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## TRENDS IN GROUND FISH FISHERY CONCENTRATION, 2007 - 2013

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### INTRODUCTION

On June 23, 2010, the New England Fishery Management Council passed a motion stating the following goals for what has become Amendment 18 to the Northeast Multispecies (groundfish) Fishery Management Plan (FMP), an amendment designed to address issues of diversity and consolidation within the fishery (1):

- Maintain inshore and offshore fleets;
- To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation;
- Maintain a balance in the geographic distribution of landings to protect fishing communities and the infrastructure they provide; and
- Prohibit any person from acquiring excessive access to the resource, through in order to prevent extraction of disproportionate economic rents from other permits holders.

This draft paper specifically addresses trends in fishery access right ownership during the period of 2007-2013. Prior to the implementation of Amendment 16 (Am16) to the groundfish FMP, access rights to the fishery were determined by a combination of vessel characteristics including length, horsepower and gross tonnage—all of which had maximum upgradeable baselines attached to each permit in an effort to limit the ability of the fishery to expand its harvesting capacity unchecked—and Days-at-Sea (DAS) limits controlling the number of days each permit could fish for groundfish in a year. These baseline upgrade limits remain in effect, but Am16 brought the opportunity to opt out of the DAS system by voluntarily entering into Sectors, co-operative arrangements into which groundfish stock-specific access rights—measured as a percent of the allowable catch and converted into pounds—may be pooled across all Sector members. Individual access rights are called Potential Sector Contribution (PSC), and these 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 Annual Catch Entitlements (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. There is a limit on the minimum number of owners allowed in any one Sector (three unique owners) but ownership within Sectors is otherwise unregulated. Sectors may be as large or as small as is efficient for their individual operational needs, and they may also be affiliated under umbrella structures, potentially bringing scale efficiencies. Some fisherman chose to not join sectors and fish in the Common Pool, where input-oriented controls such as DAS limits, trip limits and seasonal closures are maintained (2).

The important point to understand is that, for the 98% of fishing vessels who elected to join Sectors (3), fishery access rights shifted from input-based controls on harvesting capacity (proxied by vessel and engine size restrictions) and fishing days, to an output-based system placing controls on landings and discards via allocation of permit- and stock-level quota allocations, and that this transition happened in 2010 under Am16.

There are two dependent but distinguishable ways to think about industry concentration: *ownership* (access) and *use* (deriving benefits). Use is further divided into those access right holders who actively land fish and those who derive revenue from annual leases of their right—both are active users of the fishery access right they possess. This report will focus exclusively on *ownership* trend. *Use* trends are reported extensively in several other contemporary documents such as the 2011 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (3) and the Environmental Assessments for the New England Fishery Management Council’s Framework 48 and Framework 50 (4) (5).

**METHODS**

Concentration trends are evaluated in terms of the number of permits held and PSC ownership share. Ownership share for fishery access rights may be evaluated at several levels. This draft paper will look specifically at:

- Individual permits
- Ownership groups
- Sectors

Individual permits may be identified with either a vessel’s permit number (permit), issued by NOAA for commercial fishing vessels, or a moratorium right identification number (MRI), an identification number associated with each vessel issued a limited access groundfish permit. The MRI enables tracking fishing history over time and through vessel/owner changes, and was the basis for Am16’s initial allocation of PSC. MRI’s are used here for all vessel-level assessments. PSC held on each MRI would not ordinarily be expected to change across years, but in fact it does change slightly. If MRIs are retired or combined for any reason this would change the share of all other permit holders, and we do observe some small change over time in the distribution of PSC across MRIs.

Ownership groups are defined by unique combinations of owners associated with a single business. This may best be illustrated with an example: if the same two owners own separate MRIs, they are counted as one entity. If one owner is involved in three different MRIs with three different owners, they are counted as three entities. If an MRI is owned by a single owner, that counts as one entity. To illustrate these concepts more fully, Table 1 shows the interrelationship between three owners (Art, Bob, Carl) and five MRIs (123, 456, 789, 987, 654). The ownership group algorithm used here treats these as four entities.

**Table 1. Example of how business entities are defined under group definition #1 (RFA)**

MRI	Owner			
	Art	Bob	Carl	
123	X	X		<= Entity 1
456	X	X		
789	X		X	<= Entity 2
987		X	X	<= Entity 3
654			X	<= Entity 4

A myriad of decision rules could be employed to define ownership groups, and while this describes the method employed here it is neither the final definition nor necessarily the best.

Sectors are relatively straightforward to define—they are the umbrella cooperatives that individual permit holders may join and under which all PSC is pooled and converted into ‘fishable’ ACE, and sector affiliations are

recorded in several stand-alone databases.

To maintain a consistent time series from 2007-2013, MRI and ownership group data are reported in terms of PSC even though for the first three years of the time series PSC were not assigned to these permits. For the 2007 through 2009 the appropriate 2010 PSC share is applied to each MRI with an active groundfish permit. Due to the vagaries of the permit database it is possible that some MRIs were inactive in the pre-Am16 period. In these cases, with no PSC to associate, offending MRIs were dropped. This implies that PSC for all vessels in the database may not sum to 100%. PSC shares are re-scaled for 2007-2009 to ensure that, for all years, PSC do sum to 100%.

## DATA

Vessel permit, ownership, Sector membership, commercial landings and discard data are used here, as follows:

**Table 2. Data and databases referenced for this report**

Reporting metric	Ownership data
Individual permits	Commercial permit database, including business and individual ownership tables, as well as MRI data (MQRS)
Ownership group	
Sector	Sector reporting database, including PSC_as_percent and sector_participants tables

There are important differences in database structure for ownership groups (in particular) across time—different databases are used for 2007-2009 and 2010-2013. We believe that the results of this analysis are broadly accurate; however the lack of consistent variables for the two time periods may mean that ownership groups are not defined consistently. 2013 permit data may not be complete and 2013 should be treated with caution. Importantly, Certified Permit History (CPH) permits are not included in the ownership database and, as such, CPH permits are not included here. Currently there appear to be 222 permits in the CPH category—roughly half enrolled in the Sector program—and this is up from 81 in 2009.

Allocations for mid-Atlantic/southern New England winter flounder are not included in this report.

All PSC share data are reported in percent share terms. When data are aggregated across all allocated stocks, this implies that the shares are weighted equally—a 1% share in American plaice contributes and identical share to the aggregated PSC as a 1% share in Georges Bank haddock, despite the fact that the allocation of haddock converts into substantially more fish when converted to pounds of quota.

## RESULTS

The number of MRIs has held relatively constant at between 1,100 and 1,000, with a peak in 2010 and steady subsequent decline. As previously stated, this number does not include CPH MRIS, and the decrease from 2010 onward is likely driven by more permits entering the CPH program. Ownership groups have fluctuated between 840 and 750. A large decline seen for 2013, to a bit over 650 ownership groups, may be an artifact of incomplete permit data for this current year (Figure 1).

PSC share held at the individual MRI level has remained nearly constant across the seven year time period, as expected when there is limited regulatory ability to consolidate PSC shares at the MRI level. Those MRIs holding the largest share of aggregated PSC hold just over 1% of the total; at the stock level this ranges from a high of 8% for GOM winter flounder, to a low of just over 1% for GOM cod (Figure 2 - Figure 4).

Owner group's share of aggregate PSC has also remained largely constant across these seven years with the exception of the largest owner group, which has steadily increased from holding a bit over 2% of all PSC in 2007 to fewer than 10% in 2013. (Note that the largest ownership group in any one year may not be the largest

in subsequent years—the trend applies generally to the largest in any one year but this is not meant to imply that it may be the same ownership group across all years). It is not clear if this represents a true increase in the holdings of this group or if it is a function of the ownership group identification algorithm, or even some combination of both (Figure 5). The share of aggregate PSC held by the bottom 50 percent of permit holders has remained nearly constant between 1 and 2% of total; the shares belonging to the bottom 75<sup>th</sup> and 25<sup>th</sup> percentiles of ownership groups have remained similarly stable. The five largest ownership groups in any given year increased their share of total PSC substantially between 2007 and 2010, from 8% to 20%, but the share attributable to these ownership groups has not changed appreciably between 2010 and 2013 (Table 3). The largest share of individual stock PSC held by one ownership group is just over 25% (GB winter flounder); the smallest share held by the largest ownership group holder is just under 10% (GOM haddock). Across the time series the share held by the largest ownership group has increased consistently for 10 of the 14 allocated stocks (Figure 6 - Figure 7). The number of MRIs held by ownership groups has held relatively stable over the time series, though the period from 2007-2010 saw a few larger owners increasing their permit holdings substantially (Figure 8).

Sector's share of aggregate PSC has remained nearly constant across the four years of the Sector system, with the largest Sector holding between 26% and 29% of all PSC and most sectors holding between four and 11% of PSC (Figure 9). The largest share of individual stock PSC held by one Sector is just over 50% (white hake) while the smallest share held by the largest sector is just over 20% (GOM cod). The distribution of PSC holdings by Sector over the four years of the Sector system has been remarkably stable (Figure 10 - Figure 11).

The Gini coefficient, a measure of concentration with values lying between 0 and 1 where 0 represents perfect equality (all shares are evenly distributed) and 1 represents perfect inequality (all shares controlled by one owner), shows that aggregate PSC is relatively concentrated among relatively few MRIs but that this concentration has decreased slightly at the MRI level across the times series. 2007-2010 saw an increase in concentration of PSC ownership at the owner group level but this trend has reversed slightly since that time (Figure 12). The overall range of Gini coefficients at the ownership group level has been between 0.74 and 0.8, values indicative of a highly concentrated ownership structure. Trends at the stock level are similar, with most stocks seeing increasing concentration from 2007-2010 and either a stable or decreasing trend in concentration since that time. GOM cod is the least concentrated stock among ownership groups with Gini coefficients between 0.75-0.8; GB winter flounder is the most concentrated stock among ownership groups, with coefficients ranging between 0.9 and 0.94.

Figure 1. Number of MRIs and OWNERSHIP GROUPS, 2007 - 2013

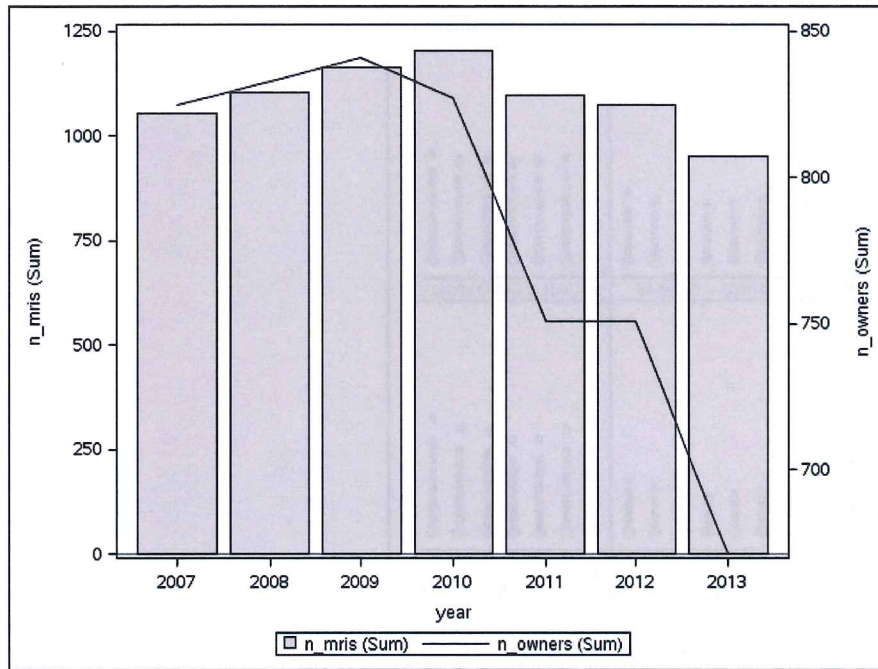


Figure 2. Percentage share of all allocated PSC at the MRI level, 2007 – 2013 (2007-2009 applies 2010 PSC allocations to corresponding MRIs)

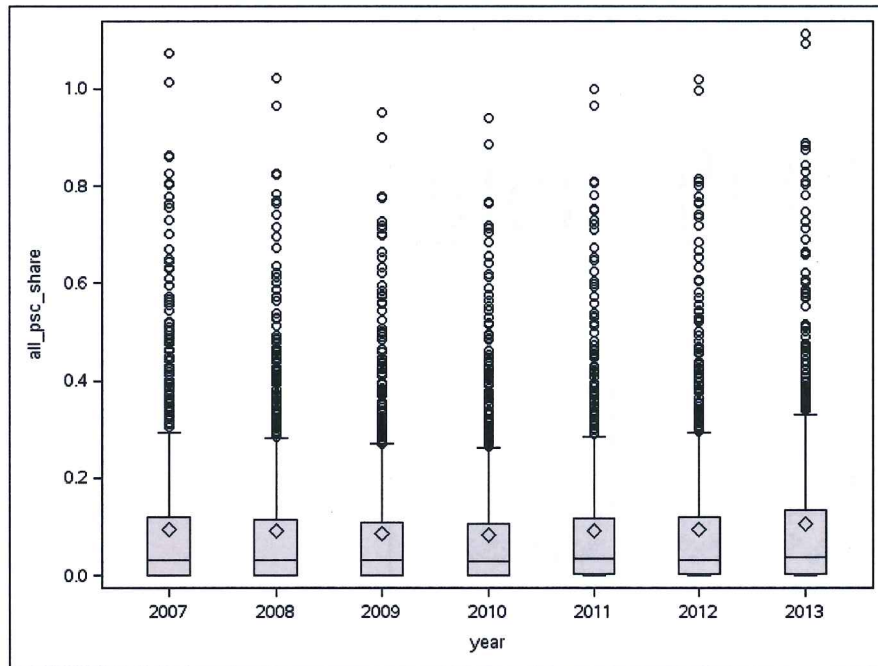


Figure 3. Distribution of PSC shares per MRI by year and allocated quota stock (first of two related figures)

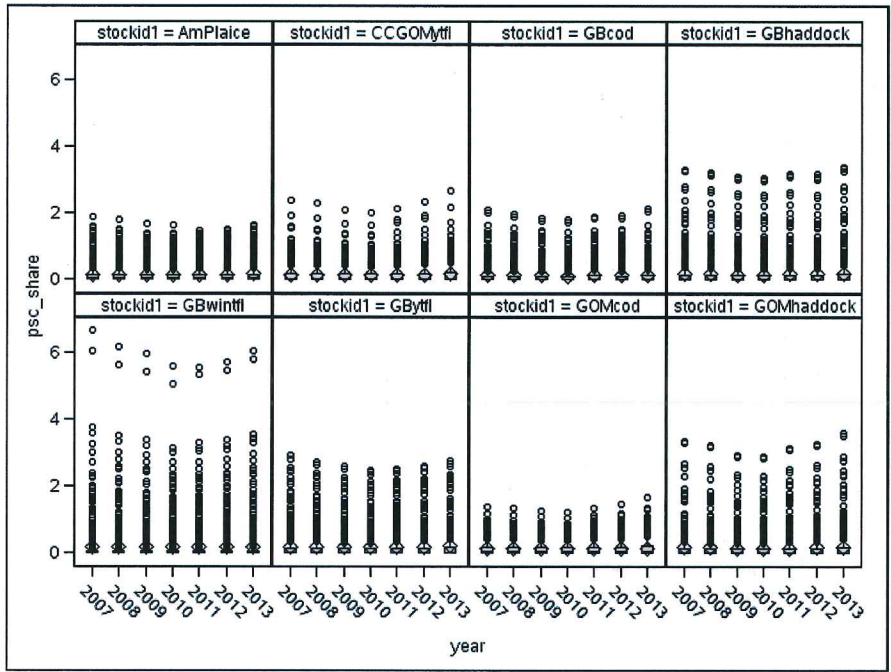
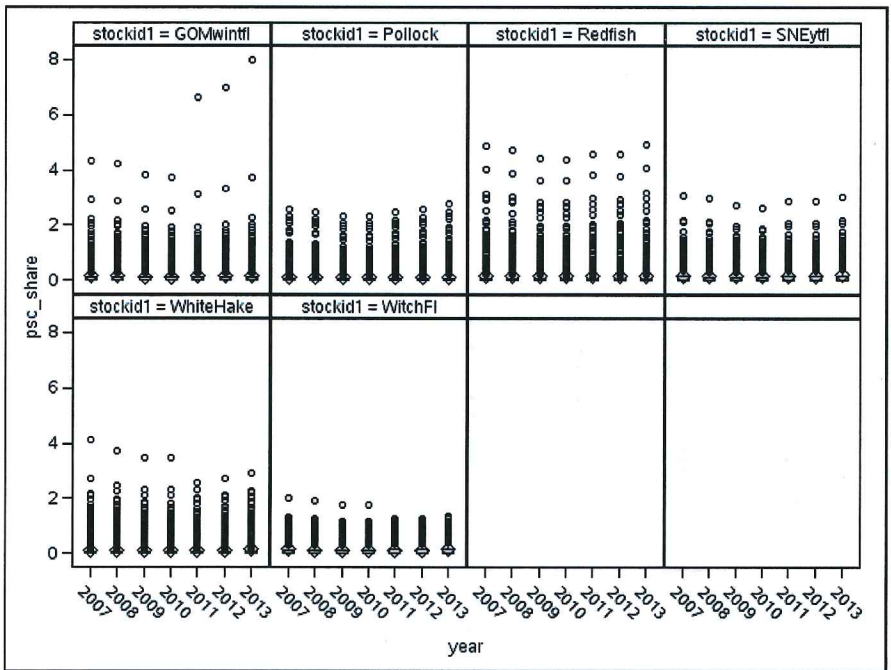
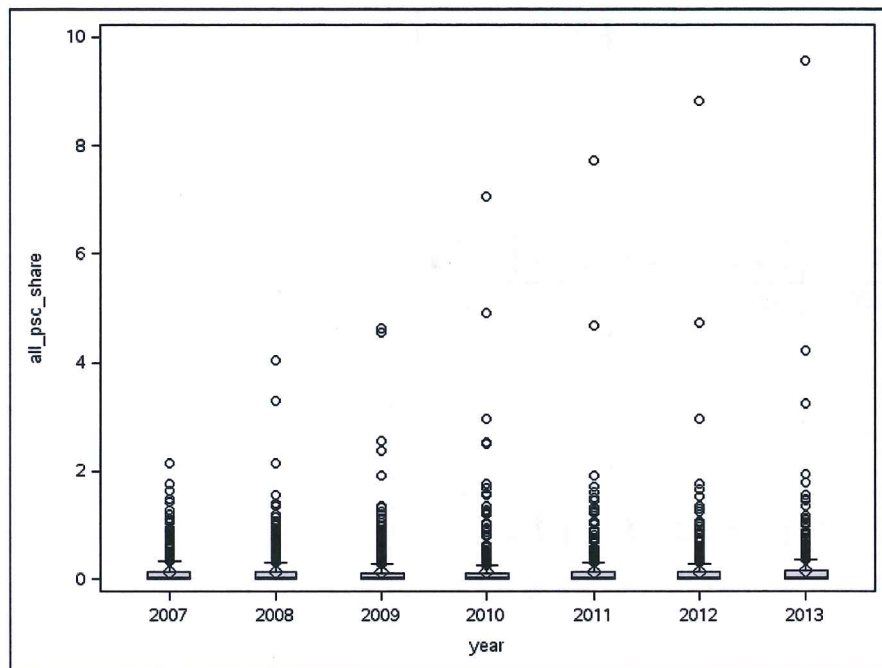


Figure 4. Distribution of PSC shares per MRI by year and allocated quota stock (second of two related figures)



**Figure 5. Percentage share of all allocated PSC at the OWNERSHIP GROUP level, 2007 – 2013 (2007-2009 applies 2010 PSC allocations to corresponding MRIs)**



**Table 3. Cumulative share of PSC held by OWNERSHIP GROUPS in the 90<sup>th</sup>, 75<sup>th</sup>, 50<sup>th</sup> and 25<sup>th</sup> percentile and share held by top five largest ownership groups**

	2007	2008	2009	2010	2011	2012	2013
Bottom 90th percentile	44%	41%	38%	34%	36%	35%	37%
Bottom 75th percentile	17%	16%	15%	12%	14%	13%	14%
Bottom 50th percentile	2%	2%	2%	1%	2%	1%	2%
Bottom 25th percentile	0%	0%	0%	0%	0%	0%	0%
<i>Top five ownership groups</i>	8%	12%	16%	20%	18%	20%	21%

Figure 6. Distribution of PSC shares per OWNERSHIP GROUP by year and allocated quota stock (first of two related figures)

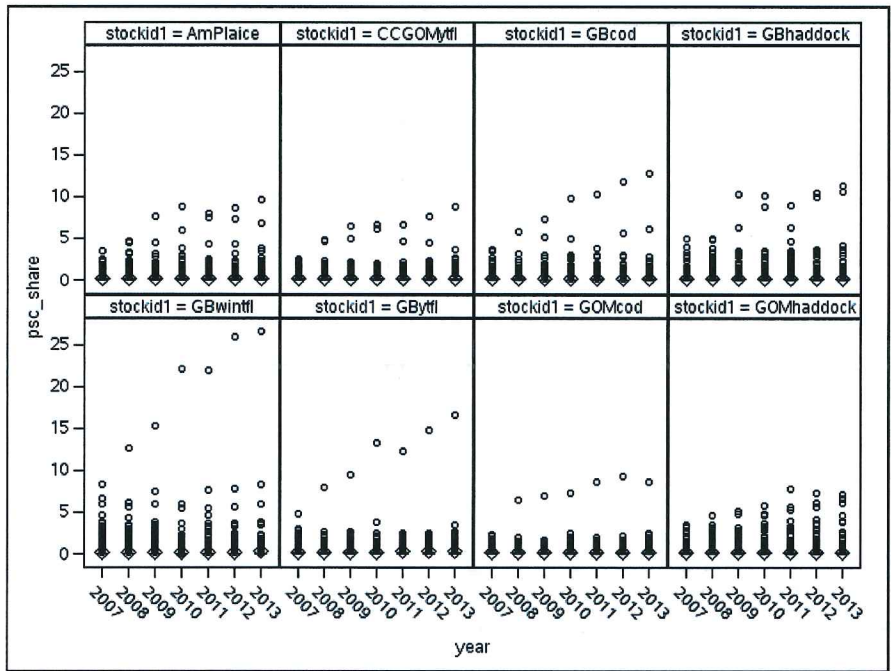


Figure 7. Distribution of PSC shares per OWNERSHIP GROUP by year and allocated quota stock (second of two related figures)

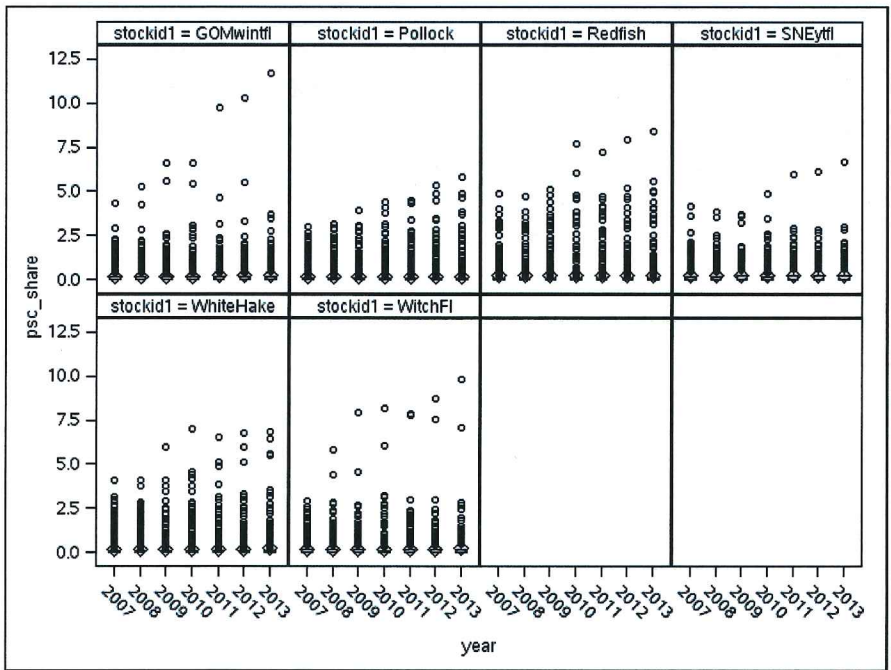




Figure 8. Number of MRIs per OWNERSHIP GROUP, 2007-2013

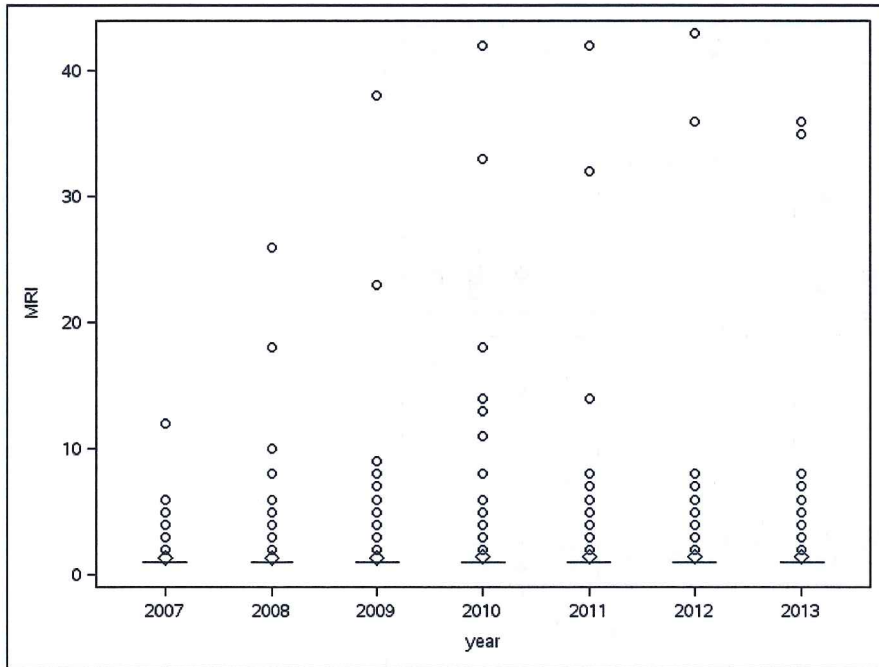


Figure 9. Percentage share of all allocated PSC at the SECTOR level, 2010 – 2013

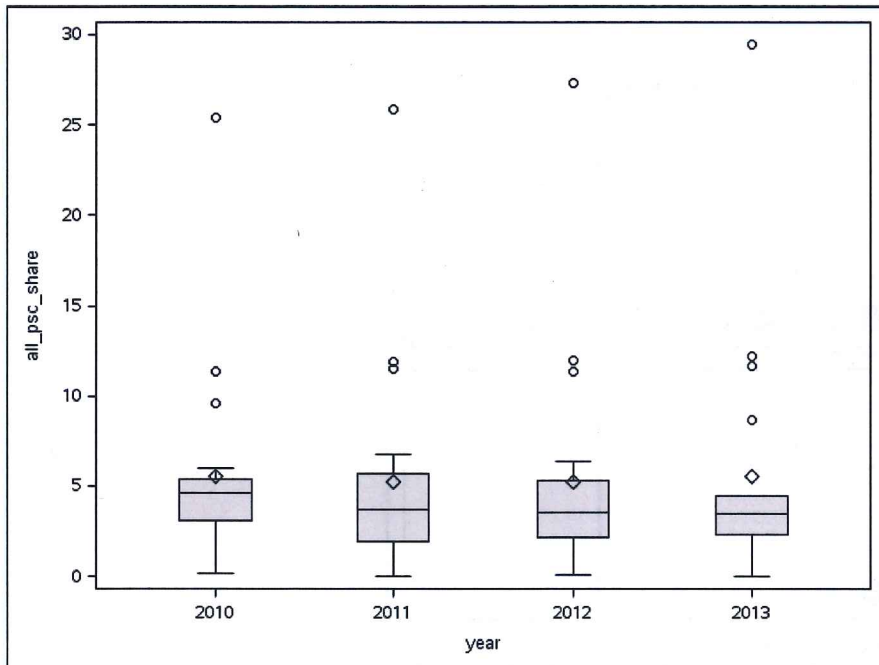


Figure 10. Distribution of PSC shares per SECTOR by year and allocated quota stock (first of two related figures)

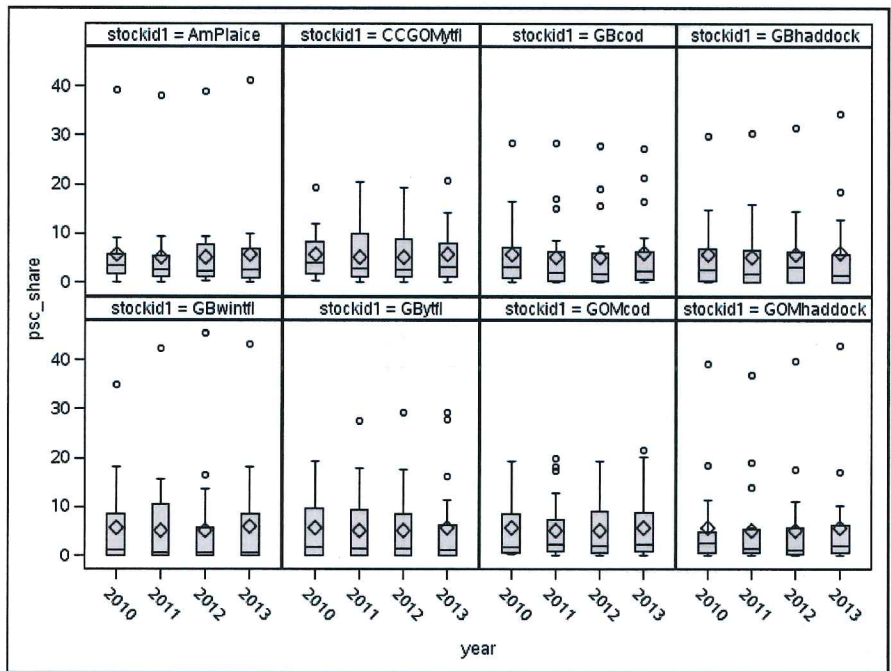


Figure 11. Distribution of PSC shares per SECTOR by year and allocated quota stock (second of two related figures)

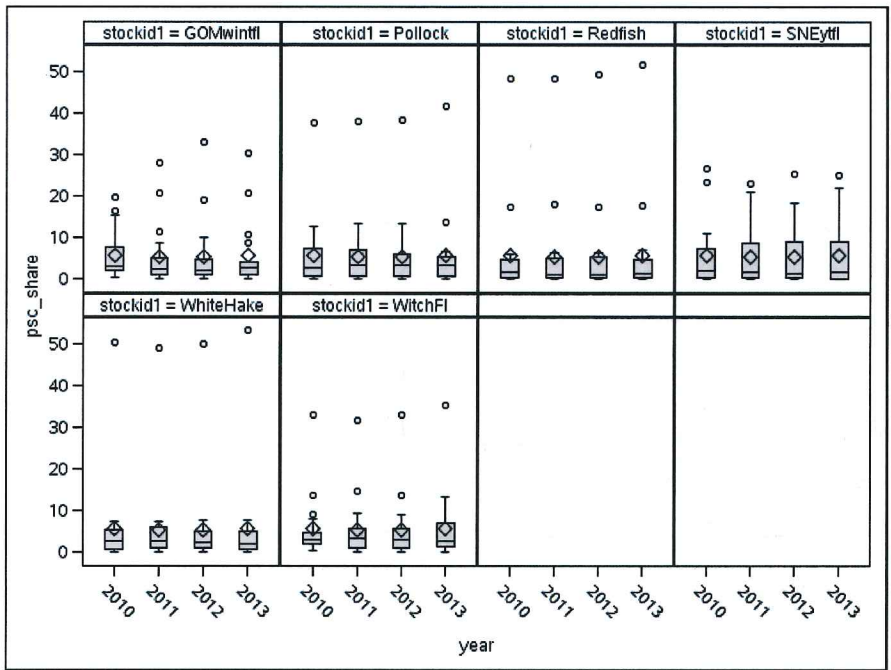


Figure 12. Gini coefficients for OWNERSHIP GROUP and MRI

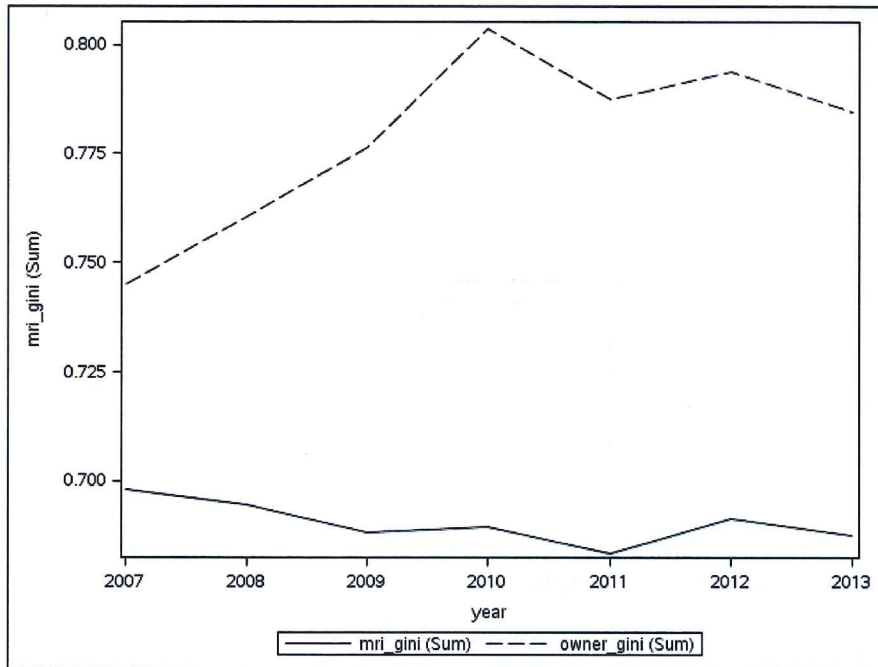


Figure 13. Gini coefficients for OWNERSHIP GROUP across allocated quota stocks (first of two related figures)

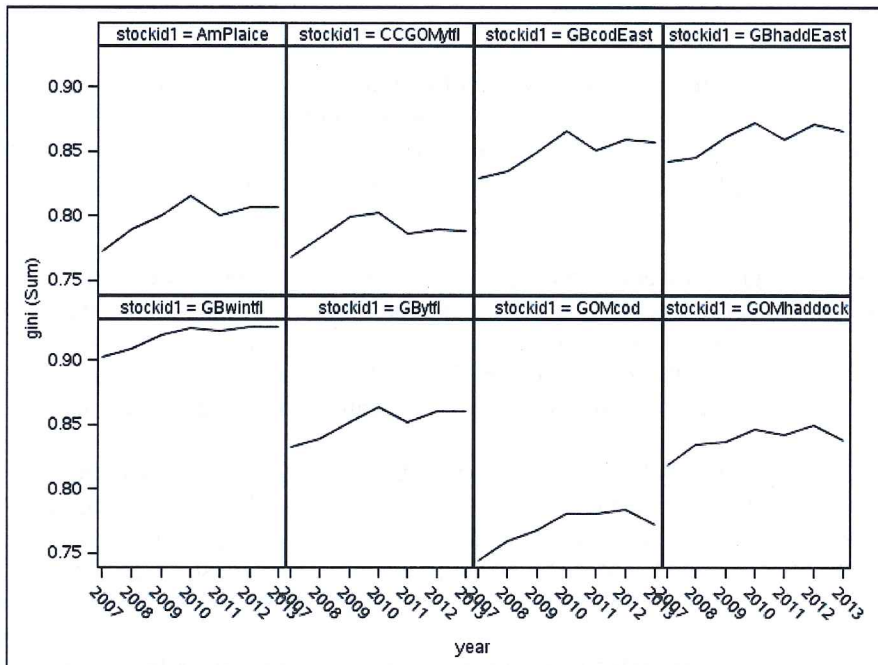
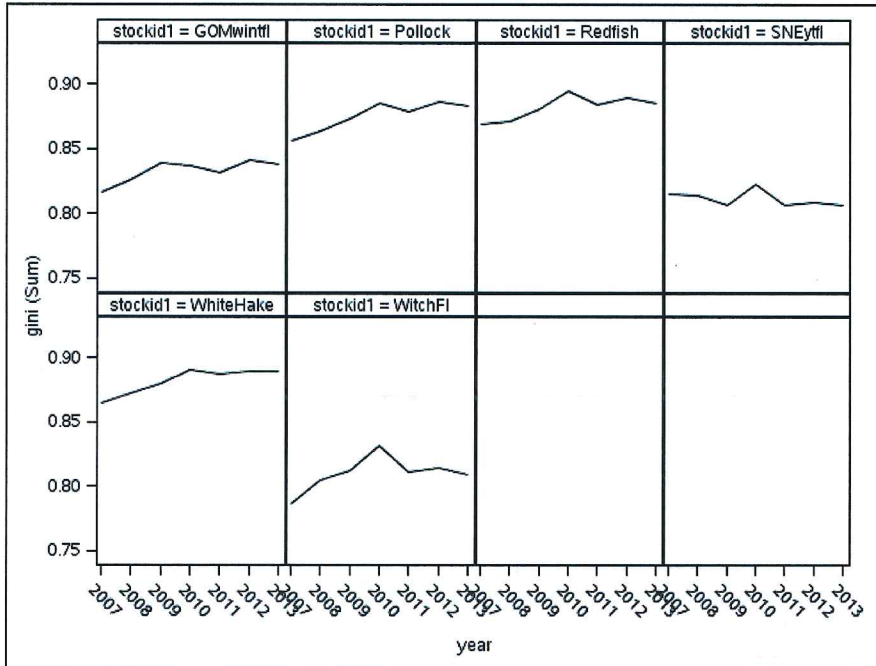


Figure 14. Gini coefficients for OWNERSHIP GROUP across allocated quota stocks (first of two related figures)



## DISCUSSION

Consolidation over time at the MRI level is challenged by the bundling of permits (both groundfish and other fisheries) and the physical platform (vessel). The Sector system allows some flexibility by including CPH permits, but even here this does not allow for ‘stacking’ of PSC share at the MRI level. Consequently, the fishery access right ownership in the fishery, when judged at the MRI level, has not seen much change in concentration across the time series.

Access right concentration within ownership groups seemed to have occurred most substantially before the Sector system was implemented, with accumulations peaking in 2010 and remaining mostly stable since that time. The number of permits held by ownership groups has remained similarly constant, though there were several large ownership groups acquiring permits in the 2007-2010 timeframe. It should be noted that permits are an imperfect proxy for fishery access right, as each permit may hold a substantially different amount of PSC.

The definitions for ownership groups are important. While trends in consolidation of PSC holdings within ownership groups are likely to be evident when using most reasonable owner group definitions, any attempt to regulate or cap PSC or permit allocations at the owner level will be highly dependent on the specific owner group definition used. To this end, both narrower and broader ownership group definitions exist than those used here.

More narrow definitions may include business entities, which are defined in NOAA permit data, where each fishing permit<sup>1</sup> is assigned a business ID number that can be associated with either an individual identifier (Joe

<sup>1</sup> Permit numbers can move among MRIs but in the data used for this report the permit number first associated with an MRI within the fishing year is used.

Smith = business ID #682) or a corporation or business (Fisher King, Inc = business ID #4337). Business ID's are further associated with individuals in a separate database linking individuals to businesses. Multiple people may be associated with a single business entity, and multiple business entities may be associated with a single person.

A broader definition may include ownership identity-of-interest, which links all permits that share even one common owner. This level takes no account of interest level—small or large ownership stakes are treated identically. By way of example, if Art owns a vessel with Bob and Bob owns another vessel with Carl, all vessels are considered to be one business entity. The example below in Table 2 has the same owners and MRI relationships as in Table 1 but shows how all MRIs fall into one business entity under this definition. Note that it is not necessary for Bob to co-own MRI #987 with Carl to make this one business entity. If Carl owned MRI #987 himself, all of these MRIs would still be linked together because Art and Carl would both be co-owners with Bob even though they are not co-owners with each other.

**Table 4. Example of how business entities are defined under group definition #2 (interest)**

MRI	Owner			
	Art	Bob	Carl	
123	X	X		=< Entity 1
456	X	X		
789	X		X	
987		X	X	
654			X	

**REFERENCES**

- (1) New England Fishery Management Council (NEFMC). White Paper on Fleet Diversity, Allocation, and Excessive Shares in the Northeast Multispecies Fishery; 2010.
- (2) New England Fishery Management Council (NEFMC). Amendment 16 to the Northeast Multispecies Fishery Management Plan; 2010.
- (3) Murphy T., Kitts A., Records D., Demarest C., McPherson M., Walden J., Caless D., Bing-Sawyer E., Steinback S., Olson J. 2011 Final Report on the Performance of the Northeast Multispecies (Groundfish) Fishery (May 2011 - April 2012). US Dept Commer, Northeast Fish Sci Cent Ref Doc. 12-30; 111 p.
- (4) New England Fishery Management Council (NEFMC). Framework 48 to the Northeast Multispecies Fishery Management Plan; 2013.
- (5) New England Fishery Management Council (NEFMC). Framework 50 to the Northeast Multispecies Fishery Management Plan; 2013.



#4

**Northeast Multispecies Fishery Management Plan**  
**Goals and Objectives.**  
(last revised by Amendment 13)

**Goals**

- 1 Consistent with the National Standards and other required provisions of the Magnuson-Stevens Fishery Conservation and Management Act and other applicable law, manage the northeast multispecies complex at sustainable levels.
- 2 Create a management system so that fleet capacity will be commensurate with resource status so as to achieve goals of economic efficiency and biological conservation and that encourages diversity within the fishery.
- 3 Maintain a directed commercial and recreational fishery for northeast multispecies.
- 4 Minimize, to the extent practicable, adverse impacts on fishing communities and shoreside infrastructure.
- 5 Provide reasonable and regulated access to the groundfish species covered in this plan to all members of the public of the United States for seafood consumption and recreational purposes during the stock rebuilding period without compromising the Amendment 13 objectives or timetable. If necessary, management measures could be modified in the future to insure that the overall plan objectives are met.
- 6 To promote stewardship within the fishery.

**Objectives**

- 1 Achieve, on a continuing basis, optimum yield (OY) for the U.S. fishing industry.
- 2 Clarify the status determination criteria (biological reference points and control rules) for groundfish stocks so they are consistent with the National Standard guidelines and applicable law.
- 3 Adopt fishery management measures that constrain fishing mortality to levels that are compliant with the Sustainable Fisheries Act.
- 4 Implement rebuilding schedules for overfished stocks, and prevent overfishing.
- 5 Adopt measures as appropriate to support international transboundary management of resources.
- 6 Promote research and improve the collection of information to better understand groundfish population dynamics, biology and ecology, and to improve assessment procedures in cooperation with the industry.
- 7 To the extent possible, maintain a diverse groundfish fishery, including different gear types, vessel sizes, geographic locations, and levels of participation.
- 8 Develop biological, economic and social measures of success for the groundfish fishery and resource that insure accountability in achieving fishery management objectives.
- 9 Adopt measures consistent with the habitat provisions of the M-S Act, including identification of EFH and minimizing impacts on habitat to the extent practicable.
- 10 Identify and minimize bycatch, which include regulatory discards, to the extent practicable, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

