

Northeast Fisheries Science Center

RESEARCH HIGHLIGHTS



May-October
1992

The Northeast Fisheries Science Center's *Research Highlights* is a news bulletin on selected Center research findings. News write-ups focus on practical applications and implications of those 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 detailed information. Names of organisms follow--to the extent possible--the lists of scientific and common names of fishes, mollusks, and decapod crustaceans published by the American Fisheries Society. Any mention of trade names does not imply endorsement. *Research Highlights* is produced by the NEFSC Information Services Unit with the assistance of the Center's scientific staff.

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

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Program Support Staff Chief Mary G. Laird
Data Management Support Staff Chief Joan B. Palmer

FACILITIES

Woods Hole Laboratory
National Marine Fisheries Service
166 Water Street
Woods Hole, MA 02543
(508) 548-5123
Officer-in-Charge: Dr. John B. Pearce

Milford Laboratory
National Marine Fisheries Service
212 Rogers Avenue
Milford, CT 06460
(203) 783-4200
Officer-in-Charge: Dr. Anthony Calabrese

Sandy Hook Laboratory
National Marine Fisheries Service
Building 74, McGruder Road
Highlands, NJ 07732
(908) 872-3000
Officer-in-Charge: Anne L. Studholme

Gloucester Laboratory
National Marine Fisheries Service
30 Emerson Avenue
Gloucester, MA 01930
(508) 281-9300
Officer-in-Charge: Robert J. Learson

National Systematics Laboratory
National Marine Fisheries Service
National Museum of Natural History
10th & Constitution Avenue, N.W.
Washington, DC 20560
(202) 357-2552
Director: Dr. Bruce B. Collette

Oxford Laboratory
National Marine Fisheries Service
904 South Morris Street
Oxford, MD 21654
(410) 226-5193
Contact: Frederick G. Kern

Narragansett Laboratory
National Marine Fisheries Service
28 Tarzwell Drive
Narragansett, RI 02882
(401) 782-3200
Officer-in-Charge: Dr. Kenneth Sherman

INFORMATION SERVICES UNIT

Chief: Teri L. Frady
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Squid Underexploited; Dab and Tilefish Stocks Low

Both northern shortfin squid and longfin squid stocks remain underexploited. That's among the findings presented in the 14th Northeast Regional Stock Assessment Workshop's "Advisory Report on Stock Status."

The following table lists the report's findings on stock level and exploitation rate for the eight stocks covered by the workshop. Also included are pertinent comments excerpted from the report.

Stock	Stock Level	Exploitation Rate	Comments
Northern shortfin squid	medium	underexploited	recent recruitment has been high
Longfin squid	moderate	underexploited	statements about status of resource very uncertain
Sea scallop	N/A	overexploited	landings almost entirely composed of recruiting year class; the current recruiting year class is above average on Georges Bank and average in the Mid-Atlantic
American lobster (Gulf of Maine)	high	near the over-fishing level	substantial yield gains will occur by reducing fishing mortality
American lobster (Georges Bank & Southern New England)	decreased	at least fully exploited and might be over-fished	substantial yield-per-recruit gains would be realized by decreasing fishing mortality
American plaice (dab)	low	overexploited	1989 year class will recruit to large-mesh fishery in 1993; average size of these fish will be less than minimum size regulations, so discarding will occur
Goosefish (monkfish)	biomass fell by half during 1984-91	at least heavily exploited and might be overexploited	substantial yield gains can be realized by increasing the size at recruitment to equate to a minimum tail length of 30.5 cm (12.0 inches)
Tilefish	low	overexploited	abundance probably too low to support 1981-91 catch level

Copies of the report are available.

Contact Dr. Steven A. Murawski, (508) 548-5123x303, for additional information, and Joyce Everhart, (508) 548-5123x248, for copies

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Dogfish and Skates Still Dominate NEFSC Resource Surveys

Fishermen's Reports are available on the results of the Northeast Fisheries Science Center's recent resource surveys: 1992 spring bottom trawl, 1992 annual sea scallop, and 1992 triennial Atlantic surfclam - ocean quahog. Each report lists the exact locations and detailed catches at numerous sampling sites on the Northeast Continental Shelf.

The spring bottom trawl survey showed continued dominance of the demersal finfish biomass by cartilaginous fishes. Spiny dogfish, little skate, and winter skate accounted for nearly three-fourths of the total survey catch by weight. The aggregate catch per haul of these species remained at about the same level as in the 1991 survey, but declined from the levels in the 1989 and 1990 surveys.

The catch per haul of other finfishes declined about 20 percent below the levels in the 1990 and 1991 surveys, and about 30 percent below the level in the 1989 survey.

Contact Thomas R. Azarovitz, (508) 548-5123x283

Cod and Yellowtail Flounder Landings Lag 1991 Pace

Preliminary data show commercial landings of Atlantic cod and yellowtail flounder from January through August of this year to be less than the landings of these species for the same period last year. Cod landings are down from 30 to 21 thousand metric tons (mt); yellowtail are down from 6 to 4 thousand mt. Haddock landings are at very low levels, but are actually up from 1.5 to 2.1 thousand mt. All landings values are in live weight.

Contact John B. Mahoney, (508) 548-5123x309

Harbor Porpoise By-catch Exceeds Sustainable Levels

The inadvertent, lethal catch (*i.e.*, by-catch) of harbor porpoise in the Gulf of Maine - Bay of Fundy needs to be reduced. That is the recommendation from a recent scientific workshop held in Woods Hole, Mass., to evaluate the status of harbor porpoise populations in the Northwest Atlantic. Eighteen scientists from seven government agencies, academic institutions, and private organizations participated in the workshop.

The abundance of harbor porpoise in the Gulf of Maine - Bay of Fundy population has been estimated at 45,000 animals (with a 95-percent confidence interval of 19,000-80,000 animals) based on a 40-day shipboard survey conducted in 1991. The by-catch -- calculated only from data gathered by official observers on board vessels in the groundfish sink gillnet fishery -- was estimated to be 2,400 (with a 95-percent confidence interval of 1,600-3,500) in 1990, &

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to be 1,700 (with a 95-percent confidence interval of 1,100-2,500) in 1991. These estimated by-catches represent approximately five percent of the population in 1990, and four percent in 1991. These by-catch rates are considered unsustainable based on estimates of production for the species, and hence the need to reduce the by-catch.

A copy of the report, "Harbor Porpoise in Eastern North America: Status and Research Needs," is available.

Contact Dr. Tim D. Smith, (508) 548-5123x251

Human Activities Significantly Affecting Right Whales

More than half of the Northwest Atlantic population of right whales has been struck by ships and/or entangled in fishing nets. Perhaps a third of all deaths in the population are caused by human activities. These are among the findings reported at a recent workshop in Silver Spring, Md., which included participants from 23 government agencies, academic institutions, and private organizations in North America. The Northwest Atlantic population of right whales is managed by the National Marine Fisheries Service under a recovery plan prepared in accordance with the Endangered Species Act.

The proceedings of the workshop, "The Right Whale in the Western North Atlantic: A Science and Management Workshop," have just been released. The 88-page proceedings includes brief articles on: (1) range and life history, especially reproduction, of the population; (2) human effects on the population; and (3) profiles of government agencies and their activities related to right whale research and management. Copies of the proceedings are available.

Contact Dr. James Hain, (508) 548-5123x210

Preference, Not Price, Accounts for Increased Seafood Consumption

The *per capita* increase in U.S. seafood consumption during the past three decades may stem from an increased preference for seafood, not from income or other economic factors. In fact, the increase in seafood consumption has occurred despite the price of seafood rising faster than the price of poultry or beef.

A change in demand based on preference is what economists call a "structural" change. Northeast Fisheries Science Center economists have found evidence of this structural change and have identified the mid-1960s and the early 1980s as the periods of greatest change in preference. The early 1980s coincide with the publicizing of seafood as a high-protein, low-fat food with healthful qualities (*i.e.*, the purported role of omega-3 fatty acids in fighting heart disease and stroke).

A report, "Evidence of Structural Change in Preferences for Seafood," is available.

Contact Dr. Steven F. Edwards, (508) 548-5123x364

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Artificial Reef Rapidly Develops Fish Community

A relatively new artificial reef in Delaware Bay has rapidly developed an approximation of climax fish and benthic invertebrate communities. Monitoring surveys in the bay during June and August with U.S. Environmental Protection Agency and U.S. Army Corps of Engineers researchers compared the fish and benthic invertebrate communities of a three-year-old, concrete artificial reef with those communities at a wrecked tugboat sunken at a similar depth for several decades. The reef's communities were similar to those of the tugboat, although the reef had smaller coral patches than the tugboat.

Such fast ecological succession appears to be good news for recreational fishermen and for fishery managers advocating artificial reefs. Surveys of this artificial reef planned for the next two years should reveal the long-term function/value of the reef.

Contact Frank W. Steimle, Jr., (908) 872-3059

Traces of Sewage Sludge from 106-Mile Dumpsite Reaching Continental Slope

Only trace amounts of sewage sludge dumped at the 106-Mile Dumpsite (which straddles the lower continental slope - upper continental rise boundary off New Jersey - New York) appear to reach the continental slope. Lesser amounts appear to reach the outer continental shelf (which intersects the upper continental slope at the 200-meter depth).

These observations are based on the distribution and concentration of *Clostridium perfringens* spores -- an excellent indicator of sewage sludge -- in sediments surrounding the deepwater dumpsite. Increased spore concentrations, relative to background, are limited to a depth greater than 1,500 meters, and the highest concentrations are limited to 2,650-2,750 meter depths immediately southwest of the dumpsite.

These distributions and concentrations follow predictions made from hydrographic models, and appear -- so far -- to allay concerns that the sludge would move into productive fishery habitats.

Contact Andrew F.J. Draxler, (908) 872-3000

Synopsis of Blue Crab Diseases Published

The Northeast Fisheries Science Center has issued a "Synopsis of Principal Diseases of the Blue Crab." The report covers diseases caused by viruses, bacteria, fungi, protozoans, and helminths, as well as ectocommusal and parasitic barnacles. A limited number of copies are available.

Contact Gretchen A. Messick, (410) 226-5193

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Biological Briefs

- Analyses of marked ocean quahogs recaptured after 14 years in waters south of Long Island show shell growth of only about one millimeter per year over the period, confirming the exceptionally slow growth of this species.

Contact Thomas R. Azarovitz, (508) 548-5123x283

- Reanalysis of age-and-growth data on the sandbar shark indicates that it may take up to 30 years for this species to reach maturity.

Contact John G. Casey, (401) 782-3200

- Analysis of 11 years of fish egg/larval survey data shows that bluefish spawning begins in late spring off North Carolina and ends abruptly in August throughout the North Carolina - Rhode Island spawning range. Eggs and larvae remain near the surface in warm water (19°-24°C and 18°-28°C, respectively).

Contact Wallace G. Smith, (908) 872-3060

- Innovative use of the pattern of bones supporting dorsal fin rays ("interdigitation pattern"), combined with the use of conventional morphological characters, have made it easier to identify species of *Symphurus* tonguefishes. Forty of the nominal 70 species of these flatfishes are found off the Americas.

Contact Dr. Thomas A. Munroe, (202) 357-4255

- Two specimens of commercially cultured *Penaeus vannamei* broodstock shrimp from Venezuela have been found to be hermaphroditic. Since hermaphroditism is not known in wild specimens of this species, there is speculation that the cultural conditions led to the hermaphroditism.

Contact Dr. Isabel C. Canet, (202) 357-1417

National Systematics Lab Marks Half Century of Service

August 15 marked the 50th anniversary of NMFS's National Systematics Laboratory. On that date in 1942, Samuel F. Hildebrand moved into the National Museum of Natural History's Division of Fishes to continue his ichthyological research for the U.S. Department of the Interior's Bureau of Fisheries. In 1970, the lab was transferred to NOAA and given its current name.

Among other activities, the lab's handful of eminent scientists: (1) revise/update the classification schemes for those groups of marine animals having economic, ecological, or aesthetic importance; (2) develop keys and other guides to help marine researchers, managers, and enforcement personnel identify marine animal species; and (3) provide identification services for specimens of marine animals found worldwide.

A one-page handout summarizing the lab's history is available. Also, a bibliography of the hundreds of scientific publications emanating from the lab

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during its first half century will be published in the first half of 1993.

Contact Dr. Bruce B. Collette, (202) 357-2524

Two Scientists Honored with Medal Awards

Dr. Austin B. Williams of the National Systematics Laboratory and Clyde L. MacKenzie, Jr., of the Sandy Hook Laboratory have been awarded U.S. Department of Commerce bronze medals in recognition of their contributions to fishery science. Williams was honored for his contributions to our knowledge of decapod crustaceans (shrimps, lobsters, and crabs). MacKenzie was honored for his contributions to enhancing shellfish populations and harvests.

Contact Jon A. Gibson, (508) 548-5123x228

Recent Scientific Publications and Reports

Northeast Fisheries Science Center authors are indicated in all capital letters in the list below. Unless otherwise indicated, single copies of the reports are available -- subject to supply -- by writing to the senior Center author, c/ Information Services Unit, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543-1097 USA.

ALMEIDA, F.P.; Castaneda, R.E.; Jesien, R.; GREENFIELD, R.E.; BURNETT, J.M. 1992. Proceedings of the NEFC/ASMFC Summer Flounder, *Paralichthys dentatus*, Aging Workshop, 11-13 June 1990, Northeast Fisheries Center, Woods Hole, Mass. NOAA Technical Memorandum NMFS-F/NEC-89; 7p. Available from: National Marine Fisheries Service, Woods Hole, MA.

BENWAY, R.L.; JOSSI, J.W.; THOMAS, K.P. 1992. Expendable bathythermograph observations from the NMFS MARMAP/Ship of Opportunity Program for 1991. Northeast Fisheries Science Center Reference Document 92-03; 24p. Available from: National Marine Fisheries Service, Narragansett, RI.

DRAXLER, A.F.J.; Hauge, P.; DESHPANDE, A.D. 1991. Organic contaminants in hepatic tissues of lobster and flounder at the New York Bight "12-mile" sewage sludge dumpsite. NOAA Technical Memorandum NMFS-F/NEC-83; 10p. Available from: National Marine Fisheries Service, Highlands, NJ.

EDWARDS, S.F. 1992. Evidence of structural change in preferences for seafood. NOAA Technical Memorandum NMFS-F/NEC-87; 12p. Available from: National Marine Fisheries Service, Woods Hole, MA.

HAIN, J., editor. 1992. The right whale in the western North Atlantic: a science and management workshop[,] 14-15 April 1992[,] Silver Spring, Maryland. Northeast Fisheries Science Center Reference Document 92-05; 88p. Available from: National Marine Fisheries Service, Woods Hole, MA.

HOLZWARTH-DAVIS, T.J.; TAYLOR, M.H. 1992. Description of the 1991 oceanographic conditions on the Northeast Continental Shelf. Northeast Fisheries Science Center Reference Document 92-08; 54p. Available from: National Marine Fisheries Service, Woods Hole, MA.

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- MUNROE, T.A. 1992. Interdigitation patterns of dorsal fin pterygiophores and neural spines, an important diagnostic character for symphurine tonguefishes (*Symphurus*: Cynoglossidae: Pleuronectiformes). Bull. Mar. Sci. 50(3): 357-403.
- Northeast Fisheries Science Center, editors. 1992. Report of the Fourteenth Northeast Regional Stock Assessment Workshop (14th SAW). Northeast Fisheries Science Center Reference Document 92-07; 140p. Available from: National Marine Fisheries Service, Woods Hole, MA.
- Northeast Fisheries Science Center, editors. 1992. Report of the Thirteenth Northeast Regional Stock Assessment Workshop (13th SAW)[:] fall 1991. Northeast Fisheries Science Center Reference Document 92-02; 183p. Available from: National Marine Fisheries Service, Woods Hole, MA.
- Pawlowski, R.J.; INGHAM, M.C. 1992. Quantifying resource loss: proceedings of the First NMFS Northeast Environmental Workshop, March 13-14, 1991, Gloucester, Massachusetts. NOAA Technical Memorandum NMFS-F/NER-3; 137p. Available from: National Marine Fisheries Service, Gloucester, MA.
- PEREZ FARFANTE, I.; Robertson, L. 1992. Hermaphroditism in the penaeid shrimp *Penaeus vannamei* (Crustacea: Decapoda: Penaeidae). Aquaculture 103: 367-376.
- RAJAGURU, A. 1992. Biology of two co-occurring tonguefishes, *Cynoglossus arel* and *C. lida* (Pleuronectiformes: Cynoglossidae), from Indian waters. Fish. Bull. (U.S.) 90(2): 328-367.
- RAJAGURU, A.; SHANTHA, G. 1992. Association between the sessile barnacle *Xenobalanus globicipitis* (Coronulidae) and the bottlenose dolphin *Tursiops truncatus* (Delphinidae) from the Bay of Bengal, India, with a summary of previous records from cetaceans. Fish. Bull. (U.S.) 90(1): 197-202.
- RUHSAM, C.M. 1992. Report of water masses receiving wastes from ocean dumping at the 106-Mile Dumpsite[:] January 1, 1991[,] through December 31, 1991. Northeast Fisheries Science Center Reference Document 92-04; 5p. Available from: National Marine Fisheries Service, Narragansett, RI.

**Information Services Unit
Northeast Fisheries Science Center
National Marine Fisheries Service
166 Water Street
Woods Hole, MA 02543-1097**

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