
Northeast Pelagic Fisheries



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Unit 2

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INTRODUCTION

Northeast pelagic fisheries target small schooling species in the U.S. Exclusive Economic Zone, particularly Atlantic mackerel, Atlantic herring, bluefish, and butterfish.¹ The fisheries on these stocks are seasonal and reflect fish migration patterns and temporal availability. Generally, these species overwinter in relatively warm offshore waters of the Mid-Atlantic Continental Shelf and move southward to avoid seasonal cooling of northern nearshore waters. This is followed by a return northward and inshore migration during the spring and summer to feed and reproduce.

Various fishing gears, including bottom trawls, midwater trawls, gillnets, and seines are used to harvest pelagic species in the Northeast Region. During 2004–06, total landings averaged 229,633 metric tons (t; Table 2-1), 70% by the United States and

¹For taxonomic consistency, longfin and shortfin squid are included in Unit 4: Northeast Invertebrate Fisheries.

30% by Canada. This includes recreational landings (bluefish and Atlantic mackerel) of about 7,666 t.

During the early 1970's, the principal Northeast pelagic species (Atlantic mackerel and Atlantic herring) were exploited heavily by foreign fleets. As a result, stock sizes and fishery yields declined to record low levels by the late 1970's. Abundance has since increased due to the exclusion of foreign fleets, resulting in lower harvest rates and improved recruitment. Stock sizes for these species are currently at historically high levels.

Northeast pelagic fisheries are managed under three fishery management plans (FMP's): Atlantic mackerel by the Mid-Atlantic Fishery Management Council's (MAFMC) Atlantic Mackerel, Squid, and Butterfish FMP; bluefish by the joint MAFMC and Atlantic States Marine Fisheries Commission's (ASMFC) Atlantic Bluefish FMP; and Atlantic herring, in coordination with the ASMFC, by the New England Fishery Management Council's Atlantic Sea Herring FMP.

Photo above:
Butterfish.



Charles Byrne, NEFSC

Atlantic herring on a sorting table aboard a NMFS survey vessel.

SPECIES AND STATUS

Northeast pelagic fisheries are dominated by four species: Atlantic mackerel, Atlantic herring, bluefish, and butterfish. The abundance of mackerel and herring is presently above average, while that of bluefish is near or above average and that of butterfish is below average.

Long-term population trends for pelagic species, as measured by research vessel survey data, have fluctuated considerably during the last 25 years (Figure 2-1). The combined abundance index for mackerel and herring reached minimal levels in the mid-to-late 1970's, reflecting pronounced declines for both and a collapse of the Georges Bank herring component, but subsequently increased steadily and peaked in 2001, declined somewhat, and remained relatively flat since then.

Atlantic Mackerel

The Atlantic mackerel stock recovered during the mid 1980's, and the most recent stock assessment (NEFSC, 2007) indicated that the spawning stock biomass reached 2.3 million t in 2005. Abundance indices from research vessel surveys have remained fairly stable in recent years, suggesting that stock biomass remains relatively high. Recent annual landings were about 106,219 t (Table 2-1), of which 49% was taken by the United States.

Atlantic Herring

The Atlantic herring stock complex in the Northeast Region is still somewhat underutilized as a whole, but the inshore Gulf of Maine component is considered fully utilized (NEFSC, 2007). Total landings of herring in 2003 were 115,000 t, up from 104,000 t in 2002. The U.S. catch accounted for 82% of the 2004 landings. Recent average landings totaled about 112,240 t (Table 2-1). The U.S. coastal stock complex consists of two major stock components, the Gulf of Maine and Georges Bank. Canadian catches off New Brunswick have also been included in a combined stock analysis since these fish mix with those from the other stocks during portions of the year. The Georges Bank stock component collapsed in 1976 after intensive exploitation by foreign fleets during the 1960's and early 1970's. A total allowable catch of 60,000 t was in effect for the nearshore portion of the Gulf of Maine in 2006.

Table 2-1
Productivity in metric tons (t) and status of Northeast pelagic fisheries resources.

| Species/Stock | Recent average yield (RAY) ¹ | Current yield (CY) | Sustainable yield (MSY) | Stock level relative to B_{MSY} | Harvest rate | Stock status |
|--------------------------------|---|--------------------|-------------------------|-----------------------------------|-----------------|----------------|
| Atlantic herring ² | 112,240 | 194,000 | 194,000 | Above | Not overfishing | Not overfished |
| Atlantic mackerel ³ | 106,219 | 335,000 | 148,000 | Above | Not overfishing | Not overfished |
| Bluefish ⁴ | 9,706 | 16,916 | 51,890 | Below | Not overfishing | Rebuilding |
| Butterfish | 1,468 | 4,545 | 12,175 | Below | Not overfishing | Overfished |
| Total | 229,633 | 550,461 | 406,065 | | | |
| U.S. Subtotal | 160,335 | 481,162 | 336,766 | | | |

¹2004–06 average. Includes foreign and recreational landings.

²Includes significant foreign (Canadian) landings; the U.S. portion of the RAY is 96,706 t.

³Includes significant foreign (Canadian) and recreational landings; the U.S. portion of the RAY is 52,455 t.

⁴Includes significant recreational landings.

Bluefish

Bluefish landings peaked in 1981 at 51,400 t, but have declined to a recent annual average of only 9,706 t (Table 2-1). About 68% of recent bluefish catches have been taken by recreational fishermen. During 2004–06, recreational and commercial landings increased slightly over the 2001–03 period. Currently, bluefish stock abundance is above average.

Butterfish

The butterfish stock is currently below average abundance (NEFSC, 2007). Butterfish landings have declined significantly in recent years, primarily due to reduced export demand and low stock size.

ISSUES

Scientific Advice and Adequacy of Stock Assessments

Although historical catch data are generally adequate for assessment purposes (with the possible exception of bluefish), stock assessments for Northeast pelagic resources are somewhat imprecise. This is due to the highly variable trawl survey indices of abundance used for calibrating cohort analysis models; the short lifespan of butterfish; and current low exploitation rates for mackerel and herring. The development of more precise assessments will require the use of hydroacoustic, midwater trawl, and improved bottom trawl surveys to estimate herring and mackerel abundance, and alternative types of sampling methods to estimate bluefish abundance. Efforts to improve stock assessments for Atlantic herring began in 1997 with the implementation of autumn hydroacoustic surveys aimed at indexing herring spawning concentrations. Research is currently underway to estimate the size of herring spawning groups from these surveys.

Fleet Capacity

Although total yields of mackerel and herring can be increased to some extent (Table 2-1), fishery expansion is limited by low export demand for herring and bycatch considerations for both species. In

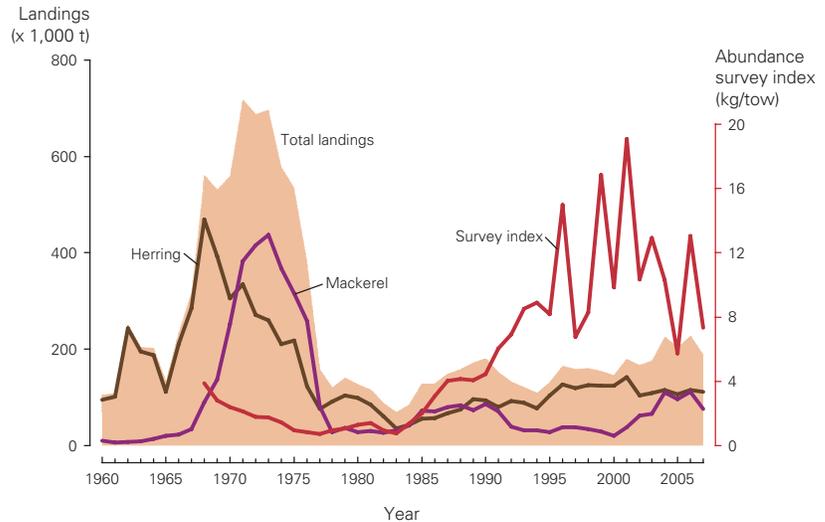


Figure 2-1
Landings in metric tons (t) and abundance survey index (kg/tow) of principal pelagic stocks, 1960–2007.

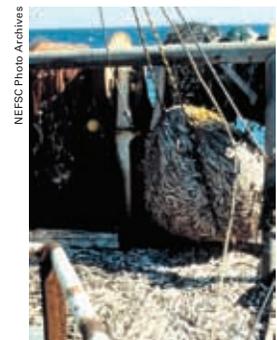
any case, overall fleet capacity in the mackerel and herring fisheries in the region has been reached.

Bycatch and Multispecies Interactions

Aggregations of schooling fish, like Northeast pelagics, are utilized as prey items by a wide variety of predatory fish, marine mammals, and birds, and form an important link in many marine food chains. In winter, the directed fisheries for Atlantic mackerel and herring have historically taken some marine mammals as incidental catch, including pilot whales and common dolphins. An intensification of these fisheries to harvest the full sustainable yield of these resources could result in greater marine mammal interactions and incidental takes. Choosing appropriate time–area closures to prevent marine mammal–fishery interactions could keep such incidental takes to a minimum.

LITERATURE CITED

NEFSC. 2007. Status of fishery resources off the northeastern United States. Internet site—<http://www.nefsc.noaa.gov/sos/>.



Atlantic mackerel on the deck of a trawler.

