May 2007

Collaborations

A report on collaborative research projects in the northwest Atlantic Ocean.

Cooperative Research Needed for the Mackerel Fishery

While most fisheries research in the Northeast focuses on the fish we eat that are on the top of the food chain, it is increasingly evident we also need to pay attention to the fish they eat on the bottom.

Two species tend to stand out as the region's premiere pelagic bait: Atlantic herring and menhaden, that have been the focus of several hydroacoustic and tagging studies.

However, scientists increasingly believe the fast-swimming mackerel (Scombur scombris) is equally important to the health of commercial and recreational fisheries. Yet relatively little is known about its biology and life history.

And with fisheries research funding already stretched thin, diverting money from relatively glamorous apex predators to study the lowly mackerel has been a challenge.

However, as with other species, cost-effective collaborative research on the fish could provide critical information on the cheap.

"We planned to increase our own sampling effort, but we also thought that an industry-based sampling program might be an inexpensive and reliable complement to that effort," said John Boreman, director of the New England Fisheries Science Center in Woods Hole, Massachusetts.

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Word on the Waterfront: Keep Collaborative Research

When the government decided to allocate millions of dollars in "disaster relief" to New England's beleaguered groundfish fleet at the end of the nineties, the fishing community had to decide how and where to spend the money. After much deliberation, the decision was made to use the money to fund collaborative research. Fishermen would be able to work with managers, scientists and researchers and would be paid for their efforts. The Northeast Consortium and the Cooperative Research Partners Program grew out of this concept and it would go on to prove its worth, as the fishermen-scientist partnership helped break down decades of mistrust and produce valuable information about the fishery.

Proctor Wells holds an experimental conservation net designed by scientists and fishermen for the Northern shrimp fishery.

As one of the fishermen involved in the research from the start, I know how important collaborative research has been. On the one hand it was able to maximize the knowledge of both fishermen and scientists by having them work as a team; the new relationship was just what the region needed to further fishery data. No longer was all 'science' without of fishermen's involvement. Data is the key to fisheries management and the new relationships that were built were helping to fill the void.

But another important part of the research was the compensation for fishermen that were involved. Myself and others were able to regain some of the income that had been lost in the face of less fish and tighter regulations. While not every fisherman was able to be involved, many were, and this offered much needed income to those participating in cooperative projects.

In fact, I built my boat specifically to be effective in conducting research. All of us involved invested time and money in order to have vessels that could offer a proper platform to the scientists. Planning on being involved in this type of research for the long haul, this was an investment myself and others felt worthwhile.

So it should come as no surprise that the risk to the Northeast Consortium's budget and collaborative research in general has left many fishermen very concerned. After countless projects, and years of hard work, we have finally proven that working together to save our fishery works.

The fish are starting to come back, but in many parts of the coast we still have a few more years to go before the recovery can be felt. To undercut the research now would be yet another blow to fishermen like me. Not only will the region lose the important data stream, we'll lose the partnerships and the trust upon which a sustainable fishery rests.

Let's now work together to find a way to allow collaborative research to continue

Proctor Wells is the owner and captain of the fishing vessel Tenacious in Phippsburg, Maine.

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The Fishery

Atlantic mackerel were heavily exploited by distant water fleets during the late 1960s-early 1970's. Total landings averaged 350,000 mt during 1970-1976 but decreased to less than 50,000 mt during 1978-1984 (Table 23., (Figure 23.2 [Fig 23.2 Data]). Landings in Canadian waters remained relatively stable at an average of 24,000 mt during 1968-2000, where landings in US waters increased during 1985-1991 to an average of 76,000m mt, with the advent of a joint venture fishery in the Mid-Atlantic region. Recently both USA and Canadian landings have increased due to improved demand. U.S. landings increased from 5,646 mt in 2000 to 53,724 mt in 2004; Canadian increased from 13,383 mt in 2000 to 51,444 mt in 2004, declining to 41,234 mt in 2005. USA recreational landings averaged 1,344 mt during 1990-2000, declined to only 467 mt in 2004, and then increased again to 1,042 mt in 2005.

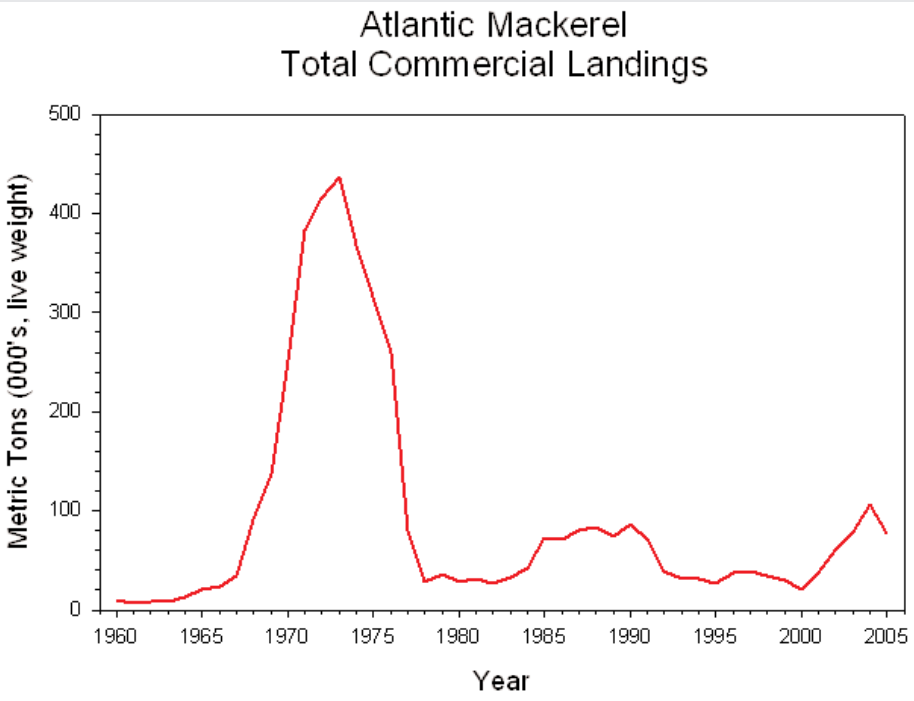

Figure 23.2. Total commercial landings of Atlantic mackerel (NAFO SA 2-6), 1960-2005.

Many age groups were present in the mackerel landings during the late 1960s and early 1970s, but the age structure of the landings became very truncated after the stock collapsed in the late 1970s. As the stock recovered in the late 1980s and early 1990s, the age distribution expanded and age groups up to 10 were again represented in the landings. Older fish have not been present in the landings during the last several years, but this is mostly due to an availability problem (Figure23.2 [Fig 23.3 Data]).

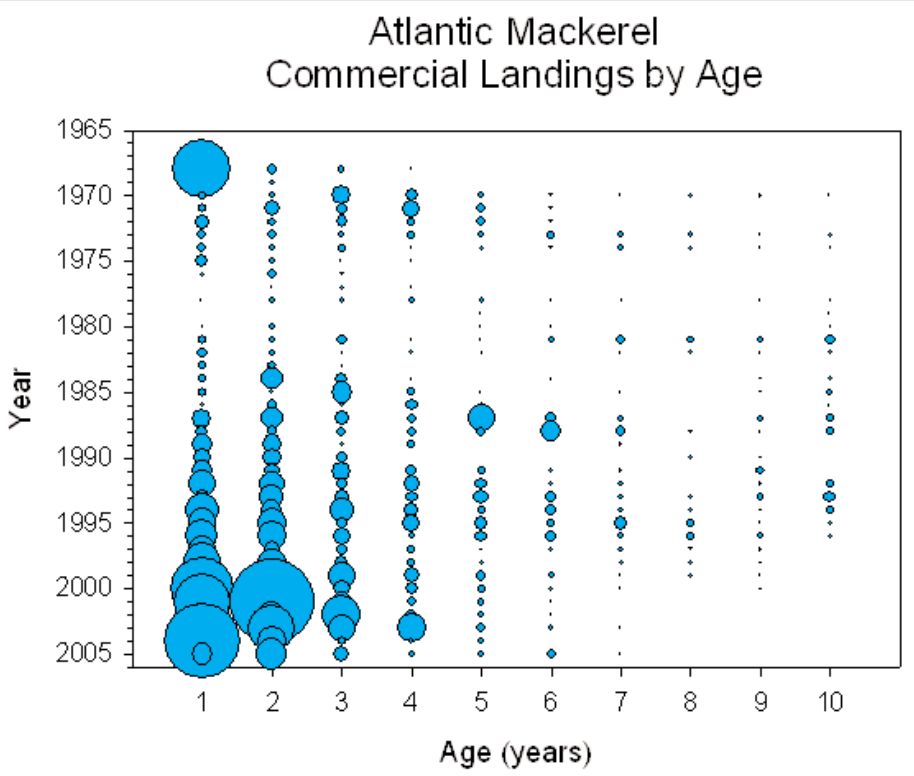

Figure 23.3. Age structure of total Atlantic mackerel landings, 1968-2005.

Research Vessel Survey Indices

NEFSC spring survey biomass indices increased during 1980-2000 but have since declined a bit (Figure 23.4 [Fig 23.4 Data]).

Several large cohorts were produced in the stock during 1968-2005 (Figure 23.5 [Fig 23.5 Data]). The 1967, 1982, and 1999 cohorts were relatively strong. Moderate year-classes and expansion of the age structure are apparent during the late 1980s through 1998. Large catches at age 1 and 2 for mackerel have dominated the survey catches in recent years. Recent surveys also show an apparent lack of older fish.

From: www.nefsc.noaa.gov/sos/spsyn/pp/mackerel/

Already, government scientists work with processors across the region to gather landings data that give them an idea about how many fish are being extracted from the resource and watch for changes in the stock over time.

But in order to better manage the fishery, scientists need to understand its biological productivity, which may require them to get out on the water.

This is because the fish often groups by size and, because smaller ones are most abundant, they are often disproportionately represented in the government's trawl surveys, according to Bill Overholtz, a biologist with the NEFSC.

In order to fully understand the stock's reproductive rates, scientists need to analyze more elusive large mackerel, and often only commercial fishermen can find and capture them.

The fishermen-scientist partnership is not new to the fishery. "We worked with the foreign fleets in the seventies, specifically Polish vessels," said Overholtz. "We were able to gather data on the fishery from their records."

In fact, it is believed that heavy fishing from Polish and other foreign factory trawlers led to the fisher's collapse at the end of that decade.

After the Magnuson Act expelled foreign vessels in 1976, mackerel stocks made a strong recover. However, increased global demand for fish protein has led to the return of mid-water trawlers, reminiscent of the factory fleet, to the region's waters and renewed concerns about overfishing.

Current indications show the mackerel fishery to be sustainable, according to Overholtz.

However, a new model that came out in 2006, part of the first regional stock assessment since 1999, showed that long term sustainable harvest is much smaller than was predicted in the previous assessment. "This is a big change," Overholtz said.

Scientists aren't sure what accounts for the change. It could be because of environmental factors, such as water temperature. It could also be because of increased fishing pressure in recent years.

"The reality is we need to conduct more research to manage the species properly and that takes money," said Overholtz.

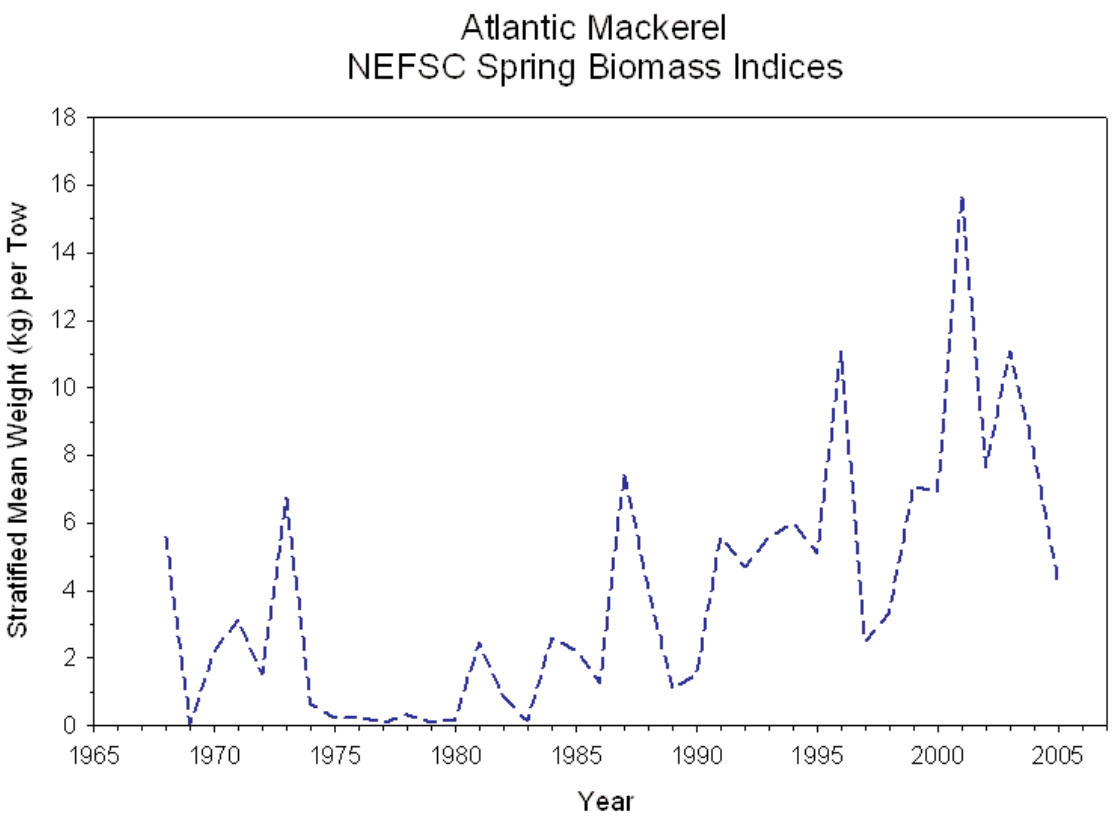

Figure 23.4. Biomass indices (stratified mean weight per tow) for Atlantic mackerel from NEFSC spring research vessel surveys.

NEFSC spring survey biomass indices increased during 1980-2000 but have since declined a bit (Figure 23.4 [Fig 23.4 Data]).

Several large cohorts were produced in the stock during 1968-2005 (Figure 23.5 [Fig 23.5 Data]). The 1967, 1982, and 1999 cohorts were relatively strong. Moderate year-classes and expansion of the age structure are apparent during the late 1980s through 1998. Large catches at age 1 and 2 for mackerel have dominated the survey catches in recent years. Recent surveys also show an apparent lack of older fish.

Fishing mortality (ages 4-6, unweighted) was high during 1969-1975, peaking at 0.54 in 1976 and then sharply declined to 0.05 in 1978 followed by a very low and stable period during 1979-1986. Fishing mortality increased very slightly in 1988 to 0.09, (coincident with the joint venture (JV) fishery that operated for several years), and then declined and has since been below 0.06. Spawning biomass peaked in 1972 at 1.7 million mt, declined until 1976, and has increased thereafter reaching a record high of 2.3 million mt in 2003-2004. Recruitment ranged between 0.1-5.8 billion fish during 1962-2004 and averaged 1.1 billion fish. Three large year-classes were produced during this period, the 1967, 1982, and 1999 cohorts. The 2003 and 2004 cohorts appear to be above average but their magnitude is still uncertain.

Azure Westwood holds yellowtail flounder tagged as part of SMAST's collaborative research project.

Panel Reviews SNE Yellowtail Flounder Industry-Based Survey

If collaborative research data is to become a substantial consideration in the policy decision-making process, it will be necessary for the studies to undergo a rigorous peer review.

Last year, in response to indications that New England's southern yellowtail flounder stock was not meeting rebuilding targets, the region's fishery's council made the review of the industry-based survey of the species a top priority.

The governmnet made funds available to conduct the review in February 2007, and the findings indicate that the survey may serve as a model to improve industry-based stock assessments elsewhere.

The review was conducted by a panel of biologists with expertise in the relevant subject (Ghislain Chouinard, Canada DFO, Michael Martin, NOAA Fisheries, AFSC, and John Sowles, Maine Dept. of Marine Resources.)

The main objective of the yellowtail survey, which is administered by the Rhode Island Department of Environmental Management in cooperation with fishermen from Point Judith, R.I., is to determine the temporal and spatial abundance, distribution and size composition of yellowtail flounder within the Nantucket Lightship closed area and a handful of adjacent sites.

The research employs a random stratified design according to strata defined by 30-minute latitude by 30-minute longitude rectangles.

Funds were made available to conduct the review in February 2007, and the findings indicate that the survey may serve as a model to improve industry-based stock assessments elsewhere.

In keeping with industry-based stock assessment protocol, an equal number of fixed stations selected by fishermen are also surveyed.

The findings were released last month (the full report is

continued from page 5

available at www.nefmc.org) and are summarized below:

• The SNE yellowtail survey collected sufficient information to suggest that the Nantucket Lightship closed area does not meet the objective of protection of juvenile yellowtail. The review panel recommends that analysis of the efficacy of the closed area be formally conducted and documented. The survey dataset is considered useful to identify alternate closed areas.

• The review panel is satisfied with the attention to detail taken in the selection of the two vessels used for the survey in an attempt to minimize vessel differences as well as in the selection of the most appropriate trawl gear to be used in the survey.

• The review panel considers age samples collected during the SNE yellowtail survey have been very useful to complement the age-length tables for the assessment of yellowtail flounder, however, the utility of the survey in tracking changes in abundance is low due to the shortness of the time series.

• Many of the questions and concerns of the review panel derive from lack of details to ensure consistency and standardization. Procedures and protocols (e.g. towing speed, guidelines for declaring null sets, swept area, fishing station standardization, analyses) need to be further documented to ensure that data are correctly interpreted and repeatable methods are used if the survey is resumed. The panel recommends that funding be made available to complete the documentation and development of metadata for this dataset to preserve its integrity and usefulness.

• The mixed design of the survey (stratified random and fixed station) poses particular analysis difficulties. Survey estimates using all stations may be biased. Given the high sampling intensity, it should be possible to obtain unbiased indicators of the trends in yellowtail abundance by analyzing stratified random and fixed stations separately.

• If the survey is continued in the future, consideration should be given to using a unique sampling design. Information and knowledge gained during the 2003-2005 surveys would be useful in designing a survey.

• A wealth of information is available for analysis and would be expected to provide new knowledge on the biology of yellowtail flounder in the area, gain insights in survey design and to explore sampling strategies to collect information on multiple species. To the extent possible, the project team members, NEFSC scientists, and others should be encouraged to analyze these data.

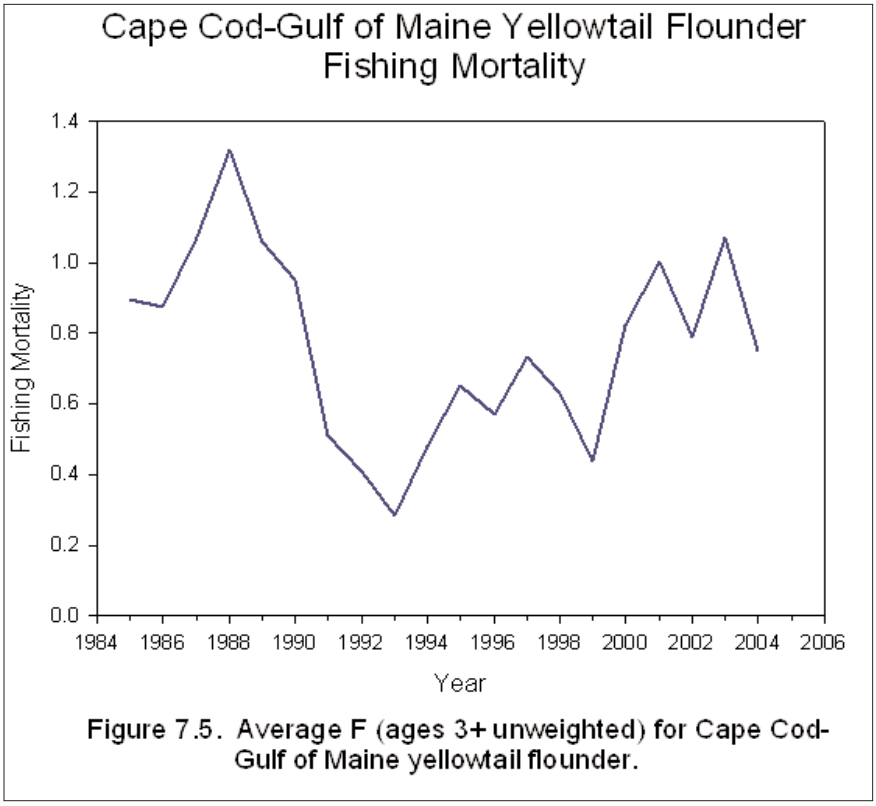

Figure 7.5. Average F (ages 3+ unweighted) for Cape Cod-Gulf of Maine yellowtail flounder.

Cape Cod-Gulf of Maine yellowtail are generally caught in multi-species groundfish fisheries (principally by otter trawls) from late fall to spring, with some landings by gillnets in the winter and spring. Historically, landings from the stock were a small portion of the total U.S. yellowtail landings. However, during the collapse of Georges Bank and southern New England stocks in the early 1990s, landings from the Cape Cod-Gulf of Maine stock accounted for the majority of U.S. yellowtail harvest. Annual landings from the stock increased from less than 1,000 mt in the mid 1930s to a peak of 5,600 mt in 1980. Landings decreased to approximately 1,200 mt per year in the late 1980s, but increased to 3,200 mt in 1990 due to recruitment of the strong 1987 yearclass. Landings declined to 800 mt in 1993, remained low through the 1990s, increased to greater than 2,400 mt in 2000 and 2001, but declined to 700 mt in 2005. Discards constitute about 20% of the total catch.

From: www.nefsc.noaa.gov

• Because of the single-species nature of the survey, integration of this survey, as it now exists, with the NMFS survey is considered to be difficult and not cost effective.

• The Southern New England Industry-based Survey is considered a good example of a cooperative project that provides valuable information on yellowtail flounder in the area. Industry-based surveys are considered more appropriate to address short-term issues than to conduct long-term monitoring.

NOTE: At press time the IB yellowtail survey was awaiting word on funding for future research.

NMFS Releases are available at:

www.nero.noaa.gov

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
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Gloucester, MA 01930-2298

May 3, 2007

Small Entity Compliance Guide

Dear Limited Access Northeast (NE) Multispecies Permit Holder:

This letter is to inform you of the Total Allowable Catches (TACs) that have been set for Eastern Georges Bank (GB) cod, Eastern GB haddock, and GB yellowtail flounder in the U.S./Canada Management Area for the 2007 fishing year (May 1, 2007-April 30, 2008) under the NE Multispecies Fishery Management Plan (FMP). The TACs for the U.S. portion of GB stocks are as follows: **494 mt of cod, 6,270 mt of haddock, and 900 mt of yellowtail flounder.**

The specification of hard TACs is required to ensure that the transboundary resources of GB cod, haddock, and yellowtail flounder, that are shared between the U.S. and Canada, are managed as outlined in the U.S./Canada Resource Sharing Understanding (Table 1 below). Though not expected, should an analysis of 2006 catch of the shared stocks by U.S. vessels indicate that an overage occurred during fishing year 2006, the pertinent 2007 TAC or TACs will be adjusted downward in order to compensate for the overage.

Table 1. Fishing Year 2007 U.S./Canada TACs (mt) and percentage shares.

	Eastern GB Cod	Eastern GB Haddock	GB Yellowtail Flounder
Total Shared TAC	1,900	19,000	1,250
U.S. TAC	**494 (26 %)**	**6,270 (33 %)**	**900 (72 %)**
Canada TAC	1,406 (74 %)	12,730 (67 %)	350 (28 %)

You may also receive permit holder letters, and find supporting documentation for these specifications on our web site at http://www.nero.noaa.gov. If you have questions, please contact the Sustainable Fisheries Division at (978) 281-9315.

This small entity compliance guide complies with section 212 of the Small Business Regulatory Enforcement Fairness Act of 1996.

Sincerely,

for Patricia A. Kurkul
Regional Administrator

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