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2012 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2012 – April 2013)

by Tammy Murphy, Andrew Kitts, David Records, Chad Demarest,
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Table 1. Summary of major trends (May through April, includes all vessels with a valid limited access multispecies permit)

Table 1: Summary of major trends (May through April) includes all vessels with a valid limited access multispecies permit										
2009		2010			2011			2012		
Total		Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool	Total	Sector Vessels	Common Pool
Groundfish Gross Nominal Revenue	\$82,510,132	\$83,177,330	\$81,123,145	\$2,054,184	\$90,453,455	\$89,603,929	\$849,526	\$69,778,174	\$69,135,759	\$642,414
Non-groundfish Gross Nominal Revenue	\$180,396,477	\$210,631,484	\$115,682,739	\$94,948,745	\$240,364,488	\$144,718,459	\$95,646,029	\$235,730,686	\$140,108,099	\$95,622,587
Total Gross Nominal Revenue	\$262,906,608	\$293,808,814	\$196,805,885	\$97,002,930	\$330,817,943	\$234,322,388	\$96,495,555	\$305,508,860	\$209,243,859	\$96,265,001
Groundfish average price	\$1.21/lb	\$1.43/lb	\$1.43/lb	\$1.58/lb	\$1.47/lb	\$1.47/lb	\$1.64/lb	\$1.51/lb	\$1.51/lb	\$1.79/lb
Non-groundfish average price	\$0.97/lb	\$1.21/lb	\$1.19/lb	\$1.24/lb	\$1.14/lb	\$1.13/lb	\$1.16/lb	\$1.11/lb	\$1.07/lb	\$1.17/lb
Number of active vessels*	916	854	435	419	776	442	337	764	446	320
Number of active vessels that took a groundfish trip	566	445	303	142	419	302	117	401	304	97
Number of groundfish trips	25,897	13,474	11,190	2,284	15,958	13,679	2,279	14,496	12,943	1,553
Number of non-groundfish trips**	37,173	38,489	16,527	21,962	33,675	16,795	16,880	32,523	17,090	15,433
Number of days absent on groundfish trips	24,605	18,401	16,796	1,605	21,465	19,963	1,502	19,935	18,964	971
Number of days absent on non-groundfish trips**	31,606	31,352	16,022	15,330	27,997	15,484	12,513	28,632	16,189	12,442
Total Crew Positions	2,416	2,255			2,161			2,136		
Total Crew-trips	148,153	123,885			122,003			116,334		
Total Crew-days	187,219	169,939			169,417			167,620		

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

**Throughout this report "trips" refer to commercial trips in the northeast Exclusive Economic Zone (EEZ). Past reports included party/charter trips.

EXECUTIVE SUMMARY

This report provides an evaluation of the economic and social performance of active limited access Northeast groundfish vessels for the 2012 fishing year (May 2012 through April 2013). Table 1 contains a summary of major trends for the fishery for the period 2009-2012. The report focuses on changes during 2011-2012, with a brief discussion for some performance indicators of trends from 2009 onward. For the first time in its three year history, this annual report includes an analysis of the impacts of quota leasing on the distribution of net revenues for different segments of the groundfish fleet.

Fishing year 2012 brought a halt to the upward trends in landings and revenues seen in the fishery from 2010 to 2011. The total amount of allocated Annual Catch Entitlement (ACE) for the all allocated groundfish species declined 3.6% from 2011 to 2012. The allocated ACE for 7 stocks was cut from 2011 to 2012: eastern Georges Bank cod, Gulf of Maine cod, eastern Georges Bank haddock, western Georges Bank haddock, Gulf of Maine haddock, pollock, and Georges Bank yellowtail flounder. Allocated ACE increased from 2011 to 2012 for western Georges Bank cod, plaice, redfish, white hake, Georges Bank winter flounder, Gulf of Maine winter flounder, witch flounder, Cape Cod and Gulf of Maine yellowtail flounder and Southern New England yellowtail flounder. Fishermen in the groundfish fleet were unable to offset the declines in groundfish revenues with increases in non-groundfish revenues. In 2012, total landings of all species on all trips taken by the groundfish fleet declined by 5.4% and total all species revenue fell by 7.7% (\$25.3 million) from 2011. Groundfish landings declined 24.9% from 2011, to a four year low of 46.3 million pounds. Although groundfish average price rose by 2.7% from 2011 to 2012, it did not compensate for the drop in groundfish landings, and groundfish nominal revenues fell 22.9% in 2012 to a four year low of \$69.8 million. At the same time, non-groundfish landings remained nearly constant, with a 0.4% increase, and average non-groundfish price fell 2.6%, which led to a 1.9% decrease in non-groundfish revenues in 2012 from 2011.

Sector and common pool vessels both had declining total gross nominal revenues for all species in 2012 compared to 2011, and both groups saw declines in both groundfish and non-groundfish revenues. Total gross nominal revenues from landings of all species declined 10.7% for sector vessels and 0.2% for common pool vessels from 2011 to 2012. Declining groundfish revenues are responsible for over 80% of the decline in all species revenues for both sector and common pool vessels.

The impacts of these changes in the fishery varied by landed port state and major landed port, but were mostly negative. All landing port states saw decreases in all species revenues, with the exceptions of Connecticut and Maine, where all species revenues were at a four year high in 2012. In the landed port state of New Hampshire, all species revenues were at a four year low. Groundfish revenues by landed port state fell in 2012 for Massachusetts, New Hampshire, and Rhode Island, with Massachusetts and New Hampshire seeing a four year low in groundfish revenues in 2012. Groundfish revenues increased in 2012 for landing port states Connecticut, Maine, New Jersey and New York, with all but New York at a four year high for groundfish revenues. Both all species and groundfish revenues decreased in 2012 for five of the six major landing ports in the Northeast. In the Massachusetts landed ports of Chatham and Gloucester, all species and groundfish revenues were at a four year low in 2012. Portland, Maine was the exception to the declines in all species and groundfish revenues for the rest of the Northeast's

major landed ports; all species and groundfish revenues from fish landed in Portland were at a four year high in 2012.

Nominal groundfish revenues from American plaice flounder, winter flounder, redfish, and white hake increased modestly in 2012 from 2011 levels, while revenues from cod, haddock, yellowtail flounder, witch flounder, and pollock all decreased in 2012. Cod and haddock revenues fell to four-year lows; these reductions were driven by declines in landings, as these species had higher average prices in 2012. The top non-groundfish species landed by the groundfish fleet, by value, were sea scallops, lobster, long-finned squid, monkfish and silver hake. Sea scallop revenue (\$90.0 million) accounted for 29% of total revenue for all species and 38% of revenue from non-groundfish species in 2012.

Fishing effort generally declined in 2012. Both the number of vessels with revenue from any species and the number of vessels with revenue from a groundfish trip continued to fall; these declines occurred across vessel class sizes. The group of sector vessels increased, while the group of common pool vessels shrank. Groundfish vessels took fewer groundfish trips, with fewer total days absent on groundfish trips. However, for the groundfish trips taken, average groundfish trip length was slightly longer in 2012 than it was in 2011. Effort measures for non-groundfish trips suggest that the fleet took fewer non-groundfish trips in 2012 than they did in 2009-2011, but for the fleet overall, those trips were longer than they were in 2010 and 2011.

The number of active vessels and active vessel affiliations (ownership groups) in the groundfish fleet continued to decline, primarily due to declining numbers of vessels and affiliations that actively target groundfish. The number of vessels with revenue from any species fell from 776 vessels in 2011 to 764 vessels in 2012 (1.5%). Since 2009, the number of vessels with revenue from any species has fallen 16.6%. The number of vessels with revenue from a groundfish trip declined 4.3% from 2011 to 2012. Over 2009-2012, the number of vessels with revenue from a groundfish trip fell 29.2%. The number of active vessel affiliations fishing under limited access groundfish permits declined 16.3% over 2009-2012 (737 to 618 affiliations), with a 2.4% reduction between 2011 and 2012 (633 to 618 affiliations). The number of permits being placed into Confirmation of Permit History (CPH) continued to increase, with 60 additional eligibilities placed into CPH in 2012, a 35.7% increase from 2011. Permits in CPH accounted for 16.2% of the total number of groundfish limited access eligibilities in 2012.

Economic trends for the fishery in 2012 were generally negative. There have been some improvements in average returns per day on groundfish trips, but aggregate measures suggest that fewer of these groundfish trips are being taken, possibly due to restrictions in quota for key groundfish stocks or other reasons. This has led to declines in the economic performance of the fleet overall from 2011 to 2012. Unadjusted for leasing activity, average owner's shares per day on groundfish trips in 2012 were the highest in the four year period for all but the largest vessel length class. From 2011 to 2012, increases in average owner's shares per day on groundfish trips ranged from 26.6% to 102.1% for the three smallest vessel class sizes. For vessels 75' and longer, average owner's share on groundfish trips was 27.4% lower in 2012 than in 2011 and at its lowest point in the four year time period. Average returns per day for non-groundfish trips declined for most vessel sizes from 2011 to 2012, but were about the same or higher than they were in 2009 and 2010. Average owner's shares per day on non-groundfish trips dropped in 2012 from 2011 levels for vessels in all length categories except for those between 30' and <50'. These declines ranged from 1.3% to 11.2%. Average owner's share per day on non-groundfish trips for vessels between 30' and <50' saw an increase, 5.7%, above its 2011 level. Average owner's share and average crew share per vessel (unadjusted for leasing activity) fell from 2011

to 2012 across vessel class sizes, but usually remained higher than they were in 2009 and 2010. For average owner's share per vessel, declines ranged from 3.6% for the smallest vessel class to 15.1% for vessels 30' to < 50' from 2011 to 2012. Similarly, declines in average crew share per vessel ranged from 3.0% for vessels in the smallest length class to 15.3% for vessels 30' to < 50' in length. For the fleet overall, average owner's share of net revenue (unadjusted for leasing activity) declined 9.3% in 2012 from its 2011 level, but remained higher than it was in 2009 and 2010. Average crew share for the fleet overall was 8.8% lower in 2012 than in 2011, but higher than it was in 2009 and 2010. The declines from 2011 to 2012 in average owner's and average crew shares occurred across vessel sizes. For most vessel class sizes, average owner's and average crew shares were typically higher in 2012 than they were in 2009 and 2010, with the exception of vessels 30' to < 50' in length, where average owner's and average crew shares were at a 4 year low in 2012. The declines in average owner's and average crew share occurred across all home port states from 2011 to 2012, with the exception of Connecticut, where both measures were at a four year high.

The quota market declined in 2012 in both weight and value. Approximately 32% of allocated quota was caught in 2012, down from 41% in 2011. In 2012, about a third of the members enrolled in sectors did not catch allocated groundfish and leased their quota to other fishermen. A total of 23.3 million pounds (live pounds) of quota was leased in 2012, down from 30.7 million pounds in 2011. The value of quota leased declined 45.8%, from \$15.1 million in 2011 to \$8.2 million in 2012. Nearly 10.9 million pounds (47%) of quota was leased within vessel affiliations (networks of connected owners) in 2012, compared to almost 16.6 million pounds in 2011. Approximately \$4.1 million worth of transfer payments occurred in 2012 between these vessel affiliations, down from about \$9.1 million in 2011.

Fishery-wide impacts of quota trading on net revenues are neutral overall because aggregate quota costs to buyers of quota equal aggregate quota revenues to sellers of quota. However, leasing activities have an impact on the distribution of net revenues earned by different segments of the groundfish fleet. For vessels that need quota in order to fish, obtaining quota is a true cost and the financial significance of that cost becomes greater with declining net revenues. Reductions in net revenues due to quota costs ranged from 3.9% to 25.7% based on vessel size category.

Both all species and groundfish revenues continued to consolidate onto fewer active vessels and vessel affiliations in 2012. All species and groundfish revenues have both been concentrated among the top earning vessels and vessel affiliations throughout the 2009-2012 period, with a marked increase in concentration in 2010. In 2011, it appeared that the degree of concentration for these revenues might be decreasing (i.e., revenues might be becoming more equitably distributed throughout the fishery). However, this trend did not continue into 2012; both all species and groundfish revenues are at least as concentrated among top earning vessels and vessel affiliations as they were in 2011, and possibly slightly more concentrated. As in the past three years, groundfish nominal revenues in 2012 were more concentrated among active vessels and vessel affiliations than all species revenues.

Employment trends for vessel crew are mostly negative. In 2012 there were fewer opportunities for crew work on most vessel sizes and in most home port states. Total crew positions decreased by 1.2% (25 positions) from 2011 to 2012 to a four year low. Total crew trips were also at a four year low in 2012, with a 4.6% decrease from 2011 to 2012. Finally, total crew days were at a four year low in 2012, after decreasing 1.1% from 2011. The exception to the negative overall trends for crew employment was the home port state of Maine, where all

three measures of crew employment increased from 2011 to 2012. Trends in the three indicators were mixed for the home port states Connecticut, New Hampshire, and New Jersey. In home port states Massachusetts, New York and Rhode Island, all indicators of crew employment were at four year lows in 2012.

1. INTRODUCTION

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

Fishing year 2012 was the third year in which the groundfish fishery operated under the catch share management program implemented by Amendment 16, which was designed to comply with catch limit requirements and stock rebuilding deadlines required under the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSA). The new groundfish management program contained two significant changes. The first consisted of “hard quota” annual catch limits (ACLs) for all 20 stocks in the groundfish complex. The second expanded the use of ‘sectors’, which are groups of fishing vessels allotted a share (quota) of the total groundfish ACL (sectors are allocated subdivisions of ACLs called Annual Catch Entitlements (ACE)). All permit holders with a limited access groundfish permit that was valid as of 01 May 2008 were eligible to participate in a sector, including holders of inactive permits currently held in Confirmation of Permit History (CPH).

Sectors, including state permit banks, receive ACE for nine of 13 groundfish species in the FMP and are exempt from many of the traditional effort controls.² Each limited access groundfish permit has a potential sector contribution (PSC) that, based on that permit’s fishing history, is a percentage of the total quota allocation for each allocated groundfish stock. When a fisherman becomes a sector member, his PSC is pooled with those of the other members of that sector. The pooled PSCs of the sector become the sector’s ACE. Fishermen may hold limited access eligibilities, which are linked to a Moratorium Rights Identifier (MRI), in Confirmation of

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

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

Permit History (CPH). CPH permits are limited access groundfish eligibilities that are not attached to an actual vessel. An important consequence of Amendment 16 is that it allowed fishermen with permits in CPH to join sectors, or to remain in the common pool with the option of leasing DAS, which was granted by Amendment 13. When a fisherman holding a CPH joins a sector, the PSC associated with those permits becomes part of that sector's ACE. This is significant because it means that a fisherman can lease the PSC associated with his CPH permits to other sector members, or his sector can lease the PSC to other sectors through ACE trading. However, sectors are not permitted to transfer ACE to or from common pool vessels.

Fishing vessels owners may also opt to fish the quota associated with their groundfish permits, including permits they have placed in CPH, on fewer vessels (including a single vessel) to reduce the costs associated with operating multiple vessels. In 2010, approximately half (46%) of the vessels with limited access groundfish permits opted to remain in the common pool, probably because of their small individual potential contribution to a sector's total ACE. Common pool vessels act independently of one another; each vessel is constrained by the number of DAS it can fish, by trip limits, and by time and area closures designated in the FMP. These restrictions help ensure that the groundfish catch by common pool vessels does not exceed the common pool's allocation of the total ACL before the end of the fishing year. In 2012, nearly 42% of the vessels with limited access groundfish permits were common pool vessels.

Twenty sectors operated in 2012 (see 77 FR 26129, May 2, 2012).³ Four of these are "lease only" sectors⁴, which hold eligible permits with accumulated ACE or DAS that they can make available to fishermen that intend to actively fish for groundfish. Each sector establishes its own rules for using its allocations, but the allocated catch restrictions are applicable to the sector as a unit (i.e., not to individual vessels in the sector). Sector enrolled permits accounted for approximately 99 percent of the FY 2012 commercial groundfish sub-ACL. From 2011 to 2012, several commercial sub-ACLs were cut from their 2011 levels: Eastern Georges Bank Cod (-19%), Gulf of Maine Cod (-23.3%), Eastern Georges Bank Haddock (-28.6%), Western Georges Bank Haddock (-10.3%), Gulf of Maine Haddock (-16.1%), Georges Bank Yellowtail Flounder (-67.8%), Southern New England Winter Flounder (-58.3%), Pollock (-9.6%), Southern Windowpane Flounder (-53.2%) and Ocean Pout (-10.5%). Some stocks' sub-ACLs increased from their 2011 levels: Georges Bank Cod (+7.1%), Southern New England/Massachusetts Yellowtail Flounder (+45%), Cape Cod/Gulf of Maine Yellowtail Flounder (+11.3%), Plaice (+5.5%), Witch Flounder (+17.2%), Georges Bank Winter Flounder (+68.8%), Gulf of Maine Winter Flounder (+117.3%), Redfish (+10.4%), White Hake (+10.4%), Northern Windowpane Flounder (+17.3%), and Halibut (+9.1%). The sub-ACL for Wolfish remained unchanged from 2011 to 2012.⁵

³ These sectors were: The Fixed Gear Sector (FGS), the Maine Permit Bank Sector (MEPBS), the New Hampshire Permit Bank Sector (NHPBS), the Northeast Coastal Communities Sector (NCCS), Northeast Fishery Sectors II through XIII, the Port Clyde Community Groundfish Sector (PCCGS), Sustainable Harvest Sectors 1 and 3 (SHS1 and SHS3), and the Tri-State Sector (TSS). The Georges Bank Cod Hook Sector (operating since 2004) and the Georges Bank Cod Fixed Gear Sector (implemented in 2006) operated as separate sectors prior to fishing year 2010, when all members of the Georges Bank Cod Hook Sector joined FGS.

⁴ The Northeast Fishery Sector IV, Sustainable Harvest 3, Maine Permit Bank, and New Hampshire Permit Bank Sectors are lease only sectors. The Sustainable Harvest 3 Sector has not explicitly prohibited fishing activity, and may transfer permits to active vessels.

⁵ See NMFS Northeast Regional Office's website: <http://www.nero.noaa.gov/ro/fso/MultiMonReports.htm>. This data does not include sector carryover.

This report provides an evaluation of the economic and social performance of the groundfish fishery for fishing year 2012 (1 May 2012 – 30 April 2013). In this report, all references to year are for the fishing year. The report presents year to year comparisons for the four year period of 2009-2012 to evaluate performance, with an emphasis on comparing performance in 2011 and 2012. Table 1 presents data on major trends in the groundfish fishery by total fleet, sector vessels and common pool vessels. Differences in the performance of sector and common pool vessels will be discussed in Section 1.2; thereafter, the report focuses on the performance of the total groundfish fleet.

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 broad performance measure categories identified are: financial viability, distributional outcomes, stewardship, governance, and well-being. There are multiple indicators within each category. The Northeast indicators are part of a NMFS-wide process of developing social and economic indicators for all US fisheries.⁶ This report includes a subset of indicators that are sufficiently developed for reporting. These cover aspects of financial viability (landings, revenue, number of vessels and effort, and average vessel performance) and distributional outcomes (employment and fleet diversity). Nominal revenues are based on landings and ex-vessel (first sale) prices and—together with fishing effort, operating costs, and quantities of fishing inputs—provide an indication of vessel performance. Employment opportunity is measured by the number of crew positions, crew-trips, and crew-days. Fleet diversity is measured by vessel size and vessel revenue categories, and by distributions of nominal revenues among individual vessels and vessel affiliations. Over time, additional indicators will be available for reporting as the NEFSC Social Sciences Branch's research and the National Performance Measures Program continue to develop.

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

The NEFSC released the first performance report for the FY2010 groundfish fishery in 2011 (see Kitts et al. 2011) and released a second performance report for FY 2011 in 2012 (see Murphy et al. 2012). In 2013, the net revenue estimation previously presented in the FY2011 report was extended to include the impact of quota leasing activities on the distribution of net

⁶ Contact Rita.Curtis@noaa.gov for more information on this national effort. The National Catch Shares Report released in August 2013 presents performance metrics for all catch share managed fisheries in the U.S and may be found at <https://www.st.nmfs.noaa.gov/economics/fisheries/commercial/catch-share-program/index>.

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

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

revenues in the fishery for FY2011 (see Kitts and Demarest 2013)⁹. This FY2012 report also includes an analysis of the impacts of quota leasing on the distribution of net revenues for different segments of the groundfish fleet, presented in Section 8.

Other efforts have been, and are being, undertaken in the Northeast to further the understanding of social and economic issues in the fisheries. A study of social capital among groundfish permit holders (Holland et al. 2010) has recently been repeated and the data collected from the second round of this study are being analyzed. The NEFSC implemented a revised vessel fixed costs survey in August 2012 and May 2013 that surveyed commercial fishing vessel owners in the Northeast, by vessel size and gear type. This effort resulted in cost data from over 800 commercial fishing vessels, which is being analyzed. The NEFSC also recently concluded the first year of its socio-economic survey of vessel crew; about 400 crew, including hired captains, were interviewed in ports in New England and the Mid-Atlantic. The first round of NEFSC's socio-economic survey of vessel owners is nearing completion. The socio-economic surveys of crew and owners were implemented to collect basic demographic data on the fishing community and to develop additional performance indicators, with an emphasis on indicators that measure how well fisheries are performing in the areas of stewardship, governance, and fishing community well-being.

See <http://www.nefsc.noaa.gov/read/socialsci> for more information on these and other NEFSC projects.

1.1. Data and Analytical Approach

The vessels whose activities are evaluated in this report are those with valid limited access multispecies permits during fishing years 2009-2012. An active vessel is defined as having revenue from the landing of any species on any trip while fishing under a limited access groundfish permit within the given fishing year. In this report, trips are defined as commercial trips in the Northeast Exclusive Economic Zone (EEZ). This is an adjustment from previous reports which included other trips, primarily party/charter trips. It is not appropriate to include vessels that are exclusively party boat/charter vessels or charter trips because groundfish caught on these trips cannot be sold. For this FY2012 report, these charter vessels and charter trips were excluded from the analysis, and previously calculated measures for 2009 to 2011 were updated to reflect the exclusion. This correction, as well as the year to year minor corrections to the database, resulted in some metrics being slightly overestimated in the FY2011 and FY2010 reports (Murphy et al. 2012, Kitts et al. 2011). The number of active vessels in the GF fleet was overestimated in the FY2011 report by about 4% for 2009, 2010 and 2011. The FY2011 report overestimated total gross nominal revenue by 1.5% for 2009, 0.24% for 2010, and 0.02% for 2011 (Murphy et al. 2011). The FY2011 report contained additional metrics that were calculated from the number of active vessels and total gross nominal revenues for all species; this FY2012 report also adjusts for corrections to those metrics for 2009-2011. The performance indicator tables presented in this FY2012 report differ slightly from those posted on the Northeast Regional Office's website (in September 2013) due to additional data cleansing activities that took place as the NEFSC prepared this report.¹⁰ The evaluation includes only fish landed and

⁹ Available at <http://www.nefsc.noaa.gov/read/socialsci/pdf/QuotaTradingImpacts.pdf>

¹⁰ See the Northeast Regional Office's web site at:

http://www.nero.noaa.gov/ro/fso/reports/Sector_monitoring/FY12_Groundfish_Tables.pdf

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

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

Some statistics are reported by both home port and port of landing. “Home port” does not necessarily identify the port where fish are landed, but rather is the information on “city and state where vessel is moored” provided by vessel owners on the vessel permit applications. Most often, the home port is the port where supplies are purchased and crew is hired, although this does not apply in all cases.¹¹ Landed port is the actual port where fish are landed. We report by home port and by landed port because the implications of each are different. For example, revenue by home port gives an indication of the benefits received by vessel owners and crew (and some fishing-related businesses such as gear suppliers) based in that port. Revenue by landed port gives an indication of the benefits that other fishing related businesses (primarily businesses that handle fish, such as dealers and processors) derive from landings in their port. We identified the top six home ports and landed ports in the Northeast, and also examined changes by home port and landed port at the state level.

Some indicators in the report use a measure of time called a “day absent.” A day absent is defined as the number of days (24 hours each) a vessel is “absent” from port, and is calculated by subtracting the sail date/time from the land date/time as entered on vessel logbook records, called vessel trip reports (VTRs). For comparative purposes, many measures have been calculated for both groundfish landings and all species landings. “All species” refers to the total of all species of fish or shellfish landed, including groundfish. The home port and length of a vessel are provided by the vessel owner on the vessel’s yearly permit application. Data on vessel landings, nominal prices, and nominal revenues come from seafood dealer reports. Information about the number of fishing trips, and crew size are from VTRs.¹² In addition to mean values, standard deviations are provided to show the degree of variability in the data. Some standard deviations

¹¹ Alternative port affiliation data are available. Principal port declaration and the vessel owner’s mailing address are also entered on the permit application. However, actual landings by port may vary widely from what a vessel owner thinks his principal port of landing will be before the fishing year begins. Also, an owner’s mailing address can be different from a vessel’s base of operation. Therefore, home port is typically used in social and economic studies to establish port affiliation (as in this report). As the home port listed for a vessel can change over the year depending on what is declared on permits, this report assigns a vessel’s home port to be the first home port that is used during FY2012.

¹² All data are from the NERO’s fishing years 2009 – 2012 Data Matching Imputation System, or “DMIS” database (a combination of seafood dealer reports, vessel trips reports, and quota monitoring reports) as of June 2013. Differences in results reported for fishing years 2009 and 2010 in the FY2010 Groundfish Report (Kitts et al 2011), for fishing years 2009-2011 in the FY2011 Groundfish Report (Murphy et al 2012) and in this FY2012 report are due to updates and corrections to the DMIS database.

are large relative to the mean, indicating that the values are widely dispersed. Therefore, care should be used when comparing mean values that have large standard deviations.

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

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

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

1.2. Performance of Sector and Common Pool Vessels

There are fundamental differences in the characteristics of sector and common pool vessels, and in the ACE and DAS allocations.¹³ A large number of common pool vessels have few or no DAS, while some common pool vessels have small vessel exemption permits (Category C) or hand gear permits (HA) excluding them from DAS constraints. Common pool vessels are regulated not only by DAS, but also by additional measures, some of which changed during the 2010 fishing year. Finally, vessels opting into the common pool landed significantly less groundfish during the landings qualification period of 1996 through 2006 than those electing to operate in sectors, which resulted in the common pool being allocated only 1-2% of the total

¹³ These may include differences in physical characteristics of the vessel, different fishing histories, and different attitudes about sector management. Also, fishermen presumably opted to join a sector or remain in the common pool based on their analysis of the advantages and disadvantages to them of each regimen.

ACL for all stocks. In 2012, sector vessels accounted for 99.1% of the total value of groundfish landed (Table 1).

This section discusses major trends in performance, broken down by sector and common pool vessels, as presented in Table 1. Differences in these performance measures should not serve alone as the basis for an evaluation of catch share versus DAS management regimes. In Sections 2-7 of this report, performance indicators are reported for the active groundfish fleet as a whole, with sector and common pool vessels combined.

The total number of active groundfish vessels continues to decline; the fishery lost 152, or 16.6%, of its active vessels over the 2009-2012 period (Table 1). Possible reasons for the declining number of active groundfish vessels will be addressed in Section 6. The percentage of active groundfish vessels enrolled in sectors has been increasing and the percentage enrolled in the common pool has been decreasing. In 2012, there were 764 active vessels in the limited access groundfish fleet, with 446 vessels (58%) enrolled in sectors and 320 vessels (42%) remaining in the common pool. Compared to 2011, with 776 active vessels in the fleet, sector enrollment increased by 4 vessels and the common pool decreased by 17 vessels (Table 1).

Sector and common pool vessels both had declining total gross nominal revenue for all species (groundfish and non-groundfish) in 2012 compared to 2011, with total revenue for the common pool vessels at a three year low. Total all species gross nominal revenue for the entire fleet was \$305.5 million, a 7.7% decrease from 2011. Total all species gross nominal revenue fell by \$25.1 million (10.7%) from 2011 to 2012 for vessels enrolled in sectors. Common pool vessels saw total all species gross nominal revenue fall by \$230,554 (0.2%) (Table 1).

Declines in total revenues for both sector and common pool vessels were driven primarily by the declines in groundfish revenues that occurred for both groups. In 2012, sector vessels had \$69.8 million dollars in gross nominal groundfish revenues, the lowest groundfish revenues for sector vessels since the implementation of catch shares in 2010. Groundfish revenues were \$20.5 million (22.8%) lower in 2012 than in 2011 for sector vessels, and declining groundfish revenue accounted for 82% of the decline in total all species revenue for these vessels. Total non-groundfish revenues also decreased for sector vessels, but this decrease was more modest, with non-groundfish revenues declining by \$4.6 million (3.2%) from 2011 to 2012 (Table 1).

Common pool vessels also experienced declines in revenues from both groundfish and non-groundfish in 2012. Groundfish nominal revenues for common pool vessels were \$642,414 in 2012, the lowest they have been in the 2010-2012 period and \$207,112 (24.4%) lower than they were in 2011. For common pool vessels, declining groundfish revenue accounted for 89.5% of the drop in total revenues for all species. Common pool vessels also saw a small drop in their non-groundfish revenues from 2011 to 2012; total non-groundfish revenues were \$95.6 million in 2012, 0.03% lower than in 2011 (Table 1). Common pool fishermen are often characterized as not being primarily groundfish fishermen due to their relatively low allocations of quota. However, in 2012 common pool fishermen were certainly impacted by declining groundfish revenue. Neither groundfish fishermen in sectors nor those in the common pool were able to substitute landings and revenue from non-groundfish to compensate for groundfish losses.

Average groundfish price increased in 2012 for both sector and common pool vessels, reaching a three year high. Common pool vessels continued to receive a higher average price at the dock for groundfish than sector vessels in 2012, as they did in 2010 and 2011. Average non-groundfish price is at a three year low, \$1.11 per pound, in 2012 for the fleet as a whole. However, while average non-groundfish price decreased for sector vessels in 2012, it increased by 1 cent per pound for common pool vessels (Table 1).

Effort in the groundfish fishery is represented in part by the number of active vessels, the number of trips taken and by days absent on trips. The number of groundfish trips taken and the number of days absent on groundfish trips decreased in 2012 from 2011 for both sector and common pool vessels, in addition to the overall decrease in the number of active groundfish vessels (Table 1). For sector vessels, the number of groundfish trips taken fell by 736 trips (5.4%) and the number of days absent on groundfish trips fell by 999 days absent (5%) from 2011 to 2012. Common pool vessels took 726 (31.9%) fewer groundfish trips, with 531 (35.4%) fewer days absent on groundfish trips. Non-groundfish effort increased slightly for sector vessels and decreased for common pool vessels from 2011 to 2012. Sector vessels took 295 (1.8%) more non-groundfish trips, with 705 (4.6%) more days absent on these trips. Common pool vessels took 1,447 (8.6%) fewer non-groundfish trips, with 71 (0.6%) fewer days absent on these trips (Table 1).

2. LANDINGS AND NOMINAL REVENUES

Nominal revenues are an important indicator of financial performance, all other things being equal. In commercial fishing, gross nominal revenues are a function of the amount of fish landed and the price paid at the time of sale. Prices paid by dealers vary by species and may fluctuate as a result of short and long term market changes. Annual changes in gross nominal revenues can result from three different factors: changes in prices paid for fish at the dock, changes in quantity of landings, and changes in the species composition of the landings. Flexibility to target specific species and/or market categories at times when market values are high can be important in maximizing gross fishing revenues. Information is provided below on landings, overall nominal revenues, and nominal prices in 2012 compared to those in 2009 through 2011. Aggregate revenues in Table 2 are also provided in 2010 (real) dollars using the GDP Implicit Price Deflator.

2.1. Landings

The groundfish fleet experienced a marked decline in groundfish landings in 2012, with little growth in non-groundfish landings from 2011. Total landings of all species on all trips were 258.3 million pounds in 2012, a decrease from 2011 (272.9 million pounds), but higher than in 2009 (254 million pounds) and 2010 (232.4 million pounds) (Table 2). Total groundfish landings on all trips decreased to a four-year low of 46.3 million pounds in 2012, compared with 61.7 million pounds in 2011, 58.2 million pounds in 2010, and 68.4 million pounds in 2009. Total non-groundfish landings on all trips in 2012 were 212 million pounds, a four-year high, but less than 1% greater than in 2011. Groundfish landings accounted for only 18% of total landings in 2012 down from 23% of total landings in 2011 (Table 2).

Total landings in 2012 of all species on groundfish trips decreased to a four-year low of 73.8 million pounds (Table 3). Groundfish landings on groundfish trips also decreased to a four-year low of 46.2 million pounds¹⁴. Non-groundfish landings on groundfish trips decreased to 27.5 million pounds, compared with 28.8 million pounds in 2011, 23.1 million pounds in 2010,

¹⁴ 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.

and 31 million pounds in 2009. The landings data indicate that in 2012 the groundfish fleet had difficulty substituting non-groundfish landings for declining groundfish landings.

2.2. Gross Nominal Revenues

Gross nominal revenues for the groundfish fleet further indicate that groundfish fishermen were unable to use non-groundfish revenues to offset their losses in groundfish revenues in 2012. Total gross revenue in 2012 from all trips was \$305.5 million, a decrease from 2011 (\$330.8 million), but higher than in 2009 (\$262.9 million) and 2010 (\$293.8 million) (Table 2)¹⁵. Groundfish revenue in 2012 decreased to a four-year low of \$69.8 million (22.9% lower than in 2011). Non-groundfish revenue decreased to \$235.7 million (2% lower than in 2011), but was still higher than in 2009 and 2010.

Total nominal revenue from all species on groundfish trips in 2012 was \$95.4 million, a four-year low (Table 3). Groundfish revenue on groundfish trips in 2012 was \$69.7 million, also a four-year low. Non-groundfish revenues on groundfish trips decreased in 2012 to \$25.8 million, from \$31.8 million in 2011. Non-groundfish revenue earned on groundfish trips was higher than it was in 2010 (\$22.3 million), but essentially the same as it was 2009 (\$25.9 million) (Table 3).

2.2.1. Nominal Revenues by Landing Port and Home Port

Most Northeast states experienced decreases in all species nominal revenues in 2012, both from the perspective of state of landing and home port state (Table 4 and Table 5). For landed state revenues, Connecticut and Maine were the exception, with landed all species revenues at four-year highs. In terms of all species revenues by home port state, only Connecticut saw an increase, also reaching a four-year high. In New Jersey, all species revenues by home port state remained constant in 2012 from 2011. All other landing and home port states saw decreases in all species revenues in 2012. New Hampshire, in particular, was at a four-year low in 2012 for all species revenues from landed fish (Table 4 and Table 5).

Groundfish nominal revenues increased in 2012 in the landing port states of Connecticut, Maine, New Jersey, and New York. Connecticut, Maine, and New Jersey also achieved four-year highs. All other landing port states saw groundfish revenues decline in 2012, with Massachusetts and New Hampshire experiencing four-year lows (Table 6). Groundfish revenues by home port state dropped significantly in 2012 for all Northeast states, with all but Maine also hitting four-year lows (Table 7). The largest percentage drops from 2011 to 2012 occurred in the home port states of Connecticut (68% reduction), New Jersey (55% reduction) and New York (48% reduction) (Table 7).¹⁶

By port of landing, the nominal value of landings of all species at each of the major landing ports in New England (Boston; Chatham; Gloucester; New Bedford; Portland; Pt. Judith) declined in 2012 with the exception of Portland, Maine which reached a four-year high. Gloucester and Chatham, Massachusetts both experienced four-year lows in terms of all species

¹⁵ To provide a sense of the influence of inflation on revenue changes, revenues in Table 2 are also given in 2010 dollars (deflated by the GDP Implicit Price Deflator).

¹⁶ These declines may be partially due to the impacts of Superstorm Sandy, which occurred in late October 2012.

revenue from landed fish. Gloucester revenues from landings decreased by almost 25% and Chatham revenues decreased by 20% since 2011 (Table 4).

Groundfish nominal revenues dropped in 2012 for all of the major landing ports in New England except Portland, Maine which achieved a four-year high. All major landing ports in Massachusetts hit four-year lows in 2012. The landing port of Chatham had the largest percentage decline in groundfish revenues (59% reduction) (Table 6).

By home port, the nominal value of landings of all species at each of the major landing ports in New England decreased in 2012, with Gloucester experiencing a four-year low (Table 5). Groundfish revenues by home port fell in 2012 for all major New England ports, with all but Portland, Maine hitting four-year lows. Chatham, Massachusetts experienced a 63% decrease in groundfish revenues as a home port in 2012 (Table 7).

Groundfish nominal revenues for 2012 by port landed are displayed in Figure 1. Groundfish nominal revenues for 2012 by county landed are displayed in Figure 2.

2.2.2. *Nominal Revenues by Species*

In 2012, nominal groundfish revenues from American plaice, winter flounder, redfish, and white hake increased modestly from 2011 levels. Revenues from cod, haddock, yellowtail flounder, witch flounder, and pollock all decreased in 2012. Cod and haddock revenues experienced very significant drops, falling to four-year lows (45% reduction for cod; 62% reduction for haddock from 2011) (Table 8). Given higher average prices in 2012 for cod and haddock, these reductions in revenue can be attributed to sharp declines in landings (Figure 4).

The eleven non-groundfish species with the highest landings by limited access groundfish vessels are presented in Table 9. Sea scallop landings and prices held constant in 2012 resulting in a less than 1% increase in revenue. Sea scallop revenue (\$90 million) accounted for 29% of total revenue for all species and 38% of revenue from non-groundfish species in 2012 (Table 2 and Table 9). Loligo squid and lobster had the largest overall gains in revenue in 2012 (\$3.1 million for loligo squid; \$2 million for lobster). Since average yearly prices dropped in 2012 for loligo squid and lobster, the increased revenues can be attributed to higher landings. The non-groundfish species with the largest percentage gain in 2012 was spiny dogfish (36%). Monkfish and illex squid saw the steepest declines in nominal revenue in 2012, with monkfish dropping by \$6.7 million (31%) and illex squid dropping by \$2.8 million (66%). These reductions can be attributed to both lower prices and landings. Changes in revenues for the non-groundfish species balanced each other out for the most part in 2012, resulting in a relatively modest \$4.6 million decrease compared with the \$20.7 million decrease in groundfish species revenue. However, even small declines in total non-groundfish revenues are especially notable in 2012 because this means that many groundfish fishermen were unable to offset the significant drop in groundfish revenues with revenues from non-groundfish landings, particularly if the composition of non-groundfish species they landed were heavily dominated by skates, silver hake, scup, illex squid and monkfish (Table 2).

2.3. Prices

In 2012, the nominal average price of the nine allocated groundfish species (as a group) increased slightly, reaching a four-year high, while the nominal average price of all non-groundfish species (as a group) declined slightly (Figure 3). The average nominal price for

redfish decreased by about ten cents per pound from 2011 to 2012 and the average nominal price for witch flounder changed very little. All 7 of the other allocated groundfish species increased in price in 2012, with the largest increase being \$0.71/lb for haddock (Figure 4).

Using simple average nominal prices of all groundfish species combined to compare changes in prices over time may be misleading because this average does not account for annual changes in the quantity and mix of groundfish species landed. A price index was therefore constructed to more accurately reflect price trends of groundfish species. The approach used the “Fisher Ideal” index (Balk 2008), which was constructed from price and quantity data recorded in dealer purchases of all groundfish species. Quarterly data were used in all fishing years from 2007 through 2012. May-July (quarter one) of 2007 was set as the base period, with a value of 1.0.

The index values (Figure 5) show how combined nominal prices have changed in relation to quarter one 2007 nominal prices. A value less than one means that prices are lower compared to the base time period, while a value greater than one indicates that prices have increased relative to quarter one in 2007. In 2012, the quarterly adjusted groundfish price indices increased in quarters 1 and 2, decreased in quarter 3, and then reached a six-year high in quarter 4.

3. NUMBER OF VESSELS AND EFFORT

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

3.1. Number of Vessels

The number of active vessels in the groundfish fleet continued to decline in 2012. Both the number of vessels with revenue from any species and the number of vessels with revenue from a groundfish trip continued to fall. The total number of groundfish limited access eligibilities fell by 56 eligibilities in 2009-2012. In addition, the numbers of eligible vessels that did not renew a limited access groundfish permit has increased over the 2009-2012 period. The percentage of inactive vessels with a limited access groundfish permit has remained around 35-40% over the 2009-2012 period, with 2012 having the lowest percentage of inactive vessels (35%) in the four year span. Both the number and the percentage of groundfish limited access eligibilities placed in Confirmation of Permit History (CPH) have grown over the 2009-2012 period. In 2012, 60 additional eligibilities were placed in CPH, a 35.7% increase from the number of eligibilities in CPH in 2011 (168 eligibilities). In 2009, 81 eligibilities (5.5% of total eligibilities) were placed in CPH. By 2012, there were 228 eligibilities in CPH, accounting for 16.2% of the total number of eligibilities (Table 10).

The number of vessels with revenue from any species fell from 776 vessels in 2011 to 764 vessels in 2012 (1.5%). Since 2009, the number of vessels with revenue from any species has fallen 16.6%, with the fishery losing 152 active vessels. The number of vessels with revenue from a groundfish trip declined 4.3% from 2011 to 2012 (419 to 401 vessels). Over 2009-2012, the number of vessels with revenue from a groundfish trip fell from 566 vessels in 2009 to 401 vessels (29.2%) (Table 10).

The reduction in the number of active vessels in the groundfish fleet should be interpreted carefully. Amendment 16 implemented a number of measures that induced the fishery toward fewer vessels, without necessarily requiring owners of non-active vessels to leave the fishery entirely. For example, an owner with a groundfish permit on each of three vessels is now allowed to stack all three permits onto one active vessel to reduce costs. In addition, Amendment 16 allows owners of permits held in Confirmation of Permit History (CPH), which are permits that are not associated with an actual fishing vessel, to participate in sectors (i.e., allows the owner of permits in CPH to contribute the landings history for permits in CPH as PSC towards a sector's yearly allocation of ACE). Alternatively, if the eligibility in CPH is in the common pool, the holder of that eligibility can lease DAS to other vessels, with some restrictions. Clearly there are now fewer vessels actively fishing under a limited access groundfish permit, and fewer vessels within the total groundfish fleet are earning revenue on groundfish trips. However, we cannot conclude that all owners of inactive vessels are no longer participating in the fishery at all; some are gaining revenue as lessors of PSC/ACE or DAS. Others have likely stopped actively groundfishing and are targeting other species. Some have left the commercial fishing industry entirely.¹⁷

3.1.1. Number of Active Vessels by Home Port

From 2011 to 2012, all home port states in the Northeast Region, except for Maine, experienced a decline in the number of vessels with revenue from any species. In absolute terms, Rhode Island lost the greatest number of active vessels (-6 vessels); in percentage terms, New Hampshire experienced the greatest decline (10.9%: 46 to 41 vessels). With the exception of Maine, the number of active vessels was at a 4 year low for all home port states. The number of active vessels home ported in Maine grew from 88 vessels in 2011 to 95 vessels in 2012 (8%), but it was still lower than it was in 2009 (112 vessels) and 2010 (102 vessels). Looking at the six major home ports in the Northeast, all major ports in Massachusetts, except for Gloucester, lost active vessels from 2011 to 2012. Boston lost two active vessels (49 to 47 vessels). The number of active vessels fell by one vessel in both Chatham (39 to 38 vessels) and New Bedford (70 to 69 vessels). The number of active vessels increased by one vessel in Gloucester, Massachusetts (91 to 92 vessels) and by two vessels in Portland, Maine (16 to 18 vessels). In Point Judith, Rhode Island, the number of vessels that had revenue from any species remained unchanged from 2011 to 2012 at 44 vessels (Table 11).

Over 2009-2012, the number of vessels with revenue from a groundfish trip fell 29.2% (566 vessels to 401 vessels), with a 4.3% decline occurring from 2011 to 2012 (419 vessels to 401 vessels) (Table 12). The number of vessels that had revenue from a groundfish trip fell in Massachusetts, New Hampshire, and New Jersey in 2012 from 2011. Massachusetts experienced the greatest decline in absolute terms, losing 17 vessels (7.6%). In percentage terms, New Jersey saw the greatest loss; there was a 35.3% decline (17 to 11 vessels) in 2012 from 2011. In contrast, Maine, Rhode Island, and New York all experienced increases from 2011 to 2012; Maine gained 4 vessels (47 to 51 vessels), New York gained one (42 to 43 vessels), and Rhode Island gained five (49 to 54 vessels).

¹⁷ The Northeast Fisheries Science Center is conducting ethnographic research on the different ways that New England groundfish fishermen have responded to the changes in the fishery. Contact Economist Tammy Murphy at tammy.murphy@noaa.gov for more information on this project.

In 2012, all four major home ports in Massachusetts saw declines from 2011 in the number of vessels with revenue from a groundfish trip, with Boston, Chatham and Gloucester at a four year low. Gloucester lost the greatest number of vessels with revenue from a groundfish trip in absolute terms, 9 vessels, a 12.9% decline from 2011. In percentage terms, Boston experienced the greatest decline between 2011 and 2012, a 17.7% drop in the number of vessels that had revenue from a groundfish trip (34 to 28 vessels). From 2011 to 2012, the number of vessels that had revenue from a groundfish trip increased in Portland, Maine (15 to 16 vessels) and Port Judith, Rhode Island (28 to 33 vessels) (Table 12).

3.1.2. Number of Active Vessels by Vessel Size

Declines in the number of active vessels with revenue from any species on all trips occurred each year between 2009 and 2012 within all vessel length classes. The largest percentage decline in the number of active vessels between 2009 and 2012 occurred in the <30' vessel size category (34%: 73 to 48 vessels). This decline is likely influenced by the presence of skiffs in this vessel length category; permit holders may be transferring quota associated with these skiffs onto other vessels they own, or leasing their quota to other fishermen. The 30' to < 50' vessel size category, which has the largest number of active vessels with revenue from any species on all trips, experienced a 17.2% decline (478 to 396 vessels) during the past 4 years. The 50' to < 75' vessel size category, containing the second largest number of vessels, experienced a 13% reduction from 2009 to 2012 (236 to 205 vessels). Finally, the ≥75' vessel category experienced an 11% reduction in the number of active vessels between 2009 and 2012 (129 to 115 vessels) (Table 13).

The number of vessels with revenue from any species on at least one groundfish trip also declined each year from 2009-2012 within all vessel length classes. The largest percentage decline in the number of active groundfish vessels between 2009 and 2012 occurred in <30' vessel size category (53%: 34 to 16 vessels). Again, this decline may reflect the presence of skiffs in this length category. The 30' to < 50' vessel size category, which has the largest number of active groundfish vessels, experienced a 33% decline (305 to 206 vessels) during the past 4 years. The 50' to < 75' vessel size category, containing the second largest number of active groundfish vessels, experienced a 27% reduction from 2009 to 2012 (157 to 115 vessels). Finally, the ≥75' vessel category experienced a 9% reduction in the number of active groundfish vessels between 2009 and 2012 (70 to 64 vessels) (Table 14).

3.2. Number of Trips, Days Absent and Trip Length

Numbers of fishing trips, days absent from port, and average trip lengths by active vessels were analyzed, in the aggregate and by four vessel length classes, to evaluate vessel activity patterns during 2009-2012 (Table 15). Vessel trip report (VTR) data were used to determine the number and length of trips taken in each fishing year¹⁸.

Effort on groundfish trips generally decreased in 2012. Vessels took fewer groundfish trips, with fewer total days absent on groundfish trips. However, for the groundfish trips taken, average groundfish trip length was slightly longer in 2012 than it was in 2011. The total

¹⁸ For some trips, there were missing values for days absent. This means that for some trips, trip length was not available.

groundfish fleet overall took a total of 14,496 groundfish trips in 2012, declining 9.2% from 2011 (1,462 fewer trips). Declines in the number of groundfish trips taken occurred in all vessel length class sizes, with the exception of vessels 50' to <75' in length (Table 15).

The number of days absent on groundfish trips has also decreased; groundfish vessels had 1,530 (7.1%) fewer days absent on groundfish trips in 2012 than they did in 2011. The decline in the number of days absent on groundfish trips also occurred across vessel length classes. (Table 15).

Average trip length on groundfish trips increased slightly in 2012, by 2.2% or 0.03 days per trip, from what it was in 2011. However, average groundfish trip length did not increase for all four vessel length classes; it increased for the smallest two length classes (<30' and 30' to <50'), but decreased for the two largest length classes (50' to <75' and $\geq 75'$). It should be also be noted that over 2009-2012, average groundfish trip length for the fleet has increased steadily from its low of 0.96 days per trip in 2009 to its 2012 level of 1.38 days per trip, a 43.75% increase overall (Table 15).

Effort measures for non-groundfish trips show that the groundfish fleet overall took fewer non-groundfish trips in 2012 than they did in 2009-2011, but those trips are longer than they were in 2010 and 2011. The total number of non-groundfish trips taken by the fleet in 2012 was 32,523 trips, a four year low and 3.4% lower than in 2011. However, for the fleet overall, the total number of days absent on non-groundfish trips in 2012 was higher than it was in 2011, with 635 (2.3%) more days absent. Furthermore, although the total number of days absent was 9.4% fewer than 2009, the average trip length in 2012 was the same as 2009 (0.92 days per trip) and higher than in 2010 and 2011 (0.86 days per trip) (Table 15).

Vessels in the < 30' and 30' to <50' length classes mirrored the trend for groundfish effort for the fleet overall, with fewer but slightly longer groundfish trips. In contrast, vessels in the 50' to <75' length class displayed a modest increase in groundfish trips in 2012 over 2011(1%). In addition, the number of days absent on groundfish trips decreased by 407 days (5.9%), and average groundfish trip length fell from 2.05 days per trip to 1.91 days per trip. Finally, the largest vessel length class, $\geq 75'$, experienced declines in all effort measures. In 2012, these vessels took 1,143 trips, a 3.1% decline from 2011 and a 12.9% decline from 2009. They also had 466 (6%) fewer days absent on groundfish trips in 2012 than in 2011 and average groundfish trip length declined from 6.63 days per trip to 6.44 days per trip (Table 15).

For vessels less than 30', all measures of non-groundfish effort in 2012 were the lowest they've been for the 2009-2012 period. These vessels took 68 (5.9%) fewer non-groundfish trips in 2012 than they did in 2011, with 62 (16.5%) fewer days absent on non-groundfish trips, and average non-groundfish trip length fell slightly from 0.33 days per trip in 2011 to 0.32 days per trip in 2012. In the 30' to <50' length class, there was a small decline (1%) in the number of non-groundfish trips in 2012 from 2011, but the trips that were taken were longer in length, with 73 more days absent in 2012 than in 2011 and an increase in average non-groundfish trip length from 0.42 days per trip in 2011 to 0.43 days per trip in 2012. The 50' to <75' vessels also took fewer and longer non-groundfish trips in 2012 than in 2011. For this vessel length class, the number of non-groundfish trips taken was at a 4 year low for the 2009-2012 period, with 853 (8.5%) fewer non-groundfish trips taken in 2012 than in 2011. However, from 2011 to 2012, the number of days absent on non-groundfish trips increased by 340 (2.9%) days and average non-groundfish trip length increased from 1.17 days per trip in 2011 to 1.33 days per trip in 2012. Non-groundfish effort for the $\geq 75'$ vessel class followed the same patterns of fewer, but longer, non-groundfish trips. These vessels took 2,137 non-groundfish trips in 2012, a four year low and

1.7% fewer than in 2011. However, these vessels had 285 (3.6%) more days absent on non-groundfish trips than they did in 2011, and from 2011 to 2012, the average length of a non-groundfish trip for these vessels increased from 3.66 to 3.91 days per trip (Table 15).

4. AVERAGE VESSEL PERFORMANCE

A complete assessment of fishery economic performance requires information from all vessels on all fishing-related costs and on all fishing-related revenues to determine profits. 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.¹⁹ This information would include the cost of purchasing additional ACE or DAS and the revenues from the sales of fish and ACE. Although progress is being made to address critical data gaps, at this time the Social Sciences Branch (SSB) does not have sufficient information to estimate profitability for various segments of the groundfish fleet, or at a finer level (e.g., on the vessel affiliation or the individual vessel level). The primary obstacles to this estimation are (1) a lack of data on fixed costs and crew payments²⁰ and (2) incomplete data on ACE trading and DAS leasing.

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

In contrast to the FY2010 and FY2011 Groundfish Performance Reports, the net revenue estimations in this report account for the impacts of leasing activity.²¹ Because an overview of ACE leasing activity in FY2012 is necessary to understand these net revenue estimates, the discussion of net revenue has been deferred to Section 8 of this report.

¹⁹ Fixed costs are typically costs that do not vary with the amount of fishing effort such as insurance.

²⁰ Fixed cost and crew payment data was collected through a voluntary survey in 2006-2008. However, vessel owner response to that fixed cost survey was poor and the resulting data quality was insufficient. In 2012, SSB implemented a redesigned cost survey to collect information about fixed costs and crew payments incurred in 2011 from approximately 50% of the commercial fishing vessel owners in the Northeast, according to vessel size and primary gear type. The survey was repeated in 2013, surveying the remaining half of vessel owners in the Northeast for fixed costs and crew payments incurred in 2012. These more recent surveys have resulted in higher response rates than the 2006-2008 efforts, with response rates of 30% and 21% respectively, and the SSB now has fixed cost and crew payment data for over 800 commercial fishing vessels in the Northeast. This data is being analyzed now as the SSB strives towards a more complete understanding of profitability for various segments of the fleet. At this time, both the Northeast Fishery Observer Program (NEFOP) and the At-Sea Monitors (ASM) Program collect some of fishing-related costs and these data can be used to evaluate financial performance. Information contained in VTR and dealer data can also be used to derive additional performance measures.

²¹ Although the Social Science Branch (SSB) cannot yet fully analyze profitability of the active groundfish fleet, it continues to move forward in its understanding of economic performance. The FY2010 and FY2011 Final Reports both provided net revenue estimation (see Kitts et al. 2011 and Murphy et al. 2012). Net revenue is defined as gross revenue less trip costs. Prior to 2013, net revenue analysis did not account for the impact of costs incurred to purchase quota (leasing costs), due to incomplete leasing activity data. At the fishery level, leasing costs incurred by vessel owners that "lease in" fish are offset by leasing revenues earned by vessel owners that "lease out" fish. However, leasing activity does change net revenues received by specific segments of the fleet. Since the release of the FY2011 Final Report, analysis of the net revenues earned by the groundfish fleet has been expanded by examining the impacts of leasing activity. In 2013, the net revenue analysis presented in the FY2011 Final Report was updated to reflect how leasing activity impacts net revenues received by different segments of the fleet (see Kitts and Demarest, 2013).

4.1. Nominal Revenue per Vessel and Day

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

The nominal revenue per effort metrics used in this report characterize the performance of an average vessel within each vessel size category. However, individual vessel performance can vary substantially, in either direction, from the average. As stated above, changes in nominal revenue per unit effort can also be accompanied by changes in the use (and therefore the cost) of inputs.²² These caveats should be considered when evaluating the results that follow.

Average all species nominal revenue per vessel on groundfish trips decreased in 2012 for all vessel size categories except for the less than 30' group (Table 16). The less than 30' group saw a 50% increase in average all species nominal revenue per vessel on groundfish trips. It is important to note, however, that the less than 30' group accounts for only a very small percentage of the total number of groundfish trips taken in 2012 (1.3%) (Table 15). Average all species revenue per groundfish trip decreased from 2011 to 2012 by a range of 19% to 20% for all other vessel size categories (Table 16).

Average all species revenue per vessel on non-groundfish trips increased by 5% for both the less than 30' and the 75' and above categories in 2012. For the two middle size categories, average all species revenue per vessel on non-groundfish trips increased by less than 1% during the same time period (Table 16). The minimal increase in average revenue per vessel on non-groundfish trips furthers the notion that groundfish fishermen were unable to offset a reduction in groundfish landings with increased non-groundfish landings (Table 16).

Average nominal revenue per day on groundfish trips increased by greater than 28% in 2012 for all vessel size categories, with the exception of the greater than 75' category, which decreased by 20.4% (Table 17). Average nominal revenue per day on non-groundfish trips decreased in 2012 for all vessel size categories, except for the 30' to <50' category, which saw a small gain of 7.3%. The largest percent decrease in average nominal revenue per day on non-groundfish trips in 2012 occurred in the greater than 75' category (17%) (Table 17)²³.

4.2. 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

²² For example, the amount of fuel used could increase because of a change in fishing behavior that may generate an increase in revenue per day absent.

²³ The standard deviation associated with average nominal revenue per day on a non-groundfish trip in 2011 is relatively high, suggesting the 2011 average may have been influenced by a few extreme values.

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

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

A Malmquist Index (MI) was therefore constructed to examine changes since 2007 in TFP for groundfish vessels.²⁴ A value greater than one for the MI indicates an improvement in productivity, while a value less than one signifies a decline in productivity. Yearly MI values were then used to construct a Malmquist Chained Index (MCI) with 2007 as the base year.²⁵ Productivity, as measured by the MCI, decreased by 10% in 2012 to a five-year low (Table 18). This decrease can be attributed in large part to the substantial reduction in groundfish landings in 2012.

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 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

²⁴ The Malmquist Index (MI), which was introduced by Caves, Christensen and Diewert (1982), is an index well suited for measuring TFP change. Because only outputs and inputs are needed to construct the MI, this index is particularly advantageous for estimating changes in productivity of fishing vessels. Other productivity metrics require data on output and input prices. Although price data for landed species are extensive, data on input prices are only available for a subset of vessels. Since both input and output quantities are readily available for all vessels, the Malmquist index approach was chosen to estimate TFP change.

Landings for each vessel were aggregated into three broad output groups: roundfish, flatfish, and all other species. Inputs included vessel length, gross tonnage, horsepower, days absent, and average crew size. The MI was calculated for three gear groups: trawl, hook, and gillnet. Lack of sufficient observations precluded calculation of the MI for other gear groups. Next, the average productivity change per vessel in each fishing group was calculated. Individual vessel index numbers were then aggregated to derive an overall index value. The contribution of each vessel's productivity to the overall value was weighted by its nominal revenue.

²⁵ A chain index uses successive years of data. For example, the MCI for 2010 is calculated as $MCI_{2010} = MI_{2010} \times MI_{2009} \times MI_{2008} \times MI_{2007}$. The interpretation of this allows one to compare productivity in 2010 against a given base year, such as 2007 in our case.

fishermen may choose to lease most or all of their ACE/PSC rather than catch it.²⁶ ACE and PSC leases result in transfer payments within the industry. If there are no transaction costs—that is, no costs associated with these transfers²⁷—the payments are not a cost to the industry. Every pound of ACE or PSC leased represents a cost to the lessee and a reimbursement to the lessor, both of whom are industry members or, in some cases, permit banks. A frictionless lease market²⁸ 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. If this is standard practice for all sectors, catching more fish than an individual PSC allocation must require either a lease of ACE (between-sector) or PSC (within-sector)²⁹. Within-sector PSC leases data were reported voluntarily and comprehensively for the first time in 2012. These data however are not uniformly traceable to the individual permit or MRI level. Section 8 contains a more comprehensive analysis of the impacts of within-sector leasing.

Between-sector leases are formally reported, noting the stock, total weight and, often but not always, 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.

Two hundred and forty-one sector-affiliated MRIs had catch that exceeded individual PSC allocations for at least one stock, down from 256 in FY 2011. These MRIs leased in over 23 million pounds of ACE and/or PSC in FY 2012 (Table 19). A similar comparison at the vessel affiliation level³⁰ shows 185 affiliations leased in nearly 11 million pounds in 2012 (Table 20).

²⁶ 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.

²⁷ Transaction 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.

²⁸ A lease market with no transaction costs.

²⁹ In FY2011 this became more difficult as FY2010 carryover was allocated to sectors and the method of re-allocation within a sector is not reported. For the purposes of this analysis, it was assumed that the total amount of sector-level carryover was re-allocated to individual sector members proportional to their unused PSC from the prior year.

³⁰ Groups of vessels connected by common ownership. Note that these data may not be comprehensive, as vessel affiliation data are not currently collected on CPH permits.

Of all the major home ports, Gloucester, Massachusetts had the largest number of lessees with 39. The largest percentage of the 242 lessees identified (44%) were attached to vessels in the 30' to <50' vessel length category (Table 21).

The difference between the 23.3 million pounds at the MRI level and the 10.9 million pounds at the vessel affiliation level, which is 12.4 million pounds, is the transfer of ACE among MRIs within a vessel affiliation. A vessel affiliation could be a single owner with multiple MRIs and these "leases" could simply be transfers of ACE from one MRI to another.

While lessee fishermen and/or ownership groups can be determined by comparing catch to allocated PSC at the MRI level, the fishermen on the other side of those transactions (lessors) are more difficult to identify. Fishermen who failed to convert their allocated PSC into catch may be easily identified (of 848 Sector-based MRIs, 545 had zero catch in FY 2012), but these permits create a pool of potential ACE/PSC that is much larger than aggregate lessee requirements (Table 22). 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. Some broad conclusions may be reached. For example, Table 23 shows that while the largest vessel size category (75' plus) was allocated 37% of all ACE, this size category caught 51% of total catch, indicating a broad shift of ACE/PSC from smaller to larger vessels.

Figure 6 reveals 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. Additionally, CPH permits are a significant source of leased ACE/PSC.

The inter-sector lease market grew again in FY 2012, with volume up more than 22% from the previous year, to almost 22 million lbs (Table 24).

5.2. Prices

Using price and quantity data for the between-sector component of the market, a hedonic price model was used to estimate lease values for all 16 stocks of leased ACE (Table 25, Table 26).³¹ Statistically significant prices were estimated in 2012 for 13 of the 16 stocks. Three stocks, East and West GB haddock and American plaice, were traded at a price no different from zero.³² East Georges Bank cod obtained the highest lease price at an annual average of \$2.48 per pound. It is interesting to note that this value appears to exceed the ex-vessel value for this stock (Table 28). Pollock and redfish traded at the lowest (non-zero) prices, between \$0.03-\$0.05 per pound.

³¹ 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.

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

³² This could be because the quota were truly valueless (likely the case for the GB haddock stocks) or because data were insufficient to allow the model to estimate a non-zero price.

GOM cod values declined from \$1.10 in 2011 to \$0.68 in 2012. GB yellowtail flounder increased from \$0.23 in 2011 to \$0.97 in 2012.

Table 27 contains mean price estimates from single stock lease data only. Relative to single stock lease values, the hedonic model predicted higher lease prices for all stocks except white hake, a notable departure from years past when modeled prices were predominantly lower than single-stock price estimates. This implies that fishermen perceive a different value for quota when traded as a basket or swap than when traded as fish-for-cash. In any case, this large discrepancy between model-estimated and single-stock-estimated prices implies that model-estimated prices likely overstate quota values, inflating the size of the quota market by some degree. This may imply that the quota market was even smaller than it appears to have been in 2012.

That said, prices based only on one portion of the lease market (between sector ACE leases) may be biased due to structural issues affecting the lease markets.³³ Further investigation of the information on intra-sector PSC leasing contained in the sector end of year reports will be provided in Section 8 of this report.

5.3. Transfer Payments

At the MRI level, the total value of ACE/PSC lease market transfers in FY 2012 is estimated at over eight million dollars, down over 45% from FY 2011 (Table 29). When collapsed to vessel affiliations, the total transfer payment due to leasing is estimated at just over four million dollars, implying that roughly half of all leasing (by value) is occurring within vessel affiliations (Table 30). Both of these numbers represent significant declines in the value of leased quota from 2011 to 2012. The proportion of leases within and between vessel affiliations varies considerably at the homeport and state level (Table 31). For example, in Boston and New Bedford the vast majority of leasing occurs within vessel affiliations, while in Gloucester, Portland and Point Judith the great majority of leasing occurs between vessel affiliations.

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.

³³ 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 choose 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.

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 discernible 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 costs is that no data are available on which to base estimates for the cost of lost leasing opportunities³⁴, 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 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 32% of total allocated ACE/PSC was caught, and that less than 50% of these allocations were caught for 9 of the 16 stocks implies at first glance that the potential for efficiency gains from improving lease markets may be large (Table 32). In fact, the inability of sectors to catch their allocated ACE is not likely attributable to any one factor. 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.

6. DISTRIBUTIONAL ISSUES

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

It is important to note that this section addresses the consolidation and concentration of all species and groundfish revenues from landings by active vessels and vessel affiliations, which earned through use of the fishery resource. It does not address concentration and consolidation of quota or permits, which allows for access to the fishery resource. A fisherman may not be actively landing fish, which means that he would not earn a share of the landings revenues discussed in this section. However, he may still be earning revenues from leasing his quota to other fishermen, and those earnings are not reflected in the discussion in this section.

³⁴ Leases that would have left both lessee and lessor better off had they occurred.

6.1. Number of Vessel Affiliations

Changes in the number of vessel affiliations, or networks of vessels connected by common owners, do not necessarily mean there are more or fewer individuals involved in the fishery. Changes in vessel ownership among existing individuals can also result in changes in the number of vessel affiliations; the results in Table 33 reflect the combination of these two possibilities. The number of vessel affiliations issued limited access groundfish permits declined 16% over 2009-2012 (934 to 787 affiliations), with a 7% reduction between 2011 and 2012 (846 to 787 affiliations).

The number of active vessel affiliations declined from 2011 to 2012 at a faster rate than the number of active vessels (Table 10 and Table 33). In addition, the number of vessel affiliations in the group of vessels that had revenue from at least one groundfish trip is declining at a faster rate than the number of vessel affiliations that had revenue from any species. The number of vessel affiliations in possession of at least one active vessel with revenue from any species on all trips declined 16% from 2009 to 2012 (737 to 618 affiliations), with a 2% decline occurring between 2011 and 2012 (633 to 618 affiliations). The number of vessel affiliations that had at least one vessel that reported revenue from at least one groundfish trip declined by 31% between 2009 and 2012 (450 to 310 affiliations), with an 8% decline occurring between 2011 and 2012 (338 to 310 affiliations) (Table 33).

Over the four year time series, the rates of decline for the numbers of active vessels and vessel affiliations were nearly identical, at around 16-17% for the numbers of vessels and affiliations with revenue from any species and 29-31% for the numbers of vessels and affiliations with revenue from at least one groundfish trip. The percentage of vessel affiliations that are inactive (i.e., have no landings) has remained relatively stable over the four year period, ranging from a low of 21% in 2009 and 2012, to a high of 25% in 2011 (Table 33).

Consolidation of vessels and vessel affiliations is occurring among owners that actively target groundfish, i.e. those vessels and vessel affiliations that had revenue from at least one groundfish trip. Vessels and vessel affiliations that were active (i.e. have revenue from any species while holding a limited access groundfish trip), but did not earn any revenue from a groundfish trip may be viewed as vessels and affiliations that do not actively target groundfish. Over 2009-2012, there does not appear to be ongoing consolidation in this group of vessels and owners. The number of active vessels with limited access groundfish permits that did not have revenue from a groundfish trip increased 3.7% (350 to 363 vessels) from 2009 to 2012, with a 1.7% increase (357 to 363 vessels) from 2011 to 2012 (Table 10). The number of active vessel affiliations that did not actively target groundfish increased 7.3% (287 to 308 affiliations) over 2009-2012, with a 4.4% increase (295 to 308 affiliations) from 2011 to 2012 (Table 33).

Data presented in Table 33 and Table 34 together suggest that the decline in the number of active vessels in 2009-2012 (Table 10) is primarily due to attrition of active vessel affiliations (fewer ownership groups) rather than consolidation at the affiliation level (i.e., vessel affiliations choosing to harvest fish on fewer vessels). In general, the percentages of vessel affiliations containing a single vessel versus those containing multiple numbers of vessels have remained stable over 2009-2012. The percentage of vessel affiliations with a single active vessel in 2012 was 86.1% (532 affiliations); a small decline from 86.6% (548 affiliations) in 2011. Only one vessel affiliation had 10+ vessels in 2011; this remains the case for 2012. The average number of active vessels per active vessel affiliation did not change between 2011 and 2012, at 1.23 active vessels per active vessel affiliation, and it has remained nearly constant since 2009 (Table 34).

6.2. Distribution of Nominal Revenue among Vessels

All species and groundfish revenues were not evenly distributed among groundfish vessels during 2009-2012 (or probably at any time). Between 2011 and 2012, the amounts of nominal all species and groundfish revenues concentrated in the top earning categories remained relatively stable. Both all species and groundfish nominal revenues were unequally distributed in 2011, and they remained so in 2012, but inequality did not worsen significantly. Groundfish revenue remained more concentrated among the top earning vessels than all species revenue. Distributions of nominal revenues among active vessels during 2009-2012 were examined by ranking active vessels by nominal revenue from highest to lowest, and then categorizing the vessels into seven earnings brackets from highest to lowest: top 1%, 20%, 40%, 60%, 80%, 99% and bottom 1%. This was done for both all species revenues on all trips and groundfish revenues on all trips (Table 35 and Table 36).

During 2009-2012, the top 20% of vessels annually accounted for 60%-65% of the total nominal revenue from all species. In this same time period, little change occurred in the proportional share of the bottom 20% of vessels for all species nominal revenues (Table 35).

Groundfish revenues continue to be less equally distributed among active vessels than all species revenues in 2012. However, the degree to which groundfish revenues were unequally distributed did not worsen from 2011 to 2012. Between 2009 and 2010, groundfish nominal revenues became noticeably more concentrated in the highest-earning 20% of vessels, increasing from 66.3% to 76.3%. This level of revenue concentration has remained nearly constant since, with the top 20% of active vessels accounting for 76.2% of nominal groundfish revenues in 2012. On the other end of the earnings spectrum, the bottom 20% of active vessels earned 0.7% of total nominal groundfish revenues in 2012 (Table 36).

6.3. Distribution of Nominal Revenue among Vessel Affiliations

The distributions of both all species and groundfish nominal revenues are more concentrated at the vessel affiliation (ownership) level than at the vessel level. The concentration of revenues among top earning vessel affiliations was marked in 2009-2011, and this level of concentration persisted and slightly increased in 2012. Groundfish nominal revenue is more concentrated than all species revenue among the top earning vessel affiliations, as was the case for at the vessel level.

Distributions of nominal revenues among vessel affiliations in 2009-2012 were examined by ranking active vessel affiliations by nominal revenue from highest to lowest, and then categorizing the vessels into seven earnings brackets from highest to lowest: top 1%, 20%, 40%, 60%, 80%, 99% and bottom 1%. This was done for both all species revenues on all trips and groundfish revenues on all trips (Table 37 and Table 38). In addition, vessel affiliations with at least one active vessel in each year were divided into eight nominal revenue categories. The smallest nominal revenue category included affiliations earning less than \$50,000 for all trips and species landed. The highest nominal revenue category included affiliations earning \$1 million or more (Figure 12).

As noted in Section 6.1, the total number of vessel affiliations with active vessels declined annually between 2009 and 2012 (Table 33). From 2011 to 2012, declines in the

number of vessel affiliations occurred in five of the eight revenue categories: \$200K-\$300K, \$300K-\$500K, \$500K-\$700K, \$700K to \$1.0 million and \$1.0 million and over. Both the \$200K-\$300K and the \$500K-\$700K revenue categories have experienced steady declines in the number of vessel affiliations throughout 2009-2012, with 37.9% (-39 affiliations) and 50% (-25 affiliations) declines, respectively. After falling from 2010 to 2011, the number of vessel affiliations in the <\$50K, \$50K to \$100K, and the \$100K-\$200K categories increased in 2011 to 2012 by 5.3% (+7 affiliations), 2.7% (+2 affiliations) and 3.5% (+4 affiliations), respectively (Figure 12). This suggests that not only are there fewer vessel affiliations in 2012 than in 2011 and the two years prior, but the distribution of all species revenues among remaining active vessel affiliations changed somewhat over 2011-2012, with the bottom three revenue categories increasing its number of vessel affiliations, and the top five revenue categories losing vessel affiliations.

During 2009-2012, the distribution of nominal all species revenue among vessel affiliations remained unequal, but relatively stable. The top 20% of vessel affiliations annually accounted for between 68% and 73% of the total nominal revenue from all species, with 72.8% of all species revenues earned by the top 20% of vessel affiliations in 2012, up from 72.1% in 2011. The bottom 20% of vessel affiliations fared slightly worse, earning 3.9% of all species revenues in 2012, compared to 4.2% in 2011 (Table 37).

Groundfish nominal revenues were highly concentrated among top earning vessel affiliations in 2011 and remained so in 2012, with minimal change in the degree of concentration from 2011 to 2012. The percentage of total groundfish nominal revenue earned by the top 20% of vessel affiliations increased from 84% in 2011 to 85.1% in 2012. This slight increase was due to an increase in the share of groundfish nominal revenue by the top 2% to 20% of vessel affiliations (57.9% to 59%); the percentage of groundfish revenues earned by the top 1% of vessel affiliations remained constant at 26.1%. The percentage of groundfish nominal revenues held by the bottom 20% of vessel affiliations decreased very slightly from 0.5% in 2011 to 0.4% in 2012 (Table 38).

6.4. 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 population³⁵. For any given point on the Lorenz curve, the vertical axis value is the share of total nominal revenue accounted for by all vessels that earned revenue equal to or less than the proportion of the population indicated by the horizontal axis value. The Gini coefficient can be derived from the Lorenz curve, and reflects the degree of deviation between the Lorenz curve and the 45 degree line that represents perfect equality³⁶. Gini coefficient values are bounded by 0 and 1, where 0 indicates perfect equality and 1 indicates maximum inequality.

It is important to recall that nominal revenues have not been equally distributed for some time, as seen earlier in this section. During 2009-2012, the distribution of groundfish nominal revenues was more unequal than the distribution of all species nominal revenues among vessel

³⁵ A Lorenz curve is constructed by ranking vessels in order of increasing nominal revenue and then plotting the cumulative proportion of the population on the horizontal axis versus the cumulative share of nominal revenue on the vertical axis.

³⁶ The Gini coefficient is equal to twice the area between the diagonal and the Lorenz curve.

affiliations, which can be seen by comparing the Gini coefficients over 2009-2012 for all species nominal revenues (Figure 13) with the Gini coefficients for the same time period for groundfish nominal revenues (Figure 14).

The 2009 to 2010 period brought an increase in inequality to the fishery, as seen by the increase in the Gini coefficient for both all species and groundfish nominal revenues (0.657 to 0.696 for all species and 0.745 to 0.814 for groundfish). From 2010 to 2011, there was a slight decrease in inequality for both all species and groundfish revenues earned by vessel affiliations, with the Gini coefficients falling slightly to 0.689 for all species and 0.810 for groundfish nominal revenues. This downward shift in the level of inequality did not continue into 2012. Based on Gini coefficient analysis, inequality in the groundfish fishery, for both all species and groundfish nominal revenues, has increased very slightly from 2011 to 2012.

The Gini coefficient for all species nominal revenues increased from 0.689 in 2011 to 0.694 in 2012 (Figure 13). Inequality among active vessel affiliations for all species revenue (as measured by the Gini coefficient) was at a four year high in 2010, suggesting that although inequality for all species revenue increased from 2011 to 2012, in 2012 inequality was not as marked as it was in 2010.

The Gini coefficient for groundfish nominal revenues among vessel affiliations also increased from 0.810 in 2011 to a four year high of 0.818 in 2012. Gini coefficients greater than 0.75 generally indicate extreme inequality, which suggests that the distribution of groundfish nominal revenues is highly skewed among vessel affiliations and has been for some time.

6.5. Consolidation and Concentration of Nominal Revenue among Vessels

Another way of analyzing the distribution of revenue is to evaluate the number of vessels that earn various shares of the overall revenue. When fewer vessels earn nominal all species and groundfish revenues, consolidation has occurred. To assess whether changes in the concentration of revenue have occurred, annual changes in the proportion of vessels by nominal revenue quartile were examined adjusting for yearly changes in the total number of vessels. The number of vessels accounting for 25%, 50%, 75%, and 100% of the nominal revenue from all species on all trips and groundfish species on all trips was tabulated for each year from 2009 to 2012 (Table 39 and Table 40).

The number of vessels earning the top 25% and 50% of all species revenues decreased from 2011 to 2012, suggesting that all species revenues were consolidated onto fewer vessels. In addition, minor evidence of a slight increase in the concentration of all species revenues on the top earning vessels can be seen by the decrease in the percentage of vessels earning the top 25% and 50% of all species revenues. The percentage of vessels accounting for the top 25% of all species nominal revenues dropped modestly from 5.3% in 2011 to 5.1% in 2012. Similarly, the percentage of vessels that accounted for the top 50% of all species nominal revenues declined slightly from 2011 to 2012, from 13.7% to 13.4% (Table 39).

Comparison of Table 39 and Table 40 indicates that groundfish revenues are more concentrated amongst top earning vessels than all species revenues. Table 40 also shows that both the number and percentages of vessels earning the top 25% and top 50% of groundfish revenues decreased from 2011 to 2012, but again, the changes in the percentages of vessels in the top 25% and 50% were very modest. For the top 25% of groundfish revenues, the percentage of vessels earning those revenues decreased from 3.6% in 2011 to 3.5% in 2012. For the top 50%,

The percentage of vessels earning the top 50% of groundfish revenues decreased from 9.6% in 2011 to 9.4% in 2012 (Table 40).

Consolidation of both all species and groundfish nominal revenues onto fewer vessels clearly occurred over 2009 to 2012. In 2011, it appeared that the level of concentration for both all species and groundfish nominal revenues among active vessels had leveled off from what it was in 2010. However, from 2011 to 2012, concentration of both all species and groundfish nominal revenues appear to have either remained relatively constant or very modestly increased.

6.6. Consolidation and Concentration of Nominal Revenue among Vessel Affiliations

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

To evaluate consolidation and concentration of nominal revenues among owners, the number of vessel affiliations accounting for 25%, 50%, 75%, and 100% of nominal revenues from all species (and separately, groundfish) on all trips was tabulated (Table 41 and Table 42, respectively).

Consolidation of all species revenues into fewer ownership groups has occurred, meaning some ownership groups are no longer actively fishing under their limited access groundfish permits. From 2009 to 2012, there has been decline in the number of vessel affiliations in each earnings quartile. For the 25% and 50% quartiles, the number of vessel affiliations with revenue from all species remained the same from 2011 to 2012. In the 75th quartile, there was a decline to 134 affiliations in 2012 from 141 affiliations in 2011. Overall, there were 15 fewer affiliations earning total all species revenues in 2012 (633 affiliations) than in 2011 (618 affiliations). The percentages of vessel affiliations earning the top 25% and 50% of all species nominal revenues have remained relatively stable from 2011 to 2012. In both 2011 and 2012, 1.9% of vessel affiliations earned the top 25% of all species revenue. The percentage of vessel affiliations earning the top 50% of all species revenues increased very slightly to 8.6% in 2012, from 8.4% in 2011 (Table 41). This analysis suggests that while the number of affiliations earning all species revenue has declined, the distribution of all species revenues among those vessel affiliations that remain active in the fishery has not changed significantly.

Groundfish nominal revenues continue to be consolidated into fewer ownership groups. Between 2011 and 2012, the degree of concentration of groundfish revenues among those vessel affiliations remaining in the fishery slightly increased. Overall, there were 28 fewer vessel affiliations earning total groundfish revenues in 2012 than there were in 2011. Both the number (2 affiliations) and the percentage of affiliations (0.6%) that earned the top 25% of groundfish revenues remained the same from 2011 to 2012. A slight increase in the concentration of groundfish revenues among vessel affiliations occurred in the percentages of vessel affiliations earning the top 50% and 75% of groundfish revenues. The percentage of vessel affiliations earning the top 50% of groundfish revenues decreased from 4.7% in 2011 to 4.5% in 2012. From

2011 to 2012, the parentage of vessel affiliations earning the top 75% of groundfish revenues also decreased, from 12.7% to 11.9% (Table 42).

Taken together, Table 41 and Table 42 imply that there are fewer ownership groups remaining in the fishery, and therefore fewer ownership groups dividing up all species and groundfish revenues earned from actively fishing under limited access groundfish permits. Groundfish revenues were distributed among vessel affiliations slightly less equally in 2012 than they were in 2011. The distributions of nominal revenues among vessel affiliations indicate that groundfish revenues are more concentrated among vessel affiliations than all species revenues, as was also the case for vessels.

Sections 6.2 – 6.6 provide different ways of looking at the issues of consolidation and the concentration of all species and groundfish nominal revenues among active vessels and vessel affiliations. In 2009, all species nominal revenues and groundfish nominal revenues were not equally distributed among active vessels or vessel affiliations. As well, groundfish nominal revenue distributions were more unequal than all species nominal revenue distributions for both active vessels and vessel affiliations. In 2010, these revenue distributions became further concentrated, or even more unequal, than in 2009. There were indications in 2011 that the level of concentration, or inequality, in the fishery, may have leveled off or possibly decreased. The analysis presented in Section 6 indicates the level of concentration did not continue to decrease in 2012; it has leveled off or possibly slightly increased, particularly for groundfish revenues.

Both the number of active vessels and vessel affiliations continued to decline in 2012, indicating that there were fewer vessels and fewer groups of owners than in the three previous years. Therefore, consolidation of revenues on fewer vessels and fewer vessel affiliations continued. Both all species and groundfish nominal revenues were no more equally distributed (or less concentrated) in 2012 than in 2011 among active participants in the fishery, and may be very slightly more concentrated.

7. EMPLOYMENT

Changes in employment levels can result from changes in fishery regulations. If new management approaches, such as catch shares, foster vessel consolidation or reductions in fishing effort, working conditions may be affected including pay, time spent at sea, and the number of jobs. Although NMFS does not track employment in the fishing industry in the Northeast, Vessel Trip Reports contain information about crew size on fishing trips and on the duration of trips. While these reports do not identify the actual number of individuals employed (e.g., crew often work for more than one vessel owner), the VTR data can be used to determine the number of crew positions available and the length of time that crew spend at sea. In general, trends in crew employment indicators were negative, suggesting that in 2012 there were fewer opportunities for crew work on most vessel sizes and in most home port states. The exceptions to this trend were in the home port states of Connecticut and Maine. However, even in those states, it appears that the time spent per crew earning opportunity, as measured by the ratio of crew days to crew trips, has increased.

7.1. Number of Crew Positions

The total number of crew positions, measured by summing the average crew size of all active vessels on all trips, declined annually between 2009 and 2012 from 2,416 to 2,136 (a 12%

decline) (Table 43). From 2011 to 2012, the number of crew positions for all vessel size categories fell by approximately 1%, with the exception of the less than 30' category which experienced a 5.1% reduction in crew positions (Table 43).

By home port state, the number of crew positions increased from 2011 to 2012 in Maine and New Jersey (in ME, by 21 positions or 9.5%; in NJ, by 3 positions or 2.1%). The number of crew positions in all other major home port states decreased in 2012 with New Hampshire seeing the largest percentage decrease (9%: 105 to 96 crew positions). Declines in the number of crew positions from 2011 to 2012 for other home port states ranged from 1.3% to 7.3% (Table 44).

7.2. Number of Crew Trips

Although the number of crew positions is an indicator of the availability of jobs, this measure is uninformative about the number of trips available for crew to work³⁷. To account for this distinction, a crew-trip indicator was derived. Because most crew members are paid on a per trip basis, this crew-trip indicator provides a measure of the total opportunities for crew to earn a share of the landings revenues.

Total crew trips were calculated by summing the crew size of all trips taken in each fishing year across both vessel size category (Table 43) and home port state (Table 44). Total crew trips steadily declined from 148,153 in 2009 to 116,334 in 2012 (a 21% reduction overall). From 2011 to 2012, total crew trips declined by 4.6%. Crew trips declined annually between 2009 and 2012 for all vessel size categories as well. The largest percentage drop from 2011 to 2012 occurred in the less than 30' category (13%). The other vessel size categories saw decreases of 5% or less in the number of crew trips from 2011 to 2012 (Table 43).

The home port states of Connecticut and Maine both experienced increases in the number of crew trips in 2012 (8.3% in CT; 1.9% in ME). All other home port states saw a decrease in the number of crew trips from 2011 to 2012, with New Jersey seeing the largest percentage decrease (15.2%). Decreases in 2012 crew trips for other home port states ranged from 3.8% to 6.7%. Crew trips were at a four year low in the home port states of Massachusetts, New Hampshire, New Jersey, New York and Rhode Island. (Table 44).

7.3. Number of Crew Days

Crew days, calculated by multiplying a trip's crew size by the days absent from port, were summed across vessel size categories and home port states to provide additional information about the time crew spend at sea to earn a share of the revenues. Because the number of trips affects the crew-days indicator, this indicator is also a measure of work opportunity. Conversely, crew days can be viewed as an indicator of time invested in the pursuit of "crew share" (the share of trip revenues received at the end of a trip). The time spent at sea has an opportunity cost. For example, if crew trips and crew earnings remain constant, a decline in crew days would reveal a benefit to crew in that less time was forgone for the same amount of earnings. The ratio of crew days to crew trips accounts for these factors. The absolute value of this ratio does not, in itself, provide information about opportunities for crew. However, annual

³⁷ For example, a vessel with three crew members that makes 10 trips a year is considered equivalent (with respect to crew positions) to a vessel with three crew members that makes 60 trips per year.

changes in the ratio are informative. For example, a declining trend in the ratio would imply a reduction in time spent per “earning opportunity” (a crew trip).

Total crew days for all vessel sizes combined decreased slightly (1.1%) from 2011 to 2012 for all vessels. Since total crew trips declined during the same time period at a higher rate (4.6%), the ratio of crew days to crew trips has increased. This suggests that, overall, the time spent per earning opportunity has increased, while at the same time earning opportunities have decreased. Total crew days decreased for all vessel size categories in 2012 with the exception of the 50’ to <75’ category, which saw a 1% rise (Table 43).

Total crew days declined in 2012 for the home port states of Massachusetts, New York, and Rhode Island, with New York experiencing the largest percent drop (7%). Connecticut, Maine, New Hampshire, and New Jersey all experienced increases in crew days in 2012 with Connecticut seeing the biggest percent increase (44%). Of all the home port states, only New York and Rhode Island had decreases in the ratio of crew days to crew trips in 2012. Connecticut had the largest increase in the ratio of crew days to crew trips in 2012 (33%) (Table 44). However, crew-based changes do not indicate, by themselves, whether crew incomes have changed. Crew income is influenced by many factors including a vessel’s revenue/cost sharing formula, the amount of revenue a vessel receives from fish sales, the costs of fishing, the number of vessels actively fishing, and the intensity of fishing.

8. NET REVENUES AND QUOTA TRADING

This section describes the actual trades of quota, both between and within sectors, as reported by sectors in their year-end reports to NERO. Data limitations, as well as the nature of trading in the market (trades are between sector members and not between vessels, per se), make it difficult to adjust individual vessel net revenues by additional income/cost from ACE trading, which is critical for understanding the full distribution of benefits from quota leasing. To accommodate for this, net revenues are summed to the sector member level (some sector members own multiple vessels) and observed ACE trades are used to estimate the additional economic implications attributable to participating in the quota market. That is, net revenues were estimated at the fishing trip level and then aggregated and reported at the vessel, sector member, and fleet levels. Since quota leasing costs/revenue cannot be calculated at the trip or vessel levels, only the sector member level net revenue estimates are adjusted for quota trading in this analysis.

8.1. Nominal Net Revenues

Nominal net revenues were estimated using trip costs³⁸ collected by Northeast Observers and At-Sea-Monitors, as well as other data sources. Net revenue is defined as gross revenue less trip costs. Typically, net revenue is then split between the vessel owner and the crew. Two types of net revenue analysis are provided: (1) yearly changes in average nominal net revenue per day; and (2) yearly changes in aggregate nominal net revenues for various vessel categories (vessel size and home port state categories).

³⁸ Trip costs are typically costs that vary with the amount of fishing effort such as fuel, bait, fishing hooks, etc.

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.³⁹ While analysis of the owner's share of net revenue is just one component of annual financial profit, it is indicative of economic performance (at least in the short run). See Figure 15 for a graphical depiction of the components of annual financial profit and the relationship between owner's share and profit.

Trip costs used in these analyses include: fuel, oil, ice, supplies, bait, food, water, damage, lumpers fees⁴⁰, and sector membership fees. There may be additional trip costs (e.g., communications costs or trucking fees) that must be covered. One important cost that has not been included in the estimation of nominal net revenue is the cost incurred by sector vessels to purchase additional groundfish ACE in 2010 - 2012, or to purchase DAS in 2009 (and 2010 - 2012 for common pool vessels). However, these costs and revenues are addressed later in this section of the report.

Because not all trips are observed, and therefore actual trip cost information is not available for all trips, trip costs must be estimated for the universe of trips using cost information from the sampled trips. To do this, trip cost data were used to calculate average trip costs per day absent for 80 vessel types, based on gear used, vessel length, trip duration (single vs. multi-day trips), and fishing year (Table 45). For unobserved trips where actual trip costs were not available (or the data were insufficient to link a vessel trip report (VTR) record with an observed trip), the appropriate vessel type mean value was multiplied by the actual trip length (days absent) recorded in the VTR. The result is an estimate of the cost for each of the unobserved trips. From these data, an estimate of nominal net revenue was obtained by subtracting the cost estimate from the actual nominal revenue received for the trip (all species landed). For trips where there was a direct match between the observed data and VTR data, actual trip costs were used.

An additional trip cost not collected by observers—but reported by most sectors in their 2010 through 2012 year-end reports—is the sector organizational cost charged to sector members. Based on the information in these reports (which are submitted to NMFS), a landings fee paid to the sector by sector members was calculated according to the formula provided in the year-end reports. For sectors that did not provide this information, a representative formula was used.

A variety of crew and owner share arrangements are used in the groundfish fishery, with different percentage splits between owner and crew, different costs deducted from net revenue, and different points within the formula where the split occurs (e.g., some vessel owners divide gross revenue first and then deduct certain costs from the crew's share of the gross revenue). Data from the SSB's 2011 fixed cost survey were used to determine common lay systems according to vessel size and number of crew.⁴¹ Information is not available to determine if a vessel was operated by the owner or a hired captain. For vessels less than 75' with a crew size (including the captain) less than three, it was assumed that the operator was the owner. If the

³⁹ Fixed costs are typically costs that do not vary with the amount of fishing effort such as insurance.

⁴⁰ Lumper fee information is not collected by observers. Based on personal communications with fishermen, a rate of \$0.04 per pound of landed weight is assumed.

⁴¹ For vessels greater than 75', half of the trip expenses were subtracted from gross revenue and the owner's share was 50% of the resulting amount. The crew paid the other half of the trip expenses from their share. Vessels 50' to 75' in length and with a crew of three or more used the same lay system as the large (75'+) vessels. If the number of crew was less than three, the owner's share was 75% of gross revenue less all trip expenses. For vessels less than 50', all trip expenses were deducted from gross revenues and the owner's share was 70% of the resulting net revenue. If resulting owner and/or crew shares were negative, they were assumed to be zero.

crew size was three or more, it was assumed that the operator was a hired captain. For vessels 75' and greater, it was assumed that the operator was a hired captain regardless of the crew size. Due to changes in the way owner and crew shares were calculated and because additional costs were considered, the net revenue results in this report will vary from those in previous reports.

8.1.1. *Average Owner and Crew Shares Per Day*

Average vessel owner and crew shares⁴² of nominal net revenue per day, by trip type (groundfish vs. non-groundfish) and vessel size category, are reported in Table 46 and Table 47. The data in these tables are not adjusted for leasing activity. In 2012, average owners' shares per day on groundfish trips were the highest in the time series for all but the largest vessel length class. For vessels less than 30' in length, average owner share per day on groundfish trips increased by \$565 per day (60.2%) from 2011 to 2012. Over the same time period, average owner share per day on groundfish trips increased by \$934 per day (26.6%) for vessels 30' to < 50' in length, and by \$3,263 per day (102.1%) for vessels 50' to <75' in length. However, in 2012 the average owner of vessels in the largest length class ($\geq 75'$) earned \$650 less per day on groundfish trips, a 27.4% decline from 2011 (Table 46).

Average crew share per man per day on groundfish trips was at a 4 year high in 2012 for the two smaller length classes of vessels, those <30' in length and those between 30' and <50' in length, at \$604 and \$1,549 per man per day, respectively. For vessels 50' to <75', crew share per day on groundfish trips was higher in 2012 (\$907) than in 2011 (\$861), but down from its 2009 peak (\$1,069). For the largest vessels, average crew share was at a four year low in 2012 at \$163 per man per day, a 40.3% decrease from 2011 (Table 46).

On non-groundfish trips, the average owner's share dropped from 2011 levels for all vessel size categories, except for owners in the 30' to <50' length class, who saw a \$131 per day increase (5.7%) to a four year high. Vessels less than 30' in length saw an 11.2% decrease in average owner's share per day on non-groundfish trips from 2011 to 2012, and vessels between 50' to less than 75' saw a 5.2% drop. Vessels in the largest length class ($\geq 75'$) experienced a \$73 per day decrease in average owner's share on non-groundfish trips (1.3%). Crew share per crew member per day followed a similar pattern. Crew share declined from 2011 to 2012 across vessel sizes, with the exception of the 30' to <50' length class, where average crew share modestly increased by \$34 (3.9%) (Table 47).

To help explain some of the factors behind net revenue changes, both average revenue per day and average trip costs per day are also provided in Table 46 and Table 47. In 2012, average revenue per day on groundfish trips were the highest in the time series for all but the largest vessel length class, which saw a \$1,414 (20.4%) decrease in average revenue per day on groundfish trips. Average trip costs per day on groundfish trips in 2012 remained stable for the smallest and the largest vessel size categories and increased for vessels 30' to <50' and 50' to >75' (Table 46). On non-groundfish trips, trip costs per day remained stable in 2012. Decreases occurred in average revenue per day on non-groundfish trips from 2011 to 2012 in all vessel length classes, except for vessels 30' to <50' in length. The decreases ranged from 4.1% to

⁴² The average share of nominal net revenue that individual crew members receive per day absent provides information about how they may be faring financially. This is a function of gross revenue, trip costs, the crew share system used, trip length, and the number of crew on the trip. All of this is captured in average crew's share of nominal net revenue per day per crew member.

17.0%. For vessels 30' to <50' in length, average revenue per day on non-groundfish trips increased 7.3% from 2011 to 2012 (Table 47).

8.1.2. *Average Owner and Crew Shares per Vessel*

Average owner and crew shares of nominal net revenues may also be expressed at the vessel level rather than per day (Table 48). For all vessel size categories, the average owner and crew shares declined from 2011 levels, but were not as low as most of the 2009 and 2010 levels. It should be noted that the average crew share values are independent of the number of crew – these are average amounts paid to the entire crew regardless of size. Also, crew shares are an expense for vessel owners and represent earnings for crew. It is possible that these declining crew earnings were shared by fewer crew (as is suggested by some of the increasing crew share per man per day values on groundfish trips as seen in Table 46).

8.1.3. *Aggregate Owner and Crew Shares*

Owner and crew shares of nominal net revenues aggregated by fleet segments (vessel size and homeport state) are presented in Table 49 and Table 50, and reflect the combined result of shifts in average vessel performance and the shifts of activity among fleet segments. Total owner shares decreased from \$143.1 million in 2011 to \$129.8 million in 2012. Total crew shares similarly declined from \$82.8 million in 2011 to \$75.5 million in 2012 (Table 50). For the 30' to <50' size category, total aggregate owner and crew shares were the lowest in the time series (Table 49).

Aggregate vessel owner and crew shares declined across all homeport states except Connecticut. In Connecticut, both aggregate owner and crew shares were at a four year high in 2012. Shares in Massachusetts, the state with the most groundfish activity, declined to the second lowest levels in the four year time series. For owners in Massachusetts, aggregate share declined by \$8.6 million (11.7%) from 2011 to 2012. Over the same time period, aggregate crew share in Massachusetts fell by \$4.8 million (10.9%) (Table 50). Given these declines in the aggregate measures of owner and crew shares, it appears that while improvements are being made on average returns per day on groundfish trips, reductions in quota and other factors limit how many of these higher average return days can be taken.

Fishery-wide impacts of quota trading on net revenues are neutral overall because aggregate quota costs equal aggregate quota revenues. However, quota trading has distributional effects that are evident by comparing the impact of quota trades on net revenues by certain sector member characteristics. In Section 8.3 below, the impact of quota trades on net revenues will be discussed.

8.2. Quota Trading

Trades between sectors are archived in a database by the National Marine Fisheries Service (NMFS). Trades within sector are not tracked by NMFS; ACE is assigned to a sector with no restrictions on how and by whom it may be fished. However, sectors are asked to voluntarily report their within sector trades in reports submitted to NMFS at the end of each fishing year. Sectors also voluntarily report which sector members transfer quota out of the sector and which sector members receive quota from another sector. Not all sectors report these

within and between sector trades in the same fashion, but the self-reported data are illuminating and form a sufficient foundation for this analysis. However, if improvements can be made in quota trade reporting, a more accurate accounting of profitability in the fishery could be achieved without reliance on simulation.

Seventeen of twenty sectors⁴³ provided a member identification number and a cross-link to the moratorium right identification (MRI⁴⁴) numbers associated with each sector member. These links are essential for associating sector member characteristics to quota trade data. Many sector members own multiple vessels but the data do not distinguish which permits were responsible for leasing in, or out, quota. In addition, fishing permits can be associated with different MRIs, due to ownership changes and other reasons, and can move in and out of confirmation of permit history (CPH) status.⁴⁵ This further complicates associating vessels with actual quota trades.

As a result of these data limitations, we limit our analysis of quota trade impacts on net revenue at the sector member level. To do this, we first report average owner and crew share of net revenue by type of sector member. Sector member types are characterized by the number of vessels (excluding permits in CPH) each member has enrolled in the sector and the average length of those vessels. Average shares are expressed at the sector member but also at the vessel level (by dividing the member's net revenue by the number of vessels owned) in order to make comparisons across types. Next, average revenues (average cost if the value is negative) from quota trades are reported by the same sector member types. Average net revenues are then adjusted by the average revenues/costs from quota trading.

The average net revenues adjusted for quota trading are only for sector members that were identified in the sector year-end reports, resulting in the averages being based on a subset of the population of sector members. In contrast, net revenues reported in Section 8.1 earlier in this report are based on the full population of active vessels (not sector member based) and include common pool vessels. The average revenues/costs from quota trading are also based on a subset of all quota traders due to data limitations.

The values of quota traded are based on species and stock-level lease prices from the hedonic model, which were discussed earlier in Section 5.2 of this report. This means that, for this analysis, all trades of a given stock are assumed to be at a constant price -- an admittedly weak assumption given that supply and demand for quota leases vary dynamically but one that cannot be avoided at this time. This analysis does not capture, for example, the effect of a sector member buying Gulf of Maine cod at a low price in the beginning of the fishing year and selling it for a higher price at the end of the fishing year.

Except for Figure 16 and Figure 17, quota trade summaries are net of all transactions. That is, the net position for any given sector (or any given sector member) for any given stock is represented.⁴⁶ The value of quota transferred around throughout the course of the 2012 fishing year totaled \$14.1 million. But once all sales and purchases are netted out for each sector

⁴³ Two of the three sectors that did not provide member information were the permit banks. These sectors operate differently from traditional sectors in that they acquire permits for the sole purpose of leasing the quota to other sectors and so the permit bank is the owner of record.

⁴⁴ A NMFS generated number that tracks the potential sector contribution (PSC) of each sector member.

⁴⁵ CPH provides a temporary holding place for inactive permits while allowing the fishing history (and ultimately the quota) to be used on another permit.

⁴⁶ For example, even though a sector member may have carried out 20 different trades during the fishing year for Gulf of Maine cod quota, we only report the final annual balance of Gulf of Maine cod quota (which will either be a net financial gain or net cost) for that vessel after all of the trades for the year have been tallied.

member, a total of \$11.2 million worth of quota was transferred from net lessors of quota to net lessees of quota. In cases of multiple vessel ownership, quota was transferred internally -- in effect, a paper transaction. That is, if a vessel owner transfers quota from one of his vessels to another, he (they) simultaneously paid for quota and received revenue from quota, resulting in a wash. These types of trades were not reported by sectors in their year-end reports. This characteristic of the market further supports estimating quota trading impacts at the sector member level.

8.2.1. Observed Quota Trading

The total value of quota traded between sectors in fishing year 2012 was \$6.2 million. Figure 16 shows the values of the quota leased out, leased in, and the net result for each sector. The Fixed Gear Sector and Northeast Fishery Sector 4 (a lease only sector) were the two largest net lessors of quota in terms of value. Northeast Fishery Sector 2 and Northeast Fishery Sector 9 were the two largest net lessees of quota.

The total value of quota traded within sectors in fishing year 2012 was \$7.9 million.⁴⁷ Figure 17 shows the value of quota traded within each sector by stock. In value terms, Northeast Fishery Sector 9, Northeast Fishery Sector 2, and the Sustainable Harvest Sector 1 exhibited the largest amount of internal trading. Georges Bank winter flounder was the stock with the highest value of quota traded. Note that the within sector trade data do not capture quota that may have been transferred between vessels owned by the same sector member.

After calculating net quota trading positions at the sector member level, the within-sector and between-sector trades were combined into one data set. The results are summarized at the sector/stock level in Figure 13 and Figure 14. The net value of quota leased out (revenue) totaled \$11.2 million (Figure 13). The Sustainable Harvest Sector 1 obtained \$2.0 million of quota revenue, followed closely by Northeast Fishery Sector 9 (\$1.9 million) and the Northeast Fishery Sector 4 (\$1.7 million). The value of quota leased in (expenditures) also totaled \$11.2 million (Figure 14). The two largest buyers of quota, both from within their own sector and from other sectors was Northeast Fishery Sector 9 (\$2.8 million), followed by members of the Sustainable Harvest Sector 1 (\$1.8 million) and the Northeast Fishery Sector 2 (\$1.6 million). The stocks with the highest net transfer values were Georges Bank winter flounder (\$1.9) million, white hake (\$1.8 million), Gulf of Maine cod (\$1.6 million), and Georges Bank cod West (\$1.6 million).

The quota revenue from all vessels with positive net quota trading positions (net lessors of quota), as well as the quota costs from all vessels with negative net quota trading positions (net lessees of quota), were summed by sector along with final net positions (Figure 20). The two sectors with the largest net quota expenditures were Northeast Fishery Sector 9 (\$1.0 million) and Northeast Fishery Sector 2 (\$0.9 million). The two sectors with the largest net quota revenues were Northeast Fishery Sector 4 (\$1.7 million) and the Fixed Gear Sector (\$1.0 million).

⁴⁷ The values of quota traded between and within sectors (a total of \$14.1 million) in Figures 14 and 15 are not net results -- these values reflect total quota trading activity.

8.3. Adjustments to Net Revenue for Leasing Activity

The report on FY2011 quota trading (Kitts and Demarest 2013) simulated the market in order to adjust net revenues for quota costs at the fishing vessel level. The simulation was performed again using FY2012 data, but the results did not correspond with the observed data – even after changing some of the assumptions. As a result, that approach was abandoned and the approach of adjusting sector member average net revenues by average quota trading revenues/costs, described above, was used instead.

The number of sector member types was limited to twelve (four average vessel length categories and three vessel ownership categories). Further disaggregation resulted in too few members per type for reporting averages. However, Table 51 provides an indication of the geographic distribution of sector members as well as how many members of each type also held CPH permits, which are important sources of quota. Within Table 51 are counts of the total population of members, how many of those traded quota, and how many members fished in FY2012. Overall, there were 533 sector members, of which 417 traded quota and 374 engaged in fishing. The majority of sector members (82%) own a single vessel.

Table 52 provides the average owner and crew share of net revenue for the sub-component of identifiable sector members. The per-vessel averages are comparable to those in Table 48. Table 53 provides the average revenue (cost if value is negative) from quota trading by sector member type. Average values in Table 52 and Table 53 are summed in Table 54 to show the net revenues adjusted by quota trading. Information is currently not available about the degree to which quota costs are absorbed by crew. Therefore, we assume the owner pays all quota costs and do not make adjustments to average crew shares in Table 54.

Reductions in the average owner share of net revenue per vessel due to quota costs range from 3.9% to 25.7%. Sector members that own a single vessel less than 30' in length were net sellers of quota and their average net revenues increased by 167.1%. The average net revenue for sector members that own two vessels and the average length of those vessels is less than 30' increased by 17.0% (Table 54).

In addition to the net sellers of quota that also fished, mentioned above, there were sector members who did not fish for allocated groundfish and were net sellers of quota. About a third of the vessels enrolled in sectors do not catch allocated groundfish and lease their quota to other vessels that were catching allocated groundfish. This does not necessarily imply that vessels that did not catch allocated groundfish were not fishing at all or that those vessels that purchased quota caught the entire amount of quota they bought. Average revenue for the members that leased quota out ranged from \$4,900 to \$48,287 (Table 55). It is likely that there were more members who did not catch allocated groundfish and received revenue from selling quota that could not be identified -- and so were not included in Table 52.

For vessels that need quota in order to fish, obtaining quota is a true cost and the financial significance of that cost becomes greater with declining net revenues. Because the method for estimating the impact of quota trading changed, it is difficult to make direct comparisons between FY2011 and FY2012. Nevertheless, the percentage reduction in net revenues from quota purchases remained at similar levels of about 6% to 8% for most categories examined. The 2012 analysis did show a wider range of impacts for some components – as low as a 3.9% decrease in one case and as high as a 25.7% decrease in another.

While the choice to use average quota trading revenues and costs to show quota trading impacts was driven primarily by difficulties with the simulation, this study also highlights that

profitability (or indicators of profitability) might best be measured at the sector member level, rather than at the vessel level. Sector members use vessels for different purposes – some vessels are held for the associated PSC while others are used to fish. Additionally, some complex vessel ownership networks might share resources. Both factors argue for re-thinking how financial viability is typically measured in this fishery.

9. CONCLUDING REMARKS

Our analyses of fishery performance measures of the limited access Northeast Multispecies (Groundfish) Fishery showed marked changes in the fishery during 2011-2012, with many of the positive economic trends observed in last year's groundfish performance report reversing their course in 2012. After increasing in 2011, landed pounds of groundfish are at their lowest point in 2009-2012 for all vessels. Non-groundfish landings are at a four year high, but grew less than 1% from their 2011 levels. Non-groundfish landings and revenues did not compensate for losses in groundfish landings and revenues. This is because non-groundfish landings have not increased significantly and because average non-groundfish price has fallen to its lowest level in the past three years. Overall, total landings have fallen by 5.4% and total gross nominal revenue declined by 7.7% from 2011.

Fishermen actively groundfishing in the Northeast are a shrinking group. The total number of active groundfish vessels continues to contract, with a reduction of 152 vessels over 2009-2012, and 165 fewer vessels taking groundfish trips in 2012 than in 2009. For those vessels remaining in the fishery, the percentage enrolled in sectors is increasing, while the percentage remaining in the common pool is declining. In addition, there are 119 fewer active vessel affiliations in 2012 than there were in 2009. Opportunities for vessel crew are decreasing except for a few limited instances. Overall, there is less effort targeting groundfish in the fishery: fewer boats taking groundfish trips and fewer groundfish trips. However, when fishermen are able to fish, in many cases, their trips appear to be longer. Economic indicators of net revenue suggest that average earnings per day are improving for groundfish trips. However, fishermen may face various limitations in the number of groundfish trips they are able to take, in the form of quota restrictions or other constraints, as aggregate owner's share of net revenue on groundfish trips has declined for most vessels.

Consolidation in the fishery continues, as all species and groundfish revenues are earned by smaller numbers of vessels and vessel affiliations. The high level of concentration of revenues earned by fishermen for all species, and especially for groundfish, continues to persist. The potential movement of the fishery in 2011 towards more equitable distributions of all species and groundfish revenues appears to have come to a standstill in 2012.

In the past year, the Northeast Fisheries Science Center (NEFSC) moved closer to understanding the profitability of different segments of the fleet by expanding its analysis of net revenue to reflect the impacts of leasing activity. For example, sector members that own one vessel with a length of 30' to < 50' are net buyers of quota and their average owner share of net revenue per vessel is reduced by about 5% as a result of this cost. Sector members that own one vessel with a length of <30' are net sellers of quota, and their average owner share of net revenue per vessel is increased by about 167% from revenues earned by selling quota. Reductions in average owner share of net revenue per vessel due to quota costs range from 3.9% to 25.7% based on sector member type, with type being based on number of vessels owned and average vessel size.

The NEFSC continues its work to provide more and better information on the impacts occurring in the groundfish fishery, as well as other Northeast fisheries. NEFSC staff are analyzing cost data recently collected from our survey of commercial fishing vessels for costs incurred in 2011 and 2012, and they are making those data available to NEFMC staff for the analysis of proposed management actions. Those data are especially important because they contain information about the fixed, or non-trip, costs associated with running a commercial fishing business, which is necessary to understand profit. Fixed costs may vary considerably depending on vessel size and primary gear type, among other factors. The NEFSC has also recently collected socio-economic data from vessel owners and vessel crew across fisheries, to better understand how regulations across fisheries affect fishermen in their work and also in their daily lives as individuals and community members. These data will enable further development of governance, stewardship, and well-being performance indicators. In addition, the socio-economic survey of vessel crew will provide needed demographic data on crew (which currently do not exist) and help to better understand how compensation to crew may be changing as fishing regulations change. NEFSC staff are also engaged in work to automate the production of basic performance measures for the Northeast's catch share and non-catch share fisheries, which will enable us to provide basic performance indicators for the other fisheries in the Northeast in a more widespread and timely manner.

Finally, these findings apply to the active participants that have remained in the groundfish fishery. However, they tell us little about the participants that are no longer actively fishing. The NEFSC is currently engaged in ethnographic research to be able to report on the social and economic experiences of fishermen that have transitioned out of the groundfish fishery into other fishing and non-fishing related activities.

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This report is produced through the collaborative efforts of several Social Science Branch (SSB) staff, and our work with staff in the Northeast Regional Office's Analysis and Program Support Division. However, the primary author for this year's report would like to call attention to some more extensive efforts led by particular co-authors that have pushed forward the NEFSC's ability to report on the economic performance of the groundfish fleet. Co-author John Walden calculated the Malmquist Index to measure fleet productivity and continues his research on measuring productivity and profitability in the Northeast's fisheries (see Walden and Kitts, 2013). Co-author Andrew Kitts was the lead author of the first annual groundfish report (Kitts et al. 2011) and is the sole author of Section 8 of this report, which accounts for the impacts of leasing activity on the distribution of net revenues received by the groundfish fleet. This has been

one of the NEFSC's goals for some time, and being able to incorporate this information into the annual economic performance report is a major step towards a fuller understanding of the profitability of groups within the groundfish fleet. Co-author Chad Demarest is the sole author of Section 5, which describes quota leasing activity in the fishery, and sets the stage for Kitts' work in Section 8. Finally, co-authors Daniel Cales (NERO) and David Records (NEFSC/SSB) worked together to identify issues within the DMIS data tool and correct for them appropriately, resulting in a more accurate dataset on groundfish vessels and therefore improving the information contained within this report for FY2009 to FY2012.

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

	2009	2010	2011	2012
Landed Pounds				
Groundfish	68,416,222	58,178,065	61,661,450	46,295,753
Non-Groundfish	185,631,323	174,269,060	211,226,012	211,983,492
Total Pounds	254,047,546	232,447,125	272,887,462	258,279,245
Gross Revenue				
Groundfish	\$82,510,132	\$83,177,330	\$90,453,455	\$69,778,174
(in 2010 dollars*)	(\$83,386,467)	(\$83,177,330)	(\$88,658,472)	(\$67,252,170)
Non-Groundfish	\$180,396,477	\$210,631,484	\$240,364,488	\$235,730,686
(in 2010 dollars*)	(\$182,312,457)	(\$210,631,484)	(\$235,594,629)	(\$227,197,123)
Total Revenue	\$262,906,608	\$293,808,814	\$330,817,943	\$305,508,860
(in 2010 dollars*)	(\$265,698,924)	(\$293,808,814)	(\$324,253,101)	(\$294,449,293)

* Deflated by the calendar year 2010 Q2 GDP Implicit Price Deflator

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

	2009	2010	2011	2012
Landed Pounds				
Groundfish	68,362,567	58,067,026	61,520,629	46,238,230
Non-Groundfish	30,965,367	23,147,600	28,781,804	27,527,755
Total Pounds	99,327,934	81,214,627	90,302,433	73,765,985
Gross Revenue				
Groundfish	\$82,456,833	\$82,964,771	\$90,237,532	\$69,669,582
Non-Groundfish	\$25,862,188	\$22,339,660	\$31,826,744	\$25,768,848
Total Revenue	\$108,319,021	\$105,304,431	\$122,064,276	\$95,438,430

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

		Year			
		2009	2010	2011	2012
CT		\$3,876,483	\$4,266,665	\$6,282,536	\$8,658,251
MA		\$159,198,374	\$174,170,552	\$193,090,182	\$177,269,456
	BOSTON	\$10,577,434	\$14,208,752	\$15,105,220	\$13,727,435
	CHATHAM	\$7,874,349	\$7,432,578	\$9,261,558	\$7,403,171
	GLOUCESTER	\$39,363,574	\$39,738,431	\$42,792,393	\$32,171,692
	NEW BEDFORD	\$84,328,951	\$95,738,111	\$108,908,183	\$104,719,496
ME		\$16,969,818	\$18,676,179	\$19,099,629	\$19,845,102
	PORTLAND	\$6,994,544	\$6,333,857	\$7,608,289	\$8,441,214
NH		\$7,245,715	\$6,926,691	\$7,297,566	\$6,403,783
NJ		\$19,024,850	\$24,262,761	\$28,516,893	\$25,482,504
NY		\$18,303,108	\$21,329,860	\$24,546,112	\$20,446,772
RI		\$26,948,520	\$30,214,760	\$37,015,172	\$33,717,704
	POINT JUDITH	\$19,270,491	\$22,037,568	\$28,310,890	\$24,829,830
Other Northeast		\$11,339,742	\$13,961,346	\$14,969,852	\$13,685,288
Grand Total		\$262,906,608	\$293,808,814	\$330,817,943	\$305,508,860

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

		Year			
		2009	2010	2011	2012
CT		\$3,823,487	\$5,524,100	\$5,156,483	\$8,532,052
MA		\$140,139,086	\$149,384,563	\$168,619,962	\$151,911,932
	BOSTON	\$26,424,512	\$27,717,001	\$31,669,685	\$27,595,366
	CHATHAM	\$6,347,821	\$6,469,012	\$8,993,091	\$6,811,320
	GLOUCESTER	\$23,519,351	\$24,968,230	\$26,414,870	\$22,588,810
	NEW BEDFORD	\$58,467,580	\$64,952,370	\$77,437,591	\$70,662,174
ME		\$26,250,187	\$31,169,768	\$29,637,709	\$27,838,421
	PORTLAND	\$10,533,770	\$12,936,008	\$12,832,447	\$11,720,115
NH		\$8,611,098	\$7,660,492	\$9,140,737	\$7,892,358
NJ		\$17,281,627	\$20,271,053	\$24,434,492	\$24,460,607
NY		\$22,735,132	\$27,332,472	\$32,189,248	\$28,026,676
RI		\$29,510,156	\$35,162,487	\$41,685,841	\$37,174,232
	POINT JUDITH	\$19,387,495	\$22,873,562	\$28,541,804	\$25,729,479
Other Northeast		\$14,555,836	\$17,303,879	\$19,953,471	\$19,672,581
Grand Total		\$262,906,608	\$293,808,814	\$330,817,943	\$305,508,860

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

		Year			
		2009	2010	2011	2012
CT		\$41,749	\$13,322	\$46,180	\$86,809
MA		\$70,477,201	\$73,618,437	\$77,997,852	\$57,581,433
	BOSTON	\$8,467,722	\$11,747,523	\$12,408,924	\$11,648,886
	CHATHAM	\$3,148,231	\$2,164,906	\$2,408,750	\$998,562
	GLOUCESTER	\$29,970,256	\$27,712,592	\$29,781,901	\$21,098,897
	NEW BEDFORD	\$24,009,818	\$29,350,115	\$30,212,657	\$21,704,387
ME		\$5,557,319	\$4,360,791	\$5,987,244	\$6,733,627
	PORTLAND	\$4,556,200	\$3,464,647	\$4,867,700	\$5,744,995
NH		\$4,157,091	\$3,269,457	\$4,312,427	\$3,258,427
NJ		\$31,677	\$24,789	\$21,616	\$32,777
NY		\$303,333	\$252,644	\$78,878	\$213,770
RI		\$1,938,459	\$1,635,316	\$2,008,929	\$1,867,391
	POINT JUDITH	\$1,804,894	\$1,532,894	\$1,938,575	\$1,750,923
Other Northeast		\$3,302	\$2,575	\$330	\$3,940
Grand Total		\$82,510,132	\$83,177,330	\$90,453,455	\$69,778,174

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

		Year			
		2009	2010	2011	2012
CT		\$125,910	\$55,713	\$47,432	\$15,039
MA		\$58,804,982	\$59,304,500	\$65,839,086	\$49,311,981
	BOSTON	\$13,706,766	\$14,478,775	\$17,515,777	\$13,210,769
	CHATHAM	\$2,733,282	\$2,370,433	\$2,572,766	\$942,609
	GLOUCESTER	\$16,756,478	\$16,796,745	\$17,041,066	\$14,273,175
	NEW BEDFORD	\$15,776,027	\$18,238,320	\$20,633,050	\$15,614,574
ME		\$13,589,256	\$14,919,082	\$15,137,260	\$13,631,908
	PORTLAND	\$8,403,921	\$10,631,179	\$10,176,772	\$8,841,043
NH		\$5,093,512	\$3,699,058	\$4,648,451	\$3,392,628
NJ		\$412,272	\$309,178	\$122,822	\$55,365
NY		\$754,517	\$1,099,266	\$1,398,333	\$727,240
RI		\$3,027,940	\$3,246,200	\$2,893,937	\$2,517,265
	POINT JUDITH	\$2,238,699	\$2,402,951	\$2,030,127	\$1,864,807
Other Northeast		\$701,742	\$544,332	\$366,134	\$126,746
Grand Total		\$82,510,132	\$83,177,330	\$90,453,455	\$69,778,174

Table 8. Nominal value and landed pounds of 9 allocated groundfish species* landed by limited access groundfish vessels (May through April)

	2009	2010	2011	2012
COD	\$28,446,288	\$26,553,996	\$30,929,762	\$16,866,540
(GADUS MORHUA)	19,344,854	12,149,233	14,001,384	6,691,210
POLLOCK	\$10,400,396	\$10,035,689	\$13,072,377	\$12,732,684
(POLLACHIUS VIRENS)	13,348,179	10,686,394	14,570,163	12,299,481
HADDOCK	\$16,895,423	\$20,721,224	\$13,937,537	\$5,276,981
(MELANOGRAMMUS AEGLEFINUS)	15,339,234	16,637,209	8,280,292	2,208,058
REDFISH / OCEAN PERCH	\$1,552,536	\$2,497,137	\$3,617,672	\$4,425,714
(SEBASTES FASCIATUS)	3,191,125	4,300,446	5,558,572	8,022,742
FLOUNDER, WINTER / BLACKBACK	\$7,520,166	\$6,548,969	\$8,210,597	\$9,521,815
(PSEUDOPLEURONECTES AMERICANUS)	4,517,751	3,248,264	4,574,725	4,809,597
HAKE, WHITE	\$4,053,519	\$4,938,927	\$6,218,217	\$6,978,107
(UROPHYCIS TENUIS)	3,389,063	3,727,193	4,943,958	3,998,372
FLOUNDER, YELLOWTAIL	\$4,968,367	\$3,854,584	\$5,706,004	\$4,827,020
(LIMANDA FERRUGINEA)	3,716,632	2,971,150	4,465,081	3,216,227
FLOUNDER, AMERICAN PLAICE /DAB	\$4,294,004	\$4,362,370	\$4,517,442	\$4,984,098
(HIPPOGLOSSOIDES PLATESSOIDES)	3,281,759	2,973,364	3,174,698	3,008,004
FLOUNDER, WITCH / GRAY SOLE	\$4,094,349	\$3,572,367	\$4,071,589	\$3,977,682
(GLYPTOCEPHALUS CYNOGLOSSUS)	2,101,941	1,466,900	2,061,719	2,016,867

* Sorted descending by landings over four years.

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

	2009	2010	2011	2012
HERRING, ATLANTIC	\$3,412,894	\$2,866,986	\$6,468,603	\$7,257,862
(CLUPEA HARENGUS)	33,810,058	23,380,003	55,337,082	55,142,543
SKATES(RACK)	\$6,923,114	\$4,996,044	\$6,700,223	\$5,276,598
(RAJIDAE)	24,019,955	17,059,045	20,249,347	18,164,533
MENHADEN	\$734,164	\$1,316,779	\$1,978,133	\$1,999,103
(BREVOORTIA TYRANNUS)	10,485,239	18,468,274	22,198,691	23,717,716
SQUID (LOLIGO)	\$14,811,640	\$18,008,358	\$20,021,817	\$23,130,245
(LOLIGO PEALEI)	15,566,879	16,415,884	15,527,094	21,022,119
HAKE, SILVER	\$8,466,465	\$11,146,497	\$10,875,399	\$9,611,239
(MERLUCCIIUS BILINEARIS)	17,092,258	17,420,218	16,358,165	14,432,688
DOGFISH SPINY	\$1,889,011	\$1,608,960	\$1,991,215	\$2,706,741
(SQUALUS ACANTHIAS)	8,058,136	7,394,636	8,956,433	12,581,652
SCALLOP, SEA	\$60,847,600	\$72,225,000	\$89,485,717	\$90,007,426
(PATINOPECTEN, PLACOPECTEN SP)	9,489,648	8,385,065	8,930,730	8,933,823
SCUP	\$3,756,327	\$4,731,736	\$6,846,405	\$6,300,781
(STENOTOMUS CHRYSOPS)	6,150,777	7,882,060	10,366,649	11,220,083
LOBSTER	\$28,668,850	\$33,854,142	\$29,495,691	\$31,473,421
(HOMARUS AMERICANUS)	8,208,689	8,717,723	7,494,936	8,596,170
SQUID (ILLEX)	\$1,482,979	\$1,639,236	\$4,186,998	\$1,415,164
(ILLEX ILLECEBROSUS)	9,006,472	6,324,303	11,098,547	5,070,033
MONKFISH	\$14,040,578	\$14,954,785	\$21,517,365	\$14,847,573
(LOPHIUS AMERICANUS)	7,518,463	6,612,111	8,482,699	7,087,713

* Sorted descending by landings over four years.

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

	2009	2010	2011	2012
As of May 1 each Fishing Year:				
Total groundfish limited access eligibilities	1464	1441	1422	1408
Eligibilities held as Confirmation of Permit History	81	94	168	228
During any part of the fishing year*:				
Total eligible vessels	1,459	1,409	1,321	1,223
Eligible vessels that did not renew a limited access groundfish permit	28	26	42	46
Vessels with a limited access groundfish permit	1,431	1,383	1,279	1,177
While under a limited access groundfish permit:				
... those with revenue from any species**	916	854	776	764
... those with revenue from at least one groundfish trip	566	445	419	401
... those with no landings	515	529	503	413
Percent of inactive (no landings) vessels	(36%)	(38%)	(39%)	(35%)

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

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

**Active vessels in this report received revenue from any species while fishing under a limited access groundfish permit

Table 11. Number of vessels with revenue from any species (all trips) by home port state.

		Fishing Year			
		2009	2010	2011	2012
Home Port State/City					
CT		12	11	11	10
MA		459	423	378	375
	BOSTON	62	52	49	47
	CHATHAM	42	43	39	38
	GLOUCESTER	110	105	91	92
	NEW BEDFORD	86	69	70	69
ME		112	102	88	95
	PORTLAND	17	17	16	18
NH		53	50	46	41
NJ		61	56	49	47
NY		95	93	91	88
RI		93	86	83	77
	POINT JUDITH	48	45	44	44
OTHER NORTHEAST		34	36	34	37
Grand Total*		916	854	776	764

* Note: State vessel counts may exceed the grand total vessel count because vessels may change home port during the fishing year.

Table 12. Number of vessels with revenue from at least one groundfish trip by home port state.

		Fishing Year			
		2009	2010	2011	2012
Home Port State/City					
CT		8	7	5	5
MA		310	238	224	207
	BOSTON	46	35	34	28
	CHATHAM	28	26	26	23
	GLOUCESTER	97	74	70	61
	NEW BEDFORD	51	33	37	36
ME		64	43	47	51
	PORTLAND	15	15	15	16
NH		40	32	29	25
NJ		26	21	17	11
NY		47	40	42	43
RI		61	55	49	54
	POINT JUDITH	33	31	28	33
OTHER NORTHEAST		12	10	8	6
Grand Total*		566	445	419	401

* Note state vessel counts may exceed the grand total vessel count because vessels may change home port during the fishing year.

Table 13. Number of vessels with revenue from any species by vessel size category.

	Fishing Year			
	2009	2010	2011	2012
Less than 30'	73	65	51	48
30' to < 50'	478	455	398	396
50' to < 75'	236	217	211	205
75' and above	129	117	116	115
Grand Total	916	854	776	764

Table 14. Number of vessels with revenue from at least one groundfish trip by vessel size category.

	Fishing Year			
	2009	2010	2011	2012
Less than 30'	34	24	20	16
30' to < 50'	305	240	216	206
50' to < 75'	157	118	117	115
75' and above	70	63	66	64
Grand Total	566	445	419	401

Table 15. Effort by active vessels (May through April)

	2009	2010	2011	2012
Less than 30'				
Number of Groundfish Trips	435	136	275	192
Number of non-groundfish Trips	1,556	1,465	1,161	1,093
Number of days absent on groundfish trips	163	61	102	74
Number of days absent on non-groundfish trips	509	470	376	314
Average trip length on groundfish trips * (standard deviation)	0.38 (0.18)	0.45 (0.13)	0.37 (0.12)	0.39 (0.14)
Average trip length on non-groundfish trips * (standard deviation)	0.35 (0.21)	0.33 (0.14)	0.33 (0.11)	0.32 (0.11)
30' to <50'				
Number of Groundfish Trips	19,193	9,263	11,122	9,745
Number of non-groundfish Trips	21,781	23,504	20,364	20,169
Number of days absent on groundfish trips	8,923	5,366	6,611	5,981
Number of days absent on non-groundfish trips	8,393	9,246	8,117	8,190
Average trip length on groundfish trips * (standard deviation)	0.47 (0.56)	0.58 (0.66)	0.59 (0.72)	0.61 (0.75)
Average trip length on non-groundfish trips * (standard deviation)	0.43 (0.49)	0.43 (0.36)	0.42 (0.35)	0.43 (0.33)

Table 15, continued. Effort by active vessels (May through April)

	2009	2010	2011	2012
50' to <75'				
Number of Groundfish Trips	4,957	2,838	3,381	3,416
Number of non-groundfish Trips	11,089	11,197	9,977	9,124
Number of days absent on groundfish trips	8,384	5,871	6,927	6,520
Number of days absent on non-groundfish trips	13,072	12,636	11,643	11,983
Average trip length on groundfish trips *	1.70	2.08	2.05	1.91
(standard deviation)	(2.29)	(2.45)	(2.48)	(2.34)
Average trip length on non-groundfish trips *	1.21	1.14	1.17	1.33
(standard deviation)	(1.75)	(1.64)	(1.68)	(1.86)
75' and above				
Number of Groundfish Trips	1,312	1,237	1,180	1,143
Number of non-groundfish Trips	2,747	2,323	2,173	2,137
Number of days absent on groundfish trips	7,135	7,103	7,826	7,360
Number of days absent on non-groundfish trips	9,632	9,001	7,861	8,146
Average trip length on groundfish trips *	5.49	5.75	6.63	6.44
(standard deviation)	(3.06)	(2.79)	(2.86)	(2.82)
Average trip length on non-groundfish trips *	3.67	3.96	3.66	3.91
(standard deviation)	(3.42)	(3.54)	(3.26)	(3.34)

Table 15, continued. Effort by active vessels (May through April)

	2009	2010	2011	2012
All Vessels				
Number of Groundfish Trips	25,897	13,474	15,958	14,496
Number of non-groundfish Trips	37,173	38,489	33,675	32,523
Number of days absent on groundfish trips	24,605	18,401	21,465	19,935
Number of days absent on non-groundfish trips	31,606	31,352	27,997	28,632
Average trip length on groundfish trips *	0.96	1.37	1.35	1.38
(standard deviation)	(1.74)	(2.14)	(2.20)	(2.19)
Average trip length on non-groundfish trips *	0.92	0.86	0.86	0.92
(standard deviation)	(1.66)	(1.56)	(1.52)	(1.62)

*This is the average trip length of all individual trips that have non-missing values for days absent. Since some trip records have missing values for days absent, average trip length reported here may be higher than what is obtained by dividing the overall number of days absent by the overall number of trips.

Table 16. Average nominal revenue per active vessel (May through April)*

	2009	2010	2011	2012
Less than 30'				
Average all species revenue per vessel on groundfish trips	\$8,208	\$7,195	\$9,634	\$14,459
(standard deviation)	(\$15,044)	(\$27,083)	(\$20,580)	(\$35,396)
Average all species revenue per vessel on non-groundfish trips	\$9,860	\$14,042	\$14,278	\$15,022
(standard deviation)	(\$26,414)	(\$34,673)	(\$44,505)	(\$27,923)
30' to <50'				
Average all species revenue per vessel on groundfish trips	\$120,866	\$110,165	\$148,303	\$119,707
(standard deviation)	(\$118,072)	(\$121,634)	(\$157,093)	(\$134,808)
Average all species revenue per vessel on non-groundfish trips	\$74,800	\$95,563	\$100,704	\$100,738
(standard deviation)	(\$91,734)	(\$109,232)	(\$114,397)	(\$118,125)
50' to <75'				
Average all species revenue per vessel on groundfish trips	\$221,112	\$273,689	\$329,833	\$262,878
(standard deviation)	(\$259,229)	(\$351,456)	(\$396,946)	(\$319,996)
Average all species revenue per vessel on non-groundfish trips	\$292,441	\$371,226	\$450,775	\$455,205
(standard deviation)	(\$294,079)	(\$397,378)	(\$471,700)	(\$446,283)
75' and above				
Average all species revenue per vessel on groundfish trips	\$520,872	\$736,459	\$776,481	\$629,945
(standard deviation)	(\$442,325)	(\$609,679)	(\$623,663)	(\$500,333)
Average all species revenue per vessel on non-groundfish trips	\$650,153	\$930,269	\$1,101,180	\$1,158,690
(standard deviation)	(\$524,750)	(\$642,562)	(\$747,609)	(\$781,542)

*Mean values should be taken in context with standard deviations, as some standard deviations are relatively high.

Table 17. Average nominal revenue per day absent (May through April)*

	2009	2010	2011	2012
Less than 30'				
Average revenue per day on groundfish trips	\$1,888	\$2,499	\$1,917	\$2,804
(standard deviation)	(\$2,674)	(\$3,505)	(\$2,158)	(\$2,888)
Average revenue per day on non-groundfish trips	\$1,274	\$1,856	\$1,849	\$1,756
(standard deviation)	(\$1,737)	(\$3,110)	(\$2,346)	(\$2,339)
30' to <50'				
Average revenue per day on groundfish trips	\$5,194	\$6,169	\$6,005	\$7,706
(standard deviation)	(\$12,235)	(\$7,060)	(\$9,658)	(\$43,173)
Average revenue per day on non-groundfish trips	\$3,427	\$4,155	\$4,246	\$4,557
(standard deviation)	(\$8,804)	(\$7,813)	(\$4,980)	(\$14,343)
50' to <75'				
Average revenue per day on groundfish trips	\$6,808	\$7,277	\$6,843	\$9,980
(standard deviation)	(\$55,271)	(\$11,991)	(\$12,540)	(\$58,543)
Average revenue per day on non-groundfish trips	\$4,833	\$5,463	\$6,933	\$6,651
(standard deviation)	(\$7,672)	(\$9,808)	(\$9,745)	(\$7,085)
75' and above				
Average revenue per day on groundfish trips	\$6,227	\$6,950	\$6,919	\$5,505
(standard deviation)	(\$17,126)	(\$7,420)	(\$5,110)	(\$3,151)
Average revenue per day on non-groundfish trips	\$7,701	\$9,327	\$16,377	\$13,596
(standard deviation)	(\$29,232)	(\$16,874)	(\$144,278)	(\$20,139)

*Mean values should be taken in context with standard deviations, as some standard deviations are relatively high.

Table 18. Malmquist Chained Index (2007=1) of productivity change for all vessels

	2007	2008	2009	2010	2011	2012
All Vessels	1.00	1.08	1.13	1.10	1.19	1.07

Table 19. Number of MRIs leasing ACE and/or PSC by homeport state

Home Port State/City	2010		2011		2012	
	n	Live lbs	n	Live lbs	N	Live lbs
CT	2	15,322	1	8,310	1	1,052
MA	181	16,349,529	161	22,144,700	152	15,128,969
Boston	31	3,233,604	32	5,802,828	25	4,394,488
Chatham	28	726,842	19	871,421	17	291,007
Gloucester	55	3,595,418	50	4,642,813	47	2,780,006
New Bedford	29	7,016,315	32	8,573,384	32	6,265,619
ME	36	4,451,744	41	5,706,207	38	6,417,131
Portland	13	3,303,341	12	4,046,493	12	5,084,771
NH	22	821,597	19	1,759,428	15	864,024
NJ	1	3,703	.	.	1	44,770
NY	6	90,570	5	171,066	5	183,985
RI	29	895,404	26	997,007	30	681,869
Point Judith	25	770,587	22	850,898	25	507,515
OTHER NORTHEAST	5	39,159	3	31,301	0	-
Grand Total	282	22,663,326	256	30,818,018	241	23,277,030

Table 20. Number of Vessel Affiliations leasing ACE and/or PSC by homeport state.

Home Port State/City	2010		2011		2012	
	n	Live lbs	n	Live lbs	n	Live lbs
CT	2	15,315	1	8,310	1	1,052
MA	106	5,871,885	102	10,501,470	97	5,506,761
Boston	8	261,142	11	1,279,930	9	1,532,102
Chatham	20	518,536	16	754,688	15	166,051
Gloucester	41	1,918,864	44	3,850,315	39	1,907,263
New Bedford	13	2,521,740	12	3,812,072	12	1,291,368
ME	28	2,165,280	32	3,753,987	32	4,032,998
Portland	10	1,574,553	10	2,845,327	10	3,238,946
NH	17	806,123	16	1,234,033	12	456,401
NJ	1	3,623	8	.	8	.
NY	4	151,321	5	170,188	6	215,191
RI	27	640,790	27	926,343	28	659,135
Point Judith	23	536,724	22	813,435	24	556,815
OTHER NORTHEAST	5	7,521	2	82	1	1
Grand Total	190	9,658,235	193	16,594,413	185	10,871,539

Table 21. Number of lessee MRIs by vessel size category.

Vessel Size Category	2010	2011	2012
< 30'	3	6	5
30'to < 50'	138	114	107
50' to < 75'	83	80	77
75' plus	58	56	53
Grand Total	282	256	242

Table 22. ACE and PSC lease markets by stock (live pounds).

	2010		2011		2012	
	Lessor Availability ¹	Lessee Requirement ²	Lessor Availability ¹	Lessee Requirement ²	Lessor Availability ¹	Lessee Requirement ²
Cod, GB East	529,418	374,586	309,342	235,587	284,649	81,703
Cod, GB West	4,247,221	3,176,679	6,702,629	3,775,453	8,047,078	1,038,248
Cod, GOM	5,426,792	3,877,575	6,868,627	5,166,943	6,298,793	2,216,656
Haddock, GB East	22,586,599	446,814	18,795,585	9,984	14,317,198	20,319
Haddock, GB West	49,427,505	1,078,499	44,580,541	172,746	47,625,663	32,867
Haddock, GOM	1,335,849	393,712	1,337,940	584,208	1,473,974	200,919
Plaice	4,243,830	1,491,631	5,171,690	1,674,756	5,488,861	1,512,758
Pollock	26,886,808	3,063,035	21,973,748	5,920,571	20,848,885	5,189,019
Redfish	11,663,286	1,416,648	13,711,013	2,274,642	14,832,154	4,866,474
White hake	3,560,086	2,725,332	4,210,810	4,100,427	4,863,407	2,766,000
Winter flounder, GB	2,647,934	1,665,791	3,050,907	2,607,884	5,477,569	2,019,563
Winter flounder, GOM	211,445	95,892	545,772	138,177	1,227,349	227,694
Witch flounder	1,081,383	785,473	1,774,673	1,113,744	2,217,827	1,047,772
Yellowtail flounder, CC/GOM	1,155,906	816,783	1,543,747	1,101,034	1,754,209	1,388,444
Yellowtail flounder, GB	1,053,098	908,610	1,674,587	1,330,464	620,971	289,240
Yellowtail flounder, SNE	360,950	184,240	664,759	492,396	865,677	424,123
Grand total	136,418,109	22,501,300	132,916,369	30,699,015	136,244,264	23,321,801

¹ Sum of uncaught ACE

² Difference between summed catch and allocated ACE

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

Vessel Size Category	2010				2011				2012			
	Allocated ACE		Catch		Allocated ACE*		Catch		Allocated ACE*		Catch	
	Pounds (mil)	% of total	Pounds (mil)	% of total	Pounds (mil)	% of total	Pounds (mil)	% of total	Pounds (mil)	% of total	Pounds (mil)	% of total
< 30'	42.17	24%	0.07	0%	40.23	25%	0.33	0%	39.13	26%	0.43	1%
30' to < 50'	24.93	14%	11.52	18%	24.08	15%	13.82	20%	21.69	14%	9.02	17%
50' to < 75'	38.61	22%	19.33	29%	37.95	24%	21.76	31%	34.92	23%	16.70	31%
75' plus	66.41	39%	34.68	53%	59.04	37%	34.37	49%	56.50	37%	27.05	51%
CPH	7.22	4%	0.00	0%	11.56	7%	0.00	0%	13.70	9%	0.00	0%
Grand Total	172.13		65.60		161.30		70.29		152.24		53.20	

*Does not include sector carryover.

Table 24. 2012 monthly volume of between-sector ACE leases by stock (live pounds)

	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	2012 total	2011 total	2010 total
Cod, GB East	10,725	63,440	15,351	5,941	5,686	19,935	192	1,055	1,029	514	4,000	0	127,868	156,942	142,288
Cod, GB West	187,878	790,081	295,854	152,289	59,367	384,732	0	103,017	32,620	42,930	22,406	10,000	2,081,174	2,820,067	2,146,442
Cod, GOM	65,983	152,021	139,305	248,132	201,153	482,496	75,238	192,537	48,679	18,661	43,000	1,000	1,668,205	2,761,229	2,115,195
Haddock, GB East	30,003	262,458	164,292	55,670	40,102	740,707	0	28,481	83,498	19,672	0	0	1,424,883	379,447	945,811
Haddock, GB West	100,010	118	375,427	204,091	119,829	2,348,328	0	86,589	275,228	58,785	0	0	3,568,405	1,280,964	1,787,990
Haddock, GOM	50,602	12,710	3,985	47,114	32,200	60,507	42,634	29,067	19,326	1,884	10,095	24,689	334,813	652,228	510,807
Plaice	130,000	222,043	121,752	141,285	6,250	597,517	54,042	75,985	53,580	4,078	0	2,855	1,409,387	663,883	799,484
Pollock	37,922	561,623	484,201	486,859	90,247	1,247,412	28,755	238,705	104,720	78,074	0	57,901	3,416,419	3,394,683	3,240,773
Redfish	297,113	83,863	123,864	331,145	381,426	567,395	171,681	195,465	276,410	2,525	2,500	7,945	2,441,332	514,264	1,139,517
White hake	133,834	116,752	112,910	472,319	367,758	122,484	124,884	105,545	77,680	16,008	66,900	128,301	1,845,375	2,332,818	1,409,496
Winter flounder, GB	94,956	184,444	118,300	192,706	43,258	88,444	0	8,261	7,426	6,814	0	53,449	798,058	468,090	247,090
Winter flounder, GOM	2	18,188	57,426	11,326	3,049	101,447	39,652	16,136	985	1,743	2,800	6,553	259,306	107,651	78,819
Witch flounder	13,524	34,514	96,391	201,634	97,840	244,633	40,376	60,186	42,958	24,321	5,800	9,814	871,991	710,804	392,939
Yellowtail flounder, CC/GOM	16,900	55,423	65,689	60,738	26,239	233,052	16,765	91,349	44,052	48,792	88,826	87,907	835,732	677,170	376,961
Yellowtail flounder, GB	31,313	9,654	4,300	39,512	9,065	17,722	4,000	43,195	6,896	16,337	15,601	98,185	295,780	596,918	249,780
Yellowtail flounder, SNE	43,205	38,224	30,430	62,671	42,160	76,144	54,570	41,705	21,131	33,318	36,465	23,374	503,397	330,248	104,581
Grand total	1,243,970	2,605,556	2,209,476	2,713,432	1,525,629	7,332,955	652,789	1,317,278	1,096,218	374,456	298,393	511,973	21,882,125	17,847,406	15,687,973

Table 25. Number of between-sector ACE lease transactions, by month and fishing year

Month	2010			2011			2012		
	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model	Number of Leases	Number of Leases with Compensation Reported	Number of Leases Validated for Model
May	.	.	.	125	125	37	81	80	52
June	30	.	.	107	107	74	124	124	72
July	138	17	2	72	72	32	179	179	64
August	59	.	.	171	171	98	147	147	108
September	67	.	.	70	70	47	64	64	47
October	127	25	7	140	140	109	109	109	88
November	65	65	12	75	75	62	62	62	45
December	101	101	23	118	118	73	110	110	93
January	70	70	37	140	140	105	53	53	36
February	115	115	63	111	111	78	63	63	25
March	93	93	64	151	151	105	51	51	33
April	82	82	56	84	84	76	17	17	12
Grand Total	947	568	264	1,239	1,239	859	979	979	623

Table 26. ACE lease prices from hedonic model

	value	2010 std error		value	2011 std error		value	2012 std error		lease value change
Cod, GB East	\$1.03	0.15	***	\$1.25	0.15	***	\$2.48	0.38	***	98.4%
Cod, GB West	\$0.85	0.03	***	\$0.65	0.01	***	\$0.44	0.03	***	-32.3%
Cod, GOM	\$1.06	0.04	***	\$1.10	0.02	***	\$0.68	0.03	***	-38.2%
Haddock, GB East	\$0.00			\$0.00			\$0.00			
Haddock, GB West	\$0.00			\$0.00			\$0.00			
Haddock, GOM	\$0.87	0.04	***	\$0.39	0.05	***	\$0.36	0.13	***	-7.7%
Plaice	\$0.37	0.07	***	\$0.00			\$0.00			
Pollock	\$0.00			\$0.06	0.01	***	\$0.05	0.02	**	
Redfish	\$0.00			\$0.24	0.06	***	\$0.03	0.01	***	
White hake	\$0.38	0.03	***	\$0.45	0.02	***	\$0.69	0.03	***	53.3%
Winter flounder, GB	\$0.00			\$0.76	0.07	***	\$0.58	0.03	***	
Winter flounder, GOM	\$0.00			\$0.70	0.24	***	\$0.36	0.10	***	
Witch flounder	\$1.23	0.17	***	\$0.63	0.07	***	\$0.70	0.06	***	11.1%
Yellowtail flounder, CC/GOM	\$0.53	0.15	***	\$0.41	0.06	***	\$0.63	0.06	***	53.7%
Yellowtail flounder, GB	\$0.93	0.32	***	\$0.23	0.05	***	\$0.97	0.11	***	321.7%
Yellowtail flounder, SNE	\$0.85	0.18	***	\$0.36	0.11	***	\$0.76	0.07	***	111.1%
<i>observations</i>	171			502			306			
<i>R-squared</i>	0.9			0.93			0.91			

¹Premium or discount per pound of fish traded

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

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

	2010			2011			2012		
	n	price	std dev	n	price	std dev	n	price	std dev
Cod, GB East	9	\$0.93	0.06	26	\$1.13	0.59	7	\$1.33	1.00
Cod, GB West	24	\$0.80	0.09	39	\$0.64	0.20	17	\$0.27	0.23
Cod, GOM	36	\$1.02	0.35	81	\$0.99	0.28	30	\$0.46	0.29
Haddock, GB East	0	\$0.00	.	0	\$0.00	.	0	\$0.00	.
Haddock, GB West	0	\$0.00	.	0	\$0.00	.	0	\$0.00	.
Haddock, GOM	4	\$0.82	0.34	33	\$0.45	0.11	11	\$0.29	0.10
Plaice	1	\$0.15	.	9	\$0.09	0.07	7	\$0.05	0.03
Pollock	0	\$0.00	.	11	\$0.06	0.07	4	\$0.01	0.01
Redfish	3	\$0.09	0.53	1	\$0.27	.	13	\$0.02	0.02
White hake	23	\$0.31	0.16	84	\$0.46	0.19	36	\$0.75	0.27
Winter flounder, GB	1	\$0.85	.	9	\$0.76	0.41	3	\$0.55	0.07
Winter flounder, GOM	12	\$0.71	0.46	19	\$0.72	0.26	14	\$0.29	0.08
Witch flounder	15	\$1.07	0.30	44	\$0.66	0.26	27	\$0.62	0.10
Yellowtail flounder, CC/GOM	8	\$0.53	0.22	51	\$0.41	0.13	55	\$0.54	0.09
Yellowtail flounder, GB	3	\$0.89	0.19	16	\$0.30	0.23	10	\$0.77	0.46
Yellowtail flounder, SNE	6	\$0.76	0.17	21	\$0.39	0.11	24	\$0.60	0.16

Table 28. Ex-vessel and ACE lease prices.

	2010			2011			2012		
	ex-vessel price	ACE lease price	ACE lease/ex-vessel	ex-vessel price	ACE lease price	ACE lease/ex-vessel	ex-vessel price	ACE lease price	ACE lease/ex-vessel
Cod, GB East	\$2.14	\$1.03	48%	\$2.18	\$1.25	57%	\$1.08	\$2.48	228%
Cod, GB West	\$2.14	\$0.85	40%	\$2.18	\$0.65	30%	\$1.93	\$0.44	23%
Cod, GOM	\$1.89	\$1.06	56%	\$2.26	\$1.10	49%	\$1.95	\$0.68	35%
Haddock, GB East	\$1.23			\$1.65			\$1.47		
Haddock, GB West	\$1.23			\$1.65			\$1.54		
Haddock, GOM	\$2.43	\$0.87	36%	\$2.60	\$0.39	15%	\$2.04	\$0.36	18%
Plaice	\$1.45	\$0.37	26%	\$1.42			\$1.37		
Pollock	\$0.93			\$0.89	\$0.06	6%	\$0.87	\$0.05	5%
Redfish	\$0.57			\$0.65	\$0.24	37%	\$0.42	\$0.03	8%
White hake	\$1.32	\$0.38	28%	\$1.25	\$0.45	36%	\$1.25	\$0.69	55%
Winter flounder, GB	\$1.98			\$1.76	\$0.76	43%	\$1.96	\$0.58	29%
Winter flounder, GOM	\$1.74			\$1.52	\$0.70	46%	\$1.90	\$0.36	19%
Witch flounder	\$2.42	\$1.23	51%	\$1.98	\$0.63	32%	\$1.80	\$0.70	39%
Yellowtail flounder, CC/GOM	\$1.18	\$0.53	45%	\$0.90	\$0.41	45%	\$1.23	\$0.63	52%
Yellowtail flounder, GB	\$1.28	\$0.93	73%	\$1.25	\$0.23	19%	\$1.40	\$0.97	69%
Yellowtail flounder, SNE	\$1.35	\$0.85	63%	\$1.52	\$0.36	24%	\$1.37	\$0.76	56%

Table 29. Transfer payments from ACE and PSC leasing by stock at the MRI level.

	2010			2011			2012		
	Lessee requirement	Lease price	Estimated payment transfers	Lessee requirement	Lease price	Estimated payment transfers	Lessee requirement	Lease price	Estimated payment transfers
Cod, GB East	374,586	\$1.03	\$386,293	235,587	\$1.25	\$294,329	81,703	\$2.48	\$202,327
Cod, GB West	3,176,679	\$0.85	\$2,694,905	3,775,453	\$0.65	\$2,445,403	1,038,248	\$0.44	\$452,956
Cod, GOM	3,877,575	\$1.06	\$4,119,463	5,166,943	\$1.10	\$5,678,979	2,216,656	\$0.68	\$1,516,437
Haddock, GB East	446,814	\$0.00	\$0	9,984	\$0.00	\$0	20,319	\$0.00	\$0
Haddock, GB West	1,078,497	\$0.00	\$0	172,746	\$0.00	\$0	32,867	\$0.00	\$0
Haddock, GOM	393,712	\$0.87	\$343,693	584,208	\$0.39	\$225,881	200,919	\$0.36	\$72,071
Plaice	1,491,631	\$0.37	\$556,466	1,674,756	\$0.00	\$0	1,512,758	\$0.11	\$166,509
Pollock	3,063,035	\$0.00	\$0	5,920,571	\$0.06	\$339,205	5,189,019	\$0.05	\$243,881
Redfish	1,416,646	\$0.00	\$0	2,274,642	\$0.24	\$538,450	4,866,474	\$0.03	\$162,561
White hake	2,725,313	\$0.38	\$1,022,999	4,100,427	\$0.45	\$1,858,194	2,766,000	\$0.69	\$1,898,863
Winter flounder, GB	1,665,791	\$0.00	\$0	2,607,884	\$0.76	\$1,975,129	2,019,563	\$0.58	\$1,167,701
Winter flounder, GOM	95,892	\$0.00	\$0	138,177	\$0.70	\$96,158	227,694	\$0.36	\$82,214
Witch flounder	785,473	\$1.23	\$967,481	1,113,744	\$0.63	\$705,849	1,047,772	\$0.70	\$728,561
Yellowtail flounder, CC/GOM	816,783	\$0.53	\$434,532	1,101,034	\$0.41	\$448,837	1,388,444	\$0.63	\$880,343
Yellowtail flounder, GB	908,610	\$0.93	\$847,946	1,330,464	\$0.23	\$311,509	289,240	\$0.97	\$279,130
Yellowtail flounder, SNE	184,240	\$0.85	\$155,962	492,396	\$0.36	\$176,472	424,123	\$0.76	\$323,964
Grand Total	22,501,277		\$11,529,740	30,699,015		\$15,094,395	23,321,801		\$8,177,518

Table 30. Transfer payments from ACE and PSC leasing by stock at the Vessel Affiliation level.

	2010			2011			2012		
	Lessee requirement	Lease price	Estimated payment transfers	Lessee requirement	Lease price	Estimated payment transfers	Lessee requirement	Lease price	Estimated payment transfers
Cod, GB East	247,751	\$1.03	\$255,494	179,297	\$1.25	\$224,004	44,543	\$2.48	\$110,303
Cod, GB West	2,059,679	\$0.85	\$1,747,309	2,320,750	\$0.65	\$1,503,175	259,930	\$0.44	\$113,400
Cod, GOM	2,198,629	\$1.06	\$2,335,783	3,109,781	\$1.10	\$3,417,955	1,174,006	\$0.68	\$803,149
Haddock, GB East	16,365	\$0.00	\$0	-	\$0.00	\$0	-	\$0.00	\$0
Haddock, GB West	24,693	\$0.00	\$0	14,785	\$0.00	\$0	6,293	\$0.00	\$0
Haddock, GOM	256,583	\$0.87	\$223,985	458,289	\$0.39	\$177,195	91,366	\$0.36	\$32,774
Plaice	596,783	\$0.37	\$222,635	728,683	\$0.00	\$0	594,347	\$0.11	\$65,420
Pollock	576,861	\$0.00	\$0	2,140,382	\$0.06	\$122,628	2,185,281	\$0.05	\$102,707
Redfish	267,541	\$0.00	\$0	690,876	\$0.24	\$163,543	2,287,924	\$0.03	\$76,427
White hake	1,229,415	\$0.38	\$461,485	2,772,252	\$0.45	\$1,256,304	1,458,158	\$0.69	\$1,001,028
Winter flounder, GB	558,233	\$0.00	\$0	1,540,367	\$0.76	\$1,166,626	587,844	\$0.58	\$339,888
Winter flounder, GOM	61,795	\$0.00	\$0	73,180	\$0.70	\$50,926	142,262	\$0.36	\$51,367
Witch flounder	381,044	\$1.23	\$469,339	602,150	\$0.63	\$381,620	563,449	\$0.70	\$391,790
Yellowtail flounder, CC/GOM	483,633	\$0.53	\$257,295	665,797	\$0.41	\$271,412	945,691	\$0.63	\$599,616
Yellowtail flounder, GB	551,879	\$0.93	\$515,032	938,140	\$0.23	\$219,652	171,736	\$0.97	\$165,733
Yellowtail flounder, SNE	141,430	\$0.85	\$119,724	386,551	\$0.36	\$138,538	358,707	\$0.76	\$273,996
Grand Total	9,652,315		\$6,608,080	16,621,279		\$9,093,579	10,871,539		\$4,127,598

Table 31. Transfer payments from ACE and PSC leasing by lessee home port state

Home Port State/City	2010				2011				2012			
	Estimated transfer payments				Estimated transfer payments				Estimated transfer payments			
	<i>between MRIs</i>		<i>between vessel affiliations</i>		<i>between MRIs</i>		<i>between vessel affiliations</i>		<i>between MRIs</i>		<i>between vessel affiliations</i>	
	<i>n</i>	<i>value</i>	<i>n</i>	<i>value</i>	<i>n</i>	<i>value</i>	<i>n</i>	<i>value</i>	<i>n</i>	<i>value</i>	<i>n</i>	<i>value</i>
CT	2	\$14,155	2	15,315	1	\$3,063	1	\$3,063	1	\$804	1	\$804
MA	181	\$8,849,396	106	4,427,692	152	\$11,806,051	97	\$6,450,755	152	\$5,799,581	97	\$2,366,746
Boston	31	\$1,621,326	8	198,973	25	\$3,009,774	9	\$675,762	25	\$1,523,339	9	\$399,074
Chatham	28	\$550,640	20	469,406	17	\$606,448	15	\$580,379	17	\$131,842	15	\$94,224
Gloucester	55	\$2,663,733	41	1,540,227	47	\$2,599,491	39	\$2,447,400	47	\$1,130,673	39	\$873,479
New Bedford	29	\$2,666,692	13	1,666,161	32	\$3,855,779	12	\$2,094,084	32	\$2,241,648	12	\$619,073
ME	36	\$1,688,192	28	1,007,729	38	\$1,912,330	32	\$1,388,393	38	\$1,460,503	32	\$1,000,172
Portland	13	\$979,966	10	599,310	12	\$1,115,736	10	\$928,620	12	\$884,764	10	\$596,745
NH	22	\$465,015	17	686,293	15	\$814,790	12	\$734,056	15	\$326,637	12	\$189,200
NJ	1	\$3,178	1	3,178	1	\$0	8	\$0	1	\$0	8	\$0
NY	6	\$28,575	4	63,985	5	\$104,524	6	\$104,339	5	\$115,072	6	\$132,109
RI	29	\$420,251	27	398,387	30	\$449,691	28	\$412,935	30	\$450,672	28	\$438,419
Point Judith	25	\$389,529	23	353,724	25	\$387,553	24	\$367,553	25	\$331,519	24	\$368,732
OTHER NORTHEAST	5	\$30,722	5	6,661	0	\$3,945	1	\$37	0	\$0	1	\$0
Grand Total	282	\$11,496,307	190	6,590,747	241	\$15,091,332	185	\$9,093,579	241	\$8,152,465	185	\$4,127,451

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

Table 32. Stock level catch, ACE and utilization.

	2010			2011			2012		
	Allocated ACE	Catch	% caught	Allocated ACE*	Catch	% caught	Allocated ACE*	Catch	% caught
Cod, GB East	717,441	562,610	78%	431,334	357,578	83%	349,326	146,887	42%
Cod, GB West	6,563,099	5,492,557	84%	9,604,207	6,727,837	70%	10,320,365	3,331,816	32%
Cod, GOM	9,540,389	7,991,172	84%	11,242,220	9,561,153	85%	8,761,312	4,699,621	54%
Haddock, GB East	26,262,695	4,122,910	16%	21,122,565	2,336,964	11%	15,074,308	777,622	5%
Haddock, GB West	62,331,182	13,982,173	22%	50,507,974	6,101,400	12%	49,398,411	1,808,495	4%
Haddock, GOM	1,761,206	819,069	47%	1,796,740	1,061,841	59%	1,784,067	522,917	29%
Plaice	6,058,149	3,305,950	55%	7,084,289	3,587,356	51%	7,400,614	3,426,646	46%
Pollock	35,666,741	11,842,969	33%	32,350,451	16,297,273	50%	29,305,283	13,688,091	47%
Redfish	14,894,618	4,647,978	31%	17,369,940	5,951,045	34%	19,052,388	9,096,051	48%
White hake	5,522,677	4,687,905	85%	6,708,641	6,598,273	98%	7,365,297	5,294,489	72%
Winter flounder, GB	4,018,496	3,036,352	76%	4,679,039	4,241,177	91%	7,695,773	4,237,884	55%
Winter flounder, GOM	293,736	178,183	61%	750,606	343,152	46%	1,561,490	562,334	36%
Witch flounder	1,824,125	1,528,215	84%	2,839,697	2,178,941	77%	3,291,703	2,122,567	64%
Yellowtail flounder, CC/GOM	1,608,084	1,268,961	79%	2,185,802	1,743,168	80%	2,433,611	2,067,901	85%
Yellowtail flounder, GB	1,770,451	1,625,963	92%	2,474,662	2,176,921	88%	798,315	474,236	59%
Yellowtail flounder, SNE	517,372	340,662	66%	963,033	795,267	83%	1,342,708	938,303	70%
Grand Total	179,350,461	65,433,630	36%	172,111,201	70,059,346	41%	165,934,970	53,195,859	32%

*includes sector carryover

Table 33. Number of vessel affiliations by fishing year.

	2009	2010	2011	2012
Affiliations issued limited access groundfish permits	934	910	846	787
With limited access groundfish permit and revenue from any species	737	698	633	618
With limited access groundfish permit and revenue from at least one groundfish trip	450	358	338	310
Number and percent inactive (no landings) affiliations	197 (21%)	212 (23%)	213 (25%)	169 (21%)

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

Number of active vessels per vessel affiliation	2009	2010	2011	2012
1	623 (84.5%)	598 (85.7%)	548 (86.6%)	532 (86.1%)
2	91 (12.3%)	76 (10.9%)	57 (9.0%)	62 (10.0%)
3	14 (1.9%)	14 (2.0%)	20 (3.2%)	15 (2.4%)
4 to 6	6 (0.8%)	7 (1.0%)	6 (0.9%)	7 (1.1%)
7 to 9	1 (0.1%)	2 (0.3%)	1 (0.2%)	1 (0.2%)
10 +	2 (0.3%)	1 (0.1%)	1 (0.2%)	1 (0.2%)
Average number of active vessels per active vessel affiliation	1.24	1.22	1.23	1.23

Table 35. Distribution of nominal revenue from all species (all trips) among vessels⁴⁸.

	Year			
	2009	2010	2011	2012
Percent Bracket				
Top 1%	\$17,557,159 (6.7%)	\$21,403,741 (7.3%)	\$21,414,348 (6.5%)	\$21,437,539 (7.0%)
20%	\$139,949,485 (53.2%)	\$168,353,712 (57.3%)	\$187,885,619 (56.8%)	\$172,472,166 (56.5%)
40%	\$58,135,273 (22.1%)	\$60,088,566 (20.5%)	\$71,317,127 (21.6%)	\$65,892,462 (21.6%)
60%	\$31,116,852 (11.8%)	\$29,284,529 (10.0%)	\$32,772,221 (9.9%)	\$29,645,129 (9.7%)
80%	\$14,337,294 (5.5%)	\$13,297,877 (4.5%)	\$14,941,537 (4.5%)	\$13,743,528 (4.5%)
99%	\$1,809,720 (.7%)	\$1,379,421 (.5%)	\$2,486,014 (.8%)	\$2,317,187 (.8%)
Bottom 1%	\$826 (.0%)	\$969 (.0%)	\$1,077 (.0%)	\$848 (.0%)
Grand Total	\$262,906,608	\$293,808,814	\$330,817,943	\$305,508,860
Number of Vessels*	916	854	776	764

⁴⁸ In Table 32, each category presents the incremental difference in cumulative all species revenue from the previous category. For example, in Table 32, by adding the all species revenues presented for the “Top 1%” and “Top 20%” categories in 2009, one can obtain the total all species revenues earned by the top 20% of vessels (\$157,506,644), \$17,557,159 of which was earned by the top 1% of vessels.

Table 36. Distribution of nominal revenue from groundfish (all trips) among vessels⁴⁹.

	Year			
	2009	2010	2011	2012
Percent Bracket				
Top 1%	\$8,731,073 (10.6%)	\$10,030,164 (12.1%)	\$9,324,833 (10.3%)	\$7,098,660 (10.2%)
20%	\$45,952,303 (55.7%)	\$53,393,718 (64.2%)	\$59,925,526 (66.3%)	\$46,072,732 (66.0%)
40%	\$18,882,918 (22.9%)	\$14,553,045 (17.5%)	\$15,570,153 (17.2%)	\$12,620,460 (18.1%)
60%	\$7,482,611 (9.1%)	\$4,562,233 (5.5%)	\$4,894,721 (5.4%)	\$3,489,661 (5.0%)
80%	\$1,395,746 (1.7%)	\$614,661 (.7%)	\$720,451 (.8%)	\$476,390 (.7%)
99%	\$65,441 (.1%)	\$23,500 (.0%)	\$17,762 (.0%)	\$20,260 (.0%)
Bottom 1%	\$39 (.0%)	\$8 (.0%)	\$8 (.0%)	\$9 (.0%)
Grand Total	\$82,510,132	\$83,177,330	\$90,453,455	\$69,778,174
Number of Vessels	555	434	417	403

⁴⁹ In Table 33, each category presents the incremental difference in cumulative groundfish revenue from the previous category. For example, in Table 33, by adding the groundfish revenues presented for the “Top 1%” and “Top 20%” categories in 2009, one can obtain the total groundfish revenues earned by the top 20% of vessels (\$54,683,376) in 2009, \$8,731,073 of which was earned by the top 1% of vessels.

Table 37. Distribution of nominal revenue from all species (all trips) among vessel affiliations⁵⁰.

Percent Bracket	2009	2010	2011	2012
Top 1%	\$45,858,852	\$52,010,888	\$61,025,944	\$53,025,137
	17.4%	17.7%	18.4%	17.4%
20%	\$131,939,363	\$160,916,111	\$177,616,092	\$169,300,175
	50.2%	54.8%	53.7%	55.4%
40%	\$47,541,162	\$46,061,896	\$53,339,573	\$48,858,605
	18.1%	15.7%	16.1%	16.0%
60%	\$24,960,713	\$23,075,940	\$25,127,203	\$22,394,152
	9.5%	7.9%	7.6%	7.3%
80%	\$11,260,403	\$10,655,366	\$11,811,511	\$10,310,648
	4.3%	3.6%	3.6%	3.4%
99%	\$1,345,503	\$1,087,868	\$1,896,483	\$1,537,969
	0.5%	0.4%	0.6%	0.5%
Bottom 1%	\$612	\$745	\$1,137	\$720
	0.0%	0.0%	0.0%	0.0%
Grand Total	\$262,906,608	\$293,808,814	\$330,817,943	\$305,427,406
Number of Vessel Affiliations	737	698	633	618

⁵⁰ In Table 34, each category presents the incremental difference in cumulative all species revenue from the previous category. For example, in Table 34, by adding the all species revenues presented for the “Top 1%” and “Top 20%” categories in 2009, one can obtain the total all species revenues earned by the top 20% of vessel affiliations (\$177,798,215) in 2009, \$45,858,852 of which was earned by the top 1% of vessel affiliations.

Table 38. Distribution of groundfish nominal revenue among vessel affiliations⁵¹.

Percent Bracket	2009	2010	2011	2012
Top 1%	\$18,696,733 22.7%	\$22,036,307 26.5%	\$23,577,829 26.1%	\$18,182,763 26.1%
20%	\$43,041,498 52.2%	\$47,798,187 57.5%	\$52,357,775 57.9%	\$41,184,429 59.0%
40%	\$14,636,043 17.7%	\$9,709,138 11.7%	\$10,657,869 11.8%	\$7,933,439 11.4%
60%	\$5,191,025 6.3%	\$3,182,033 3.8%	\$3,392,368 3.8%	\$2,161,666 3.1%
80%	\$898,895 1.1%	\$431,000 0.5%	\$454,959 0.5%	\$299,337 0.4%
99%	\$45,312 0.1%	\$19,052 0.0%	\$12,580 0.0%	\$15,970 0.0%
Bottom 1%	\$35 0.0%	\$5 0.0%	\$5 0.0%	\$5 0.0%
Grand Total	\$82,509,542	\$83,175,722	\$90,453,384	\$69,777,609
Number of Vessel Affiliations	441	352	338	310

⁵¹ In Table 35, each category presents the incremental difference in cumulative groundfish revenue from the previous category. For example, in Table 35, by adding the groundfish revenues presented for the “Top 1%” and “Top 20%” categories in 2009, one can obtain the total groundfish revenues earned by the top 20% of vessel affiliations (\$61,738,231) in 2009, \$18,696,733 of which was earned by the top 1% of vessel affiliations.

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	2009	2010	2011	2012
Top 25%	48 (5.2%)	40 (4.7%)	41 (5.3%)	39 (5.1%)
Top 50%	134 (14.6%)	108 (12.6%)	106 (13.7%)	102 (13.4%)
Top 75%	295 (32.2%)	240 (28.1%)	222 (28.6%)	217 (28.4%)
100%	916 (100.0%)	854 (100.0%)	776 (100.0%)	764 (100.0%)

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

Percent of groundfish revenue	2009	2010	2011	2012
Top 25%	21 (3.8%)	14 (3.2%)	15 (3.6%)	14 (3.5%)
Top 50%	65 (11.7%)	39 (9.0%)	40 (9.6%)	38 (9.4%)
Top 75%	146 (26.3%)	84 (19.4%)	80 (19.2%)	78 (19.4%)
100%	555 (100.0%)	434 (100.0%)	417 (100.0%)	403 (100.0%)

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	2009	2010	2011	2012
Top 25%	15 2.0%	12 1.7%	12 1.9%	12 1.9%
Top 50%	71 9.6%	54 7.7%	53 8.4%	53 8.6%
Top 75%	194 26.3%	154 22.1%	141 22.3%	134 21.7%
100%	737 100.0%	698 100.0%	633 100.0%	618 100.0%

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	2009	2010	2011	2012
top 25%	5	2	2	2
	1.1%	0.6%	0.6%	0.6%
top 50%	28	14	16	14
	6.3%	4.0%	4.7%	4.5%
top 75%	88	44	43	37
	20.0%	12.5%	12.7%	11.9%
100%	441	352	338	310
	100.0%	100.0%	100.0%	100.0%

Table 43. Changes in employment indicators by vessel size category (May through April, all trips)

Vessel Size	Year			
	2009	2010	2011	2012
Less than 30'				
Total CREW POSITIONS	108	92	78	74
Total CREW-TRIPS	3,163	2,648	2,489	2,174
Total CREW-DAYS	1,093	909	843	708
Crew-days/Crew-trips	0.35	0.34	0.34	0.33
30' to < 50'				
Total CREW POSITIONS	992	952	866	861
Total CREW-TRIPS	85,190	68,563	68,327	64,860
Total CREW-DAYS	38,264	32,992	34,714	33,383
Crew-days/Crew-trips	0.45	0.48	0.51	0.51
50' to < 75'				
Total CREW POSITIONS	726	664	661	654
Total CREW-TRIPS	43,296	37,908	37,212	35,460
Total CREW-DAYS	71,696	62,224	62,415	63,020
Crew-days/Crew-trips	1.66	1.64	1.68	1.78
75' and above				
Total CREW POSITIONS	590	547	555	548
Total CREW-TRIPS	16,504	14,766	13,975	13,840
Total CREW-DAYS	76,167	73,813	71,445	70,509
Crew-days/Crew-trips	4.62	5.00	5.11	5.09
All Sizes				
Total CREW POSITIONS	2,416	2,255	2,161	2,136
Total CREW-TRIPS	148,153	123,885	122,003	116,334
Total CREW-DAYS	187,219	169,939	169,417	167,620
Crew-days/Crew-trips	1.26	1.37	1.39	1.44

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

Home Port State	Year			
	2009	2010	2011	2012
CT				
Total CREW POSITIONS	40	36	42	39
Total CREW-TRIPS	1,873	1,975	1,466	1,587
Total CREW-DAYS	3,700	3,996	3,001	4,312
Crew-days/Crew-trips	1.98	2.02	2.05	2.72
MA				
Total CREW POSITIONS	1,231	1,132	1,067	1,053
Total CREW-TRIPS	70,654	53,380	54,007	51,545
Total CREW-DAYS	95,685	82,066	84,119	81,430
Crew-days/Crew-trips	1.35	1.54	1.56	1.58
ME				
Total CREW POSITIONS	266	247	221	242
Total CREW-TRIPS	17,619	16,438	13,861	14,128
Total CREW-DAYS	15,539	15,541	14,783	16,252
Crew-days/Crew-trips	0.88	0.95	1.07	1.15
NH				
Total CREW POSITIONS	110	107	105	96
Total CREW-TRIPS	10,557	8,031	8,497	7,928
Total CREW-DAYS	5,407	3,909	4,974	5,085
Crew-days/Crew-trips	0.51	0.49	0.59	0.64

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

Home Port State	Year			
	2009	2010	2011	2012
NJ				
Total CREW POSITIONS	162	149	145	148
Total CREW-TRIPS	11,326	9,963	9,567	8,111
Total CREW-DAYS	10,865	10,086	9,898	10,292
Crew-days/Crew-trips	0.96	1.01	1.03	1.27
NY				
Total CREW POSITIONS	219	209	217	209
Total CREW-TRIPS	15,353	14,702	14,929	14,156
Total CREW-DAYS	16,997	15,772	16,031	14,908
Crew-days/Crew-trips	1.11	1.07	1.07	1.05
RI				
Total CREW POSITIONS	267	253	248	232
Total CREW-TRIPS	16,083	15,110	15,480	14,899
Total CREW-DAYS	26,411	26,786	25,130	24,017
Crew-days/Crew-trips	1.64	1.77	1.62	1.61
OTHER NORTHEAST				
Total CREW POSITIONS	129	130	128	128
Total CREW-TRIPS	4,688	4,286	4,196	3,980
Total CREW-DAYS	12,615	11,784	11,480	11,322
Crew-days/Crew-trips	2.69	2.75	2.74	2.84
Total*				
Total CREW POSITIONS	2,424	2,262	2,173	2,146
Total CREW-TRIPS	148,153	123,885	122,003	116,334
Total CREW-DAYS	187,219	169,939	169,417	167,620
Crew-days/Crew-trips	1.26	1.37	1.39	1.44

*Note: Vessels may change home ports during the year resulting in associated crew positions for more than one state. This means the total positions shown here are higher than the total positions as calculated at the permit level in Table 26. The total work opportunity associated with these positions, crew trips and crew-days totals, is the same as reported in Table 26.

Table 45. Per day trip cost averages (in \$).

Gear Type	Vessel Length	Trip Duration	Fishing Year	Mean
Gillnet	< 40'	Day	2009	370
Gillnet	< 40'	Day	2010	520
Gillnet	< 40'	Day	2011	642
Gillnet	< 40'	Day	2012	576
Gillnet	< 40'	Multi-day	2009	421
Gillnet	< 40'	Multi-day	2010	417
Gillnet	< 40'	Multi-day	2011	509
Gillnet	< 40'	Multi-day	2012	456
Gillnet	>= 40'	Day	2009	505
Gillnet	>= 40'	Day	2010	624
Gillnet	>= 40'	Day	2011	739
Gillnet	>= 40'	Day	2012	637
Gillnet	>= 40'	Multi-day	2009	440
Gillnet	>= 40'	Multi-day	2010	622
Gillnet	>= 40'	Multi-day	2011	695
Gillnet	>= 40'	Multi-day	2012	667
Hand Gear			09 - 12	672
Longline	< 40'	Day	2009	866
Longline	< 40'	Day	2010	889
Longline	< 40'	Day	2011	658
Longline	< 40'	Day	2012	774
Longline	< 40'	Multi-day	09 - 12	1,632
Longline	>= 40'	Day	2009	807
Longline	>= 40'	Day	2010	724
Longline	>= 40'	Day	2011	1,091
Longline	>= 40'	Day	2012	908
Longline	>= 40'	Multi-day	2009	1,280
Longline	>= 40'	Multi-day	2010	1,026
Longline	>= 40'	Multi-day	2011	1,159
Longline	>= 40'	Multi-day	2012	1,426
Pots/traps			09 - 12	1,211
Purse seine			2009	1,571
Purse seine			2010	1,378
Purse seine			2011	1,940
Purse seine			2012	1,713
Scallop dredge	< 50'		2009	533
Scallop dredge	< 50'		2010	606
Scallop dredge	< 50'		2011	808
Scallop dredge	< 50'		2012	730
Scallop dredge	50' to 75'		2009	1,114
Scallop dredge	50' to 75'		2010	1,377
Scallop dredge	50' to 75'		2011	1,687
Scallop dredge	50' to 75'		2012	1,836

Other	50' to 75'		09 - 12	1,046
Scallop dredge	>= 75'		2009	1,603
Scallop dredge	>= 75'		2010	1,947
Scallop dredge	>= 75'		2011	2,476
Scallop dredge	>= 75'		2012	2,608
Trawl	< 50'	Day	2009	561
Trawl	< 50'	Day	2010	700
Trawl	< 50'	Day	2011	790
Trawl	< 50'	Day	2012	799
Trawl	< 50'	Multi-day	2009	579
Trawl	< 50'	Multi-day	2010	811
Trawl	< 50'	Multi-day	2011	900
Trawl	< 50'	Multi-day	2012	797
Trawl	50' to 75'	Day	2009	813
Trawl	50' to 75'	Day	2010	844
Trawl	50' to 75'	Day	2011	1,073
Trawl	50' to 75'	Day	2012	1,012
Trawl	50' to 75'	Multi-day	2009	1,150
Trawl	50' to 75'	Multi-day	2010	1,322
Trawl	50' to 75'	Multi-day	2011	1,577
Trawl	50' to 75'	Multi-day	2012	1,528
Trawl	>= 75'	Day	2009	1,149
Trawl	>= 75'	Day	2010	1,626
Trawl	>= 75'	Day	2011	1,914
Trawl	>= 75'	Day	2012	1,683
Trawl	>= 75'	Multi-day	2009	1,674
Trawl	>= 75'	Multi-day	2010	2,029
Trawl	>= 75'	Multi-day	2011	2,405
Trawl	>= 75'	Multi-day	2012	2,450
Other	< 50'		2009	756
Other	< 50'		2010	431
Other	< 50'		2011	557
Other	< 50'		2012	965
Other	50' to 75'		09 - 12	1,046
Other	>= 75'		2009	3,147
Other	>= 75'		2010	4,054
Other	>= 75'		2011	4,792
Other	>= 75'		2012	4,947

Table 46. Per day values for groundfish trips.

Vessel Size Category		2009	2010	2011	2012
Less than 30'	Average revenue per day	\$1,888	\$2,499	\$1,917	\$2,804
	Average trip cost per day	\$685	\$716	\$794	\$773
	Average owner share per day	\$1,073	\$1,408	\$939	\$1,504
	Average crew share per man per day	\$478	\$592	\$439	\$604
30' to < 50'	Average revenue per day	\$5,194	\$6,169	\$6,005	\$7,706
	Average trip cost per day	\$709	\$1,420	\$1,239	\$2,000
	Average owner share per day	\$3,240	\$3,714	\$3,508	\$4,442
	Average crew share per man per day	\$1,062	\$1,167	\$1,056	\$1,549
50' to < 75'	Average revenue per day	\$6,808	\$7,277	\$6,843	\$9,980
	Average trip cost per day	\$1,160	\$2,249	\$2,265	\$3,240
	Average owner share per day	\$3,574	\$3,597	\$3,197	\$6,460
	Average crew share per man per day	\$1,069	\$978	\$861	\$907
75' and above	Average revenue per day	\$6,227	\$6,950	\$6,919	\$5,505
	Average trip cost per day	\$1,791	\$4,085	\$4,595	\$4,614
	Average owner share per day	\$2,260	\$2,583	\$2,368	\$1,718
	Average crew share per man per day	\$347	\$355	\$273	\$163

Table 47. Per day values for non-groundfish trips.

Vessel Size Category		2009	2010	2011	2012
Less than 30'	Average revenue per day	\$1,274	\$1,856	\$1,849	\$1,756
	Average trip cost per day	\$860	\$863	\$802	\$806
	Average owner share per day	\$499	\$885	\$981	\$871
	Average crew share per man per day	\$290	\$526	\$494	\$340
30' to < 50'	Average revenue per day	\$3,427	\$4,155	\$4,246	\$4,557
	Average trip cost per day	\$1,041	\$1,091	\$1,123	\$1,165
	Average owner share per day	\$1,854	\$2,318	\$2,298	\$2,429
	Average crew share per man per day	\$732	\$927	\$875	\$909
50' to < 75'	Average revenue per day	\$4,833	\$5,463	\$6,933	\$6,651
	Average trip cost per day	\$1,255	\$1,336	\$1,722	\$1,768
	Average owner share per day	\$2,385	\$2,687	\$3,322	\$3,148
	Average crew share per man per day	\$617	\$688	\$834	\$751
75' and above	Average revenue per day	\$7,701	\$9,327	\$16,377	\$13,596
	Average trip cost per day	\$2,800	\$3,247	\$4,682	\$4,823
	Average owner share per day	\$3,084	\$3,827	\$5,581	\$5,508
	Average crew share per man per day	\$447	\$548	\$758	\$638

Table 48. Average owner and crew share per vessel.

Vessel Size Category		2009	2010	2011	2012
Less than 30'	Owner share	\$5,891	\$8,121	\$8,682	\$8,373
	Crew share	\$1,640	\$2,569	\$2,536	\$2,459
30' to < 50'	Owner share	\$78,507	\$80,237	\$95,319	\$80,930
	Crew share	\$29,246	\$30,686	\$37,025	\$31,348
50' to < 75'	Owner share	\$172,411	\$205,918	\$238,190	\$212,967
	Crew share	\$105,639	\$127,711	\$148,583	\$131,057
75' and above	Owner share	\$330,143	\$429,831	\$489,664	\$456,484
	Crew share	\$224,143	\$282,607	\$322,848	\$304,988

Table 49. Aggregate owner and crew shares by vessel size category.

Vessel Size Category		2009	2010	2011	2012
Less than 30'	Owner share	\$371,115	\$471,023	\$434,083	\$385,167
	Crew share	\$103,327	\$149,015	\$126,785	\$113,137
30' to < 50'	Owner share	\$35,014,155	\$34,181,046	\$35,649,198	\$30,834,488
	Crew share	\$13,043,674	\$13,072,184	\$13,847,297	\$11,943,713
50' to < 75'	Owner share	\$40,516,469	\$44,066,483	\$50,258,188	\$45,148,983
	Crew share	\$24,825,220	\$27,330,204	\$31,351,103	\$27,784,086
75' and above	Owner share	\$42,588,478	\$49,860,386	\$56,800,979	\$53,408,673
	Crew share	\$28,914,489	\$32,782,367	\$37,450,397	\$35,683,630
Grand Total	Owner share	\$118,490,217	\$128,578,938	\$143,142,448	\$129,777,312
	Crew share	\$66,886,710	\$73,333,769	\$82,775,582	\$75,524,565

Table 50. Aggregate owner and crew shares by homeport state.

Homeport State		2009	2010	2011	2012
CT	Owner share	\$1,597,429	\$2,330,677	\$2,173,589	\$3,508,914
	Crew share	\$877,058	\$1,403,177	\$1,295,558	\$2,454,457
MA	Owner share	\$63,951,719	\$65,905,885	\$73,382,663	\$64,778,922
	Crew share	\$38,056,507	\$39,656,713	\$44,257,125	\$39,438,020
ME	Owner share	\$11,596,529	\$12,539,433	\$11,136,171	\$9,821,795
	Crew share	\$5,846,178	\$5,056,564	\$4,414,043	\$4,070,687
NH	Owner share	\$4,921,235	\$3,806,142	\$4,319,190	\$3,856,263
	Crew share	\$1,943,767	\$1,497,873	\$1,738,194	\$1,470,477
NJ	Owner share	\$7,847,837	\$9,311,359	\$11,182,295	\$11,122,205
	Crew share	\$4,468,149	\$5,378,745	\$6,917,110	\$6,826,152
NY	Owner share	\$10,143,260	\$12,559,615	\$14,498,955	\$12,840,704
	Crew share	\$4,952,859	\$6,820,677	\$7,569,074	\$6,530,977
RI	Owner share	\$12,452,454	\$14,967,407	\$17,944,132	\$15,685,931
	Crew share	\$6,646,505	\$8,444,218	\$10,382,100	\$9,021,918
All Other States	Owner share	\$5,979,753	\$7,158,419	\$8,505,453	\$8,162,577
	Crew share	\$4,095,686	\$5,075,802	\$6,202,380	\$5,711,876
Grand Total	Owner share	\$118,490,217	\$128,578,938	\$143,142,448	\$129,777,312
	Crew share	\$66,886,710	\$73,333,769	\$82,775,582	\$75,524,565

Table 51. Number of sector members by vessel ownership characteristic (total # of members/# that traded quota/# that fished).

Sector member - ownership type	Average non- CPH vessel length	Sector member mailing address state						Grand Total
		MA	ME	NH	RI	All other Northeast states	Unknown	
CPH only	N/A						34/11/0	34/11/0
1 vessel, no CPH	<30'	46/17/4	12/5/1	5/1/0	2/1/0	2/1/0	1/0/0	68/25/5
	30' to 50'	94/53/78	45/28/39	12/10/11	5/3/5	5/2/4		161/96/137
	50' to 75'	42/35/40	5/4/3	2/1/2	26/20/26	16/11/12		91/71/83
	>=75'	36/31/31	1/1/1		10/4/10	9/5/9		56/41/51
1 vessel, and CPH	<30'	4/1/0	2/1/0		1/0/0		1/1/0	8/3/0
	30' to 50'	5/2/2	2/2/1	2/3/1				9/7/4
	50' to 75'		1/1/1	2/2/2		1/0/1		4/3/4
	>=75'	5/4/2				1/1/0		6/5/2
2 vessels, no CPH	<30'	11/9/9	3/1/1	2/2/2				16/12/12
	30' to 50'	9/8/9	4/3/4	1/1/1	1/0/1	1/0/1		16/12/16
	50' to 75'	1/1/1			1/1/1			2/2/2
	>=75'	2/1/2			1/1/1	1/1/1		4/3/4
2 vessels, and CPH	<30'	5/3/3		1/1/0				6/4/3
	30' to 50'	7/4/6	1/1/1	2/2/2				10/7/9
	50' to 75'		2/2/2	1/1/1				3/3/3
> 2 vessels, no CPH	<30'	6/6/5	3/3/3	1/1/1				10/10/9
	30' to 50'	2/2/2	4/4/4	3/3/3				9/9/9
	50' to 75'	2/2/2	1/1/1					3/3/3
	>=75'	1/1/1						1/1/1
> 2 vessels, and CPH	<30'	5/5/4						5/5/4
	30' to 50'	3/3/3	3/3/2			1/1/1		7/7/6
	50' to 75'		3/3/3			1/0/1		4/3/4
Unidentified							0/74/1	0/74/1
Grand Total		286/188/204	92/63/67	34/28/26	47/30/44	38/22/30	36/86/3	533/417/374

Table 52. Average owner and crew share per sector member and per vessel (active sector members only, no common pool).

		Average vessel length			
		<30'	30' to < 50'	50' to < 75'	75'+
Sector members with one non-CPH vessel	Average owner share per sector member	\$21,623	\$88,321	\$225,584	\$519,271
	Average owner share per vessel	\$21,623	\$88,321	\$225,584	\$519,271
	Average crew share per sector member	\$7,823	\$32,808	\$134,310	\$329,972
	Average crew share per vessel	\$7,823	\$32,808	\$134,310	\$329,972
	Number of sector members included in averages	5	141	87	53
Sector members with two non-CPH vessels	Average owner share per sector member	\$78,599	\$208,103	\$147,025	\$840,445
	Average owner share per vessel	\$39,300	\$104,052	\$73,512	\$420,223
	Average crew share per sector member	\$32,217	\$108,393	\$43,450	\$612,851
	Average crew share per vessel	\$16,108	\$54,197	\$21,725	\$306,425
	Number of sector members included in averages	15	25	5	4
Sector members with > two non-CPH vessels	Average owner share per sector member	\$214,701	\$333,411	\$506,895	
	Average owner share per vessel	\$54,493	\$80,733	\$127,869	
	Average crew share per sector member	\$88,263	\$132,762	\$202,392	
	Average crew share per vessel	\$22,410	\$38,040	\$50,572	
	Number of sector members included in averages	13	15	7	

Table 53. Average revenue from quota trades per sector member and per vessel (active and inactive sector members, no common pool).

		Average vessel length			
		<30'	30' to < 50'	50' to < 75'	75'+
Sector members with one non-CPH vessel	Average revenue per sector member	\$36,126	-\$4,807	-\$9,847	-\$54,614
	Average revenue per vessel	\$36,126	-\$4,807	-\$9,847	-\$54,614
	Number of sector members included in averages	28	103	74	46
Sector members with two non-CPH vessels	Average revenue per sector member	\$13,366	-\$17,753	-\$13,339	\$72,818
	Average revenue per vessel	\$6,683	-\$8,876	-\$6,670	\$36,409
	Number of sector members included in averages	16	19	5	3
Sector members with > two non-CPH vessels	Average revenue per sector member	-\$1,309	-\$58,411	-\$118,151	
	Average revenue per vessel	-\$2,150	-\$6,750	-\$32,914	
	Number of sector members included in averages	15	16	6	

Table 54. Average post-quota trading owner share per sector member and per vessel (assuming owner pays all quota costs).

		Average vessel length			
		<30'	30' to < 50'	50' to < 75'	75'+
Sector members with one non-CPH vessel	Average owner share per sector member	\$57,749	\$83,514	\$215,736	\$464,657
	Percent change	167.1%	-5.4%	-4.4%	-10.5%
	Average owner share per vessel	\$57,749	\$83,514	\$215,736	\$464,657
	Percent change	167.1%	-5.4%	-4.4%	-10.5%
Sector members with two non-CPH vessels	Average owner share per sector member	\$91,965	\$190,350	\$133,686	\$913,264
	Percent change	17.0%	-8.5%	-9.1%	8.7%
	Average owner share per vessel	\$45,983	\$95,175	\$66,843	\$456,632
	Percent change	17.0%	-8.5%	-9.1%	8.7%
Sector members with > two non-CPH vessels	Average owner share per sector member	\$213,392	\$275,000	\$388,744	
	Percent change	-0.6%	-17.5%	-23.3%	
	Average owner share per vessel	\$52,343	\$73,983	\$94,955	
	Percent change	-3.9%	-8.4%	-25.7%	

Table 55. Average revenue from quota trading for sector members that did not fish.

		Average vessel length				
		<30'	30' to < 50'	50' to < 75'	75'+	Unknown
Sector members with CPH permits only	Average revenue per inactive member					\$39,420
	Number of members					11
Sector members with one non-CPH vessel	Average revenue per inactive member	\$39,001	\$4,900	\$43,082	\$47,109	
	Number of members	26	10	6	7	
Sector members with two non-CPH vessels	Average revenue per inactive member	\$22,648				
	Number of members	3				
Sector members with > two non-CPH vessels	Average revenue per inactive member	\$48,287	-\$98,312			
	Number of members	2	1			

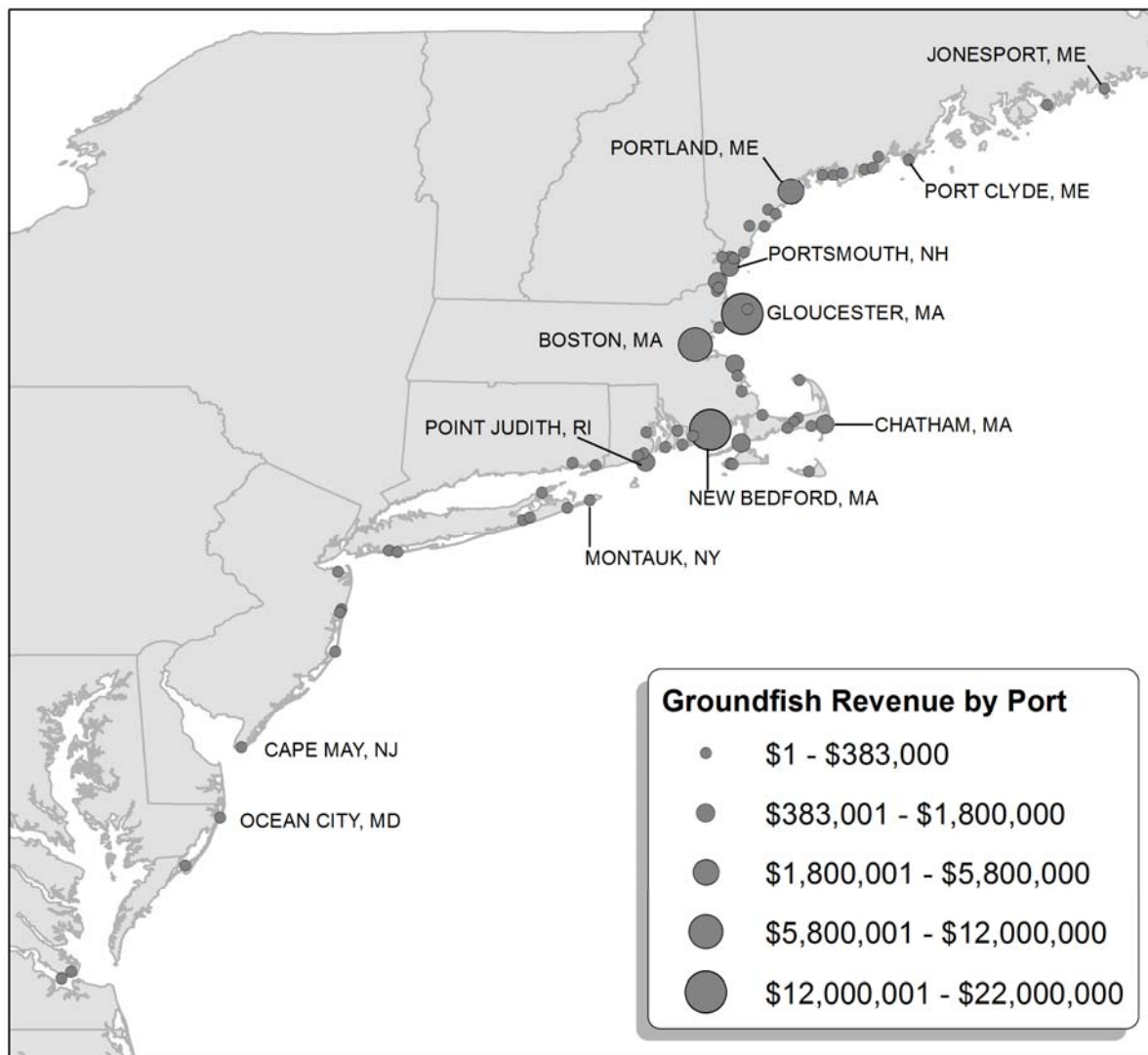


Figure 1. Nominal value of groundfish landings in FY2012 by port landed.

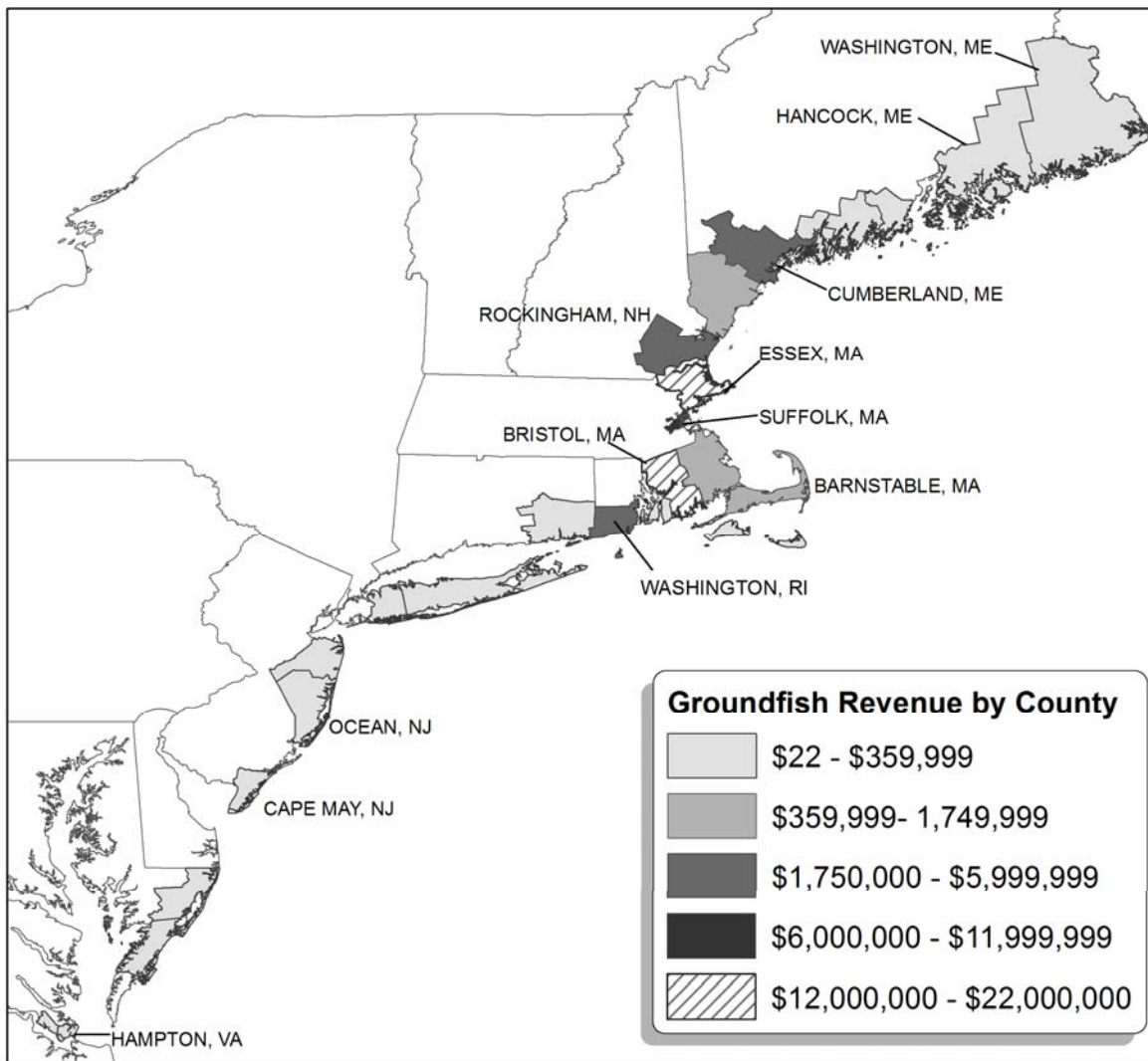


Figure 2. Nominal value of groundfish landings in FY2012 by county landed.

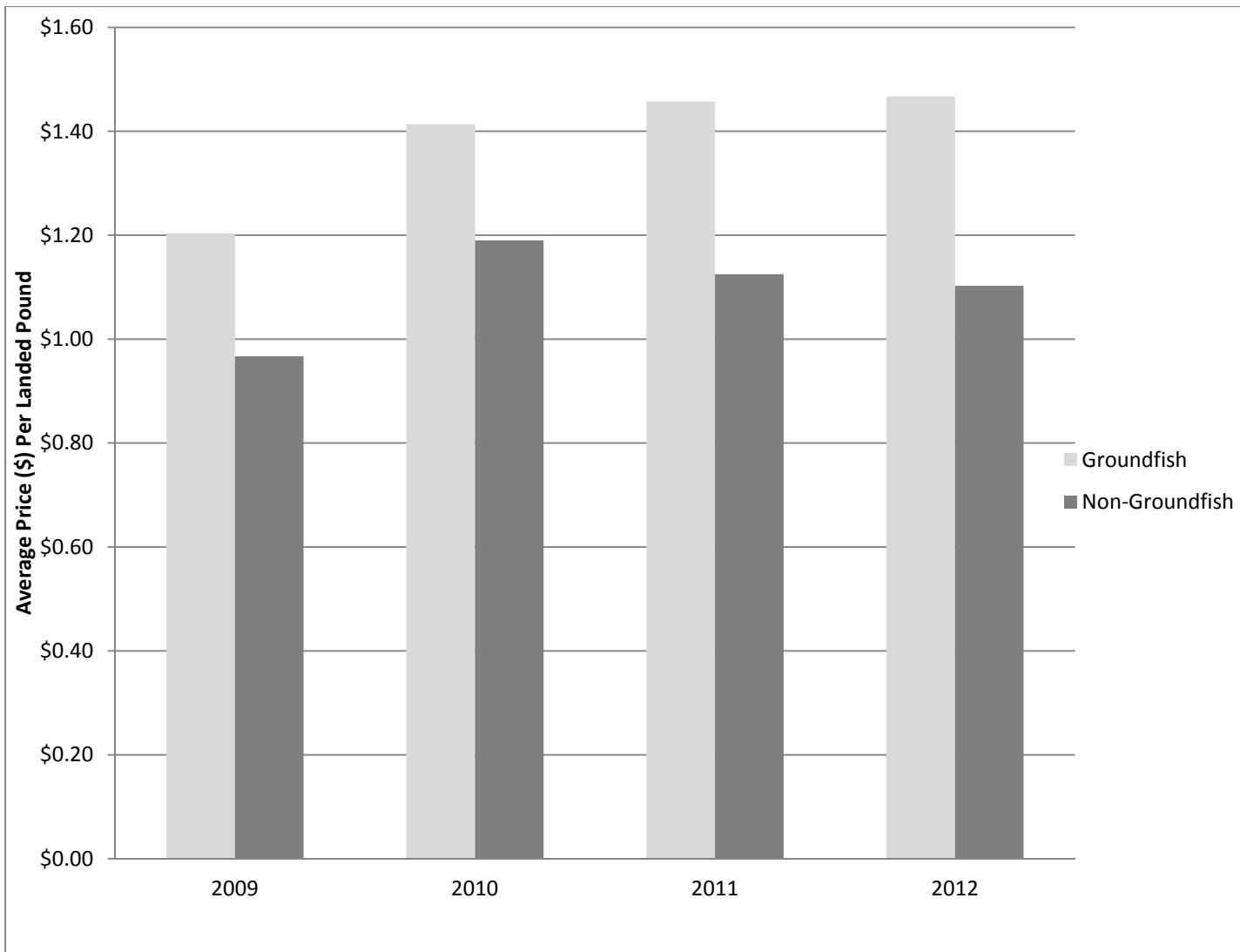


Figure 3. Yearly nominal average price of combined allocated groundfish vs. other species, including non-allocated groundfish species.

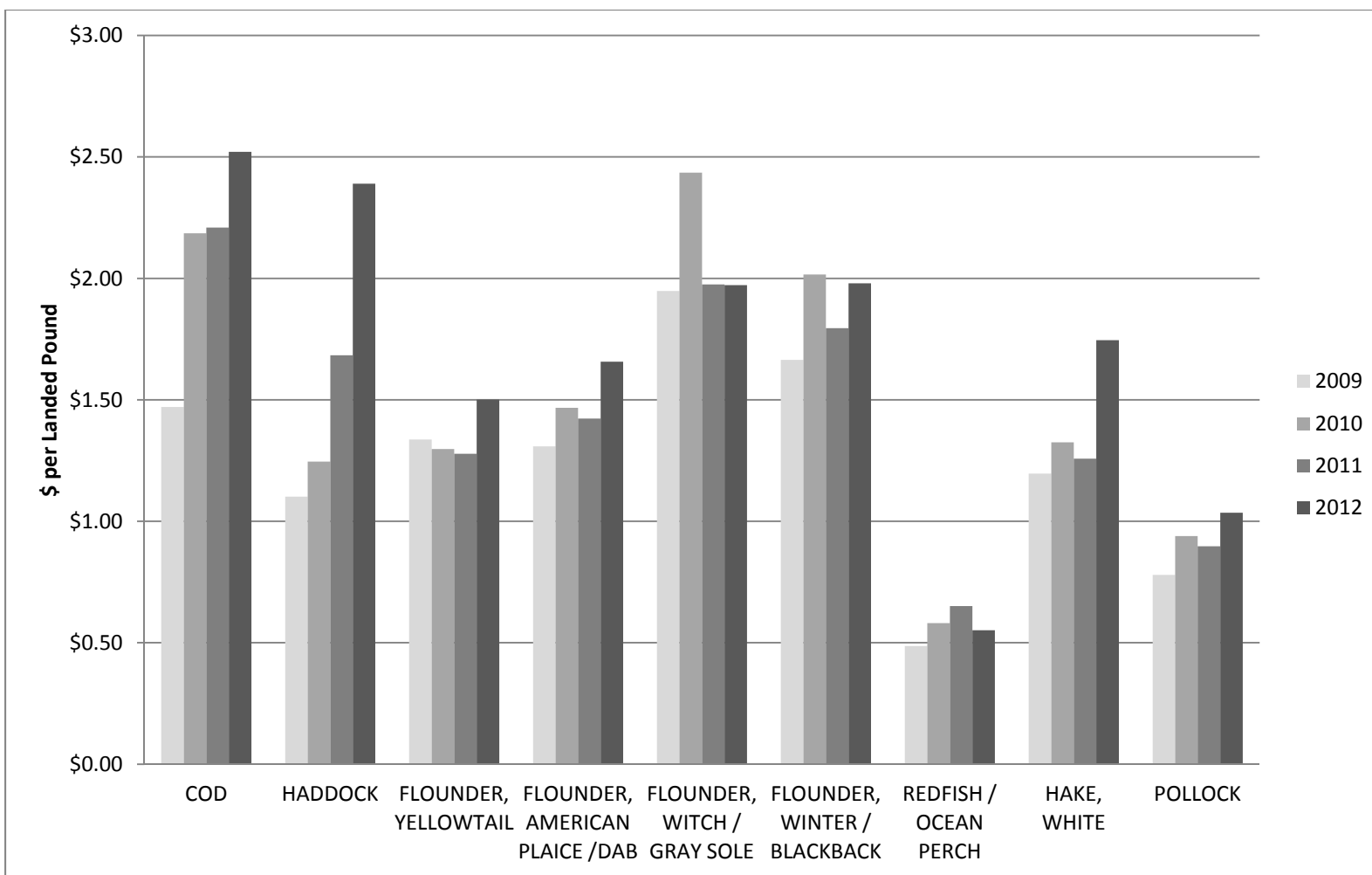


Figure 4. Yearly average nominal price by allocated groundfish species for top 9 species.

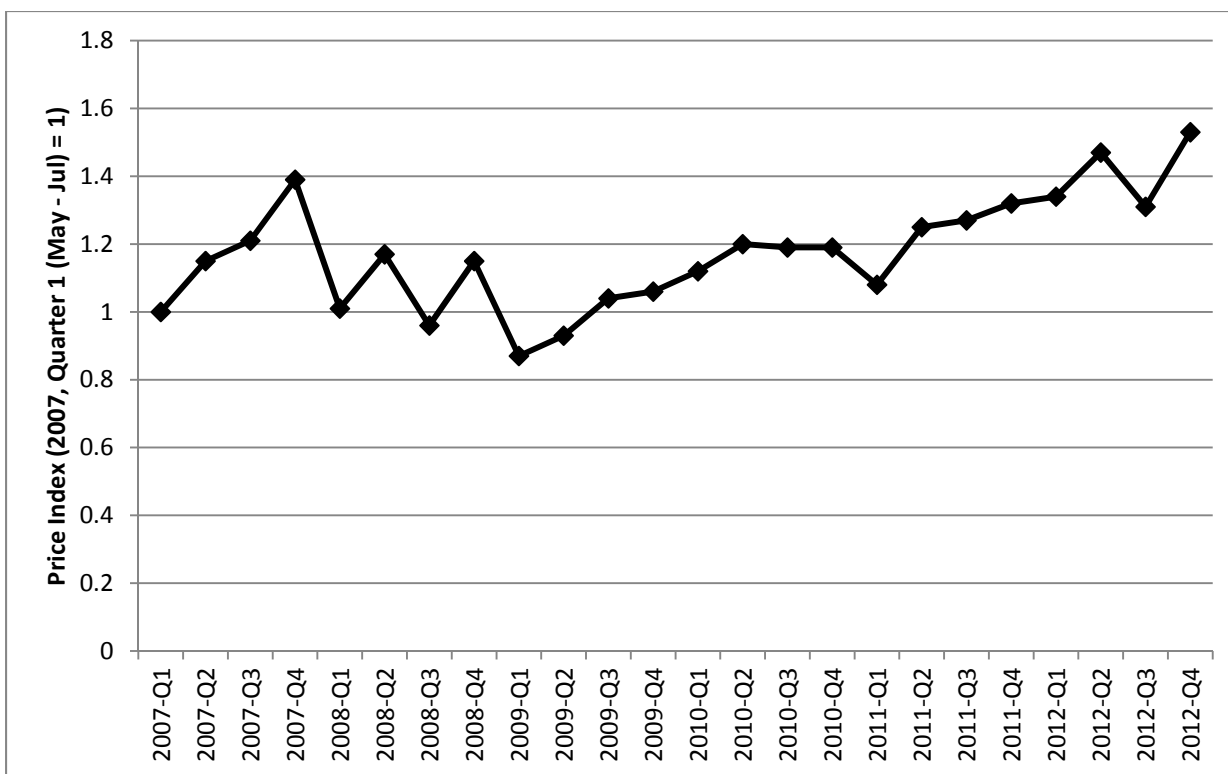


Figure 5. Quantity adjusted groundfish price index (base period = May through July, 2007).

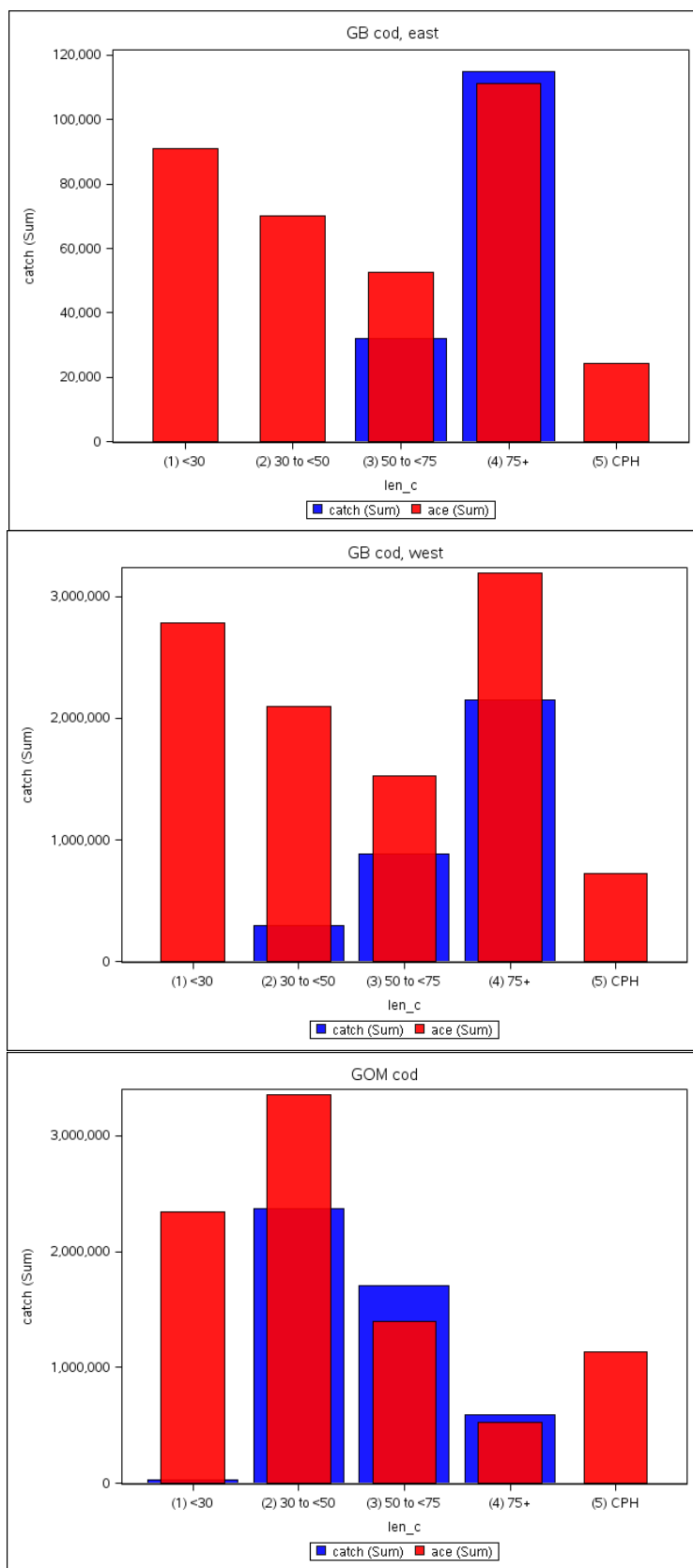


Figure 6. 2012 catch and allocated ACE by vessel size category for individual stocks

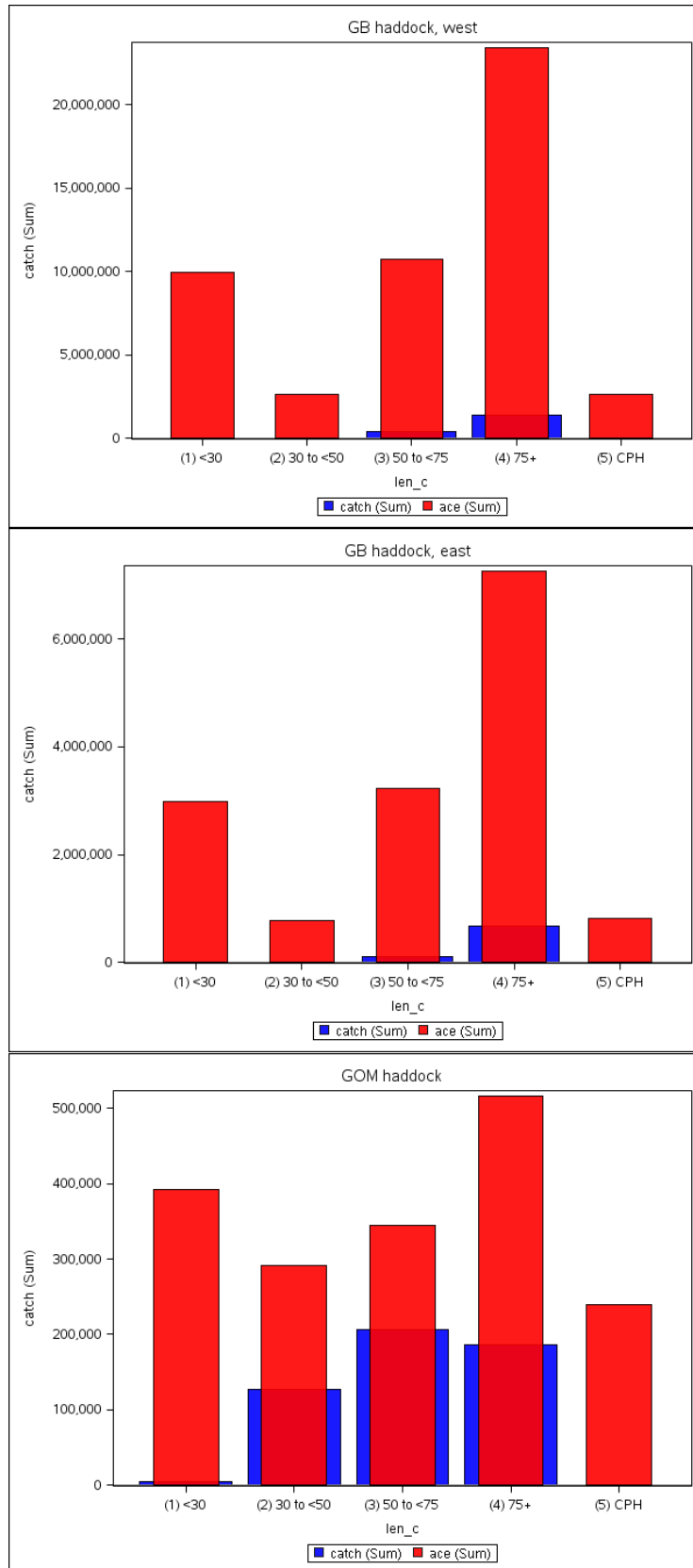


Figure 6, continued. 2012 catch and allocated ACE by vessel size category for individual stocks

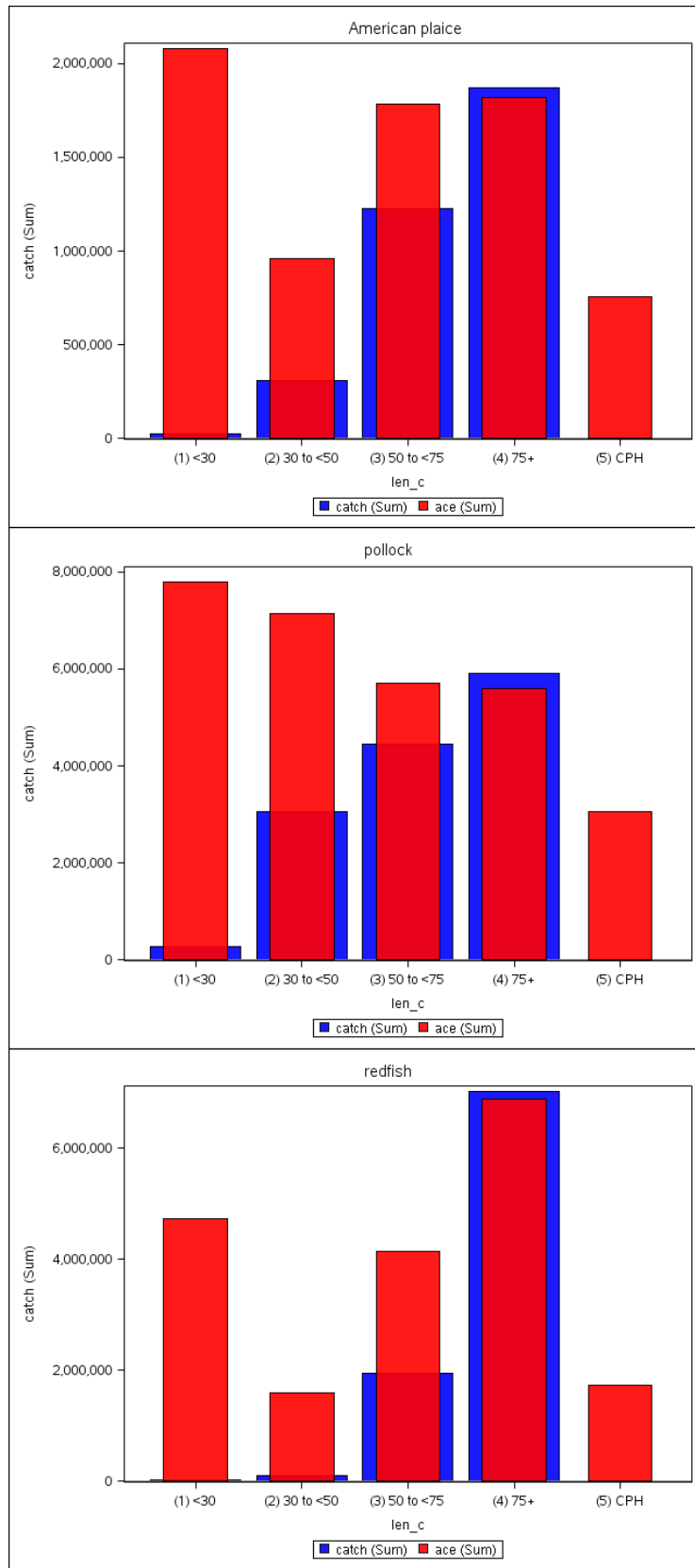


Figure 6, continued. 2012 catch and allocated ACE by vessel size category for individual stocks

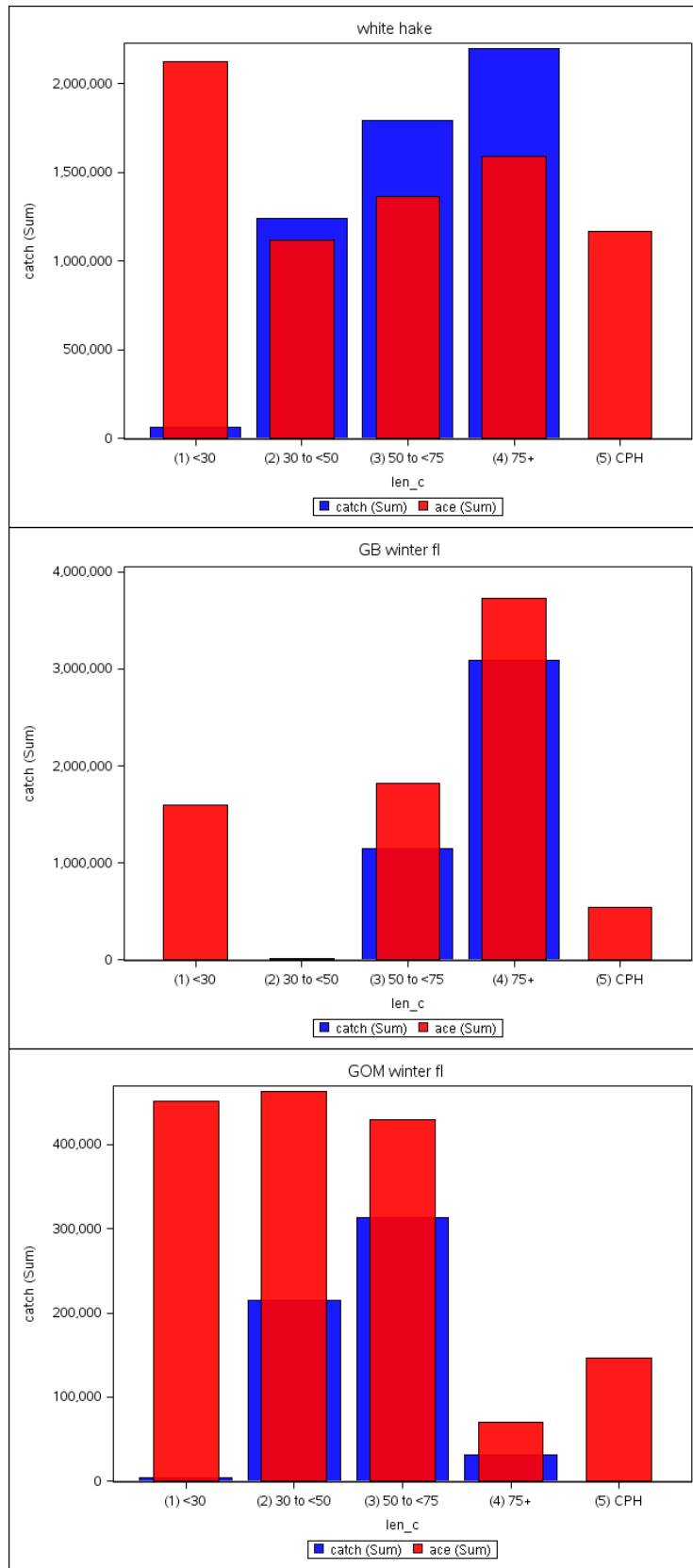


Figure 6, continued. 2012 catch and allocated ACE by vessel size category for individual stocks

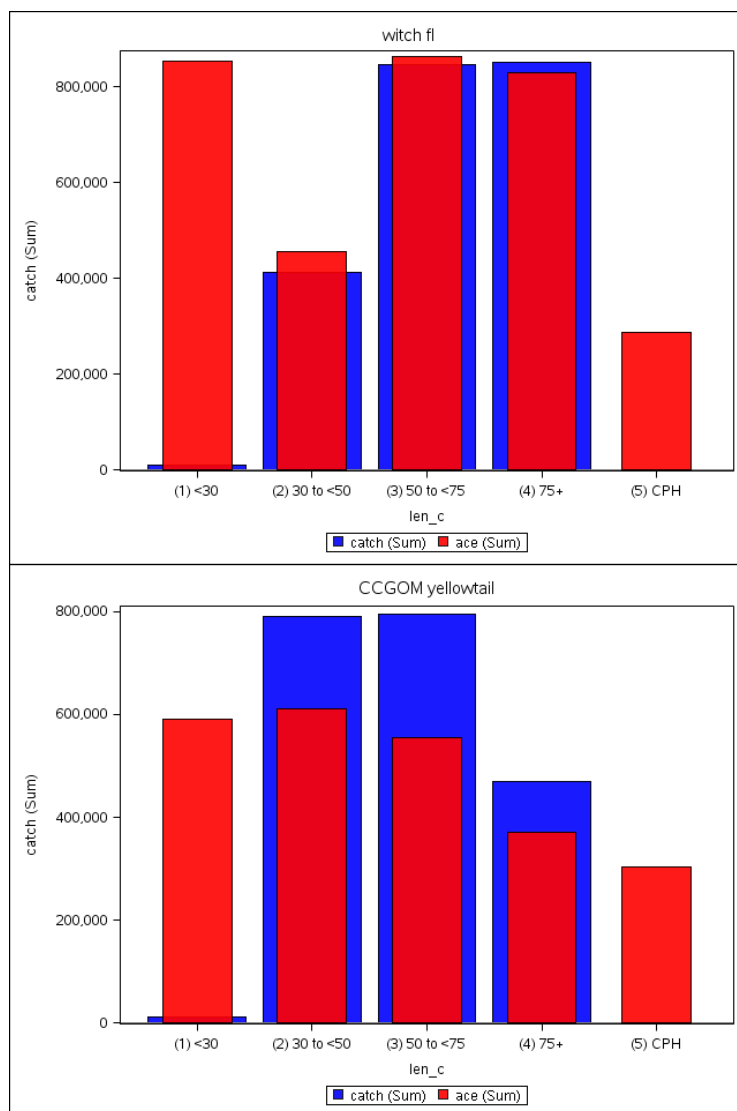


Figure 6, continued. 2012 catch and allocated ACE by vessel size category for individual stocks

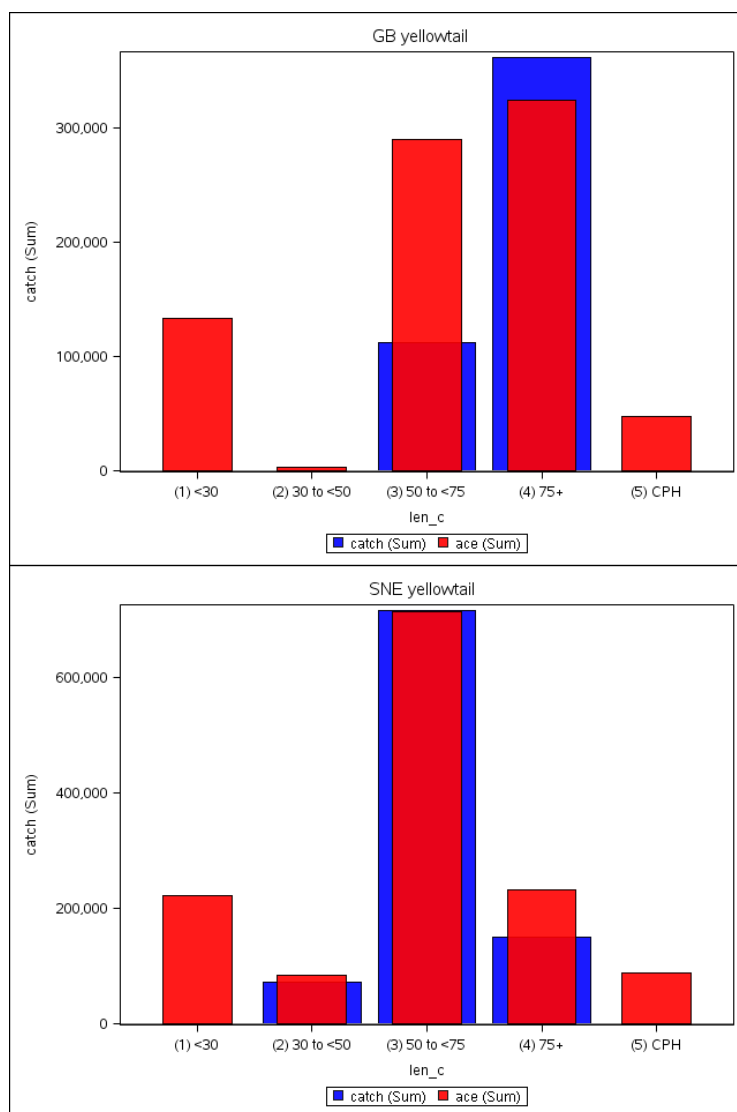


Figure 6, continued. 2012 catch and allocated ACE by vessel size category for individual stocks.

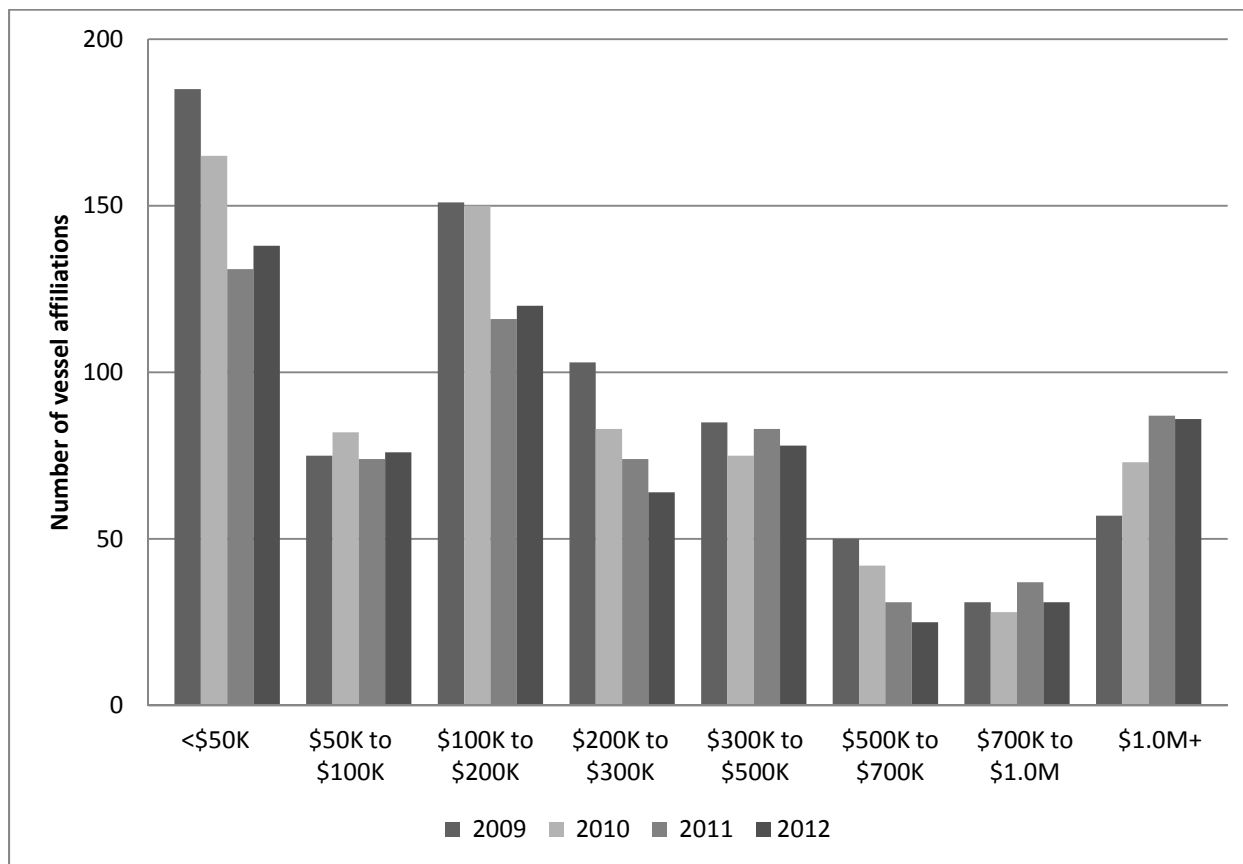


Figure 7. Number of vessel affiliations with revenue from any species by total nominal revenue category.

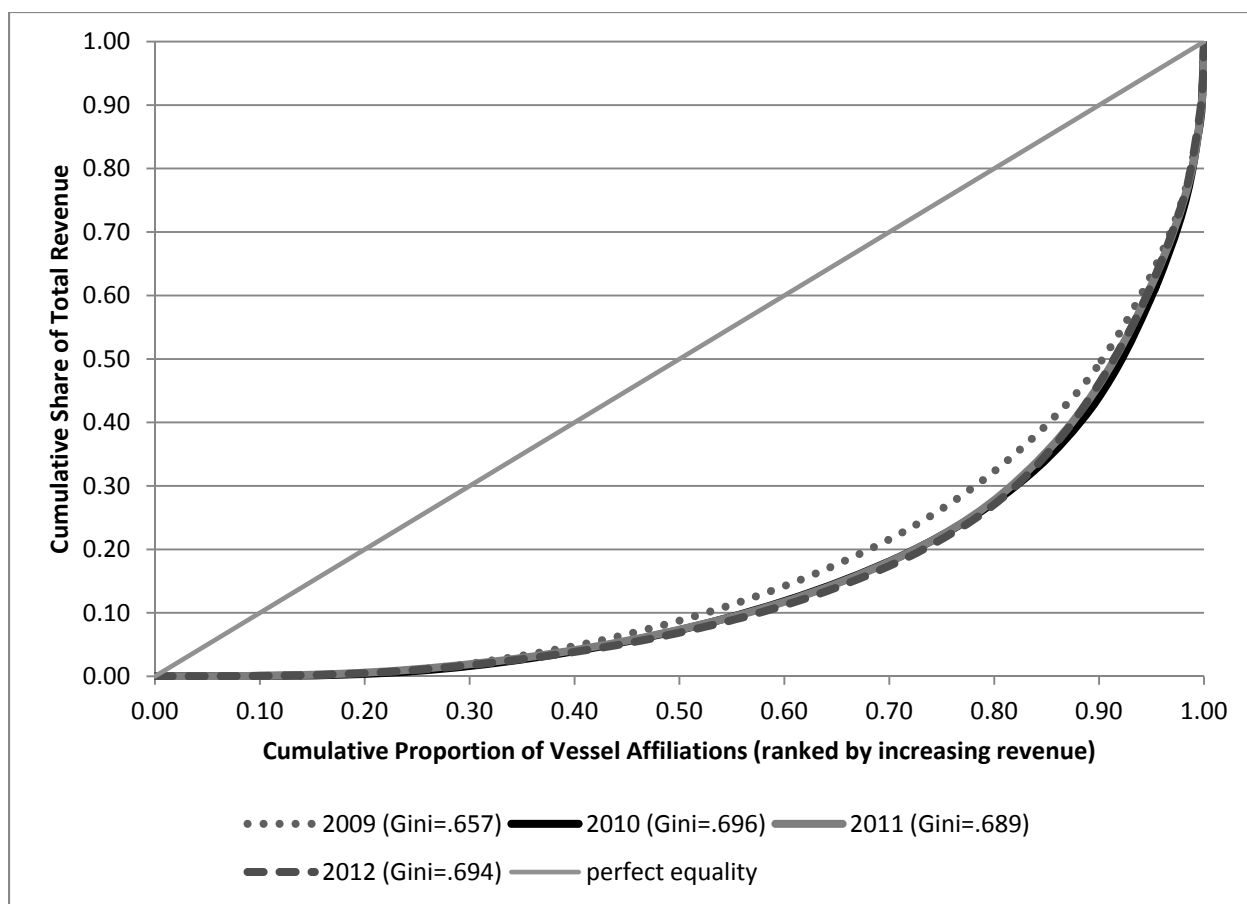


Figure 8. Lorenz curves and Gini values at the affiliated vessel level for all species nominal revenues (from active vessels).

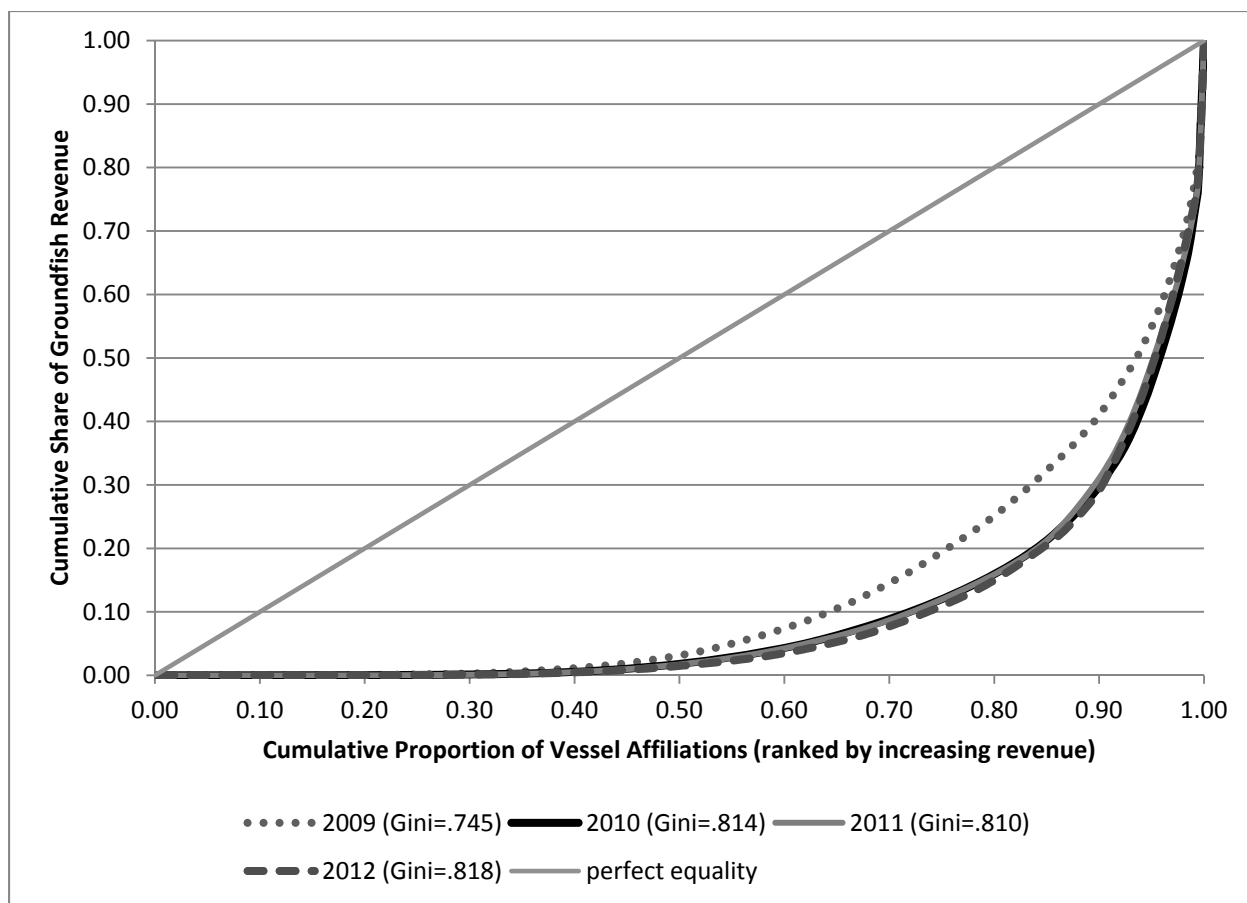


Figure 9. Lorenz curves and Gini values at the affiliated vessel level for groundfish nominal revenues (from active vessels).

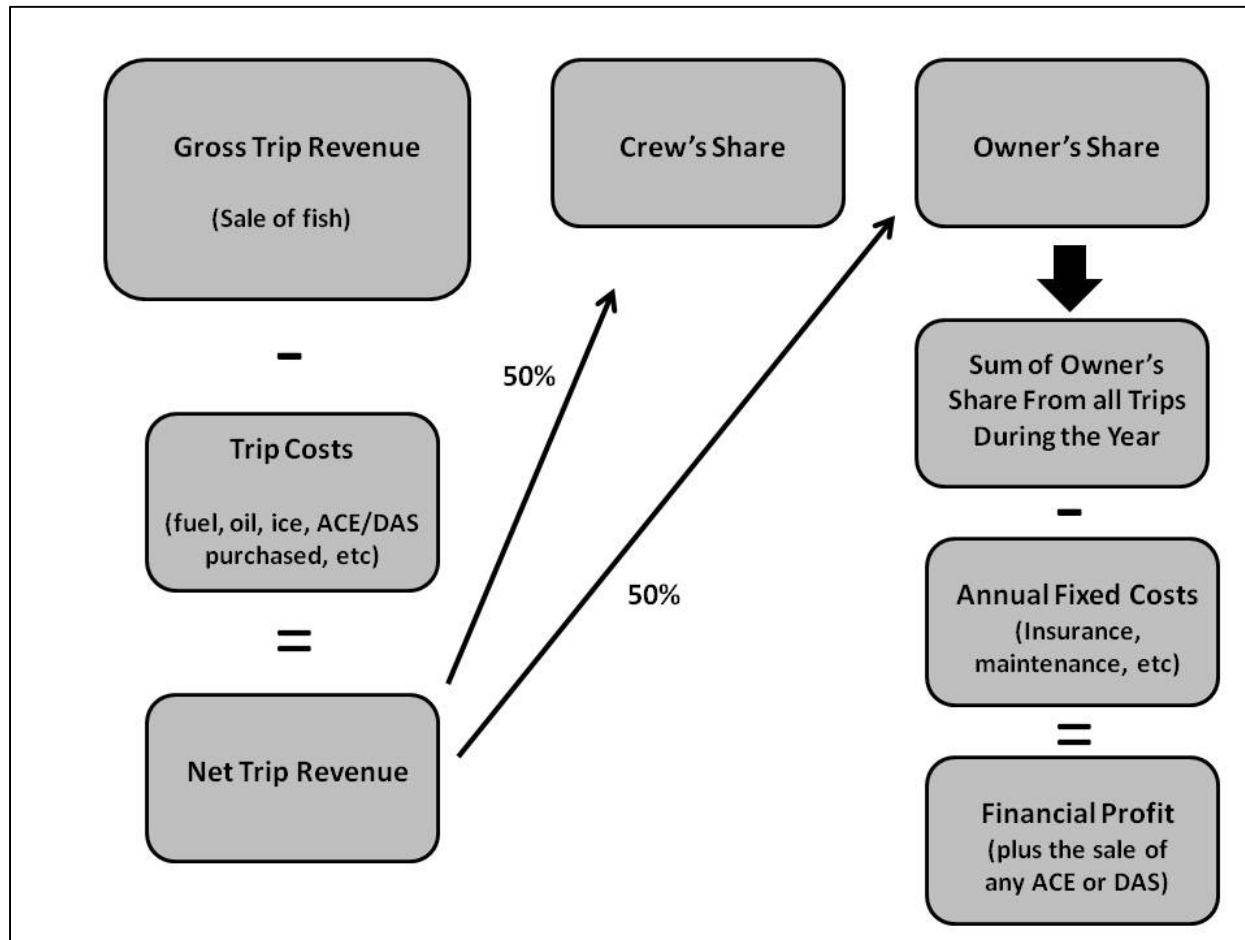


Figure 10. Components of annual financial profit (illustrative example).

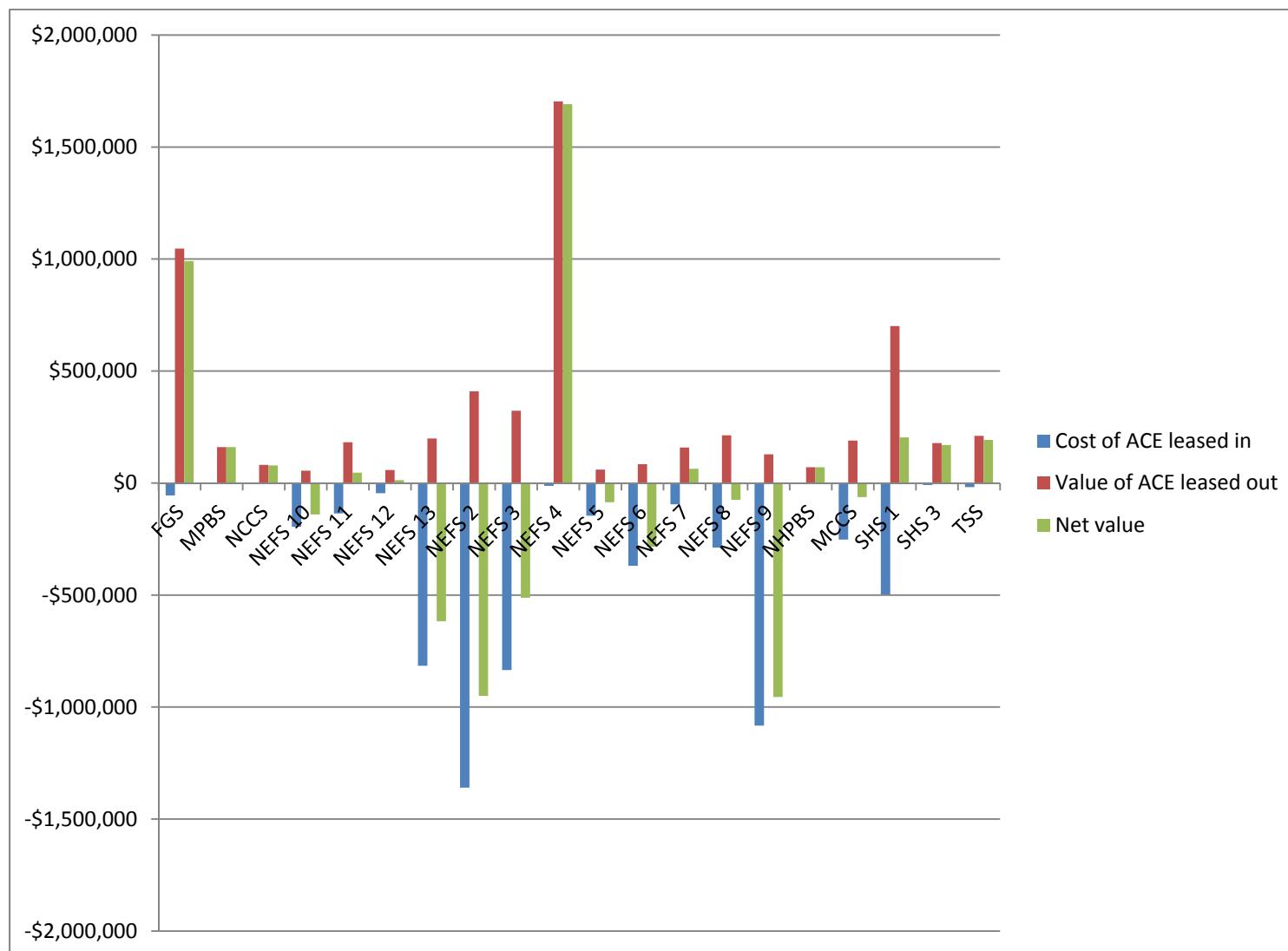


Figure 11. Gross value of quota traded between sectors for FY2012.

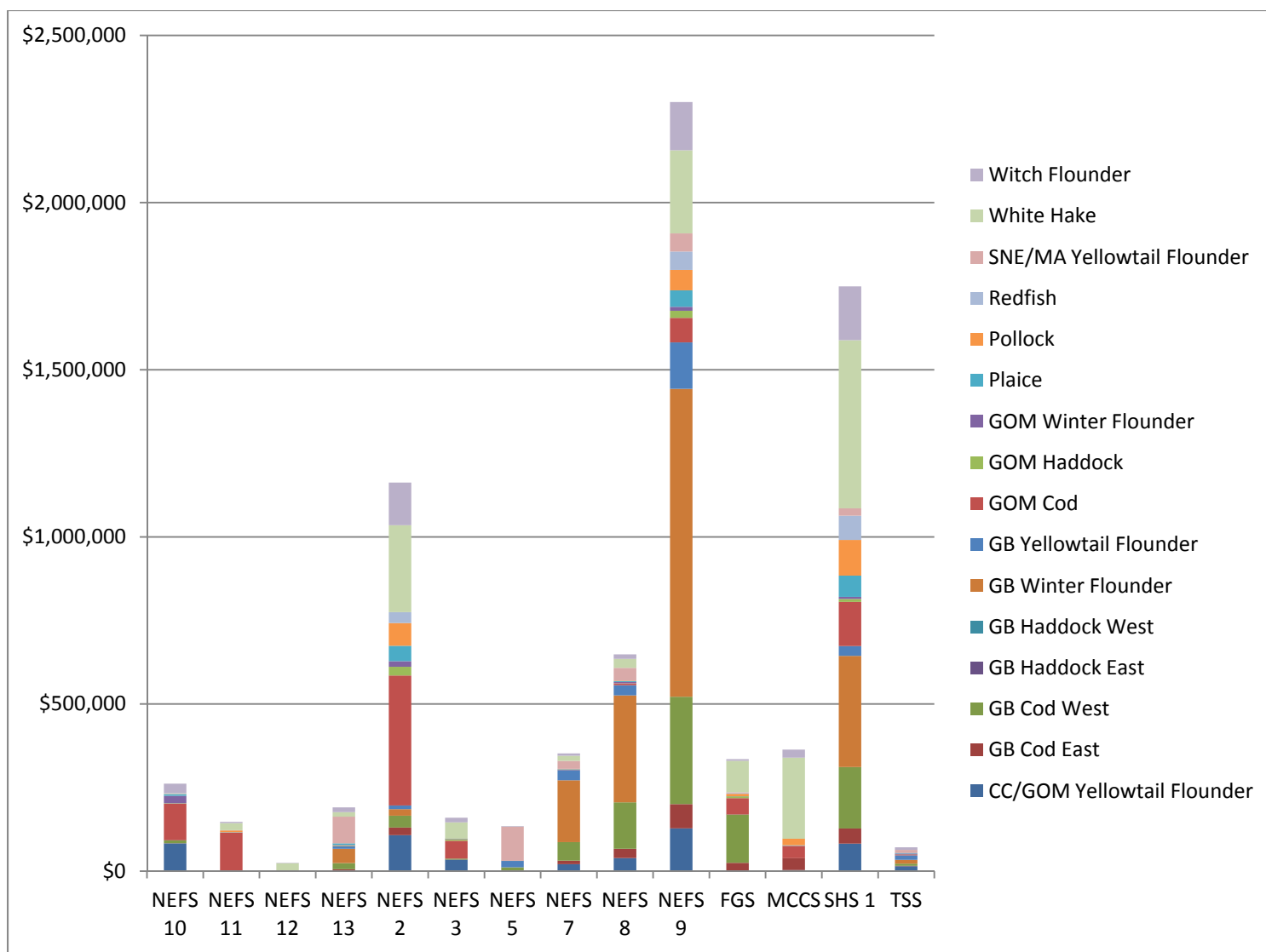


Figure 12. Gross value of quota traded within sectors, by stock.

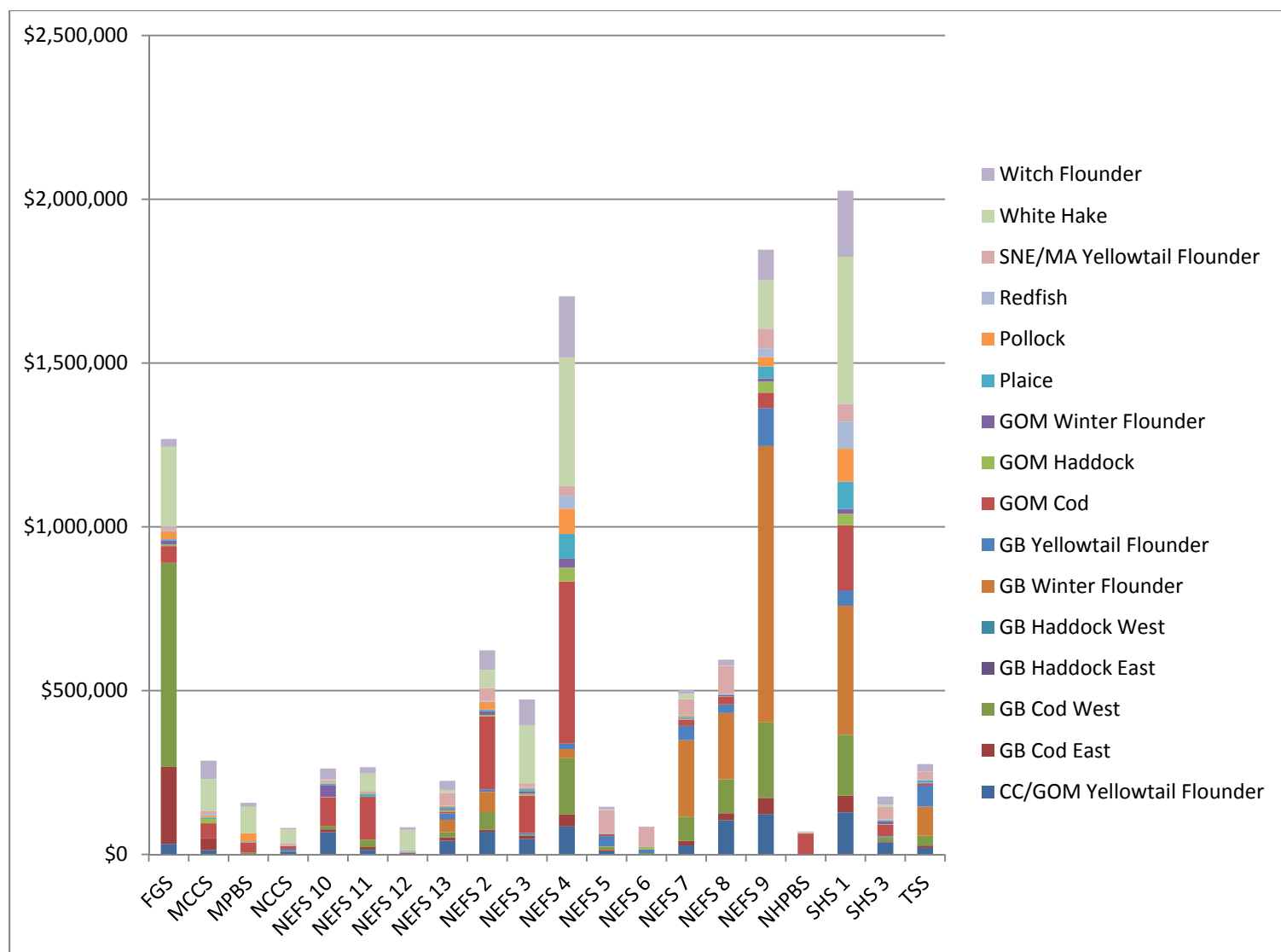


Figure 13. Sector members with positive net quota trading positions (net lessors) -- within and between sector trades combined, by sector and stock.

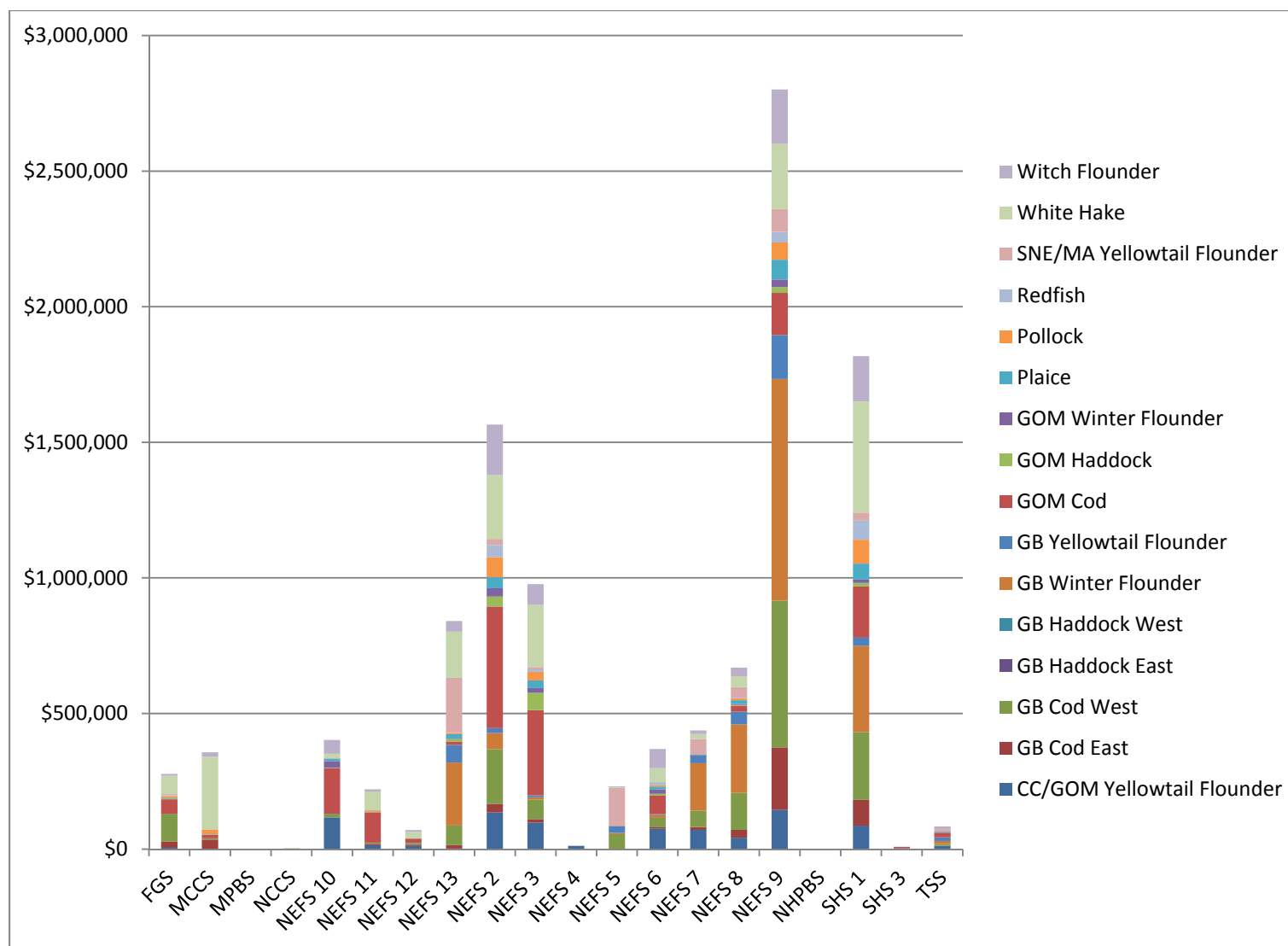


Figure 14. Sector members with negative net quota trading positions (net lessees) -- within and between sector trades combined, by sector and stock.

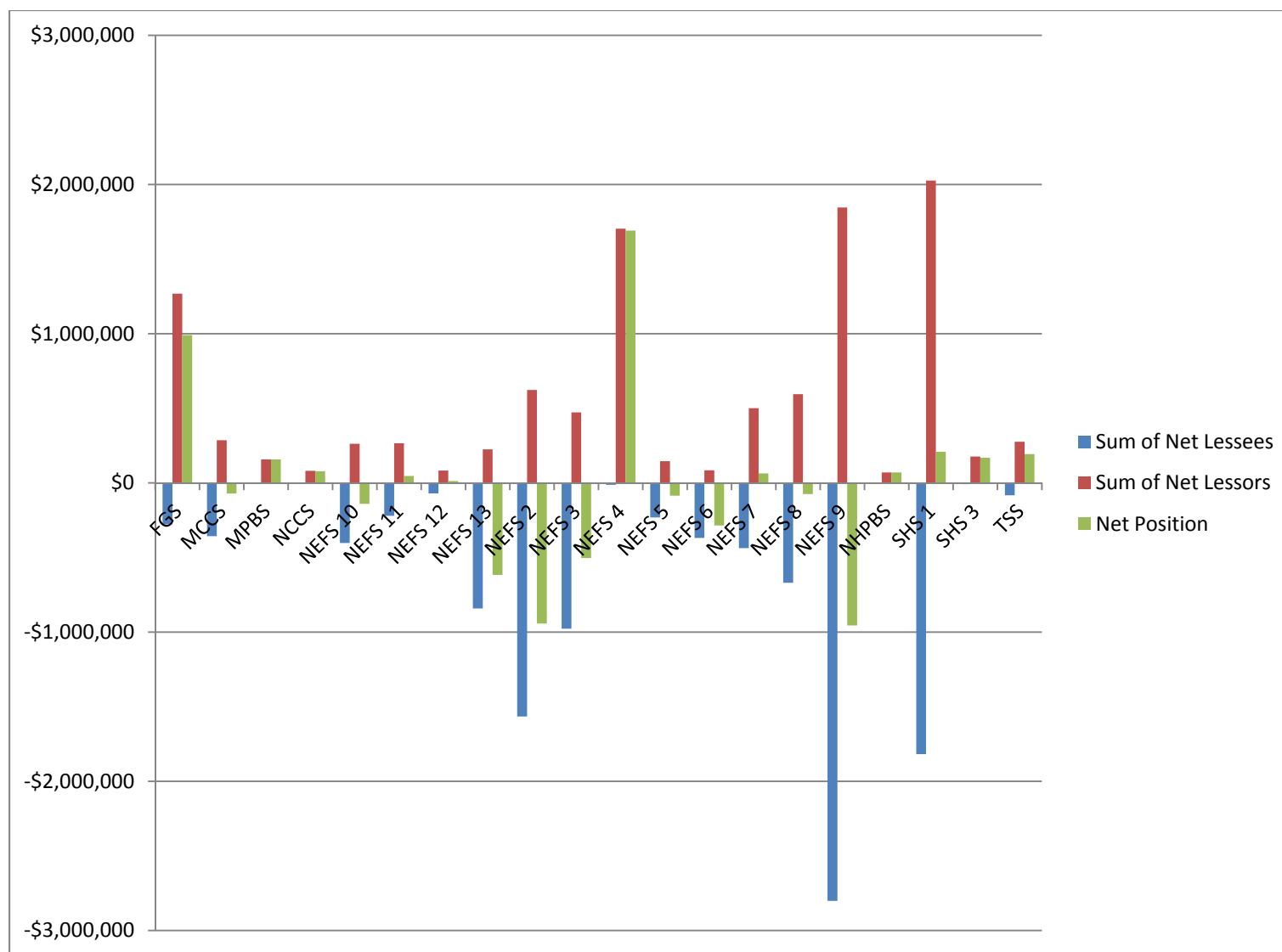


Figure 15. Final net Quota positions by sector -- within and between sectors trades combined.

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