

NORTHEAST FISHERIES CENTER

MONTHLY HIGHLIGHTS



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

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JANUARY 1988

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The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

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National Oceanic and Atmospheric Administration
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Northeast Fisheries Center

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Environmental Processes Division Chief.....Dr. Robert A. Murchelano
National Systematics Laboratory Director.....Dr. Bruce B. Collette
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Data Management Support Staff Chief.....Dr. Eugene G. Heyerdahl
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National Marine Fisheries Service, NOAA
Railroad Avenue
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(301) 226-5193
Contact: Frederick G. Kern

STATUS-OF-THE-STOCKS REPORT RELEASED

The Center has published the "Status of the Fishery Resources Off the Northeastern United States for 1987" as NOAA Technical Memorandum NMFS-F/NEC-50. The 132-page report summarizes the current and projected status of 36 Northwest Atlantic species, representing 45 exploited stocks. The report also reviews current information on commercial and recreational fisheries, and economically evaluates commercial fisheries through 1986.

All 800 copies of the first printing have been distributed. A limited number of the second and final printing of 600 copies will be available for free distribution on a first-come, first-served basis. Contact Dr. Tim D. Smith, FTS 840-1251 or (617) 548-5123.

GEORGES BANK TREATISE PUBLISHED

The MIT Press has published a treatise on Georges Bank. The book is both an atlas and a comprehensive and rigorous synthesis of knowledge on the geology, physical oceanography, chemistry, and biology of Georges Bank, as well as on the principal social, economic, and political issues involved in use of the Bank's resources. Of the 57 technical chapters, more than half deal with biology, including fisheries, and many of these were authored by Center scientists or persons supported by Center or Sea Grant funding. Included in the book is up-to-date information on the capacity for fish production, the natural processes that control fish production, and the effects of exploitation on fish production. In addition to a comprehensive summary of all NOAA/NMFS studies of the Bank, it also presents results from major studies funded by the Bureau of Land Management and Minerals Management Service, including the New England OCS Environmental Benchmark Program, New England OCS Physical Oceanography Program, Georges Bank Monitoring Program, and Sediment Transport Program.

The purchase cost of the book is high (i.e., 225 dollars); however, limited numbers of reprints of individual chapters are available from senior authors. A list of chapters, authors, and authors' mailing addresses is available by writing to: Information Services Section, Northeast Fisheries Center, Woods Hole, MA 02543. Contact Dr. Marvin D. Grosslein, FTS 840-1252 or (617) 548-5123.

TOXIC MACKEREL LIVERS IMPLICATED IN WHALE DEATHS

In response to the known deaths of 14 humpback, 4 minke, and 2 fin whales along the New England coast in December and January, the Center began testing the toxicity of liver extracts from several fish species known to be prey--as juveniles or adults--of whales. On December 18, we found liver extracts from Atlantic mackerel to be toxic to laboratory test mice. Subsequent evidence gathered by the Center and other organizations has now implicated the consumption of mackerel containing paralytic shellfish toxins in the whale deaths.

Relatively low levels of toxicity were found in all mackerel liver extracts from samples collected within the western Atlantic range of this species (i.e., from Northumberland Strait in the Gulf of St. Lawrence to the Mid-Atlantic region). Mean toxicity levels were 185 micrograms of toxin per 100 grams of liver, with up to 446 ug/100 g present in some samples. Interestingly, we found toxicity levels of 60 ug/100 g in liver extract from mackerel collected off Nantucket Island as long ago as

April 1986. It is emphasized, however, that there is no danger to human consumption of mackerel as no toxicity has been detected in the muscle tissue, the edible portion

No toxicity has been detected in the livers of other whale prey species such as Atlantic herring and silver hake (whiting), nor in the livers of goosefish (monkfish). Stomach contents of one whale--consisting mostly of bones--were tested and found to be only mildly toxic, causing delayed death of mice. Contact Ronald C. Lundstrom, FTS 837-9277 or (617) 281-3600.

12-MILE DUMPSITE BASELINE NOW ESTABLISHED

The Center has now completed the first year and a half of sampling at the New York Bight's 12-Mile Dumpsite. The sampling to date has been designed to establish a baseline for determining the effects--primarily biological--of ending sewage-sludge dumping at the site. (The last dumping was in December 1987.)

With a year and a half of sampling completed, we can now begin to compare any seasonal trends. During the November survey of three stations, chosen to represent impacted, enriched, and less polluted habitats, some trends persisted from autumn 1986 to autumn 1987. The dominant bottom fishes were little skate (75 percent of the weight per tow in 1986; 50 percent in 1987) and winter flounder (19 percent in 1986; 15 percent in 1987). At the "impacted" station, the average weight per tow for all bottom fishes increased from 22 to 40 pounds. The dominant crustaceans were rock and horseshoe crabs which ranked first and second, respectively, in weight per tow for both 1986 and 1987. At all three stations though, the weight per tow decreased for both species between the two years.

It should be noted, at this point in time, that these early comparisons do not statistically indicate that any rapid, significant shift from crustaceans to fishes has occurred. Continued sampling will be necessary to determine if any changes in the biological community in and around the site are related to the ending of sewage-sludge dumping. Contact Stuart J. Wilk, FTS 342-8290 or (201) 872-0200.

STATUS OF STRIPED BASS RECOVERY/RESEARCH REVIEWED

Surveys have revealed a record high abundance of juvenile striped bass in the Hudson River and in the Virginia tributaries to Chesapeake Bay. Juvenile abundance remains very low, however, for the Roanoke River and the Maryland tributaries to Chesapeake Bay. These findings were reported at the annual Striped Bass Workshop (sponsored by the National Marine Fisheries Service and the U.S. Fish and Wildlife Service) held in Norfolk, Virginia, on January 5 and 6.

The workshop also addressed recent research which suggests that stripers are maturing at later ages than previously thought, and that sex-specific migration rates from Chesapeake Bay differ from those historically observed. The ongoing tagging program for Atlantic Coast stripers resulted in 18,000 fish being tagged and released last year. Tag returns should increase this year as fish from the 1982 year class begin attaining the minimum size for possession. Contact Dr. R. Anne Richards, FTS 840-1357 or (617) 548-5123.

RECENT PUBLICATIONS AND REPORTS

Reprints of publications and copies of reports are available by writing to the senior Center author (names in all capital letters are Center authors) care of: Information Services Section, Northeast Fisheries Center, Woods Hole, MA 02543.

- APOLLONIO, S. 1987. The future for fisheries management on Georges Bank: an opinion. Pages 508-512 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- AZAROVITZ, T.R., and M.D. GROSSLEIN. 1987. Fishes and squids. Pages 315-346 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- CASEY, J.G., J.J. Hoey, and M.D. GROSSLEIN. 1987. Large pelagic predators. Pages 351-355 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- COHEN, E.B., and M.D. GROSSLEIN. 1987. Production on Georges Bank compared with other shelf ecosystems. Pages 383-391 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- CONSERVATION & UTILIZATION DIVISION, NORTHEAST FISHERIES CENTER. 1987. Status of the fishery resources off the northeastern United States for 1987. NOAA Tech. Mem. NMFS-F/NEC-50. 132 p.
- Cooper, R.A., P. Valentine, J.R. UZMANN, and R.A. Slater. 1987. Submarine canyons. Pages 52-63 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- FOGARTY, M.J., M.P. SISSENWINE, and M.D. GROSSLEIN. 1987. Fish population dynamics. Pages 494-507 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- HENNEMUTH, R.C., and S. ROCKWELL. 1987. History of fisheries conservation and management. Pages 430-446 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- MOUNTAIN, D.G., and R.J. SCHLITZ. 1987. Some biologic implications of the circulation. Pages 392-394 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- O'REILLY, J.E., C. EVANS-ZETLIN, and D.A. BUSCH. 1987. Primary production. Pages 220-233 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- ROPES, J. 1987. Age and growth, reproductive cycle, and histochemical tests for heavy metals in hard clams, Mercenaria mercenaria, from Raritan Bay, 1974-75. Fish. Bull. (U.S.) 85(3):653-662.
- SHERMAN, K., W.G. SMITH, J.R. GREEN, E.B. COHEN, M.S. BERMAN, K.A. MARTI, and J.R. GOULET. 1987. Zooplankton production and the fisheries of the northeastern shelf. Pages 268-282 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.
- SISSENWINE, M.P. 1987. Fish and squid production. Pages 347-350 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.

STEIMLE, F.W. 1987. Production by the benthic fauna. Pages 310-314 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.

THEROUX, R.B., and M.D. GROSSLEIN. 1987. Benthic fauna. Pages 283-295 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.

Walsh, J.J., T.E. Whitley, J.E. O'REILLY, W.C. PHOEL, and A.F. DRAXLER. 1987. Nitrogen cycling on Georges Bank and the New York shelf: a comparison between well-mixed and seasonally stratified waters. Pages 234-247 in R.H. Backus, ed. Georges Bank. The MIT Press, Cambridge, Mass.

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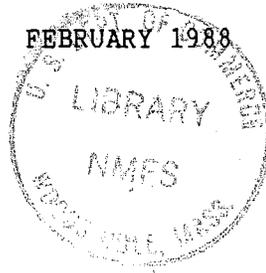
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MAY 10 1988

IN THIS ISSUE:

REPORT ISSUED FOR STOCK ASSESSMENT WORKSHOP

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ANNOTATED LIST OF MASSACHUSETTS BAY FISHES NOW AVAILABLE

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

REPORT ISSUED FOR STOCK ASSESSMENT WORKSHOP

The Center has issued a "Report of the Fifth NEFC Stock Assessment Workshop (Fifth SAW)" as Woods Hole Laboratory Reference Document No. 87-12. The fifth SAW, held during November 16-20, 1987, in Woods Hole, Massachusetts, reviewed the status of several economically valuable stocks of fishes and invertebrates in the New England and Mid-Atlantic regions. The workshop report, available upon request, includes technical reviews of presentations made on: (1) an updated assessment of northern shrimp; (2) revised assessments of Atlantic herring and bluefish; (3) approaches to assessment of black sea bass; (4) long-term potential catch of surf clams and ocean quahogs; (5) availability of Loligo squid; and (6) review of the concept and statistical attributes of "spawning stock biomass per recruit." The next Stock Assessment Workshop is scheduled for May 3-5, 1988. Contact Dr. Tim D. Smith, FTS 840-1251 or (617) 548-5123.

RECOMMENDATIONS MADE TO IMPROVE WATER QUALITY IN THE HUDSON-RARITAN ESTUARY

Center scientists, along with representatives of other federal, state, and interstate agencies, academia, and industry, have prepared a report on water quality of the Hudson-Raritan Estuary. The report, entitled "The Hudson-Raritan: State of the Estuary," presents the consensus of its preparers on conditions and trends in water quality, including nutrients, toxic materials, indicators of (human) disease-causing organisms, floating wastes and debris, oxygen-consuming materials, biota, and diseases of those biota. The report also presents recommendations to improve water quality, including: (1) designating the estuary as part of the EPA's National Estuary Program; (2) strictly enforcing existing laws and regulations on contaminant discharge and physical loss of habitat; (3) addressing non-point pollution from a regionwide standpoint; (4) tightening requirements for pretreatment of wastes by industry; (5) regulating additional pollutants and pollutant sources; (6) placing more emphasis on land-air-sea interactions in waste treatment and pollution control; and (7) preparing the public for the possible need to curtail use of nondegradable products.

The report comes in two volumes. Volume I, a summary report, is available for 15 dollars. Volume II, an appendix of full papers, will soon be available for 28 dollars. Orders should be placed with the New Jersey Marine Sciences Consortium, Bldg. 22, Ft. Hancock, NJ 07732. Contact Robert N. Reid, FTS 342-8220 or (201) 872-0200.

ANNOTATED LIST OF MASSACHUSETTS BAY FISHES NOW AVAILABLE

One-hundred years after the appearance of the first comprehensive list of Massachusetts Bay fishes, the Center has issued a new list. Entitled "An Annotated List of the Fishes of Massachusetts Bay," the list includes 141 species in 68 families based on authoritative literature reports and museum specimens. First records for Massachusetts Bay are recorded for Atlantic angel shark, smooth skate, wolf eelpout, lined seahorse, rough scad, and smallmouth flounder.

The report has been issued as NOAA Technical Memorandum NMFS-F/NEC-51. Limited copies are available on a first-come, first-served basis. Contact Dr. Bruce B. Collette, FTS 357-2552 or (202) 357-2552.

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NORTHEAST FISHERIES CENTER

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MARCH 1988

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ABSTRACTS AVAILABLE FOR CENTER'S ANNUAL SHELLFISH BIOLOGY SEMINAR

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MARINE RECREATIONAL FISHING TO CONTINUE EXPANSION IN NORTHEAST

The Northeast's marine anglers will increase in numbers by at least 34 percent by the year 2025, bringing the total to nearly five million anglers. That's the prediction of Center scientists as presented in a talk at the Symposium on Demand and Supply of Sport Fishing, held in Charleston, South Carolina, during March 14-15. The predicted increase comes on the heels of a 200 percent increase in the past three decades.

The model used by Center scientists to make these predictions relies on projections of population size and the closeness of the population to the shoreline. Our future research will extend our predictions to include specific fisheries (e.g., bluefish, summer flounder) and fishing modes (e.g., charter boat fishing, shore fishing). Contact Dr. Steven F. Edwards, FTS 840-1364 or (617) 548-5123.

REPORT RELEASED ON WATER MASSES RECEIVING WASTES AT THE 106-MILE DUMPSITE DURING FISCAL YEAR 1987

A report on the surface water masses at the 106-Mile Dumpsite that received industrial chemical wastes or sewage sludge during Fiscal Year 1987 (October 1986 - September 1987) has been prepared and released by the Center. Surface water masses which occurred at the site were those originating: (1) on the continental shelf ("shelf water"); (2) on the continental slope ("slope water"); and (3) from the Gulf Stream and one or more of its cutoff meanders ("warm-core rings"). During Fiscal Year 1987, 11 million gallons (79 percent) of industrial chemical wastes were dumped into slope water, three million (21 percent) into warm-core ring/Gulf Stream water, and none into shelf water. During the same period, 467 million gallons (62 percent) of sewage sludge were dumped into slope water, 260 million (34 percent) into warm-core ring water, and 29 million (four percent) into shelf water.

This report is the 12th in an annual series. Copies of any of these reports can be obtained by writing: Marine Climatology Investigation, National Marine Fisheries Service, South Ferry Road, Narragansett, RI 02882. Contact LTJG Margaret Sano, FTS 838-6284 or (401) 792-6837.

LOBSTER TAGGING PROGRAM BEGUN AT 12-MILE DUMPSITE

Center scientists have begun a 2-3 year tagging program with lobsters from the 12-Mile Dumpsite in the New York Bight apex. The Dumpsite has recently been closed and marine resource and environmental managers are watching for signs of recovery of the site's fisheries habitats. The recapture of lobsters that have been tagged and released in and around the Dumpsite should provide such information by detecting any changes in the direction and rate of lobster movements, as well as in the incidence and severity of lobster exoskeleton (shell) diseases.

Lobsters are being tagged with 1 1/2-inch long, pink or yellow-colored "spaghetti" tags which offer a reward. The reward is three dollars plus the landed value of the lobster, and can be claimed by returning the tagged lobster to a NMFS port agent or the Center's Sandy Hook Laboratory in Highlands, New Jersey. "Short" (legally undersized) lobsters will be tagged, and possession of "shorts" by fishermen will be permitted provided that the tag remains in the lobster and it is promptly returned to a NMFS port agent. Contact Judy Rugg, FTS 342-8216 or (201) 872-0200.

SLOWED GROWTH IN HARD CLAMS ATTRIBUTED TO ALGAL BLOOMS

Center studies of caged hard clams in Long Island Sound have shown a sharp decline in growth rate at those sites experiencing blooms of an unidentified Prorocentrum sp. alga. We monitored clam growth last year at three sites in the Sound--off Greenwich, Milford, and Stonington, Connecticut--which represent the range of estuarine to coastal habitats found within the Sound. Although all three sites had an optimal range of seawater temperatures and an abundant level of phytoplanktonic food, only the Stonington site showed clam growth linked--as would be expected--to water temperature. At the Greenwich and Milford sites, clam growth significantly slowed in close correspondence to the occurrence of blooms by the Prorocentrum sp. From these findings, we feel that Prorocentrum sp. blooms interfere with hard clam growth, and speculate that such interference comes from a metabolite of the alga, or from physical damage to the clam digestive system by the sharp "tooth" on the Prorocentrum sp.'s cell wall. Contact Ronald Goldberg, FTS 642-5246 or (203) 783-4246, or Gary Wikfors, FTS 642-5225 or (203) 783-4225.

BOTTOM TRAWL SURVEY EVALUATION REPORT COMPLETED

A report, titled "An Evaluation of the Bottom Trawl Survey Program of the Northeast Fisheries Center," has been issued as NOAA Technical Memorandum NMFS-F/NEC-52. Included in the report is an in-depth review of the procedures of the Center's bottom trawl surveys, levels of precision being achieved in these surveys, and techniques and options for improving survey precision and efficiency. Special emphasis was placed on the use of time-series analysis techniques for improving the stock abundance indices which are derived from the survey data. Contact Dr. Stephen F. Clark, FTS 840-1312 or (617) 548-5123, or Dr. Michael J. Fogarty, FTS 840-1255 or (617) 548-5123.

ABSTRACTS AVAILABLE FOR CENTER'S ANNUAL SHELLFISH BIOLOGY SEMINAR

The Center held its annual Shellfish Biology Seminar in Milford, Connecticut, on March 2. This year's seminar emphasized the results of the Center's ongoing shellfish recruitment studies in Long Island Sound, as well as the results of similar studies being conducted by other scientists in other coastal states. Abstracts of the 16 papers and one poster are available upon request. Contact Dr. Walter Blogoslawski, FTS 642-5235 or (203) 783-4235.

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DUMPING DIVERTED TO SAVE LOBSTER FISHERY

The Center has worked with the U.S. Environmental Protection Agency to modify a proposed ocean dumping operation to save part of a lobster fishery. About 400,000 cubic yards of sand and mud are scheduled to be dumped at the New York Bight's Cellar Dirt Dumpsite which is located eight miles off Sandy Hook, New Jersey. The dumpsite has long received rubble from building demolitions and excavations which has provided a protective habitat for lobsters and supported a pot fishery for them. The proposed dumping of sand and mud, though, could smother the habitat and damage the pots. As a result of the Center's interviewing of local fishermen to determine the best habitat/fishing areas within the dumpsite (the eastern half), and then providing that information to the EPA (which regulates the dumpsite), the EPA has restricted the proposed sand and mud dumping to the less productive northwestern quadrant of the site. Contact Clyde MacKenzie, FTS 342-8200 or (201) 872-0200.

"FISHERMEN'S REPORT" FOR SPRING BOTTOM TRAWL SURVEY AVAILABLE

A "Fishermen's Report" is now available upon request which lists the results of the Center's spring bottom trawl survey. The survey sampled 321 sites between Nova Scotia and North Carolina during March 4 through April 21. The report lists the sampling location, sampling time, towing direction, bottom depth and temperature, and species by weight caught at each site.

A synoptic view of the survey results shows samples dominated by: pollock, white hake, and Acadian redfish in the Gulf of Maine; winter skate and Atlantic cod on Georges Bank; spiny dogfish, little skate, and Atlantic mackerel off Southern New England and the Mid-Atlantic; and longfin squid along the continental shelf margin. Contact Thomas R. Azarovitz, FTS 840-1283 or (617) 548-5123.

SHARK TAGGING PROGRAM'S 1987 RESULTS SUMMARIZED

The NMFS Cooperative Shark Tagging Program has released its summary report of 1987 activities. (Report distribution is limited to program participants.) During 1987, the program sponsored and directed the tagging of about 6,000 sharks representing more than 40 species. More than 200 tags were returned from about 20 species. Anglers, U.S. Foreign Fisheries Observers, U.S. and foreign commercial fishermen, and biologists volunteered their efforts in these tagging and recapture activities.

Records were set last year for: (1) time at liberty (sandbar - 21.8 years, dusky - 11.8 years, hammerhead - 9.6 years, and blacktip - 7.3 years); (2) distance travelled (night - 1400 miles and scalloped hammerhead - 765 miles); and (3) rate of travel (tiger - 15.1 miles per day). In addition to migration and movement information, tag returns provided valuable information on longevity, growth rate, seasonal distribution, etc. The report also summarizes results of other Center research on sharks and other apex predators. Contact John G. Casey, FTS 838-6320 or (401) 782-3320.

SAND LANCE DISTRIBUTION AND ABUNDANCE DOCUMENTED

As part of our research on sand lance, the Center and cooperating scientists at the University of Massachusetts-Amherst have prepared a report--available upon request--on the historical distribution and abundance of this species in the Northeast. Sand lance are an important component of the Northeast Shelf Ecosystem,

primarily as food for such species as Atlantic cod, bluefish, humpback and fin whales, and numerous marine birds. Objectives of the new project are to assess the population status of this species, with an emphasis on growth rate, longevity, maturity, fecundity, and mortality rates. Contact Gary A. Nelson, FTS 840-1374 or (617) 548-5123.

RECENT PUBLICATIONS AND REPORTS

Reprints of publications and copies of reports are available in limited numbers on a first-come, first-served basis by writing to the senior Center author (names in all capital letters are Center authors) care of: Information Services Section, Northeast Fisheries Center, Woods Hole, MA 02543.

BARTON, K. W. 1988. Report of water masses receiving wastes from ocean dumping at the 106-mile Dumpsite, October 1, 1986, through September 30, 1987. Mar. Climatol. Invest. Data Anal. Prod. No. 24. 14 p.

Botton, M. L., and J. W. ROPES. 1987. Populations of horseshoe crabs, Limulus polyphemus, on the northwestern Atlantic continental shelf. Fish. Bull., U.S. 85(4): 805-812.

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NORTHEAST FISHERIES CENTER

MONTHLY HIGHLIGHTS



United States Department of Commerce
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MAY 1988

IN THIS ISSUE:

STRIPER STATUS REPORTED TO CONGRESS

CENTER-SUPPORTED RESEARCH TO IMPROVE MARINE MAMMAL ASSESSMENT

LOBSTER IDENTIFICATION GUIDE TO BE REVISED AND COMMERCIALY PUBLISHED

FLOUNDER TAG RETURNS SUPPORT PREVIOUS MOVEMENT & MIGRATION FINDINGS

SYSTEMATICS LABORATORY ANNUAL REPORT AVAILABLE

MOROCCAN FISHERIES RESEARCH AIDED

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

STRIPER STATUS REPORTED TO CONGRESS

Scientists from both the Northeast Fisheries Center and the U.S. Fish and Wildlife Service recently summarized the findings of the federal Emergency Striped Bass Study (ESBS) at hearings of the U.S. Senate and House of Representatives. The ESBS, begun by Congress in 1980 to determine the causes of striper declines and to monitor the status of striper stocks, is scheduled to expire on September 30 unless Congress reauthorizes the study's parent act--the Atlantic Striped Bass Conservation Act.

The scientists reported some signs of recovery of the Chesapeake stock in recent years. Abundance of juveniles and young adults has been increasing. Excellent juvenile production occurred in the lower Bay in 1987. Juvenile production remains poor, though, in many other areas of the Bay that have historically been important to this stock. Contact Dr. R. Anne Richards, FTS 840-1357 or (617) 548-5123.

CENTER-SUPPORTED RESEARCH TO IMPROVE MARINE MAMMAL ASSESSMENT

The Northeast Fisheries Center has and continues to support research on the use of individual identification techniques to study the population dynamics of the Northwest Atlantic's humpback and right whales. Results of this Center-supported research were presented at a recent workshop held by the International Whaling Commission's Scientific Committee which dealt with the use of photographic identification techniques to study the population dynamics of the large whales. The Scientific Committee is preparing a comprehensive assessment of whale stocks and feels that the individual identification techniques are now adequately developed to play a major role in its assessment work.

At the workshop, which was held in San Diego during April 30 - May 4, results of other Center-supported research were presented dealing with the relative effectiveness of using one or two teams of spotters in line-transect surveys of the Northwest Atlantic's harbor porpoise populations. The double-team approach may be useful in testing the effectiveness of the single-team approach currently used by the Scientific Committee in its assessment of several whale stocks. Contact Dr. Tim D. Smith, FTS 840-1251 or (617) 548-5123.

LOBSTER IDENTIFICATION GUIDE TO BE REVISED AND COMMERCIALY PUBLISHED

A Center publication on "Lobsters--Identification, World Distribution, and U.S. Trade" which originally appeared in Marine Fisheries Review (Volume 48, Issue 2) will be revised to make it more useful to non-scientific readers. The revision, now nearly completed, will include larger type, more use of common names, pictures of whole lobsters, distribution maps of individual species, and a species check list. Anyone interested in obtaining the revised publication should contact the commercial publisher: Ian Dore, P.O. Box 965, Huntington, NY 11743; (516) 549-0143.

FLOUNDER TAG RETURNS SUPPORT PREVIOUS MOVEMENT & MIGRATION FINDINGS

Recent tag returns from winter flounder originally tagged by the Center in the vicinity of the New York Bight's 12-Mile Dumpsite continue to show that this species in this area has localized movements and seasonal migrations. The tagging program is a part of an overall Center program to study the dumpsite's ability to

recover to a safe and productive fisheries habitat now that it has been closed as New York City's major site for dumping sewage sludge.

Of those flounder originally captured, tagged, and released in inshore waters, 35 were recaptured this year: 25 that were at liberty less than one month and were recaptured within 2.5 miles of their release sites, and 10 that were at liberty for one year and were also recaptured near their release sites. These recaptures indicate that some, if not most, of the flounder return to the same estuary year after year to spawn. Of those flounder originally captured, tagged, and released during this past winter offshore at the dumpsite, eight were recaptured this spring: five in inshore Long Island waters, and three in inshore Sandy Hook-Raritan Bay waters. These recaptures support the pattern of offshore-inshore migrations during late winter-early spring.

Two additional tag returns from Long Island waters were from flounder originally tagged in New Jersey waters, supporting the concept of population intermixing between estuarine systems. Contact Beth Valdes, FTS 342-8279 or (201) 872-0200.

SYSTEMATICS LABORATORY ANNUAL REPORT AVAILABLE

The National Systematics Laboratory's 1987 annual report is available in limited numbers upon a first-come, first-served basis. The report covers the research, services, and publications by the Laboratory in 1987 dealing with fish, squid, crustacean, and coral taxonomy. Contact Dr. Bruce B. Collette, FTS 357-2552 or (202) 357-2552.

MOROCCAN FISHERIES RESEARCH AIDED

Center personnel visited the Marine Fisheries Institute in Casablanca, Morocco, during April 10 - May 1 to complete the second phase of a three-phase program to improve the survey, assessment, and management of Moroccan fisheries resources. The program is sponsored by the U.S. Agency for International Development.

Phase I, which occurred during July 24, 1987, to February 15, 1988, involved both a visit to Morocco by Center personnel to evaluate the Moroccan trawl survey program and assess Moroccan training and equipment needs, and a visit to the United States by a Moroccan scientist to become exposed to the Center's trawl survey program. Phase II emphasized the standardization and documentation of current Moroccan survey methods, and the design of future Moroccan survey programs. Phase III will include training in analysis and reporting of survey data. Contact Linda I. Despres-Patanjo, FTS 840-1346 or (617) 548-5123.

NORTHEAST FISHERIES CENTER

MONTHLY HIGHLIGHTS



United States Department of Commerce
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JUNE 1988

IN THIS ISSUE:

STUDY IDENTIFIES POTENTIAL FOR FISH PRODUCTION AND FISHERIES YIELDS

ILLUSTRATED KEY TO AMERICAN PENAEOID SHRIMP PUBLISHED

SAND MINING EFFECTS TO BE PREDICTED/DETERMINED

OCEANOGRAPHIC CONDITIONS OF NORTHWEST ATLANTIC DOCUMENTED

BRIEFS

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

STUDY IDENTIFIES POTENTIAL FOR FISH PRODUCTION AND FISHERIES YIELDS

A just-published Center study of the Northeast Continental Shelf Ecosystem concludes that the ecosystem annually produces eight million metric tons of fish biomass which can yield a 1-2 million metric ton harvest. Entitled "The Continental Shelf Ecosystem off the Northeast Coast of the United States," the study describes the physical environment and how its seasonal cycles affect the biomass, production, and community dynamics of phytoplankton, zooplankton, benthos, and fish from the Bay of Fundy to Cape Hatteras.

The study also highlights the relationships between changes in the ecosystem's natural production and changes in its fisheries yields during the past two decades. Reprints are available but in limited numbers. Contact Dr. Kenneth Sherman, FTS 838-6210 or (401) 782-3210.

ILLUSTRATED KEY TO AMERICAN PENAEOID SHRIMP PUBLISHED

An "Illustrated Key to Penaeoid Shrimps of Commerce in the Americas" has just been published. Prior to this key, it was difficult to identify some of the 37 commercially valuable penaeoid shrimps (19 from the Atlantic and 18 from the Pacific) of the western Atlantic and eastern Pacific.

The key is based on readily recognizable characters and is accompanied by detailed illustrations. Each species description is composed of the scientific and most common vernacular names, the geographic and bathymetric ranges, and the maximum length attained by each sex. Contact Dr. Isabel Perez Farfante, FTS/(202) 357-1417.

SAND MINING EFFECTS TO BE PREDICTED/DETERMINED

We are working with our Northeast Region and with other federal and state agencies to predict and determine effects of a sand mining and beach nourishment project between Sandy Hook and Manasquan, New Jersey, to begin in 1990. In the project the U. S. Army Corps of Engineers would direct the hydraulic mining of 17.8 million cubic yards of sand from nearshore areas, and the delivery of it to beaches via pipelines.

The Center's role has been and will be to give advice on: (1) baseline conditions of the resources and habitats against which any changes can be detected; (2) the monitoring program to determine the causes and effects of any changes; and (3) recreational and commercial fishing areas in general, and surf clam and American lobster resources in particular. Contact Robert N. Reid, FTS 342-8220 or (201) 872-0200.

OCEANOGRAPHIC CONDITIONS OF NORTHWEST ATLANTIC DOCUMENTED

Three reports are available on oceanographic conditions in the Northwest Atlantic in 1987. Covered in the reports are: (1) the water-column temperatures along a transect through the New York Bight; (2) the position and variability of the front between the continental shelf water mass and the continental slope water mass; and (3) the paths and rates of movement of warm-core rings generated by the Gulf Stream. Contact Reed S. Armstrong, FTS 838-6280 or (401) 782-3280.

BRIEFS

Following is a list of research projects to be highlighted when results and their implications/applications become available:

- reproductive success of Long Island Sound lobsters being measured
- liquified wastes from fish processing plants being tested as cranberry fertilizer
- spatial correlation concept being used to analyze resource survey data
- mathematical models being developed to evaluate/interrelate population dynamics of Atlantic mackerel, Atlantic herring, and sand lances

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IN THIS ISSUE:

SHELLS DEPLOYED TO REDUCE PREDATION ON JUVENILE HARD CLAMS

SQUIDS & OTHER CEPHALOPODS UNDERGO SYSTEMATIC REVISION

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RECENT PUBLICATIONS & REPORTS

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

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Contact: Frederick G. Kern

SHELLS DEPLOYED TO REDUCE PREDATION ON JUVENILE HARD CLAMS

As noted in the December 1987 issue of Monthly Highlights, Center studies have shown that predation (particularly by crabs and other crustaceans) upon juveniles (or spat) is a major limiting factor in hard clam production. There is some evidence that juveniles are less vulnerable to such predation when they set in beds of shells or similar material. Consequently, Center scientists are now measuring the settlement of, and predation upon, hard clams in shell beds set out in Barnegat Bay, New Jersey, and comparing these findings with those from nearby sites without shells.

New Jersey Sea Grant has been interested in the technique and plans to work with us in testing effects of large shell beds (i.e., greater than one acre) on hard clam production in Barnegat Bay. Also, at the request of the Town of Islip (Long Island), New York, we are providing the town with shells to test effects in Great South Bay. From 300,000 to 500,000 bushels of broken surf clam and ocean quahog shells are produced annually in New Jersey, much of which is currently discarded or used as roadfill. Many of these shells could be recycled and used as cover for juvenile hard clams, if our tests prove successful. Contact Clyde L. MacKenzie, FTS 342-8267 or (201) 872-0200.

SQUIDS & OTHER CEPHALOPODS UNDERGO SYSTEMATIC REVISION

The Center led a working group on systematic revision of the squid family Loliginidae as part of the International Workshop on the Systematics and Biogeography of Cephalopods held in Washington, D.C., during July 11-25. The working group agreed upon a new genus-level classification for the 42 species of loliginids now recognized in the world. (The dominant species in the Northeast's squid fishery, the long-finned squid, is a loliginid.)

Six other working groups each focused on an important cephalopod family in need of systematic revision. Workshop results will be published as a single volume of Smithsonian Contributions to Science. Contact Dr. Michael Vecchione, FTS 357-4990 or (202) 357-4990.

LIST OF 1987 CENTER PUBLICATIONS & REPORTS PREPARED

The Center has prepared "An Indexed Bibliography of Northeast Fisheries Center Publications and Reports for 1987." The bibliography contains 70 peer-reviewed publications, 23 non-peer-reviewed reports, and subject and author indices. To make the subject index more useful to fisheries researchers and managers, it is composed of three subindices—organisms, geographic areas, and topics. Copies will be available by October 1. Contact Jon A. Gibson, FTS 840-1228 or (508) 548-5123.

RECENT PUBLICATIONS & REPORTS

Reprints of publications and copies of reports are available in limited numbers on a first-come, first-served basis by writing to: Information Services Section, Northeast Fisheries Center, Woods Hole, MA 02543.

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- BENWAY, R. L. 1988. Water column thermal structure across the shelf and slope southeast of Sandy Hook, New Jersey, in 1987. NAFO [Northw. Atl. Fish. Org.] SC [Sci. Coun. Res.] Doc. 88/06. 7 pp.
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- O'BRIEN, L., and R. K. MAYO. 1988. Sources of variation in catch per unit effort of yellowtail flounder, Limanda ferruginea (Storer), harvested off the coast of New England. Fish. Bull., U.S. 86(1):91-108.
- PEREZ FARFANTE, I. 1988. Illustrated key to penaeoid shrimps of commerce in the Americas. NOAA [Nat. Ocean. Atmos. Admin.] Tech. Rep. NMFS [Nat. Mar. Fish. Serv.] 64. 32 pp.
- RICHARDS, R. A., and D. G. Deuel. 1987. Atlantic striped bass, Morone saxatilis: stock status and the recreational fishery. Mar. Fish. Rev. 49(2):58-66.
- ROBOHM, R. A. 1988. Pasteurellosis of striped bass. Pages 362-366 in C. J. Sindermann and D. V. Lightner, eds. Disease diagnosis and control in North American marine aquaculture, second ed. Elsevier/North-Holland, New York.
- Rowe, G. T., R. THEROUX, W. PHOEL, H. Quinby, R. Wilke, D. Koschoreck, T. E. Whitley, P. G. Falkowski, and C. Fray. 1988. Benthic carbon budgets for the continental shelf south of New England. Continent. Shelf Res. 8(5-7):511-527.

SHERMAN, K., M. GROSSLEIN, D. MOUNTAIN, D. BUSCH, J. O'REILLY, and R. THEROUX. 1988. The continental shelf ecosystem off the Northeast coast of the United States. Pages 279-337 in H. Postma and J. J. Zijlstra, eds. *Ecosystems of the world: continental shelves* (Vol. 27). Elsevier Scientific Publishing Co., Amsterdam, The Netherlands.

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IN THIS ISSUE:

GEORGES BANK COD STOCK IN PRECARIOUS STATUS

MACKEREL HARVESTS COULD BE INCREASED

COLLAPSED NANTUCKET SHOALS/GEORGES BANK HERRING POPULATION SHOWS SIGNS OF RECOVERY

"FISHERMEN'S REPORT" AVAILABLE ON SEA SCALLOP SURVEY

FINFISH BIOMASS ESTIMATED BY ICHTHYOPLANKTON SURVEYS

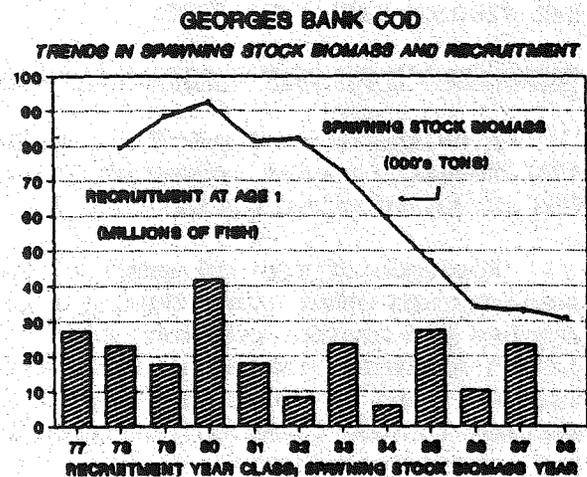
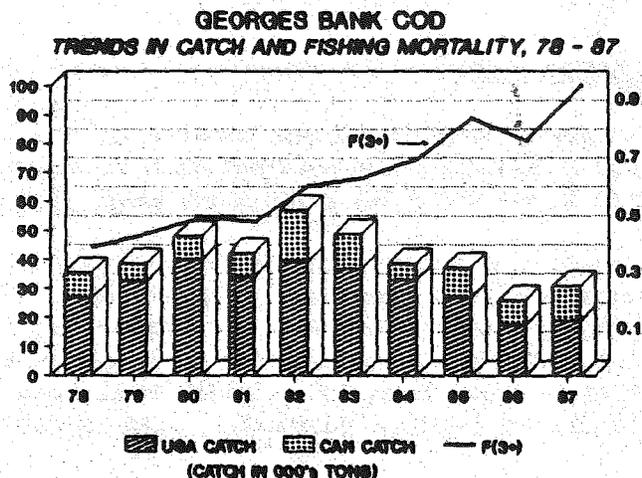
MODEL DEVELOPED TO IMPROVE FISHERY MANAGEMENT BASED ON CONCEPT OF MAXIMUM SUSTAINABLE YIELD

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

GEORGES BANK COD STOCK IN PRECARIOUS STATUS

Recent computation of the fishing mortality of Georges Bank cod during 1987 showed the mortality rate to be the highest ever recorded for this fish stock. At the 1987 fishing mortality rate, only about 30 percent of the Georges Bank cod that were alive at the beginning of 1987 survived to the beginning of 1988. When such high fishing mortality has been maintained on a continuing basis in other cod stocks worldwide, stock collapses have occurred. Stock status is precarious.

Ironically, the 1988 U.S. commercial catch of Georges Bank cod has been projected by Center scientists to increase by about a fourth over 1987 to around 53 million pounds. The increased 1988 catch will result from continued record-high fishing effort for cod and from the above-average number of cod hatched back in 1985 (the 1985 year class) that are now fully vulnerable to commercial fishing operations (recruited to the fishery). At the current fishing mortality rate, though, the 1985 year class will be quickly depleted, and the 1989 fishery will have to depend upon what will be the fully recruited 1986 year class and the partially recruited 1987 year class. The 1986 year class is way below average in size; the 1987 year class, however, currently appears strong. Prospects for the 1989 fishery are not good. Contact Dr. Fredric M. Serchuk, FTS 840-1245 or (508) 548-5123.



MACKEREL HARVESTS COULD BE INCREASED

Harvests of Northwest Atlantic mackerel could be increased to 330-440 million pounds annually without appreciably lowering the size of the spawning population. Recent harvests have been about 150 million pounds annually. Catches could be increased because the population is very large (i.e., biomass now exceeds 2.2 billion pounds) and natural, density-dependent factors—not fishing—are the limiting factors in the population.

Evidence of these density-dependent factors comes from recent Center studies which show that since 1980: (1) average fish growth is slower, (2) average fish size is smaller, and (3) predation mortality rates are higher in the larger year classes. Because of these natural, compensatory mechanisms operating within the population, keeping harvests at their current rates (with recruitment remaining at recent levels)

will no longer ensure annual increases in the biomass of Northwest Atlantic mackerel. Contact Dr. William J. Overholtz, FTS 840-1256 or (508) 548-5123.

COLLAPSED NANTUCKET SHOALS/GEORGES BANK HERRING POPULATION SHOWS SIGNS OF RECOVERY

Center ichthyoplankton surveys show growing evidence of a recovery of the Atlantic herring population in the Nantucket Shoals/Georges Bank area. This area was the principal spawning grounds for herring off the northeastern United States in the 1960's and early 1970's. The area's herring population collapsed, though, in 1977 after more than a decade of heavy fishing. Testimony to the collapse was the area's fishery plummeting from 320 million pounds of landings in 1975 to zero pounds in 1978.

There was little or no evidence of spawning in the area for the next seven years. That changed in 1985 when Center scientists found the highest abundance of herring larvae in the Nantucket Shoals/Georges Bank area since the surveys began in 1977. Larval concentrations during the 1985-87 fall spawning seasons have been greater around Nantucket Shoals than on Georges Bank, but increased catches of larvae on the bank in recent years indicate that a recovery is underway there as well.

Ichthyoplankton surveys are planned for the fall 1989 spawning season to estimate the size of the area's adult herring spawning biomass. Contact Wallace G. Smith, FTS 342-8260 or (201) 872-0200.

"FISHERMEN'S REPORT" AVAILABLE ON SEA SCALLOP SURVEY

A "Fishermen's Report" is available free of charge on the results of the Center's 1988 research vessel survey of sea scallop resources from Georges Bank to Cape Hatteras. The survey occurred during July 7 - August 10 on the NOAA research vessel Albatross IV.

For each of the 619 sampling stations of the survey, the report lists the catch of scallops and other items during a 15-minute tow of a commercial-type dredge. Scallop catches are broken down into three categories of shell height: (1) less than 90 mm (which equates to more than 40 meats per pound); (2) more than 90 mm (equates to less than 40); and (3) more than 100 mm (equates to less than 30). Additional data on each station include location (latitude/longitude and Loran C bearings), tow course, depth, and bottom temperature.

To receive a copy, or to subscribe to future copies of this issue (sea scallop survey) or other issues (spring & fall bottom trawl surveys and surf clam/ocean quahog survey) of the Fishermen's Report series, write to: Resource Surveys Investigation, Northeast Fisheries Center, Woods Hole, MA 02543. Contact Linda I. Despres-Patanjo, FTS 840-1346 or (508) 548-5123.

FINFISH BIOMASS ESTIMATED BY ICHTHYOPLANKTON SURVEYS

The Center has prepared a 132-page report that analyzes and evaluates the 25,000 samples of fish eggs and larvae collected on the bimonthly MARMAP ichthyoplankton surveys of the Northeast Shelf Ecosystem during 1977-87. Based upon these ichthyoplankton survey data, Center scientists estimate the ecosystem's total finfish biomass to have ranged between 5.3 and 8.6 million metric tons for the 1979-84 period.

These biomass estimates derived from the Center's ichthyoplankton surveys are similar to the biomass estimates derived from the Center's bottom trawl surveys for the 1960's, but are significantly higher than the trawl-survey-derived estimates for the 1980's. We attribute the higher estimates from ichthyoplankton survey data for the 1980-84 period to: (1) the ability of the ichthyoplankton surveys' sampling technique and gear (i.e., top-to-bottom coverage) to sample better those species which have little or no vulnerability to the bottom trawl surveys' technique and gear (i.e., bottom coverage only); and (2) a shift in relative biomass in recent years from the larger, more economically desirable, demersal finfish (e.g., haddock) to the smaller, less desirable, pelagic finfish (e.g., sand lance). While total finfish biomass of the Northeast Shelf Ecosystem may have remained stable, individual finfish biomass has changed greatly.

Our evaluation of the ichthyoplankton surveys' effectiveness and efficiency show that: (1) such surveys are not supplementary, but complementary, to the bottom trawl surveys; (2) the frequency of such surveys and the number of samples per survey are the most important factors in obtaining good data; and (3) the actual frequency and sampling of our ichthyoplankton surveys in recent years has been minimally adequate. Contact Dr. Kenneth Sherman, FTS 838-6211 or (401) 782-3211.

MODEL DEVELOPED TO IMPROVE FISHERY MANAGEMENT BASED ON CONCEPT OF MAXIMUM SUSTAINABLE YIELD

The Center has developed a model to help fisheries managers with one of the difficult aspects of managing fisheries under the Magnuson Fishery Conservation and Management Act. The Magnuson Act calls for management of fish stocks on the basis of maximum sustainable yield (MSY). The premise of MSY is that there is a constant catch level for each fish stock which maximizes that catch but leaves enough spawners to fully replenish the stock. However, MSY depends upon a constant biological and environmental setting for the target fish stock--something that doesn't exist in nature.

As a first step in dealing with the MSY problem, the Center has developed a model which predicts the actual effects on fishing effort and catch as a result of setting any one of several target constant catch levels. Benefits of the model will include a better assessment of the risks of various fisheries management decisions, and could lead to improvements of economic efficiency in the fishing industry's harvesting and processing sectors. Contact Dr. Steven A. Murawski or Joseph Idoine, FTS 840-1303/1217 or (508) 548-5123.

J. Gibson

NORTHEAST FISHERIES CENTER

MONTHLY HIGHLIGHTS



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SEPTEMBER 1988

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MODEL USED TO EVALUATE CLOSED AREAS AS FISHERIES MANAGEMENT TECHNIQUE

The Center recently presented a paper on its research concerned with the use of models to evaluate closed areas as a fisheries management technique. The paper was presented at the Interdisciplinary Conference on Natural Resource Modeling and Analysis, held in Halifax, Nova Scotia, during September 29 - October 1. The model used by the Center projects both the yield per recruit as well as the stock biomass per recruit when only a portion of any given year class is vulnerable to fishing gear, the latter being the intended situation when a portion of a fishing ground is closed.

The model shows that in some cases closed areas may be useful in regulating fishing mortality within a fish stock. However, because there is a lack of quantitative data on the movements of many fish stocks into and out of any given area, it will, in many cases, be difficult to assess quantitatively the effects of closed areas on fishing mortality. Also, the effective use of a closed area will most likely require a management approach which is both experimental and adaptable. Contact Dr. Tom Polacheck, FTS 840-1397 or (508) 548-5123.

UNUSUAL MARINE ENVIRONMENTAL CONDITIONS OF THE EARLY 1980s REPORTED

A recent special meeting of the Northwest Atlantic Fisheries Organization addressed the effects of the unusual environmental conditions in the Northwest Atlantic during the early 1980s on the distribution, abundance, and availability of marine species. The Center presented three papers at the meeting which dealt with: (1) "Sea Surface Wind Stress Anomalies in 1981-1987 off the Northeastern U.S.A.," (2) "Air Temperature and Wind Speed Anomalies in 1981-1987 at Coastal Weather Stations in the Northeastern U.S.A.," and (3) "Sea Surface Temperature Anomalies off the Northeastern U.S.A. during 1981-1986." Copies are available. Contact Joyce Denecour, FTS 838-6311 or (401) 782-3311.

NEW CAPABILITY DEVELOPED TO PORTRAY SEA SURFACE TEMPERATURE CHANGES

In cooperation with the University of Rhode Island, we have developed the capability to produce contoured charts showing changes in sea surface temperature between any two scenes of infrared data obtained by NOAA polar-orbiting satellites. This capability can be used to produce charts showing the differences in sea surface temperatures for any time period for which there are data available. Such charts can be used to answer the frequently asked question, "How do current sea surface temperatures differ from those in previous years?" For more information on research applications, contact Carol Fairfield, FTS 838-6284 or (401) 782-3284.

12-MILE DUMPSITE LOBSTER TAGGING PROGRAM AMENDED

As indicated in the March 1988 issue of Monthly Highlights, Center scientists have begun a two-to-three-year tagging program with lobsters from the 12-Mile Dumpsite in the New York Bight apex. Lobsters are being tagged with 1.5-inch-long, pink or yellow-colored "spaghetti" tags which offer a reward. The March issue indicated that possession of tagged, but legally undersized ("short") lobsters would be permitted provided that the tag remained in the lobster and that the lobster was promptly returned to a NMFS port agent.

The tagging program has been amended, however, such that the reward is three dollars plus the landed value of only tagged, legally sized lobsters, and can be claimed by returning the legally sized lobster to a NMFS port agent or to the Center's Sandy Hook Laboratory in Highlands, New Jersey. Tagged, short lobsters should not be retained; the tags should be removed and the animals measured and released immediately. The tag, along with a note on each lobster's length and location where captured, should be sent to the Sandy Hook Laboratory. Contact Judy Rugg, FTS 342-8216 or (201) 872-0200.

ULCER DISEASE OUTBREAKS IN COASTAL/ESTUARINE FISH REVIEWED

The Center has released a report on outbreaks ("epizootics") of ulcer and ulcer-related disease ("ulcerative syndromes") in coastal/estuarine fish. Issued as NOAA Technical Memorandum NMFS-F/NEC-54, the report reviews some of the more extensive outbreaks worldwide, particularly from the viewpoint of their causes and population effects. Following the review, the report: (1) proposes how such epizootics begin, including the roles of environmental stress (e.g., toxic chemicals) and infectious agents (e.g., viruses); (2) categorizes the kinds of population effects due to such epizootics; and (3) provides recommendations for the direction of future research. A limited number of copies are still available. Contact Dr. Carl J. Sindermann, (301) 226-5193.

BLUE SHARK FOOD HABITS DOCUMENTED

We have prepared a report on the food and feeding habits of blue sharks. Since blue sharks are the most abundant species of large pelagic sharks in the Atlantic, they have a major effect at the top of the marine food web.

Our studies show that, in general, the daily ration of food for blue sharks is lower than that for bony fishes such as tunas. Blue sharks consume 0.6 percent of their body weight daily, which means an average sized blue shark of 85 pounds consumes approximately 186 pounds of prey each year. Major food items are squids, hakes, lancetfishes, Atlantic herring, Atlantic mackerel, bluefish, butterfish, marine mammals, skates, and other sharks. Contact Dr. Nancy E. Kohler, FTS 838-6332 or (401) 782-3332.

NORTHEAST FISHERIES CENTER

MONTHLY HIGHLIGHTS



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

OCTOBER 1988

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RECENT PUBLICATIONS AND REPORTS

The Northeast Fisheries Center's Monthly Highlights is an administrative report on key Center research activities during the month. 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 research highlight to contact for more information.

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National Marine Fisheries Service
Northeast Fisheries Center

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OUTLOOK FOR SHRIMP FISHERY IS BETTER IN 1990 THAN 1989

Expect no significant increase in landings in the upcoming northern shrimp fishery in the Gulf of Maine. That's the recent assessment of the Northern Shrimp Technical Committee of the Atlantic States Marine Fisheries Commission. Center scientists serve on the Committee.

Abundance and biomass of mature female shrimp (which are of primary importance in the Gulf of Maine fishery) have declined continually since 1985. An apparently large 1987 year class is in the population, but shrimp from this year class will be too small to contribute significantly to the 1989 fishery. The 1987 year class should recruit strongly, however, to the 1990 fishery. Contact Dr. Stephen H. Clark, FTS 840-1312 or (508) 548-5123.

ENCOURAGING NUMBER OF TAGGED U.S. SALMON RECOVERED IN CANADA

U.S. and Canadian federal fisheries personnel cooperatively sampled nearly 10,000 Atlantic salmon captured by Canadian commercial fishermen during July and August along the Newfoundland and Labrador coasts. Preliminary analysis shows that 23 of the salmon had internal coded-wire tags, and that 20 of those 23 fish were of U.S. origin. The other three were of Canadian origin.

Most of the U.S.-origin tags were from fish that had been released as smolts (juveniles) in Maine and Connecticut rivers, and were destined to return to their home rivers this coming spring. In light of the disappointingly small returns of salmon to the Connecticut River in recent years, the recovery of so many tagged fish in the Canadian summer fishery is an encouraging sign. Contact Dr. Kevin D. Friedland, FTS 840-1369 or (508) 548-5123.

SEDIMENTS AT PHASED-OUT 12-MILE DUMPSITE APPARENTLY RECOVERING

Preliminary analysis of our studies of the 12-Mile Dumpsite in the New York Bight shows that sediment quality is apparently improving in response to the phase-out of sewage sludge dumping there. Toxic metal concentrations, sediment reduction-oxidation potential, and seabed oxygen consumption have all quickly improved.

Dumping at the site was phased out in a stepwise fashion between March 1986 and December 1987. Our formal study of the site began in July 1986, although some data on the site's fisheries resources and habitats were available from other studies going back to the late 1960's.

Data on the distribution and abundance of bottom-living invertebrates, used as indicators of pollution effects, are available only through summer 1987. At that time, there were no clear responses to the reduction in sludge dumping. Possible exceptions were the total number of species and the number of crustacean species, both of which had significant dips in summer

1986, but not in summer 1987. Contact Robert Reid, FTS 342-8200 or (201) 872-0200.

LOW DISSOLVED OXYGEN LEVELS SLOW FLOUNDER GROWTH

With low dissolved oxygen levels (hypoxia) continuing to be a problem in many Northeast inshore areas, the Center has continued studies of hypoxic effects on fisheries resources. Recent experiments examined the effects of long-term exposure to hypoxia (about 2 mg/l of dissolved oxygen) on the growth of young-of-the-year winter flounder. After 11 weeks, the hypoxic-exposed flounder were 28 percent smaller than flounder exposed to normal dissolved oxygen levels (about 7 mg/l). Such reduced/slowed growth would, at least, increase the time spent at smaller and more predatorily vulnerable sizes, and could increase predatory mortality.

As part of this study, we are currently looking at the potential for growth compensation in these smaller fish as oxygen levels return to "normal." Contact Allen Bejda or Beth Valdes, FTS 342-8200 or (201) 872-0200.

CEPHALOPODS OBSERVED DIRECTLY WITH RESEARCH SUBMERSIBLE

The National Systematics Laboratory has used a research submersible to directly study midwater cephalopods (e.g., squids) in the Bahamas. Using the submersible Johnson Sea-Link for 18 dives in 10 days, the Laboratory gathered data on 15 cephalopod species, collected 22 specimens in exceptionally good condition (many were photographed alive on board the mother ship, Seward Johnson), and recorded 25 videotape sequences.

Some species that are rare in trawl collections were seen to be common. Several behavior patterns that have not been reported before were observed. Also, the collection of cephalopods that are semi-gelatinous and easily damaged by trawls should be valuable for taxonomic studies. Contact Dr. Michael Vecchione, FTS/(202) 357-4990.

SOME ANTARCTIC FISH STOCKS DEPLETED; CONSERVATION UNDERTAKEN

Center scientists participated in the seventh annual meeting of the Commission for the Conservation of Antarctic Marine Living Resources held in Hobart, Tasmania, during October 12 - November 4. The Fish Stock Assessment Working Group reported on the condition of Antarctic fish stocks for the 1988-89 fishing season. Several species in the South Georgia region, notably Nototothenia rossii, are in a precarious condition; other stocks have been seriously depleted.

Conservation measures, however, have been initiated and total allowable catch levels have been recommended for two consecutive years. Careful management of these stocks will be needed because

of the multispecies nature of the fishery. Contact Dr. William J. Overholtz, FTS 840-1256 or (508) 548-5123.

RECENT PUBLICATIONS AND REPORTS

Reprints of publications and copies of reports listed below are available in limited numbers on a first-come, first-served basis by writing to the senior Center author (whose name appears in all capital letters) care of: Information Services Section, Northeast Fisheries Center, Woods Hole, MA 02543 USA.

- BOLZ, G.R., and R.G. LOUGH. 1988. Growth through the first six months of Atlantic cod, Gadus morhua, and haddock, Melanogrammus aeglefinus, based on daily otolith increments. Fish. Bull., U.S. 86(2): 223-235.
- ENVIRONMENTAL PROCESSES DIVISION, NORTHEAST FISHERIES CENTER. 1988. A plan for study: response of the habitat and biota of the inner New York Bight to abatement of sewage sludge dumping. NOAA [Nat. Ocean. Atmos. Admin.] Tech. Mem. NMFS [Nat. Mar. Fish. Serv.]-F/NEC-55. 34 pp.
- GIBSON, J.A. 1988. An indexed bibliography of Northeast Fisheries Center publications and reports for 1987. NOAA [Nat. Ocean. Atmos. Admin.] Tech. Mem. NMFS [Nat. Mar. Fish. Serv.]-F/NEC-58. 20 pp.
- POLACHECK, T. 1988. Analysis of the relationship between the distribution of searching effort, tuna catches, and dolphin sightings within individual purse seine cruises. Fish. Bull., U.S. 86(2): 351-356.
- SINDERMAN, C.J. 1988. Epizootic ulcerative syndromes in coastal/estuarine fish. NOAA [Nat. Ocean. Atmos. Admin.] Tech. Mem. NMFS [Nat. Mar. Fish. Serv.]-F/NEC-54. 37 pp.
- SMITH, W.G., ed. 1988. An analysis and evaluation of ichthyoplankton survey data from the Northeast Continental Shelf Ecosystem. NOAA [Nat. Ocean. Atmos. Admin.] Tech. Mem. NMFS [Nat. Mar. Fish. Serv.]-F/NEC-57. 132 pp.
- VECCHIONE, M. 1988. Variability in the distribution of late-stage oyster larvae in the Calcasieu Estuary. Contrib. Mar. Sci. 30: 77-90.
- WILLIAMS, A.B. 1988. Indo-Pacific spiny lobsters in the U.S. National Museum of Natural History collected from 1963 to 1981. Crustaceana 55(3): 313-316.
- WILLIAMS, A.B. 1988. Lobsters of the world -- an illustrated guide: lobsters of the world in U.S. trade. Osprey Books, Huntington, N.Y. 186 pp.

WILLIAMS, A.B. 1988. New marine decapod crustaceans from waters influenced by hydrothermal discharge, brine, and hydrocarbon seepage. Fish. Bull., U.S. 86(2): 263-287.

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NOVEMBER 1988

IN THIS ISSUE:

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SEA SAMPLING CONTRACT AWARDED TO MANOMET BIRD OBSERVATORY

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DISCUSSED AT MARINE TECHNOLOGY CONFERENCE

SCALLOP GEAR RESEARCH PAPER PRESENTED AT FISHING GEAR & VESSEL
DESIGN SYMPOSIUM

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STATUS-OF-THE-STOCKS REPORT ISSUED

The Center has issued the "Status of the Fishery Resources Off the Northeastern United States for 1988" as NOAA Technical Memorandum NMFS-F/NEC-63. The 135-page report reviews the status of 33 species or species groupings. Also covered are trends in commercial and recreational fisheries, economic aspects of commercial fisheries, and overall resource abundance.

All 1,000 copies from the first printing have been distributed. Single copies from the second printing of 400 will be available on a first-come, first-served basis. Contact Dr. Tim D. Smith, FTS 840-1251 or (508) 548-5123.

SEVENTH STOCK ASSESSMENT WORKSHOP CONDUCTED; REPORT SOON AVAILABLE

The Seventh Stock Assessment Workshop, hosted by the Center during November 28 - December 1, reviewed the current assessments of Gulf of Maine and Georges Bank cod, Southern New England and Georges Bank yellowtail flounder, and Southern New England scup. The workshop also addressed the problem of by-catch (i.e., the catching of non-target species) in the Northeast's multispecies fisheries. A report detailing workshop results is being prepared. To request a copy, contact Gary Shepherd, FTS 840-1368 or (508) 548-5123.

COASTAL STRIPER INDEX LAGS LAST YEAR'S LEVEL

Somewhat fewer striped bass showed up in this autumn's haul-seine survey along Long Island compared with last autumn. The haul-seine survey is one of four projects sponsored by the National Marine Fisheries Service under the federal Emergency Striped Bass Study. The study's Planning & Coordination Group met on December 1 in Washington, D.C., to review these projects.

In addition to the haul-seine survey results, the group noted that: (1) reproductive biology research has shown striper maturation rates to be considerably slower than previously thought; (2) the coastwide tagging program, which will continue through 1989, has so far tagged 50,000 stripers and received a suprisingly high 10 percent return rate; and (3) sampling will begin next spring to determine the best available method for identifying the spawning stock from which any given striper originates. Contact Dr. R. Anne Richards, FTS 840-1357 or (508) 548-5123.

SEA SAMPLING CONTRACT AWARDED TO MANOMET BIRD OBSERVATORY

The Center has awarded a contract to the Manomet Bird Observatory of Manomet, Mass., to conduct an experimental program of sea sampling. Under the contract, Manomet Bird Observatory will place biological technicians (sea samplers) aboard U.S. commercial

fishing vessels in the Northeast to sample vessel catches and collect detailed information on vessel operations. The contract calls for sea sampling of about 200 commercial fishing trips between January 1 and September 30, 1989, covering six major Northeast fisheries.

Fisheries to be sampled are the small-mesh and shrimp fisheries in the Gulf of Maine, the large-mesh and experimental silver hake (whiting) fisheries on Georges Bank, the Nantucket Shoals trawl fishery, and the winter trawl fishery offshore of the Mid-Atlantic Bight and Chesapeake Bay. Contact Gregory R. Power, FTS 840-1266 or (508) 548-5123.

FISHERMEN'S REPORT AVAILABLE FOR AUTUMN BOTTOM TRAWL SURVEY

A Fishermen's Report, based on the Center's 1988 autumn bottom trawl survey, is available free of charge. The report lists the composition and size of catches of 24 commercially and recreationally important species at 326 sites between the western Scotian Shelf and Cape Hatteras. The report also includes information on the exact location (latitude & longitude and Loran C bearings), tow direction, time of day, water depth, and bottom temperature of the sampling sites. This autumn's survey was conducted aboard the Albatross IV during September 12 - October 28.

The survey's largest catches of Atlantic cod--the dominant groundfish in the Northeast's fisheries--were from the Northeast Peak of Georges Bank (Canadian waters), the Southeast Channel, and Massachusetts Bay. The largest catches of haddock were from the Northeast Peak. We again found young-of-the-year haddock as far south as the New York - New Jersey coast, but in smaller numbers than last year.

The Fishermen's Report series is composed of four reports: the spring and autumn bottom trawl surveys, the surf clam - ocean quahog survey, and the sea scallop survey. Anyone wishing to subscribe to one or all of these reports should write to Linda I. Despres-Patanjo, National Marine Fisheries Service, Woods, MA 02543, or call FTS 840-1346 or (508) 548-5123.

TRAWL SURVEY WORKSHOP CONDUCTED; REPORT SOON AVAILABLE

A trawl survey workshop, sponsored by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission, was held during November 1-3 in Woods Hole. Objectives were to inform state and federal researchers of ongoing and planned survey programs, increase cooperation, and promote data exchange. Among the topics discussed were; (1) random (i.e., variable) versus fixed-location sampling sites; (2) selection and standardization of sampling gear; (3) new applications for trawl

survey data; (4) computer entry of data at sea; and (5) hydroacoustic and gear-performance monitoring equipment.

A report of the workshop will become available in early 1989. To request a copy of the report, contact Thomas R. Azarovitz, FTS 840-1283 or (508) 548-5123.

FISHERIES TECHNOLOGY PAPER PRESENTED & MID-ATLANTIC POLLUTION DISCUSSED AT MARINE TECHNOLOGY CONFERENCE

Center scientists recently presented a paper on "Marine Fisheries Technology in the United States: Status, Trends, and Future Directions." The paper, presented at the Oceans '88 Conference during October 31 - November 2 in Baltimore, Md., covers the past 20 years of U.S. fisheries. Copies of the presentation are available.

The conference also held a special session on environmental degradation in the Mid-Atlantic Bight. Papers were presented on medical waste dumping, unusual plankton blooms, marine mammal deaths, and the relationship of these activities/events to the overall pollution of the bight. Contact Dr. Fredric M. Serchuk, FTS 840-1245 or (508) 548-5123, for more information on fisheries technology, and Dr. John B. Pearce, FTS 840-1263 or (508) 548-5123, for more information on environmental degradation.

SCALLOP GEAR RESEARCH PAPER PRESENTED AT FISHING GEAR & VESSEL DESIGN SYMPOSIUM

"Recent USA Sea Scallop Gear Research" is a paper presented by Center scientists at the First World Symposium on Fishing Gear and Vessel Design, held during November 21-24 in St. Johns, Nfld. The paper reviews gear design changes in the Northwest Atlantic sea scallop fishery since it began in the early 1870's, as well as recent research efforts aimed at reducing juvenile mortality, improving gear selectivity, reducing non-catch mortality, and enhancing resource survey capabilities. Gear developments are evaluated in a management context, and probable trends in future gear design are identified for both sea scallop and other fisheries worldwide. Contact Dr. Fredric M. Serchuk, FTS 840-1245 or (508) 548-5123.

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IN THIS ISSUE:

SEA SCALLOPS REMAIN ABUNDANT

INFORMATION PUBLISHED ON MID-ATLANTIC'S ENVIRONMENT AND RESOURCES

INVERTEBRATE POPULATIONS DEVELOP POLLUTION TOLERANCE

97 PERCENT OF LANDINGS IN EXPERIMENTAL SILVER HAKE FISHERY ARE TARGET SPECIES

SURVEYS OF ANTARCTIC WILDLIFE PUBLISHED

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SEA SCALLOPS REMAIN ABUNDANT

Sea scallops off the northeastern United States will continue to be abundant in 1989. That's the conclusion of a recent Center evaluation of this resource entitled "Status of the Sea Scallop Resources off the Northeastern United States, 1988." The Center's 1988 sea scallop survey of Mid-Atlantic waters yielded the highest index of scallop abundance obtained in that region during the period of 1975-88. Excellent recruitment by the 1985 year class of scallops boosted the index to its high level. The survey of the U.S. portion of Georges Bank yielded a slightly lower index than the relatively high one obtained for that region during the 1987 survey. Recruitment by the 1985 year class appears to be only average in the Georges Bank region.

Although U.S. fishing effort for sea scallops in 1988 reached a record level, the present high abundance should allow U.S. catches in 1989, and possibly 1990, to remain near the recent high levels of about 28.7 million pounds of meats. To obtain a copy of the Center's sea scallop assessment report, contact Dr. Fredric M. Serchuk, FTS 840-1245 or (508) 548-5123.

INFORMATION PUBLISHED ON MID-ATLANTIC'S ENVIRONMENT AND RESOURCES

The Center has published a "Characterization of the Middle Atlantic Water Management Unit of the Northeast Regional Action Plan" as NOAA Technical Memorandum NMFS-F/NEC-56. The 322-page publication is a collection of 11 reports, each of which brings together and discusses the available data on the environment and different categories of living resources of Middle Atlantic Shelf waters. Copies are available.

The Northeast Regional Action Plan encourages the synthesis of the numerous, and occasionally disparate or cryptic, environmental and living resource data for the Plan's six water management units (WMUs). (In addition to the Middle Atlantic Shelf, the other WMUs are the Gulf of Maine, coastal Gulf of Maine, Georges Bank, coastal Middle Atlantic, and off shelf.) The Middle Atlantic WMU characterization is the first such synthesis document. It is intended to provide a convenient source of information for resource managers and decision-makers concerned with the effects of human activities on the area's living resources and their habitats.

Comments and suggestions on the usefulness of this first characterization will be welcomed. Contact Anthony L. Pacheco, FTS 342-8290 or (201) 872-0200, or Dr. Bruce E. Higgins, FTS 840-1340 or (508) 548-5123.

INVERTEBRATE POPULATIONS DEVELOP POLLUTION TOLERANCE

Our field experiments in the Hudson-Raritan Estuary show that populations of colonizing invertebrates (polychaete worms, nematode worms, harpacticoid copepods) that are continually exposed to heavy-metal pollution can evolve some tolerance to this

form of pollution. Since many invertebrates are important forage for fisheries resource species, the ability to tolerate increased metal contamination may decrease the pollution-related loss of forage for resource species. It may, however, also increase the accumulation of heavy metals in resource species, possibly affecting their health. Contact Clyde L. MacKenzie, FTS 342-8267 or (201) 872-0200.

97 PERCENT OF LANDINGS IN EXPERIMENTAL SILVER HAKE FISHERY ARE TARGET SPECIES

Silver hake were 80 percent of the catch and 97 percent of the landings in an experimental fishery conducted cooperatively by the Center and the commercial fishing industry. The experimental fishery was conducted to determine the feasibility of having a small-mesh trawl fishery specifically for silver hake in an area otherwise limited to large-mesh trawls by the Northeast Multi-species Fishery Management Plan to conserve small/young groundfish (Atlantic cod, yellowtail flounder, etc.).

The experimental fishery occurred during July-October on the northwestern edge of Georges Bank. Seventeen vessels made 119 trips, catching 5.0 million pounds and landing 4.9 million pounds of silver hake. The fishery caught 68 thousand pounds and landed 37 thousand pounds of Plan-regulated groundfish species (mostly white hake and Atlantic cod). About 1.2 million pounds of other species were caught, but only 136 thousand pounds were landed. The primary species discarded were red hake, skates, northern shortfin squid, Atlantic herring, and spiny dogfish. Contact Frank P. Almeida, FTS 840-1308 or (508) 548-5123.

SURVEYS OF ANTARCTIC WILDLIFE PUBLISHED

As part of the U.S. Antarctic Marine Living Resources Program, two reports on Antarctic wildlife have been published in the Center's subseries of the NOAA Technical Memorandum NMFS series. Issue 59 covers "Surveys of Breeding Penguins and Other Seabirds in the South Shetland Islands, Antarctica, January-February 1987." Issue 60 covers the "Survey of Antarctic Fur Seals in the South Shetland Islands, Antarctica, during the 1986-1987 Austral Summer." A limited number of copies are available. Contact Dr. Kenneth Sherman, FTS 838-6210 or (401) 782-3210.