

NORTHEAST FISHERIES CENTER

END-OF-YEAR REPORT



United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Center
Woods Hole, Massachusetts 02543

CALENDAR YEAR 1986

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July 1, 1987

The Northeast Fisheries Center's End-of-Year Report is an administrative report on key Center research activities during the year. The report focuses on the practical applications of research findings to fisheries resource and habitat management. A name and telephone number have been included at the end of each write-up to contact for more information.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Fisheries Center

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CONSERVATION & UTILIZATION DIVISION

BIG-GAME FISHERIES SURVEYED: Conducted a cooperative catch-and-effort survey of recreational fisheries for tunas, billfishes, and sharks in the Northeast (based on 4,400 interviews), as well as a cooperative catch-and-effort survey of commercial handline and rod-and-reel fisheries for giant Atlantic bluefin tuna off Rhode Island and Massachusetts (based on 1,500 interviews). Contact Darryl J. Christensen, FTS 840-1351 or (617) 548-5123.

GRAND BANKS FISHERY TABULATED: Extracted from total U.S. landings in the Northeast, those landings taken from the portion of the Grand Banks of Newfoundland outside the Canadian 200-mile limit (the "Tail-of-the-Bank"), showing over 12.5 million pounds of groundfishes, particularly flounders, being landed from there in 1985 by U.S. trawlers. Contact Ralph K. Mayo, FTS 840-1310 or (617) 548-5123.

ATLANTIC SALMON FISHERIES SAMPLED: Worked in Canada and Greenland during the summer to collect biological data and recover tags in the commercial Atlantic salmon fisheries of Labrador and West Greenland. Contact Dr. Kevin E. Friedland, FTS 840-1369 or (617) 548-5123.

SHELLFISHING OPERATIONS EVALUATED: Used a research submersible to observe and document (with videotape) commercial shellfishing gear in operation in 70-220 feet of water off New Jersey and Delaware, finding that dredging and culling of surf clams, ocean quahogs, and sea scallops cause less mortality to unharvested and discarded shellfish than previously thought. Contact Dr. Fredric M. Serchuk, FTS 840-1245 or (617) 548-5123.

YELLOWTAIL FLOUNDER GROWTH DOCUMENTED: Found that during 1970-84, age 3 and older yellowtail flounder grew fastest off Cape Cod, followed by yellowtail flounder from the Georges Bank, Southern New England, and Middle Atlantic regions, with females growing faster than males in all areas. Contact Scott E. Moseley, FTS 840-1332 or (617) 548-5123.

SILVER HAKE STOCKS RECONFIGURED: Redefined the three stocks of Northwest Atlantic silver hake (Gulf of Maine, Georges Bank, and Southern New England-Middle Atlantic) as two stocks (Gulf of Maine-Northern Georges Bank and Southern Georges Bank-Middle Atlantic), based on a stock delineation study. Contact Frank P. Almeida, FTS 840-1308 or (617) 548-5123.

STOCK ASSESSMENT WORKSHOPS HELD: Conducted stock assessment workshops during May and September to examine the status of 22 Northeast finfish and shellfish species, and to discuss assessment-related research needs, methods, and constraints. Contact Dr. Tim D. Smith, FTS 840-1251 or (617) 548-5123.

STOCK ASSESSMENT REPORTS PRODUCED: Completed several stock assessment reports and a summary report ("The Status of the Fishery Resources Off the Northeastern United States for 1986") which reviews the status of 34 species, or groups of species, and which discusses trends in the Northeast's marine commercial and recreational fisheries. Contact Dr. Tim D. Smith, FTS 840-1251 or (617) 548-5123.

ATLANTIC COD STOCKS EXAMINED: Confirmed, through research vessel survey and stock assessment activities, that the Georges Bank and Gulf of Maine stocks of Atlantic cod were at historically low levels (while fishing mortality was at historically high levels), but that a large 1985 year class of Georges Banks cod would at least boost scrod cod numbers in 1987. Contact Dr. Fredric M. Serchuck, FTS 840-1245 or (617) 548-5123.

SEA SCALLOP RECOVERY FOLLOWED: Established, through our summer research vessel survey of the Georges Bank and Mid-Atlantic sea scallop resources, that the marked improvement in sea scallop abundance that began in 1985 continues, largely due to widespread and outstanding recruitment of the 1982 and 1983 year classes. Contact Dr. Fredric M. Serchuck, FTS 840-1245 or (617) 548-5123.

MARINE MAMMAL RESEARCH SUPPORTED: Provided funding to various contractors for research on: right whale population changes; harbor seal population estimates; humpback whale fluke photo-identification; humpback whale stock identification; right, humpback, and fin whale habitat use in the Cape Cod Bay-Stellwagen Bank area; and marine mammal-fishery interactions in Gulf of Maine gillnet fisheries. Contact Gordon T. Waring, FTS 840-1311 or (617) 548-5123.

SEAFOOD NUTRITIONAL PAMPHLET PREPARED: Compiled a pamphlet on nutritional data for 29 species of Northeast finfishes and shellfishes, explaining the contribution of seafood to human nutrition and heart disease prevention. Contact Judith Krzynowek, FTS 837-9226 or (617) 281-3600.

CADMIUM CONTENT OF SQUID MEASURED: Determined that cadmium levels in the Northeast's longfin squid appear to be below the Italian government's two-parts-per-million action level, thus expediting the continued export of these squid to Italian markets. Contact Elinor M. Ravesi, FTS 837-9287 or (617) 281-3600.

WINTER SKATE PROCESSING ASSISTED: Developed a method to cull winter skate by length or width in order to land skate wings of the most marketable sizes at any given time. Contact Kurt A. Wilhelm, FTS 837-9308 or (617) 281-3600.

FISH WASTES TESTED: Designed and built a pilot-scale facility for producing hydrolysates from fish processing wastes for subsequent testing as plant fertilizer. Contact Robert J. Learson, FTS 837-9313 or (617) 281-3600.

FROZEN COWNOSE RAY EVALUATED: Found that vacuum-packaged portions of cownose ray wing flesh were still acceptable for eating after 60 weeks of storage at 0 degrees F. Contact Joseph J. Licciardello, FTS 837-9236 or (617) 281-3600.

FRESH/FROZEN STORAGE COMPARED: Determined that Atlantic cod fillets which have been frozen, then thawed, have as long a refrigerated shelf life as fillets which have been kept on ice since being caught. Contact Joseph J. Licciardello, FTS 837-9236 or (617) 281-3600.

SORBATE PRESERVATION EXAMINED: Demonstrated that treatment of bulk-packed pollock fillets and freshly picked Jonah crab meat with potassium sorbate dip extended the iced shelf life of these products by 73 and 60 percent, respectively, at a cost of less than 0.5 cents per pound. Contact Vincent G. Ampola, FTS 837-9248 or (617) 281-3600.

WASTE HEAT USED: Adapted a heat pump capable of producing 60,000 BTU's per hour to remove waste heat from refrigerator-condensor cooling water and transfer it by a refrigeration process to heat a 2,000-square-foot pilot fish processing plant area. Contact Robert VanTwuyver, FTS 837-9319 or (617) 281-3600.

FISHERIES ECOLOGY DIVISION

LARVAL FISH ATLAS PREPARED: Completed an atlas depicting larval fish distribution for the 26 numerically dominant taxa collected on our ichthyoplankton surveys of the Northeast's shelf waters from winter 1977 through spring 1984, and providing an up-to-date record of spawning places and times of the more numerous fish species. Contact Wallace G. Smith, FTS 342-8260 or (201) 872-0200.

FINFISH BIOMASS ESTIMATED: Calculated the total finfish biomass in the Northeast's shelf waters during the 1979-84 period based on our ichthyoplankton survey data, coming up with a 13.4-20.9 billion pound estimate. Contact Dr. Kenneth Sherman, FTS 838-6210 or (401) 782-3210.

APEX PREDATORS ASSESSED: Conducted the first survey of abundance and food habits of sharks and other apex predators along the entire U.S. East Coast, showing Atlantic sharpnose, sandbar, and dusky sharks to be the most common of the 15 shark species observed. Contact John G. Casey, FTS 838-6320 or (617) 782-3320.

WINTER FLOUNDER BIOLOGY WORKSHOP HELD: Sponsored a two-day workshop on winter flounder biology where over 100 Northeast biologists heard formal and informal presentations and exchanged research results. Contact Dr. Anthony Calabrese, FTS 642-5240 or (203) 783-4240.

STERILE HADDOCK DETECTED: Discovered that seven percent of the sexually mature haddock examined during our bottom trawl surveys of Georges Bank were sterile, and that the gonads of sexually immature female haddock were infected with white nodules which we collected for later detailed analysis. Contact John J. Ziskowski, FTS 642-5200 or (203) 783-4200.

BACTERIAL LEVELS IN HARD CLAMS MEASURED: Determined that Vibrio bacteria levels in tissues of juvenile hard clams held in cages in Long Island Sound were less than Vibrio levels in ambient bottom waters or sediments. Contact Dr. Walter J. Blogoslawski, FTS 642-5235 or (203) 783-4235.

MACKEREL BLOOD PARASITE DISCOVERED: Discovered a parasite of white blood cells in Atlantic mackerel which appears related to parasites that cause deaths among cultured fish populations. Contact Sharon A. MacLean, (301) 226-5193.

MACKEREL PARASITE RELATIONSHIPS UTILIZED: Established the relationships among Atlantic mackerel, a parasite of the mackerel's gills, and a parasite of the gill parasite's blood, all as a basis for evaluating the use of multiple parasitic infections in identifying physically similar but biologically different stocks of this species. Contact Sharon A. MacLean, (301) 226-5193.

OYSTER DISEASE SPREAD DOCUMENTED: Found that "MSX" disease has begun killing American oysters in areas of the Mid-Atlantic Coast previously unaffected by this disease. Contact Fred G. Kern, (301) 226-5193.

OYSTER MICROCELL DISEASE DESCRIBED: Prepared a report on "microcell" disease in oysters, describing a new species and a new genus--the latter being a major parasite of oysters worldwide. Contact C. Austin Farley, (301) 226-5193.

POLLUTION-ASSOCIATED LESIONS STUDIED: Reported on the prevalence and intensity of pathologic and parasitic lesions in Narragansett Bay hard clams relative to the distribution of pollution within the Bay. Contact Fred G. Kern, (301) 226-5193.

COPPER EFFECTS ON FISH CORNEAS EXAMINED: Showed that a short exposure to copper-polluted water will cause corneal lesions in larval sand lance, impairing the ability of larvae to find food, flee predators, etc. Contact Dr. Joel E. Bodammer, (301) 226-5193.

WINTER FLOUNDER LIVER DISEASE AND POLLUTION LINKED: Determined the nature of winter flounder liver cell changes and death associated with the liver-toxin pollution of Boston Harbor. Contact Dr. Joel E. Bodammer, (301) 226-5193.

UNIQUE SEA SCALLOP PROTEIN DISCOVERED: Found a unique metal-binding protein in the sea scallop (similar in function to a mammalian metal-binding protein) that is induced by cadmium exposure and that is important in regulating the metabolism of essential metals. Contact Edith Gould, FTS 642-5222 or (203) 783-4222.

SHELLFISH CHROMOSOME ENGINEERING DISCUSSED: Reported upon the implications and applications of shellfish chromosome engineering for genetic breeding. Contact Sheila S. Stiles, FTS 642-5224 or (203) 4224.

OYSTER CROSSBREEDING CARRIED OUT: Observed the successful crossbreeding of American oysters--which had been selectively bred by the Center for fast growth, with wild oysters from Maine--which have a natural resistance to cold waters, to develop a fast-growing, cold-resistant oyster for northern waters. Contact Dr. Arlene Longwell, FTS 642-5207 or (203) 783-4207.

PHYTOPLANKTON ASSEMBLAGES DOCUMENTED: Found, as a result of gently centrifuged whole-water samples of Long Island Sound phytoplankton, that centric diatoms dominate the Sound's western end and pennate diatoms dominate the Sound's eastern end during the cold-water months of March and November, whereas chlorophytes, cryptophytes, and dinoflagellates constitute a relatively larger portion of the phytoplankton--especially in the Sound's central and western waters--during the warm-water months of June and August. Contact Gary H. Wikfors, FTS 642-5225 or (203) 783-4225.

FILTER-FEEDER NUTRITION ASSESSED: Determined that, except for the month of August, waters in western Long Island Sound contain more potential sestonic nutrition for filter-feeding organisms than the more-open waters of eastern Long Island Sound. Contact Gary H. Wikfors, FTS 642-5225 or (203) 783-4225.

SURF CLAM GROW-OUT EVALUATED: Demonstrated, in cooperative studies, the feasibility of growing caged, hatchery-reared, surf clam seed to a potentially marketable 50-mm size in six months during the fall and winter in the Southeast. Contact Ronald Goldberg, FTS 642-5246 or (203) 783-4246.

BLUE CRAB SHEDDING TANK MORTALITY STUDIED: Showed, in cooperative studies, that more blue crabs survive in the recirculated water of commercial shedding tanks when the water is treated with ultraviolet light; additional studies will be needed during all periods of the crab shedding season before recommendations can be made. Contact Dr. Phyllis T. Johnson, (301) 226-5193.

ANTARCTIC RESOURCES SURVEYED: Designed and participated in a cooperative survey of Antarctic bottom fish and krill, as well as of predator-prey relationships between krill and their seal, penguin, and fish predators, finding fish stocks depleted, krill heavily fished, and seals and penguins abundant. Contact Dr. Kenneth Sherman, FTS 838-6211 or (401) 782-3211.

ENVIRONMENTAL PROCESSES DIVISION

MID-ATLANTIC PHYTOPLANKTON RECORDED: Prepared cooperative reports on the seasonal phytoplankton composition off the Delmarva Peninsula, and in the New York Bight. Contact John Mahoney, FTS 342-8255 or (201) 872-0200.

RED TIDE DISTRIBUTION STUDIED: Prepared a cooperative report on the recent distribution of Gonyaulax tamarensis (a cause of paralytic shellfish poisoning and red tides) off New Jersey: noting that cysts of the organism were present only in the Atlantic City area. Contact John Mahoney, FTS 342-8255 or (201) 872-0200.

RED TIDE HISTORY DOCUMENTED: Published a cooperative report on the 25-year history of red tide occurrences and phytoplankton monitoring survey activities in New York and New Jersey waters. Contact John Mahoney, FTS 342-8255 or (201) 872-0200.

GREEN TIDE REPORT ISSUED: Completed a report on the occurrence and effects of blooms of the dinoflagellate Gyrodinium aureolum, the cause of green tides along the southern New Jersey coast. Contact John Mahoney, FTS 342-8255 or (201) 872-0200.

REMOTE SENSING OF WETLANDS EVALUATED: Completed a report on the feasibility of using remote sensing technology--including an evaluation of object discrimination and identification accuracy--to determine wetland changes in Chesapeake Bay. Contact William Phoel, FTS 342-8215 or (201) 872-0200.

PREDATION ON JUVENILE SHELLFISH ASSESSED: Determined the role of predation as a limiting factor in juvenile shellfish production as part of a cooperative effort to rehabilitate populations of hard clams in Barnegat Bay, and oyster beds in Delaware Bay. Contact Clyde MacKenzie, FTS 342-8267 or (201) 872-0200.

HABITAT QUALITY DOCUMENTED: Completed a report on NOAA's five-year (1979-84) program for monitoring water and sediment quality, bottom invertebrates, and contaminant burdens and sublethal effects in resource species. Contact Robert N. Reid, FTS 342-8220 or (201) 872-0200.

NORTHEAST ESTUARINE CONTAMINATION STUDIED: Completed a first-year report for the National Status and Trends Monitoring Program, noting that Lower New York-Raritan Bay, Boston Harbor, and Salem Harbor are considerably polluted with sewage-derived organic and metal contaminants, and identifying Boston Harbor winter flounder as having the highest level of liver PCB's and the highest incidences of liver, gill, and kidney lesions. Contact Vincent Zdanowicz, FTS 342-8232 or (201) 872-0200.

HISTORICAL WATER QUALITY DATA COMPILED: Developed a data base on water quality in the New York Bight from oceanographic studies conducted over the past 30-40 years in order to assist water quality managers with such issues as oxygen depletion, nutrient enrichment, and phytoplankton blooms. Contact Jay E. O'Reilly, FTS 342-8205 or (201) 872-0200.

LONG ISLAND SOUND OXYGEN LEVELS DOCUMENTED: Used available historical data to document cooperatively the increased dissolved oxygen levels in bottom waters of the East River and extreme western Long Island Sound since 1970 (which are evidently related to upgraded sewage treatment plants), as well as to document the decreased levels further east (Narrows and Western Basin) since 1980 (which are likely related to greater phytoplankton production stimulated by higher amounts of sewage-derived nutrients). Contact Jay E. O'Reilly, FTS 342-8205 or (201) 872-0200.

PCB'S IN BLUEFISH SURVEYED: Completed sample collection, sample organic analysis, and a data report to Congress on the 1984-86 federal survey of PCB's in Atlantic Coast bluefish. Contact Stuart J. Wilk, FTS 342-8208 or (201) 872-0200.

HYDROGEN SULFIDE EFFECTS ON LARVAL SETTLEMENT ASSESSED: Found that sediment-related hydrogen sulfide--at the high levels occurring in some Northeast waters--can either enhance, deter, or not affect the settlement of larval invertebrates depending upon the species. Contact Clyde MacKenzie, Jr., FTS 342-8267 or (201) 872-0200.

OCEAN QUAHOG CONTAMINANTS MEASURED: Characterized levels of trace metals, PCB's, and petroleum and polynuclear aromatic hydrocarbons in ocean quahogs collected between Nova Scotia and Virginia, finding low levels in all samples, with the highest values from the inner New York Bight and Rhode Island Sound. Contact Frank W. Steimile, Jr., FTS 342-8259 or (201) 872-0200.

OIL EFFECTS IN MARINE WORMS STUDIED: Completed a manuscript which compares the responses of bloodworms and sandworms to exposure to oiled sediment, indicating that while both species show altered burrowing and emergence, bloodworms are more sensitive to oil and even exhibit impaired feeding. Contact Anne L. Studholme, FTS 342-8201 or (201) 872-0200.

SHELF-WATER MOVEMENTS DETECTED: Discovered, via satellite data, that a large parcel (14,000 square nautical miles) of shelf water moved off the continental shelf of eastern Georges Bank into the slope-water region during November 1986, indicating the potential for such massive movements--should they occur during the spring larval development season--to sweep a major portion of the new year classes of economically important fishes off the Bank and to its death. Contact Kenneth W. Barton, FTS 838-6284 or (401) 792-6837.

LOBSTER GEAR LOSSES EXPLAINED: Determined that strong currents and warm-water intrusion induced by a powerful warm-core ring on southwestern Georges Bank during April 1986 were the cause of deep-sea lobster pot losses as well as occurrences of dead lobsters in those pots recovered. Contact Reed S. Armstrong, FTS 838-6280 or (401) 782-3280.

WARM-CORE RINGS MONITORED: Compiled a report on the development and movements of the nine warm-core rings which formed from Gulf Stream meanders off the Northeast during 1985, and continued weekly monitoring of warm-core ring activity during 1986. Contact Carol A. Price, FTS 838-6284 or (401) 792-6837.

SEA-SURFACE TEMPERATURES PROVIDED: Cooperatively acquired and processed infrared satellite data within 24 hours of a satellite pass in order to provide: detailed sea-surface temperature charts to fishermen; ocean-front and sea-surface temperature charts to research ships at sea; and oceanographic information to competitive sailboat racers. Contact Carol A. Price, FTS 838-6284 or (401) 792-6837.

NATIONAL SYSTEMATICS LABORATORY

FRIGATE TUNA SPECIES REVISED: Revised the frigate tuna genus Auxis to include two worldwide species--the narrow-corseleted frigate tuna, A. thazard, and the wide-corseleted frigate tuna or bullet tuna, A. rochei. Contact Dr. Bruce B. Collette, (202) 357-2524.

STONE CRAB SPECIES SPLIT: Published a paper on the stone crab, recognizing two species instead of one--the Florida stone crab (Menippe mercenaria) which ranges from Cape Lookout (North Carolina), through peninsular Florida, the Bahamas, and Greater Antilles, to the Yucatan peninsula (Mexico) and Belize, and the Gulf stone crab (M. adina) which ranges from northwestern Florida around the Gulf of Mexico to Tamaulipas State (Mexico). Contact Dr. Austin B. Williams, (202) 357-2639.

PENAEOID SHRIMP KEY DEVELOPED: Prepared an illustrated key to the commercial penaeoid shrimps of the Americas, emphasizing such readily recognizable characters as the carapace and genitalia. Contact Dr. Isabel Canet, (202) 357-2524.

GAMBA PRAWNS DESCRIBED: Completed a monograph on the wide-ranging gamba prawn genus Pseudaristeus, describing six species with commercial potential, two of which were previously unknown to science, and a third previously known only in the juvenile stage. Contact Dr. Isabel Canet, (202) 357-2524.

MUD SHRIMP MONOGRAPH PUBLISHED: Published a monograph on mud shrimps (Upogebia) found in the eastern Pacific between Alaska and the Galapagos Islands, recognizing 20 species--15 new to science. Contact Dr. Austin B. Williams, (202) 357-2639.

NEW SHRIMP SPECIES FOUND: Discovered caridean shrimps in a hydrothermally active area of the Mid-Atlantic Ridge, yielding one genus and two species new to science. Contact Dr. Austin B. Williams, (202) 357-2639.

**Information Services Section
Northeast Fisheries Center
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