

# Latent Fishing Effort and Vessel Ownership Transfer in the Northeast U.S. Groundfish Fishery

Eric M. Thunberg, Ph.D.  
Social Sciences Branch  
Northeast Fisheries Science Center  
Woods Hole, MA

**Abstract.** Management of fishing effort and fishing capacity is receiving increased attention world-wide. In the Northeast region of the U. S., the principal focus has been on managing “active” fishing vessels, although concerns have increased over the magnitude of “latent” effort and its implications for resource recovery and sustainability. This paper reviews current and historic levels of latent fishing effort in the Northeast U.S. groundfish fishery and examines patterns of latent to and active effort, particularly as they may be affected by vessel ownership transfer.

**Keywords:** latent effort, ownership transfer, multispecies fishery

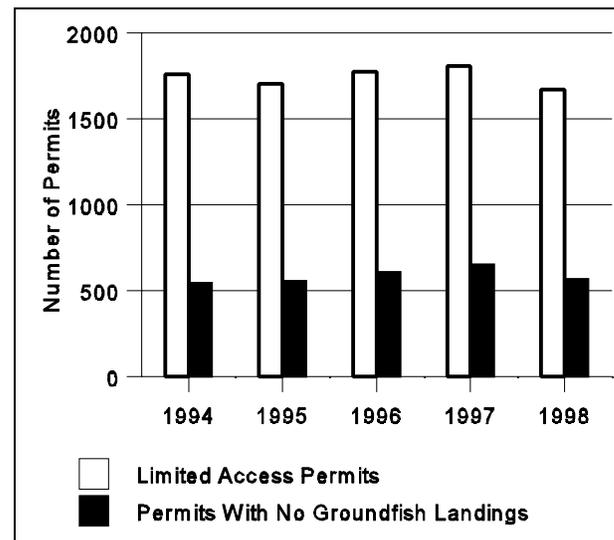
## 1. INTRODUCTION

The Northeast U.S. groundfish fishery is prosecuted using trawl, gillnet and hook gears targeting a complement of ten principal groundfish species. Among these species Atlantic cod, haddock, and yellowtail flounder comprise slightly less than half of fishery landings and value. Both the history of the fishery and its management are well documented elsewhere (Edwards, 1999; Wang and Rosenberg, 1997) so only those elements of groundfish management necessary for present purposes will be discussed further.

While regulatory measures are formally implemented by the National Marine Fisheries Service (NMFS), responsibility for management of Northeast U.S. groundfish (under the Northeast Multispecies Fishery Management Plan or Multispecies Plan) falls to the New England Fishery Management Council (NEFMC). With the implementation in 1994 and 1996, respectively of Amendments 5 and 7 to the Multispecies Plan came a watershed change in the manner in which Northeast groundfish were managed. The key elements of Amendment 5 were a limited access program and limits on allowable days-at-sea.

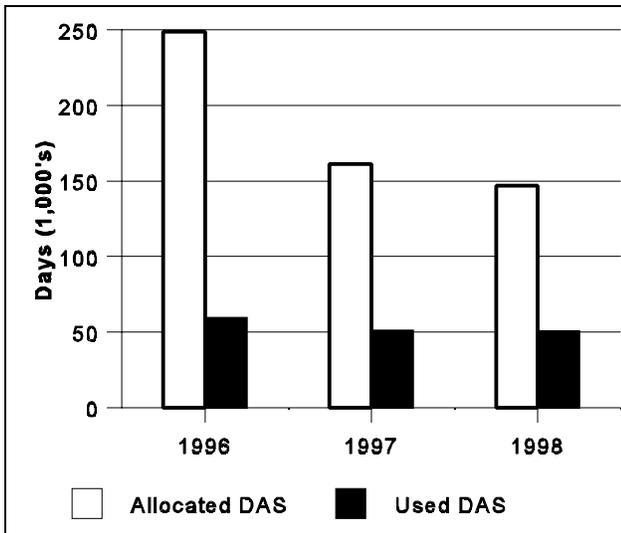
The qualification criteria for both limited access and baseline effort allocations were both quite liberal allowing for a large number of permit qualifiers and initial effort allocations that exceeded documented levels of fishery participants and fishing time. For example, approximately 1,700 vessels were issued limited access permits in 1994, but from its inaugural year to the present, the average number of vessels that did not record landing any groundfish was 590, of which, approximately 350 recorded no activity at all (Figure 1). Edwards, and Murawski (1993) estimated that fishing effort in 1989 was 75,000

days. According to their estimates, the documented fishing effort exceeded that of sustainable levels by 26,000 days and that of an economic optimum by 53,000 days. In 1996, 249,000 days-at-sea were allocated to the groundfish fleet. These allocations have since been reduced to 144,000 days through an effort reduction plan and a vessel buyout program but are still nearly twice that of past effort levels and fishing time reported through vessel trip reports since adoption of the days-at-sea program (Figure 2).



**Figure 1.** Number of Limited Access Groundfish Permits Issued and Unused Permits (1994 to 1998).

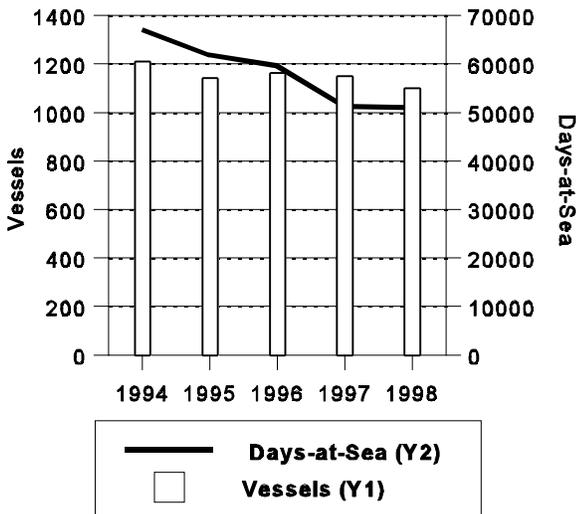
Even though both access rights and effort rights have been over-allocated, the observed number of vessels landing groundfish has been relatively stable since 1994 (Figure 3). Over the same time period used days-at-sea declined from 1994 to 1997 due to reductions in days-at-sea allocations



**Figure 2.** Allocated and Used Day-at-Sea Allocations (1994 to 1998).

and the removal of some groundfish vessels through a buyout. In 1997 and 1998 used days-at-sea were nearly identical.

Even with the apparent stability in groundfish participants and effort, improving stock conditions have prompted



**Figure 3:** Summary of Participating Vessels and Days-at-Sea Used in the Northeast Groundfish Fishery 1994-1998

concern over the prospect of surplus effort entering the fishery at a rate that may exceed the rate of resource recovery. It is notable that these concerns have been raised by fishery managers and industry participants alike with the latter expressing concerns over the potential that their effort may not be allowed to increase, and may be further reduced even as stocks rebound. In this paper two sources of effort

entry are examined. The first is latent effort and the second is ownership transfer.

Given that the groundfish fishery is managed by days-at-sea controls, anything less than full use of days-at-sea allocations may be considered a form of latency. Therefore, latent effort is defined as a continuum from no fishing activity in any fishery to full use of all allocated groundfish days-at-sea. Activation of surplus or latent effort has obvious consequences for groundfish resource recovery. The potential effects of ownership transfer are more subtle.

In a study of small-scale Norwegian fishing vessels Maurstad (2000) observed a positive relationship between level of debt and effort. This observation has intuitive appeal for both social and economic reasons. As debt is retired, less time is required to maintain a given level of fishing income and more time may be spent with family and in other non-fishing activities (Maurstad, 2000). Lower debt may also permit the vessel owner greater flexibility to explore alternative fishing opportunities and may reduce financial risk with changing resource conditions.

When a vessel is transferred, the new owner may be presumed to take on some level of debt unless the transfer is a result of an inheritance or between family members. If the vessel owners in the Northeast U.S. behave in a manner similar to their Norwegian counterparts and the indebtedness of the new owner exceeds that of the previous owner, then vessel ownership transfer may be hypothesized to result in a net increase in fishing effort.

In this paper fishing activity data are examined to identify patterns of latency and ownership transfer among Northeast groundfish vessels. This research is currently in the developmental stages so only descriptive results will be reported. Patterns in latent effort will be described first followed by an examination of ownership transfers for a representative year. The final section will offer conclusions and prospects for additional research.

## 2. LATENT FISHING EFFORT

Latency of a given groundfish vessel was defined as falling into one of three categories. A category 1 vessel reported no fishing activity of any kind in a given year. A category 2 vessel recorded fishing but did not record landing any of the ten principal groundfish species. A category 3 vessel recorded fishing and recorded landing groundfish.

Activity data recorded in the Northeast region dealer reports were used to ascertain latency categories. These

data were combined with annual permit renewals to identify latency categories by vessel from 1988 to 1999 for 1 groundfish vessels possessing a commercial groundfish permit which were 5 gross tons or larger in size. These vessels were selected for several reasons. First, prior to 1994 small vessels (less than 5 gross tons) were not identified in the dealer data so it would have been impossible to assign these vessels to a latency category. Even for vessels that were identified prior to 1994, fishing activity may not be complete as activity data was gathered primarily through voluntary interviews. Second, prior to 1988 groundfish permits were issued as “perpetual” permits which did not have to be renewed on an annual basis. Without an annual permit renewal it is not possible to distinguish between a vessel that may elect to remain in the Northeast region from one that may have sunk or been transferred elsewhere in the U.S. Last, the analysis was limited to vessels that held a permit in every year. Given these considerations a total of 758 vessels were available for further analysis.

From 1988 to 1999 the number of limited access vessels that recorded at least some level of groundfish activity (latency category 3) was relatively stable ranging from 545 vessels in 1989 to 599 vessels in 1995 (Figure 4). By contrast, the number of vessels that were in latency category 1 dropped by nearly 50% between 1988-1993 and 1994-1999 with a counterbalancing change in vessels in latency category 2. Thus, based on evidence of activity alone, the number of limited access vessels landing groundfish has not increased since adoption of Amendments 5 and 7. Earlier, latency was described as a continuum from no groundfish activity to full use of all allocated fishing effort.

To examine the level of activity in groundfish, days absent for all latency category 3 vessels were calculated. These days were further divided into days on trips on which groundfish were landed and days on trips on which no groundfish were landed.

The total number of days-at-sea allocated to category 3 vessels in 1998/99 was approximately 53,000 days. Prior to implementation of day-at-sea controls in 1994, (under Amendment 5) the total number of groundfish days actually fished by category 3 vessels exceeded 53,000 days (denoted by the solid horizontal line in Figure 5). Since 1994, total groundfish days fished declined in each year until 1998 where groundfish days fished were roughly the same as that in 1997. At the same time groundfish days were declining total days fished (groundfish and “other” days combined) remained relatively stable at about 70,000 days. Thus, in recent years, latency category 3 vessels have been substituting fishing time directed to other fisheries for time spent in the groundfish fishery.

Applying the 1998/99 groundfish effort allocations to the entire time period for category 3 vessels and adding unused groundfish days from latency category 1 and 2 vessels. indicates that latent effort in the groundfish fishery has increased from approximately 21,000 days to nearly 35,000 days in 1997 (Figure 6). Most of this increase comes from vessels with a history in groundfish. This finding runs counter to expectations and current perceptions about the latency problem in the groundfish fishery.

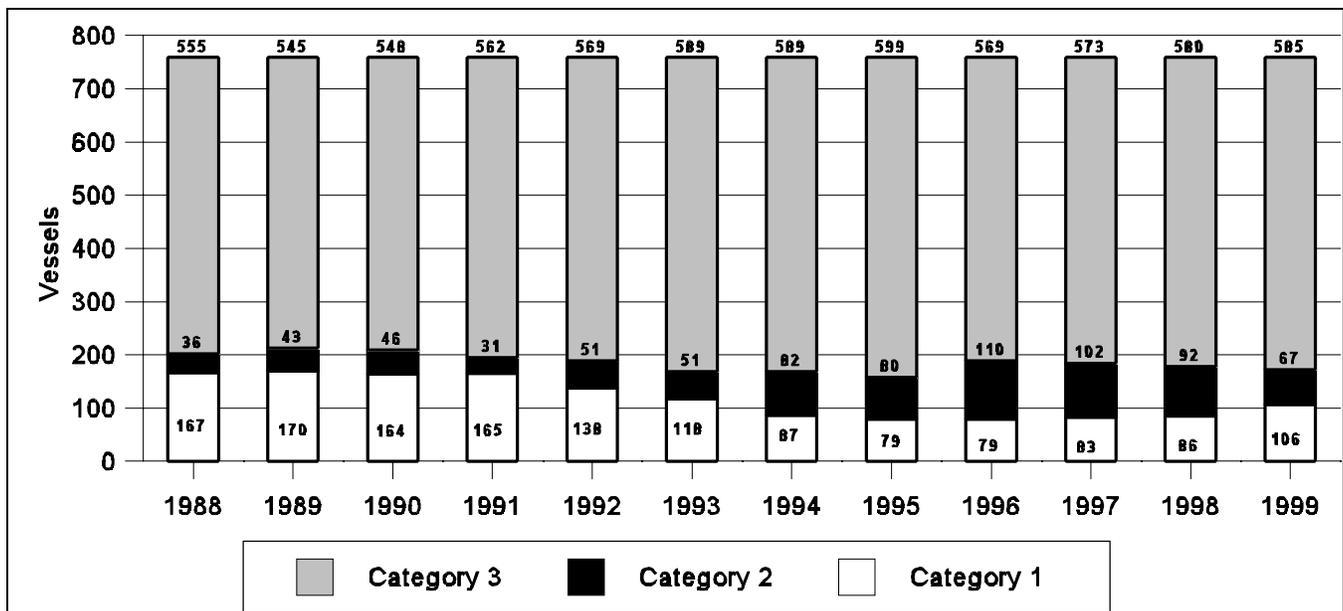
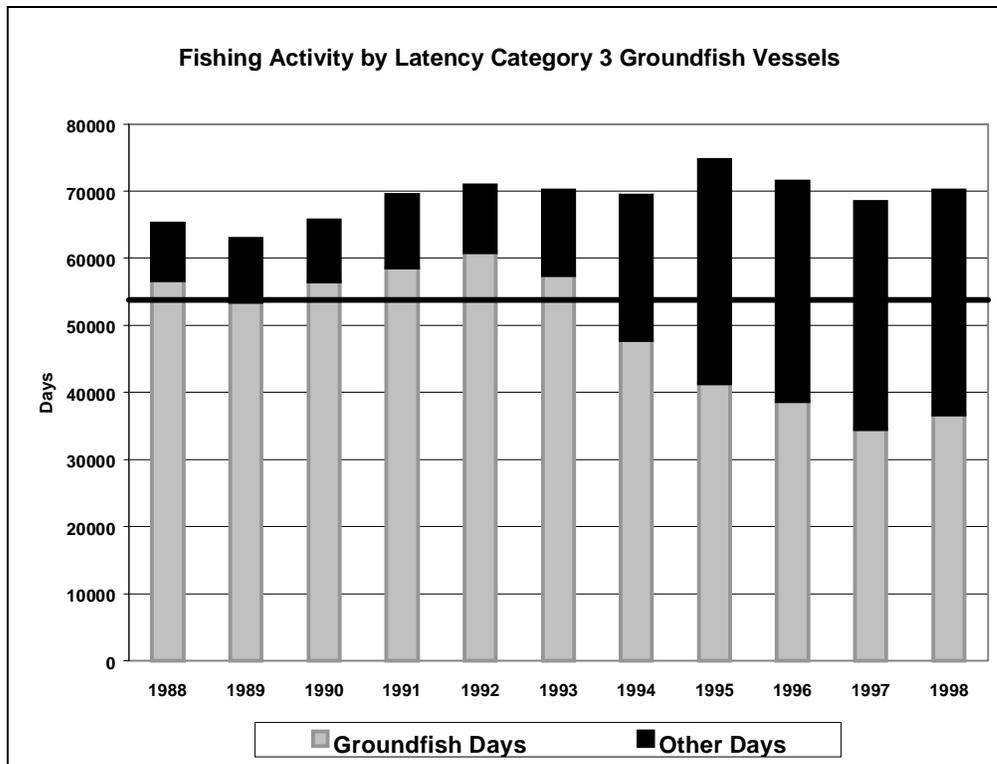


Figure 4. Limited Access Groundfish Vessel Latency Categories (1988 to 1999).



**Figure 5.** Days Fished by Limited Access Latency Category 3 Vessels (1988 to 1998).

To date, much of the concern over increased fishing effort has focused on the segment of the groundfish fleet that has recorded little or no fishing activity in recent years. However, little change has occurred since 1994 in the level of latency of category 1 and 2 vessels. By contrast, the number of unused groundfish days-at-sea for category 3 vessels has increased. Further, it is the category 3 vessels that may have a greater propensity to increase effort as groundfish stocks rebuild as they already have a demonstrated history of fishing at levels in excess of what current days-at-sea allocations would allow.

### 3. VESSEL OWNERSHIP TRANSFER

As discussed previously, vessel ownership transfer may be hypothesized to lead to a net increase in fishing effort as new owners seek to service debt payments. In the Northeast region, fishing permits are assigned to a vessel. When an ownership transfer occurs, the assigned permits may be transferred with the vessel or may end up being transferred to a different vessel. Thus, in practice, ownership transfer is a combination of permit and vessel exchange but the formal record of a transaction is through the permit number.

Information from the NMFS Northeast Region permit data base was used to identify ownership transfers where at least one permit was a commercial groundfish permit. From 1988 to 1999, the total annual number of groundfish vessel transfers ranged between 150 and 200 except in 1992 and 1994 (Figure 7). Since 1996, approximately 100 limited access permit transfers have taken place annually.

The permit data base only indicates that a transfer has taken place. Data on economic variables such as the purchase price or financial arrangements that would be necessary to conduct a formal test of the relationship between debt level and fishing effort are not collected. Further, the manner in which permit/vessel transfers are recorded makes it easy to identify the seller, but the buyer cannot be identified except by manually reconstructing the history of each permit. For this reason only a single year (1994) was selected for further study. This year was selected because it was the first year of the limited access program and offered a five year time period over which vessel activity before and after the transfer could be compared.

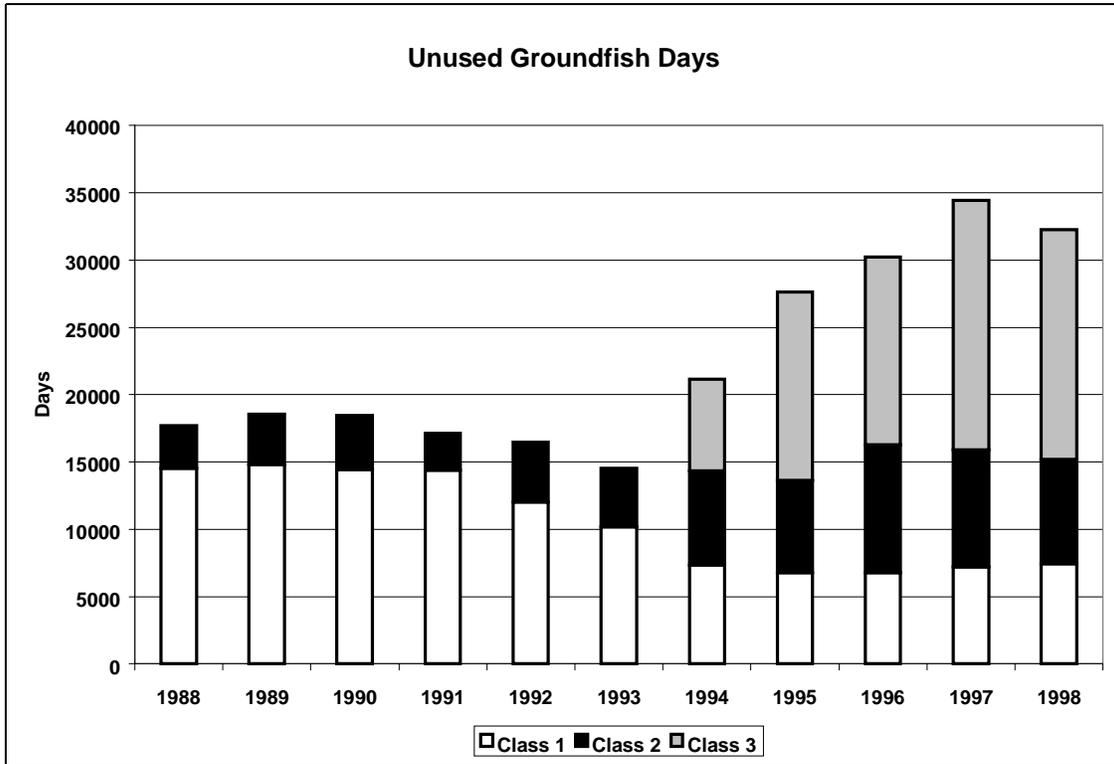


Figure 6. Cumulative Unused Allocated Groundfish Days by all Latency Categories (1988 to 1998).

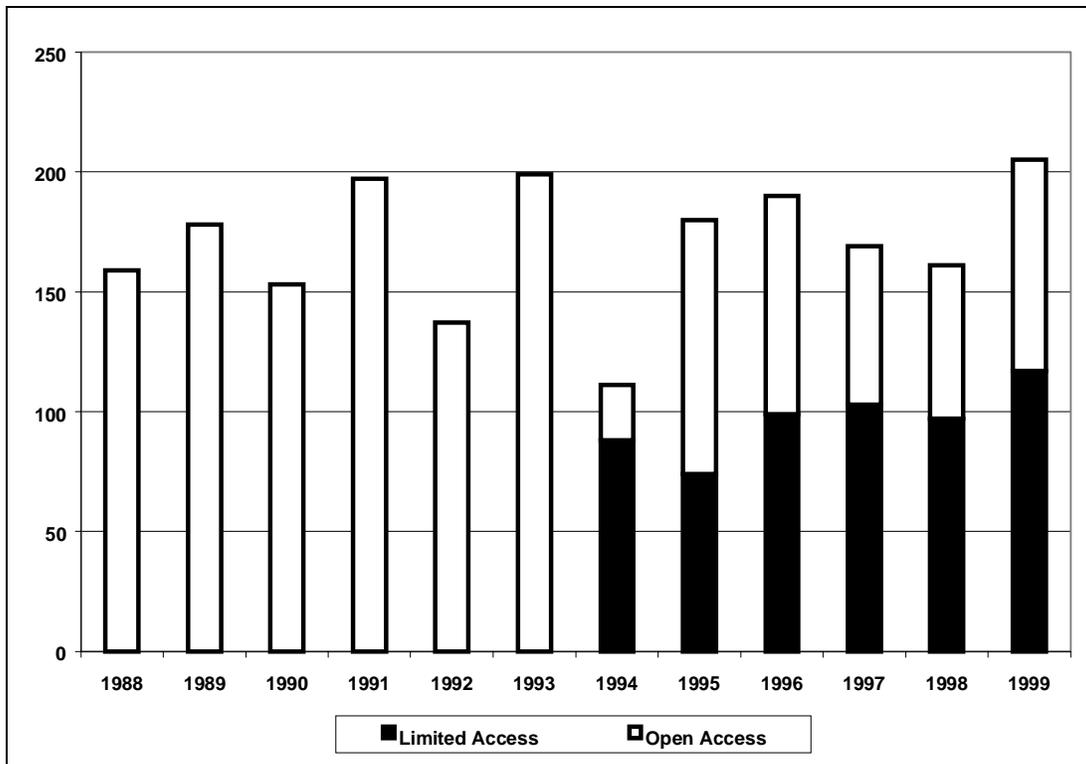


Figure 7. Number of Open Access and Limited Access Groundfish Ownership Transfers (1988 to 1999)

In 1994 transfers were recorded for 111 groundfish vessels possessing either an open access or limited access permit. Each of these transactions was examined to distinguish between changes in ownership structure from actual changes in ownership. Changes in ownership structure include conversion from private to corporate ownership, adding a spouse or relative to ownership, or changing a corporate name. In these cases, ownership transfer is a paper exchange only. By contrast, transfers between two completely different individuals or corporations involve a change in management responsibility.

After eliminating apparent paper exchanges, a real ownership transfer occurred for 96 groundfish vessels. Over the entire permit history (from 1987 to the present) of these vessels, the majority were sold on three or fewer occasions while a small number were sold up to seven times (Table 1).

Table 1. Frequency of Ownership Transfer for 96 Vessels Sold in 1994

Number of Times Sold	Number of Vessels
1	28
2	28
3	21
4	12
5	3
6	2
7	2

At the time of transfer, the majority of sellers (64) had owned their vessel for at least five years and a majority of buyers (55) still owned the same vessel five years after acquisition in 1994 (Table 2).

To examine potential relationships between ownership transfer and groundfish fishing effort requires that the activity of the new and previous owner be compared over a period of time. Given available data, the maximum period for comparison would be 5 consecutive years (i.e. 55 vessels). Therefore, cumulative fishing activity in terms of both groundfish and landings of all species combined were compared for one and five calendar years before (1989 to 1993) and after (1995 to 1999) the date of transfer.

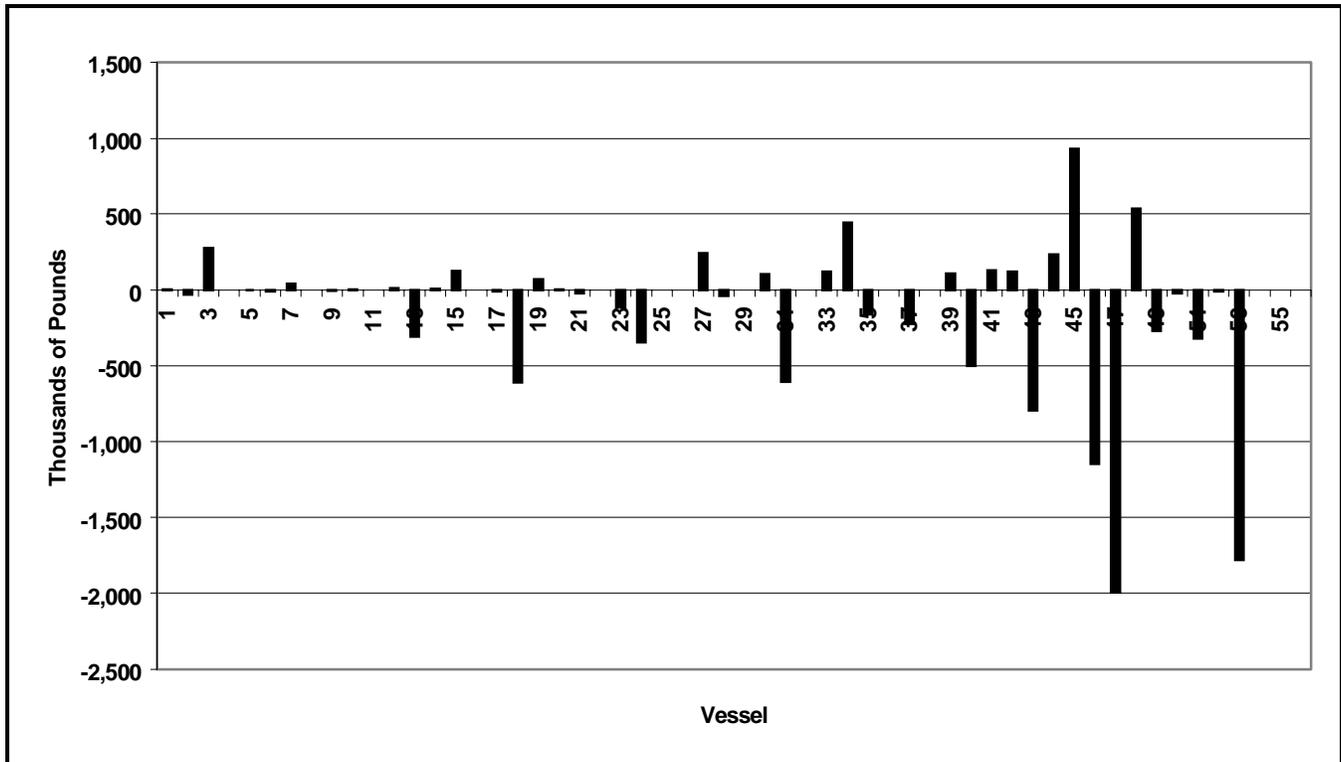
Table 2. Ownership Tenure for Sellers and Buyers of 96 Vessels Sold in 1994

Years of Tenure	Sellers (prior to 1994)	Buyers (since 1994)
1	2	2
2	14	13
3	9	13
4	7	13
5+	64	55

Comparing groundfish landings of sellers and buyers indicates little change in groundfish activity one year before and after the ownership transfer. Specifically, 21 of the 55 buyers had groundfish landings that exceeded that of the previous owner while groundfish landings for 19 buyers was below that of the previous owner for a net reduction of 275 thousand pounds across all vessel owners. The remaining 15 vessel owners did not record any groundfish landings before or after transfer. This difference between new and previous owners' activity in groundfish is even greater when cumulative activity over a five year period is compared.

Cumulative groundfish activity after five years was greater for 23 of the 55 vessels that changed hands in 1994. However, activity by these vessels was more than offset by reductions in groundfish activity for 25 other vessels for a net aggregate reduction of 5.8 million pounds of groundfish (Figure 8). This overall reduction in groundfish activity may be due to the substantial differences in regulatory environment that occurred after 1994. For the remaining 7 vessels, no groundfish fishing activity was recorded either over the entire five year ownership period for this study.

In contrast to the reductions in groundfish activity, new vessel owners shifted effort from groundfish to other fisheries. The magnitude of this shift was not readily apparent after only one year of new ownership. Specifically, 27 of the 55 new owners recorded greater activity in all species combined but the aggregate difference for the 55 new owners was only 431 thousand pounds. After five years this difference had increased to over 97 million pounds (Figure 9). These data indicate that owners of vessels purchased in 1994 with groundfish permits increased their overall level of activity but have done so by prosecuting fisheries other than groundfish.



**Figure 8.** Cumulative (5-year) Net Change in Groundfish Landings for 55 Vessels Sold in 1994

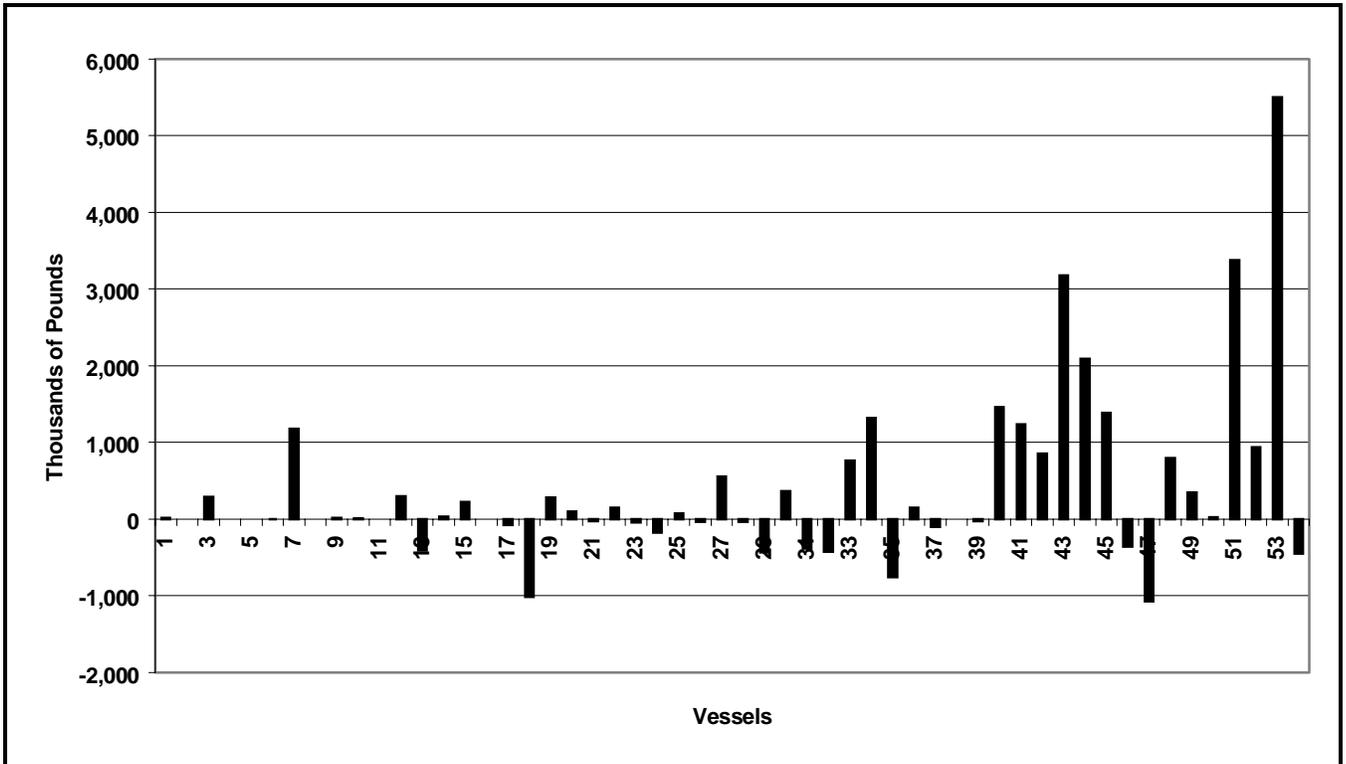
#### 4.0 CONCLUSIONS

The Northeast groundfish fishery has been operating under a set of stringent individual vessel effort controls since adoption of Amendments 5 and 7 to the Northeast Multispecies Plan. These Amendments established a limited access program and implemented limits on allowable fishing days for groundfish. This paper sought to examine two potential sources of effort increase in the groundfish fishery; latent effort and vessel ownership transfer. Available data indicate that there has been relatively little change in either the number of vessels in the groundfish fishery over the past ten years or in the number of vessels that have held a commercial groundfish permit but have not fished groundfish. However, while total allocated fishing time for vessels in the groundfish fishery (latency category 3) has remained relatively stable, the amount of available fishing time devoted to groundfish has declined since 1994. Thus, the primary source of growth in latent groundfish effort appears to be within the component of the fleet that has a documented history of fishing groundfish rather than from a component of the fleet with relatively little documented groundfish activity.

A formal test of Maurstad's observations in the small-scale Norwegian cod fishery cannot be conducted because indebtedness data in the Northeast U.S. groundfish fishery are not collected. Nevertheless, observed changes in

activity for vessels involved in ownership transfers indicate greater effort on the part of new vs. previous owners. These ownership transfers have generally resulted in increased effort in fisheries other than groundfish. Should these patterns continue, vessel ownership transfers may not be a significant source of effort increase in the groundfish fishery. However, this finding may be an artifact of the times in which the 1994 vessel ownership transfers occurred. With the combination of reduced groundfish abundance and effort controls that have been in place since 1994, new vessel owners may have had to pursue fisheries other than groundfish to recoup their investment. As groundfish stocks recover, these owners and others may return to the groundfish fishery.

Further research is needed to examine the propensity for effort to enter the groundfish fishery. As long as managers continue to rely on fixed effort allocations (as compared to share-based allocations), total allocated days-at-sea will probably always exceed levels consistent with conservation objectives. An improved understanding of willingness to supply effort may help to design management measures that meet conservation targets and are more cost-effective.



**Figure 9.** Cumulative (5-year) Net Change in Landings of all Species Combined for 55 Vessels Sold in 1994

## 5.0 REFERENCES

- Edwards, S. Influence of a century of macroeconomic change on U.S. fisheries production. *North American Journal of Fisheries Management*. 19(1):1-17, 1999.
- Edwards, S.F. and S. A. Murawski, Potential Economic Benefits from Efficient Harvest of New England Groundfish. *North American Journal of Fisheries Management* 13:437-449, 1993.
- Maurstad, A. "To Fish or not to Fish: Small-Scale Fishing and Changing Regulations of the Cod Fishery in Northern Norway." *Human Organization* 59(1):37-47, 2000.
- Wang, S. D. H. and A. A. Rosenberg, "U.S. New England Groundfish Management Under the Magnuson-Stevens Fishery Conservation and Management Act." *Marine Resource Economics*. 12(4):361-366, 1997.