



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

25 August 2005

CRUISE RESULTS

NOAA FRV ALBATROSS IV
Cruise No. AL 05-02 (Parts I-II)
Winter Bottom Trawl Survey

CRUISE PERIOD AND AREA

The cruise period was from 31 January - 25 February 2005. The cruise was conducted in two parts: Part I was from 31 January - 9 February and Part II was from 15-25 February. The area of operations was from Cape Hatteras to the eastern portion of Georges Bank. Station locations are shown in Figure 1.

OBJECTIVES

The objectives of the cruise were to: (1) determine the seasonal distribution, relative abundance, and biodiversity of fish and invertebrate species found on the continental shelf; (2) collect biological samples for age determinations and growth studies, fecundity, maturity, and feeding ecology; (3) collect hydrographic and meteorological data; (4) collect samples of ichthyoplankton and zooplankton for relative abundance and distribution studies; (5) collect data and samples for cooperative researchers and programs; and (6) conduct a hydroacoustic survey between stations.

METHODS

Operations and gear used during Parts I-II conformed with the Cruise Instructions for the Winter Bottom Trawl Survey dated 3 January 2005, Addendum 1 dated 26 January 2005; and Addendum 2 dated 14 February 2005.

A 30-minute tow was made at each station with a Northeast Fisheries Science Center (NEFSC) standard 36 Yankee "flatfish" net rigged with a rubber disc covered chain sweep, 11 floats, and 55 meter ground cables. NEFSC standardized 450 kilogram (kg) polyvalent trawl doors rigged with chain backstraps were used. The trawl was fished at a scope of 4:1 in depths between 18 and 27 m, 3:1 in depths between 28 and 183 m deep, and 2.5:1 in depths of 184 m and greater. Towing speed was maintained at approximately

3.8 knots using DGPS instrumentation. Direction of the tow was generally toward the next station. Throughout the cruise, a hydroacoustic survey was conducted during transit between bottom trawl stations using the Simrad EK-500 system.

After each tow, the catch was sorted by species and weighed to the nearest 0.001 kg using motion-compensated digital scales. Representative length frequencies were collected for all species caught. All catch and biological data were recorded using shipboard automated data entry systems. The Fisheries Scientific Computing System (FSCS) was used to record all biological data. This system uses digital scales, electronic measuring boards, touch screen displays and barcode scanners to record data on deck, and archives the data on the ship's computer network.

Sampled fish were assigned individual identification numbers, measured, weighed to the nearest 0.001 kilogram, and further sampled for age and growth and feeding ecology studies. Bony fish were measured to the nearest centimeter to the end of the central caudal ray; biological samples were collected concurrently with measuring operations. Sharks and skates were measured to the end of the caudal fin (total length). Rays were measured for disk width. Lobsters were measured in millimeters from the posterior edge of the eye socket to the end of the carapace; the presence or absence of a V-notch was also noted. Crabs were measured across the carapace width in centimeters. Shell height was measured in centimeters for selected bivalves. Additional collections were obtained for various scientists (Table 2). The remainder of the catch (miscellaneous invertebrates, shells, substrate, etc) was described by volume.

Surface temperatures were measured using the hull-mounted temperature sensor at a depth of 3 meters. Temperature and conductivity profiles were recorded at each station using a conductivity, temperature, and depth (CTD) instrument. A bottom salinity sample was obtained twice each day to calibrate the CTD. Water samples were also taken for fluorometer calibrations.

Samples of fish eggs and larvae were collected at selected stations. Plankton sampling gear consisted of a 61 cm bongo frame fitted with 0.333 mm mesh nets. Digital flow meters were suspended within the mouths of the bongo frame to estimate water volume filtered. The net was towed at 2.8-3.8 kilometers/hour (1.5-2.0 knots). A CTD was deployed at each plankton station.

RESULTS

The survey sampled at 108 stations with 36 and 72 stations completed on Parts I and II respectively.

Standard plankton tows were made at 42 stations. Bottom temperatures were collected at 108 stations using the CTD system. Bottom water samples for CTD calibration were taken at 12 stations.

Tables 1 and 2 list the major samples collected for various studies.

DISPOSITION OF SAMPLES AND DATA

Age and growth samples, feeding ecology data and samples, maturity data, trawl catch data, and hydrographic data will be analyzed at the NEFSC Woods Hole, Massachusetts Laboratory. The various collections were forwarded to the individuals listed in Table 2. Resulting data will be audited, edited, and loaded into the NEFSC trawl survey database.

SCIENTIFIC PERSONNEL

National Marine Fisheries Service, NEFSC, Woods Hole, MA

John Galbraith, Chief Scientist¹

Larry Brady, Chief Scientist²

Stacy Rowe¹

Katherine Sosebee¹

Paul Kostovick¹

Mark Terceiro¹

David Mountain¹

Sandra Sutherland¹

Tiffany Vidal¹

Charles Keith¹

Rob Alexander²

Kevin McIntosh²

Nathan Keith²

Chris Pickett²

William Duffy²

Virginia Institute of Marine Science, Gloucester Point, VA

Roy Pemberton Jr.¹

Contractors

John Cookingham^{1,2}

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Kris Ohleth²

Falmouth, MA

S. Yarmouth, MA

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Volunteers

Susan Stone¹

Meghan McGovern¹

Ryan McDermott¹

Leslie Osborne²

Nikolai Kilbansky²

Daniel Newquist²

Nathan Lampert²

Katie Anderson²

Washington, DC

Winthrop, MA

Jenkintown, PA

Ennis, MT

Northampton, MA

Peacedale, RI

Boston, MA

Amherst, MA

¹31 January - 9 February

²15-25 February

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Table 1. Field observations and samples collected for feeding ecology, and age and growth studies on the FRV ALBATROSS IV, Cruise 05-02 (I-II), Winter Bottom Trawl Survey, during 31 January - 25 February 2005.

| Species | Feeding Ecology Observations | Age and Growth Samples |
|---------------------|-------------------------------------|-------------------------------|
| American shad | 17 | - |
| Armored searobin | 6 | - |
| Atlantic cod | 12 | 32 |
| Atlantic herring | 108 | 355 |
| Atlantic mackerel | 75 | 195 |
| Barndoor skate | 14 | 30 |
| Black sea bass | 47 | 201 |
| Blackbelly rosefish | 20 | - |
| Blueback herring | 20 | - |
| Bluefish | 8 | - |
| Buckler dory | 9 | - |
| Butterfish | 72 | - |
| Clearnose skate | 5 | - |
| Fawn cusk-eel | 15 | - |
| Fourspot flounder | 158 | 1 |
| Goosefish | 177 | 355 |
| Haddock | 9 | 12 |
| Lanternfish uncl. | 1 | - |
| Little skate | 159 | - |
| Longhorn sculpin | 51 | - |
| Northern searobin | 55 | - |
| Ocean pout | 51 | - |
| Offshore hake | 83 | 84 |
| Red hake | 78 | 3 |
| Rosette skate | 40 | - |
| Scup | 44 | 93 |
| Sea raven | 12 | - |
| Silver hake | 126 | 2 |
| Smooth dogfish | 30 | - |
| Spiny dogfish | 240 | - |
| Spotted hake | 127 | 2 |
| Striped bass | 47 | 47 |
| Striped searobin | 48 | - |
| Summer flounder | 314 | 742 |
| Thorny skate | 1 | - |
| Tilefish | 7 | - |
| Weakfish | 3 | 3 |
| White hake | 5 | - |
| Windowpane | 169 | 240 |
| Winter flounder | 55 | 79 |
| Winter skate | 97 | - |
| Witch flounder | 113 | 18 |
| Yellowtail flounder | 63 | 89 |
| TOTALS | 2,791 | 2,583 |

Table 2. Miscellaneous scientific collections made on the FRV ALBATROSS IV, Cruise 05-02 (I-II), Winter Bottom Trawl Survey, during 31 January - 25 February 2005.

| Investigator and Affiliation | Samples Saved | Approximate Number |
|--|---------------------------|---------------------------|
| Aquarium, NMFS, NEFSC, Woods Hole, MA | Barndoor skate | 2 indiv. |
| | Red hake | 1 indiv. |
| Peter Chase, NMFS, NEFSC, Woods Hole, MA | Various species | 67 indiv. |
| John Galbraith, NMFS, NEFSC, Woods Hole, MA | Various species | 433 indiv. |
| Joe Idoine, NMFS, NEFSC, Woods Hole, MA | Shrimp uncl. | 1 bag |
| Francis Juanes, UMASS, Amherst, MA | Offshore Hake | 26 samples |
| | Silver Hake | 30 samples |
| Charles Keith, NMFS, NEFSC, Woods Hole, MA | Atlantic hagfish | 5 indiv. |
| | Conger eel uncl. | 2 indiv. |
| Bill Macy, University of Rhode Island, Kingston, RI | Longfin squid | 101 indiv. |
| Nancy McHugh, NMFS, NEFSC, Woods Hole, MA | Various species | 72 indiv. |
| Paul Nitschke, NMFS, NEFSC, Woods Hole, MA | Cunner | 5 indiv. |
| Martha Nizinski, Smithsonian Institute, Washington, DC | Galatheid uncl. | 97 indiv. |
| Roy Pemberton, VIMS, Gloucester Point, VA | Black sea bass | 1 indiv. |
| Brian Smith, NMFS, NEFSC, Woods Hole, MA | Various species | 83 samples |
| Katherine Sosebee, NMFS, NEFSC, Woods Hole, MA | Spiny dogfish | 112 exam. |
| | Dogfish spines | 51 samples |
| | Various skates | 404 exam. |
| | Skate spines/frozen whole | 60 samples |
| Tiffany Vidal, NMFS, NEFSC, Woods Hole, MA | Various species | 207 indiv. |
| Susan Wigley, NMFS, NEFSC, Woods Hole, MA | Witch flounder | 20 indiv. |

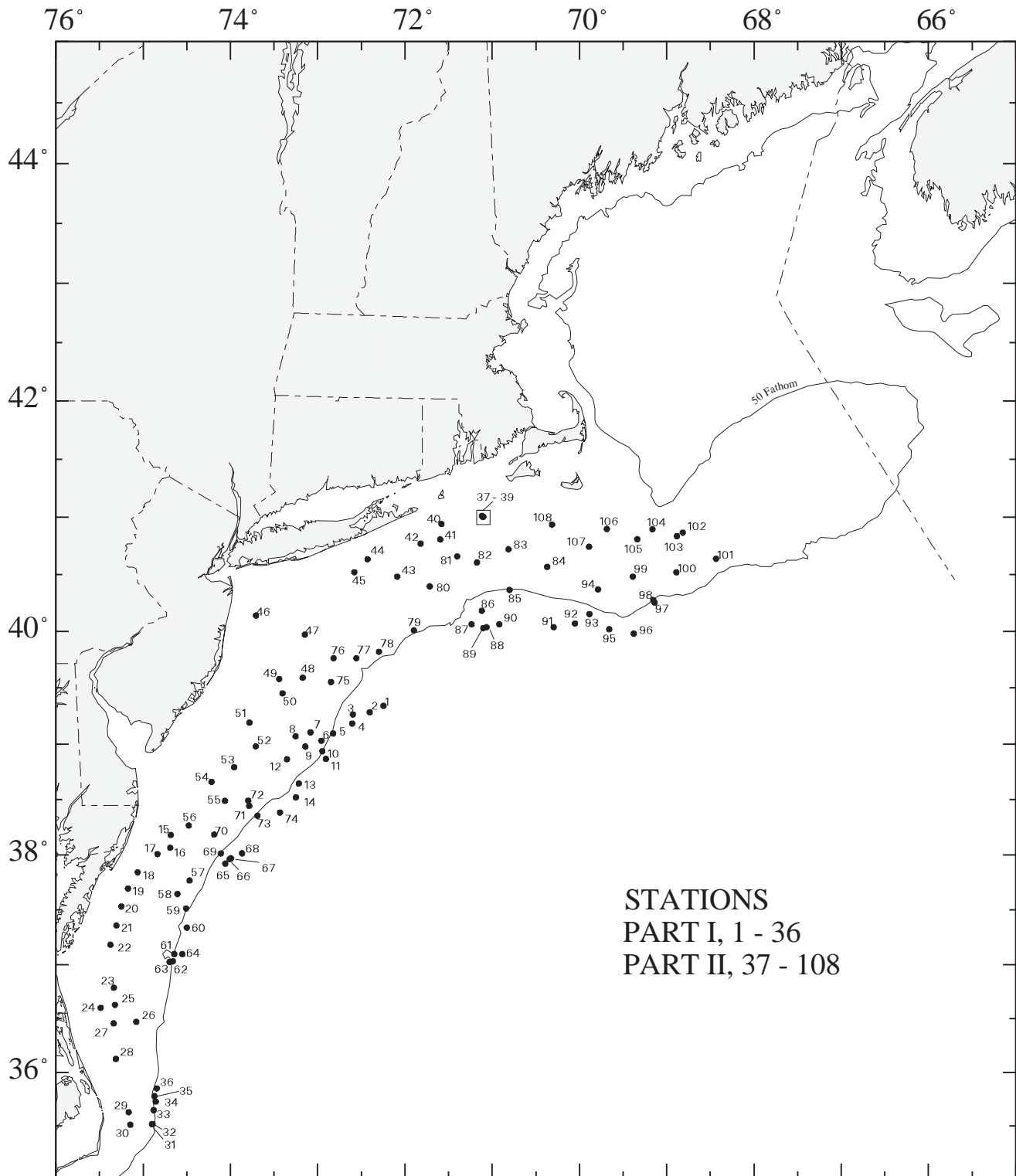


Figure 1. Trawl hauls made from FRV ALBATROSS IV, during NOAA Fisheries Service, Northeast Fisheries Science Center winter bottom trawl survey (05 - 02), January 31 - February 25, 2005.