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Status of fisheries and research carried out in Subarea 5 and Statistical Area 6 in 1975

by

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Introduction

Reports on research carried out in 1975 in Subarea 5 and Statistical Area 6 (SA 5 and 6) have been submitted by the GDR, Japan, Poland, Spain, USA, and USSR.

Documents containing information on the status and management of resources and of environmental conditions in these areas are: Res. Docs. 76/VI/2, 5, 6, 10, 12, 13, 14, 29, 30, 31, 32, 35, 36, 41, 42, 43, 47, 48, 52, 55, 58, 61, 64, 65, 66, 68, 77, 78, 79, 80, 82, 83, 85, 86, 87, 95, 97, 100, 104-107, 110, 111, and 114-118; Summ. Docs. 76/VI/14, 15, 16, 17, 18, 20 and 38.

Status of the fisheries in 1975

The total nominal catch of all species decreased 8% from 1,800,000 tons in 1974 to 1,650,000 tons in 1975,[1] and the finfish catch declined 11% from 1,140,000 tons in 1974 to 1,016,000 tons in 1975. The 1975 catch of finfish (excluding menhaden, billfishes, tunas and sharks) and squid was 863,000 tons, a 8% decline over the 1974 level of 942,000 tons. Decreases in catch from 1974 to 1975 occurred in the following groups: groundfish (306,000 to 280,000 tons), pelagics (752,000 to 657,000 tons), and invertebrates (665,000 to 636,000 tons). The other

[1] Catches of Romania were estimated by 1974 Romanian catches.

finfish group remained about the same, at 79,000 tons.

Species which showed declines of greater than 10% included yellowtail flounder (25,000 to 20,000 tons), red hake (33,000 to 29,000 tons), silver hake (130,000 to 114,000 tons), mackerel (295,000 to 258,000 tons), and other fish (132,000 to 119,000 tons). Within the "other fish" category, the most notable declines occurred in argentine (20,000 to 1,400 tons), butterfish (13,000 to 10,000 tons), sculpins (2,800 to 150 tons), and ocean pout (3,700 to 300 tons). Menhaden catches also declined (249,000 to 198,000 tons). Catches of cod and herring dropped moderately, from 35,000 to 34,000 tons for cod, and from 187,000 to 183,000 tons for herring. Species of which catches increased from 1974 to 1975 included haddock (5,000 to 7,000 tons), pollock (12,000 to 14,000 tons), and other flounders (21,000 to 27,000 tons).

The total catch of all species declined 3% in Subarea 5 from 806,000 tons in 1974 to 784,000 tons, and 13% in Statistical Area 6, from 998,000 to 868,000 tons.

Research activities

a. Species assessments (Res. Docs. 76/VI/14, 30, 35, 41, 43, 47, 55, 61, 107,110; Summ. Docs. 76/VI/5, 6, 22)

(1) Japan

Analytical assessment of Loligo squid in SA 5 and 6.

(2) USA

Analytical assessments were prepared for the following stocks: Div. 5Y and Div. 5Z cod; SA 5 haddock; Div. 5Y, Subdiv. 5Ze, and Subdiv. 5Zw - SA 6 silver hake; SA 5 yellowtail (east of 69°w); SA 5 and 6 yellowtail (west of 69°w); Div. 5Y and Div. 5Z - SA 6 herring; SA 3 - 6 mackerel; SA 5 and 6 Loligo; and SA 5 and 6 Illex squid.

A joint USA - Canadian analytical assessment was prepared for Divs. 4VWX - SA 5 pollock.

In addition, a surplus-production model assessment was prepared for SA 5 redfish, and the following stocks were assessed on the basis of trends in commercial and research vessel survey data: Subdiv. 5Ze and Subdiv. 5Zw - SA 6 red hake, SA 5 and 6 flounders (except yellowtail), and SA 5 and 6 other finfish.

(3) USSR

Assessment of the mackerel stock in NW Atlantic, 1975-1977.

Analytical assessments for Subdiv. 5Ze and Subdiv. 5zw - SA 6 red hake.

(4) POLAND - GDR

Alternative assessment of mackerel in ICNAF area.

b. Growth and mortality (Res. Docs. 76/VI/47, 52, 65; Summ. Doc. 76/14)

(1) Japan

Age and growth of butterfish in SA 5.

(2) France

Growth of Loligo and Illex squid in SA 5 and 6.

(3) USA

Haddock mortality in SA 5; growth and mortality of pollock in Divs. 4VWX -

SA 5.

(3) USSR

Growth of mackerel in SA 3 - 6.

c. Biological sampling and related data (Res. Doc. 76/VI/29, 100, 104, 114, 118; Summ. Docs. 76/VI/14, 15, 17, 18, 20, 23, 38)

(1) Canada

Biological sampling of scallop catches; Report on Special Sampling Project for mackerel and silver hake in SA 4, 5 and 6.

(2) GDR

Commercial length-frequency sampling and age determinations for mackerel and herring in SA 5.

(3) Japan

Commercial length-frequency sampling for redfish, butterfish, mackerel, herring, and Loligo and Illex squid, in SA 5 and 6.

(3) Poland

Commercial length-frequency sampling and age determinations for mackerel and herring; commercial length-frequency sampling of Illex squid; compilation of commercial mean weight at age data for Div. 5Z herring; and age composition of mackerel catches for assessment purposes.

(4) Spain

Commercial length-frequency sampling and age determinations for cod; observations of finfish by-catch in the Illex squid fishery.

(5) USA

Commercial length-frequency sampling and age determinations for all stocks in SA 5 and 6; compilation of assessment data for cod, silver and red hake, mackerel, and other finfish in SA 5 and 6 stocks; computation of total biomass estimates for SA 5 and 6 for 1964-1976, inclusive, from research vessel survey data; summaries of squid length and weight data collected in SA 5 on the French R/V CRYOS

autumn 1975 survey; recruitment estimates for SA 3 - 6 mackerel; relative abundance indices by year-class and area for Div. 5Y and Div. 5Z herring from juvenile herring surveys; study of variability of Albatross IV catch per tow; report on distribution of catches and sizes of age 1 herring in the Gulf of Maine, Georges Bank and Nantucket Shoals, spring 1976.

(6) USSR

Commercial length-frequency sampling and age determinations for silver and red hake, mackerel, and herring; commercial length-frequency sampling for Illex squid.

(7) USA - FRG

Report of 1975 and 1976 FRG young herring surveys in ICNAF SA 4 and 5.

(8) France

Length measurements of Loligo and Illex taken in May and November survey of R/V CRYOS. Length measurement of silver hake.

d. Other biological studies (Res. Docs. 75/VI/13, 42, 52, 65, 87, 97, 111; Summ. Doc. 76/VI/16.

(1) France

Biology and distribution of Loligo and Illex squid in Div. 5Ze; life history studies of Loligo and Illex.

(2) USA

Motivation and food habits of selected commercial species; age and length at maturity for Div. 5Z cod; distribution of mackerel in SA 5 and 6; investigation of the megabenthic invertebrate fauna in SA 6; in situ investigations of herring spawning ecology.

(3) USSR

Biological studies of mackerel in SA 3-6; peculiarities of diurnal vertical migrations of mackerel in NW Atlantic.

e. Plankton (Res. Docs. 76/VI/58, 79, 80, 82, 83, 84, 95, 97, 115; Summ. Doc. 76/VI/16, 18)

(1) FRG

Survey in SA 5 in spring; preparation of summarized larval herring catch data from FRG cruises, 1973-1976.

(2) Poland

Collection of plankton samples during ICNAF larval herring survey in spring in SA 5. Study of the distribution of zooplankton on the fishing grounds of Georges Bank, Browns Bank, and the Gulf of Maine, autumn, 1974.

(3) USA

A variety of phytoplankton studies were conducted at several institutions. Subjects included distribution, bloom dynamics, genetic features, nutrient uptake and cycling, succession, and environmental physiology.

Zooplankton (including ichthyoplankton) studies included an investigation of a "lipo" or slime infestation in Div. 5Y which hampered fishing considerably in autumn; apparently this resulted from a dramatic increase in abundance of a colonial siphonophore, Nanomia cara. Other subjects of study included: feeding, behavior, distribution, patchiness; standing crop comparisons between Div. 5Y and Subdiv. 5Ze; systematics, and zoogeography. Ichthyoplankton studies included the following: metabolism of larval haddock, yellowtail flounder, and scup; completion of a bioenergetic model for analyses of feeding and survival in winter flounder larvae; comparisons of catching efficiency of 0.505 and 0.333 mm mesh Bongo nets; study of the relationship between Ekman transport and onshore drift of larval menhaden; sampling variation in collections of fish eggs and larvae; analyses of different methods of larval fish-length measurement.

A sorting protocol for ICNAF samples was also prepared.

USA research vessels collected plankton samples during spring and autumn groundfish and demersal fish surveys and fall and winter larval herring surveys in SA 5 and 6. A summary of the samples collected during larval herring cruises 1971-1975 was prepared.

(4) USA - Poland

Role of Polish Plankton Sorting Center in supporting fishery assessment investigations.

(5) USSR

Collection of plankton samples in SA 5 in autumn during ICNAF larval herring cruises; zooplankton studies in Subdiv. 5Ze; distribution of silver hake eggs and larvae in Subdiv. 5Ze.

(6) France

Plankton samples taken on R/V CRYOS surveys in May in SA 5 and November in SA 5 and 6.

f. Hydrography (Res. Docs. 76/VI/2, 5, 6, 36, 37, 68, 77, 78, 80, 81, 85, 86; Summ. Docs. 16, 17, 18, 20, 31, 38)

(1) France

Temperature profiles and surface salinities taken on R/V CRYOS surveys in spring in SA 5 and in autumn in SA 5 and 6.

(2) FRG

Temperature profiles, surface salinities, and nutrients, chlorophyll, and O_2 sampling in larval herring autumn cruise in spring in SA 5;temperature and surface salinity measurements on young herring in SA 5 in spring, 1975.

(3) GDR

Temperature profiles and surface salinities in spring in SA 5.

(4) Poland

Temperature profiles and surface salinities, in spring in SA 5 and 6.

(5) USA

Temperature and salinity profiles were taken throughout the year in SA 5 and 6 in conjunction with groundfish, demersal fish, and larval herring cruises; nutrients, chlorophyll, O_2 and C_{14} sampling was also conducted during fall and winter in SA 5 in conjunction with ICNAF larval herring cruises. In addition, temperature and salinity data are also collected by Coast Guard vessels in SA 5 and 6 during routine patrols, search and rescue missions, and hydrographic research. Temperature profiles have been collected in the Gulf of Maine since July 1975 by the ferry BLUENOSE.

Other activities included: summaries of temperature data from larval herring surveys in fall and winter 1975; hydrographic studies on Georges Bank and vicinity (SA 5) including analyses of salinity data from larval herring surveys; study of trends in bottom water temperature in SA 5 from 1968 to 1975; observations of a large warm-core eddy near Georges Bank; description of a program for monitoring Gulf Stream meanders and eddies, and recommendations for standard section locations in SA 5, and for preparation of hydrographic atlases in the ICNAF area.

(6) USSR Temperature profiles and surface salinities in SA 5 and 6 in summer; temperatures and salinity, and nutrients, chlorophyll, and O_2 sampling under the ICNAF larval herring program in the fall in SA 5; study of long-term temperature variations in SA 5; temperature, circulation, and water chemistry studies during winter-spring on Georges Bank.

g. Special studies (Res. Docs. 76/VI/10, 12, 30, 31, 34, 48, 64, 66, 102, 103, 105, 106, 114, 116, 117; Summ. Doc. 76/VI/16)

(1) Canada

Movements of herring tagged in the Bay of Fundy.

(2) Poland

Hydroacoustical studies.

(3) USA A variety of specialized studies were completed relating directly to assessment work. These included: study of different commercial and research vessel survey abundance indices as indicators of mackerel abundance; review of procedures for estimating Loligo and Illex stock size in SA 5 and 6; simulations of the Loligo-Illex squid fishery; stochastic simulations using the Schaeffer stock production model to investigate its applicability as a management tool; linear programming simulations of the importance of by-catch in national catches in SA 5 and 6; study of fishing power of ton class 7 vessels of Poland, FRG and Japan fishing in 1971-1973; study of variability of catchability by year, season, 30-minute square area, and vessel; study of changes in efficiency of several fleets operating in ICNAF SA 5 and 6, 1960-1973. A prospectus on the basis for fishing management on the Northwest Atlantic Continental Shelf of the coast of the US was prepared.

Studies more directly related to applications and techniques included: development of methods of estimating catch from overflight data and ICNAF inspection boardings; estimation of herring tagging requirements for stock delineation; studies of hydroacoustical echo components and their effect on fish-target density estimation; trawl standardization studies; joint in situ-surface hydroacoustical studies involving targets of known density.

(4) USSR

Proposal on trawling surveys for estimation of pelagic fish stocks in SA 5 and 6.

h. Research vessel cruises

The following table gives a summary of research cruises completed in SA 5 and 6 in 1975, together with dates and type of data collected.

Table 1. Summary of research cruises completed in SA 5 and 6 in 1975.

Country	Vessel	Date	Type of Cruise
France	CRYOS	3-19 May	Squid survey
		21 Nov-11 Dec.	Squid survey
FRG	WALTHER HERWIG	11-28 Mar	Juvenile herring, mackerel, and plankton survey
	ANTON DOHRN	31 Oct-16 Nov	Larval herring survey
	HELGOLAND	4 Sep-5 Dec	Herring spawning study
GDR	ERNST HAECKEL	26 Feb-11 Mar	Fish survey
	ERNST HAECKEL	11-17 Mar	Juvenile herring and mackerel survey
	ERNST HAECKEL	21-27 Mar	Hydroacoustical survey
Poland	WIECZNO	3-17 Mar	Juvenile herring and mackerel survey
	WIECZNO	18 Mar-13 Apr	Hydroacoustical survey
	WIECZNO	13-22 Apr	Squid survey
USSR	POISK	20 Mar-13 Apr	Hydroacoustical survey
	BELOGORSK	6-26 Aug	Groundfish survey
	BELOGORSK	4-19 Sep	Gear trials
	BELOGORSK	24 Sep-16 Nov	Larval herring survey
USA	ALBATROSS IV	29 Jan-6 Feb	Gear trials
	ALBATROSS IV	12-28 Feb	Larval fish survey
	ALBATROSS IV	4-30 Mar	Groundfish survey
	DELAWARE II	20-26 Mar	Hydroacoustical survey
	DELAWARE II	28 Mar-13 Apr	Hydroacoustical fish survey
	ALBATROSS IV	16-30 Apr	Groundfish survey
	ALBATROSS IV	5-12 May	Groundfish survey
	ALBATROSS IV	13-23 May	Juvenile fish survey
	LULU AND ALVIN	23 Jun-3 Jul	Biological and geological survey
	ALBATROSS IV	24-25 Jun	Plankton gear calibration
	ALBATROSS IV	8-18 Jul	Food chain and hydrographic survey
	ALBATROSS IV	7-16 Aug	Sea scallop survey
	DELAWARE II	29 Jul-7 Aug	Gear mensuration
	ALBATROSS IV	20-29 Aug	Gear mensuration
	ALBATROSS IV	3-19 Sep	Gear trials
	DELAWARE II	23 Sep-2 Oct	Larval herring dispersal
	ALBATROSS IV	23 Sep-3 Oct	Sea scallop survey
	ALBATROSS IV	7-23 Oct	Groundfish survey
	DELAWARE II	6-10 Oct	Gear mensuration
	DELAWARE II	15-24 Oct	Groundfish survey
	ALBATROSS IV	28 Oct-5 Nov	Larval herring and productivity
	ALBATROSS IV	7-18 Nov	Groundfish survey
	ALBATROSS IV	2-17 Dec	Larval herring survey