



Let's protect our earth



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

NEW JERSEY'S FISHING INDUSTRY

COASTAL NOTES NO. R-4

CENTER FOR COASTAL AND ENVIRONMENTAL STUDIES
RUTGERS UNIVERSITY-THE STATE UNIVERSITY OF NEW JERSEY
NEW BRUNSWICK

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MARINE SERVICES
OFFICE OF COASTAL ZONE MANAGEMENT

SH
222
.N5
B66
1977

U. S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

THE FISHING INDUSTRY OF NEW JERSEY

Coastal Notes No. R-4

by

Susan Bonsall

May, 1977

Property of CSC Library

This pamphlet was prepared by the Center for Coastal and Environmental Studies at Rutgers - The State University for the Office of Coastal Zone Management, Division of Marine Services, New Jersey Department of Environmental Protection, with financial assistance from the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, under the provisions of P.L. 92-583. This pamphlet was prepared in conjunction with the New Jersey Sea Grant Program. Additional single copies of this publication are available free from the Office of Coastal Zone Management and the Center for Coastal and Environmental Studies.

SH222.N5 B66 1977
8384228

MAY 2 1977

New Jersey is fortunate to have a wide variety of finfish and shellfish available off the shores of the state. This pamphlet describes New Jersey's fishery resources and the people who utilize them. In addition, problems within the commercial and recreational fishing industries are discussed in conjunction with federal and state government programs.

Fish in New Jersey

Approximately 150 finfish species inhabit New Jersey's coastal waters or migrate through them, 30 of which are important to the fishing industry. Finfish catches vary with seasonal migration patterns and cyclic or sporadic population changes. Many species migrate northward and inshore from continental shelf waters as the ocean water becomes warmer during the spring and summer months. The more important of these species include the Atlantic menhaden, weakfish (sea trout), scup (porgy), bluefish, fluke (summer flounder), Atlantic mackerel, black sea bass, puffer and butterfish. Further offshore the bluefin tuna, bonito, swordfish, and white marlin move in a similar migration pattern but do not all move as far inshore. In the fall and winter these finfish species move offshore and/or southward. Consequently the best fishing for these fish is during the warmer months from April to November.

Another group of finfish, known as anadromous because they spawn in fresh water, moves into the estuaries and ascends tidal rivers during the late spring and early summer months. Included in this group are the striped bass, American shad, blueback herring, alewife, and white perch. Good fishing for these fish occurs during periods of their upstream spawning runs.

A third group of finfish which includes the whiting (silver hake), cod, Atlantic herring, ling (squirrel or red hake), yellowtail flounder, and winter flounder, migrates southward and/or towards the coast during the fall and winter months. Therefore, good fishing for these species occurs during the late fall and early spring periods.

A large range in water temperature offshore New Jersey allows this wide diversity of finfish. An enormous mass of cool bottom water usually extends from Montauk, Long Island to just south of Delaware Bay and is known as the Middle Atlantic Cold Cell. Summer temperatures in the Cold Cell are about 40°F to 50°F while surface waters of the Cell are 70°F to 75°F. A layer of rapidly changing water temperatures between the two distinct masses is

called the thermocline. Different species of fish favor each of these specific thermal environments in the Cold Cell.

New Jersey's coastal waters support abundant shellfish as well as finfish. The soft clam is abundant in the bays and rivers of the northern part of the state, especially in Sandy Hook Bay, and the estuaries of the Navesink, Shrewsbury, Shark, Manasquan, and Metedeconk Rivers down to Forked River in Barnegat Bay. The hard clam, which is more widely distributed, can be found in virtually all bays and rivers throughout the coast extending from Raritan and Sandy Hook Bays in the north to Delaware Bay in the south. The surf clam or sea clam is found in offshore marine waters all along the New Jersey coast, but is particularly abundant in the southern half of the state from Little Egg Harbor to Cape May Point.

The ocean quahog or mahogany quahog is becoming an increasingly important shellfish for harvesting in the light of declining surf clam stocks. Ocean quahogs are found off the New Jersey shore at depths of 37 to 55 meters. Estimates of a standing quahog crop in New Jersey waters is 2.3 billion pounds.

Oyster beds are located in Raritan Bay, the estuaries of the Navesink, Toms, Mullica, Tuckahoe, and Great Egg Harbor Rivers, and in the upper Delaware Bay. Some of the beds in Delaware Bay are dedicated to seed oyster production and after several years growth, the young oysters from these beds are transplanted to the lower Delaware Bay where the water is more saline and conducive to growth. Bay scallops are found in Barnegat Bay from Barnegat Light south to Manahawkin Bay and Little Egg Harbor.

The American lobster is another important shellfish found along the New Jersey coast from nearshore waters to the 200 fathom line. Major population areas include the Hudson Canyon, the slope of the Continental Shelf, and limited rocky inshore areas of the northern part of the state. Blue crabs are found in estuaries and nearshore waters along the entire coast.

Many of the foregoing finfish and shellfish species are highly dependent upon New Jersey's estuarine environment. This environment is comprised of tidal wetlands and shallow estuary and bay waters. It supports a diversity of phytoplankton, zooplankton, and aquatic vegetation as well as finfish and shellfish. The estuarine zone is important for the linkage of natural energy flow pathways,

food production and storage, and food web relationships, all of which support and enhance the fishing industry.

Fishing in New Jersey

Two major groups utilize the fishery resources of New Jersey -- the commercial fishermen and the recreational or sports fishermen. New Jersey's commercial fishing fleet consists of approximately 3,200 vessels and boats employing about 4,500 full- and part-time people. Eighty-six percent of these boats sail from three coastal counties: Ocean (47%), Atlantic (30%), and Cape May (9%). The balance of the fleet originates in Cumberland, Monmouth, Salem, and Bergen counties. The principal commercial fishing municipalities within each county are Belford and Highlands, Monmouth County; Point Pleasant and Barnegat Light, Ocean County; Atlantic City and Ocean City, Atlantic County; Wildwood and Cape May, Cape May County; and Port Norris and Bivalve, Cumberland County.

Commercial fishermen operating from New Jersey landed 41.1 million pounds of finfish and 39.0 million pounds of shellfish, together valued at approximately \$30.4 million in 1976. Eleven finfish species comprised 95 percent of the catch in weight and 90 percent of the dollar value in 1976. These fish include the menhaden, whiting, porgy, weakfish, fluke, sea bass, tilefish, Atlantic mackerel, bluefin tuna, bluefish, and red hake. Shellfish with greatest weight and dollar value in 1976 were the surf clam, hard clam, lobster, sea scallop, oyster, and blue crab. New Jersey ranked seventh nationally in commercial fisheries landings by weight and thirteenth by dollar value in 1973.

What happens to the finfish and shellfish once they are caught? For the most part, the finfish are sold at the dock to be taken to the fresh fish markets in New York, Philadelphia and Baltimore. Shellfish are sold at the dock for the fresh market as well, but are also sold to a variety of processing plants located along the New Jersey coast. Of the 43 processing plants in New Jersey, about half are devoted to processing shellfish. The remaining plants process finfish by filleting, freezing, canning, and smoking to produce frozen dinners, soups, sauces, gefilte-fish, and animal feeds. These plants employ about 2,000 people each year with Cumberland, Cape May, Atlantic, Essex and Camden Counties each employing an average of 300 people. New Jersey's processed fishery products were valued at \$60 million in 1975.

The other major fishing group in New Jersey is the

sports fishermen. Approximately 2.7 million fishermen engage annually in recreational fishing and shellfishing in New Jersey. Sixty percent of these people come from New Jersey and the balance comes mostly from Pennsylvania and New York. There are estimated 36.07 million fisherman trips per year in New Jersey. At \$10.42 expenditures/trip, this generates about \$375.8 million to the state's economy each year. Of this total, finfishing yields about \$217.2 million and shellfishing \$158.6 million.

Twelve species comprise 95 percent of all the recreational finfish species caught off the New Jersey coast. These include the bluefish, Atlantic mackerel, striped bass, weakfish, white perch, winter flounder, summer flounder (fluke), black sea bass, porgy, cod, red hake (ling), and silver hake (whiting). Recreational shellfishermen engage mainly in clamming and crabbing.

The fishing industry is beset with many problems which have evolved through the years since World War II. A major problem presently facing the industry is a diminished resource base. Several factors have combined to produce this situation including heavy foreign fleet and domestic commercial fishing off New Jersey shores, a dramatic upsurge in recreational fishing, a sharp increase in estuarine water pollution, and disease. A corollary problem is the industry's slow reaction to meet changing consumer preferences for fish and fish products in New Jersey and the United States.

Foreign fleet inroads into domestic waters is demonstrated by the fact that although the volume of fish being harvested off the United States coast has almost trebled since World War II, landings by domestic vessels have remained nearly constant. The United States doubled its consumption of seafood in the past twenty years, but this demand has been met by imported fish that are often harvested and processed in United States waters by the foreign fleet. In 1974, 62 percent of U.S. fish products were imported which created a trade deficit of \$1.4 billion.

One reason that imported processed fish have sold well on the U.S. market is a change in consumer preferences. Our fishermen return to the dock with fish to be sold at the fresh fish market. However, the demand for fresh fish has been declining. Instead, the consumer wants a processed and packaged fish that is easy to prepare and serve. New Jersey does not have adequate pro-

cessing facilities to meet this new consumer demand. Further, it does not have the necessary cold storage facilities that would enable the fishing industry to insure a consistent supply of fish to the market.

While the commercial catch and market for finfish has declined through the years, the surf clam harvest has grown. In 1976 the surf clam was first in dollar value (\$10,829,520) and weight landed (24,377,864 lbs.) over all other fin- and shellfish. The demand for surf clams is going up each year since it is the cheapest available shellfish which can be processed to fulfill new markets.

Yet problems do exist for the surf clammer as they do for their finfishing counterparts. During the summer of 1976, a large algal bloom created anoxic water conditions. With no oxygen available in the water, bacteriological anaerobic metabolism released hydrogen sulfide into the water. These conditions suffocated and poisoned many shellfish including the surf clam, as well as killing hake, fluke, winter flounder, and sea bass. The financial loss incurred as a result of these conditions is estimated at \$1.5 million for commercial fishing and \$1.75 million for sportsfishing. In part, algal blooms may be caused by human activities such as massive additions of nutrients to the ocean waters off New Jersey through ocean disposal of sewage sludge and dredge spoils.

Bay shellfishermen are also subject to the same type of problem. Increased pollution of estuarine waters has drastically reduced the amount of waters suitable for shellfish harvesting. There are approximately 395,000 acres of estuarine waters along the New Jersey coast, but approximately 25 percent of these waters are condemned either fully or seasonally due to high bacteriological counts for the taking of clams, scallops, oysters, and mussels.

In addition, diseases periodically affect shellfish populations. For example, the oyster population in Delaware Bay was reduced by 90 percent in 1957 by a sporozoan parasite. The disease-related population reductions together with over-harvesting have made recovery within the oyster industry slow. However, with careful controls, the oyster production in Delaware Bay has been brought back to pre-1957 levels.

The great increase of sports fishermen in recent years has had two effects on the commercial industry: 1) it has contributed to stock depletions since many sportsmen seek the same species as the commercial fishermen; and 2) it has helped oversupply the market with fresh fish since, beyond supplying themselves, many

sportsmen sell their excess catch at the dock for prices below those of the commercial fishermen.

Thus, problems troubling the New Jersey commercial fishing industry include: 1) a diminishing resource due to overfishing, pollution, and disease; and 2) an inadequate product for the American market. These problems are not endemic to New Jersey fishermen, but are being experienced on a national scale. Therefore, changes in the industry will have to take place both locally and nationally.

To combat the overharvesting of our fishery resources, we must restore and manage the fish populations important to our nation. To this end the Fishery Management and Conservation Act of 1976 was enacted by Congress and made effective March 1, 1977. This act establishes a 200-mile fisheries zone off the coasts of the United States which will restrict fishing by foreign and domestic fleets to an optimum yield level. The optimum yield for each species will be specified in the fishery management plans drawn up by Regional Fishery Management Councils.

More specifically oriented to the New Jersey fishing industry are the activities of the New Jersey state government. Statutory authority to promulgate regulations rests entirely with the State Legislature. Laws pertaining to fishing and shellfishing are found in a volume entitled New Jersey Fish and Game Laws in sections 23:3-41 et seq., 23:5-1 et seq., and 23:9-1 et seq. This book may be obtained from the Division of Fish, Game, and Shellfisheries. The laws cited regulate licensing, seasons, size limits, fish quotas, bait limits, net size, and penalty procedures. Laws pertaining to shellfishing (except for lobsters and crabs) are found in Title 50 of the New Jersey State Law.

The Commissioner of the Department of Environmental Protection has the final authority for all legislation and regulations promulgated to control and regulate the state fishing industry. The Division of Fish, Game, and Shellfisheries within the DEP administers all programs undertaken by the state with regard to the industry. The Fish and Game Council, composed of eleven citizens appointed by the Governor with the advice and consent of the State Senate, make recommendations about the protection and propagation of fish and wildlife to the Director of this Division. The Maurice River Shellfisheries Council advises the Division in matters relating to shellfish management in the Delaware Bay area and the Atlantic Coast Shellfisheries Council functions similarly for the Atlantic coast shellfisheries.

A shellfish program has been initiated by the Water Resources Division of the Department of Environmental Protection. The Shellfish Control Section has classified all of New Jersey's waters according to extent of bacteriological contamination. Some waters have been closed to all shellfish harvesting; others have been closed from May 1 to December 31, the months in which high bacteriological counts are found; and others are open to harvesting provided the harvest is processed.

Hard clams may be harvested by hand in contaminated waters and then deposited on state-leased ground in non-polluted waters. The clams remain there for 30 days, after which time they are inspected by Shellfish Control Section personnel and then released to lease holders for sale to the public. Harvested soft clams are cleansed at two depuration plants to make them safe for public consumption. Seed oysters that have developed on state seed beds in low saline estuaries are transplanted by shellfishermen to their 30,000 acres of leased grounds in the lower Delaware Bay.

The fishing industry is a major commercial and recreational industry in coastal New Jersey which provides income, employment, food, and recreational opportunities. Both the national and state governments recognize the problems facing the industry and are responding to them through programs to aid the resource, the commercial fisherman, and the recreational sportsman. With considerable coordinated effort, New Jersey's potential as a major fishing state can be realized.

SELECTED BIBLIOGRAPHY

1. Freeman, Bruce L. and Lionel A. Walford, Angler's Guide to the United States Atlantic Coast, Section III, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Department of Commerce, Washington, D.C., 1974.
2. Kantor, Richard A., Estuarine and Wetland Resources: A Staff Working Paper, New Jersey Department of Environmental Protection, Division of Marine Sciences, Office of Coastal Zone Management, Trenton, New Jersey, Jan. 1977.
3. Kantor, Richard A., Ocean Resources: Living, A Staff Working Paper, New Jersey Department of Environmental Protection, Division of Marine Services, Office of Coastal Zone Management, Trenton, New Jersey, Jan. 1977.
4. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Fishery Statistics of the United States, 1972, Statistical Digest No. 66, Department of Commerce, Washington, D.C., 1972.
5. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Fishery Statistics of the United States, 1974, Current Fisheries Statistics No. 6400, Department of Commerce, Washington, D.C., 1974.
6. National Oceanic and Atmospheric Administration, New Jersey Landings, Current Fisheries Statistics No. 7182, Department of Commerce, Washington, D.C., December, 1976.
7. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, The United States Marine Fishery Resource, MARMAP Contribution No. 1, Department of Commerce, Washington, D.C., March, 1974.
8. New Jersey Department of Environmental Protection, Shellfish Control Section, Condemned Area Chart, Department of Environmental Protection, Trenton, New Jersey, 1977.
9. New Jersey Division of Fish, Game & Shellfish and the New Jersey Bureau of Geology and Topography, Environmental Map of New Jersey: Fisheries Resources, Department of Environmental Protection, Trenton, New Jersey, 1976.
10. Ridgely, John L. and David A. Deuel, Participation in Marine Recreational Fishing, Northeastern United States 1973-74, Current Fisheries Statistics No.

6236, National Oceanic and Atmospheric Ad-
ministration, National Marine Fisheries Ser-
vice, Department of Commerce, Washington,
D.C., January, 1975.