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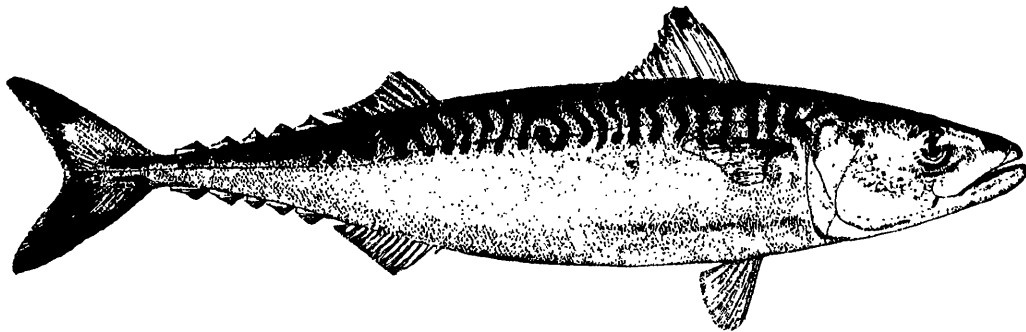
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RECREATIONAL ATLANTIC MACKEREL (SCOMBER  
SCOMBRUS) FISHERY IN VIRGINIA, 1978

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ABSTRACT

A sport fishery survey at Rudee Inlet, Lynnhaven Inlet, and Wachapreague, Virginia during February-Mid April 1978 was conducted by telephone interview and intercept census of returning vessels. The 1978 Atlantic mackerel fishing season was regarded as very poor by the fishermen and of brief duration. The abnormally cold spring of 1978 was responsible for the mackerel low abundance in the Virginia fishing area. Seasurface isotherm data and a cooperative trawl-hydroacoustic cruise by USSR R/V Argus confirmed the northward movement of mackerel through the Chesapeake Bight via warmer offshore waters rather than coming to the inshore fishing areas.

Recreational fishing for Atlantic mackerel is very limited off Virginia ports. Unsettled weather and sea water isotherm are the factors controlling the success of the local season. FCZ catch data must be complimented by territorial sea catch data for rational apportionment of quotas under the provisions of FCMA, particularly in states north of Virginia.

The Atlantic mackerel, Scomber scombrus, occurs along the east coast of North America from Labrador (Parsons 1970) to North Carolina (Hildebrand and Schroeder 1927). Sette (1950) was first to propose the existence of a northern and southern stock. The northern contingent appears off the southern New England coast in mid-May, moves steadily northward and summers in the Gulf of St. Lawrence. Following a southerly fall migration, this stock withdraws from the coast by November or December (Sette 1950). The southern contingent, which is dealt with herein, appears off the Cape Hatteras to Virginia coastline between the end of March to mid-April (Hildebrand and Schroeder 1927). The stock migrates steadily northward with maximum spawning occurring in May along the New Jersey to Long Island coast (Sette 1950). After summering in the Gulf of Maine, this contingent moves south, then west and disappears into offshore waters near Block Island in October (Hoy and Clark 1967).

In recent years (1973-1977) the size of the spawning stock of Atlantic mackerel has undergone a precipitous decline (Fig. 1; ICNAF statistics). Concurrently, the strength of the 1976 and 1977 year classes were poor (Fig. 1). Although the relationship between size of spawning stock and recruitment is little understood for Atlantic mackerel, management of the present spawning stock has been deemed necessary.

The recently enacted Fishery Conservation and Management Act of 1976 allows for the implementation of Fishery Management Plans (FMP) to protect adequate spawning stocks. The final FMP

for Atlantic mackerel drafted in May, 1978 permits a total harvest of 9,200 metric tons in the Fishery Conservation Zone (FCZ). Allocations are as follows: 3,500 metric tons to domestic commercial fishermen, 4,500 mt to domestic recreational fishermen, and 1,500 mt incidental catch to foreign fishers.

The recreational catch of Atlantic mackerel has been significantly greater than the United States commercial landings for about the last two decades (Table 1). The purpose of this survey was to obtain a measure of total catch, fishing effort, and fishing season for Atlantic mackerel caught off Virginia by sportfishermen.

#### METHODS

February 22, 1978 was randomly preselected as the starting date of the survey. Every third successive day was then designated as a sampling date. April 14 was the last sampling day. Past experience and presurvey telephone interviews indicated that Lynnhaven Inlet, Rudee Inlet, and Wachapreague were the major ports participating in the recreational Atlantic mackerel fishery in Virginia. These ports were contacted by telephone either one day prior to or on the morning of each sampling date to ascertain if and/or how many recreational vessels left port seeking mackerel. Efforts were made to meet incoming vessels dockside and to collect total effort and catch estimates along with biological catch data.

Water temperatures in the Chesapeake Bight during the study period were obtained from the National Weather Services' satellite sea surface temperature charts.

## RESULTS

Telephone interviews with marina personnel indicated that due to adverse weather conditions (windy and cold) no vessels had left the ports of Lynnhaven, Rudee, or Wachapreague between February 22 and March 21, seeking mackerel. There was one unconfirmed report from a Virginia Beach tackle dealer of a mackerel catch in mid-January in North Carolina waters.

A headboat<sup>1</sup> from Lynnhaven landed the first 1978 catch of mackerel in Virginia on March 24. An estimated 3,400 pounds of mackerel were caught several miles offshore of Oregon Inlet, NC. The catch however was made strictly for commercial purposes. In this type of venture, the fishing party is composed of acquaintances of the captain and/or marina operator. In return for their fishing efforts, the fishermen are paid a small portion of the catch. The remainder of the catch is then sold to a local seafood dealer. One vessel of this type operated from Lynnhaven during the 1978 mackerel season. In past years, a similar enterprise operated from Rudee, however this captain did not participate in the 1978 mackerel fishery.

On the evening of March 24, a local television fishing program conveyed the news of that day's mackerel catch. Wind and rain prevented vessels from leaving Lynnhaven and Rudee on the weekend of March 25 and 26. At this point, it was apparent that the 1978 mackerel season in Virginia would be of extremely short duration. Daily telephone contacts with marina operators were kept for the remainder of the survey.

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<sup>1</sup>Recreational fishing boat where anglers pay for a day's fishing on a per person basis.

A summary of information gathered via telephone and personal interviews with captains and marina operators at Lynnhaven and Rudee for the remainder of the 1978 mackerel season is shown (Table 2).

After Sunday April 2, headboats and charters out of Lynnhaven and Rudee ceased fishing for mackerel. Following this date, the captains of the above vessels from Rudee fished the offshore wrecks for tautog (Tautoga onitis).

Telephone and personal interviews with the marina operator at Wachapreague indicated mackerel were landed at this port from April 8 through April 13. Five to six charter boats with parties of 5-6 persons fished each of the above days. The parties were primarily interested in fishing for the early run of summer flounder (Paralichthys dentatus). Flounder fishing was poor however, and the parties were persuaded by the captains to fish for mackerel. Each charter vessel during this period landed an estimated 300 pounds of mackerel. Large schools of mackerel were reported from just outside of Wachpreague Inlet to approximately one mile offshore. By April 14, flounder fishing improved and the charters directed their efforts towards this species. Also on this date, the Wachapreague marina operator reported that the year's initial catch of mackerel was made at Indian River, Delaware.

Headboat captains and marina operators at Lynnhaven and Rudee indicated that a large majority of the persons participating in the recreational mackerel fishery at these ports are

residents of the Tidewater Virginia area. They may be properly characterized as fishermen seeking the first available species of the new year. Conversely, fishing parties that caught mackerel out of Wachapreague in 1978 were generally from neighboring mid-Atlantic states (Maryland, Delaware, Pennsylvania and Washington, DC). Mackerel were an alternate catch for these parties, since flounder was the target species of the charter.

Headboats from Lynnhaven and Rudee charged \$15.00/head, while charters from Rudee were \$231 /8 hr day. Charter boats from Wachapreague charged \$140/8 hr day.

Sea surface temperatures for the Chesapeake Bight during the survey period are shown (Figs. 2A-H).

#### DISCUSSION

1978 was an extremely poor year for the Virginia recreational mackerel fishery. Captains and marina operators at Lynnhaven and Rudee generally regarded their catches as poor. Mackerel generally occurred in "small pods" in contrast to the large schools encountered in previous years.

It appears that the abnormally cold spring of 1978 was responsible for the low abundance of mackerel in Virginia's nearshore waters. In his extensive study of the Atlantic mackerel populations on our East coast, Sette (1950) concluded that "water colder than 7° or 8° C forms a temperature barrier to the northward advance of the mackerel, but the warming of the water to this point does not necessarily attract fish along their northward migration." Between February 17 and March 20, 1978 the 5° C



isotherm hovered near or below the VA-NC state line (Figs. 2A-E). By March 23-27, the 7° C isotherm had advanced slightly north of this point (Fig. 2F). Virginia's initial catch of mackerel was landed during this period and was caught several miles off Oregon Inlet, NC. Catches during the following week (up to April 2) were generally made between Oregon Inlet and 5-10 miles south-southeast of Rudee.

Concurrent with this survey, a trawl-hydroacoustic cruise was conducted by the USSR R/V ARGUS from George's Bank to Cape Hatteras (Cruise No. 78-01). One objective of this joint USA-USSR project was to investigate the winter distribution of Atlantic mackerel. Cruise results showed that substantial catches of mackerel were made on the outer portion of the continental shelf between Washington and Norfolk Canyons on March 17-21, 1978.

From the above information, it is suggested that the northward movement of mackerel through the Chesapeake Bight in spring 1978 proceeded via warmer offshore waters. A major portion of the population was probably north of Cape Henry by the time nearshore waters had warmed to 7° - 10° C (Fig. 2G). Consequently, the inshore movement of mackerel occurred along Eastern Shore, Virginia, as witnessed by the large schools fished near Wachapreague during the second week of April.

Recreational participation in the 1978 Virginia mackerel fishery was extremely limited. One recreational headboat operated from Lynnhaven, while two headboats and one charter boat

sailed from Rudee. Several small sportfishing vessels also fished from Rudee. The Wachapreague fleet was composed primarily of charter boats, whose parties primarily sought flounder.

The 1978 season was our first attempt to monitor Virginia's recreational mackerel fishery. Several major problems were encountered. Biological catch data were difficult to collect since the vessel generally arrived dockside near or after sunset and anglers with their iced-down catch were quick to disperse upon docking. With one port sampler, meeting vessels which docked simultaneously at Lynnhaven and Rudee was impossible.

Expense has usually precluded placement of scientific observers aboard recreational vessels (Huntsman et al. 1978). However, due to the brevity of Virginia's mackerel season and the limited number of participating ports, this method would appear to be relatively inexpensive. Accurate biological and catch data would be readily available. Since a limited number of vessels participate in the fishery, logbooks could be supplied to cooperating captains.

If enacted for 1979, the final FMP for Atlantic mackerel (May, 1978) will require: (1) licensing of all commercial vessels, including head- and charter boats, that fish for or are expected to have incidental catches of mackerel in the FCZ, and (2) licensed vessels to file monthly mackerel catch reports; these reports shall include date, type and size of gear used, locality fished, duration of fishing time, and estimated weight of catch. With this fishery council action a state monitoring

program of the 1979 Virginia recreational mackerel fishery will be unnecessary for the FCZ, but might be needed for the 0-3 territorial sea.

#### ACKNOWLEDGMENTS

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<u>Year</u>	<u>United States</u>		<u>Canada</u>	<u>Other Countries</u>	<u>Total</u>
	<u>Commercial</u>	<u>Recreational</u>			
1961	1,361	6,828	5,459	11	13,659
1962	938	8,698	6,301	175	16,612
1963	1,320	8,348	6,363	1,299	17,330
1964	1,644	8,486	10,786	801	21,717
1965	1,998	8,583 <sup>1</sup>	11,185	2,945	24,711
1966	2,724	10,172	11,577	7,951	32,424
1967	3,891	13,527	11,181	19,048	47,647
1968	3,929	29,130	11,134	65,747	109,940
1969	4,364	33,303	13,257	114,189	165,113
1970	4,049	32,078 <sup>1</sup>	15,690	210,864	262,681
1971	2,406	30,642	14,735	355,892	403,675
1972	2,006	21,882	16,254	391,464	431,606
1973	1,336	9,944	21,247	396,723	429,250
1974	1,042	7,640 <sup>1</sup>	16,701	321,337	347,220
1975	1,974	6,503	13,544	271,719	293,740
1976 <sup>1</sup>	2,345	4,947 <sup>1</sup>	15,744	219,997	243,033
1977	3,000 <sup>2</sup>	5,000 <sup>2</sup>	20,000 <sup>2</sup>	64,000 <sup>2</sup>	92,000 <sup>2</sup>

<sup>1</sup>From angler surveys; remaining years estimated (see text).

<sup>2</sup>Estimated.

<sup>3</sup>Provisional.

Table 1. Atlantic mackerel catch from ICNAF Subareas 3-5 and Statistical Area 6, 1961-1977, metric tons. (From Atlantic mackerel final FMP, May 1978.)

Table 2. Catch and Effort Data from Lynnhaven and Rudee Inlets on Atlantic Mackerel, 27-III-78 to 2-IV-78.

Date	Port	Vessels Fishing	# Fishermen	Estimated Weight Landed (lbs.)	Area Fished
27-III-78	Lynnhaven & Rudee	No vessels out			
28-III-78	Lynnhaven	1 Recreational Headboat	22	1000	off Oregon Inlet
	Lynnhaven	1 Commercial Headboat		1000	
29-III-78	Lynnhaven	1 Recreational Headboat	25	300-400	off Oregon Inlet
	Rudee	2 Recreational Headboat	29	300-400	off Oregon Inlet
			30	300-400	off Oregon Inlet
	Rudee	1 Charter Boat	6	17	off Oregon Inlet
30-III-78 and 31-III-78		Adverse weather conditions			
1- IV-78	Lynnhaven	1 Recreational Headboat	30	300	5-10 miles SSE
		1 Commercial Headboat		300	of Rudee Inlet
	Rudee	2 Recreational Headboat	50	400	5-10 miles SSE
		-mate from one of the above headboats reported sighting 4 small sportfishing vessels in the area fished.			of Rudee Inlet
2- IV-78	Lynnhaven	1 Commercial Headboat		3000	Near high rise of Ches. Bay Bridge Tunnel
	Rudee	2 Recreational Headboat	45	300	5-10 miles SSE
			42	300	of Rudee Inlet
		2 Charter Boats	4	25-30	
			5	25-30	5-10 miles SSE
		2 small sportfishing vessels also sighted in the area.			of Rudee Inlet

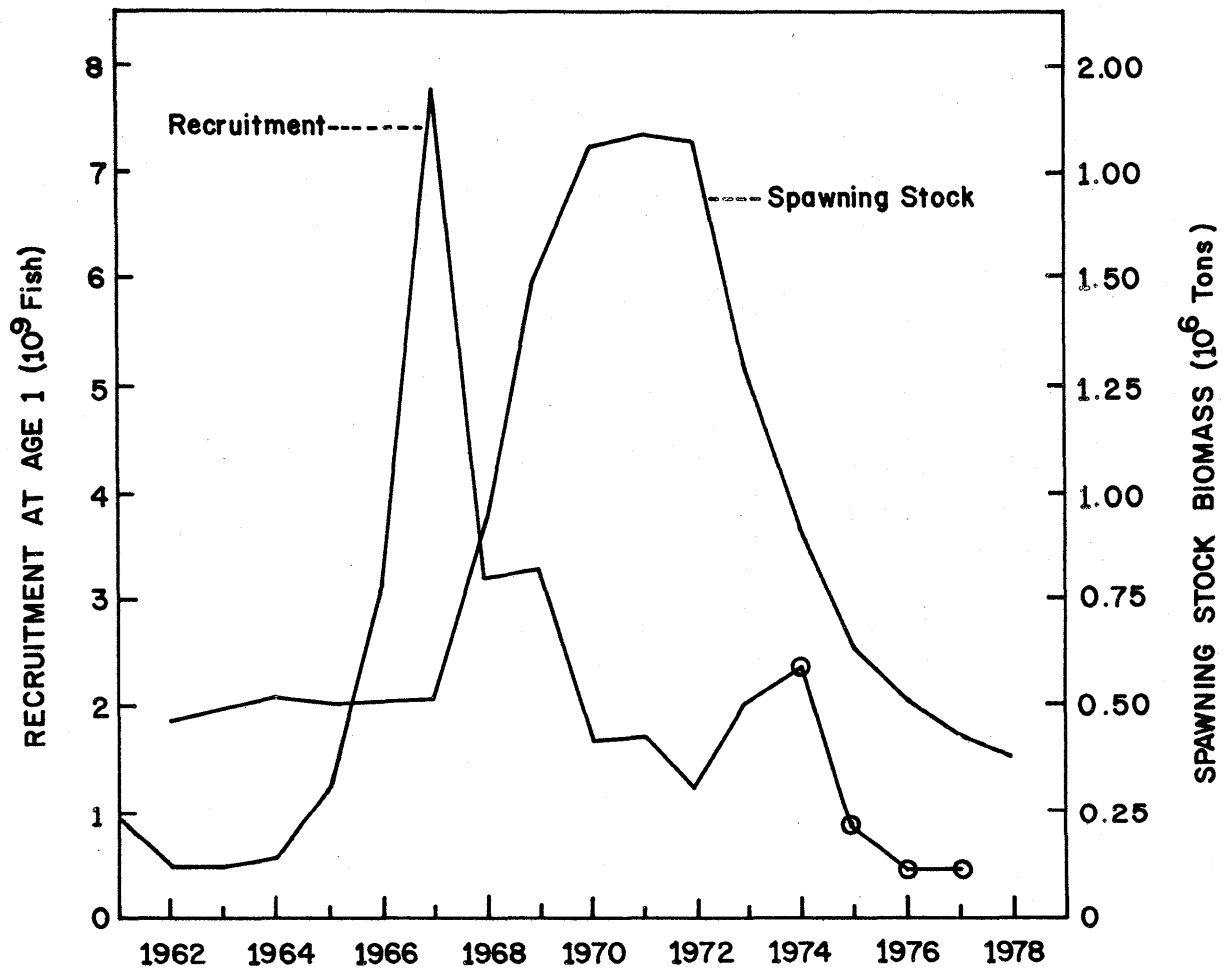


Figure 1. Mackerel spawning stock biomass in 1962-77 and abundance at age 1 of the 1961-77 year-classes. (Open circles indicate estimated year-class sizes.) (From Atlantic mackerel final FMP, May 1978.)

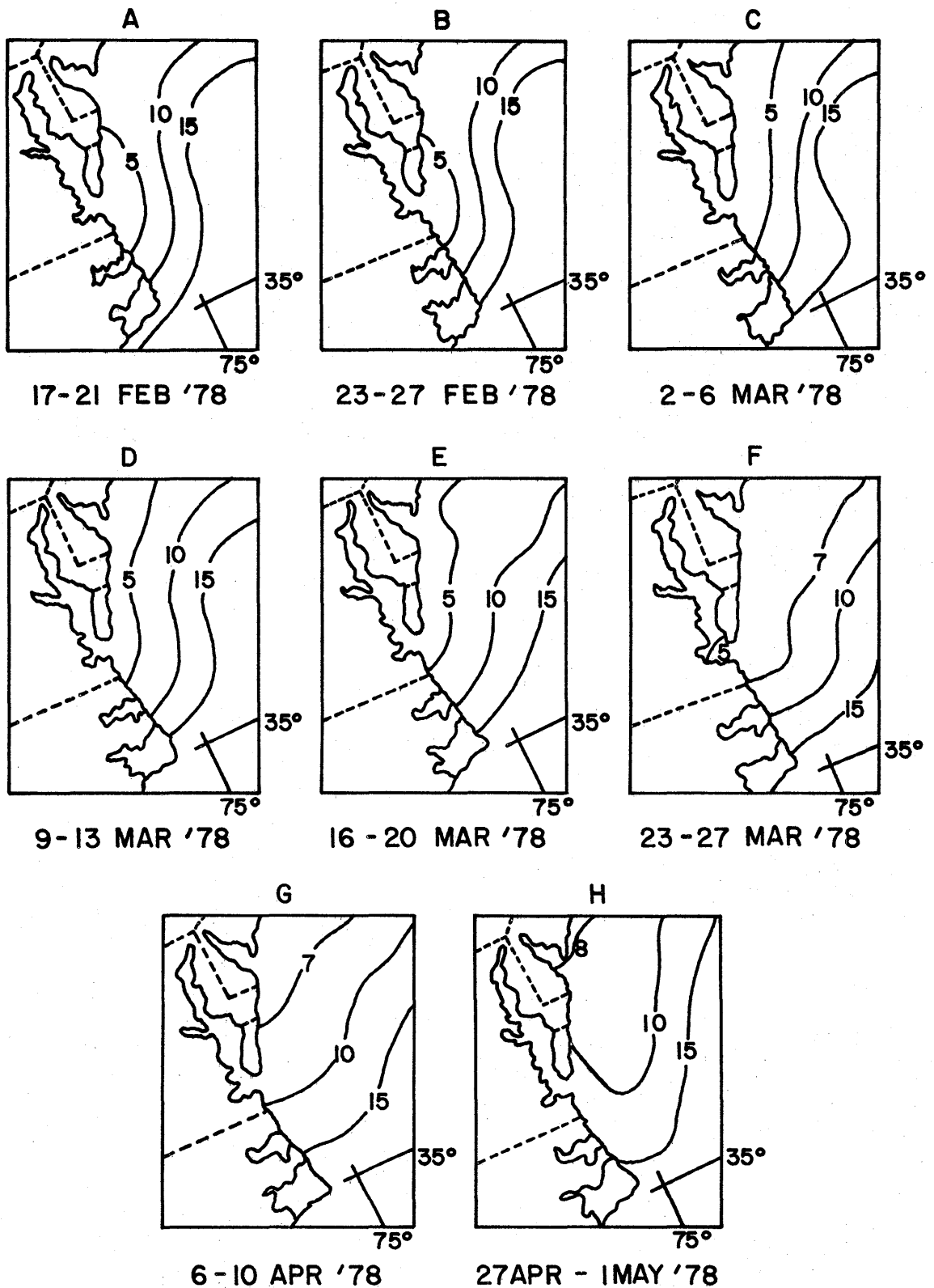


Figure 2. Surface temperatures in Chesapeake Bight during the study period (source of data: National Weather Service's satellite sea surface temperature charts).