

AUG 15 1989
#89023

CRUISE REPORT

Vessel name: RV Seward Johnson and Johnson Sea Link Submersible
Harbor Branch Oceanographic Institution
Fort Pierce, FL

Cruise no: SJHN 89-1

Parent project: EEZ Geology, 9470-03611

Funding agency: NOAA (National Underwater Research Center, U. Connecticut,
Avery Point, CN

Funding amount: 70 K

Area of operations: Eastern Georges Bank

Start: Aug. 8, 1989; Gloucester, MA

End: Aug. 14, 1989; Gloucester, MA

Chief scientist: Gregory Lough, National Marine Fisheries Service

Scientific party: NMFS: Gregory Lough, Dave Potter, George Bolz, Elizabeth
Broughton, Geoffery Laurence

USGS: Page Valentine, Eric Strom, Nancy Soderberg

URI: Edward Durbin

Canada: Stratis Gavaris (Dept. of Fisheries and Oceans,
St. Andrews, NB)

Purpose of cruise: Geological and biological observations of eastern Georges
Bank. Abundance and distribution of juvenile cod and haddock in relation to
bottom sediment type. Mapping sediment distribution and bottom morphology;
sediment transport.

Navigation: Loran-C; Megapulse receiver using ASF corrections; 10-sec fixes
stored on 3.5 inch diskettes.

Scientific equipment: Submersible, video and still cameras, sediment sampler,
50 kHz echo sounding system.

Tabulated information:

Days at sea: 7

Kilometers of echo sounding profiles: 454

Stations occupied: see attached tables

Submersible dives: " " "

Station information: " " "

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DIVE LOG

RV Seward Johnson and Johnson Sea Link Submersible, Eastern Georges Bank, 1989

Date	Dive No.	Sta. No.	Time (EDT)	Personnel		15-min transect	Tapes		Geol. Smpls.
				Fwd	Aft		Audio	Video	
8-9-89	JSL 1888	1	1923-2201	Potter	Lough	3	1	3	1
8-10-89	JSL 1889	1	1013-1214	Potter	Bolz	0	0	1	0
"	JSL 1890	1	1619-1830	Lough	Laurence	3	1	4	1
"	JSL 1891	1	2141-2316	Valentine	Broughton	4	2	4	1
8-11-89	JSL 1892	1	0959-1123	Bolz	Gavaris	4	1	4	0
"	JSL 1893	1	1446-1613	Laurence	Broughton	3	1	3	1
"	JSL 1894	1	2014-2137	Durbin	Potter	4	1	4	1
8-12-89	JSL 1895	1	0905-1048	Potter	Bolz	3	1	3	2
"	JSL 1896	2	1355-1528	Lough	Gavaris	4	0	4	5
"	JSL 1897	2	2009-2156	Valentine	Broughton	5	2	4	2
8-13-89	JSL 1898	2	0853-1005	Gavaris	Bolz	4	1	4	2
"	JSL 1899	2	1117-1200	Strom	Soderberg	2	0	2	2
"	JSL 1900	2	1706-1830	Broughton	Laurence	4	1	4	3
"	JSL 1901	3	2146-2308	Potter	Bolz	4	1	4	2

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SEDIMENT SAMPLES COLLECTED FROM SUBMERSIBLE

CRUISE: RV SEWARD JOHNSON AND JOHNSON SEA LINK SUBMERSIBLE, EASTERN GEORGES BANK, 1989

Sample No.	Date	Time (EDT)	Water depth, m	Loran TD's	Lat. N	Long. W	Comments
JSL2-1888-1	8-9-89	2036	87	12694.3	42° 00.65'	66° 09.89'	Sta. 1 area; gravel and sand; covered by polychaete worm tubes and bryozoa
1890-1	8-10-89	1622	88	12695.4	42 00.48	66 09.97	Sta. 1 area; " " "
1891-1	"	2223	88	12695.6	42 00.01	66 09.31	Sta. 1 area; gravel and sand; fewer encrusting worm tubes
1893-1	8-11-89	1613	87	12693.8	42 00.97	66 10.20	Sta. 1 area; mostly polychaete worm tubes with some gravel and sand
1894-1	"	2137	90	12690.8	42 00.51	66 08.66	Sta. 1 area; gravel and sand; few worm tubes
1895-1	8-12-89	1011	89	12694.4	42 00.14	66 09.18	Sta. 1 area; sand and gravel; few worm tubes
1895-2	"	1049	89	12696.0	41 59.73	66 09.01	Sta. 1 area; sand and gravel; few worm tubes
1896-1	"	1359	77	12760.6	41 54.39	66 19.84	Sta. 2 area; gravel and sand
1896-2	"	1422	77	12761.4	41 54.49	66 20.21	Sta. 2 area; gravel and sand
1896-3	"	1443	78	12761.6	41 54.66	66 20.51	Sta. 2 area; gravel and sand
1896-4	"	1506	78	12762.2	41 54.76	66 20.80	Sta. 2 area; gravel and sand
1896-5	"	1528	78	12762.8	41 54.85	66 21.11	Sta. 2 area; gravel and sand

SEDIMENT SAMPLES COLLECTED FROM SUBMERSIBLE

CRUISE: RV SEWARD JOHNSON AND JOHNSON SEA LINK SUBMERSIBLE, EASTERN GEORGES BANK, 1989

Sample No.	Date	Time (EDT)	Water depth, m	Loran TD's	Lat. N	Long. W	Comments
JSL2-1897-1	"	2010	78	12762.8	41 54.50	66 20.61	Sta. 2 area; gravel and sand
1897-2	"	2156	79	12766.0	41 53.06	66 19.50	Sta. 2 area; gravel and sand
1898-1	8-13-89	0839	79	12765.1	41 54.24	66 20.89	Sta. 2 area; gravel and sand
1898-2	"	1005	80	12765.4	41 53.73	66 20.27	Sta. 2 area; gravel and sand
1899-1	"	1133	81	12765.5	41 53.48	66 19.95	Sta. 2 area; gravel and sand
1899-2	"	1201	81	12766.3	41 53.31	66 19.94	Sta. 2 area; gravel and sand
1900-1	"	1706	81	12772.9	41 53.11	66 21.48	Sta. 2 area; gravel and sand
1900-2	"	1747	78	12771.6	41 53.42	66 21.58	Sta. 2 area; sand from dune crees
1900-3	"	1831	74	12769.8	41 53.74	66 21.50	Sta. 2 area; sand
1901-1	"	2147	71	12779.8	42 05.08	66 40.14	Sta. 3 area; gravel and sand
1901-2	"	2308	70	12780.1	42 04.35	66 39.20	Sta. 3 area; gravel and sand

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

August 16, 1989

#89023

CRUISE RESULTS

NOAA R/V CHAPMAN
Cruise Number CH 89-03C
Juvenile Fish Survey

CRUISE PERIOD AND AREA

The cruise period was from 1-12 August 1989. The area of operation was the northeastern part of Georges Bank (Figure 1).

OBJECTIVES

The cruise objectives were to: (1) determine the distribution and relative abundance of age-0 cod and haddock; (2) document the predation on the juvenile fish; (3) conduct a site-study in conjunction with the R/V SEWARD JOHNSON's submersible SEA LINK to derive estimates of absolute abundance for the age-0 fish, and (4) compare results of stations located on gravel substrate with those located on sand.

METHODS

The primary sampling gear during the cruise was a standard Yankee 36 otter trawl with 14 inch rollers. The trawl was fished at 3.5 knots for a 30 minute duration with a 3:1 wire scope. The distance over bottom was recorded using a Doppler speed log. A pipe dredge (9 x 48 centimeters) was attached by a 0.3 meter length of chain to the foot rope of the trawl. A twin 20 centimeter (cm) MARMAP bongo frame with 0.333 and 0.505 millimeter (mm) mesh plankton nets was attached to the head rope of the trawl.

Trawl catches were processed and recorded according to standard NEFC bottom trawl survey methodology. Stomach contents of potential predators of juvenile fish were examined at sea and recorded volumetrically. Age-0 fish, plankton, and sediment samples were saved for more detailed analyses back at the laboratory.



Hydroacoustic traces were taken throughout the cruise track. A surface-to-bottom temperature profile using an expendable bathythermograph (XBT) and/or surface bucket temperature was taken at selected stations.

RESULTS

The first station was done in Cape Cod Bay as a test haul. A systematic grid survey (stations 2-37) was completed on northeastern Georges Bank (Figure 1). The remaining stations (38-49) were conducted at a selected site (42°10' 67°00) near the R/V SEWARD JOHNSON's submersible operations.

Age-0 cod were caught at most of the stations on northeastern Georges Bank. A total of 406 age-0 cod were captured ranging from 45-105 mm in total length (TL). Catches of juvenile cod were several times greater during the night than day. Only five age-0 haddock were caught ranging from 105-140 mm TL.

A total of 2,861 stomachs were examined volumetrically at sea (Table 1). Some predation on age-0 cod was observed in the stomachs of cod, sea raven, longhorn sculpin, and thorny skate. Sand lance, mailed sculpin, silver hake, and age-0 Atlantic herring were some of the other fish prey found in the stomach samples. Major invertebrate prey consumed were shrimp (Dichelopandalus leptoceras; Crangon septemspinosa; Spirontocaris spinus), crab (Cancer sp.; Hyas sp.), Gammarid amphipods, and brittlestar.

The numbers in Table 1 reflect the composition of the overall catches during the cruise; cod, haddock, silver hake, longhorn sculpin, and young spiny dogfish were the predominant species on the Northeast Peak.

Pipe dredge samples were collected from 47 stations. Coarse gravel was collected on the gravel bed and sand occurred at those stations located off the bed (Figure 1).

The gammarid amphipod, Gammarus annulatus was the predominant organism collected by the 20 cm plankton net.

Three XBT were dropped and their traces indicate a stratified temperature profile with the surface and bottom temperatures averaging about 18 and 6°C, respectively.

DISPOSITION OF SAMPLES AND DATA

Hydroacoustic traces and dredge samples will be sent to Page Valentine, U.S. Geological Survey, Woods Hole, MA for analyses of substrate type. The remaining samples and data will be processed and archived at the NEFC laboratory in Woods Hole, MA.

Copies of all data logsheets and results have been sent to OMO, Rockville, Maryland for forwarding to the Department of Fisheries and Oceans, Halifax, Nova Scotia, Canada. It is anticipated that all data will be published prior to 1992.

SCIENTIFIC PERSONNEL

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Figure 1. Station location and cruise track on NOAA ship CHAPMAN Cruise 89-03C, Juvenile Fish Survey, during 1-12 August 1989. A systematic grid survey (stations 2-37) was completed on northeastern Georges Bank and a site study (stations 38-49) was done in conjunction with the R/V SEWARD JOHNSON's submersible work. The gravel bed is indicated by the shaded area.

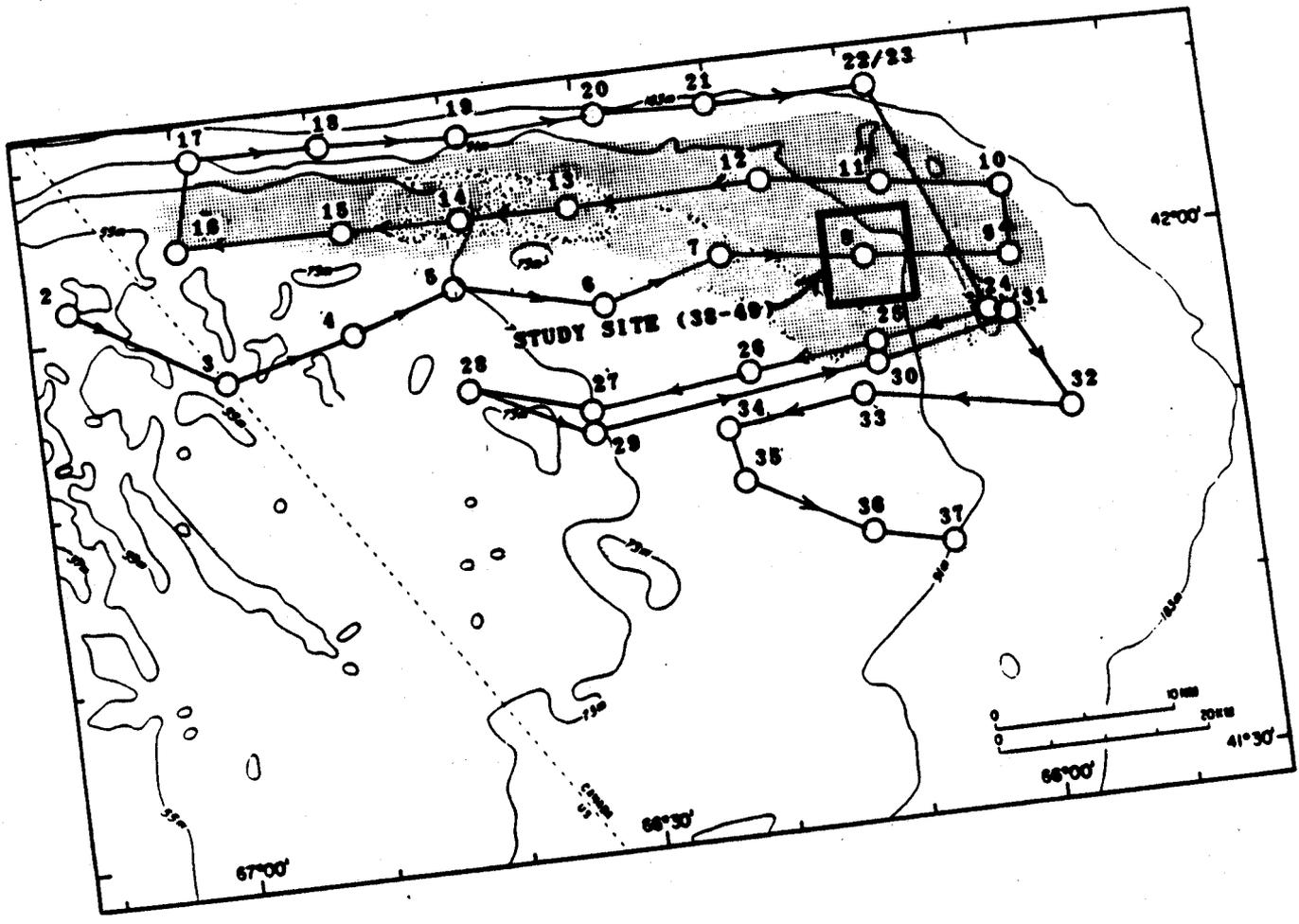


Table 1. List of species for which stomach contents were examined during the NOAA ship CHAPMAN Cruise 89-03C, Juvenile Fish Survey, during 1-12 August 1989.

Code	Predator	No.
015	Spiny dogfish	230
017	Blue shark	1
023	Winter skate	125
026	Little skate	58
027	Smooth skate	2
028	Thorny skate	84
069	Offshore hake	1
072	Silver hake	305
073	Atlantic cod	762
074	Haddock	498
075	Pollock	1
076	White hake	10
077	Red hake	29
101	Atlantic halibut	3
104	Fourspot flounder	2
105	Yellowtail flounder	2
106	Winter flounder	13
108	Windowpane	3
121	Atlantic mackerel	4
135	Bluefish	1
163	Longhorn sculpin	371
164	Sea raven	94
193	Ocean pout	58
197	Goosefish	3
502	Shortfin squid	201
	Total	2861