LABORATORY REFERENCE DOCUMENT NO. 80-22

Status of the Northwestern Atlantic Butterfish Stock, July 1980

by

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☒ Approved for Distribution

☒ Distribution to F/NWC; F/SWC; F/SEC; F/NWR1, & F/NEC (Technical Writer-Editor)

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Date 5 July 1980

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Introduction

This paper presents updated survey and commercial catch information reported in Murawski and Waring (1978) and Waring (1979). The implications of this additional information is discussed.

Survey Abundance Indicies

The NEFC, NMFS autumn offshore (>27 m) survey catch per tow index increased 288% from 4.59 kg in 1978 to 17.79 kg in 1979 and is the highest observed for the 12 year (1968-79) period (Table 1). Likewise the linear catch per tow index (in numbers) from the autumn 1979 survey increased 463% from the previous year, and was 218% above the 12-year average of 142.62. The autumn mean weights per fish was 39.2 g, the lowest observed since 1971 (22.5 g) (Figure 1).

The recruitment index (number per tow at age 0) in the 1979 autumn survey (324.45) was ~7 fold greater than the 1978 (48.73) index and is the highest on record (Table 2). Over 81% of the fish ranged in size between 10-13 centimeters (FL) (Figure 2). The decline in numbers of larger (age 2+) fish in the survey catch may be reflective of the high natural mortality rate (M = 0.8) (Murawski and Waring 1978) since both domestic and distant-water fleet catches declined from 1978 levels.

Commercial Catch Data

The distant-water fleet butterfish catch declined from 1,324 tons in 1978 to 820 tons in 1979 (Table 3). This is the third consecutive year of declining catch, which is attributed in part to reduced catch allocations for distant-water fleets as a result of extended jurisdiction. However, only 23% of the distant-water fleet allocation (3,600 tons) was taken (Table 4). The USA catch declined 24% from 3,563 tons in 1978 to 2,707 tons in 1979.

Discussion

Based on 1979 autumn survey data it is apparent that a good year-class is recruiting to the butterfish fishery. However, the data also reveal a decline in larger (age 2+) fish. This high level of recruitment may provide for significant increases in the 1980-81 butterfish landings.

Literature Cited

Murawski, S., and G. Waring. 1979. A population assessment of butterfish, *Peprilus triacanthus*, in the Northwestern Atlantic Ocean. Trans. Am. Fish. Soc. 108: 427-429.

Waring, G.T. 1979. Status of the Northwestern Atlantic butterfish stock. NEFC, Woods Hole Laboratory Reference No. 79-33.

TABLE 1. AUTUMN USA SURVEY BUTTERFISH CATCH PER TOW, STRATA 1-12, 61-76, 1968-1979.

	CATCH PER TOW IN NUMBERS			CATCH PER TOW IN WEIGHT (KG)		
YEAR	LINEAR	LN	RETRANSFORMED	LINEAR	LN	RETRANSFORED
1968	121.09	1.99	47.28	10.44	0.66	2.91
1969	76.93	2.16	57.25	5.32	0.68	2.72
1970	48.29	1.13	10.74	3.07	0.34	1.06
1971	242.17	2.19	112.00	5.45	0.58	2.29
1972	86.67	1.36	20.11	3.21	0.36	1.16
1973	178.03	2.35	124.08	8.39	0.75	3.70
1974	116.32	1.95	77.52	5.12	0.66	2.68
1975	52.47	1.69	36.19	2.94	0.58	1.80
1976	160.31	2.32	156.60	6.71	0.86	4.15
1977	94.69	1.99	69.33	6.87	0.70	3.24
1978	80.57	2.16	94.33	4.59	0.76	3.31
1979	453.93	2.72	864.70	17.79	1.15	11.58

TABLE 2. ESTIMATES OF RELATIVE JUVENILE (AGE 0+) ABUNDANCE FROM NMFS AUTUMN OFFSHORE BOTTOM TRAWL SURVEYS, AND TOTAL 0+ STOCK SIZE FOR YEAR CLASSES 1968-79.

YEAR CLASS	AUTUMN CATCH PER TOW INDEX (X N/TOW AGE 0+)	ESTIMATE OF 0+ POPULATION SIZE FROM VPA (MILLIONS)
1968	46.19	1684.2
1969	44.61	823.3
1970	30.06	847.5
1971	231.58	1215.3
1972	79.59	1976.8
1973	135.02	1168.8
1974	92.02	1024.0
1975	89.95	368.1
1976	127.50	----
1977	33.60	----
1978	48.73	----
1979*	324.45	----

* USED 1977-78 AGE-LENGTH KEYS

TABLE 3. NOMINAL LANDINGS (MT, ICNAF SA 4-6) BY COUNTRY, AND ADJUSTED TOTAL CATCHES*, 1963-1979.

YEAR	USA	JAPAN	USSR	POLAND	BULGARIA	GDR	ROMANIA	OTHERS	NOMINAL TOTAL	ADJUSTED CATCH
1963	4513	--	2285	--	--	--	--	--	6798	6798
1964	2461	--	748	--	--	--	--	--	3209	3209
1965	3340	--	749	--	--	--	--	--	4089	4089
1966	2615	--	3865	--	--	--	--	--	6480	6480
1967	2452	146	2170	--	--	--	--	--	4768	4768
1968	1804	3526	1911	--	--	--	--	--	7241	7241
1969	2438	3930	11107	--	36	--	--	--	17511	17816
1970	1869	8624	484	--	--	--	--	--	10897	14319
1971	1570	5771	486	--	26	--	--	--	7853	10483
1972	819	3675	1848	--	114	34	--	--	6490	13040
1973	1557	12172	2334	2804	239	196	152	--	19454	33236
1974	2528	5457	1372	3508	--	--	--	--	12865	17993
1975	2088	3624	789	3754	298	1	--	612*B	11166	14852
1976	1528	7884	420	1518	4	3	62	--	11419	15837
1977	1447	1750	419	280	--	--	16	381*C	4293	4293
1978	3563	661	14	--	--	--	56	603*D	4887	4887
1979	2707	248	2	--	--	--	2	568*E	3527	3527

*ADJUSTED TO ACCOUNT FOR DISCARDS OF COUNTRIES NOT REPORTIN BUTTERFISH CATCHES FROM THE LOLIGO FISHERY.

*B IRELAND
*C SPAIN = 105, ITALY = 60, CUBA = 111, CANADA = 105.
*D SPAIN = 156, ITALY = 354, MEXICO = 93.
*E SPAIN = 90, ITALY = 138, MEXICO =340.

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TABLE 4. TOTAL REPORTED LANDINGS (MT) OF BUTTERFISH FROM US WATERS AND ALLOCATIONS FOR 1979

COUNTRY	CATCH	1979 ALLOCATION	PERCENT TAKEN
FRG	0.0	150	0.0
GDR	0.0	10	0.0
ITALY	138.0	354	338.8
JAPAN	248.0	1016	24.4
MEXICO	340.0	640	53.2
POLAND	0.0	37	0.0
ROMANIA	2.0	10	1.7
SPAIN	90.0	876	10.2
USSR	2.0	497	0.5
TOTAL	820.0	3600	22.8
USA	2707.0		
TOTAL	3527.0		

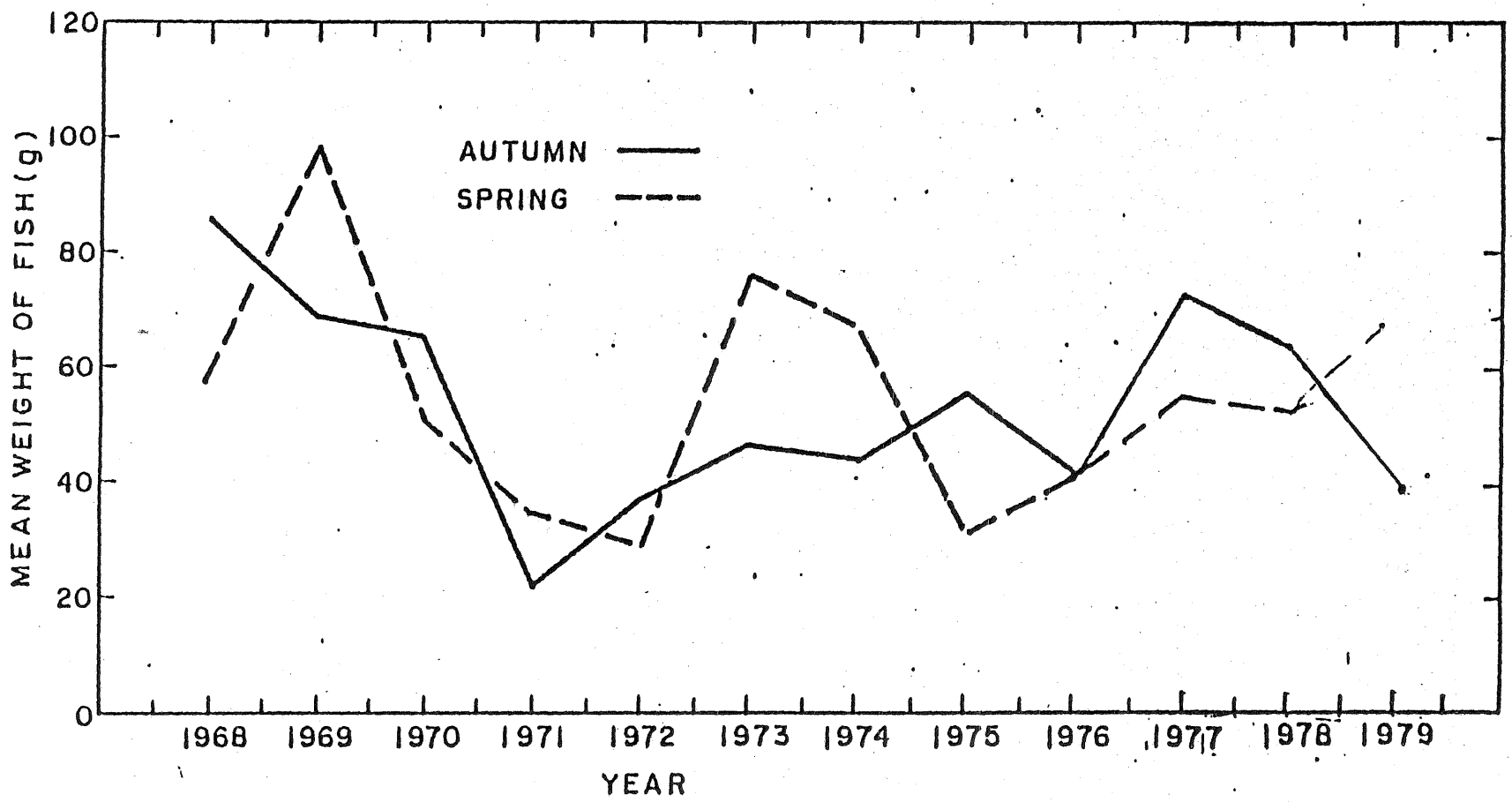

Figure 1. Mean weight of butterfish (g) taken from the Southern New Englnad and Middle Atlantic areas during USA research vessel surveys, 1968-1979.

NMFS/NEFC BOTTOM TRAWL SURVEY CATCH DATA

SPECIES 131. BUTTER FISH
STRATA SET 1. SNE-MID-ALT
YEAR 79.

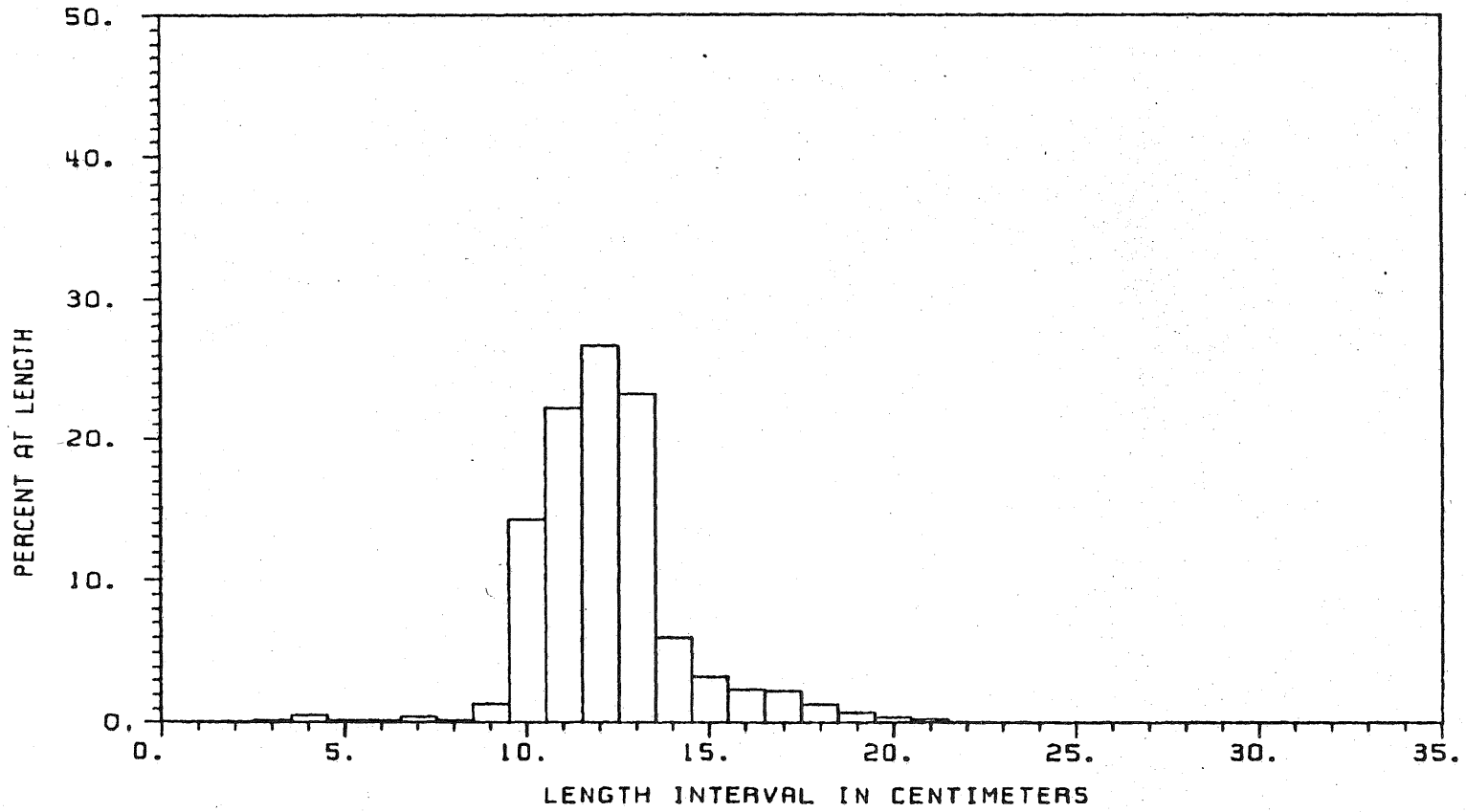

Figure 2. NUMBER OF INDIVIDUALS AT EACH LENGTH INTERVAL BY SPECIES, YEAR, SEASON AND GEOGRAPHICAL AREA.