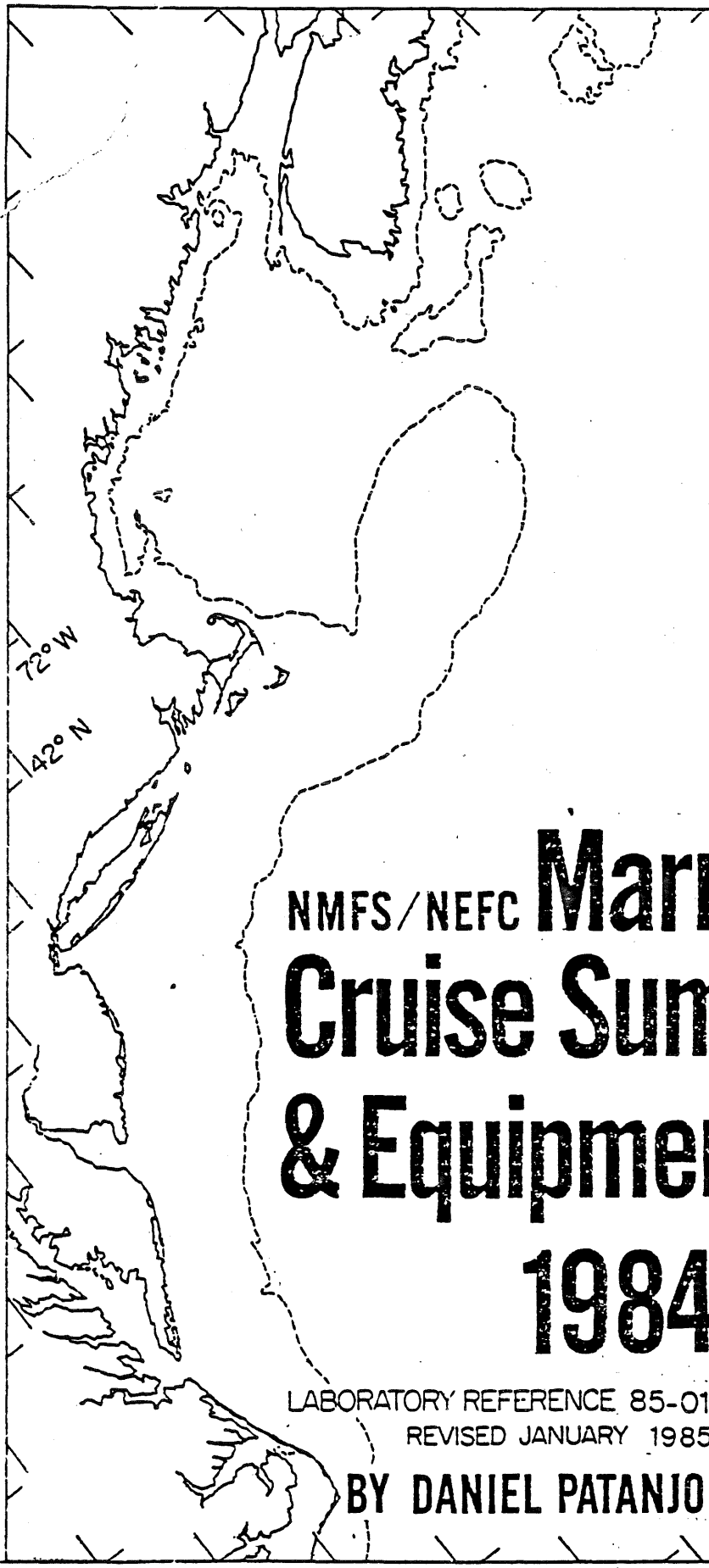


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# NMFS/NEFC Marmap Cruise Summaries & Equipment List 1984

LABORATORY REFERENCE 85-01
REVISED JANUARY 1985

BY DANIEL PATANJO

NATIONAL MARINE FISHERIES SERVICE · NORTHEAST FISHERIES CENTER · WOODS HOLE LABORATORY

**UNITED STATES DEPARTMENT OF COMMERCE**
**National Oceanic and Atmospheric Administration**
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Center
Woods Hole Laboratory
Woods Hole, Massachusetts 02543

March 6, 1985 F/NEC1:DP

TO: Distribution

FROM: Daniel Patanjo

SUBJECT: NMFS/NEFC MARMAP Cruise Summaries and Equipment List

This report is a 1984 update to the 1976-1983 five-part summary of the operations of all vessels used by NMFS/NEFC.

Please contact me about any errors or missing information you may be aware of, also let me know if you wish more copies.

As you will notice, the equipment list is null - if you wish or know of some equipment that should be listed, please let me know.

The 1981-1984 summary and equipment list is still available.

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VESSEL: ALBATROSS IV CRUISE: 84-01

DATES: 13-24 February 1984

DAYS AT SEA: 12 STATIONS: 136

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the seasonal distribution and relative abundance of fish species with particular reference to Atlantic herring; (2) collect biological samples; and (3) collect hydrographic and meteorological samples and data.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Malcolm Silverman, Chief Scientist
Eva Montiero
John Nicolas
Susan Avtges
Uvetta Dozier
Charles Bell

National Marine Fisheries Service, NEFC, Gloucester, MA

Tracey McKenzie

University of Maine, Orono, ME

Katherine Wynne
Lisa Debruyckere

Eastern Nazarene College, Quincy, MA

Philip Mclaren

Manomet Bird Observatory, Manomet, MA

Michael Payne

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | | |
| BOTTLE CAST | 44 | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | 44 | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 136 | | | |
| FISH SAMPLES | YES | | | |

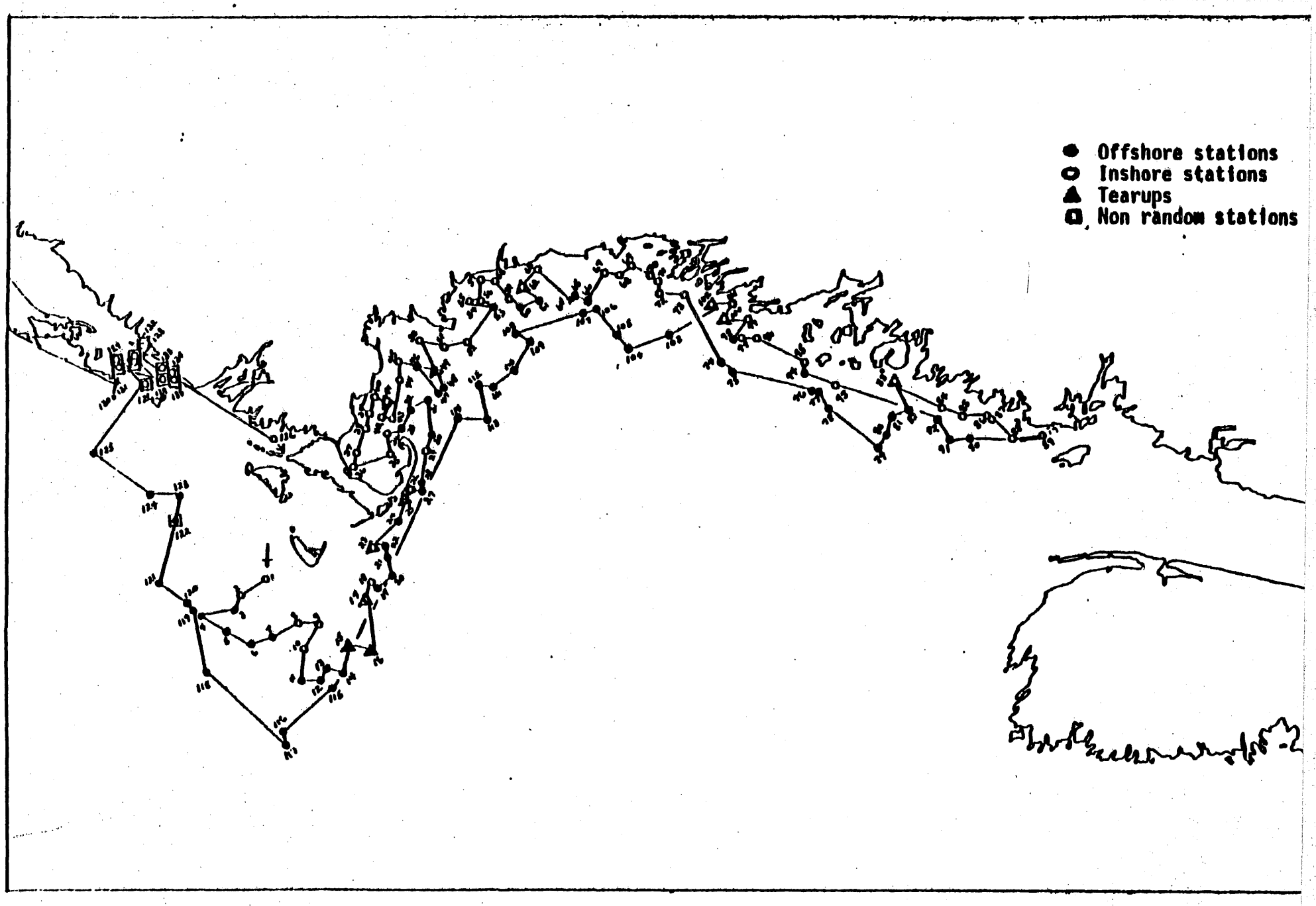



Figure 1. Station Locations for R/V ALBATROSS IV Cruise 84-01 Trawl Survey for Atlantic Herring, Atlantic Mackerel and Hydroacoustic Experimentation, during 13-24 February 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-02

DATES: 29 February-16 March 1984 | PART I

DAYS AT SEA: 17 | STATIONS: 175

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the spring distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Donald Flescher, Chief Scientist
Lorraine Belfiore
Harold Foster
Brian Hayden
Ellen Johnson
Philip LeBlanc
William Michaels
Andrew Thomas

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Alcye Wells

Virginia Institute of Marine Sciences, Gloucester Point, VA

*Gene Burreson
Dennis Thoney
**Michael Armstrong

National Environmental Satellite Data Service, Washington, DC

Michael Dowgiallo

Manomet Bird Observatory, Manomet, MA

Robert Bowman

*Debarked vessel on 9 March 1984 off Virginia Beach, VA
**Embarked vessel on 9 March 1984 off Virginia Beach, VA

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | 44 | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | 127 | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | 175 | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 175 | | | |
| FISH SAMPLES | YES | | | |

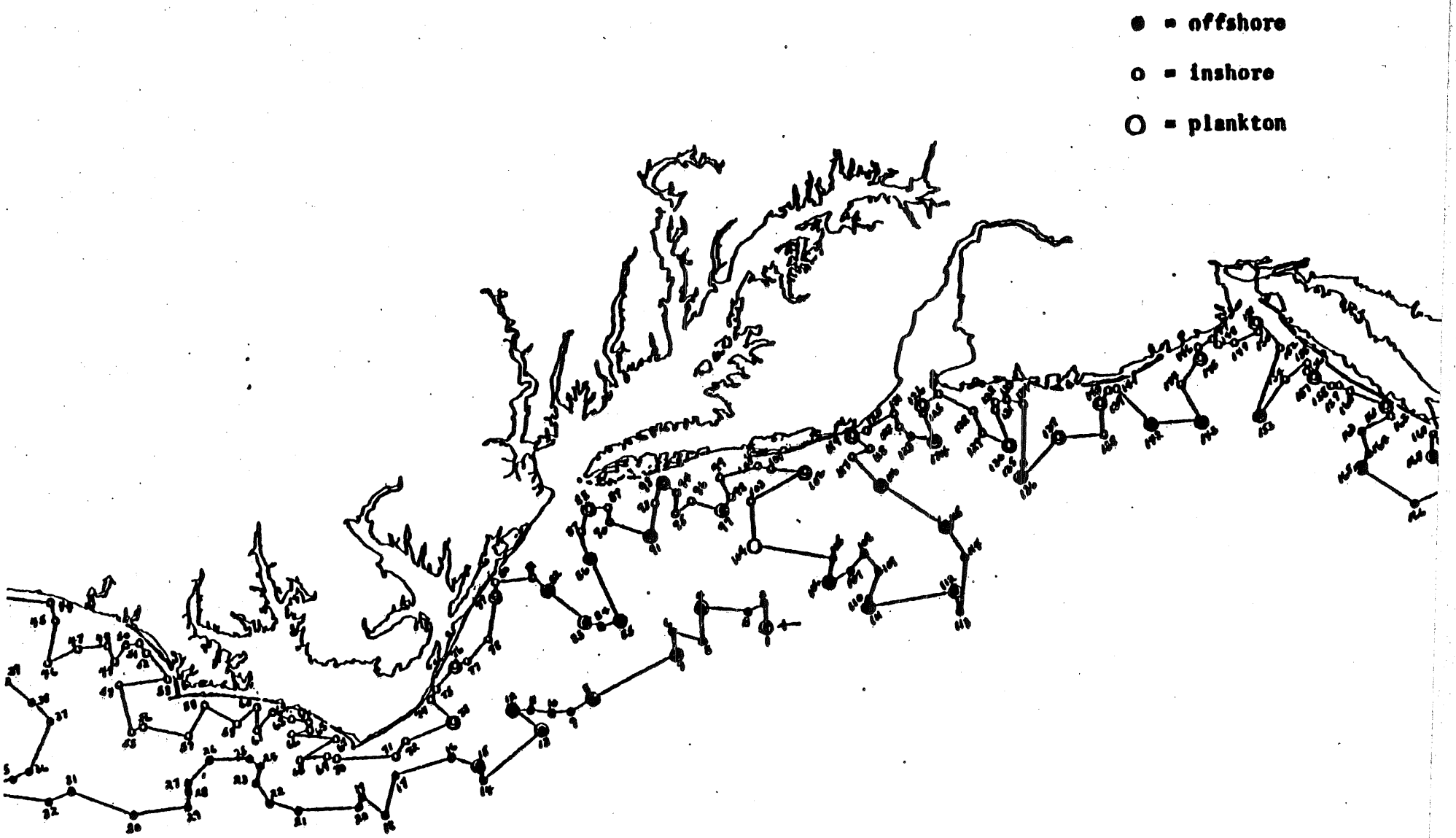



Figure 1. Station locations and cruise track for R/V ALBATROSS IV Cruise 84-02 (I) Spring Bottom Trawl Survey, during 29 February-16 March 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-02

DATES: 19-29 March 1984 | PART II

DAYS AT SEA: 11 | STATIONS: 93

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the spring distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Malcolm Silverman, Chief Scientist
Peter Auditore, Watch Chief 6-12
Margaret McBride, Watch Chief 12-6
Ray Bowman
Bill Golden
Ellen Johnson
Dijohn Magruder

National Marine Fisheries Service, NEFC, Gloucester, MA

Christopher Mantzaris

National Marine Fisheries Service, NEFC, Narragansett, RI

Jerome Prezioso

National Marine Fisheries Service, NEFC, Milford, CT

David Nelson
George Sennefelder

National Marine Fisheries Service, NEFC, Oxford, MD

Sharon McLean

Northeastern University, Boston, MA

Steven Bailey

Manomet Bird Observatory, Manomet, MA

Peter Stevick

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | 49 | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | 93 | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | 93 | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | | 93 | | |
| FISH SAMPLES | | YES | | |

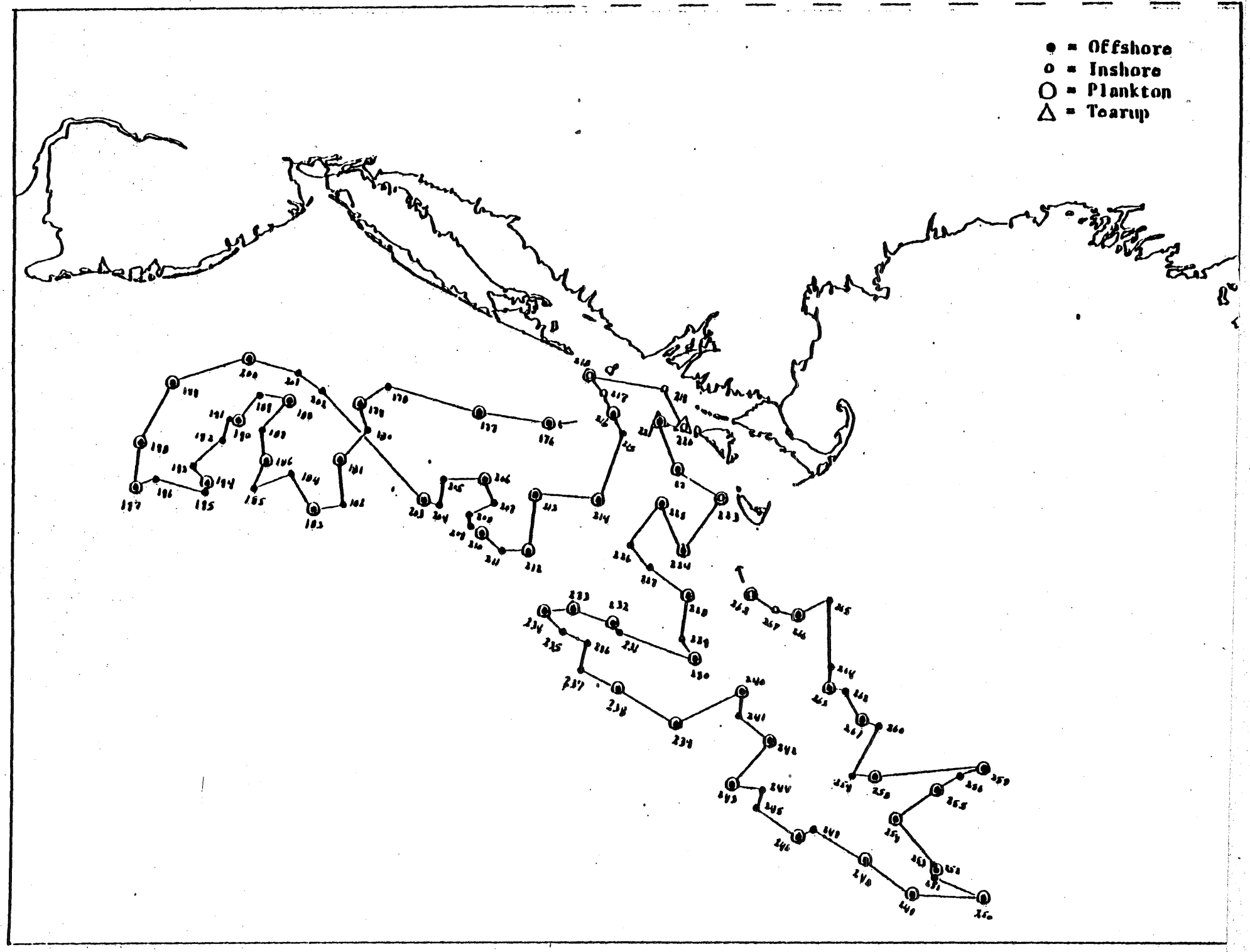



Figure 1 Station locations for R/V ALBATROSS IV Cruise 84-02 (II) Spring Bottom Trawl Survey, during 19-29 March 198

VESSEL: ALBATROSS IV | CRUISE: 84-02

DATES: 2-13 April 1984 | PART III

DAYS AT SEA: 12 | STATIONS: 55

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the spring distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Donald Flescher, Chief Scientist
Maurice Crawford
Brenda Fields
Raymond Maurer
Eva Montiero
John Nicolas
Gary Shepherd
Joel Sohn
Susan Wigley

National Marine Fisheries Service, NEFC, Narragansett, RI

Joseph Kane

National Marine Fisheries Service, NEFC, Milford, CT

Joseph Pereira

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

John Ziskowski

Manomet Bird Observatory, Manomet, MA

*Scott Marion

Eastern Nazarene College, Quincy, MA

*Daniel Chung

*Debarked vessel on 7 April 1984 in Woods Hole, MA.

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | 28 | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | 55 | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | 55 | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | | | 55 | |
| FISH SAMPLES | | | YES | |

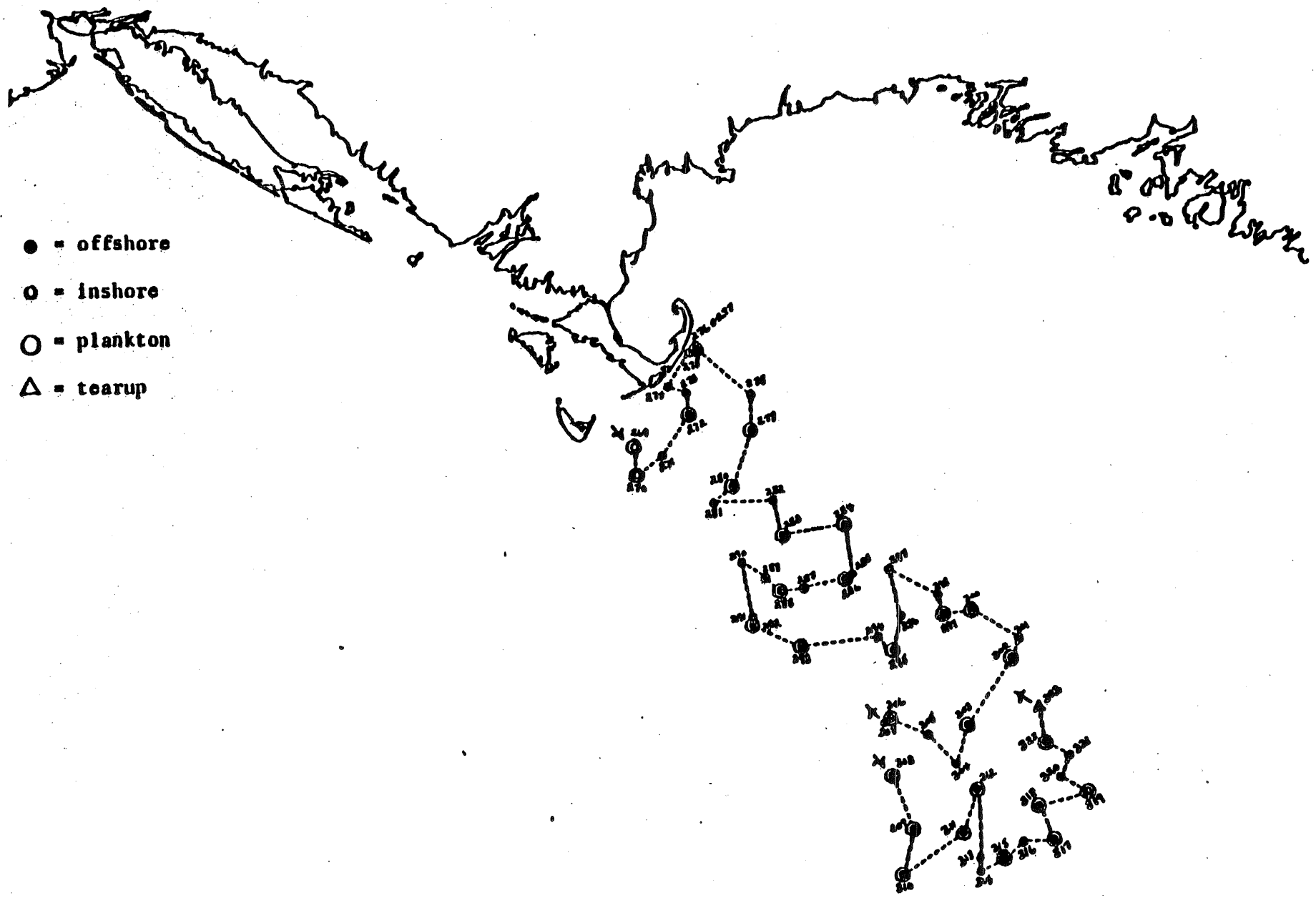



Figure 1. Station locations and cruise tracks for R/V ALBATROSS IV Cruise 84-02 (III) Spring Bottom Trawl Survey, during 2-13 April 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-02

DATES: 16-27 April 1984 | PART IV

DAYS AT SEA: 12 | STATIONS: 84

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the spring distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton, and (6) test and evaluate a new acoustic link monitoring system for the survey bottom trawl.

## SCIENTIFIC PERSONNEL

6-24 April 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Loretta O'Brien, Chief Scientist
Linda Despres-Patanjo
Ralph Mayo
Wendy Gabriel
Edward Cohen
Jay Burnett
Lorraine Belfiore
Elizabeth Kenney
Cheryl Windsor
Donald Mack

National Marine Fisheries Service, NEFC, Narragansett, RI

Jerome Prezioso

National Marine Fisheries Service, NEFC, Milford, CT

Donna Ludke

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Myron Silverman

Manomet Bird Observatory, Manomet, MA

Hollie Duval

25-27 April 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Thomas Azarovitz, Chief Scientist
Patrick Twohig
Charles Byrne
Malcolm Silverman
Joel Sohn
Warren Handwork

National Marine Fisheries Service, NEFC, Narragansett, RI

John Green

Manomet Bird Observatory, Manomet, MA

Hollie Duvaul

Mass. Maritime Academy, Buzzards Bay, MA

Robert Mont

United States Navy, Charleston, SC

Robert Abel

## DATA COLLECTED

| | IV PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | 34 | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | 84 | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | IV PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | 84 | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 84 | | | |
| FISH SAMPLES | YES | | | |

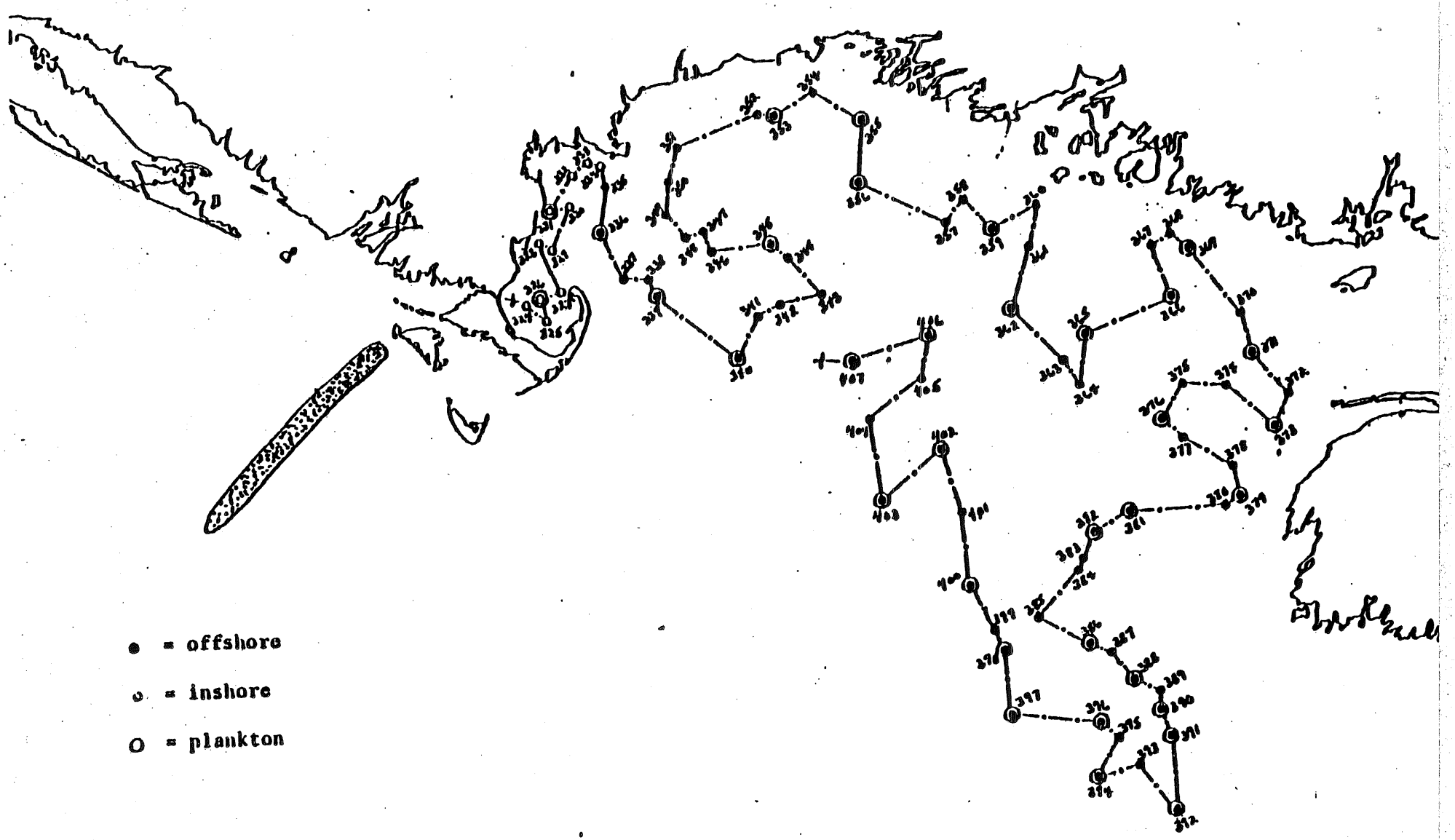



Figure 1. Station locations and cruise track for R/V ALBATROSS IV Cruise 84-02 (IV) Spring Bottom Trawl Survey, during 16-27 April 1984. Tows were made in the area from 25-27 April to test the acoustic link.

VESSEL: ALBATROSS IV | CRUISE: 84-03

DATES: 7-18 May; 21 May-3 June | PART I, II

DAYS AT SEA: 26 | STATIONS: 181

## CRUISE OBJECTIVES

This cruise is one of a series of MARMAP I surveys conducted annually to monitor seasonal changes in distribution and abundance of fish eggs and larvae, zooplankton and phytoplankton, and to collect oceanographic and primary productivity data.

## SCIENTIFIC PERSONNEL

**National Marine Fisheries Service, NEFC, Sandy Hook, NJ**

| | |
|---|---|
| John Sibunka, Chief Scientist | Parts I, II |
| Donald McMillan | Parts I, II |
| Paul Lyons | Parts I, II |
| Michael Bandera | Part I |
| Celeste McCuish | Part II |

**National Marine Fisheries Service, NEFC, Woods Hole, MA**

| | |
|---|---|
| Ellen Johnson | Parts I, II |
| Dana Densmore | Parts I, II |
| Daniel Patanjo | Parts I, II |
| Paul Jessen | Part I |
| Catherine Jewell | Part II |

**National Marine Fisheries Service, NODC, Woods Hole, MA**

| | |
|---|---|
| George Heimiedinger | Part I |

**National Marine Fisheries Service, NODC, Narragansett, RI**

| | |
|---|---|
| Jacqueline Anderson | Part II |

**Univesity of Rhode Island, Kingston, RI**

| | |
|---|---|
| Mark Terceiro | Part I |

**Darien High School, Darien, CT**

| | |
|---|---|
| Celeste Richardson | Part I |
| Kimberly Raleigh | Part I |

**Manomet Bird Observatory, Manomet, MA**

| | |
|---|---|
| Scott Marion | Part I |
| Lisa Hill | Part II |

## CRUISE STATISTICS

| | Part I | Part II | Total |
|---|---|---|---|
| Sea days | 12 | 14 | 26 |
| Plankton/hydrographic stations | 83 | 98 | 181 |
| Primary productivity stations | 16 | 22 | 38 |
| 0.61-meter bongo tows (.505/.333-millimeter) | 81 | 97 | 178 |
| 0.20-meter bongo tows (.253/.165-millimeter) | 14 | 16 | 30 |
| 0.20-meter bongo tows (.165/.053-millimeter) | 15 | 21 | 36 |
| 0.5 x 1-meter neuston tows | 81 | 97 | 178 |
| Haedrich neuston tows | 28 | 23 | 51 |
| Weather observations | 83 | 98 | 181 |
| Hydrocasts | 83 | 98 | 181 |
| Number of Niskin bottles | 751 | 1154 | 1905 |
| Bottles with reversing thermometers | 683 | 1112 | 1795 |
| Salinity samples | 751 | 1154 | 1905 |
| $H_2{}^{18}O$ samples | 751 | 1153 | 1904 |
| Chlorophyll samples | 675 | 1012 | 1687 |
| Dissolved oxygen samples | 296 | 408 | 704 |
| Phytoplankton samples (M-C) | 81 | 92 | 173 |
| Surface temperature observations | 83 | 98 | 181 |
| Secchi temperature observations | 44 | 36 | 80 |
| XBT drops | 23 | 19 | 42 |
| Marine mammal sightings | 21 | 21 | 42 |
| Number of bird species sighted | 18 | 14 | 14 |

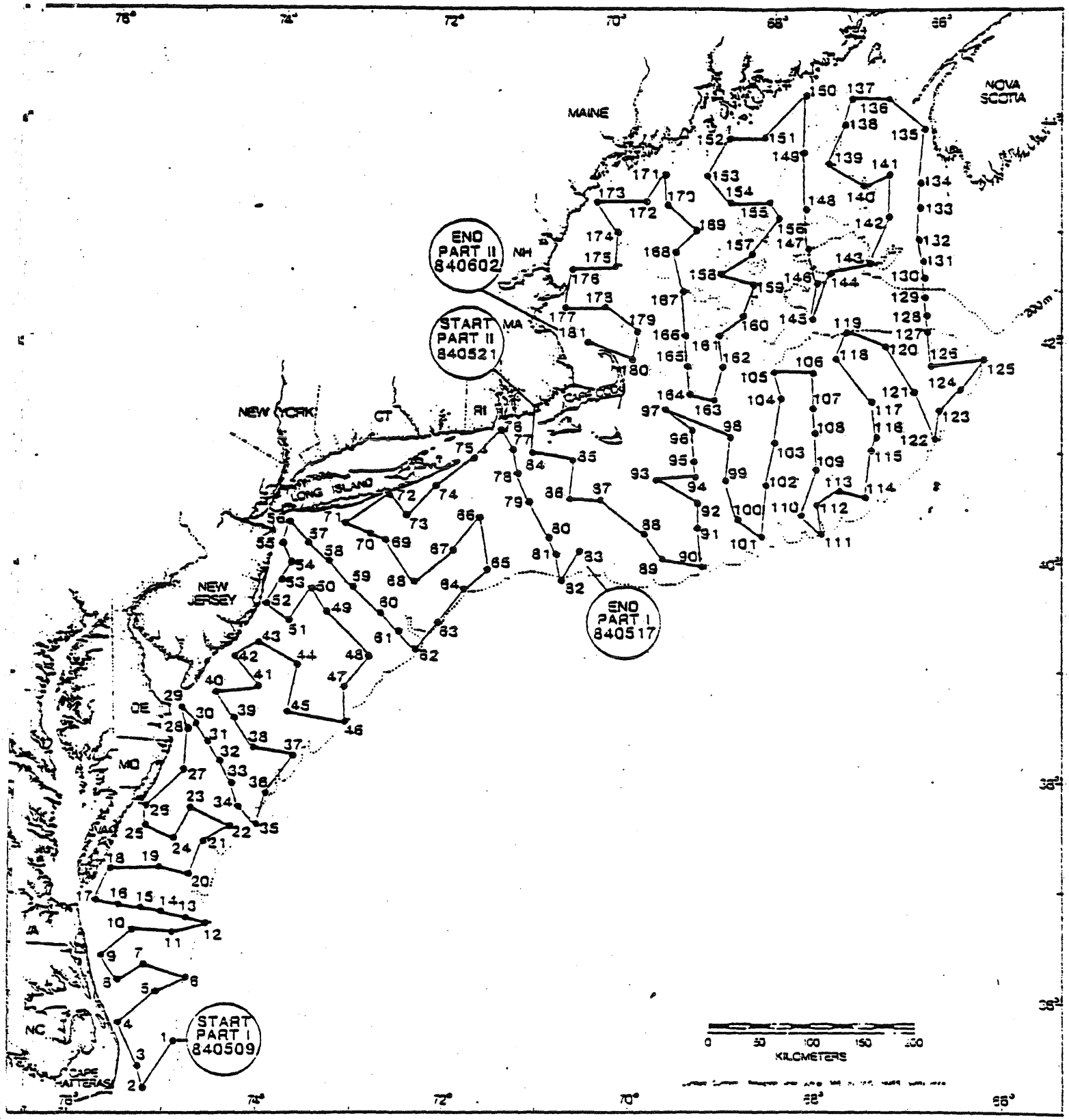



Figure 1. Station locations numbered consecutively for R/V ALBATROSS IV Cruise 84-03 (I-II), MARMAP I: Ichthyoplankton-Zooplankton, Oceanographic and Primary Productivity Survey during 7 May-3 June 1984.

VESSEL: ALBATROSS IV CRUISE: 84-04/05

DATES: 5-6 June, 11-22 June 1984

DAYS AT SEA: 14 STATIONS: 77

## CRUISE OBJECTIVES

The objectives of cruise 84-04 was to test midwater gear and related instrumentation in preparation for the cruise 84-05. The objectives of cruise 84-05 were to: (1) determine the distribution and abundance of haddock and cod post-larvae and young juveniles, and (2) conduct site studies to determine their vertical distribution, diurnal variability, predator-prey relations and vulnerability to various sampling gear.

## SCIENTIFIC PERSONNEL

Cruise 84-04, 5-6 June 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

David Potter, Chief Scientist
R. Gregory Lough
Charles Byrne
Philip LeBlanc
Peter Auditore
Hannah Goodale
Nancy Andrade
Elaine Crocker
Antonette Erol
Lisa Merritt

Cruise 84-05, 11-22 June 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

R. Gregory Lough, Chief Scientist
David Potter
George Bolz
Philip LeBlanc
Peter Auditore
Harold Merry
Charles Byrne
Donald Mack
Edward Cohen

National Marine Fisheries Service, NEFC, Narragansett, RI

Geoffrey Laurence
Jack Green

National Marine Fisheries Service, NEFC, Oxford, MD

Joel Bodammer

Manomet Bird Observatory, Manomet, MA

Robert Coran

## CRUISE STATISTICS 84-05

| | | |
|---|---|---|
| XBT Drops | 39 | |
| MOCNESS 10-meter hauls | 93 | |
| Boothbay Depressor hauls | 3 | |
| IYGPT midwater hauls | 2 | |
| Standard Bottom Trawl with cookies | 8 | |
| Standard Bottom Trawl with rollers | 1 | |
| Bird and Marine Mammal Observations | 55 | hours |
| Stomach-Food Habits Analysis | 621 | |
| Special Collections of Fish: | | |
| Otolith age and growth | 118 | |
| Biochemical content | 163 | |
| Pathobiology | 98 | |
| Monoclonal Antibody Analysis | 6 | |

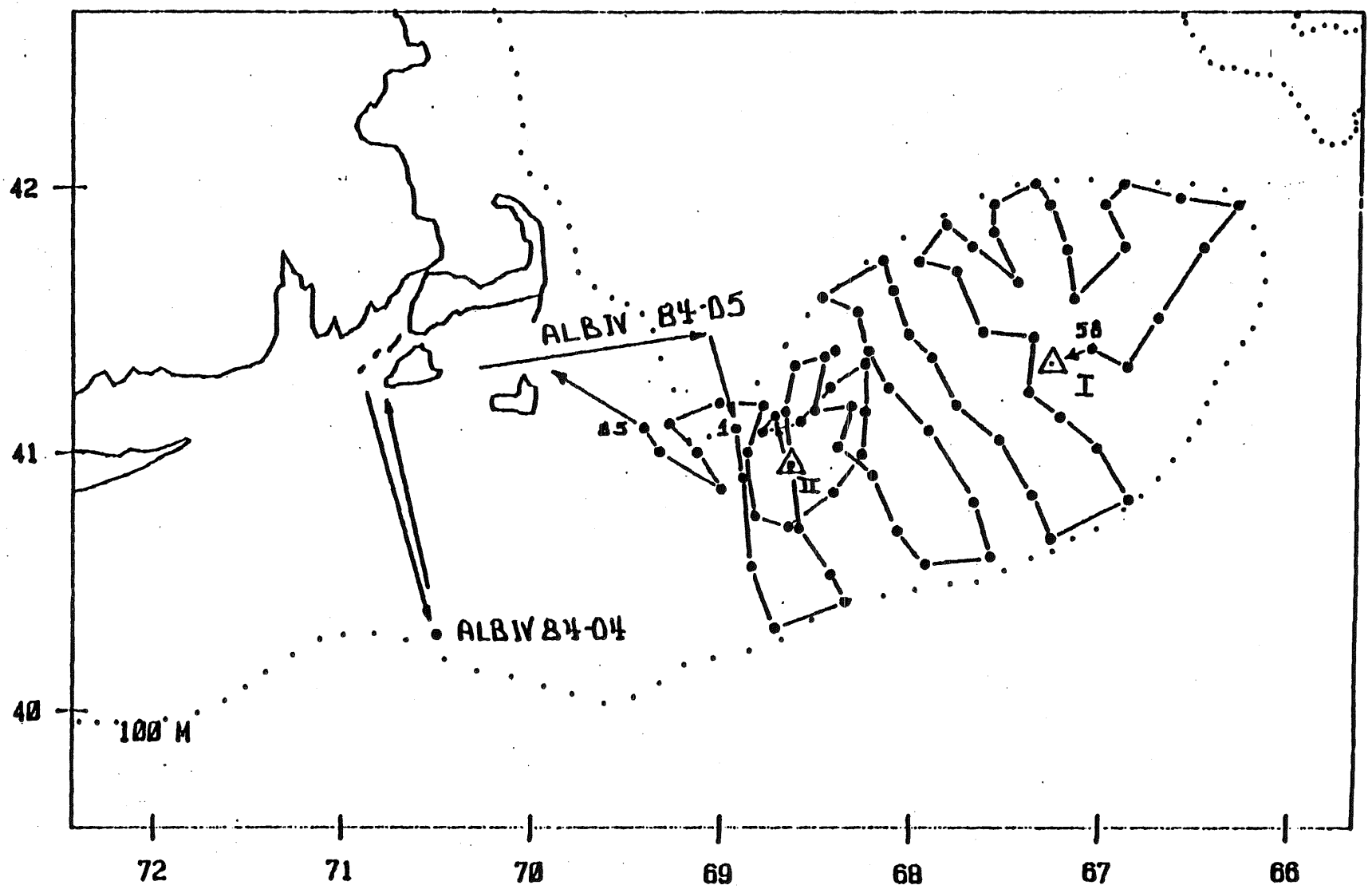



Figure 1. Station locations and cruise track for R/V ALBATROSS IV Cruise 84-04 Gear Testing, during 5-6 June 1984 and Cruise 84-05 Juvenile Fish Survey, during 11-22 June 1984.

VESSEL: ALBATROSS IV CRUISE: 84-06

DATES: July 2-19

DAYS AT SEA: 17 STATIONS: 125

## CRUISE OBJECTIVES

The survey is part of a continuing series that makes collections and measurements relative to assessing the health of the ocean's biota, especially fishery resources. Specific objectives were: (1) to collect select indicator species for examination of certain biochemical, physiological, pathological, and chemical contamination variables that are related to the organisms' health; (2) to collect water samples from selected locations in the New York Bight to monitor salinity, dissolved oxygen, temperature; (3) to collect benthic samples for pathology monitoring, sediment analysis (physical and chemical), the presence of certain types of bacteria (*Vibrio* sp. and *Clostridium* sp.), and benthic community structure; and (4) to conduct a MARMAP I bongo net survey for the abundance and distribution of bluefish eggs and larvae in the Middle Atlantic Bight.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Frank Steimle, Chief Scientist
David Radosh
Doris Finan
Steven Fromm
Vincent Zdanowicz

National Marine Fisheries Service, NEFC, Milford, CT

Donna Luedke
Rene Mercaldo
Diane Rusanowsky
Renee Coulombe

National Marine Fisheries Service, NEFC, Woods Hole, MA

Ellen Johnson

Drew University, Madison, NJ

Frank Bonifacio
Ann West

Manomet Bird Observatory, Manomet, MA

Lisa Hill

Rutgers University, New Brunswick, NJ

Janet Allison

## RESULTS

One hundred and twenty-five stations were completed during the cruise. An inventory of the samples collected or measurements made is as follows:

1. Obtained from water samples:

   24 salinity samples at 24 stations
   40 dissolved oxygen samples at 40 stations
   42 top and bottom water samples for bacteriology

2. Obtained from grab or dredge samples:

   24 samples for bacteriology
   121 sediment cores for trace metals at 20 stations
   85 sediment cores for grain size analysis at 17 stations
   85 benthic macrofauna samples at 17 stations
   8 collections of benthic macrofauna for contaminant analysis

3. Obtained from trawl collections:

   551 winter flounder examined for *Glugea stephani* infections
   53 fish samples for stomach content analysis
   40 winter flounder livers for trace metal analysis
   86 scallop viscera for trace metal analysis
   227 winter flounder for physiology and biochemistry
   9 yellowtail flounder for physiology and biochemistry
   37 windowpane flounder for physiology and biochemistry
   80 scallops for physiology and biochemistry
   270 serum samples from flounders and hakes for immunology
   5 collections of deepwater fauna for calorimetry
   3 samples of flounder gills for bacteriology

4. A total of 92 hours of marine bird and mammal observations.

5. Obtained from the bongo vertical oblique tow:

   70 samples each for both nets
   4 samples of zooplankton for bacteriology
   2 samples of zooplankton for calorimetry

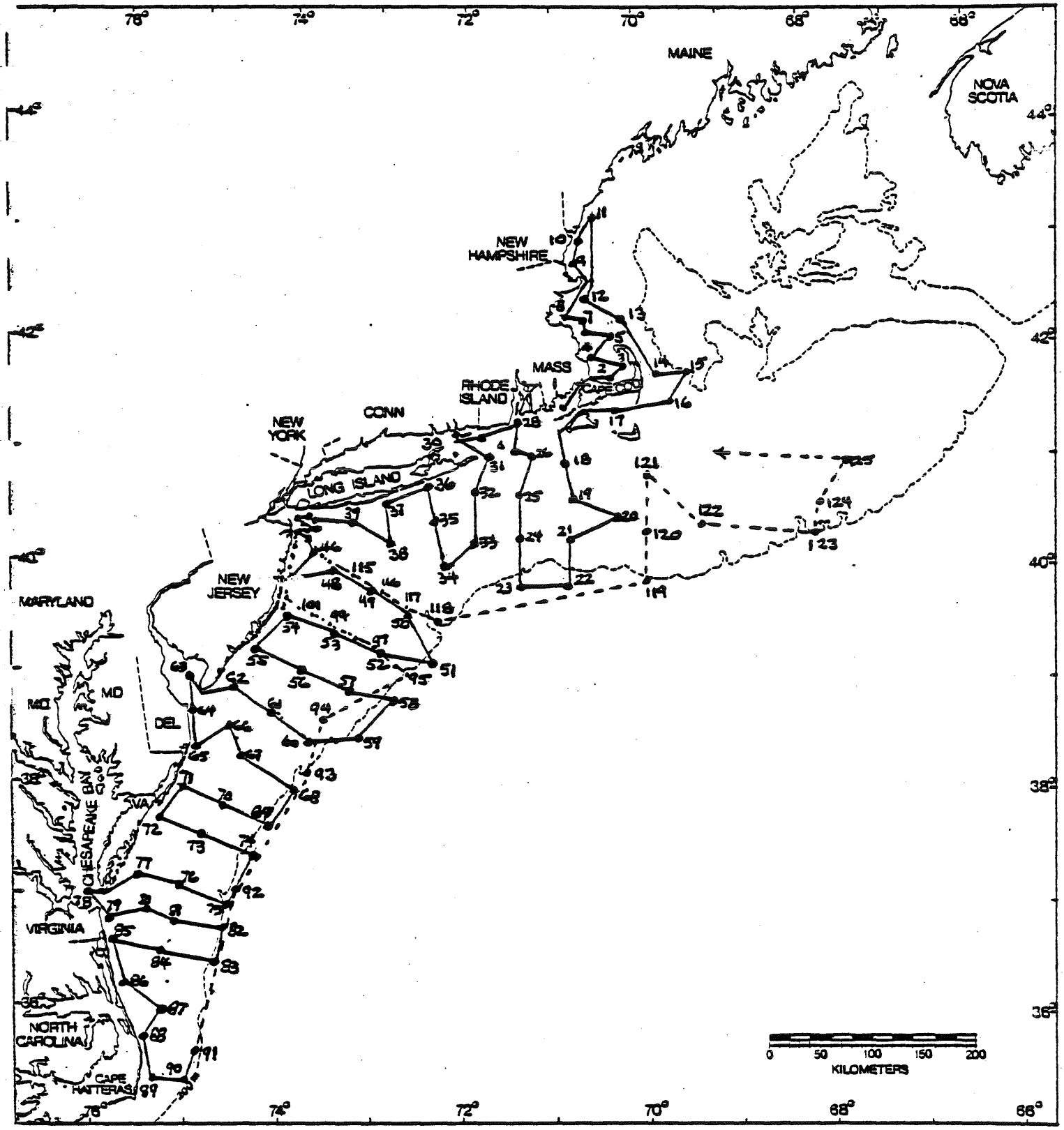



Figure 1. Cruise track and consecutive station locations for R/V ALBATROSS IV Cruise 84-06, Northeast Monitoring Program, Biological Effects Survey, during 2-19 July 1984.

VESSEL: ALBATROSS IV

CRUISE: 84-07

DATES: 24 July-3 August 1984

PART I

DAYS AT SEA: 12

STATIONS: 220

## CRUISE OBJECTIVES

The objectives of the survey were to (1) determine the distribution and relative abundance of the sea scallop, *Placopecten magellanicus*; (2) collect biological samples; and (3) determine the distribution and relative abundance of fish eggs and larvae.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Linda Despres-Patanjo, Chief Scientist
Donald Flescher
Eva Montiero
Bernice Kingsley
Ira Palmer
Uvetta Dozier
Ellen Johnson
Charles Ball
Maurice Crawford
Patricia Toomer

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Celeste McCuish

Manomet Bird Observatory, Manomet, MA

James Laurita

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL | | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| .61 cm BONGO | 45 | | | | SALINITY SAMPLES | 67 | | | |
| .20 cm BONGO | | | | | OXYGEN SAMPLES | | | | |
| .61 cm NEUSTON | | | | | NUTRIENT SAMPLES | | | | |
| .20 cm NEUSTON | | | | | CHLORPHYLL SAMPLES | | | | |
| HAEDRICH | | | | | PRIMARY PRODUCTIVITY | | | | |
| XBT | | | | | DROGUES | | | | |
| BOTTLE CAST | | | | | SECCHI DISC | | | | |
| CTD CAST | | | | | TRAWLS | | | | |
| CURRENT METERS | | | | | FISH SAMPLES (SCALLOPS) | 6,233 | | | |

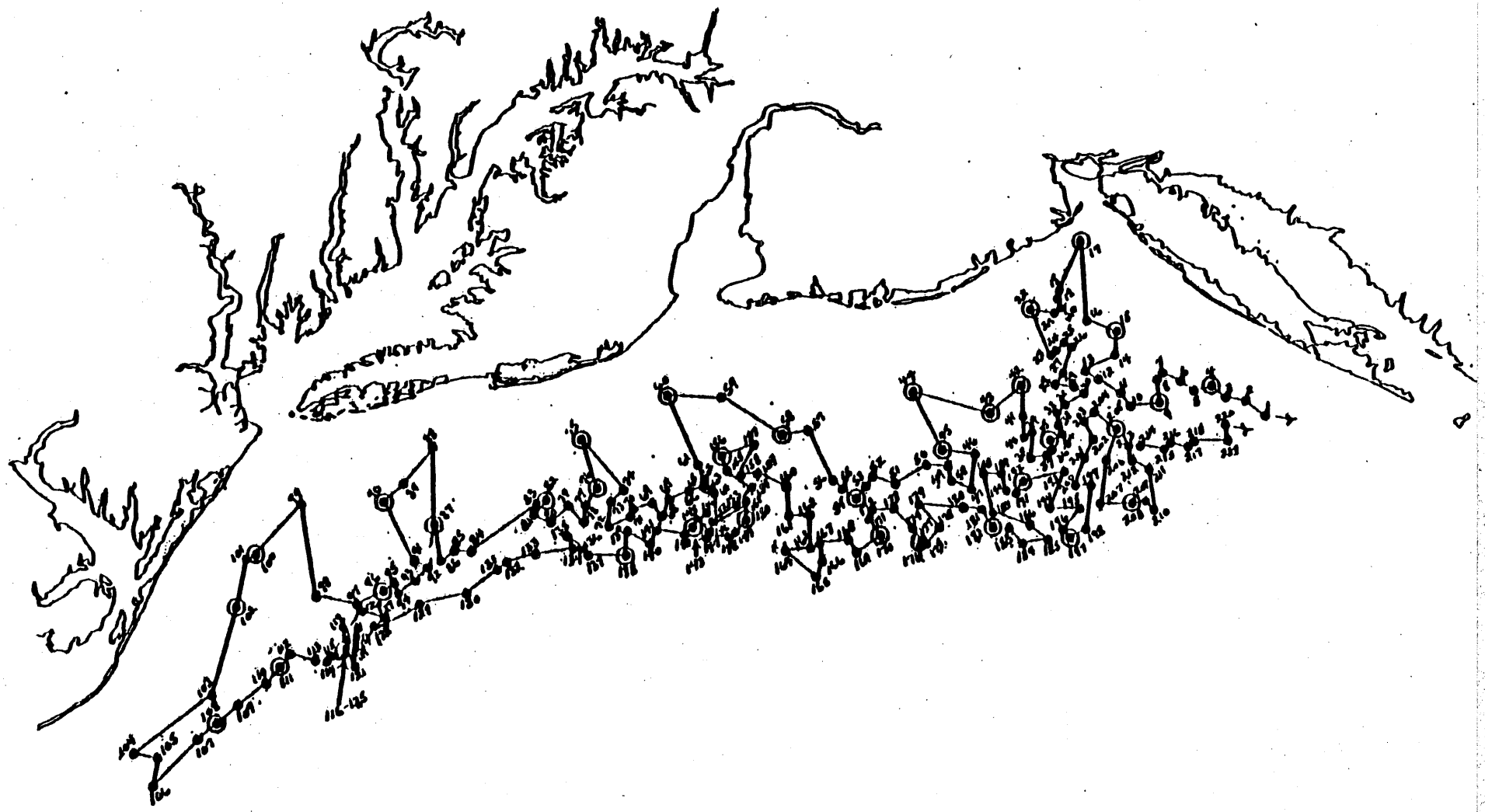


Figure 1. Station locations and cruise tract for the R/V ALBATROSS IV Cruise 84-07 (I) Sea Scallop Survey, during 24 July-3 August 1984.

VESSEL: ALBATROSS IV

CRUISE: 84-07

DATES: 6-16 August 1984

PART II

DAYS AT SEA: 11

STATIONS: 240

## CRUISE OBJECTIVES

The objectives of the survey were to (1) determine the distribution and relative abundance of the sea scallop, *Placopecten magellanicus*; (2) collect biological samples; and (3) determine the distribution and relative abundance of fish eggs and larvae.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Loretta O'Brien, Chief Scientist
Phil Chase
Rose Concha
Ellen Johnson
Susan Wigley
Lorraine Belifore
Dijohn McGruder
Scott Mosley
Melinda Grace

National Marine Fisheries Service, NEFC, Narragansett, RI

Patricia Michalik

Herbert Lehman University, Brooklyn, NY

John Klonowski

School of Oceanography, University of Rhode Island, Narragansett, RI

Li Chiang Ong

Manomet Bird Observatory, Manomet, MA

James Laurita

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | 51 | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | 70 | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | | | | |
| FISH SAMPLES (SCALLOPS) | | 39,211 | | |

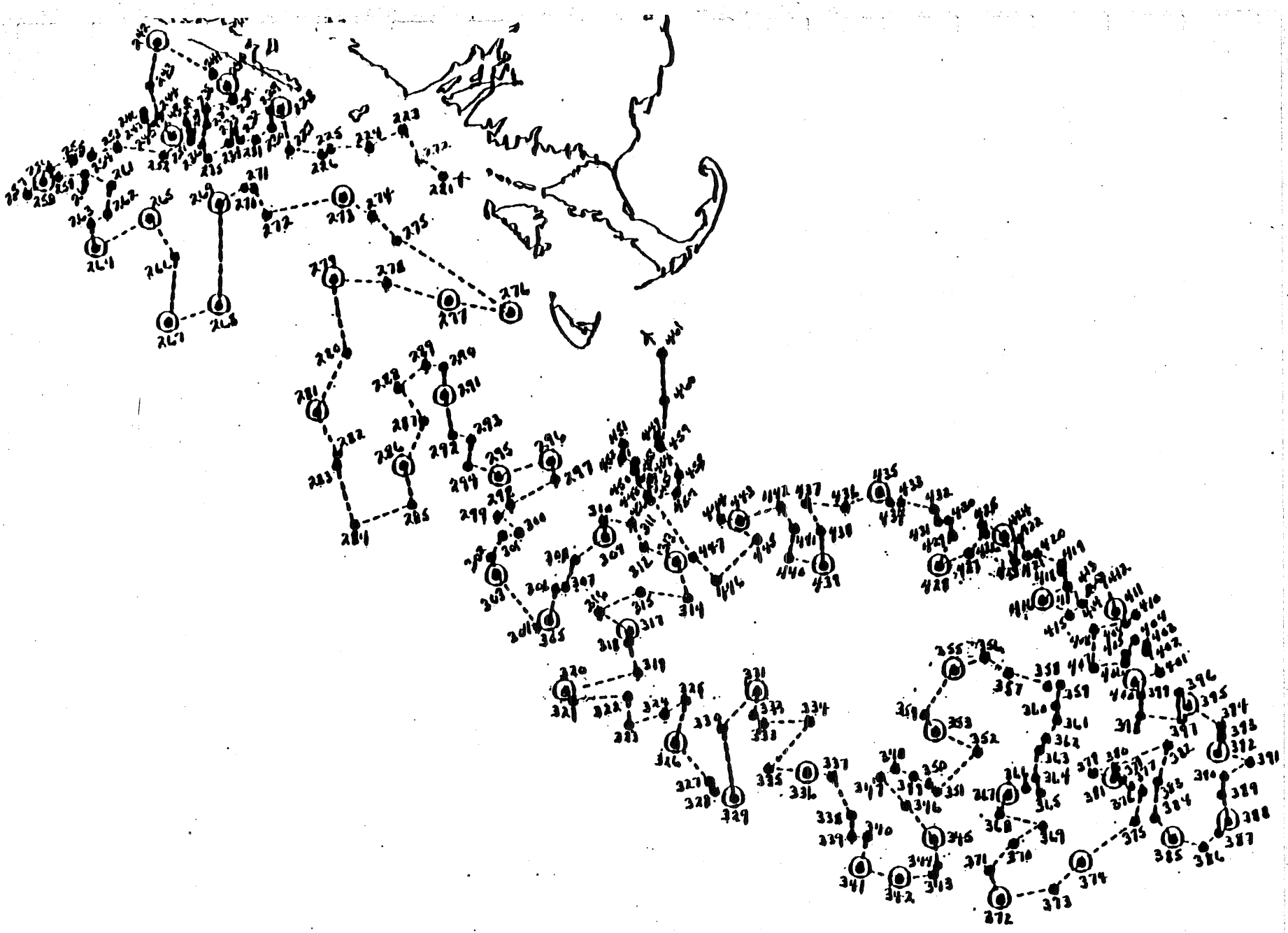


Figure 1. Station locations and cruise tract for the R/V ALBATROSS IV Cruise 84-07 (II) Sea Scallop Survey, during 6-16 August 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-07

DATES: 20-31 August 1984 | PART III

DAYS AT SEA: 12 | STATIONS: 194

## CRUISE OBJECTIVES

The objectives of the survey were to (1) determine the distribution and relative abundance of the sea scallop, *Placopecten magellanicus*, and the Iceland scallop, *Chlomys islandica*; (2) determine the distribution and relative abundance of juvenile Atlantic cod, *Gadus morhua* and haddock, *Melanogrammus aeglefinus*; (3) evaluate variations in catch rates of an eight foot scallop dredge fitted with rock chains,; (4) determine the distribution and relative abundance of fish eggs and larvae; and (5) collect biological samples for studies on samples obtained from the Gulf of Maine collected from deep water areas of possible or ptential commercial importance.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

John Nicolas, Chief Scientist
John Burnett
Brian Wells
Elizabeth Kenney
Wendy Sabatini

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

John Sibunka
Myron Silverman

National Marine Fisheries Service, NEFC, Oxford, MD

Frederick Kern

National Marine Fisheries Service, NEFC, Milford, CT

Tracy Cole

Southern Massachusetts University, Dartmouth, MA

Timothy Riley

University of Connecticut, Storrs, CT

Steven Tettlebach

Manomet Bird Observatory, Manomet, MA

Scott Smith

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | 22 | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HARDRICH | | | | |
| XBT | | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | 34 | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS (36 YANKEE OTTER) | | | 24 | |
| FISH SAMPLES | | | | |

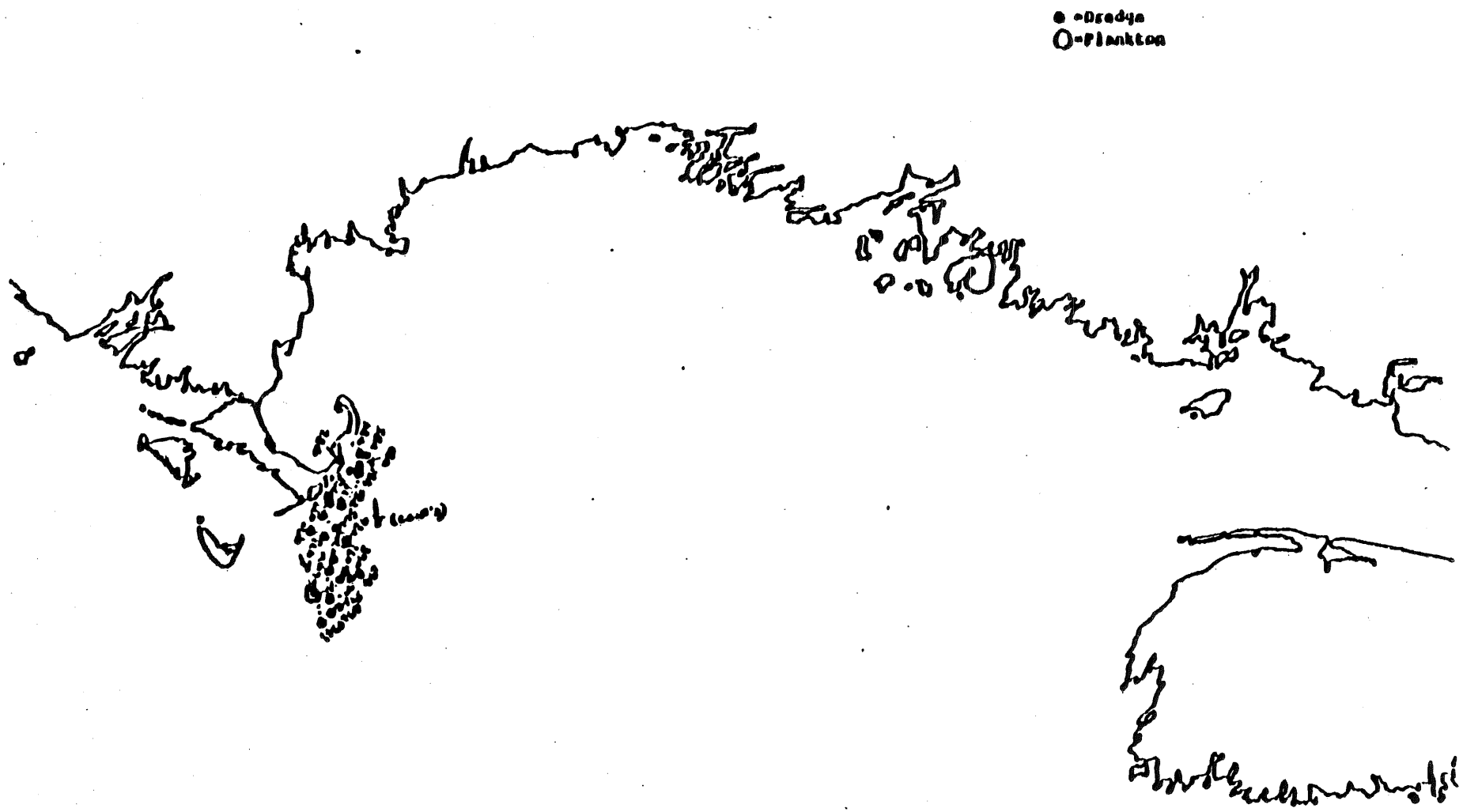



Figure 1. Station locations and cruise tract for the R/V ALBATROSS IV Cruise 84-07 (III) Sea Scallop Survey, during 20-31 August 1984.

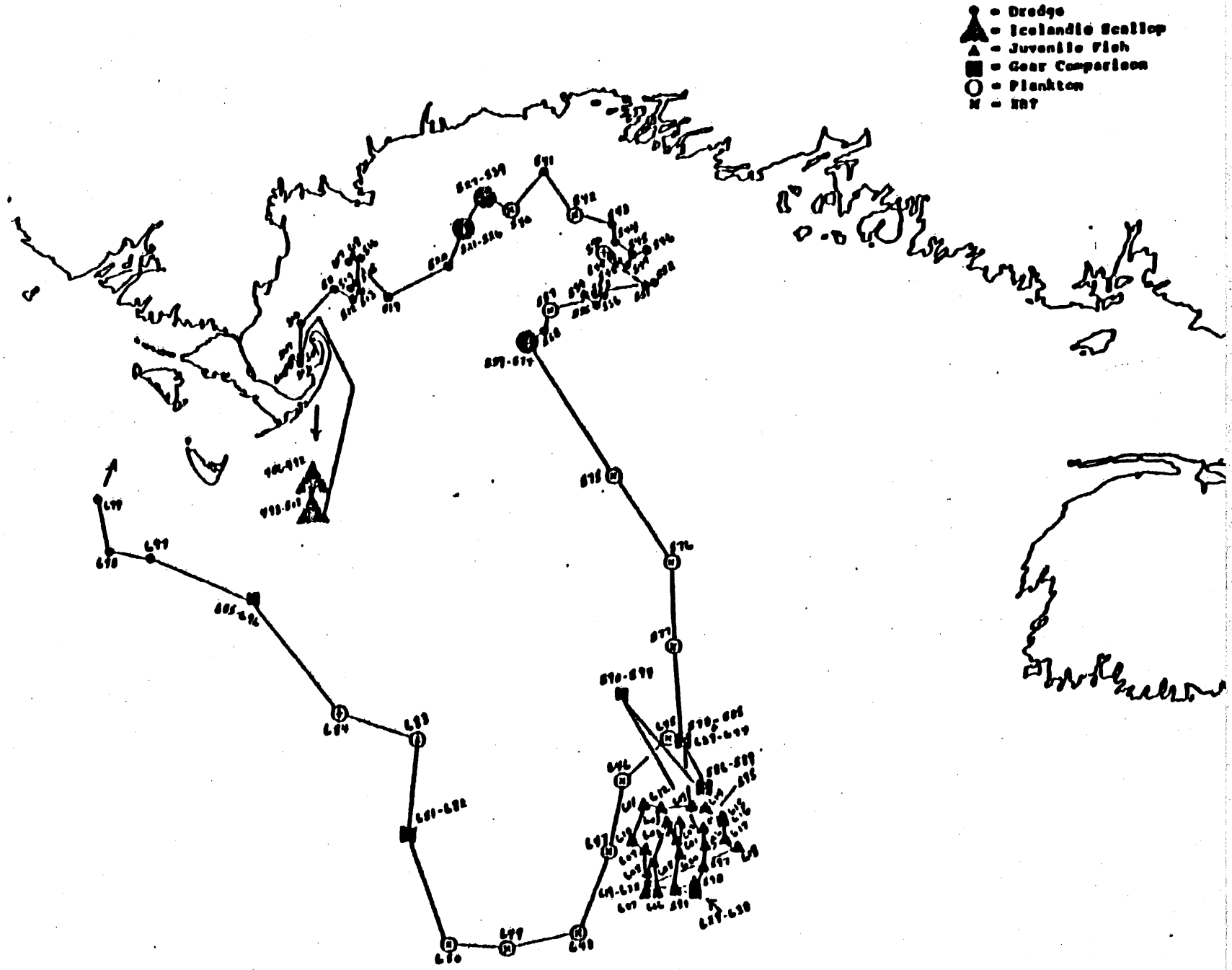



Figure 1 continued...Station locations and cruise tract for the R/V ALBATROSS IV Cruise 84-07 (III) Sea Scallop Survey during 20-21 August 1984

VESSEL: ALBATROSS IV | CRUISE: 84-08

DATES: 10-28 September | PART I

DAYS AT SEA: 18 | STATIONS: 186

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the autumn distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth and relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Donald Flescher, Chief Scientist
Maurice Crawford
Brenda Fields
Patricia Hersey
Ellen Johnson
Philip LeBlanc
Ronald Mack

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Doris Finan
Carl Weilandics

National Marine Fisheries Service, NEFC, Oxford, MD

Latina Cornish

Virginia Institute of Marine Science, Gloucester Point, VA

Jean Fulton
Dennis Thoney

Manomet Bird Observatory, Manomet, MA

James Laurita

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | 8 | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | 139 (Surface Only) | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 186 | | | |
| FISH SAMPLES | YES | | | |

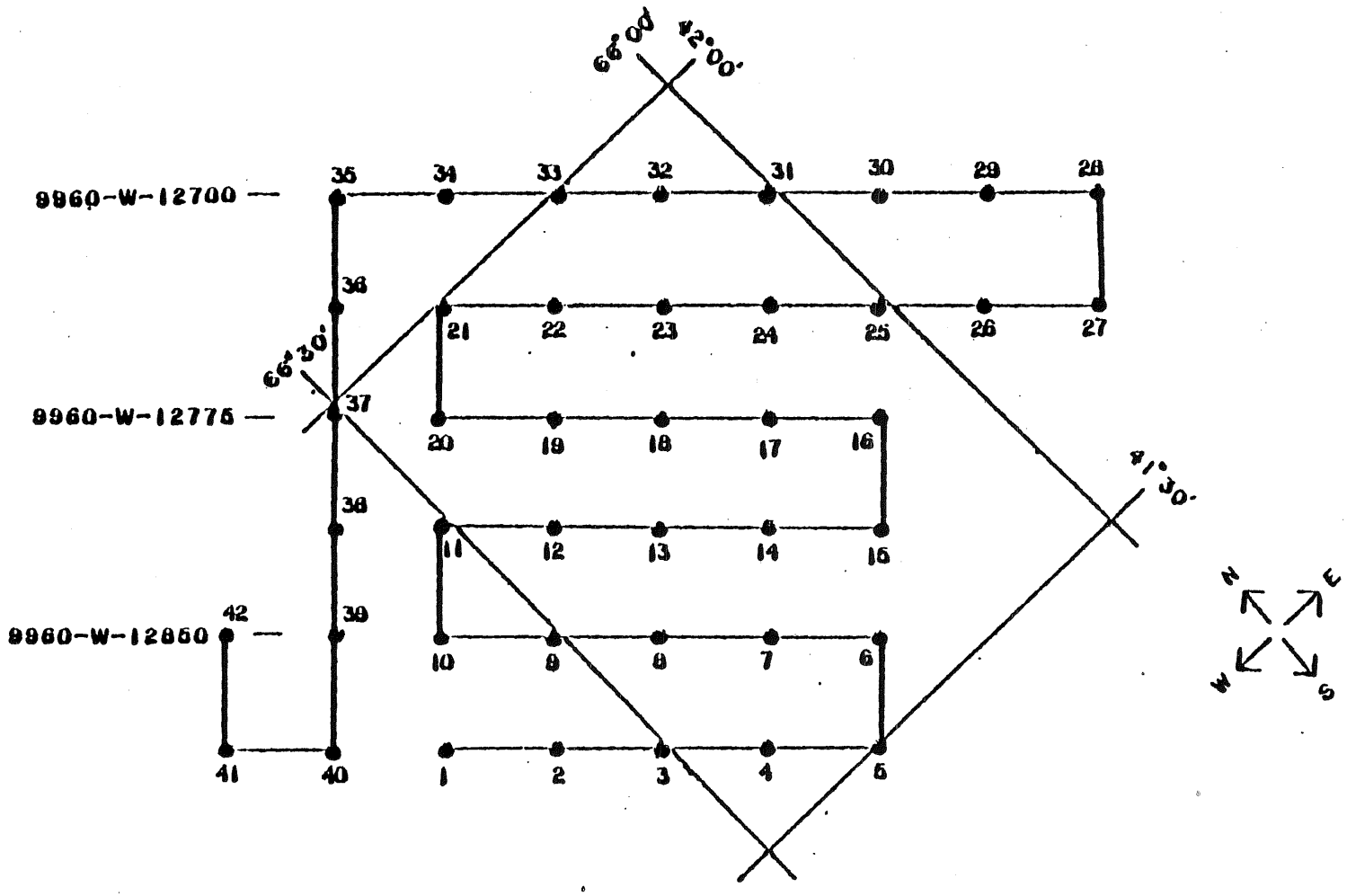



Figure 1. Station locations and cruise track for the juvenile fish portion of R/V ALBATROSS IV Cruise 84-08 (I) Autumn Bottom Trawl Survey, during 10-14 September 1984.

● = Trawl Stations
O = Plankton Stations

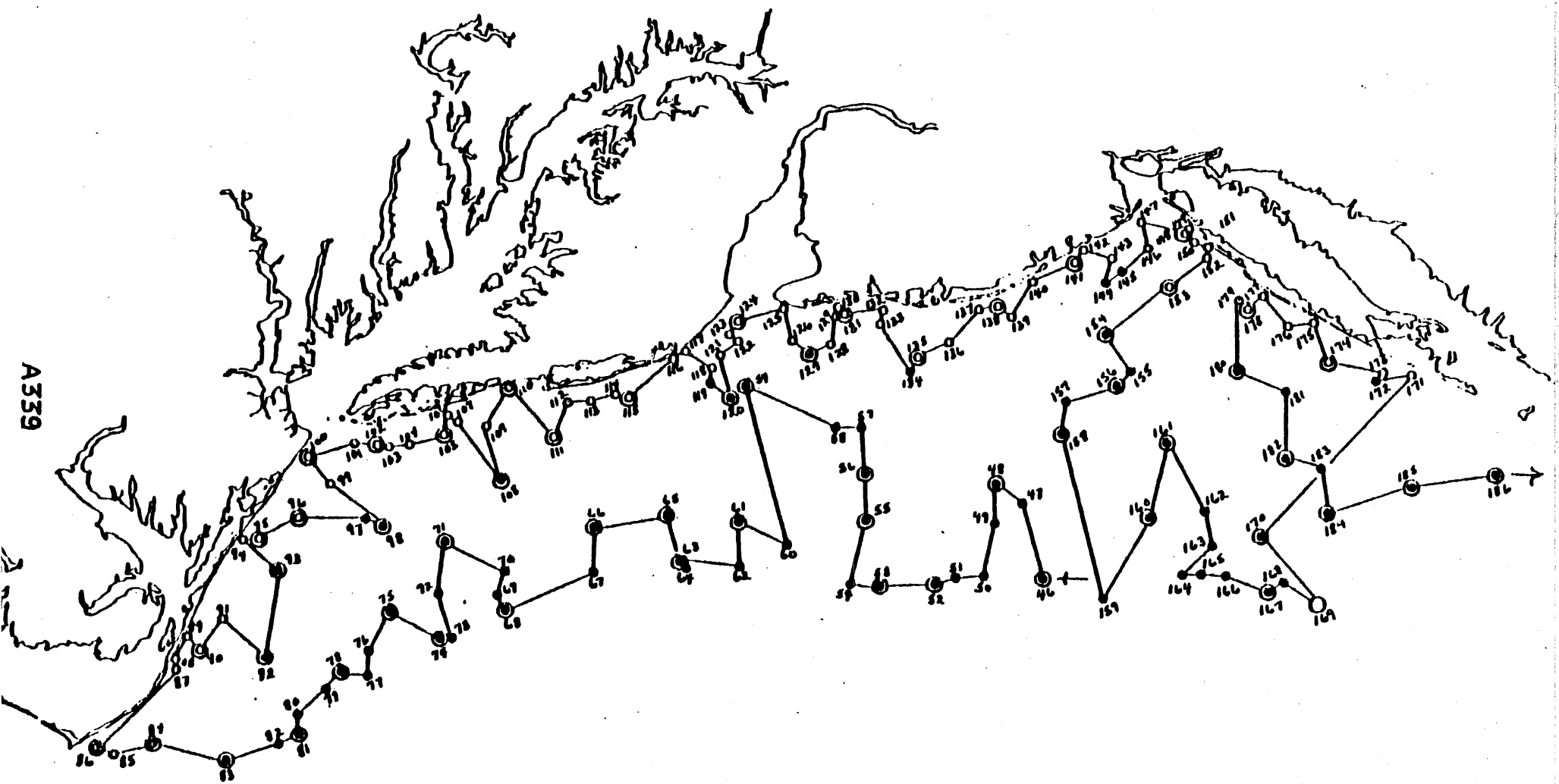


Figure 2. Station location and cruise track for R/V ALBATROSS IV Cruise 84-08 (I) Autumn Bottom Trawl Survey, during 16-28 September 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-08

DATES: 1-12 October 1984 | PART II

DAYS AT SEA: 12 | STATIONS: 96

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the autumn distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish; (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Linda Despres-Patanjo, Chief Scientist
Harold Foster
Eva Montiero
Uvetta Dozier
Arthur Neill
Brian Wells
Raymond Maurer
Geryl Hanley
Fern Carr
Cheryl Windsor

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Celeste McCuish
John Ziskowski

Manomet Bird Observatory, Manomet, MA

Carol Danton

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | 42 | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | 42 | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | 42 | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | | | | |
| FISH SAMPLES | | | | |

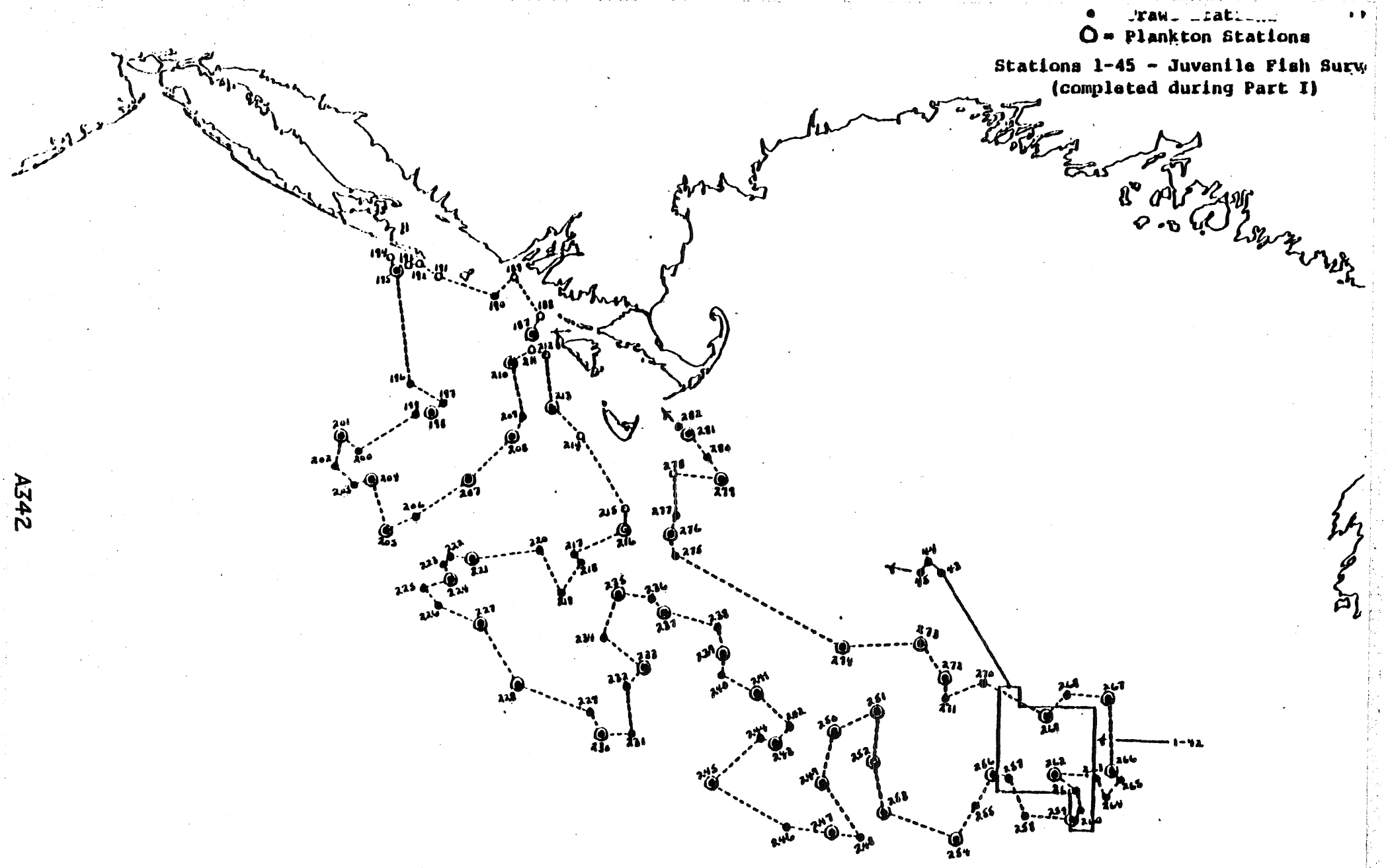



Figure 1. Station location and cruise track for R/V ALBATROSS IV Cruise 84-08 (II) Autumn Bottom Trawl Survey, during 1-12 October 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-08

DATES: 15-26 October 1984 | PART III

DAYS AT SEA: 12 | STATIONS: 108

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the autumn distribution and relative abundance of fish and shellfish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Thomas Azarovitz, Chief Scientist
Ralph Mayo
Micahel Fogarty
Edward Cohen
Peter Auditore
Susan Avtges
Patricia Chew

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Myron Silverman
Alyce Wells

National Marine Fisheries Service, NEFC, Milford, CT

Andrew Hebert

National Marine Fisheries Service, NEFC, Portland, ME

Marilyn Henry

National Marine Fisheries Service, Regional Office, Gloucester, MA

Susan Mello
Tracey McKenzie

Manomet Bird Observatory, Manomet, MA

Kyle Jones

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | 36 | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | 65 | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | 65 | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORTHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS (36 YANKEE OTTER) | | | 108 | |
| FISH SAMPLES | | | | |

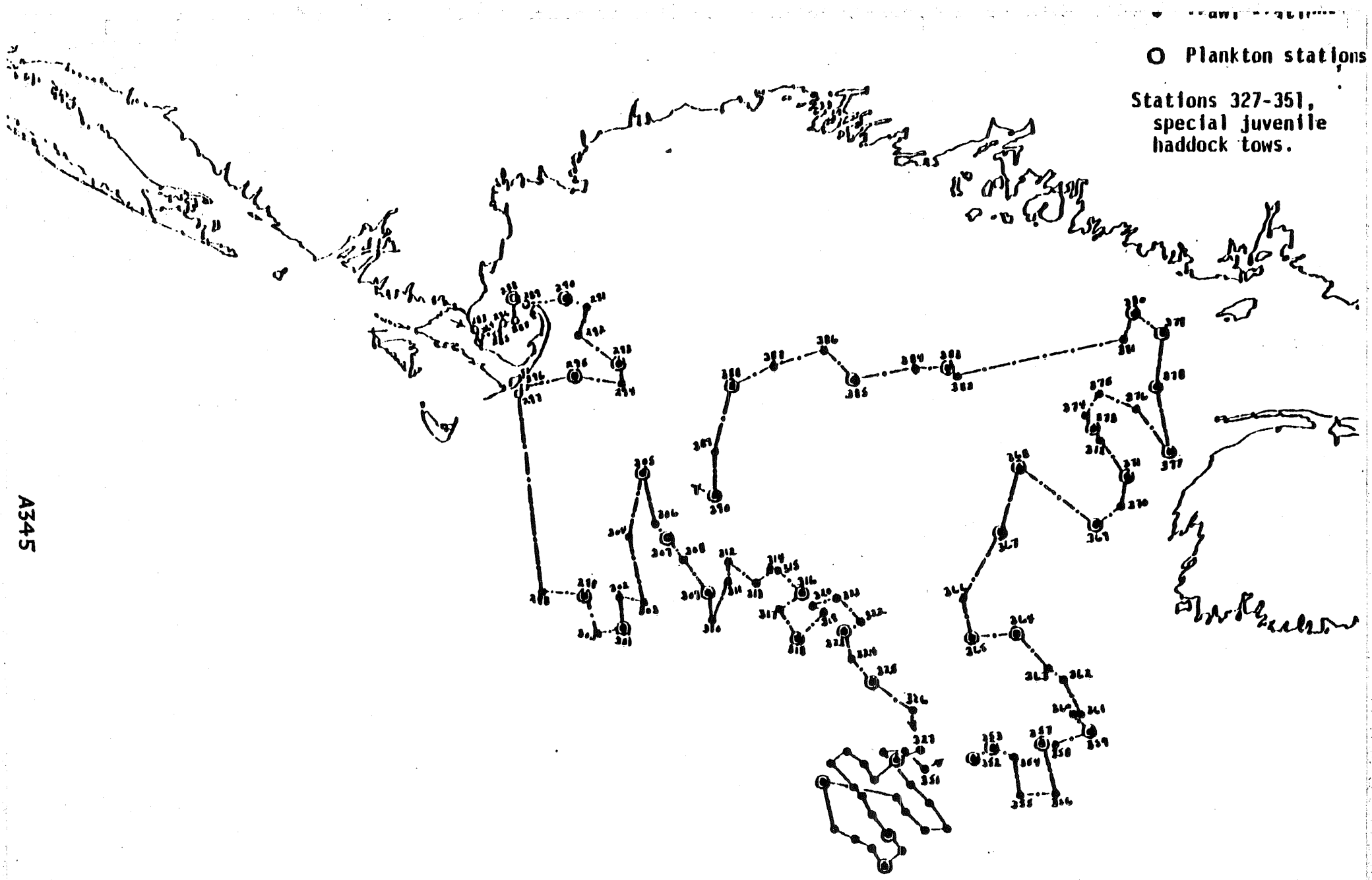



Figure 1. Station location and cruise track for R/V Albatross IV Cruise 84-08 (III) Autumn Bottom Trawl Survey, during 15-26 October, 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-08

DATES: 29 October-9 November 1984 | PART IV

DAYS AT SEA: 12 | STATIONS: 114

## CRUISE OBJECTIVES:

The objectives of the cruise were to: (1) determine the autumn distribution and relative abundance of fish species, (2) collect biological samples for studies of age and growth relationships, fecundity, maturity and food habits, (3) make pathological observations on various species of fish, (4) collect hydrographic and meteorological samples and data, and (5) collect samples of ichthyoplankton and zooplankton.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

John Nicolas, Chief Scientist
John Burnett
Roger Clifford
Dennis Hansford
Deidre Jackson
Ellen Johnson
William Michaels
William Overholtz
John Ropes

National Marine Fisheries Service, NEFC, Narragansett, RI

Carolyn Griswold

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Stanley Gorski

Virginia Institute of Marine Science, Gloucester Pt., VA

Glynn Rountree

Manomet Bird Observatory, Manomet, MA

Kyle Jones

# DATA COLLECTED

| | IV PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | IV PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS (36 YANKEE OTTER) | 114 | | | |
| FISH SAMPLES | | | | |

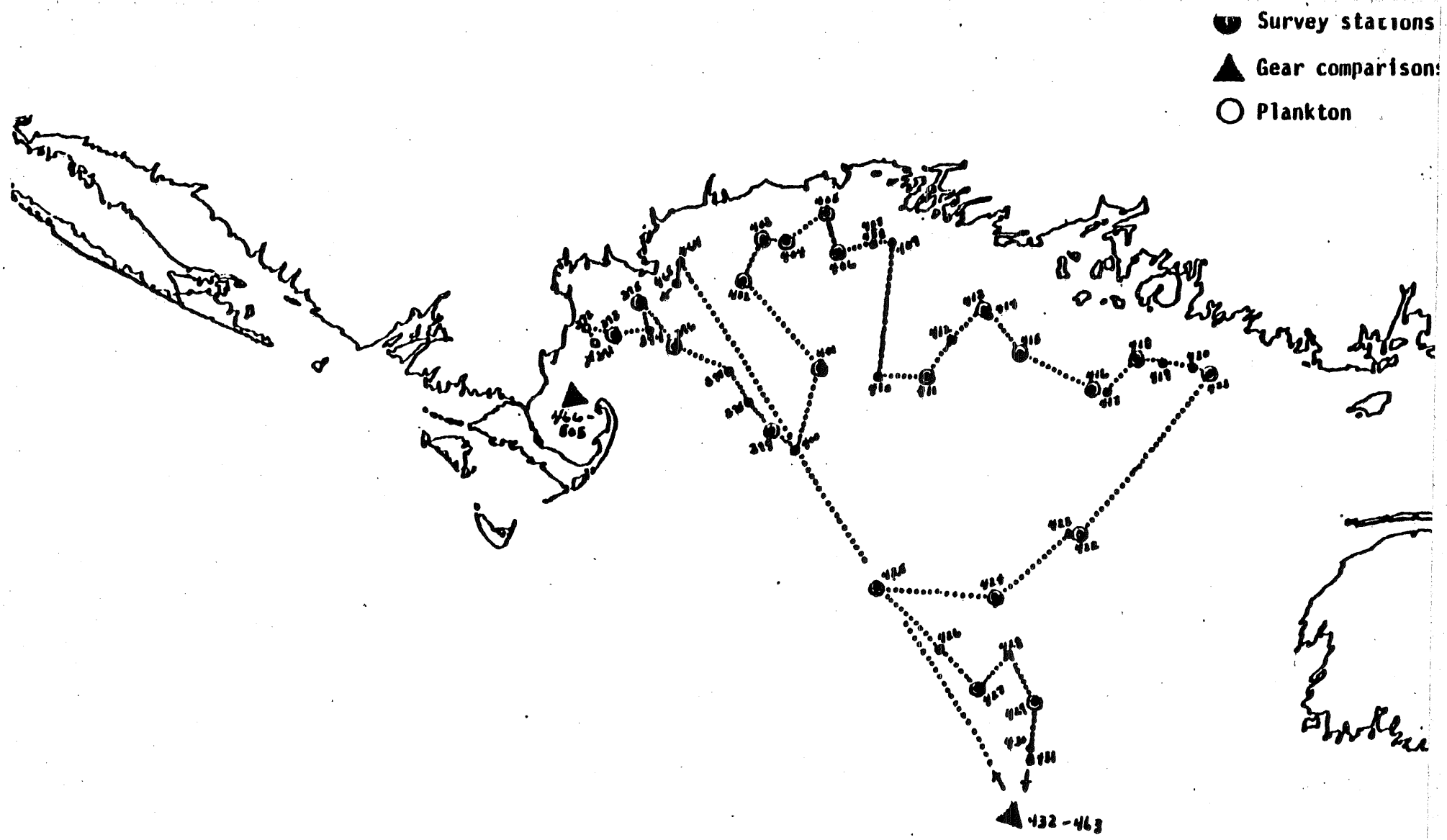



Figure 1. Station locations and cruise track for the Albatross IV Cruise 84-08 (IV) Autumn Bottom Trawl Survey, during 29 October 9 November 1984.

VESSEL: ALBATROSS IV | CRUISE: 84-09

DATES: 27 November - 14 December | PART I, II

DAYS AT SEA: 18 | STATIONS 92

## CRUISE OBJECTIVES

The survey is part of a continuing series that makes collection and measurements relative to assessing the health of the ocean's biota, especially fisherey resources. Specific objectives were to: 1) collect select indicator species for examination of certain biochemical, physiological, pathological and chemical contamination variables that are related to the organisms' health; 2) collect water samples for standard hydrographic variables (salinity, dissolved oxygen and temperature) at specific locations; and 3) collect benthic samples for pathology monitoring, sediment analysis (physical and chemical), the presence of certain types of bacteria (*Vibrio* sp. and *Clostridium* sp.), and benthic community structure.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

| | |
|---|---|
| Vincent Zdanowicz, Chief Scientist | Part I |
| David Radosh | Part I and II |
| Kneeland Mcnulty | Part I and II |
| Roger Kothe | Part I and II |
| Thomas Finneran | Part II |

National Marine Fisheries Service, NEFC, Milford, CT

| | |
|---|---|
| David Nelson, Chief Scientist | Part II |
| Jose Pereira | Part I and II |
| Renee Mercaldo | Part I and II |
| Donna Luedke | Part I |
| Dean Perry | Part I |
| George Sennefelder | Part II |
| Andrew Hebert | Part II |
| Diane Oakes | Part II |

National Marine Fisheries Service, NEFC, Oxford, MD

| | |
|---|---|
| Sheri Everline | Part I |
| Joyce Evans | Part II |

Ocean Assessment Division, NOS, Rockville, MD

| | |
|---|---|
| Adrianna Cantillo | Part I |

Drew University, Madison, NJ

| | |
|---|---|
| Wendy Kaplan | Part I and II |
| Cheryl Kent | Part I |
| Susan Draxler | Part II |

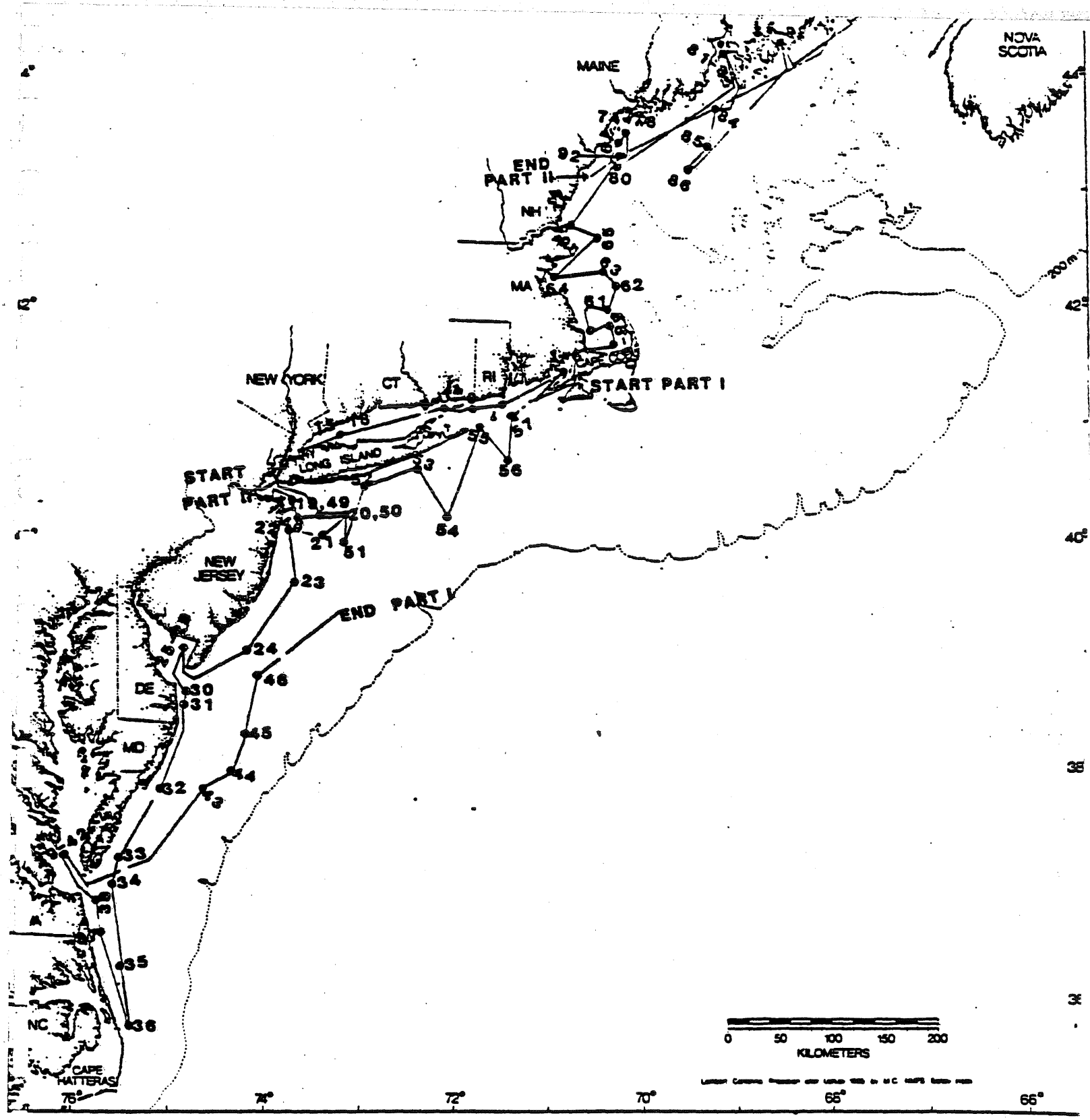
Manomet Bird Observatory, Manomet, MA

| | |
|---|---|
| Peter Stevick | Part I and II |

## CRUISE RESULTS

Activities completed and total number of samples taken:

| | Total |
|---|---|
| Salinity Samples | 13 |
| Oxygen Samples | 13 |
| Trawls | 70 |
| Fish Samples | Yes |
| Bottom Grabs | 250 |




rigure 1. Cruise track and station locations for R/V ALBATROSS IV Cruise 84-09 (I-II) Northeast Monitoring Program, Biological Effects Survey, during 27 November-14 December 1984.

VESSEL: DELAWARE II | CRUISE: 84-01

DATES: 9-27 Jan.; 30 Jan.-10 Feb. 1984 | PART I, II

DAYS AT SEA: 31; I-19, II-12 | STATIONS: 161; I-100, II-61

## CRUISE OBJECTIVES

This cruise is one of a series of MARMAP I surveys conducted annually to monitor seasonal changes in distribution and abundance of fish eggs and larvae, zooplankton and phytoplankton, and to collect oceanographic and primary productivity data.

## SCIENTIFIC PERSONNEL

Part I: 9-27 January 1984
Part II: 30 January-10 February 1984

**National Marine Fisheries Service, NEFC, Sandy Hook, NJ**

| | |
|---|---|
| John Sibunka, Chief Scientist | Parts I, II |
| Donald McMillan[1] | Parts I, II |
| Paul Lyons | Parts I, II |
| Alyce Wells | Part II |

**National Marine Fisheries Service, NEFC, Woods Hole, MA**

| | |
|---|---|
| Dana Densmore | Parts I, II |
| Paul Jessen | Part I |
| Benjamin Marshall[2] | Parts I, II |
| Daniel Pantanjo[3] | Parts I, II |
| Ellen Johnson | Parts II |

**National Marine Fisheries Service, NEFC, Narragansett, RI**

| | |
|---|---|
| Joseph Kane | Part I |
| Bruce Burns | Part I |
| Jacqueline Anderson | Part I |
| Jennifer Meyer | Part II |

**Grande Valley State College, Allendale, MI**

| | |
|---|---|
| Ronald Ward | Part II |

**Manomet Bird Observatory, Manomet, MA**

| | |
|---|---|
| Beverly Alger | Parts I, II |

[1]Debarked vessel on 1 February; returned to vessel on 3 February.
[2]Debarked vessel during a port call (19-20 January) on Part I.
[3]Embarked vessel during a port call (19-20 January) on Part I.

## CRUISE STATISTICS

| | Part I | Part II | Total |
|---|---|---|---|
| Sea days | 19 | 12 | 31 |
| Plankton/hydrographic stations | 100 | 61 | 161 |
| Primary productivity stations | 28 | 10 | 38 |
| 0.61-meter bongo tows (.505/.333-millimeter) | 100 | 60 | 160 |
| 0.20-meter bongo tows (.253/.165-millimeter) | 20 | 11 | 31 |
| 0.20-meter bongo tows (.165/.053-millimeter) | 28 | 12 | 40 |
| 0.5 x 1-meter neuston tows | 99 | 60 | 159 |
| Haedrich neuston tows | 30 | 19 | 49 |
| Weather observations | 100 | 61 | 161 |
| Hydrocasts | 100 | 61 | 161 |
| Number of Niskin bottles | 1148 | 536 | 1684 |
| Bottles with reversing thermometers | 1095 | 483 | 1578 |
| Salinity samples | 1148 | 535 | 1683 |
| $H_2{}^{18}{}_0$ samples | 1148 | 535 | 1683 |
| Chlorophyll samples | 1005 | 487 | 1492 |
| Nutrient | 405 | 249 | 654 |
| Dissolved oxygen samples | 35 | 178 | 213 |
| Phytoplankton samples (M-C) | 100 | 58 | 158 |
| Surface temperature observations | 100 | 61 | 161 |
| Secchi disc observations | 43 | 24 | 67 |
| XBT drops | 25 | 14 | 39 |
| Marine mammal sightings | 9 | 16 | 25 |
| Number of bird species sighted | 23 | 21 | 26 |

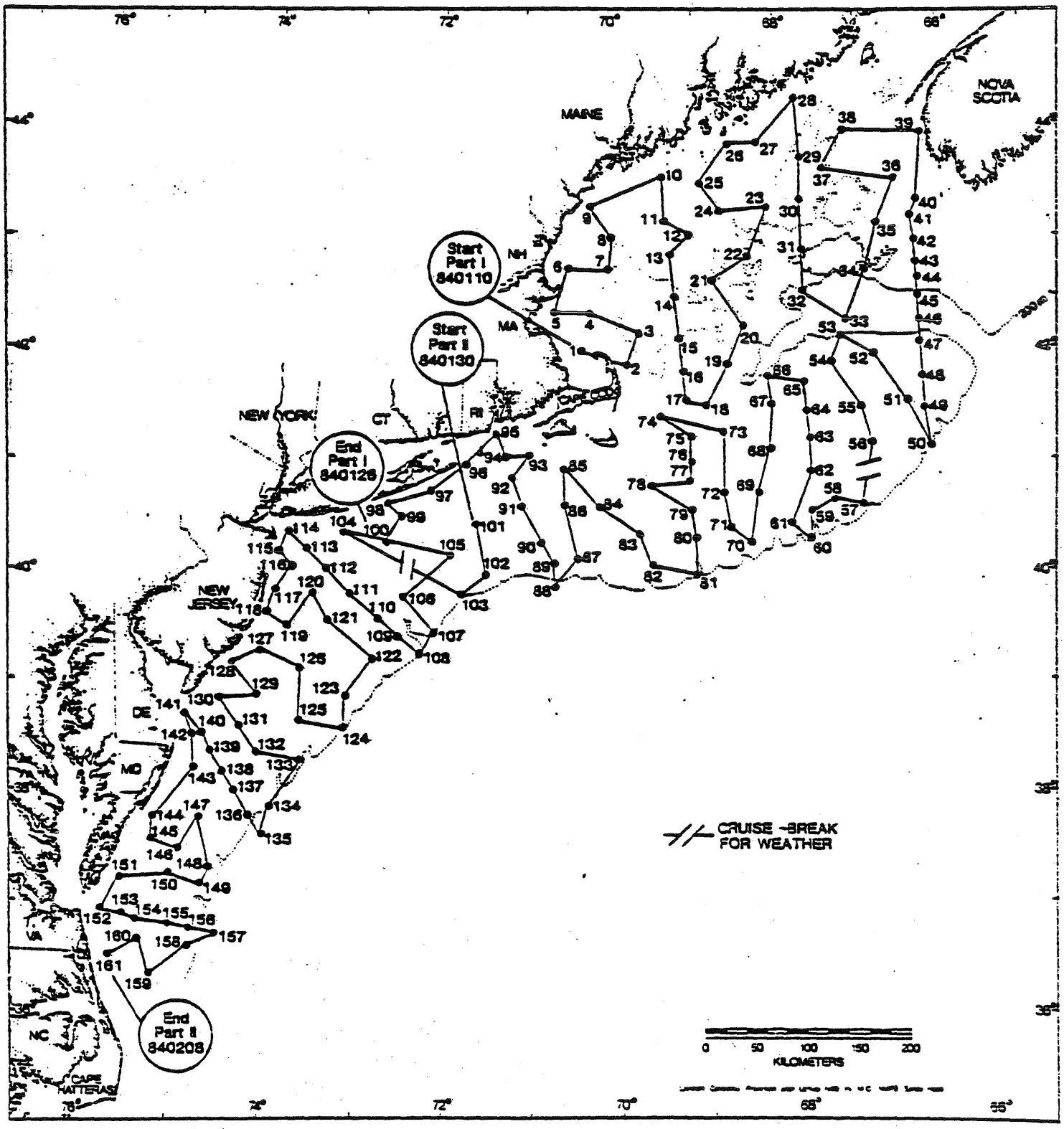



Figure 1. Station locations numbered consecutively for R/V DELAWARE II Cruise 84-01 (I-II), MARMAP I: Ichthyoplankton-Zooplankton, Oceanographic and Primary Productivity Survey during, 9 January-10 February 1984.

VESSEL: DELAWARE II CRUISE: 84-02

DATES: 14-23 February 1984

DAYS AT SEA: 10 STATIONS: 147

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) determine the seasonal distribution and relative abundance of fish species with particular refeence to Atlantic herring; (2) collect biological samples; and (3) collect hydrographic and meteorological samples and data.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFC, Woods Hole, MA

Thomas Azarovitz, Chief Scientist
Dennis Hansford
Cheryl Windsor
Elizabeth Kenny
DiJohn McGruder
Robert Johnson

National Marine Fisheries Service, NEFC, Milford, CT

David Nelson
Jose Pereira

University of Missouri, Columbia, MO

Patrick Shannon
Richard Klann

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | 49 | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | 49 | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 147 | | | |
| FISH SAMPLES | YES | | | |

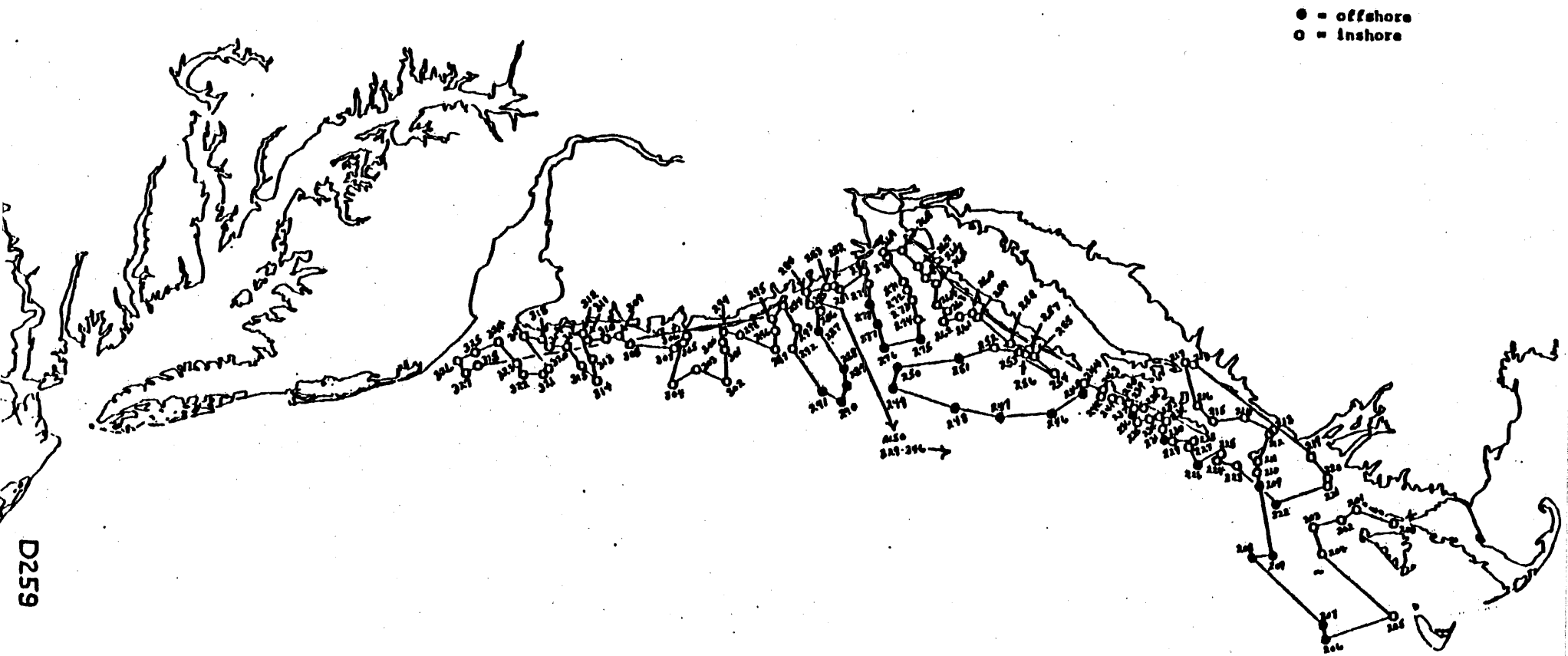



Figure 1. Station locations for R/V DELAWARE II Cruise 84-02 Trawl Survey for Atlantic Herring, Atlantic Mackerel and Hydroacoustic Experimentation, during 14-23 February 1984.

VESSEL: DELAWARE II | CRUISE: 84-06

DATES: 9-19 July 1984 | PART I, II

DAYS AT SEA: 24 | STATIONS: 434

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) investigate the distribution and relative abundance of the surf clam (*Spisula solidissima*), ocean quahog (*Arctica islandica*), and other moluscs; (2) collect biological samples and data relative to assessment needs; (3) collect ichthyoplankton samples; (4) make collections for interested scientists from other institutions and NMFS laboratories; and (5) monitor meteorological and hydrographical conditions.

## SCIENTIFIC PERSONNEL

Part I: 9-19 July 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Charles Byrne, Chief Scientist
Andrew Thoms
David Ashley
John Ropes
Brenda Fields
Tracey Williams
Robert Johnson

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Celeste McCuish

National Marine Fisheries Service, NEFC, Narragansett, RI

Jacqueline Anderson

National Marine Fisheries Service, NEFC, Cape May, NJ

Walter Makowski

Part II: 20 July-1 August 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Malcolm Silverman, Chief Scientist
Andrew Thoms
David Ashley
Jacob Richardson
Kelly Kress
Chris Gledhill
Raymond Maurer (19-25 July 1984)
Thomas Azarovitz (25 July-1 August 1984)

National Marine Fisheries Service, NEFC, Sandy Hook, NJ

Peter Berrien

Fordham University, New York, NY

Mark Botton

Eastern Nazarene College, Quincy, MA

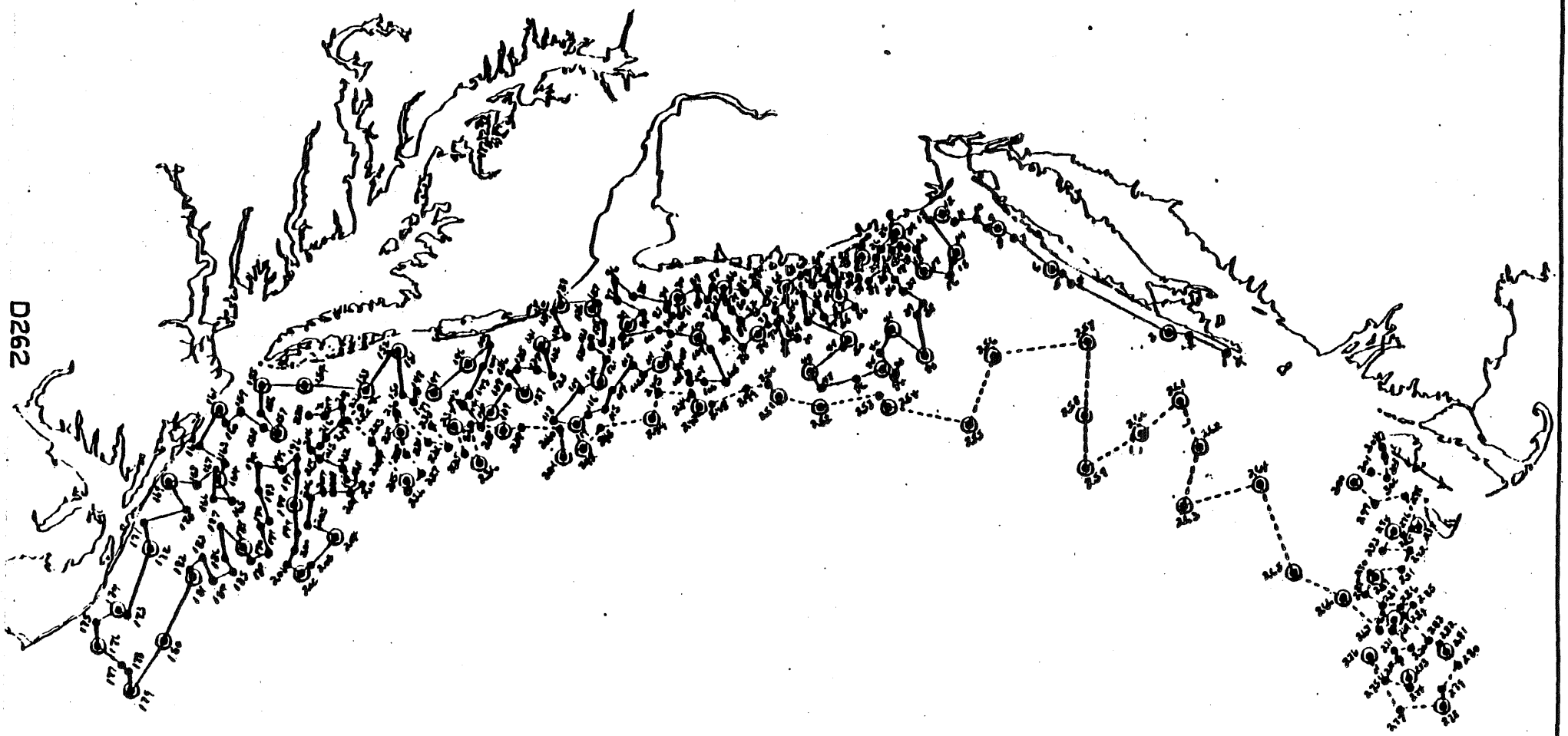
John Twining

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | 105 |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | | 105 |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | | 144 |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | | | | |
| FISH SAMPLES | | | | |

PLANKTON
DREDGE



D262

Figure 1. Station locations and cruise track for R/V DELAWARE II cruise 84-06 (I-II) Shellfish Resource Assessment Survey, during 9 July-1 August 1984. Solid line indicates Part I; dashed line indicates Part II.

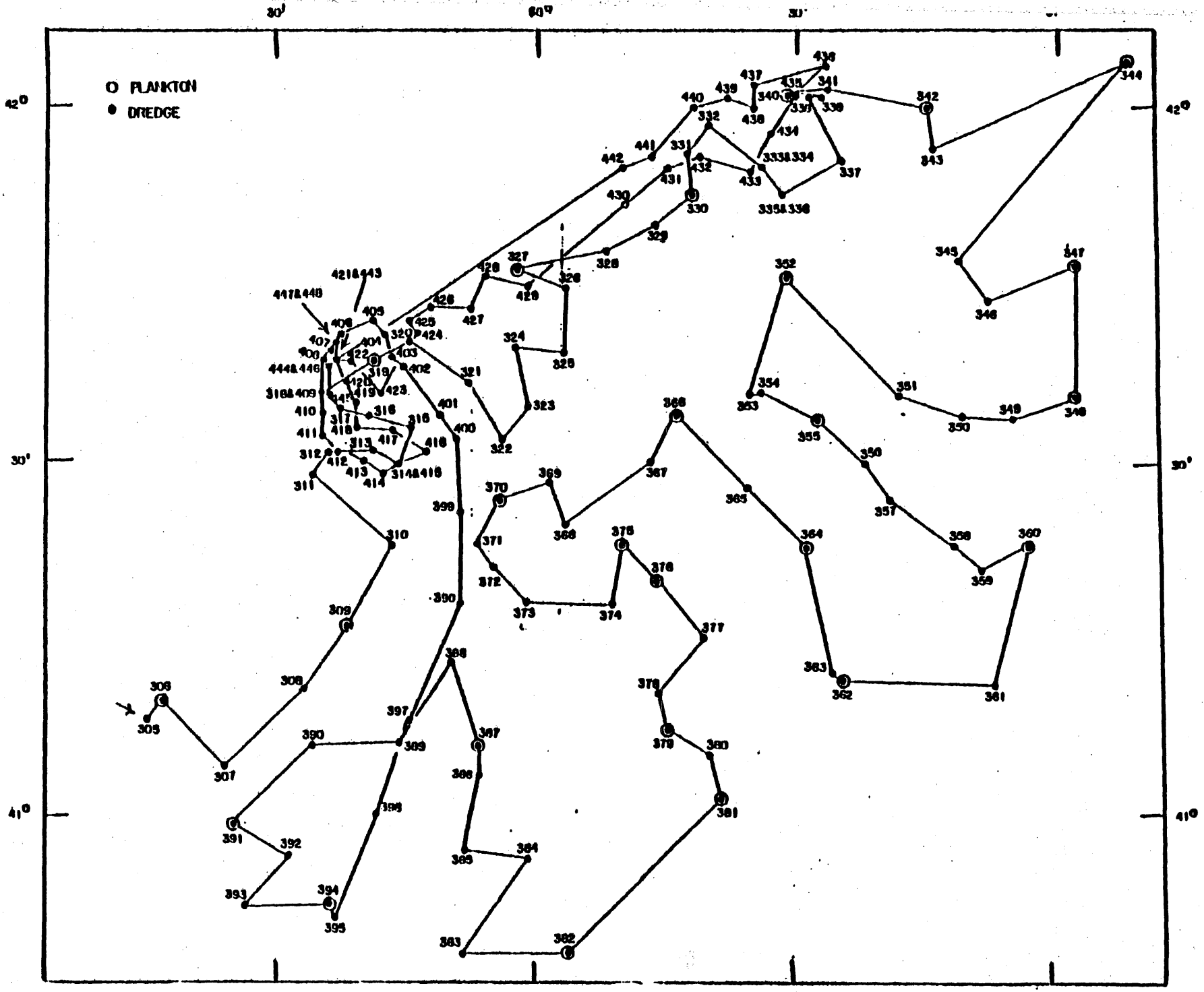



Figure 1 continued...Station locations and cruise track for R/V DELAWARE II cruise 84-06 (I-II) Shellfish Resource Assessment Survey, during 9 July-1 August 1984. Solid line indicates Part II.

VESSEL: DELAWARE II CRUISE: 84-07

DATES: 6-18 August 1984

DAYS AT SEA: 13

## CRUISE OBJECTIVES

The objectives were to (1) determine the distribution and abundance of haddock, cod and yellowtail young juveniles, and (2) conduct site studies to determine their diel variability, predator-prey relations and vulnerability to various sampling gear.

## SCIENTIFIC PERSONNEL

National Marine Fisheries Service, Woods Hole, MA

Edward Cohen, Chief Scientist
David Potter
Ronald Mach
John Thiel
William Michaels
Ray Bowman
James Myette
Stephen Spina

National Marine Fisheries Service, Narragansett, RI

Joseph Cane
Bruce Burns

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL | | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| .61 cm BONGO | | | | | SALINITY SAMPLES | | | | |
| .20 cm BONGO | | | | | OXYGEN SAMPLES | | | | |
| .61 cm NEUSTON | | | | | NUTRIENT SAMPLES | | | | |
| .20 cm NEUSTON | | | | | CHLORPHYLL SAMPLES | | | | |
| HAEDRICH | | | | | PRIMARY PRODUCTIVITY | | | | |
| XBT | | | | 29 | DROGUES | | | | |
| BOTTLE CAST | | | | | SECCHI DISC | | | | |
| CTD CAST | | | | | TRAWLS (36 YANKEE OTTER) | | | | 65 |
| CURRENT METERS | | | | | FISH SAMPLES | | | | |

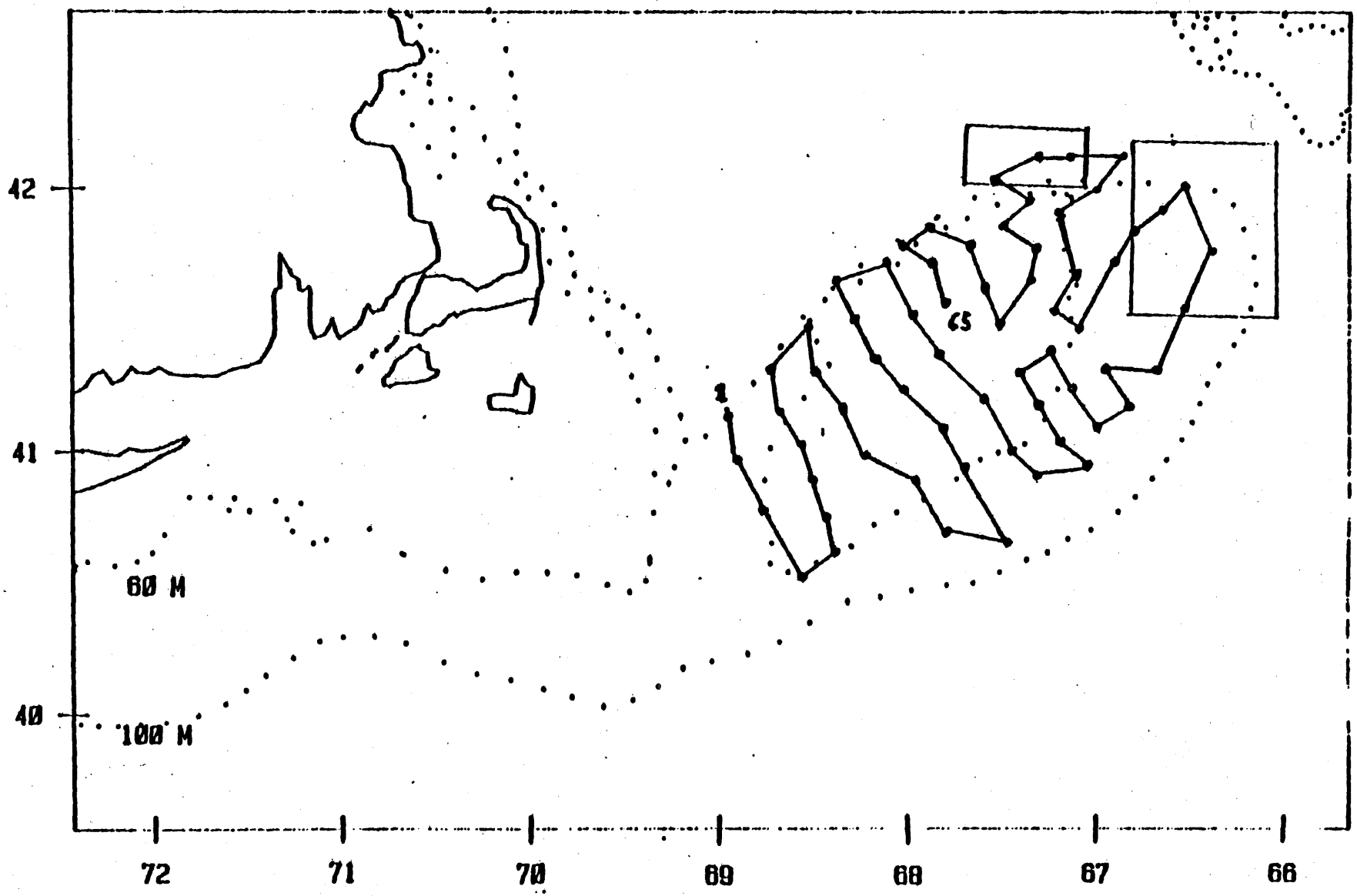



Figure 1. Cruise track and station locations for R/V DELAWARE II Cruise 84-07 Juvenile Fish Survey, during 6-18 August 1984. Boxes indicate areas of special sampling (see Figures 2 and 3).

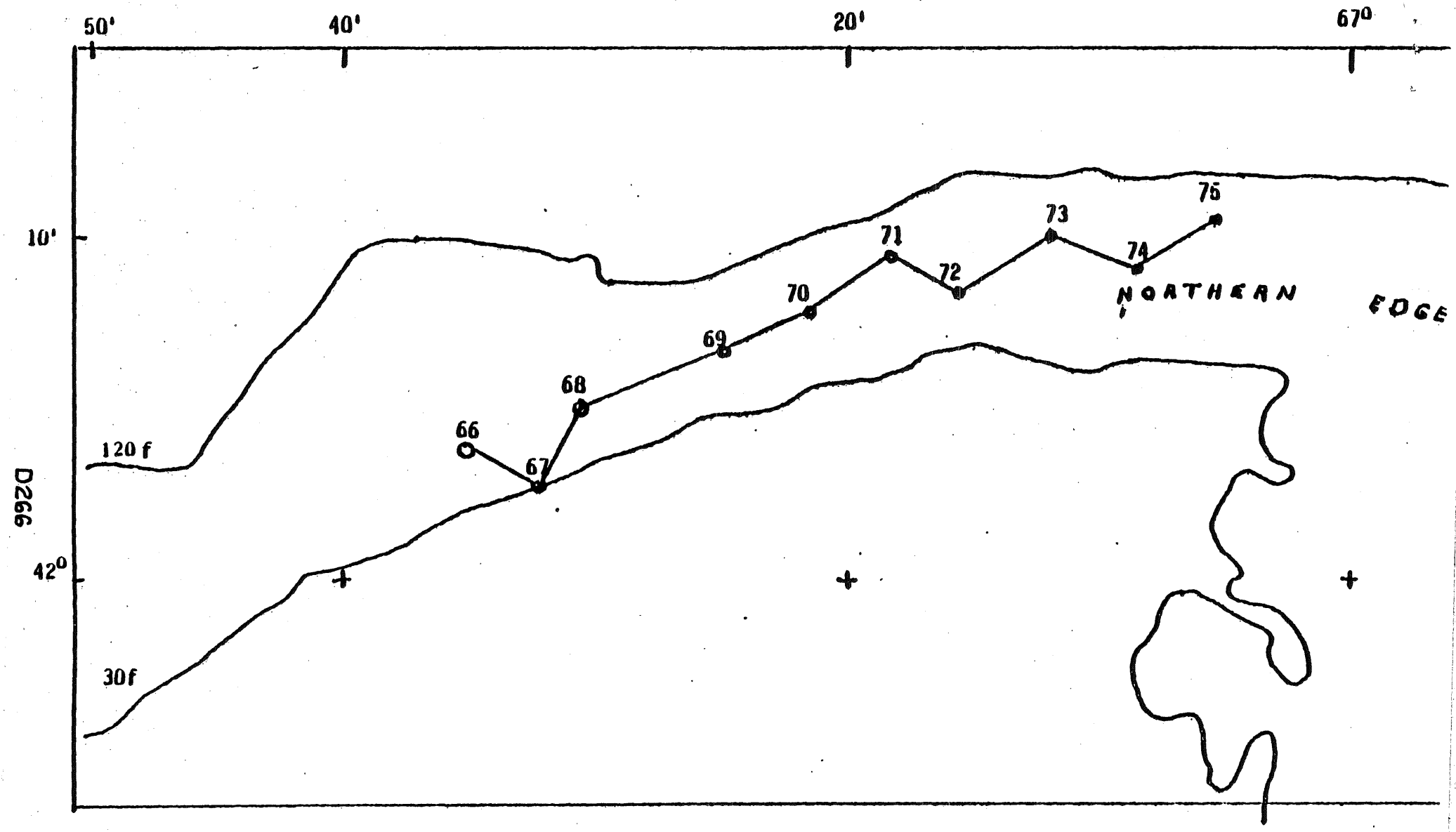



Figure 2. Stations for day-night series with IYGPT and bottom trawl on Northern Edge of Georges Bank on R/V DELAWARE II cruise 84-07 Juvenile Fish Survey, during 6-18 August 1984.

D266

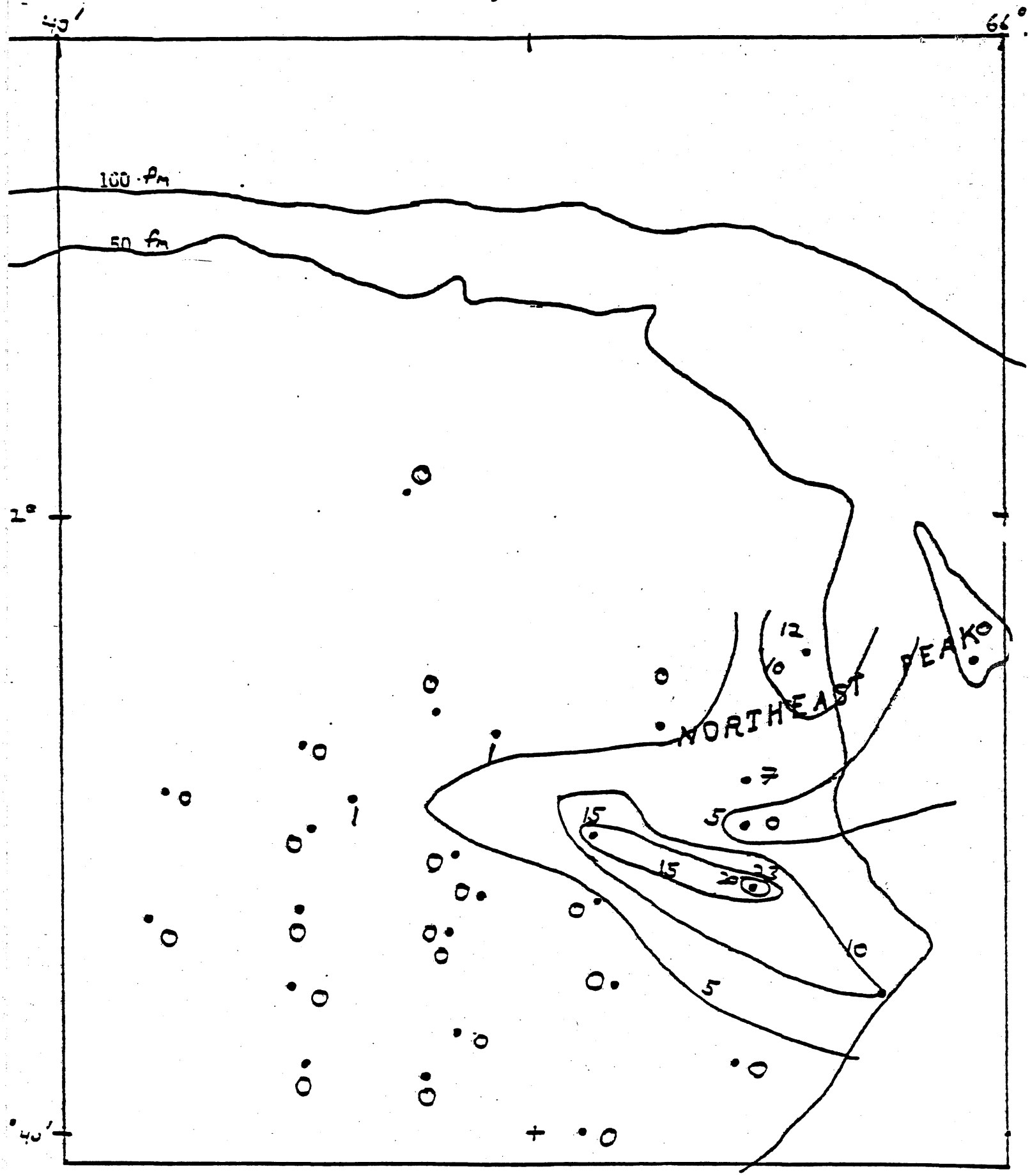



Figure 4. Distribution of juvenile cod at 40 hour special sampling area during 16-17 August on R/V DELAWARE II Cruise 84-07, Juvenile Fish Survey. Also included are 2 stations from survey portion of cruise on 11 August. • indicate stations, + reference point for longitude and latitude. Number/tow indicated at each station. Contours indicate distribution of juveniles.

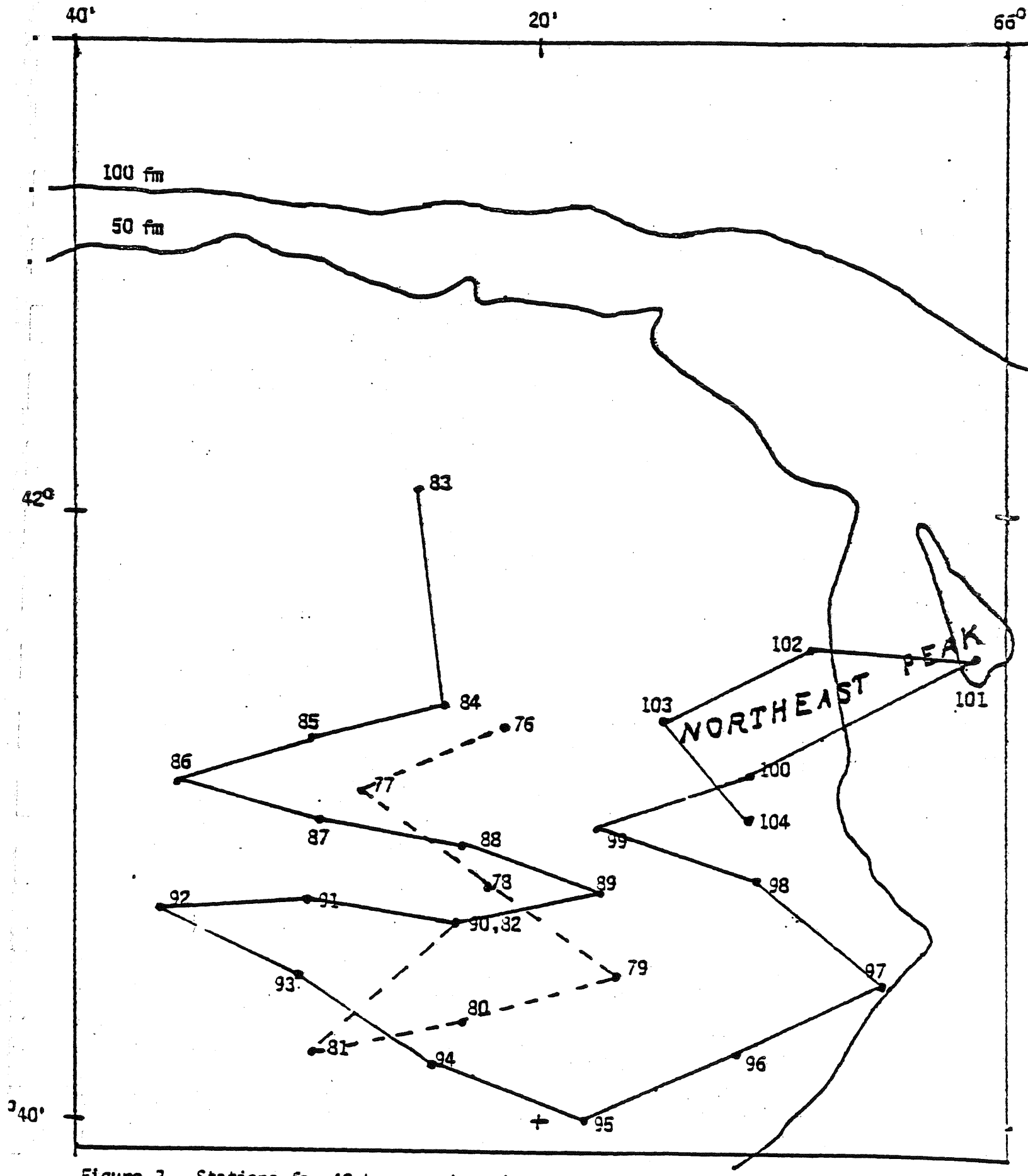



Figure 3. Stations for 40 hour series with IYGPT trawl and bottom trawl on the Northeast Peak of Georges Bank on R/V DELAWARE II Cruise 84-07, Juvenile Fish Survey, during 6-18 August 1984.

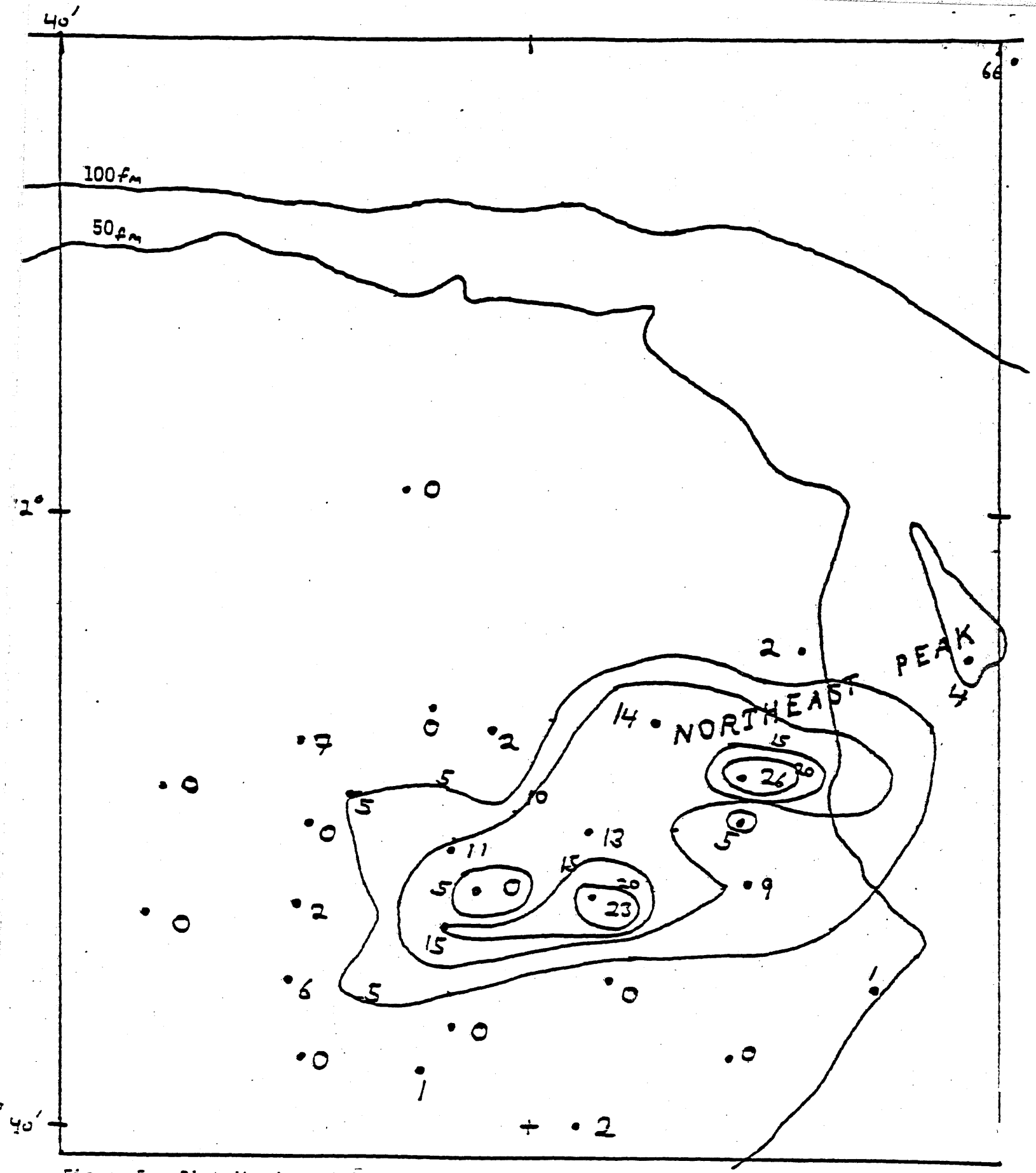



Figure 5. Distribution of juvenile haddock at 40 hour special sampling area during 16-17 August on R/V DELAWARE II Cruise 84-07, Juvenile Fish Survey. Also included are 2 stations from survey portion of cruise on 11 August. • indicate stations, + reference point for longitude and latitude. Number/tow indicated at each station. Contours indicate distribution of juveniles.

VESSEL: DELAWARE II | CRUISE: 84-08

DATES: 5-14 October 1984 | PART I, II

DAYS AT SEA: 22 | STATIONS: 250

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) test the effects of different trawl doors on trawl performance and catch rates, and (2) collect food habits data from specimens collected during the experiment.

## SCIENTIFIC PERSONNEL

Part I: 5-14 October 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Charles Byrne, Chief Scientist
John Burnett
Ray Bowman
Christopher Gledhill
Wendy Gabriel
Susan Wigley
Lorraine Belfiore

National Marine Fisheries Service, NEFC, Oxford, MD

Joyce Evans

Part II: 15-26 October 1984

National Marine Fisheries Service, NEFC, Woods Hole, MA

Malcolm Silverman, Chief Scientist
Gary Shepherd
Andrew Thoms
Ronald Mack
Steven Spina
Rose Concha
William Golden
Hannah Goodale

National Marine Fisheries Service, NEFC, Oxford, MD

Sherry Eberline

Eastern Nazarene College, Quincy, MA

Denise Der

# DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | 6 | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | 6 | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS (36 YANKEE OTTER) | | 250 | | |
| FISH SAMPLES | | | | |

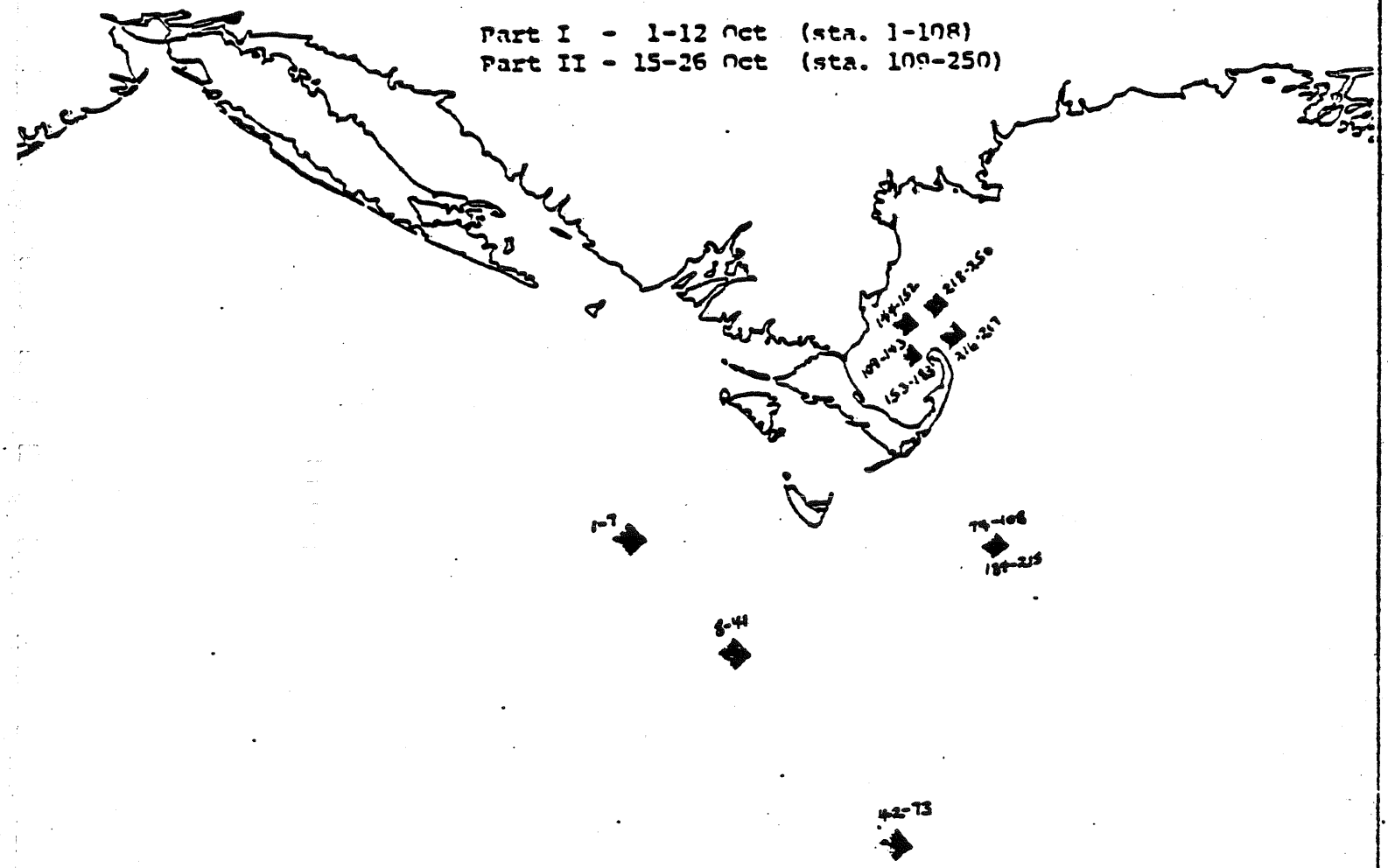



Figure 1. Station(s) locations for R/V DELAWARE Cruise 84-08 (I-II) Gear Testing, during 1-26 October 1984 (Part I: stations 1-108; Part II: stations 109-250).

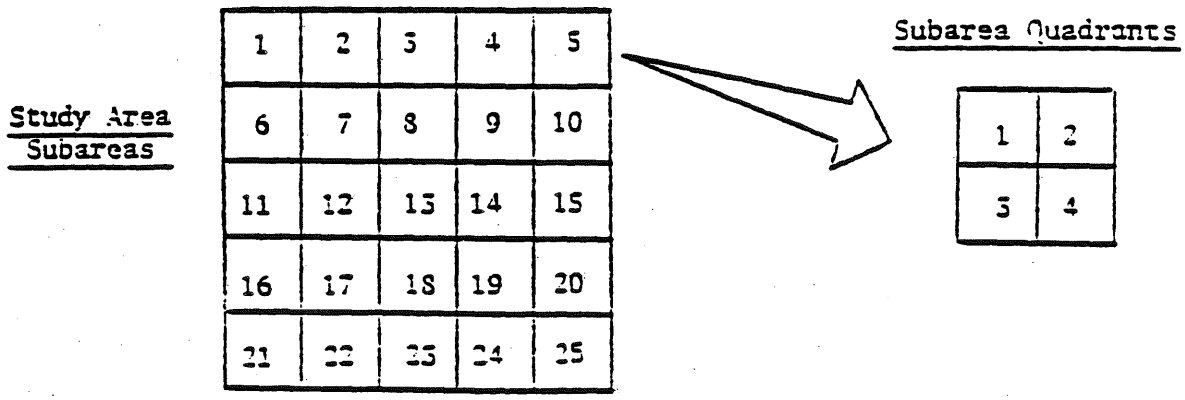



Figure 2. Numbered grid for study areas (stations) for R/V DELAWARE II Cruise 84-08 (I-II) Gear Testing, during 1-26 October 1984.

VESSEL: DELAWARE II

CRUISE: 84-09

DATES: 29 October-9 November,
12-21 November,
27 November-7 December

PART I, II, III

DATES AT SEA: 12, 10, 12

STATIONS: 68, 29, 49

## CRUISE OBJECTIVES

This cruise is one of a series of MARMAP I surveys conducted annually to monitor seasonal changes in distribution and abundance of fish eggs and larvae, zooplankton and phytoplankton, and to collect oceanographic and primary productivity data.

## SCIENTIFIC PERSONNEL

Part I: 29 October-9 November 1984
Part II: 12-21 November 1984
Part III: 27 November-7 December 1984

### National Marine Fisheries Service, NEFC, Sandy Hook, NJ

| | |
|---|---|
| John Sibunka, Chief Scientist | Parts I, III |
| Peter Berrien | Part I |
| James Duggan | Part I |
| Donald McMillan | Parts I, II, III |
| Susan Leftwich | Parts I, II, III |
| Celeste McCuish | Part II |
| Thomas Finneran | Part II |
| Alyce Wells | Part III |

### National Marine Fisheries Service, NEFC, Woods Hole, MA

| | |
|---|---|
| Steven Ramp, Chief Scientist | Part II |
| Benjamin Marshall | Part I |
| Debra Adam | Parts I, II |
| Dana Densmore | Parts I, III |
| Paul Jessen | Parts I, III |
| Daniel Patanjo | Parts II, III |
| John Thiel | Part III |
| Ellen Johnson | Part II |

### National Marine Fisheries Service, NEFC, Narraganset, RI

| | |
|---|---|
| Jacqueline Anderson | Part III |

### National Ocean Service, NEFC, Woods Hole, MA

| | |
|---|---|
| John Bortniak | Part II |

Manomet Bird Observatory, Manomet, MA

| | |
|---|---|
| Peter Stevick | Part I |
| Kyle Jones | Part II |
| Katherine Isles | Part III |

## CRUISE STATISTICS

| | Part I | Part II | Part III | Total |
|---|---|---|---|---|
| Sea days | 12 | 10 | 12 | 32 |
| Plankton/hydrographic stations | 68 | 29 | 49 | 146 |
| Primary productivity stations | 13 | 7 | 10 | 30 |
| 0.61-meter bongo tows (.505/.333-millimeter) | 67 | 29 | 48 | 144 |
| 0.20-meter bongo tows (2.53/.165-millimeter) | 11 | 6 | 8 | 25 |
| 0.20-meter bongo tows (.165/0.53-millimeter) | 14 | 7 | 11 | 32 |
| 0.5 x 1-meter neuston tows | 66 | 29 | 49 | 144 |
| Haedrich neuston tows | 25 | 8 | 13 | 46 |
| Weather observations | 68 | 29 | 49 | 146 |
| Hydrocasts | 68 | 29 | 45 | 142 |
| Number of Niskin bottles | 600 | 307 | 515 | 1422 |
| Bottles with reversing thermometers | 543 | 282 | 488 | 1313 |
| Salinity samples | 600 | 307 | 515 | 1422 |
| $H_2{}^{18}O$ samples | 599 | 307 | 515 | 1421 |
| Chlorophyll samples | 543 | 284 | 451 | 1278 |
| Dissolved oxygen samples | 183 | 143 | 183 | 509 |
| Phytoplankton samples (M-C) | 68 | 27 | 45 | 140 |
| Surface temperature observations | 68 | 29 | 49 | 146 |
| Secchi disc observations | 29 | 14 | 17 | 60 |
| XBT drops | 14 | 8 | 10 | 32 |
| Marine mammal sightings | 4 | 13 | 12 | 29 |
| Number of bird species sighted | 19 | 21 | 11 | 29 |

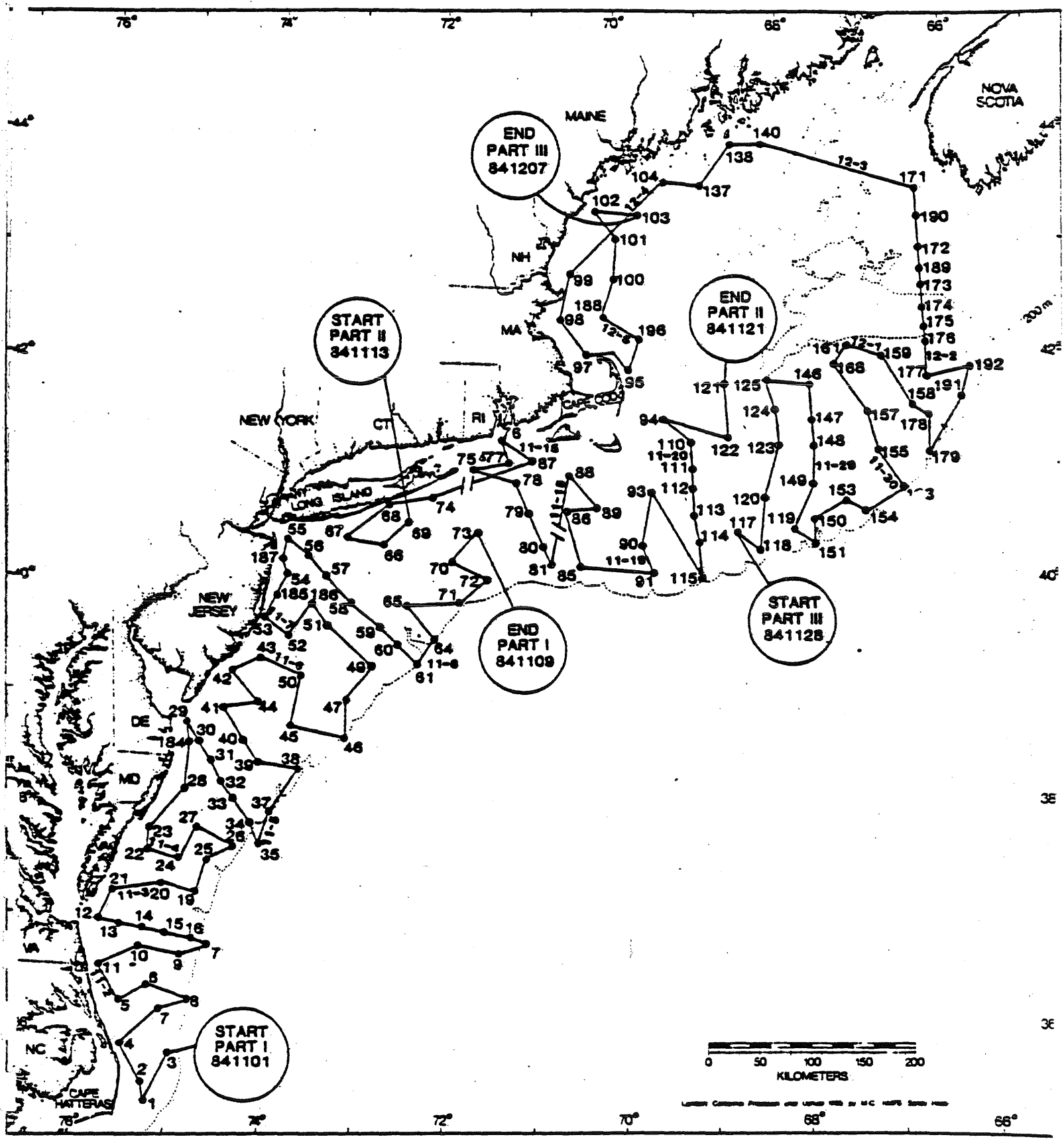



Figure 1. Station locations numbered consecutively for R/V DELAWARE II Cruise 84-09 (I-III), MARMAPI: Ichthyoplankton-Zooplankton, Oceanographic and Primary Productivity Survey during 29 October - 7 December 1984.

VESSEL: ARCISZEWSKI CRUISE: 84-01

DATES: Part I - 6-25 January 1984
Part II - 27 January-21 February 1984
Part III - 22 February-13 March 1984
Part IV - 15 March-10 April 1984
Part V - 10-30 April 1984

PART I, II, III, IV, V

DAYS AT SEA: 111

STATIONS: 226

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) obtain length and age data for mackerel from commercial-sized catches in order to monitor the age structure of the over-wintering stock, (2) define the distribution of overwintering mackerel in the area of the operations and measure environmental parameters which may relate to distribution, (3) identify location of northern and southern spawning components of mackerel in overwintering area, and (4) collect relevant biological data from mackerel and associated species.

## SCIENTIFIC PERSONNEL

Sea Fisheries Institute, Gdynia, Poland

| | |
|---|---|
| Mieczaslaw Giedz | Part I-V |

National Marine Fisheries Service, NEFC, Woods Hole, MA

| | |
|---|---|
| Charles Byrne | Part I |
| Gordon Waring | Part II |
| Emory Anderson | Part IV (15-19 March) |

National Marine Fisheries Service, Foreign Fisheries Observer Program, Gloucester, MA

| | |
|---|---|
| Anne Matherne | Part III |
| Roger Dow | Part IV |
| Robert Dempsey | Part V |

Mid-Atlantic Fishery Management Council, Dover, DE

| | |
|---|---|
| Robert Martin | Part IV (15-19 March) |
| Ricks Savage | Part IV (15-19 March) |
| Ronal Smith | Part IV (15-19 March) |

Cape May County Extension Office, Cape May Court House, NJ

Stewart Tweed

Part IV (15-19 March)

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL | |
|---|---|---|---|---|---|
| SALINITY SAMPLES | | | | | |
| OXYGEN SAMPLES | | | | | |
| NUTRIENT SAMPLES | | | | | |
| CHLORPHYLL SAMPLES | | | | | |
| PRIMARY PRODUCTIVITY | | | | | |
| DROGUES | | | | | |
| SECCHI DISC | | | | | |
| TRAWLS | | | | 226 | |
| FISH SAMPLES | | | | 3679 | metric tons |

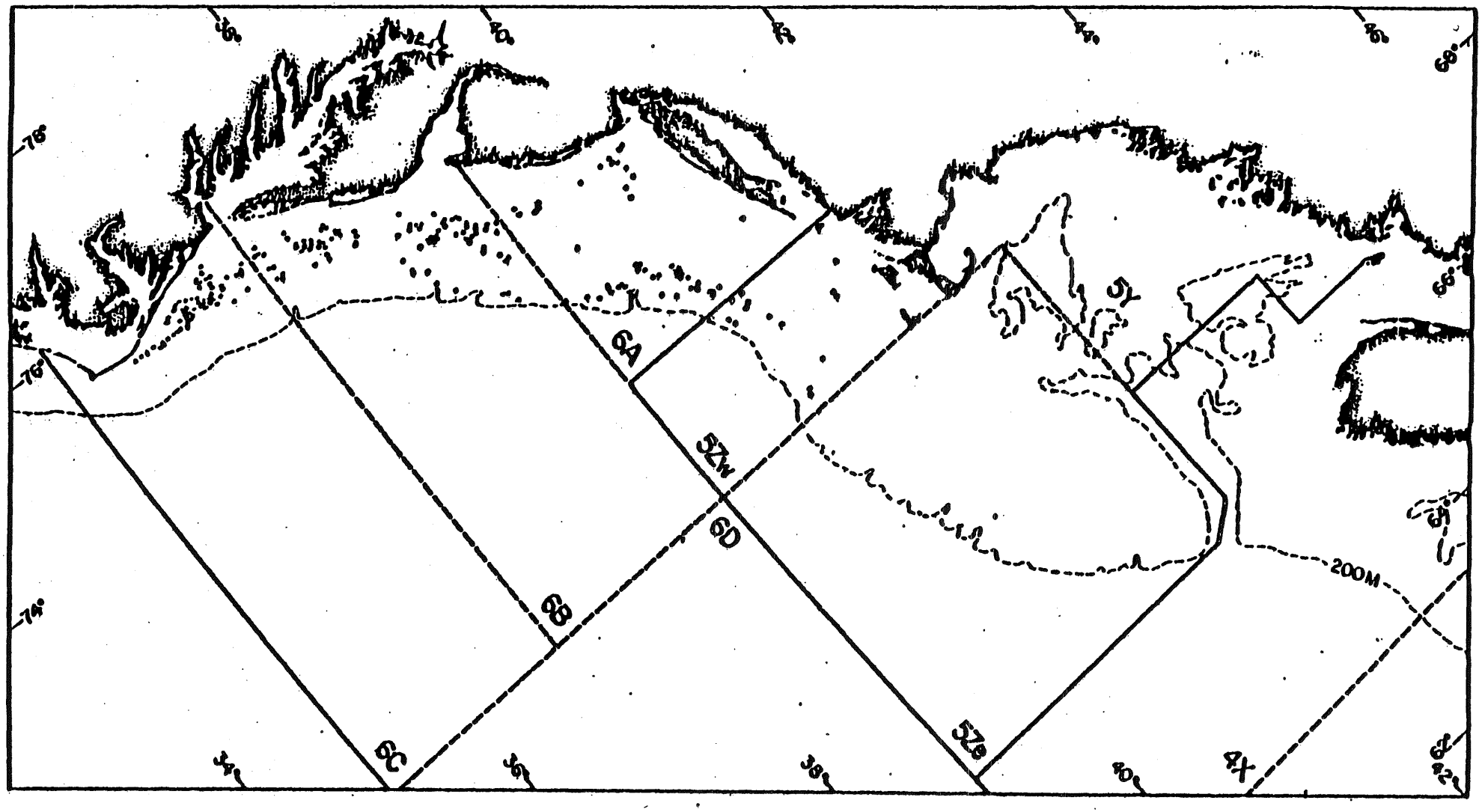



Figure 1. Area of work for the Polish M/T ADMIRAL ARCISZEWSKI Cruise 84-01 (I-V) Atlantic Mackerel Research Fishery during 6 January - 30 April 1984. Dots depict location of trawl tows.

A0319

VESSEL: KNIAZIK CRUISE 84-01

DATES: Part I - 6-25 January 1984
Part II - 27 January-21 February 1984
Part III - 22 February-13 March 1984
Part IV - 15 March-4 April 1984

DAYS AT SEA: 88

STATIONS: 213

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) obtain length and age data for mackerel from commercial-sized catches in order to monitor the age structure of the over-wintering stock, (2) define the distribution of overwintering mackerel in the area of operations and measure environmental parameters which may relate to distribution, (3) identify location of northern and southern spawning components of mackerel in overwintering area, and (4) collect relevant biological data from mackerel and associated species.

## SCIENTIFIC PERSONNEL

Sea Fisheries Institute, Gdynia, Poland

Roman Nowakowski — Parts I-IV

National Marine Fisheries Service, NEFC, Woods Hole, MA

Dennis Hansford — Part I
Roger Clifford — Part II

National Marine Fisheries Service, Foreign Fisheries Observer Program, Gloucester, MA

Jerzy Cygler — Part III
Bradford Haskell — Part IV

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL | | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| .61 cm BONGO | | | | | SALINITY SAMPLES | | | | |
| .20 cm BONGO | | | | | OXYGEN SAMPLES | | | | |
| .61 cm NEUSTON | | | | | NUTRIENT SAMPLES | | | | |
| .20 cm NEUSTON | | | | | CHLORPHYLL SAMPLES | | | | |
| HAEDRICH | | | | | PRIMARY PRODUCTIVITY | | | | |
| XBT | | | | | DROGUES | | | | |
| BOTTLE CAST | | | | | SECCHI DISC | | | | |
| CTD CAST | | | | | TRAWLS | | | | 213 |
| CURRENT METERS | | | | | FISH SAMPLES | | | | 2080 metric tons |

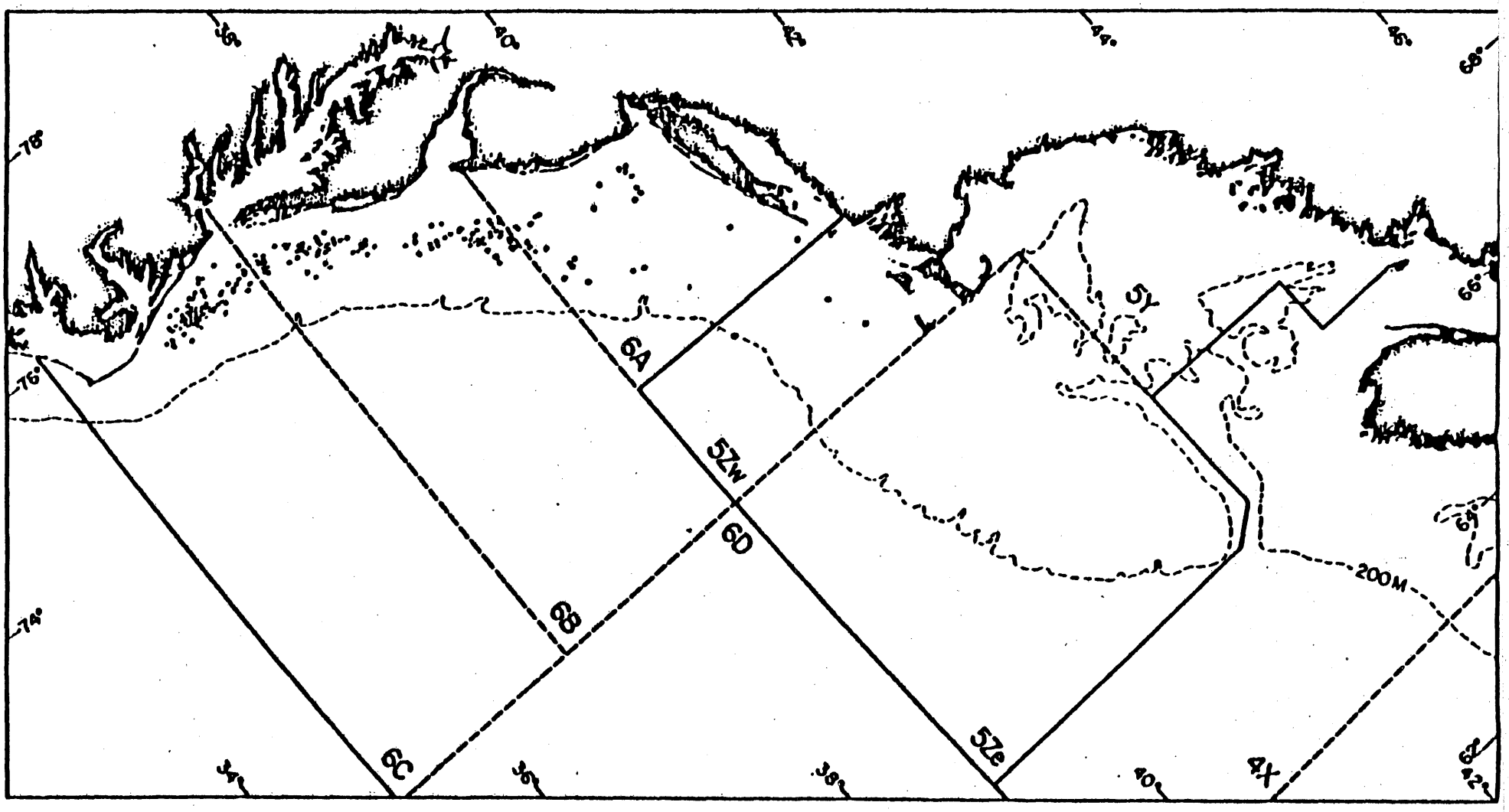



Figure 2. Area of work for the Polish M/T KNIAZIK Cruise 84-01 (I-IV) Atlantic Mackerel Research Fishery during 6 January - 4 April 1984. Dots depict location of trawl tows.

A0321

VESSEL: WIECZNO

CRUISE: 84-01

DATES: 31 March-10 April 1984

PART I

DAYS AT SEA: 11

STATIONS: 37

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) define the distribution of Atlantic herring and Atlantic mackerel in the area of operation and measure environmental parameters which may relate to their distribution; (2) collect information on length, age food habits and sexual maturity of these species and on disease and parasites of Atlantic mackerel; and (3) collect food habits data on the possible predators of these species (e.g. Atlantic cod and spiny dogfish).

## SCIENTIFIC PERSONNEL

Morski Institute Rybachi, Gdynia, Poland

Andrzej Kosior, Co-Chief Scientist
Andrzej Majequicz
Jan Warzocha
Mirek Wyszynski

National Marine Fisheries Service, NEFC, Woods Hole, MA

Linda Depres-Patanjo, Co-Chief Scientist
Ralph Mayo

National Marine Fisheries Service, NEFC, Oxford, MD

Sharon McLean

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| .61 cm BONGO | | | | |
| .20 cm BONGO | | | | |
| .61 cm NEUSTON | | | | |
| .20 cm NEUSTON | | | | |
| HAEDRICH | | | | |
| XBT | 18 | | | |
| BOTTLE CAST | | | | |
| CTD CAST | | | | |
| CURRENT METERS | | | | |

| | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|
| SALINITY SAMPLES | | | | |
| OXYGEN SAMPLES | | | | |
| NUTRIENT SAMPLES | | | | |
| CHLORPHYLL SAMPLES | | | | |
| PRIMARY PRODUCTIVITY | | | | |
| DROGUES | | | | |
| SECCHI DISC | | | | |
| TRAWLS | 37 | | | |
| FISH SAMPLES | | | | |

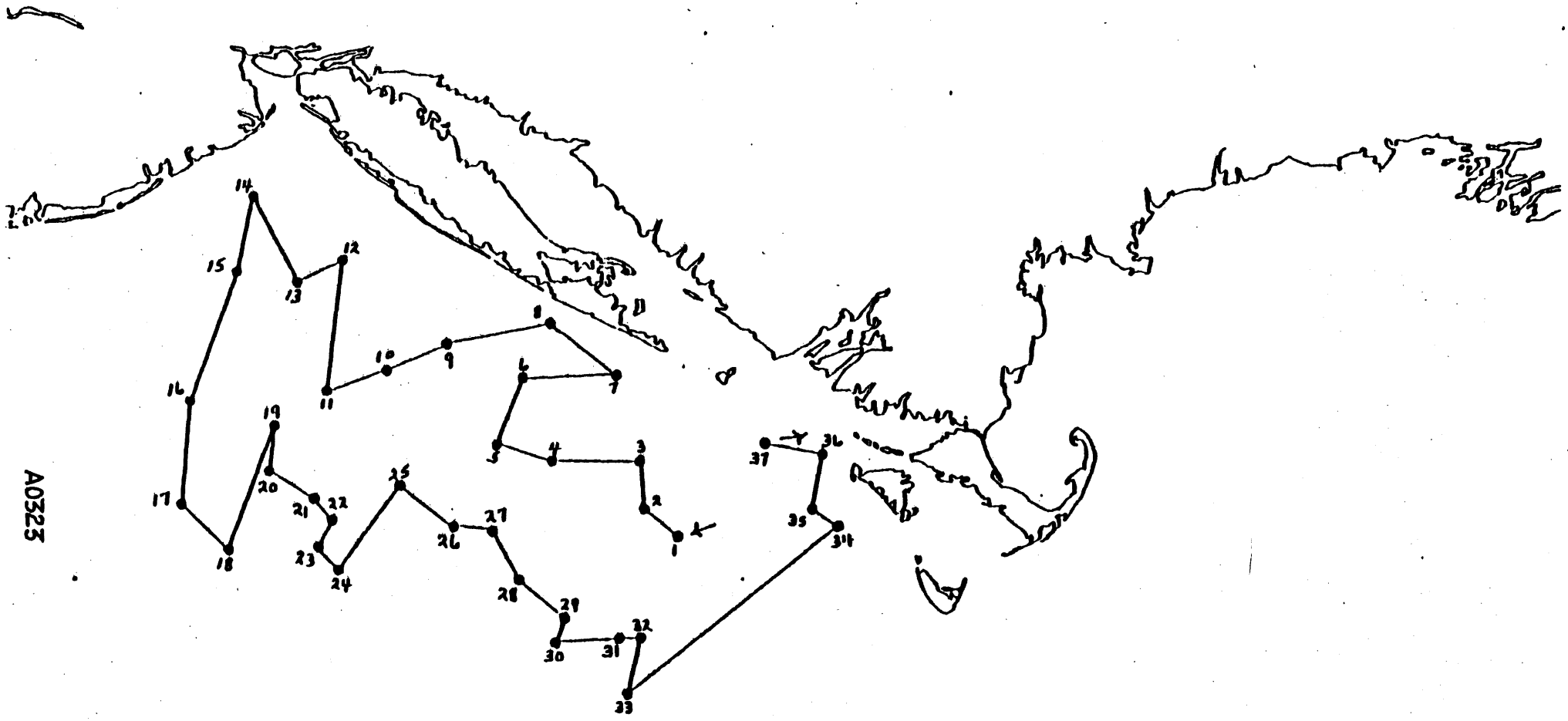



Figure 1. Station locations and cruise track for R/V WIECZNO Cruise 84-01 (I) Atlantic Sea Herring and Atlantic Mackerel Survey, during 31 March-10 April 1984.

A0323

VESSEL: WIECZNO

CRUISE: 84-01

DATES: 12-24 April 1984

PART II

DAYS AT SEA: 13

STATIONS: 36

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) define the distribution of Atlantic sea herring and Atlantic mackerel in the area of operations and measure environmenal parameters which may relate to this distribution, (2) collect information on length, age, food habits and sexual maturity of these species and on disease and parasites of Atlantic mackerel and; (3) collect food habits data on the possible predators of these species (e.g. Atlantic cod and spiny dogfish).

## SCIENTIFIC PERSONNEL

Morski Instytut Rybacki, Gdynia, Poland

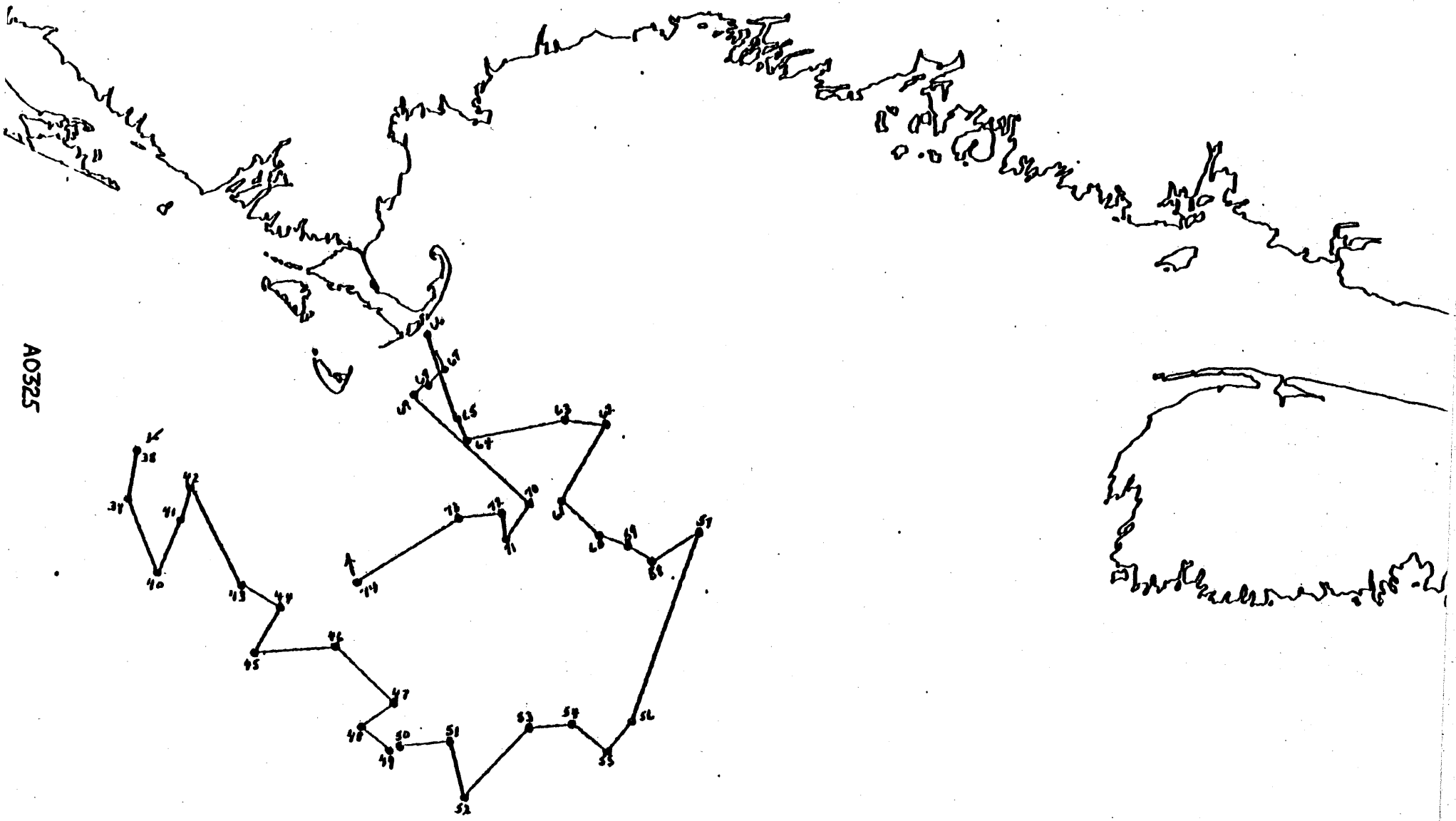
Andrzej Kosior, Co-Chief Scientist
Andrzej Majewicz
Jan Warzocha
Mirek Wyszejnski

National Marine Fisheries Service, NEFC, Woods Hole, MA

Gordon Waring, Co-Chief Scientist
Margaret McBride
Ira Palmer

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL | | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| .61 cm BONGO | | | | | SALINITY SAMPLES | | | | |
| .20 cm BONGO | | | | | OXYGEN SAMPLES | | | | |
| .61 cm NEUSTON | | | | | NUTRIENT SAMPLES | | | | |
| .20 cm NEUSTON | | | | | CHLORPHYLL SAMPLES | | | | |
| HAEDRICH | | | | | PRIMARY PRODUCTIVITY | | | | |
| XBT | | 17 | | | DROGUES | | | | |
| BOTTLE CAST | | | | | SECCHI DISC | | | | |
| CTD CAST | | | | | TRAWLS | | 36 | | |
| CURRENT METERS | | | | | FISH SAMPLES | | 150 | | |



F_ re ^ Sta^^n locations and cruise tract for R/V WIECZNO Cruise 84-01 (II) Atlantic Sea Herring
... dur ..... 1_ _ ) A| . . 19^^

A0325

VESSEL: WIECZNO

CRUISE: 84-01

DATES: 26 April-18 May 1984

PART III

DAYS AR SEA: 23

STATIONS: 30

## CRUISE OBJECTIVES

The objectives of the cruise were to: (1) investigate a newly-formed cold core ring for concentrations of large apex predators (primarily sharks, tunas and swordfish); (2) conduct food habits studies by examining stomachs of apex predators taken in the different water masses; (3) collect vertebral samples from sharks for age and growth studies; (4) collect biological material for reproductive studies of sharks; (5) collect blood samples from tuna for bacteriological studies; (6) collect parasites from sharks; (7) tag sharks and tunas for migration studies.

## SCIENTIFIC PERSONNEL

Morski Instytut Rybacki, Gdynia, Poland

Andrzej Kosior, Co-Chief Scientist
Marianna Pastuscak
Mirsoslaw Wyszynski

National Marine Fisheries Service, NEFC, Narragansett, RI

John Casey, Co-Chief Scientist
Charles Stillwell
Harold "Wes" Pratt
Nancy Kohler
Gregory Skomal

Department of Conservation, Storrs, CT

George Benz

## DATA COLLECTED

| | I PT | II PT | III PT | TOTAL | | I PT | II PT | III PT | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| .61 cm BONGO | | | | | SALINITY SAMPLES | | | | |
| .20 cm BONGO | | | | | OXYGEN SAMPLES | | | | |
| .61 cm NEUSTON | | | | | NUTRIENT SAMPLES | | | | |
| .20 cm NEUSTON | | | | | CHLORPHYLL SAMPLES | | | | |
| HAEDRICH | | | | | PRIMARY PRODUCTIVITY | | | | |
| XBT | | | 143 | | DROGUES | | | | |
| BOTTLE CAST | | | | | SECCHI DISC | | | | |
| CTD CAST | | | | | TRAWLS | | | | |
| CURRENT METERS | | | | | FISH SAMPLES | | | 623 | |
| | | | | | LONGLINE | | | 30 | |

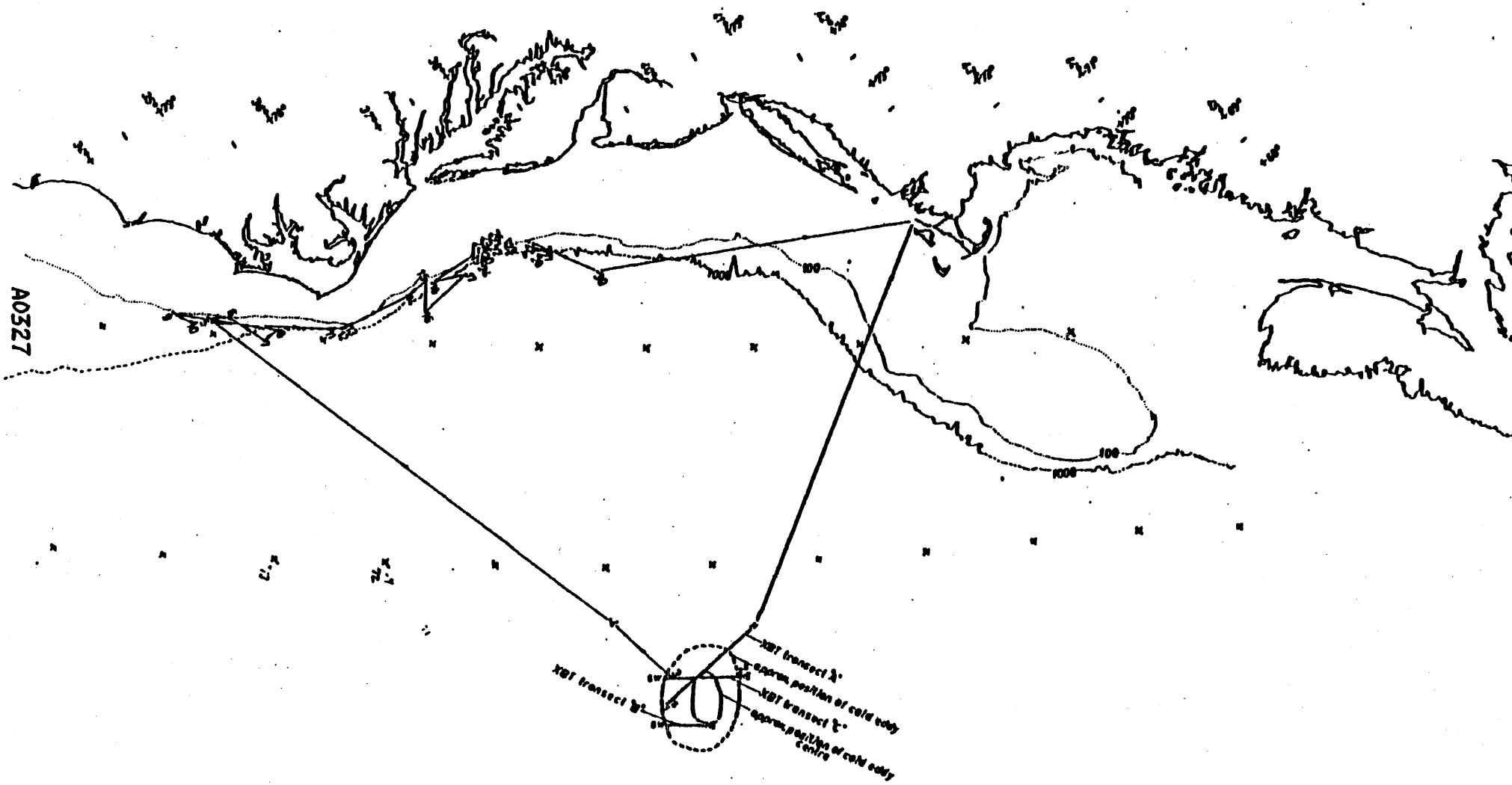



Figure 2. Cruise track and station locations of longline sets for the R/V WIECZNO Cruise 84-02 Survey of Apex Predators-Sharks and Swordfish, during 26 April-18 May 1984.