NORTHEAST FISHERIES CENTER

BIMONTHLY REPORT

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

NOVEMBER-DECEMBER 1984

The Northeast Fisheries Center's "Bimonthly Report" is an unedited compilation of reports submitted by the Chiefs/Directors of the Center's nine major research programs, summarizing key research activities and publications-reports during the bimonthly period. This "Bimonthly Report" does not constitute a publication and is for information only. All data should be considered provisional. Reference to trade names does not imply endorsement.

ADMINISTRATION

Center Director.....Allen E. Peterson, Jr.

Deputy Center Director (Acting).....Dr. George J. Ridgway

Assistant Center Director for Fisheries Management/
Woods Hole Laboratory Director.....Richard C. Hennemuth

Assistant Center Director for Environmental Management/
Sandy Hook Laboratory Director.....Dr. Carl J. Sindermann

Center Operations Officer.....Herbert Stern, Jr.

Resource Assessment Division Chief (Acting).....Dr. Michael P. Sissenwine

Manned Undersea Research & Technology Program Chief.....Dr. Richard A. Cooper

Marine Ecosystems Division Chief/
Narragansett Laboratory Director.....Dr. Kenneth Sherman

Resource Utilization Division Chief/
Gloucester Laboratory Director.....Robert J. Learson

Environmental Assessment Division Chief (Acting).....Stuart J. Wilk

Aquaculture Division Chief (Acting)/
Milford Laboratory Director (Acting).....Dr. Anthony Calabrese

Pathobiology Division Chief/
Oxford Laboratory Director.....Dr. Aaron Rosenfield

National Systematics Laboratory Director.....Dr. Bruce B. Collette

Atlantic Environmental Group Director.....Dr. Merton C. Ingham

LABORATORIES

Northeast Fisheries Center &
Woods Hole Laboratory
National Marine Fisheries Service, NOAA
Water St.
Woods Hole, MA 02543
(617) 548-5123 & (FTS) 840-1011

Gloucester Laboratory
National Marine Fisheries Service, NOAA
Emerson Ave.
Gloucester, MA 01930
(617) 281-3600 & (FTS) 837-9276

Narragansett Laboratory
National Marine Fisheries Service, NOAA
So. Ferry Rd.
Narragansett, RI 02882
(401) 789-9326 & (FTS) 838-7142

Atlantic Environmental Group
National Marine Fisheries Service, NOAA
So. Ferry Rd.
Narragansett, RI 02882
(401) 789-9326 & (FTS) 838-7142

Milford Laboratory
National Marine Fisheries Service, NOAA
212 Rogers Ave.
Milford, CT 06460
(203) 783-4200 & (FTS) 642-5200

Sandy Hook Laboratory
National Marine Fisheries Service, NOAA
PO Box 428
Highlands, NJ 07732
(201) 872-0200 & (FTS) 342-8200

National Systematics Laboratory
National Marine Fisheries Service, NOAA
National Museum of Natural History
10th & Constitution Ave., NW
Washington, D.C. 20560
(202) 357-2552 & (FTS) 357-2552

Oxford Laboratory
National Marine Fisheries Service, NOAA
Railroad Ave.
Oxford, MD 21654
(301) 226-5193

AQUACULTURE DIVISION

HIGH-TEMPERATURE ALGAL CULTURES

A series of experiments is being conducted to determine the resistance to increased temperatures of algal species that are known or potential molluscan food sources. In a recently completed experiment, population growth at 20°C and 26°C was compared for the following algal species: Isochrysis galbana (Tahitian strain), Tetraselmis sp (Tahitian isolate), Tetraselmis maculata, Dicrateria sp, Pyramimonas grossi, Carteria chunii, and Dunaliella salina. Of these, five species showed no differences in growth at the two temperatures, four demonstrated some heat sensitivity, and one strain, Tetraselmis (Tahiti), showed increased growth at the higher temperature. The resistance of the I. galbana Tahitian strain to 26°C is noteworthy because a boreal isolate of the same species has a 22-23°C temperature maximum. This screening of algal strains for high temperature resistance is of practical importance to shellfish hatchery operations that may have difficulty maintaining lower temperatures usually recommended for algal culture. In addition, temperature may be a factor in the mass culture of microalgae for industrial or biomass conversion purposes. Contact Dr. Ravenna Ukeles (203-783-4223 or FTS 642-5223).

SEWAGE DISCHARGE INTO SOUND MAY EXPLAIN FINDINGS

Data from a year-long study of the bacterial flora over four oyster beds in Long Island Sound were analyzed and collated for a manuscript in preparation. Several curious points were found which required a search of Connecticut state and federal documents for possible explanations. Bacterial counts were higher than in previous studies of the Sound. Initially, this was thought to be due to an increase in human population along the shoreline; however, census data for 1960, 1970, and 1980 indicate that although there has been an increase in population, the rate is slowing down. In fact, some major cities are actually decreasing in size. Documents are now being examined to determine whether the switch during the 70s from septic tanks to sewers by many municipalities has resulted in an increase in the volume of nutrients being dumped into the Sound. Concomitant with an increase in nutrients would be an increase in bacterial density. An increase in sewage explains why the Norwalk site had the lowest counts and New Haven, the highest. Two of New Haven's municipal sewer plants provide primary treatment only; thus the level of nutrients being dumped into New Haven Harbor is quite high. The lower bacterial density at the Norwalk site is due to its successfully operated treatment plant for sewer overflow which, according to a 1984 Connecticut state document, also has led to the opening of closed shellfish beds. Contact Dr. Carolyn Brown (203-783-4239 or FTS 642-5239).

NEW DEVELOPMENTS IN GENETIC STUDIES, AND APPLICATION TO NATURAL RESOURCE POPULATIONS

In looking forward to utilizing the new possibilities breakthroughs in molecular biology offer for developing better plant and animal breeds, a concensus view has developed among leading agriculturists that this must be preceded by an understanding of the fundamental nature of gene integration and control in our food species. If this understanding is deficient for agriculture species, it is certainly even more lacking for cultured species and hardly even passingly contemplated for non-cultured marine resource species. As an initial effort at developing some such information on shellfish and fish, reliable chromosome banding procedures are being adapted for these marine groups. These are to be used in the interim in a model study of natural marine and/or cultured populations. This is to be followed by their use in a shellfish breeding program, along with identification, isolation, and cloning of ribosomal gene clusters. Eventually, an understanding should be developed of the role of facultative and constitutive heterochromatin and ribosomal genes in regulating cell growth and gene expression in shellfish. Contact Dr. Arlene Longwell (203-783-4207 or FTS 642-5207).

CYTO-EMBRYOLOGICAL ANALYSES OF MARMAP SAMPLES OF ICHTHYOPLANKTON

Earlier cytological studies of Atlantic mackerel eggs were based on extensive collections made in 1974 (an outstanding year-class for the fisheries) and on smaller collections made in 1977 and 1978. Now, samples of mackerel eggs collected in 1979 as part of the NEFC MARMAP program are undergoing combined embryological-cytological-cytogenetic analyses. Even initial results make it clear once more that superficial examination of planktonic eggs provides only exceedingly poor information as to their quality. This observation may eventually be of much general concern to fishery biologists in their use of ichthyoplankton as a means of assessing stock size and of understanding fluxes in the resource. Again, as in 1974, 1977 and 1978, embryo mortality in 1979 was exceedingly high in the first developmental stage (cleavage). Further examination of MARMAP collections of mackerel eggs from other years and eventually of other species should provide some insight into whether annual variations being observed in at least some aspects of egg quality at the cytological-embryological levels are due to temporary conditions of incubatory waters, or to inter-annual variations in egg quality expressed over the entire spawning season. Contact Dr. Arlene Longwell (203-783-4207 or FTS 642-5207).

ATLANTIC ENVIRONMENTAL GROUP

SHIP-OF-OPPORTUNITY TEMPERATURE AND PLANKTON TRANSECTS

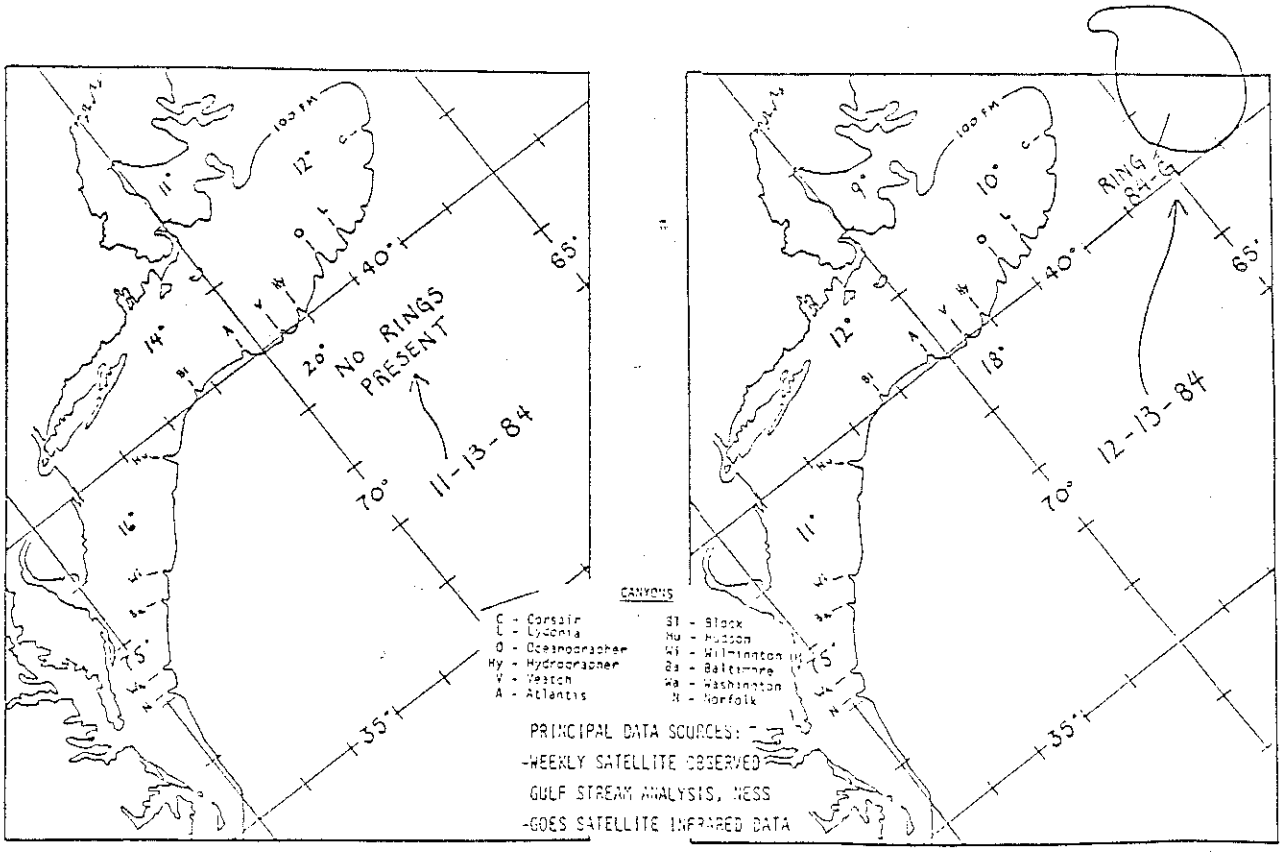
A total of 10 XBT (Expendable Bathythermograph) and 4 CPR (Continuous Plankton Recorder) Transects were occupied during November - December as follows: Gulf of Maine - 2 CPR and 2 XBT, Middle Atlantic Bight - 2 CPR and 4 XBT, Gulf of Mexico - 4 XBT, Contact: Bob Benway FTS 838-7142.

PROGRESS REPORT; REAL-TIME SATELLITE DATA

During December, a test set of AVHRR digital satellite data was received by AEG via telecommunication from NESDIS, Washington, DC. This represented a significant step toward the goal of an operational routine for the real-time reception and processing of satellite infrared data to be used for analyzing marine environmental conditions. Contact: Reed Armstrong, FTS 838-7142.

GULF STREAM RING LOCATIONS

Announcements of Gulf Stream ring locations in mid-September and mid-October were sent to Commander, Atlantic Area, U.S. Coast Guard for publication in the December and January issues of the Atlantic Notice to Fishermen. Contact: Reed Armstrong, FTS 838-7142.



SEA GRANT: REAUTHORIZATION OF THE NATIONAL PROGRAM AND NEFC COLLABORATION

On November 8, 1984, the President signed into law H. R. 6342 which re-authorized the National Sea Grant College Program for another three years in the amounts of $39M, $42M and $44M respectively for fiscal years 85, 86 and 87. This reauthorization is a basis for further planning of Sea Grant projects, and continuing or expanding appropriate NEFC collaborative activities of mutual benefit.

To date, NEFC personnel have actively participated in Sea Grant activities. While some served as members on various Sea Grant Program Advisory Councils and some took part in site visits, many of the Center's scientific staff reviewed Sea Grant project proposals on an almost regular basis.

Currently, interactions between Center staff and Sea Grant reserchers include activities in the areas of aquaculture, submerged aquatic vegetation, fish and shellfish diseases, pathogenic amoebae, environmental matters, harvesting gear, food technology and underutilized species. Center staff also provide electron microscopy services for some Sea Grant projects. Center reports, newsletters and other information is provided regularly to Marine Advisory Programs and Sea Grant Directors and Coordinators. Center Director, Allen E. Peterson, Jr. is a member of the Massachusetts Institute of Technology Sea Grant-State Industry Advisory Council, Anthony Calabrese a member of the Connecticut Sea Grant Advisory Council, and Aaron Rosenfield participates in the activities of the Maryland Sea Grant Citizens Advisory Board. Carl Sindermann serves as Chairman of the New Jersey Sea Grant Advisory Committee and Perry Lane is a member of the Northeast Marine Advisory Council, a regional organization of Sea Grant and collaborating institutions.

To further improve communications and help facilitate interactions between the National Marine Fisheries Service and Sea Grant, the Assistant Administrator for Fisheries appointed liaisons in the Fisheries Centers and Regional Offices. The Liaison for NEFC is Helen Mustafa.

Contact: Helen Mustafa, F/NEC, (617) 548-5123 or FTS 840-1244.

ENVIRONMENTAL ASSESSMENT DIVISION

CANNIBALISM REDUCED IN COMMUNALLY-HELD LOBSTERS

When a vertical climbing surface is provided, cannibalism among recently molted, communally held American lobsters is reduced by 78% over lobsters held without an available climbing surface. Because lobsters are typically solitary and territorial, a high level of antagonistic behavior occurs when they are communnally held. This leads to a high level of cannibalism when molting occurs, one of the main reasons why holding and raising lobsters for experimental or commercial use is so difficult. Experiments over the last year and a half have demonstrated that cannibalism can be significantly reduced when a climbing screen is provided, so that recently molted lobsters can elevate themselves off the bottom, and thus avoid aggressive encounters with lobsters patrolling the bottom.

EFFECTS OF OIL-CONTAMINATED SEDIMENT ON BLOOD WORM BEHAVIOR

Results from a series of comparative studies on the effects of oiled sediment on benthic organisms show the blood worm, *Glycera dibranchiata*, to be relatively tolerant to oil in terms of lethality. However, aberrant burrowing and emergence as well as debilitation at environmentally relevant concentrations of oil could increase the vulnerability of the worms to predation. While these effects may be short-lived depending upon the period of exposure, it appears, however, that there is a chronic effect on feeding behavior, imposing an additional risk for worm survival.

PUBLICATIONS

Olla, B. L., A. J. Bejda, A. L. Studholme, and W. H. Pearson. 1984. Sublethal effects of oiled sediment on the sand worm, *Nereis* (*Neanthes*) *virens*: Induced changes in burrowing and emergence. Mar. Environ. Res. 13: 121-139.

EIGHTH CONSECUTIVE YEAR OF MARMAP ICHTHYOPLANKTON SURVEYS COMPLETED

The Ichthyoplankton survey group at Sandy Hook successfully completed the eighth consecutive year of field work in coastal waters from Cape Hatteras, North Carolina, to Cape Sable, Nova Scotia. Fish eggs and larvae collected on these broadscale surveys are used to investigate multispecies ecosystems interactions, support research on recruitment processes, and derive fishery-independent assessment of adult spawning biomass. In 1984 we completed nine surveys, occupied more than 1,100 stations, collected in excess of 2,500 plankton samples and 480 neuston samples, and made nearly 20,000 ancillary observations and measurements in support of our marine ecosystems research.

The year was highlighted by an intensive spring/summer effort to collect bluefish eggs and larvae in the Middle Atlantic Bight. From May through September we completed five surveys over the known spawning range of bluefish north of Cape Hatteras. This intensified coverage should provide us with an appropriate data base for estimating adult spawning biomass. Emphasis on bluefish will carry over into 1985 when we will join forces with SEFC personnel to survey the spawning grounds of this popular recreational species along the eastern seaboard from Florida to New England. Other 1984 results indicate that sand lance reproduction continued robust, with the larval population centered off southern New England in the Nantucket Shoals area. The once productive spawning beds of Atlantic herring on Georges Bank remained largely barren. Contact Wally Smith (201-872-0200 or FTS 342-8260).

METALIC POLLUTANTS INFLUENCE MACROMOLECULAR COMPOSITION AND DEVELOPMENT OF SEA SCALLOP GONADS

Gonads from sea scallops held in clean water or exposed to two levels of copper or a mixture of cadmium and copper for up to 6 wk at the Milford Laboratory were analyzed for RNA, DNA, and protein content. Preliminary results showed significant differences in nucleic acid concentration between sexes. Protein concentration was similar in males and females. Maturation of gametes in males was associated with an increase in RNA, DNA, and protein concentration, RNA-DNA ratio of maturing males fell sharply. Maturation of gametes in females was associated with an increase in RNA and protein concentrations and the RNA-DNA ratio. Exposure to copper or cadmium plus copper appeared to inhibit development of the gonads and associated changes in macromolecular composition. Contact Geoffrey Laurence (401-789-9326 or FTS 838-7142).

TRANSATLANTIC MOVEMENT FOR MAKO SHARK

Tags were returned from 13 sharks and teleosts during November and December. These included recaptures from blue sharks after 1.5 yr and 700 miles, sandbar sharks after 3.5 years and 500 miles, and a swordfish after 1.5 yr and 350 miles. The furthest distance travelled by any shark came from a mako tagged off Georges Bank and recaptured off Portugal (2,500 miles in 9 mo). This is the first evidence in over 20 yr of tagging to show transatlantic movements for the mako shark. Contact Wes Pratt (401-789-9326 or FTS 838-7142)

PUBLICATIONS AND REPORTS

Casey, J. G., and J. J. Hoey. Estimated catches of large sharks by U.S. recreational fishermen in the Atlantic and Gulf of Mexico. U.S. Dep. Commer., NOAA Tech. Rep. NMFS SSRF. (A)

NATIONAL SYSTEMATICS LABORATORY

AHLSTROM SYMPOSIUM: SCOMBROIDEI AND BELONIFORMES

Publication of the Ahlstrom Symposium on the Ontogeny and Systematics of Fishes makes available summaries of the systematic status and developmental patterns of most groups of bony fishes. The volume, published by the American Society of Ichthyologists and Herpetologists with the assistance of the National Marine Fisheries Service, contains two major contributions from the National Systematics Laboratory, both by Bruce B. Collette with different sets of co-authors. One deals with development and relationships of the Scombroidei, the tunas, mackerels, billfishes, and relatives, the second with the Beloniformes, the halfbeaks, needlefishes, and flyingfishes. Each contribution includes a cladogram showing relationships of families contained within the group, literature summaries of information on eggs and larvae, and illustrations of representative larvae. The volume is obtainable from Dr. Linda Trueb, American Society of Ichthyologists and Herpetologists, Museum of Natural History, University of Kansas, Lawrence, Kansas, 66044. Contact Bruce B. Collette (202-357-2524).

BIOLOGY OF QUEEN MACKEREL PUBLISHED

A summary of the biology and systematics of the queen mackerel, Scomberomorus plurilineatus, written by South African fishery biologist Rudy van der Elst and NSL systematist Bruce B. Collette has been published by the Oceanographic Research Institute in Durban, South Africa. The queen mackerel is among the dozen most important pelagic game fishes in Natal, South Africa. The systematic status of the species has been confused until now. Biological information on the queen mackerel will be useful in comparison with American species of Spanish mackerels: the king mackerel (Scomberomorus cavalla), Spanish mackerel (S. maculatus), and cero (S. regalis). The size range of the recreational catch of queen mackerel is 336-1090 mm fork length. Males and females do not differ in length-weight relationship:

$$w=1.25\times10^{-5}\ FL^{\ 2.9411}$$

where w=weight in grams and FL=fork length in mm. Reproductive maturity is usually attained at 720-740 mm FL in males and 760-780 mm FL in females. The queen mackerel is a voracious predator of small clupeiform fishes, mostly taken during active active surface feeding. Contact Bruce B. Collette (202-357-2524).

PUBLICATIONS AND REPORTS

Collette, B. B. 1984. Status of the systematics of the Scombroidei. In: Proceedings of the 35th annual tuna conference, A. E. Dizon, ed. Southwest Fish. Center Admin. Rept. LJ-84-35:33 (abstract)

Collette, B. B. 1984. Atherinomorpha: Relationships. In: Ontogeny and systematics of fishes. Amer. Soc. Ich. Herp. Spec.Publ. No. 1:333.

Collette B. B., G. E. McGowen, N. V. Parin, and S. Mito. 1984. Beloniformes: Development and relationships. In: Ontogeny and systematics of fishes, Amer. Soc. Ich. Herp. Spec. Publ. No. 1:334-354.

Collette, B. B., T. Potthoff, W. J. Richards, S. Ueyanagi, J. L. Russo, and Y. Nishikawa. 1984. Scombroidei: Development and relationships. In: Ontogeny and systematics of fishes, Amer. Soc. Ich. Herp. Spec. Publ. No. 1:591-620.

Van der Elst, R., and B. B. Collette. 1984. Game fishes of the east coast of southern Africa. 2. Biology and systematics of the queen mackerel, Scomberomorus plurilineatus. So. Afr. Assoc. Mar. Biol. Res., Oceanogr. Res. Inst. Invest. Rep. No. 55:1-12.

SQUID ABUNDANCE DECLINES

Domestic fisheries for long-finned and short-finned squid continue to increase in importance. The USA catch of each species in 1983 exceeded that by foreign nationals for the first time since the late 1960's, and the 1984 fishery was also dominated by the USA.

For long-finned squid, commercial catch rates and NEFC autumn survey data indicate record high abundance during 1983, but 1984 survey indices were substantially lower. Recruitment from the 1984 year class appears equal to about one-half the 1968-81 average, and yield in 1985 will be less than in recent years unless fishing mortality increases. Yields of 17-18,000 metric tons (mt) would be expected if fishing mortality remains comparable to the 1978-81 average.

The NEFC 1983 autumn survey index for short-finned squid was the lowest since the early 1970's. The 1984 index, although higher than in 1983, was lower than the 1968-83 average, while the 1984 prerecruit index was the second lowest since 1973. In spite of these declines stock biomass is still judged adequate to support a 1985 harvest comparable to levels observed in recent years. Contact Anne Lange, (617) 548-5123 or FTS 840-1301.

MACKEREL STOCK RECOVERY CONTINUES

Latest assessment results indicate a continued increase in abundance and biomass for the Northwest Atlantic mackerel stock. Total stock biomass at the beginning of 1985 is estimated at nearly 1.2 million metric tons (mt), more than double the 1980 level of about 475,000 mt. This increase has been due to improved recruitment in recent years, particularly from the strong 1982 and 1984 year classes. Total international catches (commercial and recreational) have remained relatively stable during 1978-84 at an average of nearly 33,000 mt; the 1984 catch was 38,500 mt. Catches increased sharply in US waters in 1984 (due primarily to joint ventures) and are likely to increase further in 1985 as a result of such activity. The 1985 catch would be about 68,000 mt if fishing mortality remained at the 1984 level. Contact Emory Anderson, (617) 548-5123 or FTS 840-1251.

NEW "FISHERMENS REPORT" SERIES INITIATED

A new report series has been initiated by the Resource Surveys Investigation to provide fishermen, scientists and the general public with timely survey information (on finfish and invertebrate distribution and abundance in a useable format. These reports contain plotted catches and catch summaries by location for commercially and recreationally important species from the Gulf of Maine to Cape Hatteras, together with environmental data collected during the cruise. In the future, reports will be distributed within 2-3 weeks of the cruise completion date. The report for the 1984 autumn survey (now available) marks the first routine mailing of the new series. Contact Tom Azarovitz, (617) 548-5123 or FTS 840-1282.

A SCIENTIFIC PERSPECTIVE ON ATLANTIC DEMERSAL FINFISH (ADF) MANAGEMENT

A NEFC scientist reviewed the theory, history, and reality of ADF management at a recent conference on "Fisheries Management: Issues and Options" (November 13-16, Anchorage, Alaska). Off the USA coast, cod and other demersal species have been fished since the 16th century, and at least one species (halibut) was overfished as early as 1850. Increases in fishing effort associated with the influx of distant-water fleets during the 1960's resulted in pronounced declines in abundance for several ADF stocks, many of which have still not recovered. In fact, the condition of the most economically important species -- haddock, cod, and yellowtail flounder -- is remarkably similar to that observed when the Magnuson Fishery Conservation and Management Act (MFCMA) was enacted, except recruitment prospects are not as good. The review covered a range of theoretical and practical problems in management, such as the complexity of relationships between spawning biomass and recruitment and the effectiveness of catch quotas. Contact Michael Sissenwine, (617) 548-5123, or FTS 840-1239.

CONCERN INCREASES FOR YELLOWTAIL

Commercial landings of yellowtail flounder for the first three quarters of 1984 declined 45% from corresponding levels for 1983. The strong 1980 year class, which largely supported the fishery in 1982 and 1983, has been greatly reduced by fishing and more recent year classes have been much weaker. Since 1982, NEFC survey indices have declined for all yellowtail grounds, and during the 1984 autumn survey catches were among the lowest on record. Autumn survey catches of age 1 yellowtail (from the 1983 year class) were also extremely low, indicating that recruitment to the fishery in 1985 will be poor. Current assessment results indicate that fishing mortality is at or near record levels and the fishery is now strongly dependent upon incoming recruitment. Contact Steve Clark, (617) 548-5123 or FTS 840-1312.

JUVENILE HADDOCK ABUNDANCE INCREASES

NEFC autumn 1984 survey results indicate a modest improvement in recruitment for Georges Bank haddock during 1985. Catch per tow of age 1 haddock (from the 1983 year class) increased over 1982-1983 levels, indicating increased abundance of scrod haddock in 1985 as compared to 1983-1984. Nevertheless, survey catch per tow values were much lower than observed during the late 1970's prior to recruitment of the strong 1975 and 1978 year classes, and we therefore do not expect recruitment of this year class to result in a significant increase in stock size. Catch per tow of age 1 haddock in the Gulf of Maine has also remained low. Contact Bill Overholtz or Steve Clark, (617) 548-5123 or FTS 840-1312.

PUBLICATIONS AND REPORTS

Anderson, E. D. Analysis of various sources of pelagic shark catches in the Northwest and Western Central Atlantic Ocean and Gulf of Mexico with comments on catches of other large pelagics. NOAA Tech. Rept. NMFS-SSRF. (A)

Boreman, J., and C. Phillip Goodyear. MS 1984. Effects of fishing on the reproductive capacity of striped bass in Chesapeake Bay, Maryland. Woods Hole Lab. Ref. Doc. No. 84-29, 15 p.

Brown, B. E., B. Dennis, B. Bailey, H. Burkhart, S, Clark, and A. Stage. Modeling succession, recruitment, growth, yield, and harvesting in forestry and marine fisheries. American Statistician. (S)

Fogarty, M. J., and S. A. Murawski. Population dynamics and assessment of exploited invertebrate stocks. Spec. Publ. Can. J. Fish. Aquat. Sci. (S)

Gabriel, W. L., and S. A. Murawski. The use of cluster analysis in identification and description of multispecies systems. Spec. Pub. Can. Tech. Rep. Fish. Aquat. Sci. (S)

Lange, A. M. T. MS 1984. An assessment of the long-finned squid resource off the northeastern United States, Autumn 1984. Woods Hole Lab. Ref. Doc. No. 84-37, 24 p.

Lange, A. M. T. MS 1984. Status of the short-finned squid (Illex illecebrosus) off the northeastern USA, November 1984. Woods Hole Lab. Ref. Doc. No. 84-38, 20 p.

Overholtz, W. J. Seasonal and age specific distribution of the 1975 and 1978 year classes of haddock on Georges Bank. NAFO Scientific Council Studies. (A)

Ropes, John. 1984. Methods for aging oceanic bivalves. Und. Nat. Vol. 15 (1), pp. 12-15. (P)

Shepherd, G., and C. B. Grimes. 1983. Geographic and historic variations in growth of weakfish, Cynosium regalis, in the Middle Atlantic Bight. Fish. Bull., U.S. 81:803-813. (P)

SURIMI - THE HOTTEST FROZEN ITEM IN YEARS

Surimi is a Japanese term for deboned, washed and pressed fish with a bland taste and used as a base to make artificial scallops, crab legs, and a host of items to artificial mushrooms. Imports have leaped from 2 million pounds in 1979 to 29 million pounds in 1983. With predictions for 1984 to reach about 50-60 million pounds, it doesn't require much acumen to realize what effect it will have on our balance of payments.

Because S-K money has been granted to URI, one of our researchers has been designated as GOTR (Grant Officer Technical Representative) to monitor the surimi produced at the university. The quality of the surimi was tested at the Gloucester Laboratory. Thawed surimi was blended with 2.5% salt in a special cutting machine, packed into cellulose casings and cooked to set the gel. Physical tests for compression, tension, and cohesiveness are now being made.

FLOUNDER FREEZING STUDIES

The frozen storage stability experiment of flounder (dab) is continuing. After 5 months frozen storage at +10°F, following iced storage at 1, 5 and 9 days all the samples were judged as fair to poor by the laboratory taste test panel. At the next month sensory examination, the 10°F storage samples looked and smelled too bad to be taste tested and were considered inedible. The flounder samples stored for 6 months at 0° and -10°F were again judged as borderline to fair by the laboratory taste test panel. Hunter L color and Instron texture measurements are being taken on the samples that are taste tested to determine if there is a correlation between instrumental analysis and sensory ratings.

PRODUCT SPECIFICATIONS RESEARCH

For the second time we have begun writing a protocol on an Association of Official Analytical Chemists (AOAC) collaborative study on determining the amount of minced fish in a fish block containing both fillets and minced fish. This study will be done using 5 pound blocks. At the present time it appears that about 1000 pounds of fish flesh will be required. We have made arrangements with a cooperative Gloucester processor to obtain the containers and matching freezing trays. A New Bedford firm will provide exactly the same type of tripolyphosphate used in the first study. Once our part of the protocol is completed, the next step will be to determine how well industry collaborators agree.

CRANKY CONTAMINANTS

Some man made contaminants of the environment cannot be accurately measured in sampled material such as sediments, foods, etc. because the ultraviolet radiation found in the electromagnetic spectrum has a significant reducing effect. Contaminants such as polynuclear aromatic hydrocarbons (PAH)

require that the ultraviolet-blue component of our electromagnetic spectrum be filtered out by sealing all sources of light with special yellow plastic sheeting over apertures such as doors and windows. We even have to replace the fluorescent lighting to screen out UV. The result is that while we are now assured of greater accuracy, it is eerie on dark days to pass by one laboratory section that seems to glow with its own sun.