

Products:

- ▶ The purse seine fishery for reduction processes menhaden into fish meal, fish oil, and fish solubles.
- ▶ Fish meal is used as a high quality protein component in poultry, swine, and aquaculture feeds and in pet foods.
- ▶ Fish oil is high in omega-3 fatty acids which have positive health effects in humans and animals.
- ▶ In Europe and South America, fish oil is used extensively in margarine. Fish oil is a significant feed ingredient in high quality aquaculture feeds in Europe, the United States, Canada, South and Central America, as well as the Far East. Fish oil has become an important ingredient in numerous animal and pet foods. Some fish oil is also used in the production of water-resistant paints and cosmetics.
- ▶ In June 1997, the U.S. Food and Drug Administration approved refined menhaden fish oil for general use in foods for human consumption. This decision by the FDA should open significant new markets in the United States for refined menhaden fish oil as an edible oil for human consumption.
- ▶ Fish solubles are rich in vitamins and numerous cofactors. After undergoing an evaporative process, most solubles are recombined with fish meal to form an "enriched" meal, although solubles are sometimes marketed as liquid to be added to various animal feeds.
- ▶ Catches from the menhaden purse seine bait fishery are used in blue crab, crayfish,

and eel fishing. Menhaden are also used by sport fishermen as chum and as cut or live bait for sportfishes such as king mackerel, red drum, sharks, and tunas.

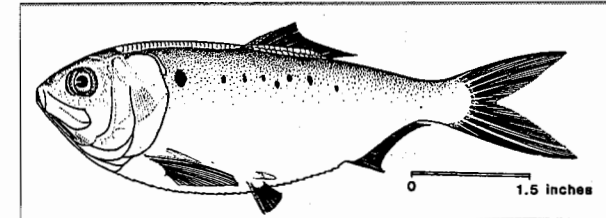
Resource Management:

- ▶ State and federal agencies cooperatively conduct research and monitor the resource.
- ▶ Responsibility for regulation of the menhaden fishery resides with the individual states which border the Gulf of Mexico. The Gulf States Marine Fisheries Commission (GSMFC), an interstate organization which promotes cooperative management of migratory fish species along the Gulf of Mexico, provides coordination and advisory functions relative to the management of gulf menhaden.
- ▶ A regional fishery management plan for gulf menhaden was adopted in 1977 through the GSMFC and its Menhaden Advisory Committee. Since its adoption, the management plan has undergone revision in 1983, 1988, and 1995.
- ▶ Beginning in 1993, the traditional gulf menhaden fishing season (mid-April to mid-October, 26 weeks) was extended. The current fishing season is from mid-April to November 1, 28 weeks.
- ▶ State regulations include purse-seine mesh size, limits on bycatch, closed areas and seasons. ❖

Menhaden illustration—CLUP Brevo 1 section in Fischer, W. (editor), FAO species identification sheets for fishery purposes. Western Central Atlantic (fishing area 3), Vol. 2. Rome, Italy.
Figure 1—Modified from the original in Dumont, W.H. and G.T. Sundstrom. 1961. Commercial fishing gear in the United States, U.S. Bur. Comm. Fisheries, Circular 109.
Figure 2—Population Dynamics Team, National Marine Fisheries Service, Beaufort, North Carolina.

Gulf Menhaden Fact Sheet

The gulf menhaden fishery is the largest and most productive fishery by volume on the United States Gulf Coast. Since World War II, it has provided many Gulf Coast communities with a stable source of employment and the nation with a major source of protein on a sustainable, renewable, and environmentally sound basis.



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A publication of the Gulf States Marine Fisheries Commission pursuant to National Oceanic and Atmospheric Administration Award Number NA56FIO085. This brochure is funded by a grant from the National Oceanic and Atmospheric Administration. The views expressed herein are those of the authors and do not necessarily reflect the views of NOAA or any of its subsidiaries.

Life History/Biology:

- ▶ Gulf menhaden occur in estuarine and coastal waters from the Yucatan Peninsula, Mexico, to Tampa Bay, Florida.
- ▶ Adult and juvenile menhaden feed by straining plankton from the water.
- ▶ Sexual maturity begins at late age-1 with major spawning areas across the northern Gulf of Mexico; spawning occurs primarily offshore (20-30 miles) from late fall through early spring.
- ▶ Buoyant eggs hatch at sea, and larvae are carried into estuarine nursery areas by ocean currents. Larvae transform into juveniles in estuaries.
- ▶ Adult and juvenile gulf menhaden do not exhibit pronounced longitudinal (east-west) migrations along the Gulf Coast, although there is a tendency to find older and larger fish toward the center of their range (the Mississippi Delta).
- ▶ Adult and juvenile gulf menhaden form large, near-surface schools primarily in estuaries and near shore waters of the northern Gulf of Mexico from early spring through fall.
- ▶ One-year-old gulf menhaden are about six inches long (fork length) and weigh two to three ounces. Three-year-old gulf menhaden are eight inches long and weigh more than six ounces.

Fisheries:

- ▶ The purse seine (Figure 1) fishery for gulf menhaden dates from the late 1800s.

Generally, landings were sporadic and insignificant prior to World War II.

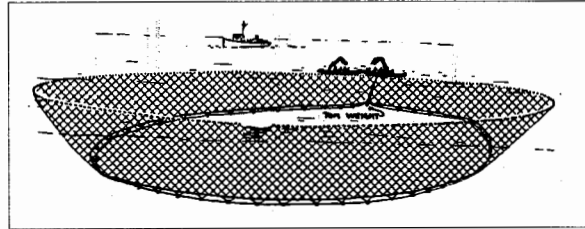


Figure 1. Menhaden purse seine.

- ▶ Some of the menhaden companies which were established on the East Coast of the United States moved some or all of their processing operations to the Gulf Coast after World War II.
- ▶ Major innovations in harvesting technology after World War II included the use of spotter aircraft, radio communications, nylon nets, hydraulic power blocks, aluminum purse boats, fish pumps, and carrier vessels greater than 150' in length with refrigerated fish holds.
- ▶ Fishing effort and landings generally increased from 1946 with a peak in fishing effort in 1983 and a peak (982,800 metric tons) in landings in 1984 (Figure 2). Since 1990, landings have averaged 534,000 metric tons per year. Landings consist primarily of age-1 and age-2 gulf menhaden.
- ▶ Between 1950 and 1990, the number of menhaden vessels ranged between 64 and 82, while the number of processing plants ranged between 7 and 14. In 1997, about 50 vessels operated from five processing plants on the Gulf Coast, four in Louisiana and one in Mississippi.

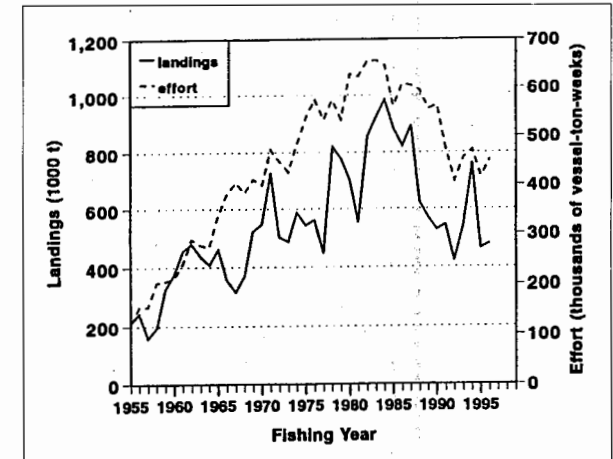


Figure 2. Gulf menhaden landings and fishing effort, 1955-1996.

- ▶ Approximately 60% of the gulf menhaden catch is harvested within three miles of the gulf shoreline, that is, within state waters (0-3 miles from shore) from Alabama to eastern Texas.
- ▶ Since 1993, 72% of annual commercial fisheries landings from the United States Gulf Coast, by weight, were gulf menhaden valued at \$66.5 million.
- ▶ In 1993, landings of gulf menhaden for bait were estimated at about 27 million pounds or 3% of the catch for reduction.
- ▶ Major studies during the mid-1990s by Louisiana State University scientists reaffirmed earlier findings that the gulf menhaden purse-seine fishery is an exceptionally "clean" fishery. The purse-seine fishery for gulf menhaden has a negligible incidental catch of other species.