Synopsis of Status of Key Species in the Southern New England-Middle Atlantic Area

75-6

by

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A. Mackerel

The Middle Atlantic coastal shelf constitutes the major overwintering area for the southern contingent of a mackerel stock that extends northward to Newfoundland. Mixing to some degree of the southern and northern contingents occurs off New England shores during the winter. International landings in ICNAF SA 5-6 increased from 1,049 MT in 1962 to 387,364 MT in 1972 and have since declined to 303,774 MT (provisional) in 1974. US landings during 1962-1974 averaged 2,400 MT. An apparent shift in availability of mackerel in the last several years has resulted in a marked decline in the SA 6 catch with a corresponding increase in the SA 5 catch. US commercial, US survey, and distant water fleet catch/effort data indicate a continuous decline in stock abundance following intensification of the fishery after 1968. Year-classes since 1967 have been less abundant than the strong 1966 and 1967 year-classes which have supported the high catches of the fishery. The first quarter catch in 1975 has included mainly age 1 and 2 mackerel. The stock for 1976 is predicted to consist primarily of fish age 2 and younger, thus leading to the possibility of markedly increased fishing mortality on the younger age groups and the loss in yield per recruit. A TAC of 310,000 MT was recommended for 1976 for the SA 3-6 mackerel, as compared to separate TAC's for SA 3-4 and SA 5-6 for 1975, totalling 355,000 MT. It has also been recommended that a 25 cm (total length) minimum size limit be imposed to prevent the capture of mackerel less than 2 years old.

B. Sea Herring

The herring fishery conducted on the Georges Bank and offshore Middle Atlantic fishing grounds was begun in 1961 by the USSR distant water fleets. It developed rapidly during the mid-1960's, supported largely by two very good year-classes: 1960 and 1961. In addition, fishing mortality in 1964 and 1965 was shifted to silver hake and haddock, thus allowing an accumulation of herring stock to a level exceeding 1 million metric tons. Since 1967 the stock size has steadily declined with only fair to poor year-class recruitment to the fishery following the 1960 and 1961 year-classes, and with the 1969, 1971 and 1972 year-classes being very poor. Catches of the 1973 year-class in juvenile surveys suggest that this year-class may also be very poor. US landings have been 4,600 MT or less per year. The ICNAF TAC for this stock has remained at 150,000 MT for 1972 through 1975. Catches exceeded this TAC level in both 1972 and 1973. To prevent the further decline of the stock size below a minimum of 225,000 MT, a TAC for 1976 is recommended to be no greater than 60,000 to 100,000 MT depending upon the size of the 1973 year-class. The current 1975 TAC level, however, if caught will allow a further decline in stock and the probability for subsequent rebuilding is very low. It should be noted that the winter and spring distribution of herring overlaps that of mackerel, alewife, blueback and yellowtail flounder in the bilateral area.

C. Yellowtail flounder

Yellowtail flounder in the Southern New England-Middle Atlantic grounds have been reduced to extremely low abundance as a result of heavy fishing mortality combined with very poor recruitment. Abundance indices indicate that the stock size in 1975 is only 8% of that existing in 1967. The ICNAF total allowable catch for 1975, in the area west of 69°, of 4,000 MT will serve at best only to maintain the current low stock size. Every effort should be made to minimize the possible by-catch of this species in other directed fisheries operating within the bilateral area.

D. Silver hake

A single stock of silver hake is considered to exist from Nantucket Shoals through the Middle Atlantic area. Inshore and offshore migrations are pronounced during the spring and late fall, respectively. Landings (5Zw-6) increased from an average of 12,400 MT in 1955-1962 to 136,051 MT in 1966 as the result of an intensive USSR fishery. Landings then dropped sharply and averaged 43,000 MT during 1967-1973. The provisional 1974 catch was about 62,400 MT. US landings declined abruptly after 1965 (20,998 MT) to a low of 4,989 MT in 1971 but have since improved slowly to 7,180 MT in 1974. Stock abundance as measured by US commercial landings/day and US survey catch/tow has dropped in the last few years even though the 1971 and 1972 year-classes were above average. The 1973 year-class was weak but the 1974 year-class is predicted as the strongest since 1964. Assessment of this stock has indicated that fishing mortality in recent years has exceeded F_{max}. A 1976 TAC of 43,000 MT (as compared to 80,000 MT in 1973-1975) was recommended which will reduce F to the level of F_{max} and also maintain the 1977 stock at the 1976 level.

E. Red hake

A stock of red hake is considered to inhabit the waters from Cape Cod to the Middle Atlantic. It undergoes a migration inshore in the spring and offshore in late fall and is thought to mix seasonally with the Georges Bank stock. Total landings from the 5Zw-6 stock increased from 4,174 MT in 1960 to 61,059 MT in 1966 due to the USSR fishery. Since 1966 total landings have fluctuated between 10,322 MT (1970) and 50,518 MT (1969) while averaging 31,000 MT (1967-1973). US landings peaked at 32,622 MT in 1964, decreased abruptly to 3,629 MT in 1966, and averaged 4,350 MT during 1966-1973. US survey catch/tow declined 90% from 1972 to 1974 indicating a very low stock abundance at the present time. On the basis of a USSR assessment, a 1976 TAC of 16,000 MT was recommended. TAC's were set at 40,000 MT, 50,000 MT, and 45,000 MT for 1973, 1974, and 1975, respectively, for 5Z west of 69° W and SA 6. The 1976 recommended TAC pertains only to 5Zw-6, as agreed at the ICNAF 1974 Annual Meeting.

F. River herring

The river herring fishery includes both alewife (Alosa pseudoharengus) and blueback (Alosa aestivalis). The offshore foreign fishing fleet exploits both immature and adult fish while the US fishery concentrates on the spawning stocks when they enter estuaries and streams. US landings of river herring increased from the late 1950's to the mid 1960's, stabilizing around 22,000 tons (1966-1969). Increased offshore landings from 1969 to 1971 of around 9,000 tons per year coincided with reduced catches inshore and may have been the direct cause. Quality of estuarine spawning areas and nurseries did not decline coincident with the decline in catch. Total landings had declined by 1973 to less than half the 1966-1971 average of 24,600 tons, with a US reduction in catch of 40% and a total foreign reduction of 50%. In 1974 the US catch fell further to 6,700 tons, approximately 30% of the catch during 1966-1969. The declining catch indicates that the adult stock is at a very low level. The outlook for recruitment through 1978 is poor inasmuch as production of juveniles has been declining. Production of river herring in Chesapeake Bay nurseries in 1974 was only 3.4% of that in 1970. Therefore the river herring catch in 1975-1978, at least, should be less than 10,000 MT per year to allow the stocks a chance to rebuild themselves to former levels.

G. Scup

No fishery stocks have yet been defined for scup. There is some evidence that scup may form two distinct subpopulations off southern New England and the Chesapeake in the summer but they appear to intermingle along the 100-fathom curve from Hudson Canyon to Cape Hatteras during November to March. Total US commercial landings fluctuated from 16,000-20,000 MT during the 1950's, peaked at 22,000 MT in 1960, and then steadily declined to just over 3,000 MT in 1970. Since 1970, US landings have increased, reaching 6,000 MT in 1973. The Mid-Atlantic area accounts for around 80% of the total. Foreign landings have remained low since 1963; however, unspecified by-catches (in some cases discarded) may amount to significant levels). Estimated sport fish harvest declined by 69% from 1965 to 1970 (6,350 to 1,996 MT). While recent landings data and research survey catches indicate an increasing trend in abundance, the current stock would still appear to be at a low level relative to earlier periods (1950's).

H. Butterfish

No fishery stocks have yet been defined for butterfish, but their distribution both seasonally and geographically is similar to scup, except that butterfish extend further east to Georges Bank. US landings from SA6 averaged 2,000 MT during 1963-68. First foreign landings were reported in 1967 and the combined US-foreign landings have increased to 12,000 MT in 1973, largely as the result of butterfish by-catches (often discarded) in the expanding squid fishery. The US catch has declined since 1965 by around 50%. No definite trends in abundance are evident in the fall research surveys in the Mid-Atlantic since 1967, while the spring survey suggests an increasing trend. The vulnerability of winter concentrations of butterfish to the offshore trawl fisheries and the significant growth of the squid fishery could have a significant effect on the butterfish population.

I. Fluke (summer flounder)

No fishery stocks have yet been defined for fluke, but the species ranges from southern New England to Florida. The population ranging from Cape Cod to Cape Hatteras is subject to an intense U.S. sport and commercial fishery in late spring and summer along the northern Middle Atlantic Coast, and in summer and winter nearer Cape Hatteras. Total commercial landings in ICNAF SA6 averaged about 4,000 MT from 1963-66 but declined to about 2,000 MT from 1969-71. The 1972 and 1973 catches were recorded as 3,100 and 4,000 MT respectively. The estimated total sport fishery landings in the same area were 12,000 8,000 and 15,000 MT for 1965, 1970 and 1973 respectively. The recent trends of landings indicate the population may be increasing in abundance. Assessment analyses for this population suggest a sustainable catch level of 20,000-22,000 tons. The total estimated harvest of 27,000 MT for 1974 is considerably above the estimated sustainable yield. Reported landings by foreign vessels have remained low.

J. Black sea bass

No fishery stocks have yet been defined for black sea bass. The U.S. commercial catches are taken chiefly by trawls and pots from New York to Florida, with the bulk of the harvest taken from the mid-Atlantic region. In late spring and summer sea bass are found inshore, over hard bottom and wrecks, and in late fall and winter they move offshore as deep as 100 fathoms. U.S. commercial landings declined from 10,000 MT in 1952 to 3,600 MT in 1965. Following 1965, landings dropped even more drastically, reaching a low of only 580 MT in 1971. 1972 and 1973 catches show a slight recovery. The decline is also seen in the sport fishery where the estimated 1970 catch was 20% lower than the 1965 catch, even though the number of anglers increased 20%. Only the U.S. has a directed fishery for black sea bass, however unreported by-catch of black sea bass by the distant water fleets fishing in the mid-Atlantic could be a contributing factor to the decline of this species.

K. Menhaden

Atlantic menhaden occur from Maine to Florida and are considered to form one population. The stock winters south of Cape Hatteras beyond the 100-fathom curve from January to March, and rapidly migrates inshore and northward in March and April. In late summer the pattern reverses and the fish concentrate in dense schools off Long Island in October, moving southward during October to December. During the 1940's menhaden landings averaged 300,000 MT, increased to a peak of 700,000 MT in 1956, and then declined. In 1969 total menhaden landings in SA 6 were at the lowest level since 1940, 160,000 MT, then increased to about 300,000 MT (1973), supported largely by the harvest of young fish. The 1974 landings are estimated to be 230,800 MT. The current menhaden fishery is considered to be fully exploited by the U.S. interests. So far there have been virtually no landings reported by the distant water fleets fishing in the bilateral area but considerable portions of the adult stock in certain years can be found up to 50 miles offshore along the mid-Atlantic area and could be subject to harvest by the offshore fishing fleets.

L. Bluefish

No fishery stocks have yet been defined for bluefish but a common population appears to migrate annually from Florida to Maine and back. It appears that the bulk of the bluefish stock remains inside the 12-mile contiguous fishing zone, at least during the period when it is in the bilateral area. Bluefish are landed in these coastal waters from late spring to fall by anglers, and by commercial fishermen using pound nets, gill nets, and haul seines. The recreational catch far exceeds the commercial catch as seen in the 1970 estimates of 3,000 MT and 54,400 MT for the commercial and recreational fisheries respectively. To date, bluefish have not been taken in number in U.S. or foreign trawl fisheries, but the population could be influenced by an increase in fishing effort on their deep offshore wintering grounds south of Hatteras.

M. Squid

Two main species comprise the squid fishery, *Lolligo pealei* and *Illex illecebrosus*. *Lolligo*, a shoal water species, is most abundant between Georges Bank and Cape Hatteras, while the deeper water and less available *Illex* is found from Cape Hatteras to Newfoundland as well as northeastward to Europe. *Lolligo* spawns in shoal waters and is found on the shelf from late spring to fall. It winters offshore in the 50-100 fathom zone. While *Illex* may come inshore almost to the beach during the summer months, it usually remains most abundant in the 50-100 fathom zone. It is not available to the winter fishery and virtually nothing is known of its behavior at that time. Since the entry of the distant water fleets into the squid fishery, reported landings form ICNAF SA 5 and 6 have increased rapidly from 1,000 MT in 1964 to 56,639 MT in 1973. While the dominant species in the fishery is *Lolligo*, in recent years *Illex* may comprise 25% of the total. *Lolligo* is caught both incidentally by the major trawl fisheries in the shoal waters of the shelf, and in a directed fishery conducted mainly by Japan, Sapin, and Italy in the offshore zone during the winter months. The offshore fishery was begun in 1968 by Japan and has increased steadily since, so that present U.S. catches are less than 5% of the total. Recently, the offshore fishery has been expanded into the summer months primarily by Spain in pursuit of *Illex*. Analysis of bottom trawl research survey data has not to date been able to detect consistent trends in stock abundance. Biomass estimates for *Lolligo* range to 90,000 MT and productivity characteristics and yield per recruit relationships for the species suggests that a sustained yield of 45,000 MT may be possible. Similar estimates have not yet been made for *Illex*.

Squid is an important source of food for many species of fish. It is probable that reduction of its population will have direct effects on productivity of these fish. We cannot yet quantify this effect, but the harvest of squid should be closely controlled, and allowed to increase slowly, if at all, until more information is available.

N. Lobster

American lobster are fished by U.S. fishermen along the continental shelf from Virginia to the eastern edge of Georges Bank. They are caught both by U.S. bottom trawls in a directed fishery during the winter and spring when the lobsters are concentrated in a relatively narrow range of depth, 60-100 fathoms, and as a by-catch of other bottom trawl fisheries. During summer and fall months, lobsters are more dispersed over the shelf and while vulnerable to bottom trawling at this time they are caught mainly by pots. The level of fishing effort applied to the offshore lobster population has been extensive during recent years and indices of catch per

pot have declined from 1969 to 1972. Associated catch has also declined from a peak of 4-5,000 MT in 1970 to about 2,000 MT in 1974. The magnitude of incidental lobster catches by foreign trawlers using bottom tending gear is unknown. Outside of closing certain areas entirely to bottom trawling, there is no way to eliminate these incidental catches.

Table 1. Landings by the USA and Romania from ICNAF-SA-6 for 1974

(metric tons, live weight)

SPECIES	USA	ROMANIA*
TOTAL FINFISH & SQUID (excluding menhaden)	58,344	6,189
COD	507	2
SILVER HAKE	4,546	121
FLOUNDERS	9,659	
Summer Flounder	5,363	
Yellowtail flounder	1,884	
Other flounders	2,412	
OTHER GROUNDFISH	10,529	57
Ocean pout	459	
Haddock		
Red hake	789	51
Sculpin	135	
Scup	4,890	
Sea robin	22	6
Tilefish	408	
Other groundfish	3,826	
ALL GROUNDFISH & FLOUNDERS	25,241	180
SEA HERRING	279	426
OTHER PELAGIC FISH	216,383	5,247
Bluefish	3,189	
Butterfish	1,075	
Mackerel	567	5,247
Menhaden	210,951	
Swordfish	68	
Tuna	492	
Other pelagic fish	41	
OTHER FISH	26,087	336
Alewife (Blueback)	9,513	(252)
Black sea bass	897	
Sharks & Dogfish	152	77
Skates	113	
Striped bass	4,108	
Others	11,304	
SQUID	1,305	7

*Preliminary