

ALBATROSS IV CONDUCTS GROUND FISH SURVEY OFF EASTERN UNITED STATES

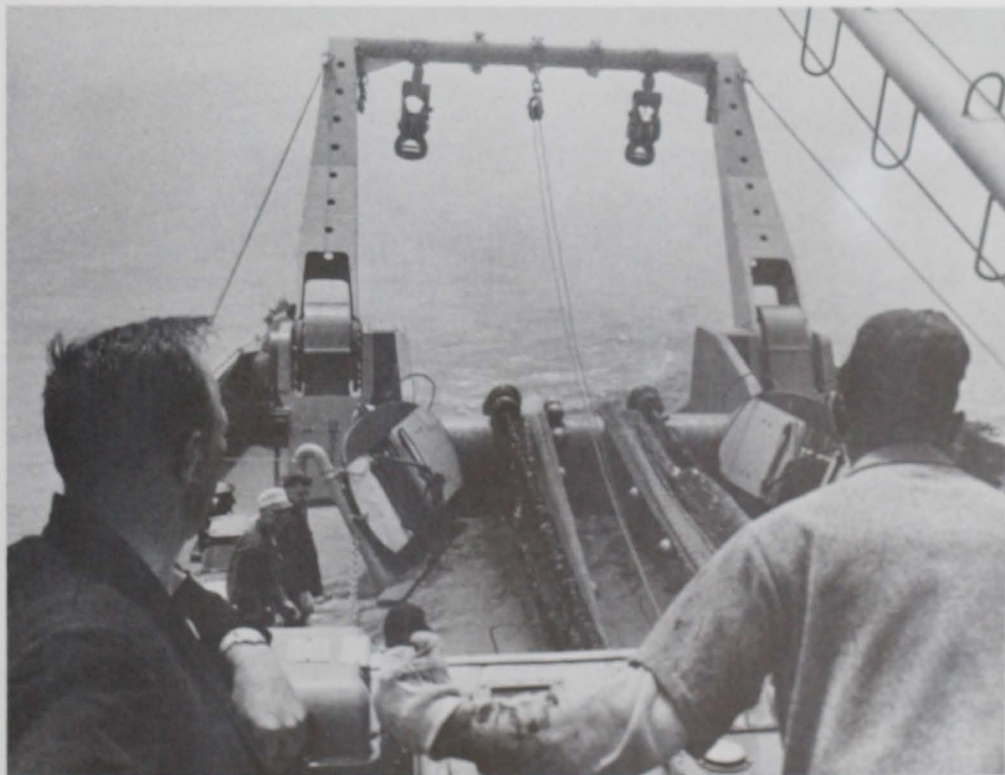
During the fall of 1971, the NMFS research vessel 'Albatross IV' completed surveys of 5 major areas: the continental shelf off western Nova Scotia, the Gulf of Maine, Georges Bank, and shelf areas off southern New England, and the middle Atlantic States.

The groundfish surveys have been an important part of the research program of the NMFS Northeast Fisheries Center at Woods Hole, Massachusetts, for over 20 years. The timing and techniques of the survey have varied considerably. In 1963, when the Albatross IV became available, a fairly standardized approach was adopted. From 1963-1965, three times a year, surveys were conducted from western Nova Scotia to Long Island, New York. Since 1967, the survey area has included the continental shelf southward from Long Island to Cape Hatteras, North Carolina. Current surveys are carried out twice a year, in spring and autumn.

The primary goal of the survey series is to measure changes in the composition of species and the abundance of the fish populations of the continental shelf off the U.S. northeastern coast. The results supplement other information available to develop management policy for conservation under The International Commission for the Northwest Atlantic Fisheries (ICNAF). Recent surveys by Canadian and USSR fishery research agencies have followed NMFS guidelines. The results of these cooperative surveys increase "the precision of interpretation."

How Survey Is Conducted

The evaluation of survey results relies heavily on statistical techniques aided by automatic data processing. The sampling stations are chosen to reflect an accurate measure of the entire area. Primary sampling is done by trawling at stations



Crew of NMFS research vessel 'Albatross IV' retrieves fishery gear off Georges Banks during experimental fishing operations. Vessel has stern trawling ramp, bow thruster to help control it on station, variable pitch propeller, active rudder and closed circuit television. TV shows operations on vessel and trawl and other gear.

selected randomly with a standard #36 Yankee trawl. Measurements of the trawl net during presurvey testing show an average wing-spread of 36.5 feet and average headrope height of 8.5 feet. The nets used were equipped routinely with a $\frac{1}{2}$ " stretched-mesh liner in the cod-end to retain smaller organisms. Operations are continuous on a 24-hour day basis; trawl hauls are 30 minutes.

Preliminary evaluation of data from the 1971 survey for southern New England and Georges Bank is compared in Table 1 with data from earlier surveys (1965-1970) for several important species.

In Fall 1971, the relative abundance indices (mean catch per haul in pounds) for Georges Bank area was only 52% of average fall survey figure for the 6-year period, 1965 to 1970. Haddock catches dropped most precipitously: The 1971 figure was only 14% of 1965-70 average (down 86%).

Overall catch rates for southern New England also showed a decline. However,

these were off only 17% in 1971 from earlier (1969-1970) data. The catch index for yellowtail flounder was off about 25% for the period.

1971 Results

Some observations on key species include:

HADDOCK

Recruitment to this fishery will remain at a low level until at least 1974. The 1969 and 1971 year-classes appear better than the very

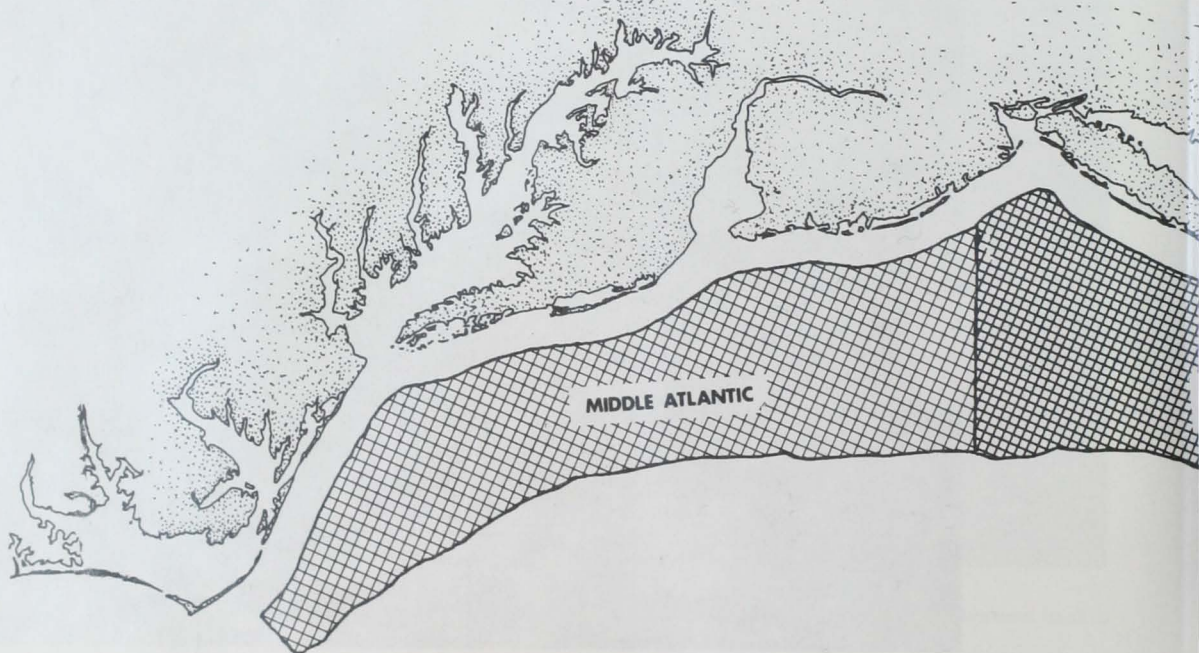
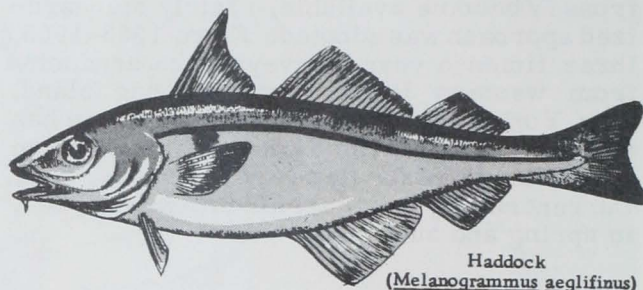


Fig. 1 - Sampling areas in groundfish survey.

poor year-classes spawned since about 1965. But it must be remembered that they are small relative to the average year-classes that supported a much larger fishery in the 1950s. Even though the present level of fishing for it is low, it is very doubtful that the haddock population will be able to do much more than hold its own. The recruitment will not produce any significant build-up of the stock under current quota levels, the NMFS scientists predict.

YELLOWTAIL FLOUNDER

Recruitment of the southern New England yellowtail flounder stock is low. The reduction in quota from 13,000 to 10,000 metric tons in 1972 is essential to maintain the stock. No major increase will be possible until recruitment improves. In 1972, recruitment will remain low.

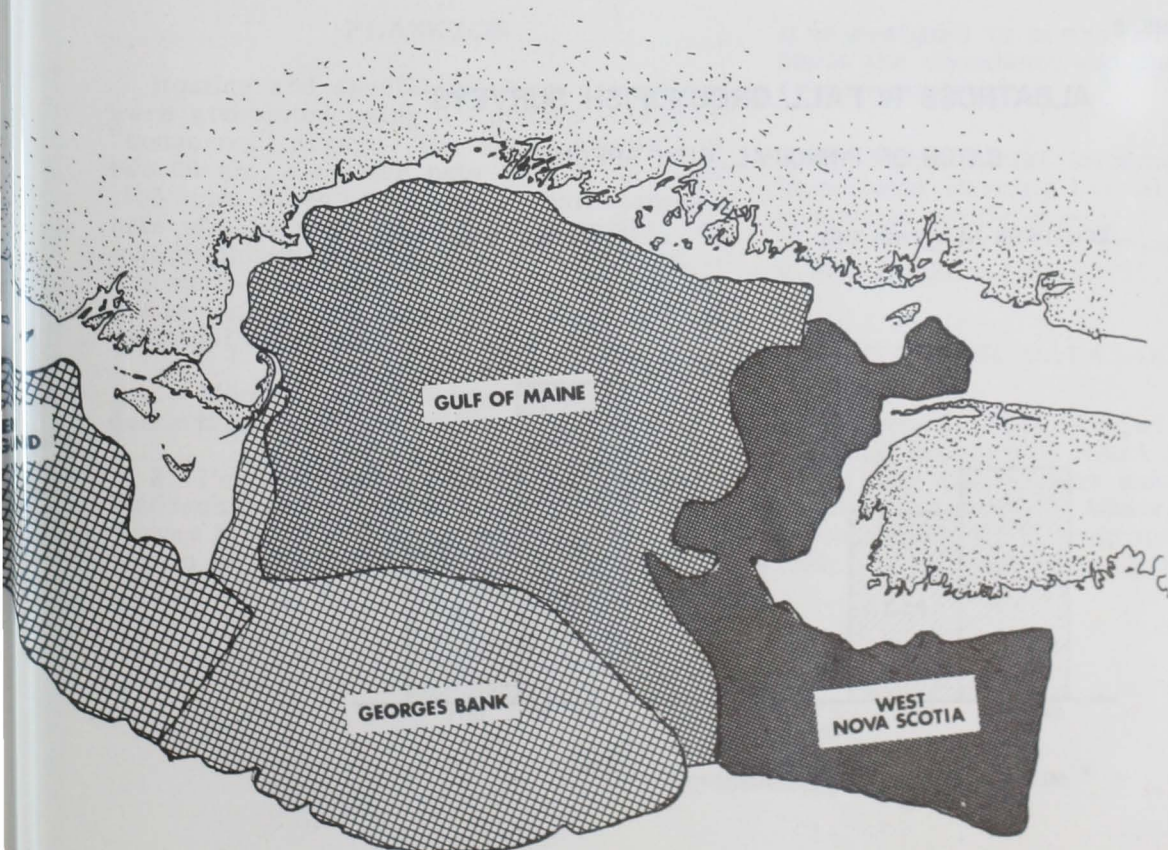
The Georges Bank yellowtail flounder indices for total stock and recruitment also

have shown a decrease. Although the relationship between recruitment and fishable stocks is not yet established for this area, the decline is cause for concern, say MMFS scientists.

Table 1 - Yellowtail Flounder Fall Index of Recruitment

Year	Relative Recruitment *Index	
	So. New England	Georges Bank
1963	16.3	12.7
1964	18.5	2.2
1965	11.7	1.3
1966	34.4	9.9
1967	19.9	7.7
1968	9.0	9.7
1969	7.0	6.0
1970	9.2	5.7
1971	7.7	3.5

* Addition of fish one-year-or-more old to the exploited stock.



SILVER HAKE

Survival of the 1971 year-class was very good: Albatross IV caught hake 10 cm. or less. The greatest improvement was in the Gulf of Maine and on Georges Bank. Abundance of young fish in the Gulf increased about 44-fold from the 1967-70 average; on the Bank, about 7-fold. Catches of young fish in the southern New England-Middle Atlantic area were the highest since 1968--1.7 times greater than the 1967-70 average. This year-class will begin recruiting to the fishery in late 1972. It should become more evident in 1973 and 1974.

Total abundance of the fishable stock of silver hake increased in the Gulf of Maine and southern New England-Middle Atlantic area. It decreased on Georges Bank.

RED HAKE

Survival of the 1971 year-class was better than average. Catches of red hake 10 cm. or less were greater in all areas than in 1970 and most other years. These young-of-the-year on Georges Bank was only slightly less

abundant than in 1969, the previous high; 1969 was far superior to any other 1963-70 catches by Albatross IV.

Total abundance of red hake in all areas increased from 1970. Catches in the Gulf of Maine were 5 times greater than the 1967-70 average. The increase was not as great in other areas.

OTHER

Fair catches of redfish were made in the Gulf of Maine. Incidence of copepod parasite infections was low; some redfish catches appeared free of copepods.

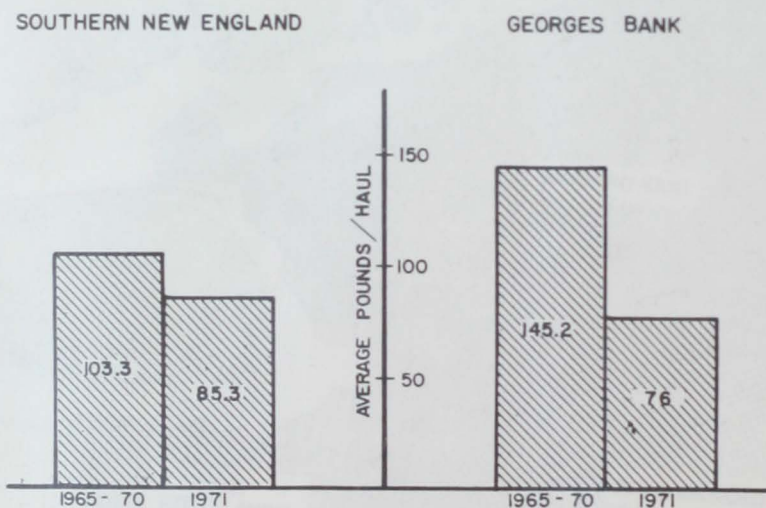
Other Collections and Observations

Large series of samples were collected to support detailed studies of age, growth, and food habits of principal species. Observations of maturity indicated pollock were approaching spawning, cod were just starting to develop, and haddock generally were still in resting stage. This order of development is as expected for the fall season.

FIGURE 2

ALBATROSS IV FALL GROUND FISH SURVEYS

CATCH OF PRINCIPAL FISH SPECIES *



* MEAN CATCH/HAUL

Table 2 - Relative Abundance Indices (Mean Catch Per Haul in Pounds) of Groundfish in Southern New England and on Georges Bank During Albatross IV Fall Surveys

Species	So. New England			Georges Bank		
	65-70	"71"	1971 Catch in Percent of 65-70 Average	65-70	"71"	1971 Catch in Percent of 65-70 Average
Haddock	0.9	0.2	22	45.4	6.4	14
Cod	3.0	0.3	10	11.3	8.3	73
Silver Hake	9.4	10.0	106	3.5	2.3	66
Red Hake	8.9	8.0	90	3.0	4.4	147
Yellowtail	24.1	17.7	73	12.2	10.4	85
Winter Flounder	4.2	1.9	45	6.4	2.6	41
Other Flounders	5.6	2.9	52	4.4	3.0	68
Butterfish	7.4	12.8	173	1.1	2.4	218
Scup	1.5	0.5	33	-	-	-
Goosefish	7.3	3.2	44	6.0	1.6	27
Skates	12.1	14.6	121	32.7	18.6	57
Miscellaneous (all other sp.)	18.9	13.2	70	19.2	16.0	83
Total (all sp.)*	103.3	85.3	83	145.2	76.0	52

* Exclusive of invertebrates and spiny dogfish.

PLANKTON

Routine and special plankton collections were completed using a standard MARMAP "bongo-net" array. The array consists of two 60 cm. diameter nets of .333 mm. and .505 mm. mesh, and two 20 cm. diameter nets of .253 mm. and .366 mm. mesh. An oblique plankton tow from 50 meters depth to the surface was made at each trawl station. These collections support studies in three principal categories:

1. Monitoring of fish egg and larval abundance from Cape Hatteras to Nova Scotia.

2. Preoperational evaluation of specialized techniques being developed for MARMAP Survey I. This will be a comprehensive survey in waters contiguous to North America.

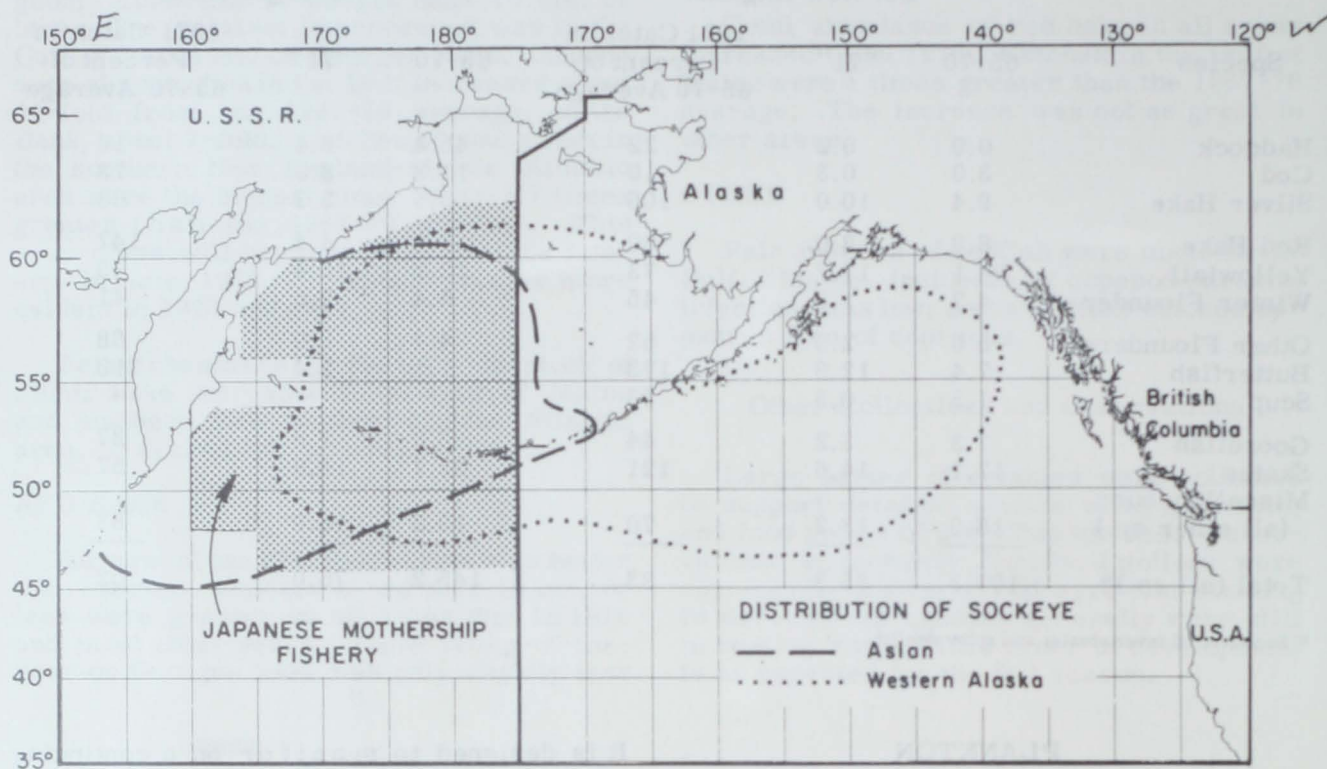
It is designed to monitor on a continuing basis the abundance and distribution of marine resources.

3. Supplemental information for the International Herring Larval Dispersal Study completed cooperatively by French, Soviet, West German, and U.S. research vessels and scientists during Fall 1971.

AUTOMATIC DATA LOGGER TRIALS

A portable Data Acquisition System (PODAS) supplied by NASA Mississippi Test Facility (MTF) was used for the entire groundfish survey on Albatross IV to record automatically 22 hydrographic, meteorological, and ship-operating factors.





An example of research findings on the ocean distribution and intermingling of Pacific salmon is shown on the map. Here is a generalized summary of the distribution and intermingling of Asian and western Alaskan sockeye salmon. It is based on data from tagging and racial studies, catch statistics of commercial fisheries, and fishing surveys of research vessels. Most findings were made by scientists of the Fisheries Agency of Japan, NMFS, and the Fisheries Research Institute, University of Washington, under NMFS contract.

The shaded portion of map indicates fishing areas of Japanese mothership fleet. The heavy line along eastern border of shaded area is provisional abstention line established by International North Pacific Fisheries Convention.