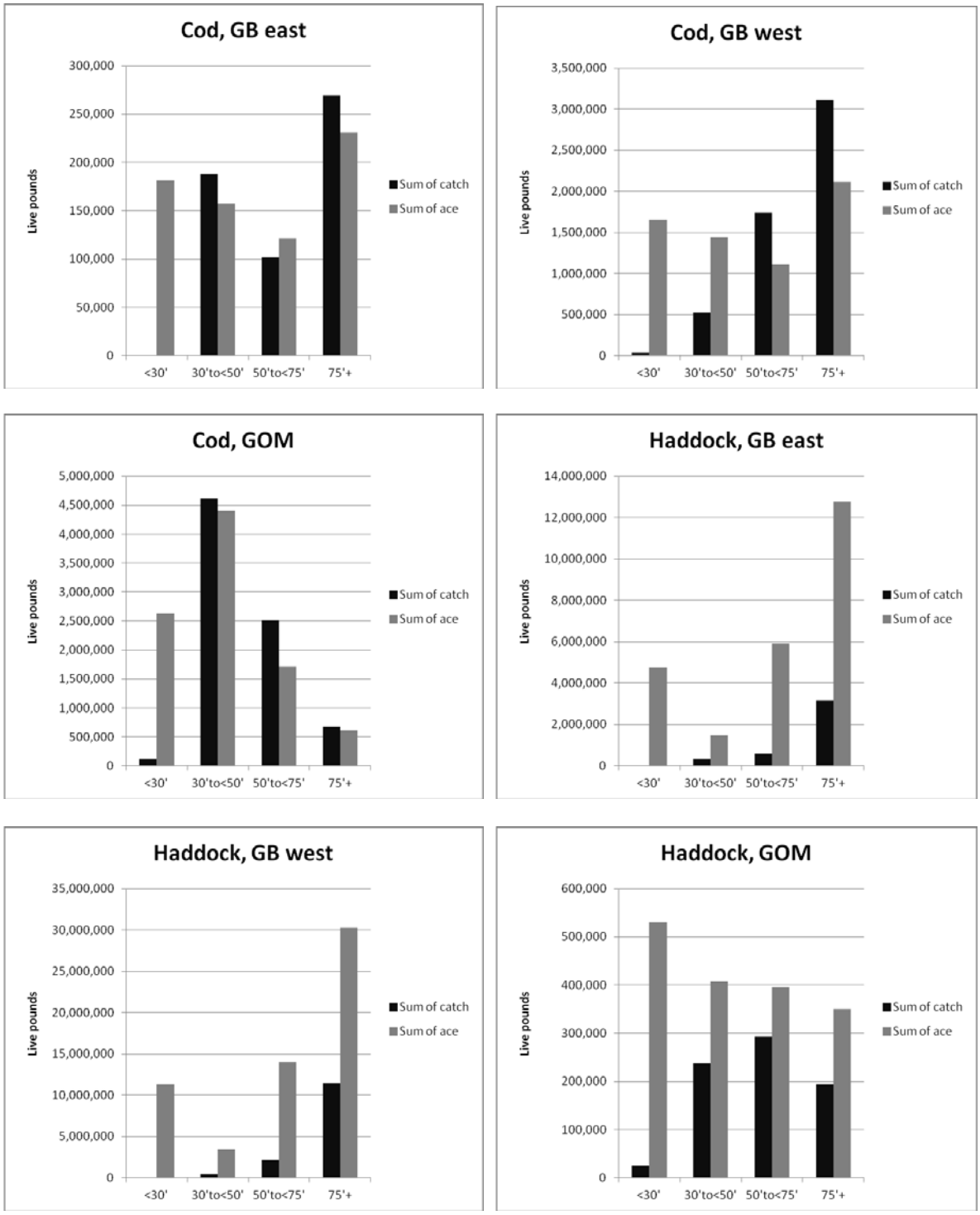

Figure 13. Total catch and allocated ACE by vessel size category for individual stocks.

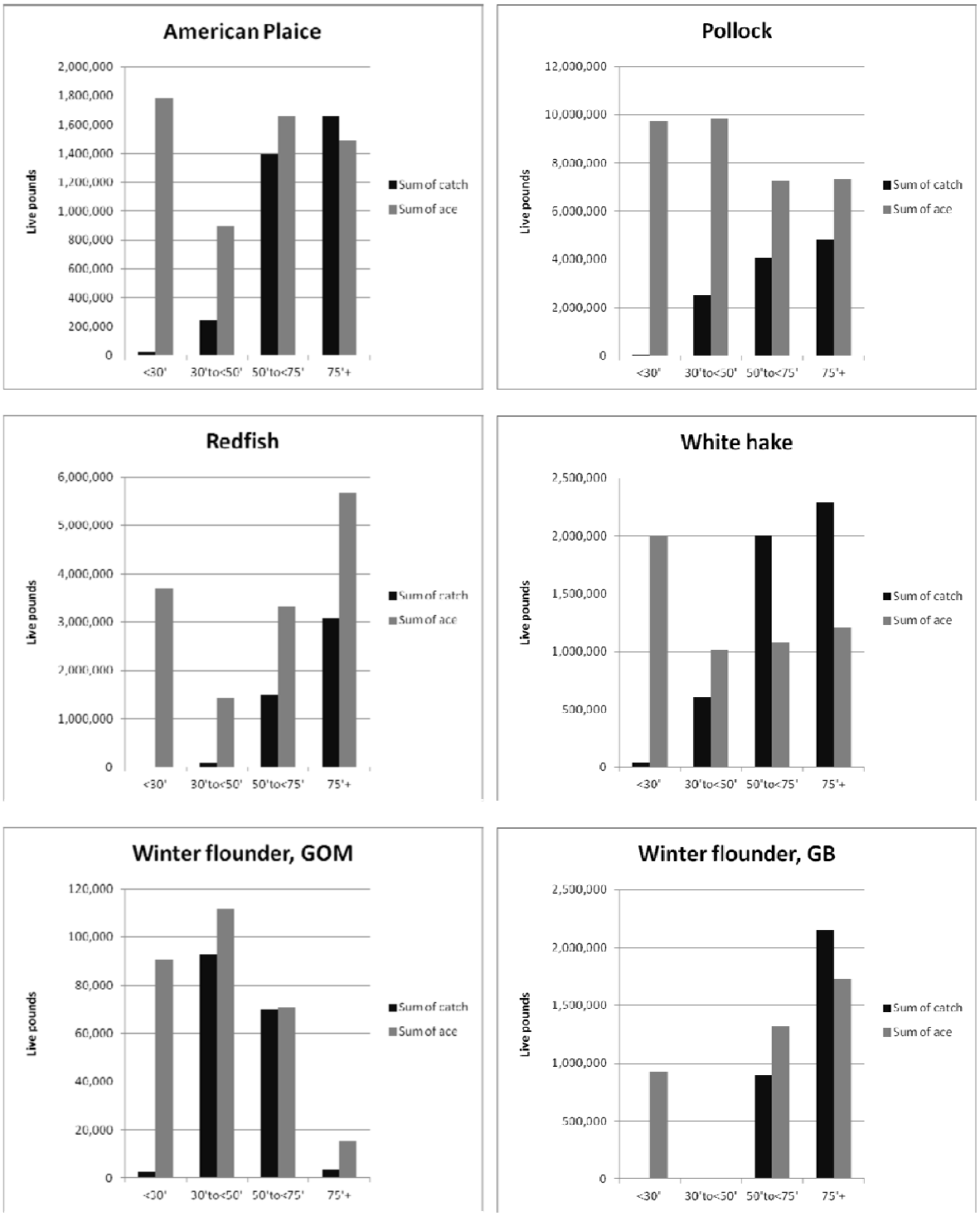

Figure 13, continued. Total catch and allocated ACE by vessel size category for individual stocks.

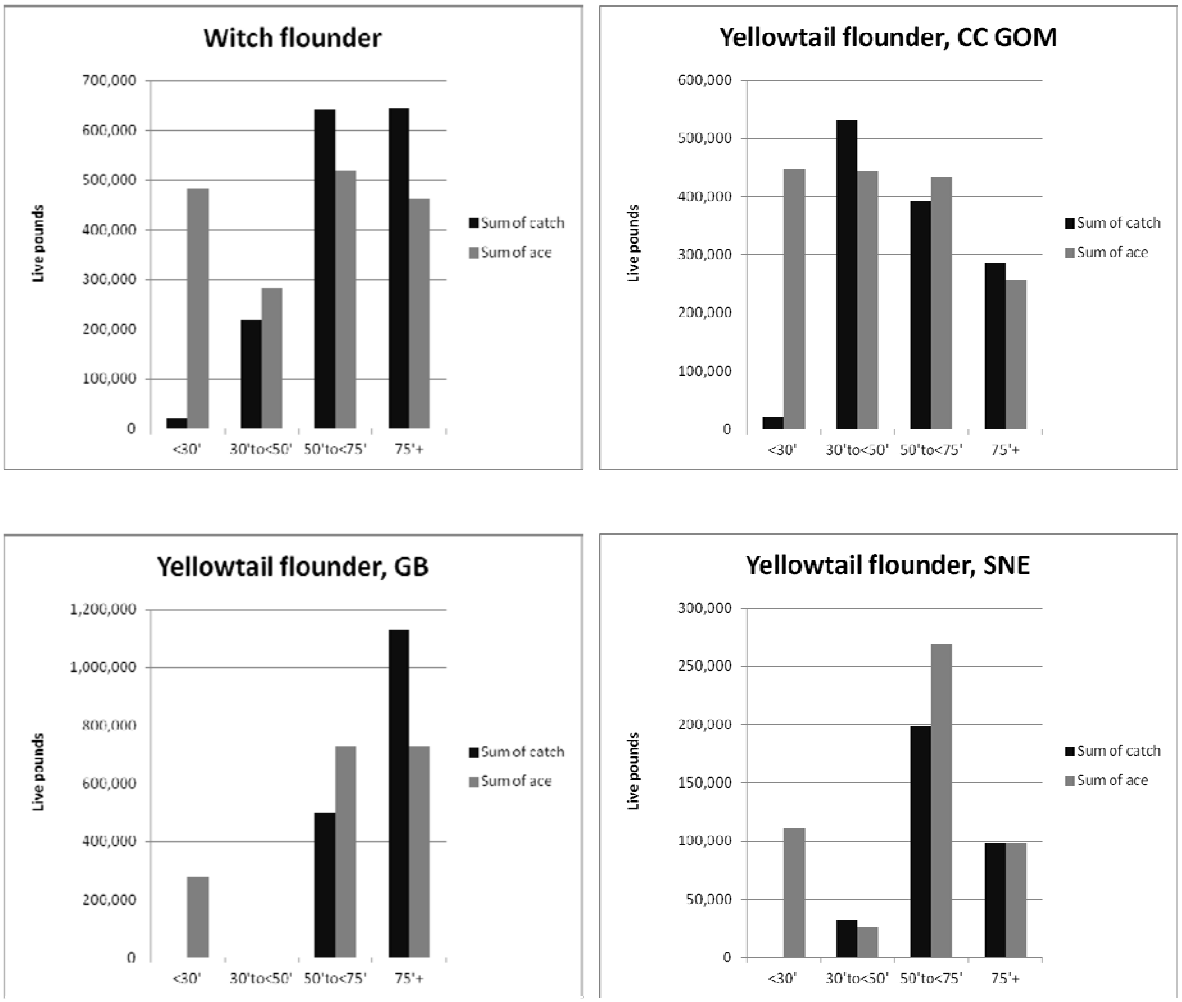

Figure 13, continued. Total catch and allocated ACE by vessel size category for individual stocks.

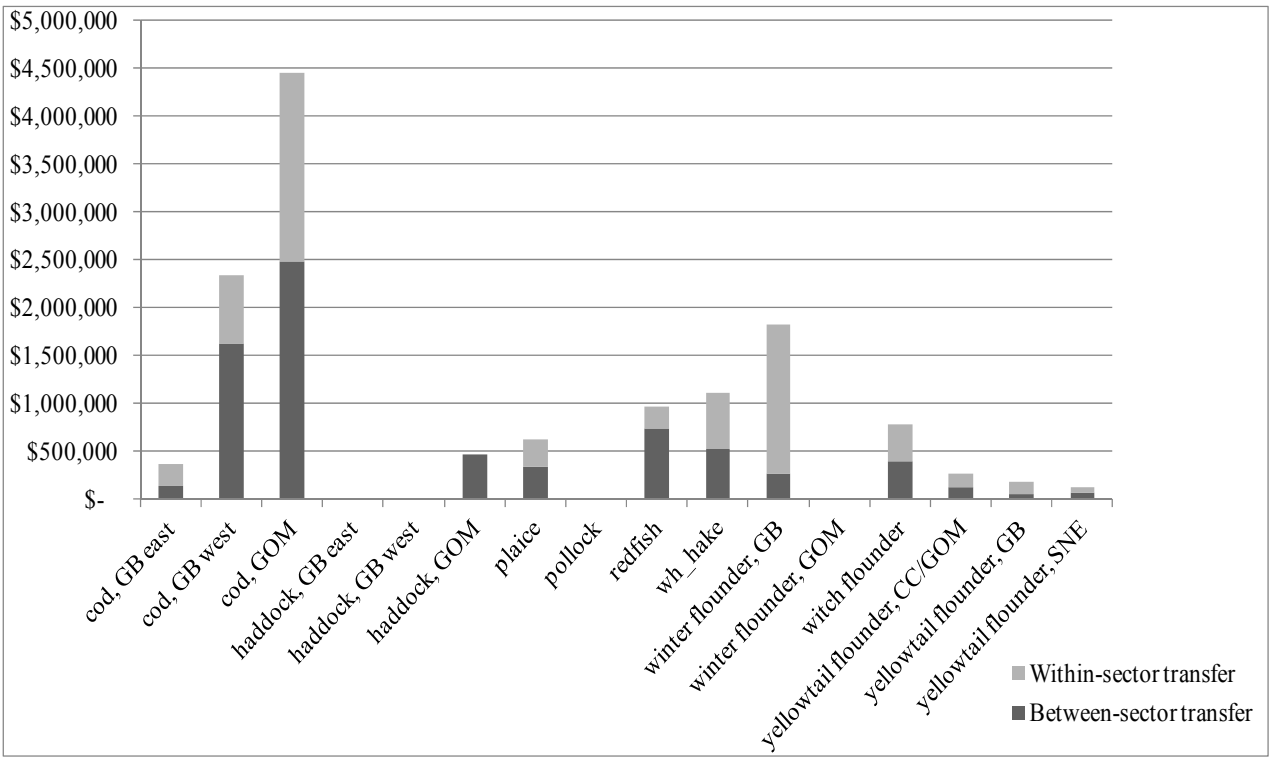

Figure 14. Within- and between-Sector transfer payments by stock at MRI level (total value for within = $6.33 million, between = $7.23 million).

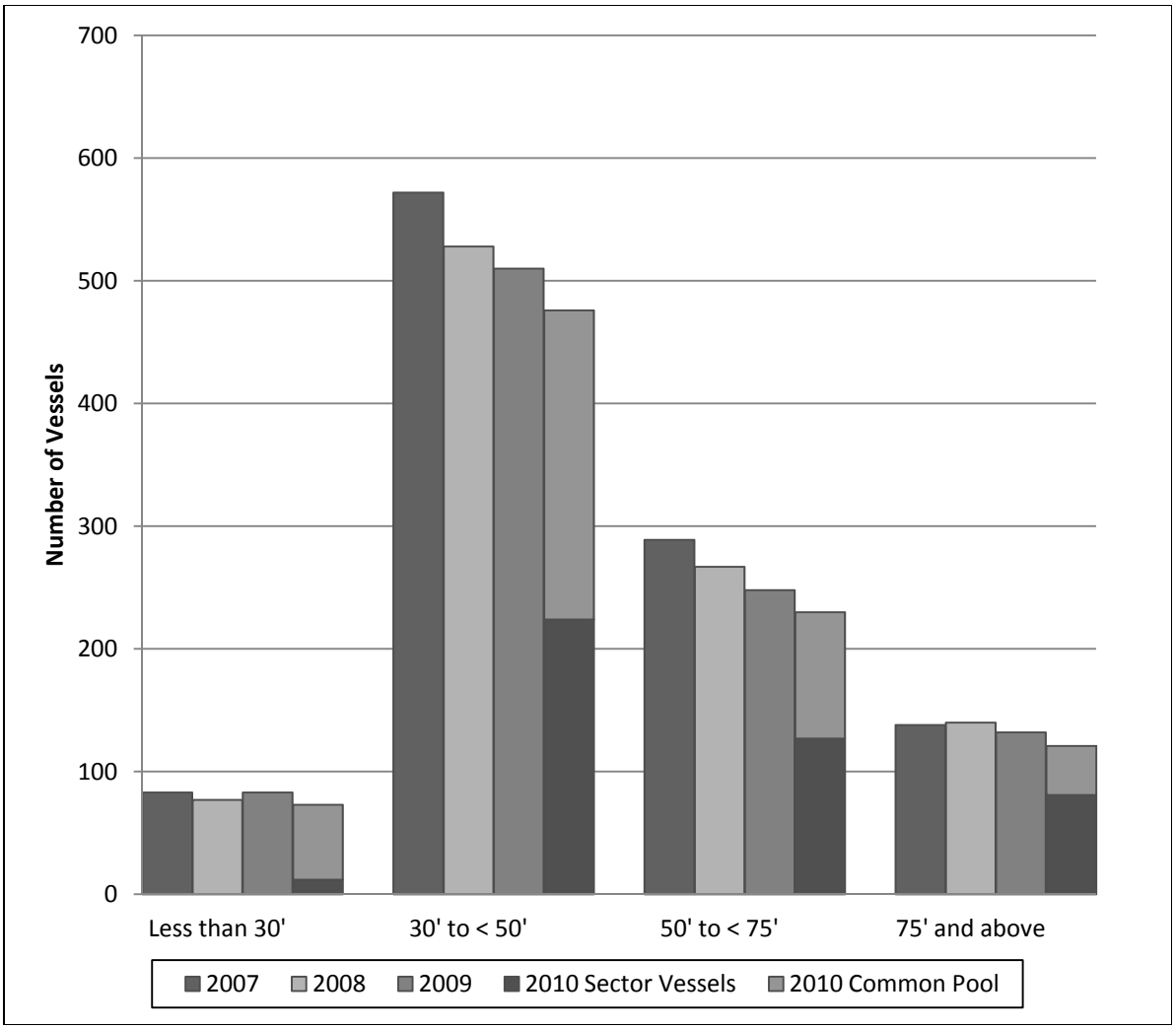

Figure 15. Number of vessels with revenue from any species by vessel size category (all trips).

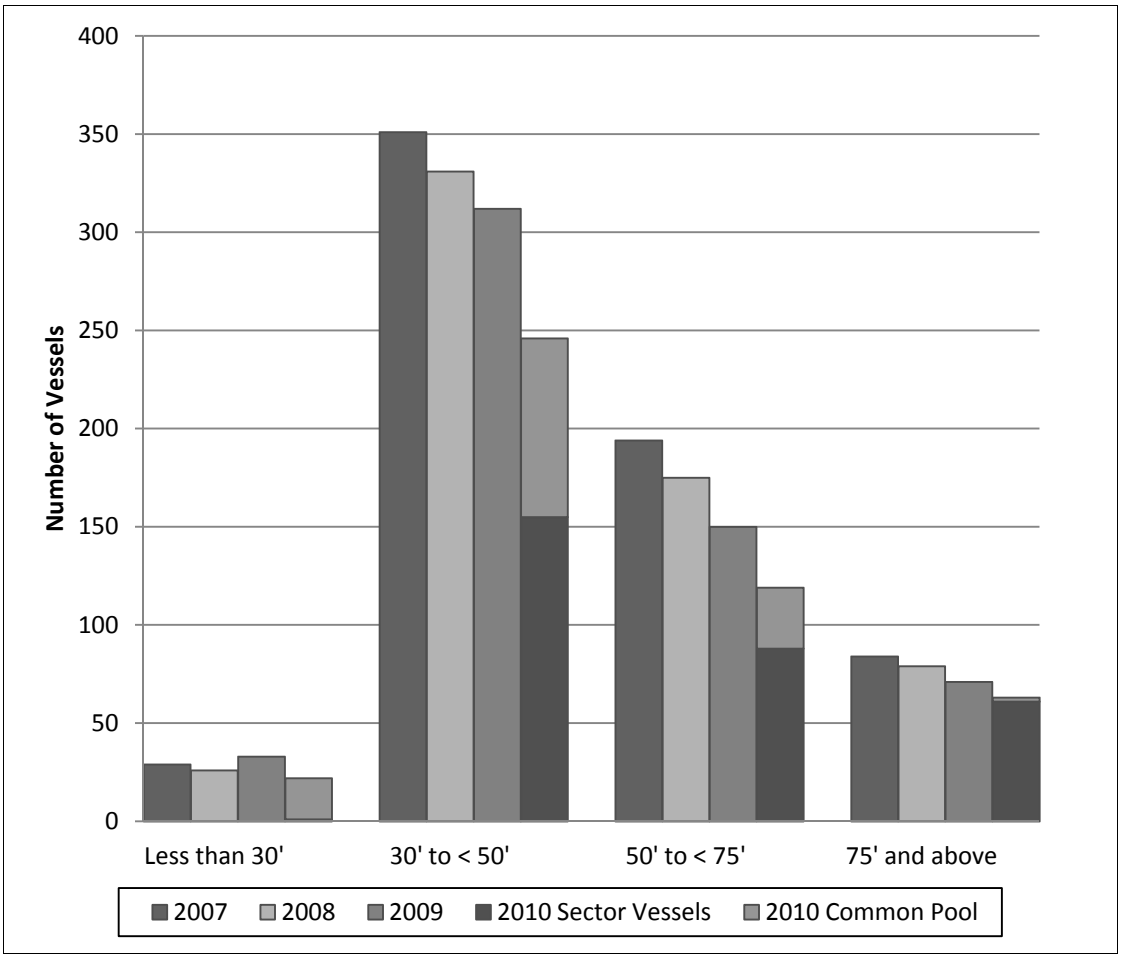

Figure 16. Number of vessels with revenue from any species on at least one groundfish trip by vessel size category.

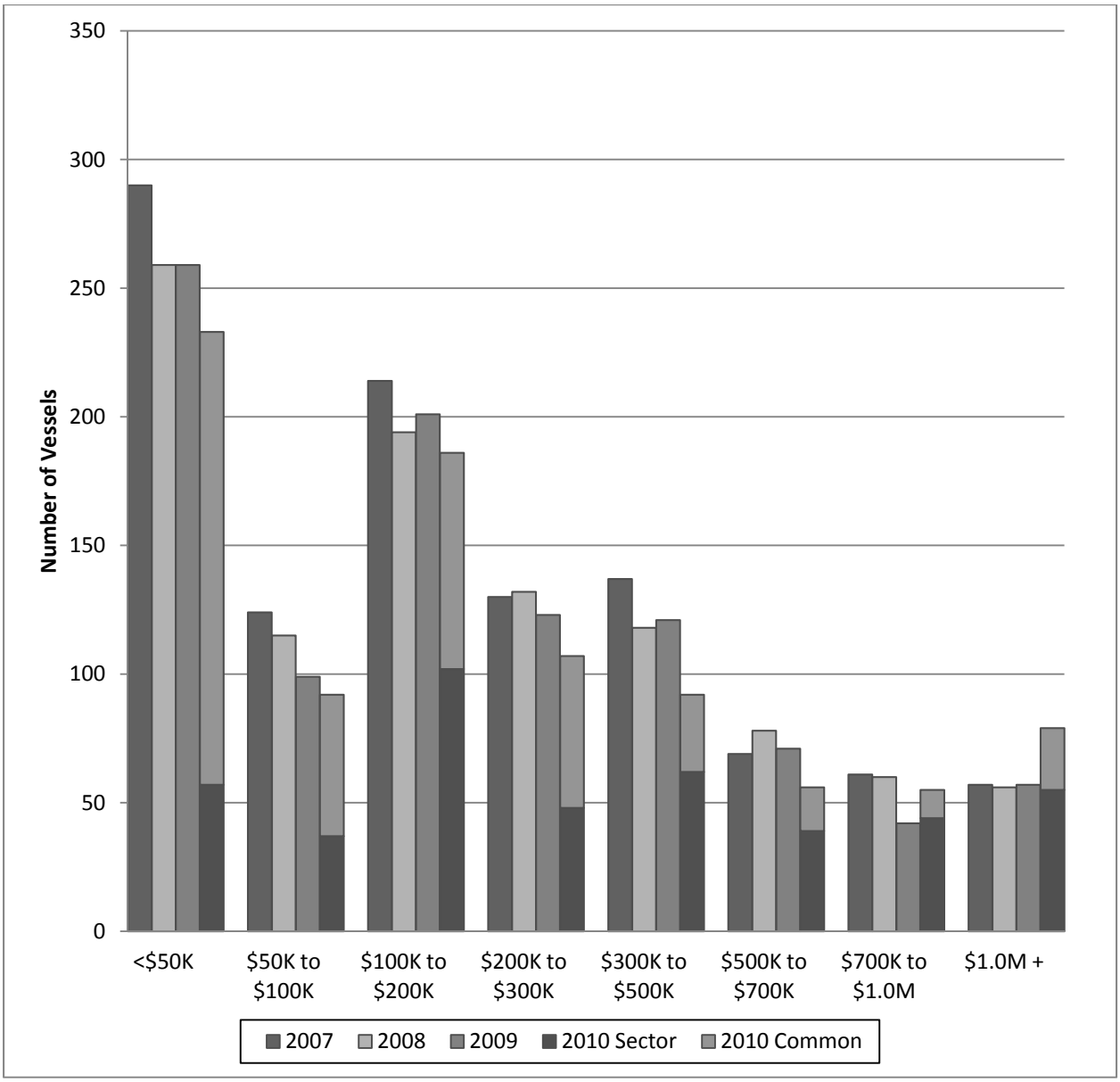

Figure 17. Number of vessels with revenue from any species by total nominal revenue category (all trips).

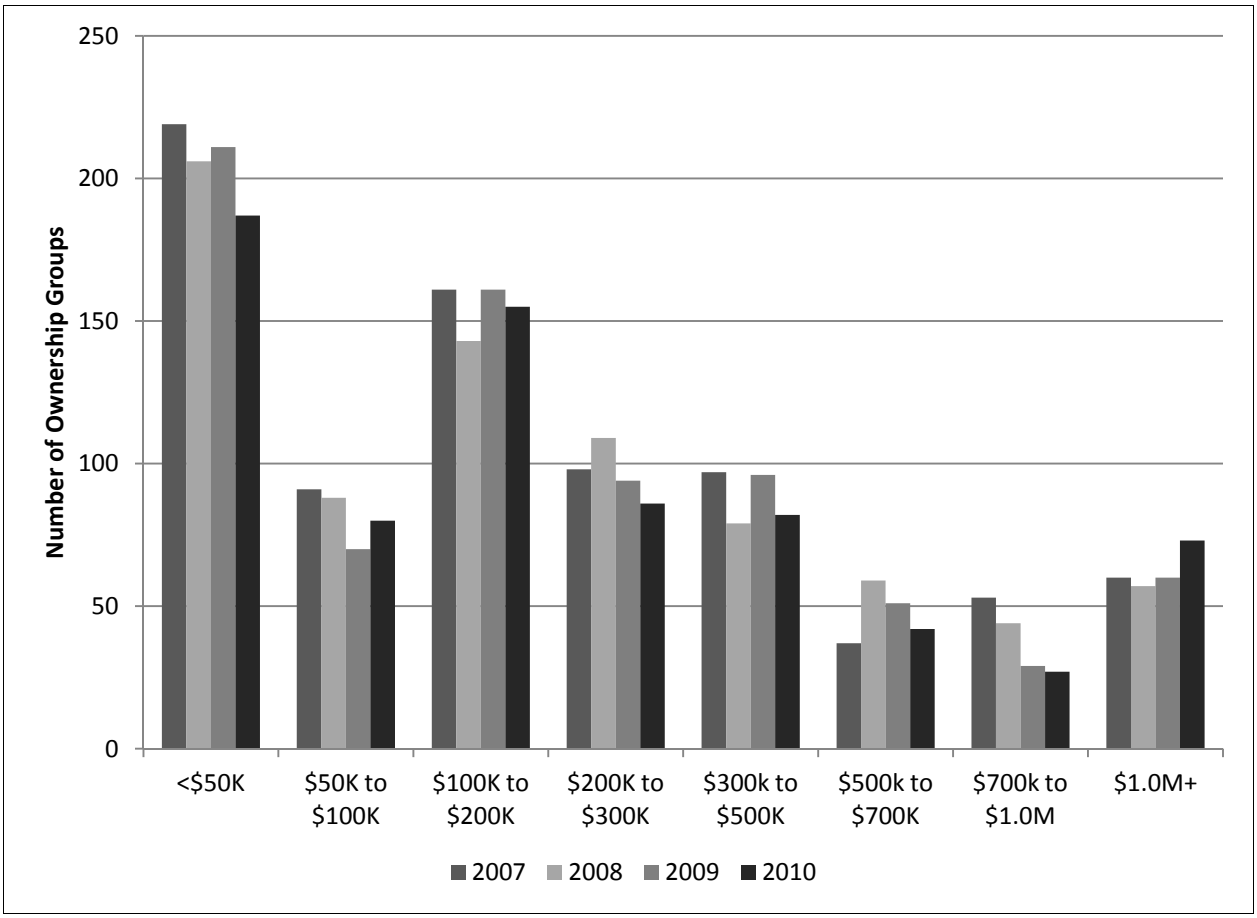

Figure 18. Number of vessel affiliations with revenue from any species by total nominal revenue category.

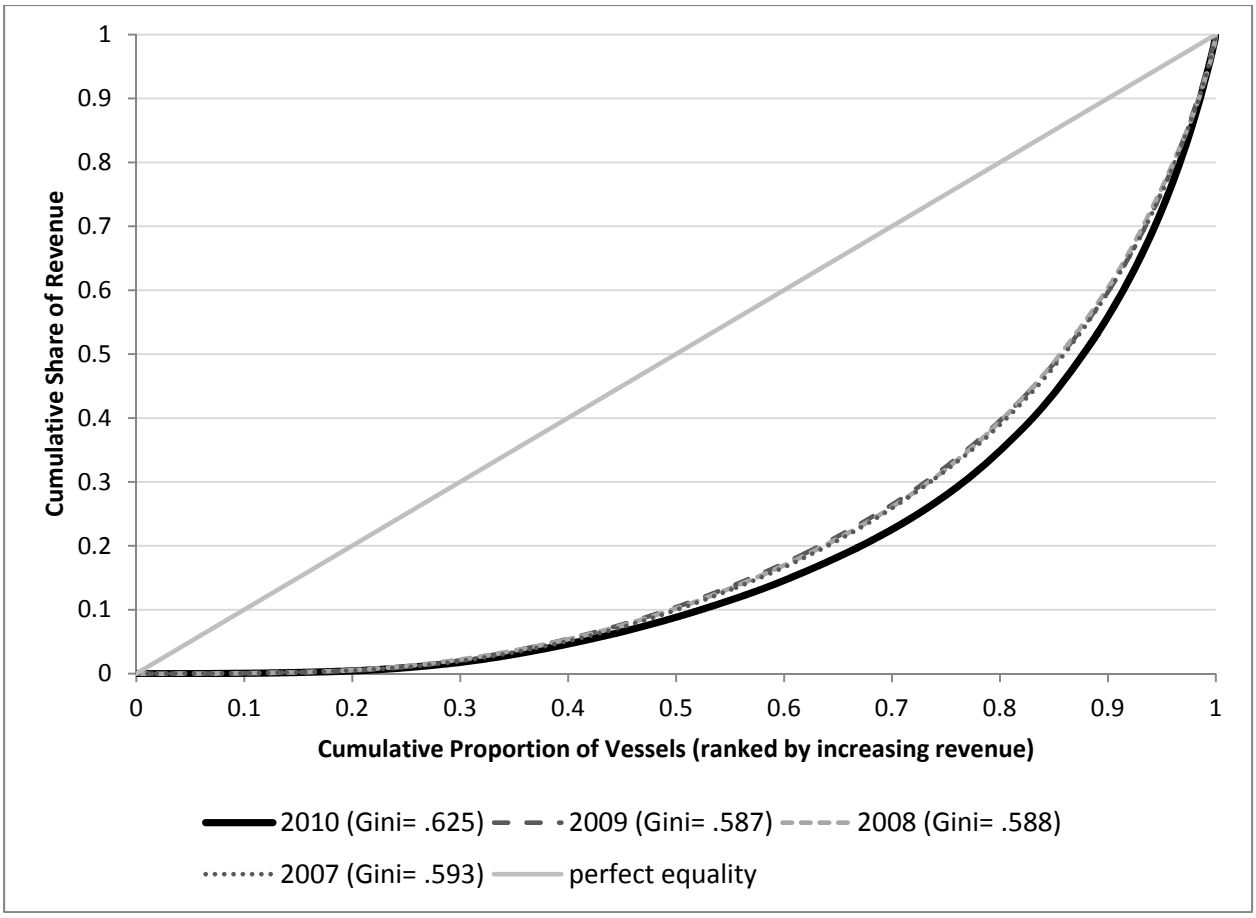

Figure 19. Lorenz curves and Gini values at the active vessel level for all-species nominal revenues.

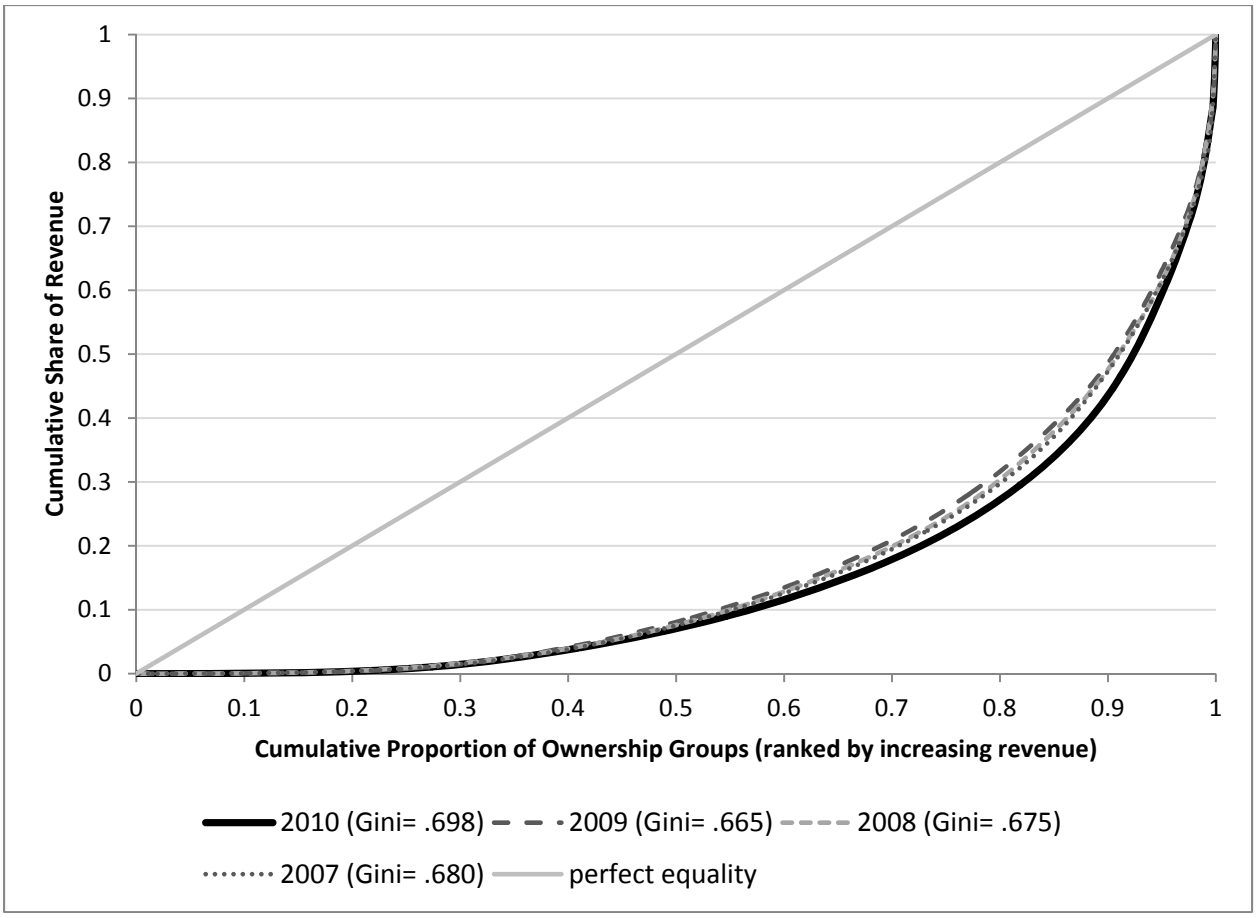

Figure 20. Lorenz curves and Gini values at the affiliated vessel level for all-species nominal revenues (from active vessels).

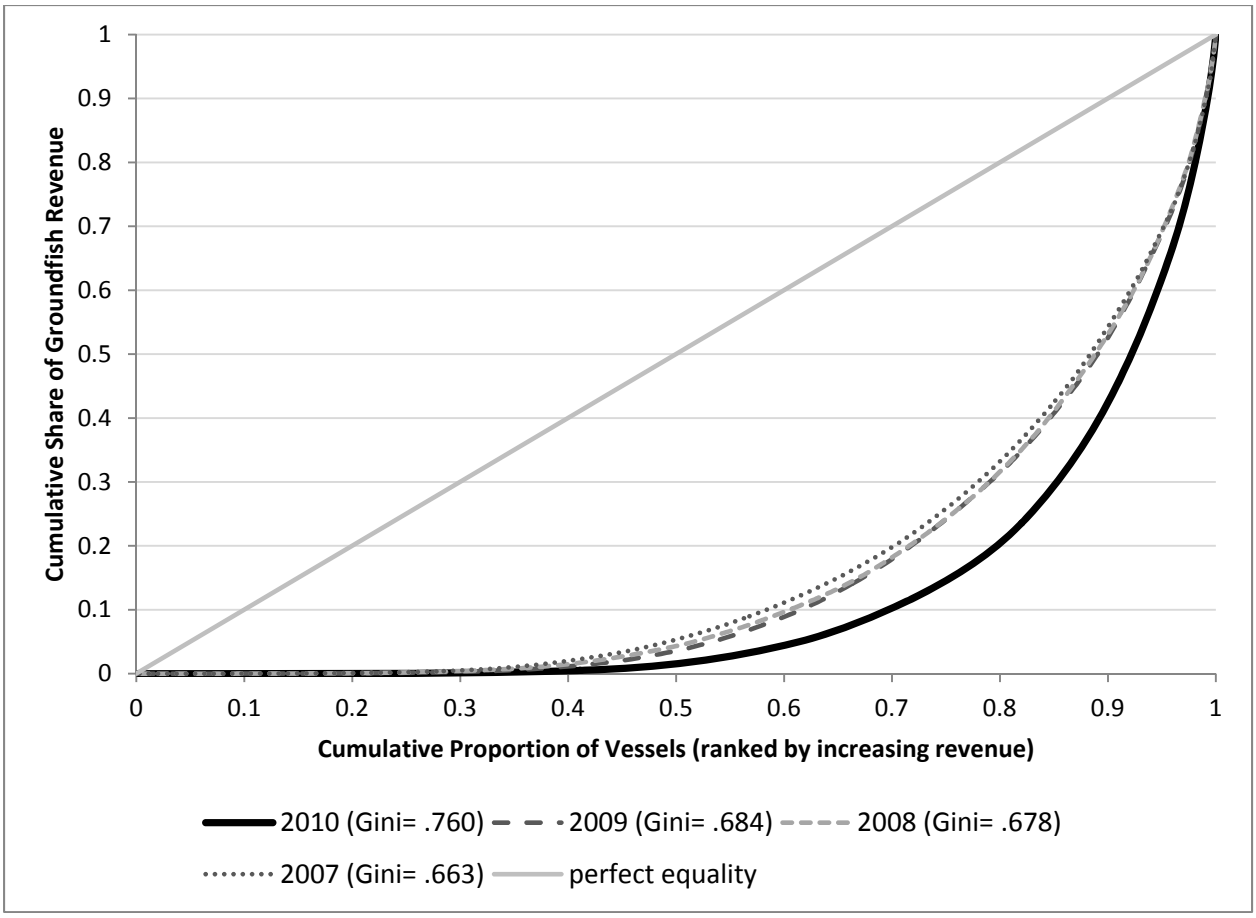

Figure 21. Lorenz curves and Gini values at the active vessel level for groundfish nominal revenues.

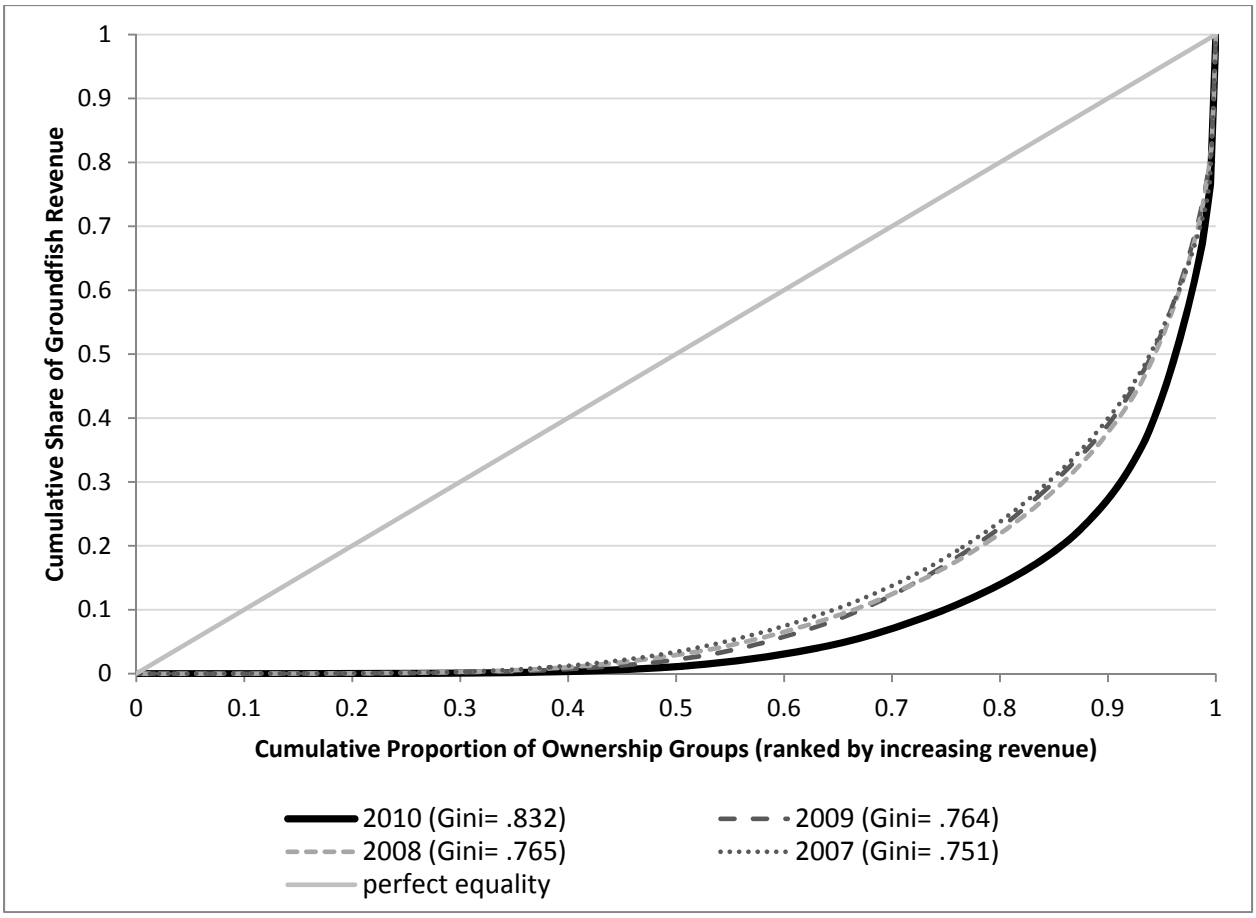

Figure 22. Lorenz curves and Gini values at the affiliated vessel level for groundfish nominal revenues (from active vessels).

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