Southeast Menhaden Fisheries

Unit 10

DOUGLAS S. VAUGHAN
JOSEPH W. SMITH

NMFS Southeast Fisheries Science Center, Beaufort Laboratory

Beaufort
North Carolina

INTRODUCTION

The menhaden is a herring-like species found in coastal and estuarine waters of the U.S. Atlantic and Gulf of Mexico. They form large schools at the surface which are located by aircraft and are harvested by purse seines to produce fish meal, fish oil, and fish solubles. An active baitfish fishery along the Atlantic and Gulf Coasts harvests about 5–10% of the amount landed by the industrial fishery. These fisheries are managed by individual states, with interstate coordination handled through the Atlantic States Marine Fisheries Commission and the Gulf States Marine Fisheries Commission. Menhaden are prey for many fishes and sea birds.

In the Atlantic area, the menhaden resource is fully utilized with a long-term potential yield of 480,000 metric tons (t) per year and a recent average yield of 300,000 t/year (Table 10-1). In the Gulf of Mexico, the menhaden resource is fully utilized with a long-term potential yield of 660,000 t/year and a recent average yield of 560,000 t/year.

Atlantic Menhaden

Atlantic menhaden range from West Palm Beach, Fla., to Nova Scotia, Can. As coastal waters warm in April and May, large surface schools form along the coasts of Florida, Georgia, and the Carolinas. The schools move slowly northward, stratifying by age and size during summer, with the older and larger fish generally moving farther north. The southward migration begins in early fall with surface schools disappearing in late December or early January off the Carolinas. Atlantic menhaden may live 10 years, but most fish caught are 3 years old or younger (Smith, 1991).

Menhaden landings rose during the 1940's and early 1950's, peaking at 712,100 t in 1956 (Figure 10-1). Landings remained high during the late 1950's and early 1960's, dropped precipitously during the mid 1960's, and remained low, bottoming out at 161,600 t in 1969. Since 1970, landings have improved but not to the levels of the late 1950's. Landings peaked in 1983 at 418,600 t. Landings have been relatively stable in recent years at about 300,000 t. While spawning stock biomass recently peaked in 1997 at about 89,000 t, recruitment of 1-year-old fish has declined over the last decade to recent lows (Cadrin and Vaughan, 1997). The commercial ex-vessel revenue of Atlantic menhaden for 1994–97 averaged $41.7 million/year. In 1998, two menhaden reduction or processing plants were in operation, one in Reedville, Va., and one in Beaufort, N.C.; the industrial purse-seine fleet was comprised of about 15 vessels.

The stock decline in the 1960's drove fishing effort southward to Virginia and North Carolina where menhaden are generally younger and smaller than those in the north. Overutilization owing to growth overfishing (catching too many fish before they grow to full size) has been a prime management concern for this stock. While maximum spawning potential estimates have been low (10%), estimates of spawning stock biomass have rebounded from the very low levels of 1965–75, although not to the very high level of the late 1950's. A new fishery management plan was adopted by the Atlantic States Marine Fisheries Commission in September 1992 which provided for an annual review of six trigger variables (landings in weight, percentage of age 0 and adults in numbers in the landings, new recruits aged 1 year old, spawning stock biomass, and maximum spawning potential) (Atlantic Menhaden Advisory Committee, 1992).

Table 10-1
Productivity in metric tons and status of Southeast Region menhaden fishery resources.

Area/Species	Recent average yield (RAY)	Current potential yield (CPY)	Long-term potential yield (LTPY)	Fishery utilization level	Stock level relative to LTPY
Gulf of Mexico Menhaden	560,000	560,000	660,000	Full	Near
Atlantic Menhaden	300,000	300,000	480,000	Full	Near
Total	860,000	860,000	1,140,000		

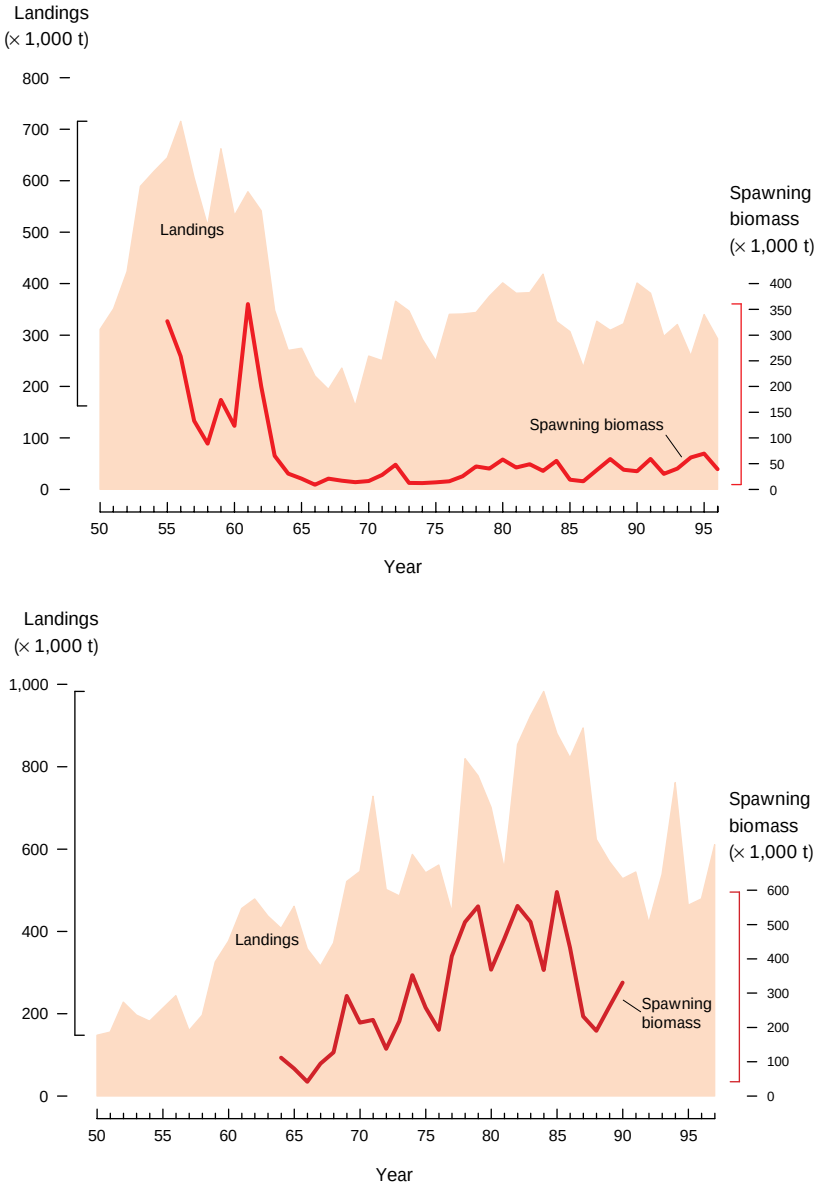

Figure 10-1
Landings and spawning biomass of menhaden, 1950–97, in metric tons (t). Top, Atlantic; bottom, Gulf of Mexico.

Exceeding prespecified levels of trigger variables in conjunction with ancillary information will determine the need for specific management actions.

Gulf of Mexico Menhaden

Gulf menhaden are found from Mexico's Yucatán Peninsula to Tampa Bay, Fla. They form large surface schools that appear in nearshore Gulf waters from April to November. Although no extensive coastwide migrations are known, some evidence suggests that older fish move toward the Mississippi River delta. Gulf menhaden may live to age 5, but most of those landed are ages 1 and 2. In 1998, active Gulf menhaden reduction plants were located in Moss Point, Miss., and in Empire, Morgan City, Intracoastal City, and Cameron, La.; about 50 purse-seine vessels operate in the Gulf (Smith, 1991).

Historically, landings rose after World War II to a peak of 982,800 t in 1984 (Figure 10-1). Landings were generally high during the mid 1980's (greater than 800,000 t for 1982–87), but they declined steeply from 894,200 t to 421,400 t between 1987 and 1992. During this period (1987–92), the number of processing plants declined from 8 to 6 and vessels fell from 75 to 51. Although catch per unit of effort (expressed as metric tons/vessel-ton-weeks or t/vtw) showed a similar decline (1.48 t/vtw in 1987 to 1.03 t/vtw in 1992), catch per unit of effort is not useful as an index of population abundance for menhaden. The commercial ex-vessel revenue of Gulf menhaden for 1994–97 averaged $66.7 million/year. Landings during 1994-98 have averaged 561,000 t. Landings in 1994 of 761,600 t were the greatest in the past 10 years.

Because Gulf menhaden has a short life cycle and a high natural mortality, growth overfishing

has not been a management concern (Vaughan et al., 1996). Management is coordinated through the Gulf States Marine Fishery Commission, and consists of a 28-week fishing season (mid April through 1 November) and closure of inside waters across the northern Gulf of Mexico. The most recent revision to the Gulf Menhaden Fishery Management Plan was completed in 1995 (Gulf Menhaden Advisory Committee, 1995). Another revision is planned for 1999.

ISSUES

Management Concerns

Atlantic menhaden continue to be overfished (growth overfishing), which reduces the future opportunity for greater weight production. Of greater concern is the decline in recruitment noted since 1989 (1988 year class). This is somewhat tempered by the later high estimates for spawning stock biomass (peaking in 1995). Additionally, social concerns have resulted in numerous area closures along the Atlantic coast. Gulf menhaden landings have declined greatly since the mid 1980's, however, estimates of maximum spawning potential remain high (about 40%).

Transboundary Stocks and Fishery Management Jurisdictions

Because this resource migrates long distances along the coast, interstate coordination of menhaden management is required for Atlantic menhaden along the U.S. Atlantic Coast and for Gulf menhaden along the northern Gulf of Mexico through the interstate marine fisheries commissions. During the late 1980's and early 1990's, fish landed at processing plants in New Brunswick and Nova Scotia, Canada, were caught off Maine by U.S. vessels and transported to Canada for processing.

Bycatch and Multispecies Interactions

Two Saltonstall-Kennedy studies, funded in 1992 to investigate bycatch in the Atlantic and Gulf menhaden purse-seine fisheries, showed very low bycatch incidence (<0.1% of other species). The importance of menhaden as prey for other species should be considered with respect to multispecies resource management.

LITERATURE CITED

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