Northeast Fisheries Science Center Reference Document 13-19

Impact of Quota Trading on Net Revenues in the Northeast U.S. Groundfish Fishery

by Andrew Kitts and Chad Demarest

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INTRODUCTION

This report builds on data provided in the fishing year 2011 report on the performance of the Northeast multispecies (groundfish) fishery (Murphy et al. 2012). In that report, Section 5 discusses trading of annual catch entitlements (ACE) and Section 4.2 provides estimates of net revenue which do not account for ACE trading. This report is motivated by the need to evaluate how quota [1] trades affect the profitability of sector members and, in particular, to better understand the full distribution of benefits between lessors and lessees of quota.

The ACE trading analysis conducted in Section 5 of the 2011 groundfish report (Murphy et al. 2012, p 22-26) used an existing database of between sector trades maintained by the Northeast Regional Office (NERO). The analysis in this report draws on a new database that contains information about both between-sector trades and within-sector trades from 17 individual sector year-end reports submitted to NERO.

This report describes the actual trades of quota, both between and within sectors, as reported by sectors in their year-end reports to NERO.[2] Reporting inconsistencies between sectors make it difficult to describe trades at the individual vessel level, which is critical for understanding the full distribution of benefits from quota leasing. To accommodate for this, a simulation of quota trading was performed at the vessel level using catch and potential sector contribution (PSC) data. The simulated vessel level trade information is then used to adjust net revenue estimates.

There are two major limitations to this supplemental report:

- Net revenues in the 2011 report (Section 4.2) were estimated at the fishing trip level and then aggregated and reported at the vessel and fleet levels. For reasons discussed elsewhere in this report, quota leasing costs/revenue cannot be calculated at the trip level. Therefore, only the vessel level net revenue estimates are adjusted for quota trading in this analysis.
- In the simulation, vessels that must acquire quota are identified by comparing catch and quota allocations at a vessel level. Information about net sellers of quota, on the other hand, is limited because the overall fishery quotas are not fully utilized (some quota is never caught or sold). So, while both simulated quota expenditures and revenues are used to adjust net revenue, there is a higher level of confidence about the simulated quota-leasing expenditures and a lower level of confidence in the revenues.

Our analysis showed that while the fishery-wide impacts of quota trading on net revenues are neutral overall because aggregate quota costs equal revenues; quota trading has distributional effects that are evident by comparing the impact of quota trades on net revenues by vessels size class and by homeport state. For example, vessels in the two largest vessel size categories are

[1] We use the term "quota" in this report to refer to both potential sector contribution (PSC) and annual catch entitlement (ACE). PSCs may only be converted into catch rights when a permit joins a Sector. At this point all member PSC shares are pooled, converted into pounds, and become ACE. ACE may be converted into catch (landings plus discards) once a Sector has submitted an approved Sector Operations Plan, and it is important to understand that this access right—ACE—is allocated only to Sectors and not individual vessels or owners.

[2] The 2011 groundfish report contains further details about the between sector traded ACE which are not repeated here (Murphy et al. 2012).

net buyers of quota and their net revenues are reduced by about 8% as a result of this cost. Similarly, quota has been disproportionately sold to vessels with homeports in MA and NH, resulting in net revenue reductions of 4.1% for vessels in MA and 2.2% for vessels in NH. In contrast, net revenues are higher for vessels in the smallest size class and for vessels with homeports in other states in the northeast. Further, about a third of the vessels enrolled in sectors do not catch allocated groundfish and lease their quota to vessels that do.

METHODS

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, as we will show, 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.

Thirteen of nineteen sectors provided a member identification number and a cross-link to the moratorium right identification (MRI[3]) numbers associated with each sector member. These links are essential for associating vessel characteristics to quota trade data. Six of the nineteen sectors either did not include a member identification number or did not provide adequate information about MRIs associated with a member ID.

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.[4] This further complicates associating vessels with actual quota trades.

Of the $10.9 million of observed net trades in fishing year 2011, only $5.0 million can be traced to individual vessels. The other $5.9 million can only be associated with unidentified sector members, sector members with multiple vessels, or sector level trades. This subset of transactions is not representative of the population of sector members engaging in ACE leasing.[5]

As a result of these data limitations, we conducted a simulation of quota transactions to assign quota transfers to specific vessels. The simulation results were then used to adjust the net revenues reported in the 2011 groundfish report (Murphy et al 2012).

The values of quota traded, both in the actual and simulated trade data, are based on species and stock-level lease prices from the hedonic model provided in Table 32 of the 2011 groundfish report (Murphy et al. 2012). 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

[3] A NMFS generated number that tracks the potential sector contribution (PSC) of each sector member.
[4] CPH provides a temporary holding place for inactive permits while allowing the fishing history (and ultimately the quota) to be used on another permit.
[5] Primarily because some sectors did not identify members engaging in trades.

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 Figures 2 and 3, quota trade summaries (both actual and simulated) are net of all transactions. That is, the net position for any given sector (or any given sector member or vessel) for any given stock is represented.[6] That is, the value of quota transferred around throughout the course of the 2011 fishing year totaled $16.3 million. But once all sales and purchases are netted out for each sector member, a total of $10.9 million worth of quota was transferred from net lessors of quota to net lessees of quota.

In some cases, quota was acquired from within a vessel affiliation – 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. Trades within vessel affiliations[7] were not reported by sectors in their year-end reports. The simulation does, however, estimate the amount of quota transferred within vessel affiliations but these estimated values are not used to adjust net revenues.

Quota Trading Simulation

As previously discussed, a simulation was performed to re-create vessel-level lease activity. Catch data and the amount of quota each vessel brings to a sector (via its PSC) were used to simulate which vessels were required to purchase quota and which vessels sold that quota.

In the simulation, the amount of quota each vessel needed to purchase was determined by comparing its annual catch to its starting quota balance. If catch exceeded the starting quota balance, then that amount of quota must have been acquired at some point during the fishing year. The estimated prices from the hedonic model were used to estimate the cost of purchasing these quotas.

Similarly, we used PSC and catch data to simulate revenue derived from leasing. If the starting quota balance exceeded catch, then that amount of quota was available for leasing. Since the catch limits were not met in fishing year 2011 – in fact, catch was less than 80% of the quota for many stocks (Murphy et al. 2012, Table 37) – the amount of quota available for sale far exceeded the need for quota. So the challenge was to determine which sector members were most likely to lease their excess quota to other sector members (both within their own sector and in other sectors) with shortages of quota. To refine the estimates of which portions of a portfolio were leased, additional factors were considered. For each stock, the following process was used[8] (see Figure 1 schematic):

- Vessels in need of quota first purchased from vessels within their sector and from within their vessel affiliation.[9] They first purchase quota from the vessels with the most quota

[6] 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.

[7] See the Appendix for how vessel affiliations were defined in this study.

[8] This simulation is an abstraction of a dynamic process that was played out each day among the sector members.

[9] Quota would most likely be leased from CPH vessels before leasing from other vessels, but CPH vessels are currently not included in the vessel affiliations. Therefore, in this simulation, quota was obtained from CPH vessels at the sector level.

available to sell.[10] To carry out this process for each stock, vessels were sorted by sector membership, vessel affiliation, and then by their available quota in descending order. The amount of quota needed to be purchased was then summed for each vessel affiliation. Quota sales were simulated by drawing from the sorted list of vessels until the quota purchase requirements were met.

- Once within-vessel affiliation leasing limits were reached, the process was repeated at the within-sector level. That is, it was assumed that if vessels still had a need for quota once they purchased it from within their own vessel affiliation, they then purchased quota from within their own sector before purchasing quota from outside their sector.[11] To carry out this process for each stock, vessels were sorted by sector and then by their available quota in descending order (CPH permits first). The amount of quota still required was then summed for each sector. Quota sales were simulated by drawing from the sorted list of vessels until the quota purchase requirements were met.
- Once within-sector leasing limits were reached, the process was repeated at the between-sector level. That is, it was assumed that if vessels still had a need for quota once they purchased it from within their own vessel affiliation and sector, they then purchased quota from another sector. To carry out this process for each stock, vessels were sorted by their available quota in descending order. The amount of quota still needed was then summed for each stock. Quota sales were simulated by drawing from the sorted list of vessels until the quota purchase requirements were met.
- To better match actual trades at the sector/stock level, the simulated quota available for sale by each vessel was proportionally adjusted to match the observed sales of quota at the sector/stock level. This adjustment was made for both simulated within-sector and between-sector trades.

The average simulated quota purchase costs and revenues were used to adjust the average net revenue figures provided in Table 19 of the 2011 groundfish report (Murphy et al. 2012). In addition to providing estimates of average net revenue per vessel, the 2011 groundfish report also aggregates net revenues by vessel size category and homeport state (see Murphy et al. 2012, Tables 21 and 22). Simulated quota lease purchases and revenues are also used to adjust these values.

An additional cost related to quota trading, but not included in the results, are the fees some sector members pay to transfer quota outside of their sector. Some sectors charge 1.5 cents to 5.0 cents per pound of quota traded out of their sector and/or out of the Northeast Sector Service Network. In fishing year 2011, these transactions fees totaled about $183,000. This value is based on multiplying the appropriate fees by the pounds of quota traded as reported in the trade data provided by sectors. Net revenues could not be adjusted by these transaction fees because the quota trading simulation did not reveal individual transactions between vessels. Rather, the simulation only estimated which vessels sold quota and, separately, which vessels bought quota.

[10] It is presumed that vessels with the most quota available to sell were those with the greatest incentive to sell and were actively seeking buyers.

[11] There are three primary reasons for making this assumption: 1) sectors have rights of first refusal clauses in their contracts, 2) some sectors charge members a fee for selling quota outside of their sector, so presumably quota prices would be offered at a lower price inside a sector in these cases, all else equal, and 3) search costs are likely to be lower within a sector.

RESULTS

Observed Quota Trading

The total value of quota traded between sectors in fishing year 2011 was $7.8 million. Figure 2 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 2011 was $8.5 million.[12] Figure 3 shows the value of quota traded within each sector by stock. In value terms, the Fixed Gear Sector, NEFS 2, and the Sustainable Harvest Sector 1 exhibited the largest amount of internal trading. Gulf of Maine cod was the largest component stock for these three sectors. Note that the within-sector trade data does 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 Figures 4 and 5. The net value of quota leased out (revenue) totaled $10.9 million (Figure 4). The Sustainable Harvest Sector 1 obtained $1.9 million of quota revenue, followed closely by the Fixed Gear Sector ($1.8 million) and the Northeast Fishery Sector 4 ($1.6 million). The value of quota leased in (expenditures) also totaled $10.9 million (Figure 5). The two largest buyers of quota, both from within their own sector and from other sectors, were Northeast Fishery Sector 2 ($2.3 million), followed by members of the Sustainable Harvest Sector 1 ($1.7 million) and the Northeast Fishery Sector 9 ($1.4 million). The stocks with the highest net transfer values were Gulf of Maine cod ($3.7 million), Georges Bank cod West ($2.4 million), white hake ($1.1 million), and Georges Bank winter flounder ($1.1) 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 6). The two sectors with the largest net quota expenditures were Northeast Fishery Sector 2 ($1.8 million) and Northeast Fishery Sector 9 ($1.1 million). The two sectors with the largest net quota revenues were Northeast Fishery Sector 4 ($1.6 million) and the Fixed Gear Sector ($0.9 million).

Simulated Quota Trading

The simulation estimates that $10.8 million was spent in fishing year 2011 by sector members to lease-in quota. The simulation results indicate that the sectors that spent the most on quota were the Sustainable Harvest Sector 1 ($2.3 million), Northeast Fishery Sector 2 ($2.2 million), and Northeast Fishery Sector 9 ($1.6 million) (Figure 7). The simulated values for the Northeast Fishery Sector 2 and the Northeast Fishery Sector 9 are similar to the actual values (compare Figure 7 to Figure 5) reported to NMFS in their respective annual reports. However, the simulation over-estimates purchases by Sustainable Harvest Sector 1 members by 37%. All other sector estimates are similar to the reported trade values. The stocks with the highest

[12] The values of quota traded between and within sectors (a total of $16.3 million) in Figures 2 and 3 are not net results -- these values reflect total quota trading activity.

simulated total transfer values were Gulf of Maine cod ($3.8 million), Georges Bank cod West ($1.8 million), Georges Bank winter flounder ($1.5 million), and white hake ($1.4 million).

The simulation results indicated that quota expenditures by vessels greater than 75 feet totaled $4.2 million and were $3.9 million for vessels 50' to 75' (Figure 8). Quota expenditures by vessels with homeports in Massachusetts were estimated to be $8.5 million. The second largest expenditures ($1.4 million) were by vessels with homeports in Maine (Figure 9).

The results of simulating quota revenue ($10.8 million) by sector and stock (Figure 10) are similar to the actual values (Figure 4). Members of the Sustainable Harvest Sector 1 had simulated sales of $2.0 million, followed by members of the Fixed Gear Sector and the Northeast Fishery Sector 4 (both at $1.7 million).

Simulated quota revenues by stock and vessel size category are shown in Figure 11 and by homeport state in Figure 12. Vessels less than 30' in length received the most revenue from leasing out quota[13] ($5.1 million). Quota coming off CPH permits and from vessels 30' to < 50' were also significant (both earned $1.8 million). The two largest vessel size categories received the least amount of revenue from the sale of quota. And, across all vessel sizes, vessels with homeports in Massachusetts received the most revenue ($6.5 million) with Maine receiving $1.5 million.

To illustrate differences between fleet components, Tables 1 and 2 provide average revenue earned from trading quota (average cost if value is negative) by homeport state and vessel length category. Table 1 reports averages for the 296 vessels that caught at least one pound of allocated groundfish species. Nearly all fleet components with catch had quota costs. The fleet component with the largest average quota cost of $108,934 was 75'+ vessels with homeports in Maine (four vessels). Standard deviations provide information about the range of values around the mean. Table 2 reports averages for the 514 vessels that did not catch any allocated groundfish species in fishing year 2011. On average, each inactive vessel earned $16,820 of revenue from quota sales (with a standard deviation of $44,266). The component with the largest average revenue from quota sales of $28,130 (with a standard deviation of $48,751) was permits in CPH status (62 vessels).

The simulation predicts that an additional $4.4 million of quota was transferred among vessel affiliations. Since these transfers are not true costs/revenues, this portion of simulated trades is not described here or used in the net revenue adjustments. The 2011 groundfish report estimates that a total of $15.2 million of quota needed to be purchased to cover catch overages (Murphy et al. 2012). The $4.4 million of within vessel affiliation trading is the difference between the $15.2 million of quota requirements and the $10.8 million of out-of-vessel-affiliation quota trades discussed here.

Adjustments to Net Revenue

The average simulated quota purchase cost ranged from $117 for the smallest vessels to about $48,000 for the largest vessels. Average simulated revenue from quota sales ranged from about $7,500 for vessels 30' to <50' in length to about $20,000 for vessels less than 30'. The combined effect on average net revenues is an increase for vessels <30' (162.0%) and a decrease

[13] Most vessels < 30' in length are owned specifically for the PSC associated with them, not for fishing. The vessels < 30' discussed in this analysis should not be confused with multispecies category C permits (a limited access category which exempts certain vessel < 30' from days-at-sea limits).

for all other vessels (6.2% to 8.1%). While the larger vessels trade quota among themselves, the net result is that the smallest vessels (those usually acquired solely for their associated PSC) earn revenue from selling quota to the larger vessels that are, on average, net purchasers of quota (Table 3).

Aggregate results at the vessel size category level are provided in Table 4. For all vessels less than 30', net revenues increase from about $75,000 to $5.2 million (an increase of 6,795.9%). Changes to net revenues in the other vessel categories are not nearly as pronounced – ranging from decreases of 6.2% to 8.4%. At the homeport state level (Table 5), the changes to net revenue estimates range from decreases of 4.1% (MA) to increases of 1.2% (ME).

Quota revenue to vessels in CPH (about $0.6 million) is included in Tables 4 and 5 for consistency, even though there is no net revenue or quota purchase cost estimates for these vessels. The grand total rows in Tables 4 and 5 illustrate that on a fleet-wide level, net revenue estimates remain the same because quota revenue equals quota costs. The distributional impacts are apparent by examination of the net movement of quota between fleet sub-components.

DISCUSSION

Although the fishery-wide impacts of quota trading on net revenues are neutral, as aggregate quota costs equal revenues, there are distributional effects between vessel size categories and between homeport states. Vessels in the two largest vessel size categories are net buyers of quota and their net revenues are reduced by about 8% as a result of this cost. Vessels 30' to <50' are also net buyers of quota and their net revenues are reduced by about 6% as a result of this cost. On net, vessels <30' and CPH permits supply quota to all three of these vessel size categories and their net revenues increase markedly (net revenues are essentially zero because most of these small vessels and permits were inactive to begin with). There is a shift of quota from vessels with homeports in ME, RI, and other Northeast states to vessels with homeports in MA and NH. As a result, vessels in MA had net revenue reductions of 4.1% and NH vessels had net revenue reductions of 2.2%. Vessels with homeports in all other states experienced net revenue increases of 0.6% to 1.2%. Further, about a third of the vessels enrolled in sectors do not catch allocated groundfish and lease their quota to vessels that do.

The use of catch and PSC data to simulate quota transactions may become less appropriate under three circumstances: (1) if sectors, over time, choose methods other than PSC as a basis for re-distributing ACE to members; (2) if complexity increases with respect to the rollover of ACE from one year to the next, or how is ACE held in reserve by sectors and how portions of ACE are treated by sectors; and (3) if there are substantial changes in the use of lease only sectors and other innovative risk pooling techniques. Added complexities mean that the simulation used in this analysis, which treats quota as a pseudo-individual transferable quota, would have to be modified. However, if there are improvements in how quota trades are reported, it may not be necessary to simulate trades.

This study also indicates that profitability might be better 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 measured in this fishery.

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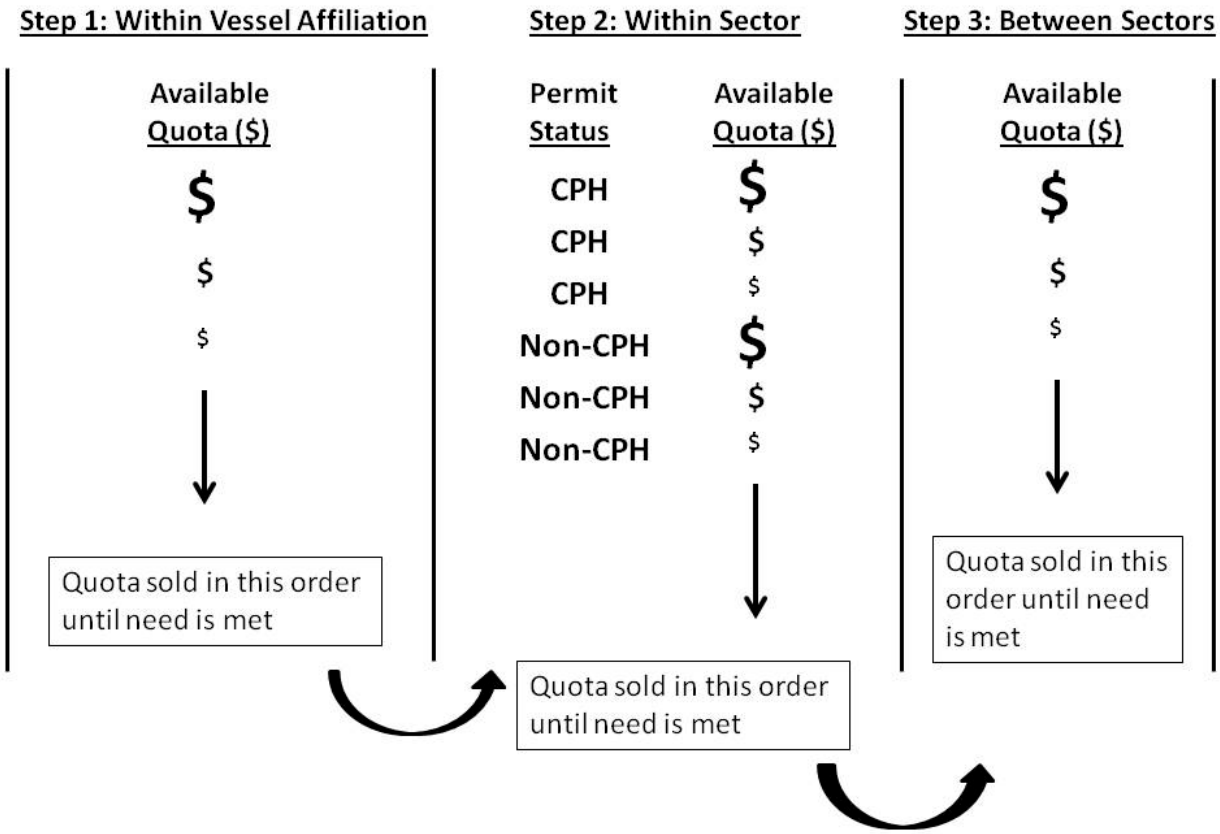

Figure 1. Schematic of Revenue from Quota Trading Simulation

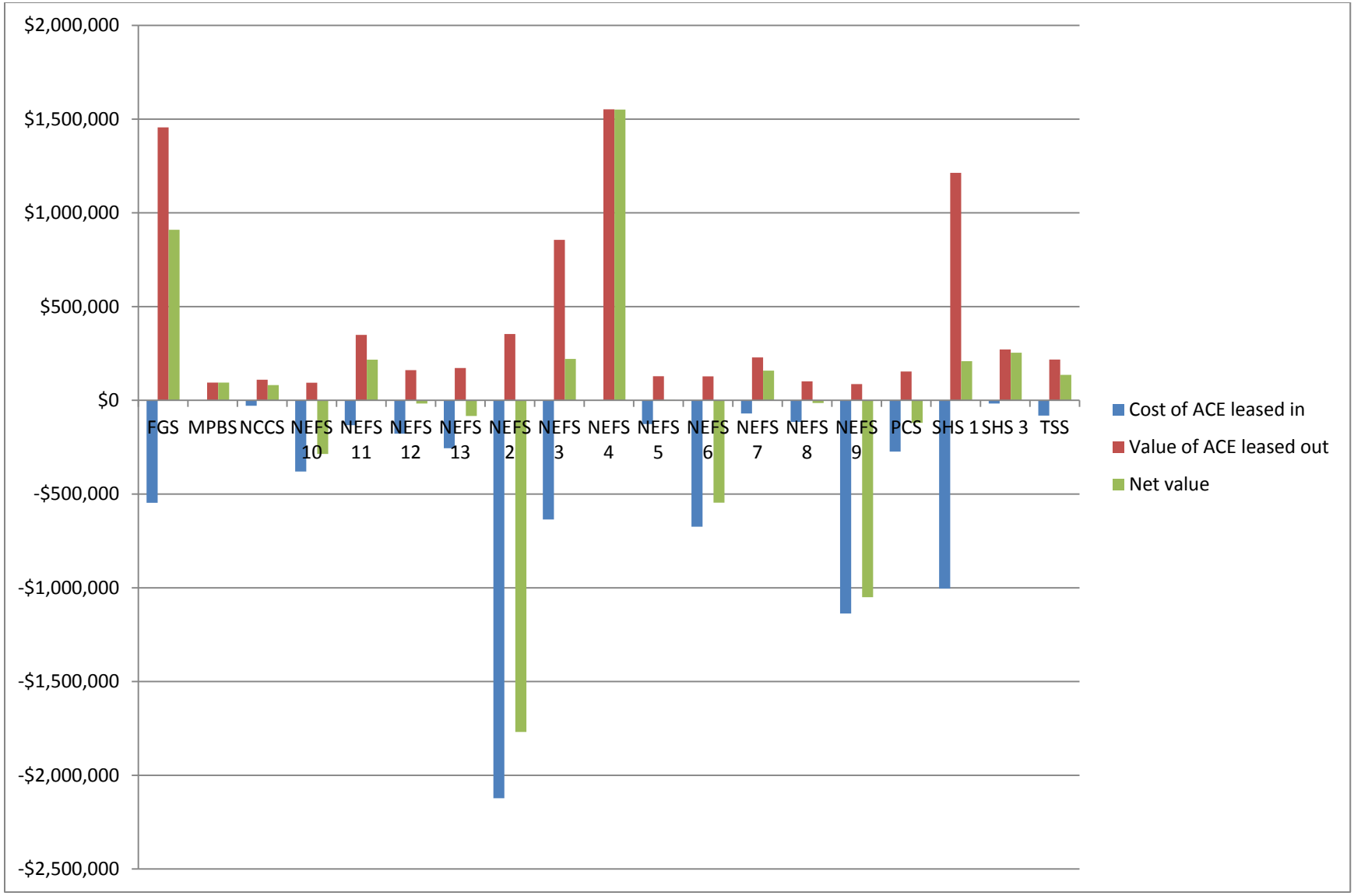

Figure 2. Gross Value of Quota Traded Between Sectors

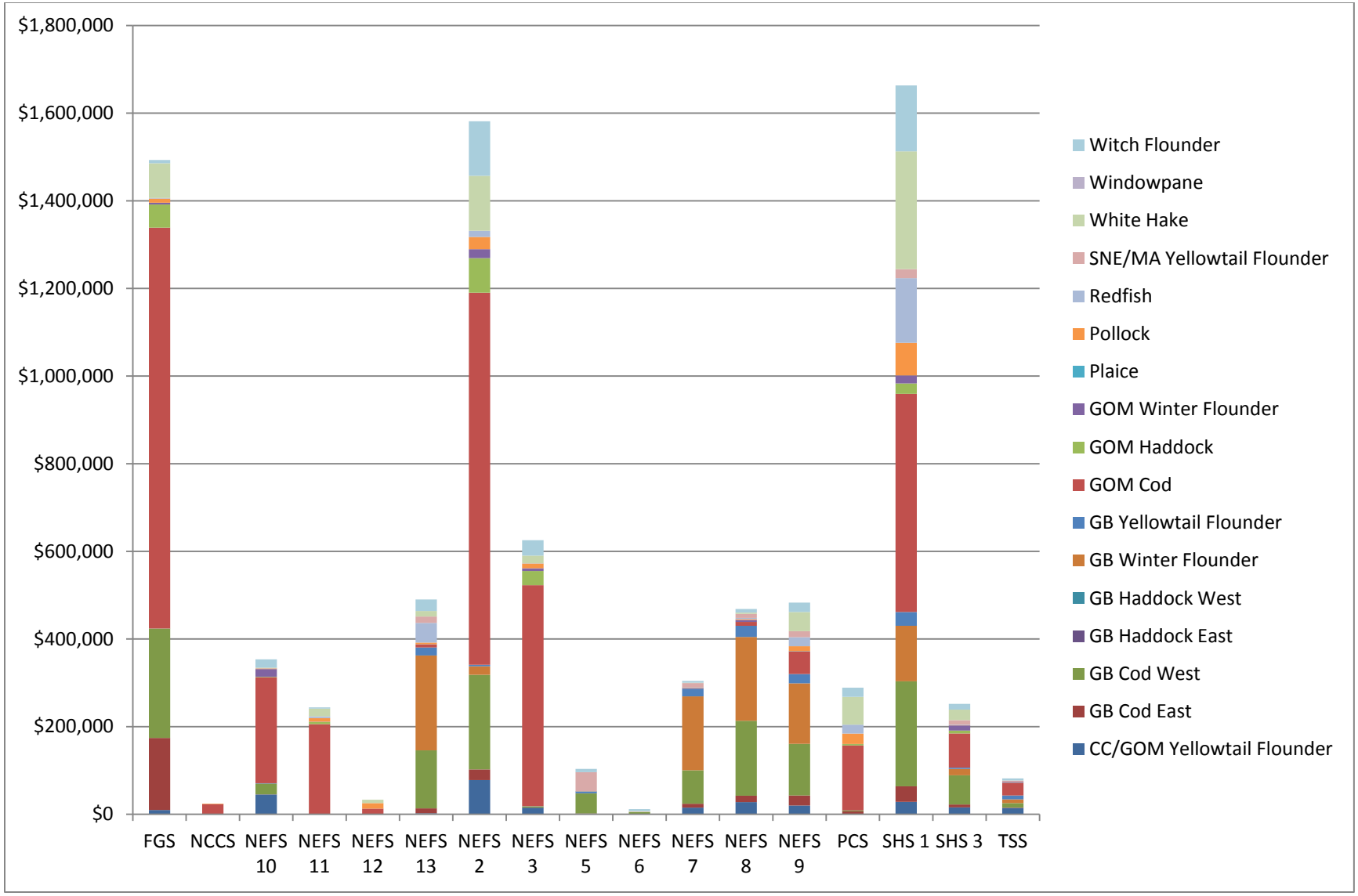

Figure 3. Gross Value of Quota Traded within Sectors, by Stock

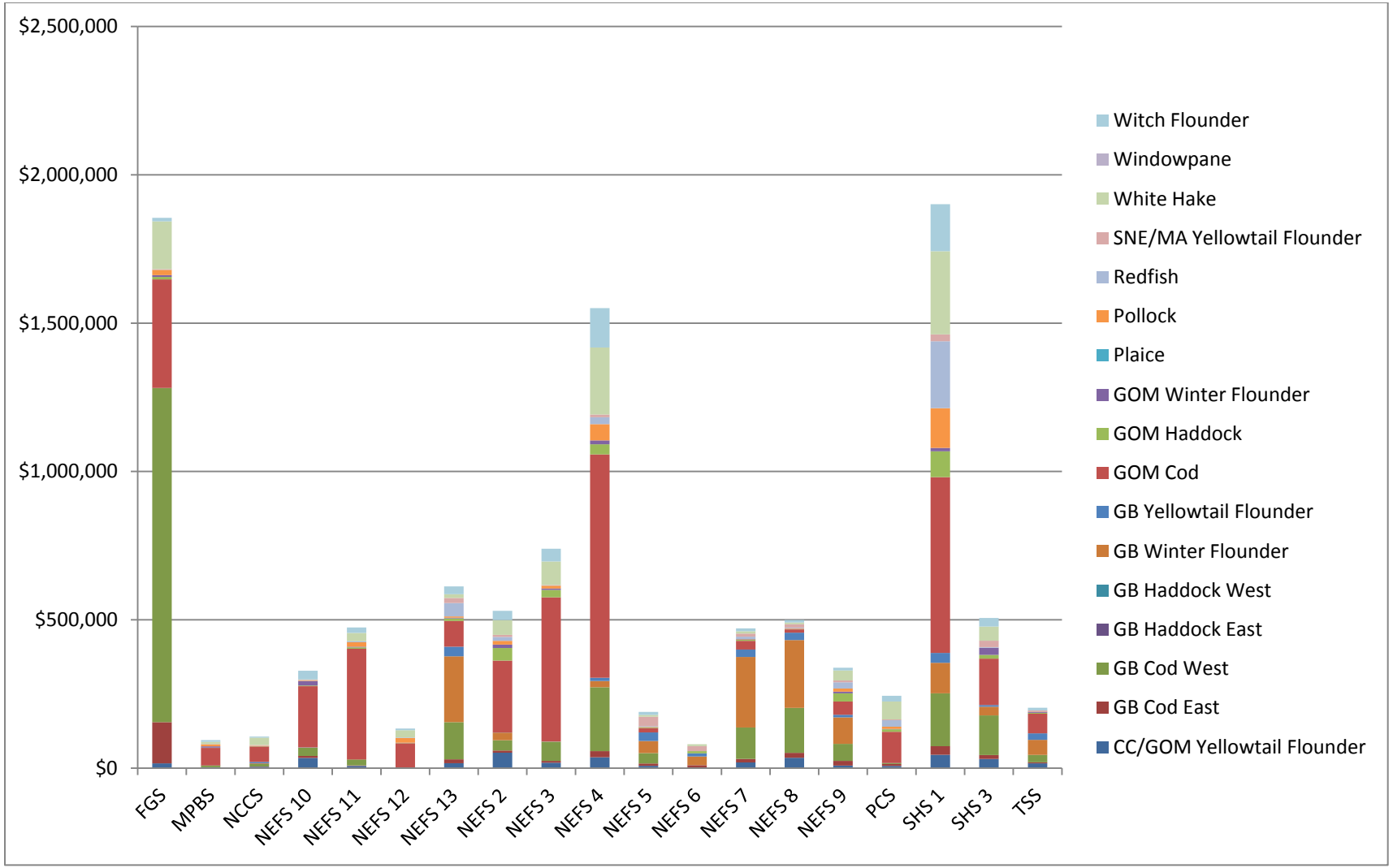

Figure 4. Vessels with Positive Net Quota Trading Positions (net lessors) -- Within and Between Sector Trades Combined, by Sector and Stock

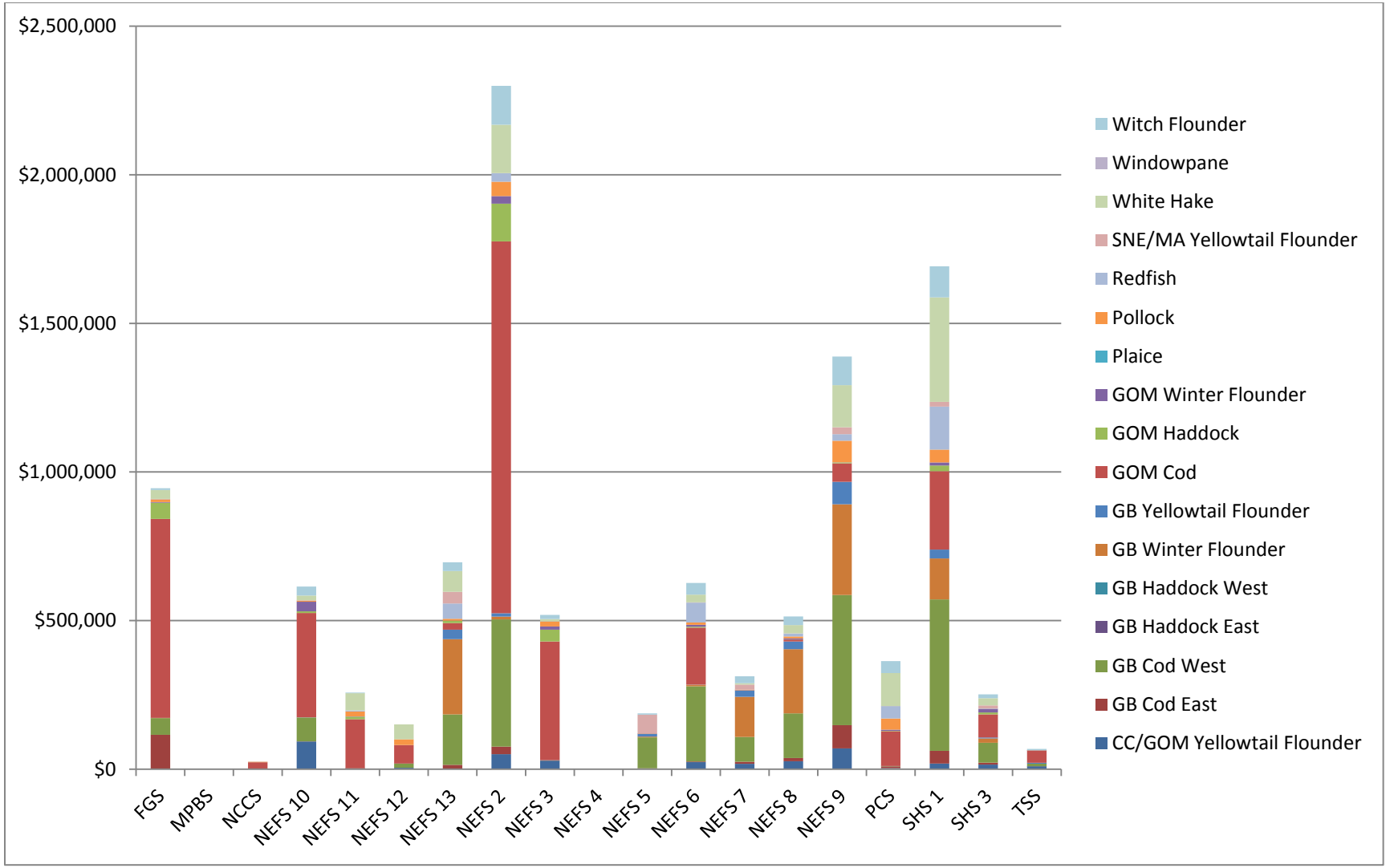

Figure 5. Vessels with Negative Net Quota Trading Positions (net lessees) -- Within and Between Sector Trades Combined, by Sector and Stock

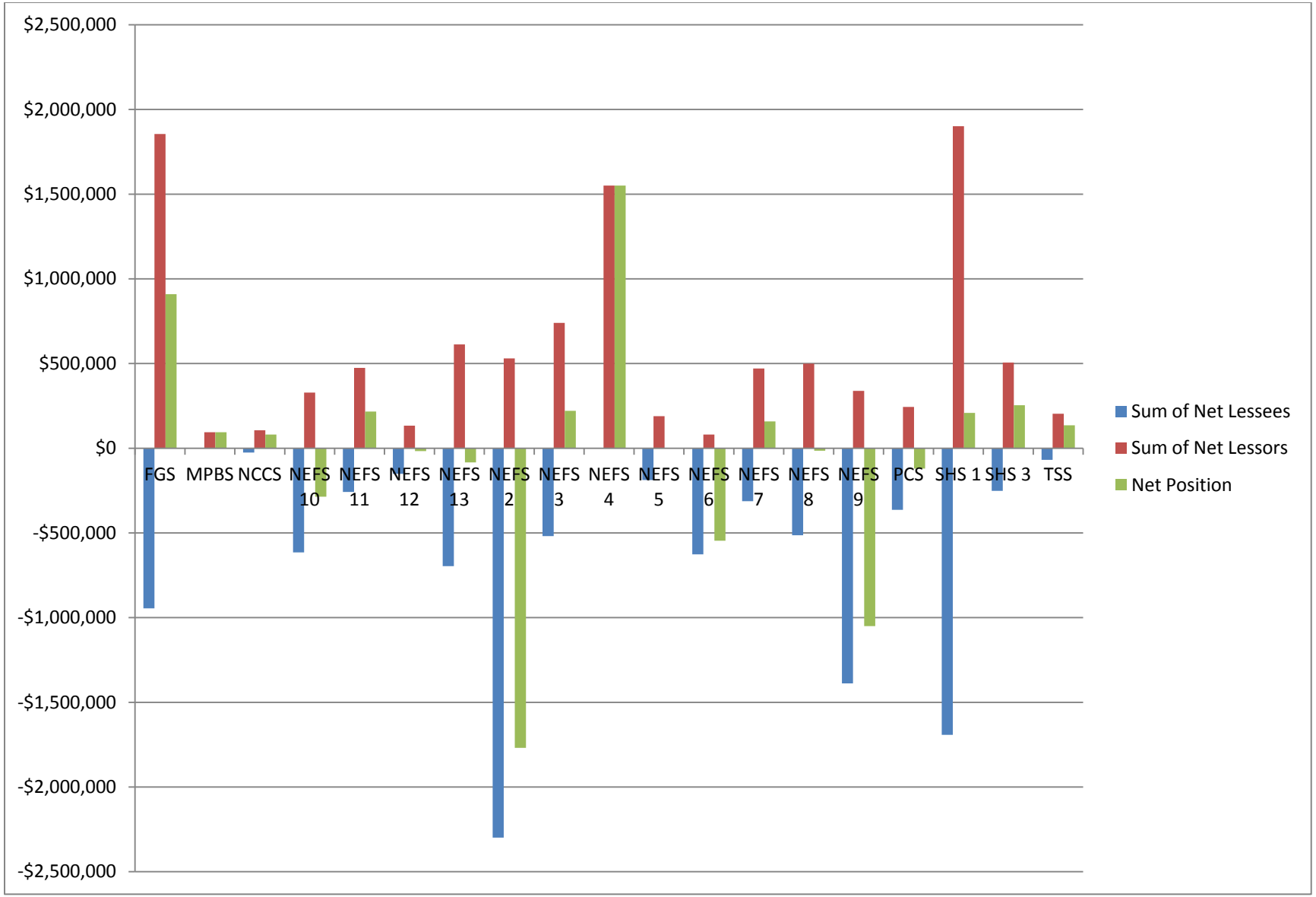

Figure 6. Final Net Quota Positions by Sector -- Within and Between Sectors Trades Combined

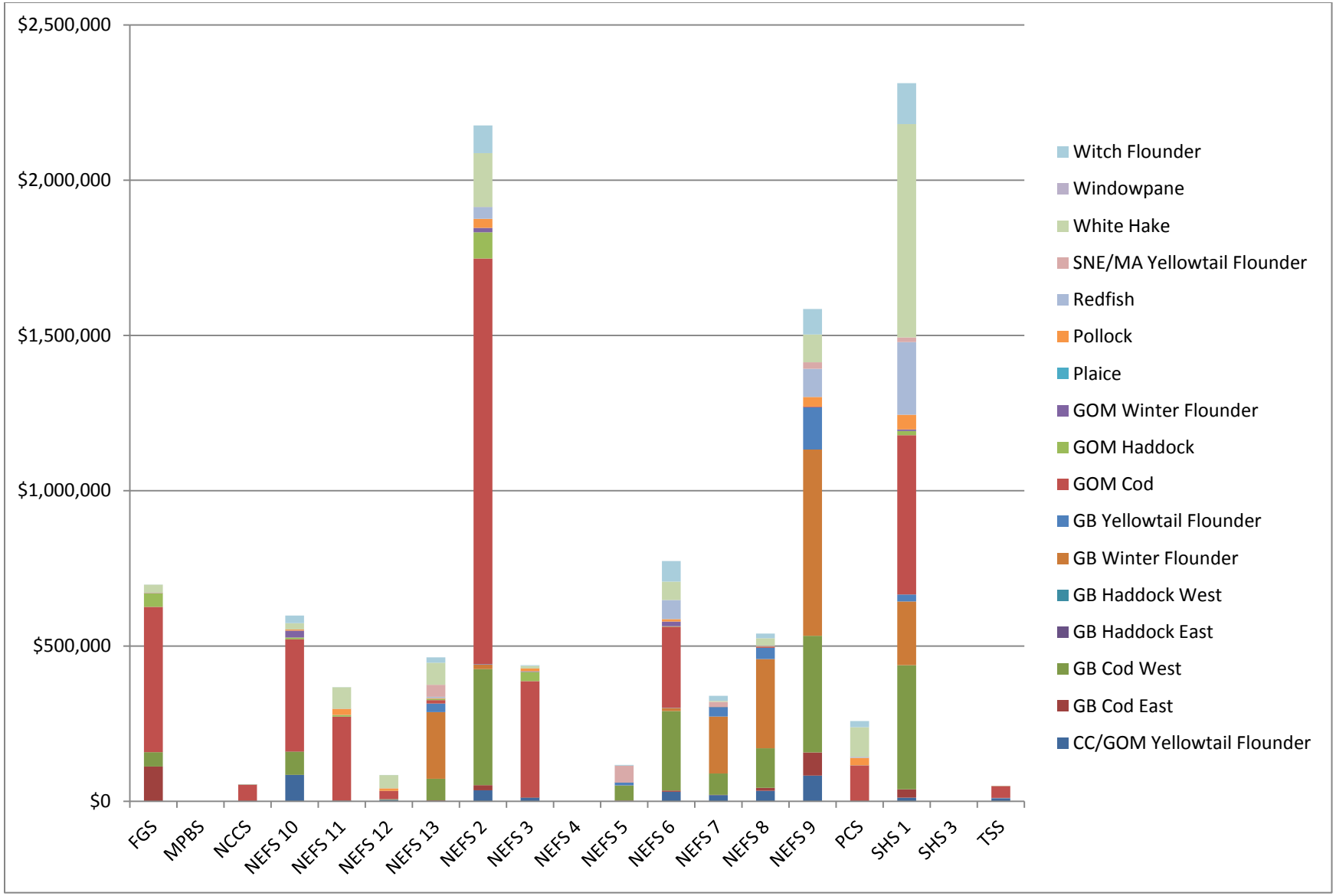

Figure 7. Simulated Quota Requirement Costs by Sector and Stock

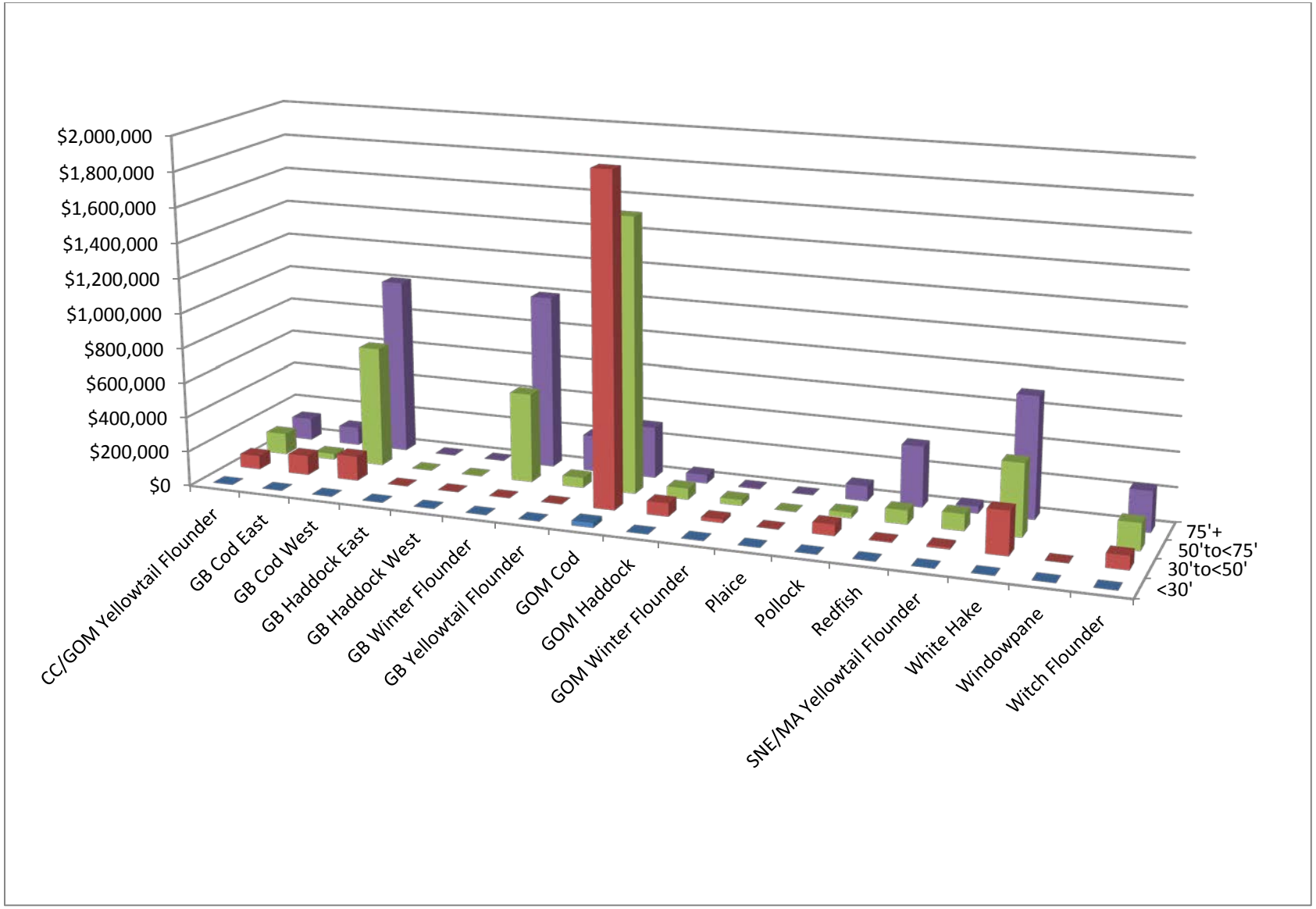

Figure 8. Simulated Quota Requirement Costs by Vessel Length and Stock

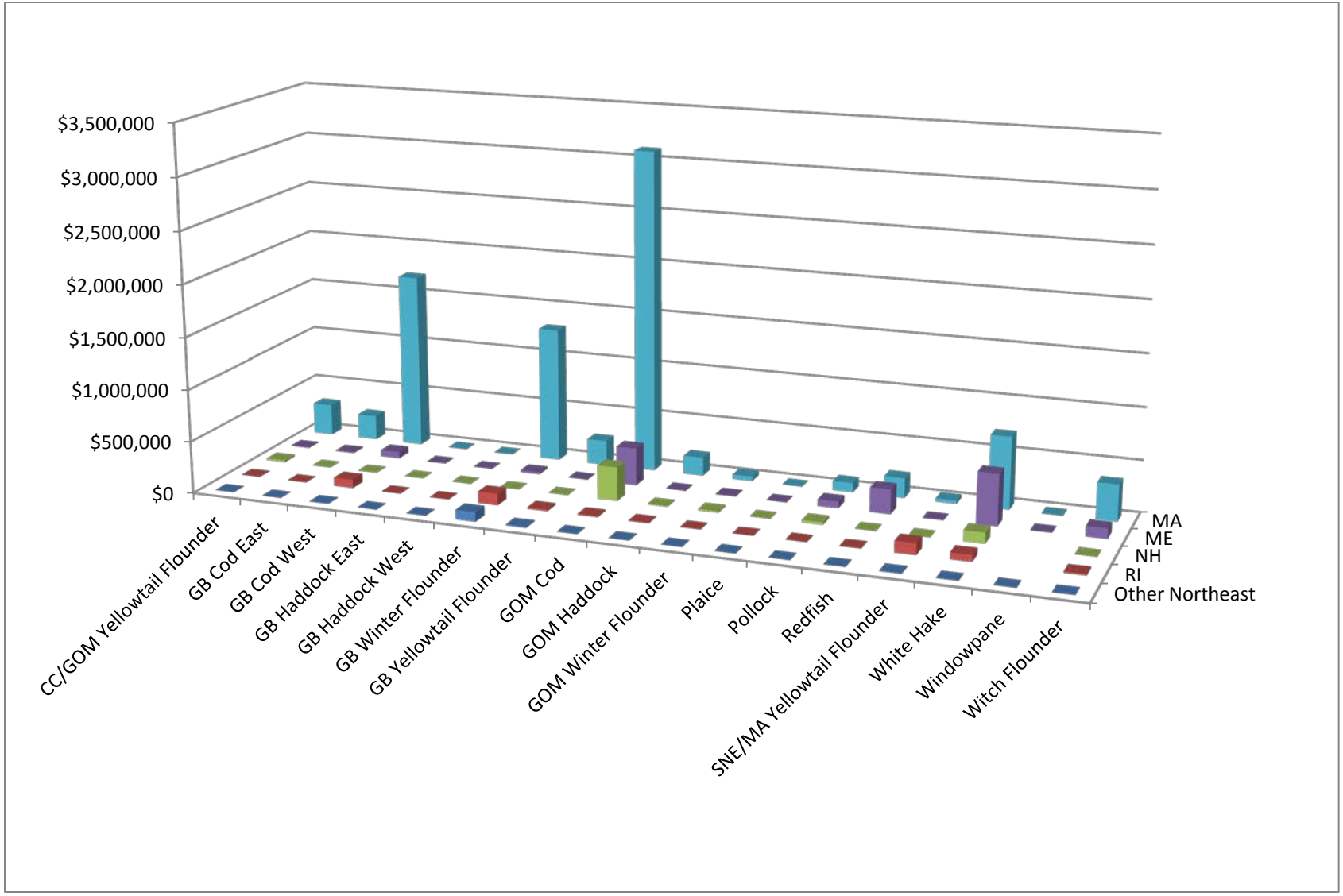

Figure 9. Simulated Quota Requirement Costs by Homeport State and Stock

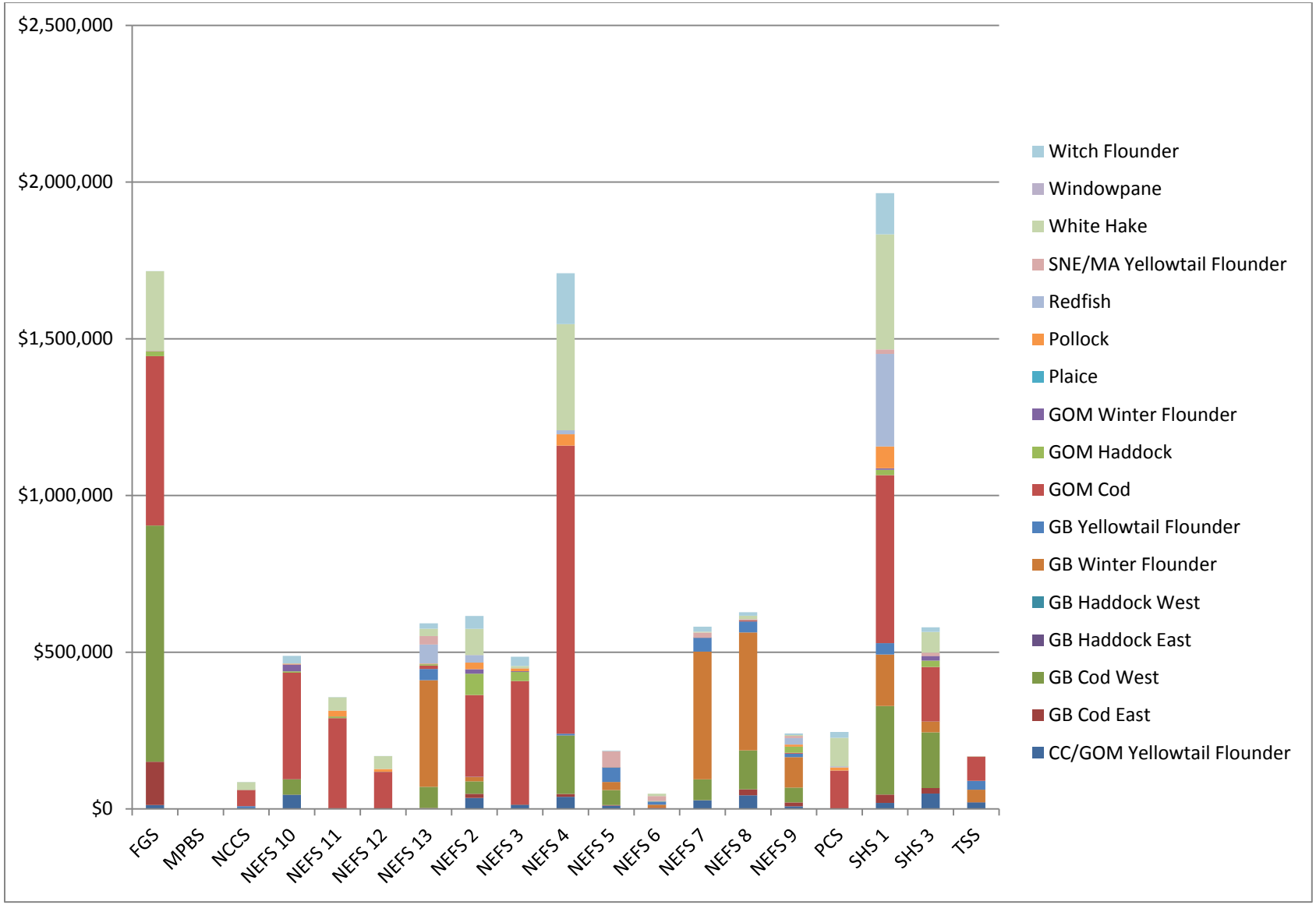

Figure 10. Simulated Revenue from Quota Leases by Sector and Stock

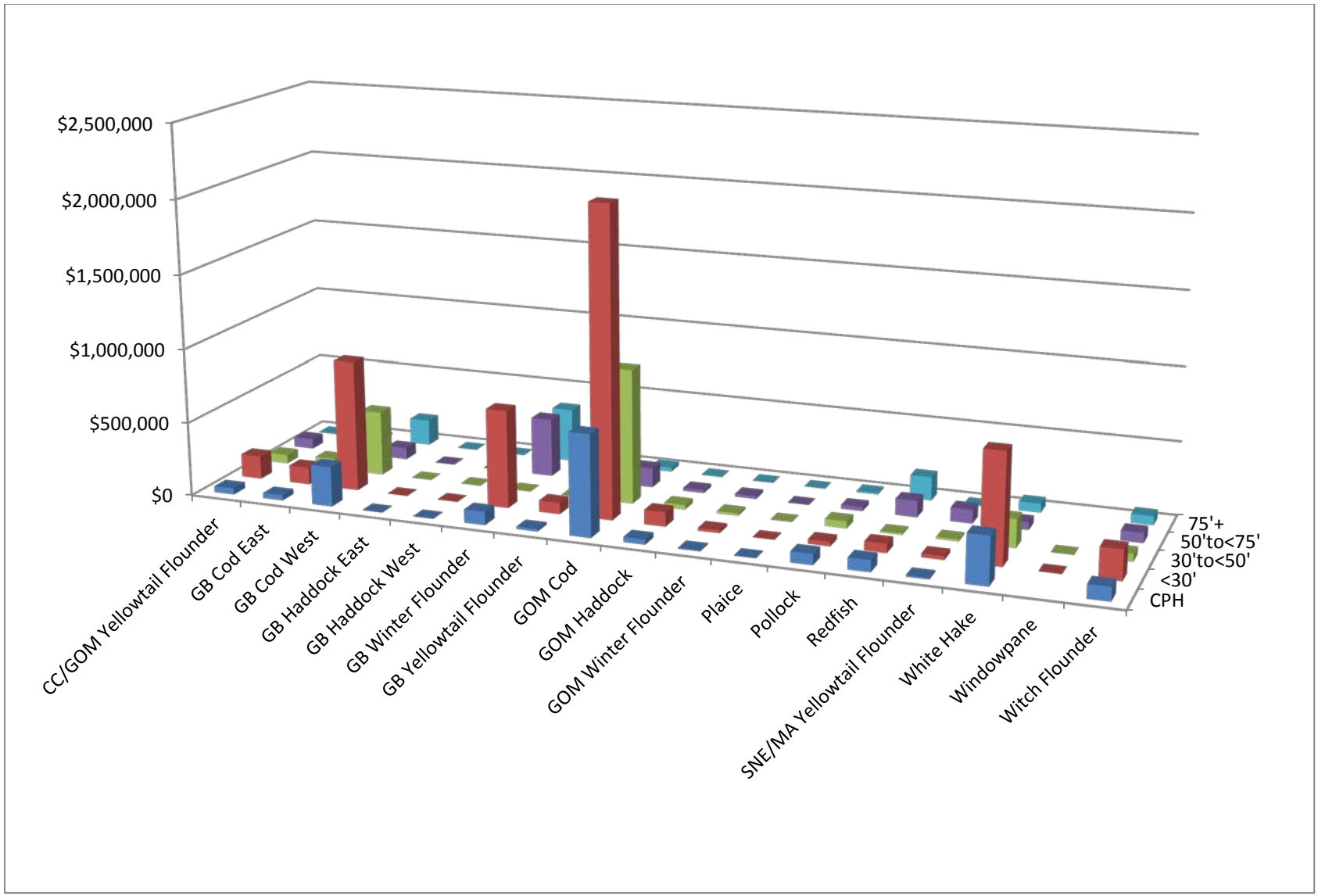

Figure 11. Simulated Revenue from Quota Leases by Stock and Vessel Size Category

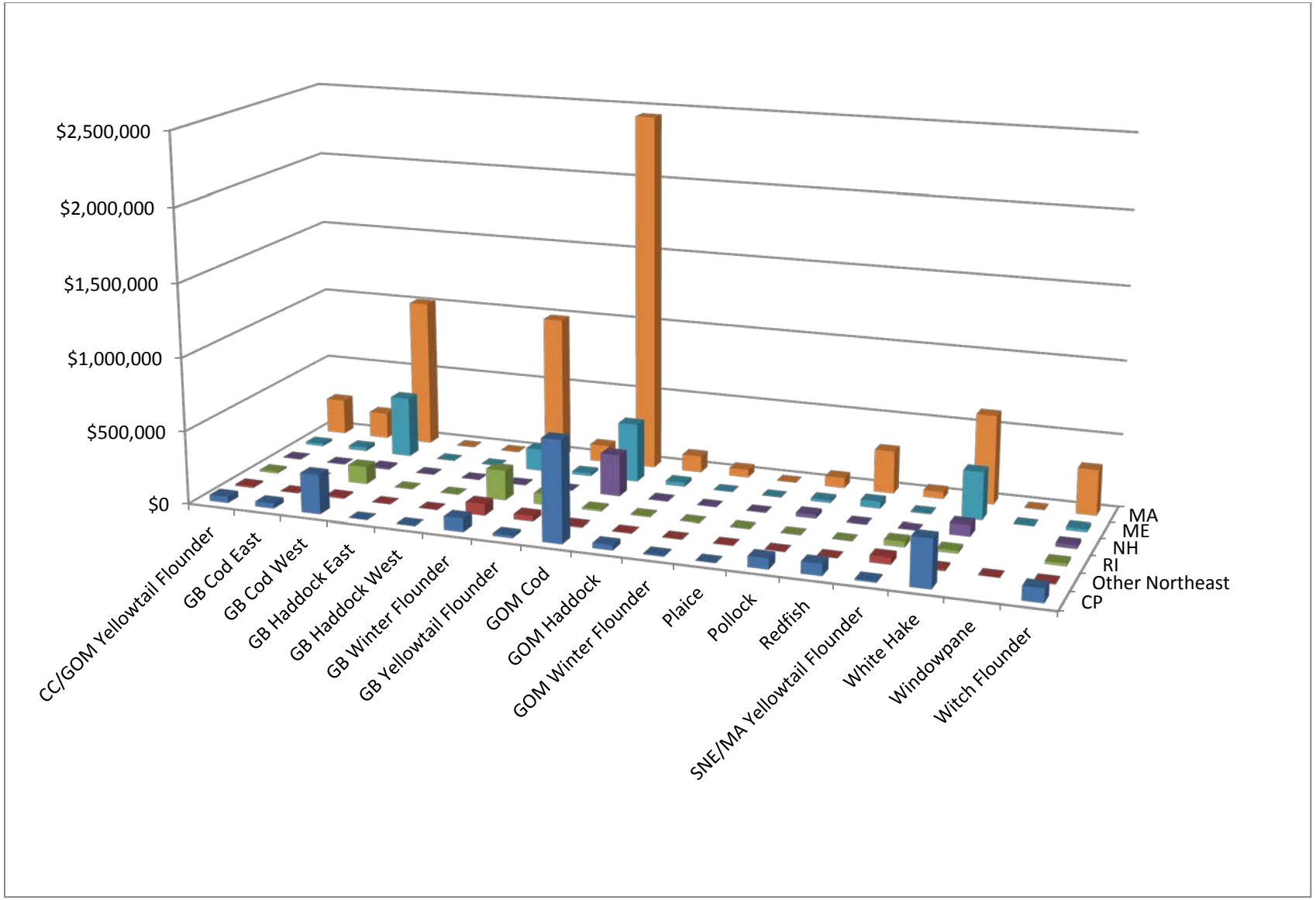

Figure 12. Simulated Revenue from Quota Leases by Stock and Homeport State

Table 1. Revenue from Quota Trades for Vessels with Groundfish Catch (allocated species)

Vessel Length		Homeport State MA	ME	NH	Other Northeast	All Northeast
<30'	Average revenue	$25,494	-$2,178	confidential		$8,931
	Standard deviation	$42,493	$2,159	confidential		$26,586
	Number of vessels	3	3	2		8
30' to< 50'	Average revenue	-$12,451	-$14,165	-$14,064	-$10,270	-$12,929
	Standard deviation	$47,329	$20,481	$50,461	$17,557	$43,473
	Number of vessels	93	25	19	3	140
50' to< 75'	Average revenue	-$59,920	-$49,041	-$8,371	$572	-$36,991
	Standard deviation	$78,379	$82,506	$5,469	$26,557	$70,019
	Number of vessels	46	10	3	29	88
75'+	Average revenue	-$78,557	-$108,934		$722	-$60,762
	Standard deviation	$69,079	$79,418		$33,456	$71,833
	Number of vessels	41	4		15	60
All Vessels	Average revenue	-38,572	-30,638	-12,118	-72	-29,188
	Standard deviation	67,908	55,740	44,886	28,118	61,408
	Number of vessels	183	42	24	47	296

Table 2. Revenue from Quota Trades for Vessels with no Groundfish Catch (allocated species)

		Homeport State					
Vessel Length		MA	ME	NH	Other Northeast	CPH	All Northeast
<30'	Average revenue	$21,435	$21,254	$6,483	$3,660		$19,883
	Standard deviation	$51,732	$72,524	$10,205	$8,632		$53,954
	Number of vessels	184	47	14	10		255
30' to <50'	Average revenue	$7,299	$12,445	$6,675	$7,965		$8,345
	Standard deviation	$21,826	$25,848	$18,798	$12,917		$21,873
	Number of vessels	68	24	15	6		113
50' to <75'	Average revenue	$11,984	$17,571	confidential	$5,215		$9,551
	Standard deviation	$24,186	$21,254	confidential	$8,003		$18,520
	Number of vessels	24	5	1	22		52
75'+	Average revenue	$17,767	confidential		$2,135		$12,236
	Standard deviation	$37,051	confidential		$3,223		$30,011
	Number of vessels	20	1		11		32
CPH	Average revenue					$28,130	$28,130
	Standard deviation					$48,751	$48,751
	Number of vessels					62	62
All Vessels	Average revenue	$17,173	$18,158	$6,577	$4,543	$28,130	$16,820
	Standard deviation	$44,027	$58,533	$14,741	$8,043	$48,751	$44,266
	Number of vessels	296	77	30	49	62	514

Table 3. FY2011 Average Owners' Share of Net Revenue per Vessel Adjusted by Quota Transfers

Vessel Length	Average net revenue per vessel (from table 19 in 2011 groundfish report) (Std dev)	Average Cost of Quota Purchases (Std dev)	Average Revenue from Quota Sales (Std dev)	Adjusted Average Net Revenue (Std dev)	Percent Change
Less than 30'	$12,352 ($3,735)	$117 ($1,479)	$20,128 ($54,264)	$32,362 ($54,862)	162.0%
30' to < 50'	$63,493 ($82,405)	$11,482 ($29,716)	$7,519 ($20,978)	$59,530 ($74,258)	-6.2%
50' to < 75'	$248,674 ($213,500)	$28,298 ($57,670)	$8,179 ($15,263)	$228,554 ($203,531)	-8.1%
75' +	$474,363 ($323,527)	$48,357 ($63,168)	$10,268 ($29,434)	$436,273 ($321,155)	-8.0%

Table 4. FY2011 Aggregate Owners' Share of Net Revenue Adjusted by Quota Transfers by Vessel Size

Vessel Length	Aggregate owners' shares (from table 21 in 2011 groundfish report)	Aggregate Cost of Quota Purchases	Aggregate Quota Revenue	Aggregate Adjusted Net Revenue	Percent Change
Less than 30'	$75,174	$30,068	$5,138,826	$5,183,932	6795.9%
30' to < 50'	$14,538,866	$2,732,688	$1,831,478	$13,637,655	-6.2%
50' to < 75'	$32,327,659	$3,876,862	$1,153,127	$29,603,924	-8.4%
75' +	$38,423,441	$4,207,098	$969,885	$35,186,227	-8.4%
CPH	N/A	$0	$1,753,402	N/A	N/A
Grand Total	$85,365,141	$10,846,717	$10,846,717	$85,365,141	0.0%

Table 5. FY2011 Aggregate Owners' Share of Net Revenue Adjusted by Quota Transfers by Homeport State

Homeport State	Aggregate owners' shares (from table 22 in 2011 groundfish report)	Aggregate Cost of Quota Purchases	Aggregate Quota Revenue	Aggregate Adjusted Net Revenue	Percent Change
MA	$48,277,794	$8,467,853	$6,479,331	$46,289,272	-4.1%
ME	$8,923,786	$1,357,362	$1,468,293	$9,034,717	1.2%
NH	$2,725,014	$492,467	$432,542	$2,665,089	-2.2%
RI	$12,587,341	$421,068	$501,217	$12,667,490	0.6%
Other Northeast	$12,851,206	$107,967	$211,932	$12,955,171	0.8%
CPH	N/A	$0	$1,753,402	N/A	N/A
Grand Total	$85,365,141	$10,846,717	$10,846,717	$85,365,141	0.0%

Appendix -- Definition of Vessel Affiliations

The definition of vessel affiliations in this report is not the one used in the main report. This definition is narrower so that within vessel affiliation trading is not overestimated.

In the Northeast federal fishing permit database, each fishing permit is assigned a business identification number. The business ID can identify an individual (Joe Smith = business ID #682) or a corporation/partnership/business name/etc. (Fisher King, Inc = business ID #4337). Therefore, a single business ID could comprise a single person or multiple persons. Furthermore, every person (vessel owner) associated with a business ID is assigned a person identification number. Through the use of person IDs associated with each vessel, unique combinations of vessel owners are categorized into a single vessel affiliation.

For example, if the same two owners own separate vessels, those vessels are grouped into one vessel affiliation. If one owner co-owns three vessels with three different owners, that counts as three vessel affiliations. If a vessel is owned by a single owner, that counts as a vessel affiliation of one.

To illustrate this concept, the following schematic shows the interrelationship between three owners (Art, Bob, Carl) and five vessels (123, 456, 789, 987, 654) that this definition treats as four distinct vessel affiliations (the boxes in the table).

Example of how vessel affiliations are defined:

	Owner			
Vessel	Art	Bob	Carl	
123	X	X	<= Affiliation #1	
456	X	X		
789	X		X	<= Affiliation #2
987		X	X	<= Affiliation #3
654			X	<= Affiliation #4

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