

MONTHLY REPORT  
ON  
MESA-FUNDED RESEARCH  
JANUARY 1979

by

NATIONAL MARINE FISHERIES SERVICE  
NORTHEAST FISHERIES CENTER  
SANDY HOOK LABORATORY  
HIGHLANDS, NEW JERSEY 07732

Report No. SHL 79-8 (February 1979)

Title of Study: Source of and Environmental Concentrations of Organic Compounds (I.C.7) and Organic Contaminants of Fish, Shellfish, and Plankton (I.E.1)

Principal Investigator: Vincent S. Sdanowicz

Institution or Agency: National Marine Fisheries Service  
Northeast Fisheries Center  
Milford Laboratory  
Milford, Connecticut 06460

Period Reported: January 1979

Planned Activity:

(1) Collection of organisms and sediments for shipment to Seattle NAF.

Actual Accomplishments:

(1) Collections of samples for hydrocarbon collections were made from the R/V Kelez from 1/22-25. Ten samples from five stations were taken comprising sediments (5), sea scallop (3), rock crab (2).

Forecast of Activities for February:

Continue collections using Kelez and Kyma as available.

Title of Study: Water Column Respiration and Release of  
Dissolved Organic Matter from Natural  
Populations of Phytoplankton (II.D.6)

Principal Investigator: Dr. James P. Thomas

Institution or Agency: National Marine Fisheries Service  
Northeast Fisheries Center  
Sandy Hook Laboratory  
Highlands, New Jersey 07732

Period of Report: January 1979

Planned Activity:

- (1) Submit final report.
- (2) Workshop meeting to discuss final report.
- (3) Additional data analysis as per proposal.
- (4) Begin manuscript preparation.

Actual Accomplishments:

- (1) Completed.
- (2) Meeting held Jan. 18 at Lamont.
- (3) Begun.
- (4) Statistical analyses continued.

Planned Activities for February:

- (1) Submit FY79 proposal.
- (2) Continue data analysis as proposed.
- (3) Manuscript preparation.

Title of Study: Environmentally-Induced Mutagenesis, Cytotoxicity and Related Teratogenicity in Planktonic Fish Eggs (III.5)

Principal Investigator: Dr. A. Crosby Longwell

Institution or Agency: National Marine Fisheries Service  
Northeast Fisheries Center  
Milford Laboratory  
Milford, Connecticut 06460

Period of Activity: January 1979

Period Reported: Actual Accomplishments:

(1) Continue sorting and dissection of Atlantic mackerel embryos from the New York Bight, May '78.

(2) Cytological analysis of above embryos.

(3) Prepare Atlantic mackerel eggs from above stations for examination of their outer egg membrane for indications of damage.

(4) Manuscript preparation.

(1) Almost completed - a few thousand eggs dissected.

(2) Underway - see notes below. A few hundred embryos have been analyzed. These are from 18 Bight stations and from 6 development stages.

(3) Underway - a few hundred eggs prepared. Examination and record taking beginning.

(4) A rather extensive manuscript (9 tables, 14 figs., about 60 references) is almost completed. This details all the mackerel egg work for an ICES Biological Monitoring Effects Workshop. Can also serve as a full report to MESA as it is a synthesis of biological, chemical, and statistical studies. From this detailed report another manuscript will be extracted shortly for publication in the open literature.

## Significant Accomplishments:

Analysis of the '78 cruise material is revealing variation similar to that observed for the '74 and '77 years. Interestingly, a station near the transect - Rockaway Inlet - Sandy Hook - is showing again dramatic cell-level differentiation problems in its embryos. In the '77 sample this was associated with high levels of toxic hydrocarbons and low salinity. In the '78 sample salinity was not low at the affected station.

A final report has been prepared detailing methods and the results of the '74 and '77 cruises - biological, chemical, physical, and statistical. This is presently in form for an ICES Pollution Monitoring Workshop and for a final report to MESA on these cruises. This paper, along with the one given last October at a symposium in Japan, will be forwarded to the MESA office shortly. Outline of the ICES paper is:

### Cytologic, Cytogenetic and Embryologic Conditions of Early-stage Atlantic Mackerel Eggs in Sea Surface Waters, Natural and Un-natural Stress Factors, and Monitoring Biological Effects of Ocean Pollution

Rationale for Cytologic-Embryologic Study of Fish Eggs in Nature

Introduction to Cytologic-Embryologic Study of Atlantic Mackerel Eggs from Surface Waters of the New York Bight

Part I - Methods Adaptation and New Developments for Cytologic Examination of Early-stage Fish Eggs as Sampled in Plankton or in Laboratory Experimentation

Part II - Cytological State of a May '74 Collection of Early-stage Atlantic Mackerel Eggs from Surface Waters of the New York Bight

General results of a cytologic study of the early-stage Atlantic mackerel eggs

Variation in cytological state of the early-stage Atlantic mackerel eggs as sampled from different areas of the New York Bight - May '74

Part III - Examining Relationships Between Cytologic, Cytogenetic and Embryologic Measures of Mackerel Egg Health, Heavy Metal Load of the Water, Toxic Hydrocarbon Load of the Plankton, and Physical Parameters

Sampling protocol and summary results of several '77 cruise analyses

Examination of associations between environmental  
measures and cytologic-embryologic measures of  
Atlantic mackerel egg health

Discussion

9 Tables

About 60 references.