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DOCUMENTATION OF LENGTHS OF FISH SAMPLED ON NMFS BOTTOM TRAWL SURVEY CRUISES DURING THE YEARS 1973-76 FOR THE FEEDING ECOLOGY PROJECT*

by

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ABSTRACT

Predator length data are presented for 17 species of Northwest Atlantic fish sampled for fish feeding studies by the NMFS during the years 1973-76. The number and average length (within 5 cm length categories) of each species collected for stomach content analysis are listed according to area, year and season and; area for all years and seasons combined. The intent of providing this information is primarily for those who may have a use for it in modeling efforts at the NMFS, and for others who may have a need for more detailed predator length data for calculations of food consumption by various species based on the food data presented in Woods Hole Laboratory Reference Documents 82-16 and 17 entitled "Food of seventeen species of Northwest Atlantic fish: Part I, Examination by predator length and geographic area; Part II, Examination by year and listing of prey species", authored by Ray E. Bowman and William L. Michaels, and William L. Michaels and Ray E. Bowman, consecutively.

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INTRODUCTION

Documentation of the length frequency of fishes examined for fish feeding studies is necessary for calculation of consumption estimates, particularly for length specific predator-prey modeling efforts underway as part of the MARMAP (Marine Resources Monitoring, Assessment, and Prediction) program of the NMFS (National Marine Fisheries Service). Presently the model GEORGE, developed at the NEFC(Northeast Fisheries Center), requires detailed information on the type and quantity of food consumed by various age groups (lengths) of fishes. This paper provides an accounting of the lengths of all fish sampled for the 1973-76 data base of the Feeding Ecology Project.

A summary of the food of the 17 species comprising the 1973-76 data base is given in Woods Hole Laboratory Reference Documents 82-16 and 17 entitled "Food of seventeen species of Northwest Atlantic fish: Part I, Examination by predator length and geographic area; Part II, Examination by year and listing of prey species" authored by Ray E. Bowman and William L. Michaels, and William L. Michaels and Ray E. Bowman, consecutively.

METHODS

Sampling

A total of 16,631 fish representing 17 species was sampled during eight bottom trawl survey cruises conducted in the spring and autumn for the years 1973-76[1]. The area surveyed covers continental shelf waters extending from Cape Hatteras, North Carolina, to Browns Bank, Nova Scotia, and has traditionally been subdivided into five geographic areas, namely the Middle Atlantic, Southern New England, Georges Bank, the Gulf of Maine, and Western Nova Scotia (Figure 1). Fishes sampled within a particular geographic area were selected according to their dietary preferences, the portion they make up of the biomass in a given area (largest biomass species were considered the most important), and commercial value.

During each cruise technicians were instructed to sample 50 juveniles and 50 adults per selected species from each geographic area. No more than 10 fish from each age group were to be sampled at a particular station, and fish were not to be sampled at two consecutive stations. The only exception to the collection method occurred when, as the cruise progressed, it seemed that 50 juvenile or 50 adult fish of a species would not be collected as necessary to obtain the sample size requested. The number of each species of fish sampled within the various geographic areas for all years and seasons combined is given in Table 1.

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[1]Further details of bottom trawling techniques may be obtained from the Resource Surveys Investigation, NEFC, Woods Hole, MA 02543.

Presentation of Data

Presented in Tables 2-19 are the average length, expressed as either TL (total length) or FL (fork length) depending on the particular species, and number of fish sampled according to five centimeter length categories. (However, in some instances, the largest length categories were combined.) Within the tables the average length is given as the denominator and the number of fish as the numerator for each fish length category. In Tables 2-18 data are listed according to area, year and season for each species. In several instances fish were sampled in areas not targeted for collections; these samples are identified with an asterisk and are included in appropriate tables since they are part of the Feeding Ecology Project's 1973-76 data base. Given in Table 19 are data according to fish length category for each species within a particular geographic area for combined years and seasons.

Table 1. Number of each species of fish sampled for stomach content analysis within various geographic areas of the Northwest Atlantic for the years 1973-76, combined.

Species	Geographic Area				
	Middle Atlantic	Southern New England	Georges Bank	Gulf of Maine	Western Nova Scotia
Little skate	52*	487	583	4*	
Atlantic cod	1*	35*	587	410	665
Haddock		1*	636	97*	745
Silver hake	789	917	918	77*	12*
Pollock	2*	1*	22*	372	289
Red hake	26*	480	81*	1*	
Spotted hake	523	1*	6*		
White hake	8*	1*	6*	464	70*
Ocean pout	8*	247	183	8*	
Scup	448	262	10*		
Butterfish	676	393	10*		
Redfish			2*	454	10*
Longhorn sculpin		20*	687	1*	
Fourspot flounder	366	18*			
Witch flounder		2*	33*	421	385
American plaice	1*	3*	20*	699	780
Yellowtail flounder	16*	478	501	1*	

*These fish sampled in areas not targeted for collections.

Table 2. Number and average length (TL) of little skate sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Litte skate (026)

AREA: Southern New England

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)												TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	
	1973													
733	Spring		3/10	8/11	1/19	3/23	1/29	4/33	12/38	10/42	11/47		1/57	54/34
738	Autumn					2/23	4/28	2/33	3/38	3/43	10/47	1/52		25/40
	1974													
744	Spring		4/9	6/12	17/17	1/21	1/30	4/33	9/38	12/43	12/47	2/51		68/31
748	Autumn		1/10	3/13		1/22	2/29	4/34	8/37	14/43	10/46			43/38
	1975													
753	Spring				1/19	1/21		3/34	8/39	19/43	29/47	2/51		63/43
758	Autumn			1/12		1/24	6/28	11/33	9/38	14/42	15/47	3/51	1/58	61/40
	1976													
762	Spring		2/10		7/18	5/22	1/26	8/33	15/38	26/43	27/47	2/51		93/39
767	Autumn			1/13		1/24	4/27	3/34	10/37	26/43	32/47	3/51		80/42

Table 2. Continued

SPECIES: *Little Skate (026)*

AREA: Georges Bank (Middle Atlantic, Gulf of Maine*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)												TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	
	1973													
733	Spring								1/40	16/43	35/47	2/51		54/46
738	Autumn					1/23	2/27	2/33	3/39	14/43	25/47	5/52		52/44
	1974													
744	Spring		1/10		2/17	2/25	10/28	6/33	5/39	21/43	29/47	2/51		78/40
748	Autumn		2/10	1/14	4/17			6/34	5/39	12/44	32/48	8/51		70/42
	1975													
753	Spring		13/9	1/11				2/34	4/38	22/43	55/47	3/52	1/59	101/41
758	Autumn			3/12	10/17	7/22	4/28	10/32	2/39	3/41	13/47	5/51		57/33
	1976													
762	Spring		17/9	21/13	9/17	8/22	6/29	2/35	3/38	9/44	22/47	5/51		102/27
767	Autumn			3/14	11/18	5/23	4/29	2/32	5/37	14/43	23/47	2/51		69/36
*Middle Atlantic -	733			4/13	10/18	6/22				2/44	4/47			26/25
	744						1/29	1/32	4/38	4/42				10/38
	758				1/16				1/36	2/44	2/46			6/39
	762								3/37	3/43	3/48			9/43
	767										1/48			1/48
*Gulf of Maine -	762									1/42	2/48		1/57	4/49

*These fish sampled in areas not targeted for collections.

Table 3. Number and average length (TL) of Atlantic cod sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Atlantic cod (077)
AREA: Georges Bank
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																								TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >100	
	1973																									
733	Spring						9/29	4/31	4/39	7/43	5/47	3/51		3/64	2/66		2/78	5/82	2/89		1/96	2/101	1/106	1/125	51/55
738	Autumn		6/7			3/24	2/29	5/32	16/37	10/43	27/48	5/53	5/58	4/62	6/69	5/72	7/77		2/86		1/97		1/110	1/130	106/50
	1974																									
744	Spring			6/13	1/16				2/39	9/42	7/47	8/52	12/58	4/63	3/67	2/72	5/77	8/83	3/87	2/91	1/97	1/103	2/107		76/59
748	Autumn				1/18			4/34	2/38	3/44	7/49	7/54	11/57	11/62	7/67	4/71	1/80		1/90			1/102			60/57
	1975																									
753	Spring										2/47	6/54	8/57	14/62	10/67	6/72	8/77	6/83	3/87		2/96		1/110		74/68
758	Autumn		13/9	10/12	4/17	2/24	4/27	5/33	5/36	2/43		1/52	6/58	5/63	11/67	6/73	4/78	1/84	1/89		1/96				81/42
	1976																									
762	Spring			1/15	7/18	9/23	15/28	10/32	2/39	1/45	3/47	2/55	3/58	7/62	4/69	8/73	4/78	4/82	1/90		1/97	1/103	1/108		84/47
767	Autumn						3/29	17/33	6/37	4/42	2/50	5/52	2/57	1/61	1/66	2/72	1/79	3/83	3/89	2/93	1/100		1/107	1/112	55/52

Table 3. Continued

SPECIES: Atlantic cod (073)
AREA: Gulf of Maine
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																							TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	
	1973																								
733	Spring							1/35	2/40		3/48		2/58	3/62	3/68	3/73	1/78	2/81		3/91	1/98	3/103	1/106		28/72
738	Autumn	1/5	8/6	8/12		1/25	12/28	13/32	11/38	7/43	6/47	4/53	1/57	4/62	3/68	10/73	3/78	2/82	2/88	3/91	4/98	1/102	2/108		106/47
	1974																								
744	Spring			1/11	3/18	1/21		1/31	11/38	5/42	2/46	2/52	3/58	1/62	3/68	1/73	2/78	3/81	6/88	3/92	2/96	2/102	1/109	3/124	56/63
748	Autumn			2/14	9/17	2/21	1/29		1/40	1/43	5/48	1/55	5/58	1/63		1/74	3/78	1/81		3/93	1/98	1/103			38/49
	1975																								
753	Spring			3/13		2/24	2/27	2/31	1/39	3/42	4/48	6/53	3/59		1/68	1/75					1/100	2/101			31/48
758	Autumn						1/27	3/32	2/36	1/41	2/47	2/54	4/58	4/62	6/67	4/72	5/77	3/82	1/86	1/93				1/118	40/63
	1976																								
762	Spring						4/28	11/33	5/37	5/43	1/49	3/53	3/59	3/61		1/75	2/77		1/88	1/94	1/100	2/101		1/120	44/52
767	Autumn					1/23	2/27		3/38	4/42	12/48	4/52	6/57	5/63	7/66	5/71	6/77	4/82	2/89	2/92	2/97		1/108	1/112	67/62

Table 3. Continued

SPECIES: Atlantic cod (073)
AREA: Western Nova Scotia (Middle Atlantic, Southern New England*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																							TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	
	1973																								
733	Spring	11/5	1/6	18/12	1/16		4/28	8/33	5/38	6/44	5/48	6/52	10/57	6/63	5/67	1/72	2/78	2/82	1/90				1/107	1/133	93/39
738	Autumn				10/19	10/23	4/27	7/33	12/38	9/43	10/47	10/53	3/57	9/63	12/68	22/72	6/78	7/83	3/88	5/91	3/99	1/104	2/107	2/120	147/57
	1974																								
744	Spring			1/14	2/18		1/30	1/32	2/40	4/43	7/48	6/53	2/58	1/63	5/67	10/72	13/78	5/83	2/87		3/97	1/101	1/108		67/65
748	Autumn		4/8	10/11	4/18	4/23	2/28	3/34	5/37	3/43	6/49	12/53	10/57	11/62	5/68	3/72	1/79	3/81	5/88		1/96			1/124	93/48
	1975																								
753	Spring	1/2			1/16		4/28	10/33	1/36	5/42	5/49	4/52	2/60	7/62	2/66	1/72	1/77	4/82	3/87	3/93					54/53
758	Autumn		3/9	2/12	3/19	4/24	4/27	4/33	5/39	13/42	5/47	6/53	10/56	4/63	7/68	4/72		1/82		1/92	1/97	1/105		1/150	79/49
	1976																								
762	Spring	1/4		20/13	5/17	1/24	7/27	3/33	6/38	7/44	8/47	7/53	6/58	5/62	2/66	4/73		3/81		1/93					86/39
767	Autumn								11/37	8/42	2/48	3/54	5/57	4/63	2/68	2/72	4/78	2/84	2/86		1/96				46/56
*Middle Atlantic -	738					1/24																			1/24
*Southern New England -	738																				1/96				1/96
	744			1/15							3/48	3/54	4/58	3/61	1/68	5/73	3/77	1/81		1/94					25/63
	753													1/65	3/67	1/75		1/83		1/92					7/74
	767							2/33																	2/33

*These fish sampled in areas not targeted for collections.

Table 4. Number and average length (TL) of haddock sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Haddock (074)
AREA: Georges Bank
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																		TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	
	1973																			
733	Spring					5/23	11/27				1/48	1/52		4/63	3/69	12/73	2/79	2/82		42/53
738	Autumn						1/30	15/32	19/37	4/43	14/48	9/51	3/58	4/63	3/69	5/72	5/78	1/83		83/46
	1974																			
744	Spring					14/21	1/26	3/34	11/39	20/42	5/47	1/52	2/56	2/63	1/68	5/73		1/84		66/41
748	Autumn			14/14	13/17			7/33	3/36	10/44	17/48	9/52	2/57	5/62				1/81	1/88	82/37
	1975																			
753	Spring	1/5			4/19	1/25	2/27	1/35	4/37	10/43	6/49	14/52	4/56	3/62		2/72	1/77	1/82		54/46
758	Autumn			42/13	26/17	2/22	2/27	6/33	8/37	7/43	4/47	20/52	12/57	7/62	4/68	1/73				141/32
	1976																			
762	Spring				1/19	45/22	9/27	1/35	4/37	4/42	8/48	8/52	16/57	3/61	3/67	1/71				103/37
767	Autumn						1/30	21/33	34/37	1/43		1/53	2/58	3/62	2/68		1/79			66/39

Table 4. Continued

SPECIES: Haddock (074)
AREA: Western Nova Scotia (Southern New England, Gulf of Maine*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																		TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	
	1973																			
733	Spring					3/24	9/27		3/39	8/43	9/47	10/52	7/58	5/62	4/68	2/73				60/48
738	Autumn					8/23	6/28	27/33	12/37	2/42	9/48	19/53	21/57	16/63	5/67	1/71		1/81		127/46
	1974																			
744	Spring					1/25	2/29	6/33	11/37	4/42	5/47	3/52	9/57	8/63	2/68	1/71				52/48
748	Autumn		13/9	56/13	14/17	3/25	10/27	10/34	16/38	16/43	8/47	3/54	4/59	2/63	4/68	2/72				161/27
	1975																			
753	Spring					1/21	10/29	9/32	2/37	13/43	9/47	1/51	5/58	5/62	5/66					60/44
758	Autumn			64/13	10/17	2/22	4/28	4/32	3/37	9/43	13/47	9/52	4/57	2/64	3/67					127/27
	1976																			
762	Spring			25/14	33/16		2/28	1/31												61/16
767	Autumn						10/27	5/33	10/37	6/43	18/47	15/52	18/57	11/63	3/67		1/76			97/48
*Southern New England - 767									1/36											1/36
*Gulf of Maine - 733						4/22									1/70					5/32
738										2/43										2/43
744									2/37	1/43										3/39
748			4/9	6/11	1/20	2/24			1/38				1/58	1/63	1/67					17/23
762											1/47									1/47
767				1/11			4/28	12/33	10/37	3/42	3/47	5/53	5/59	2/62	6/68	3/72	4/79	1/62		59/49

*These fish sampled in areas not targeted for collections.

Table 5. Number and average length (FL) of silver hake sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Silver hake (072)
AREA: Middle Atlantic
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	No. / >60	
	1973														
733	Spring				1/20	3/23	6/29	19/32	6/39	1/44	1/50	2/52			39/33
738	Autumn	49/4	6/9	6/12		38/24	30/26	8/33	5/38	1/45				1/78	144/18
	1974														
744	Spring	53/4	55/8	32/12	1/17		25/28	19/32	6/37	1/41	1/46				193/14
748	Autumn	17/4	16/6		3/20	12/22	5/27		1/37						54/12
	1975														
753	Spring	3/5	23/6	5/12	2/16	4/24	8/28	15/32	1/38	4/42					65/19
758	Autumn	49/4			5/19	30/23	6/26		1/40						91/13
	1976														
762	Spring		33/8	14/12	14/16		16/28	22/32	5/38	3/44	2/47				109/20
767	Autumn	14/4	30/7	1/15		23/24	24/27	2/34							94/16

Table 5. Continued

SPECIES: Silver hake (072)
AREA: Southern New England
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	No. / >60	
	1973														
733	Spring		43/8	30/13	5/17	7/22	8/28	5/32	6/38		1/47				105/16
738	Autumn	15/4			3/19	20/23	31/28	30/32	13/37	4/42	3/47				119/27
	1974														
744	Spring		1/9	3/11		5/24	25/27	23/32	19/37	11/42	3/48	1/51	2/59		93/33
748	Autumn	39/4	9/6	1/15	12/18	29/22	12/28	11/32	3/36						116/16
	1975														
753	Spring		26/8	9/11		4/23	26/28	19/32	5/38	7/42	2/47	2/54			100/24
758	Autumn	30/4	29/7	3/11		6/24	23/28	21/31	5/37	1/44	1/50	1/55			120/18
	1976														
762	Spring	13/4	22/8	7/12	2/19	10/23	34/28	24/32	5/38	3/44	3/49	1/53			124/23
767	Autumn	10/4	44/7	4/11	1/20	10/22	9/28	32/33	15/36	8/42	5/47	2/53			140/23

Table 5. Continued

SPECIES: Silver hake (072)

AREA: Georges Bank (Gulf of Maine, Western Nova Scotia*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring						20/28	23/32	4/36	1/42					48/31
738	Autumn	27/4	87/7	5/11	1/20	10/22	28/28	28/32	7/37	2/42	1/47	2/52			198/16
	1974														
744	Spring		9/9	27/13	9/17	1/25	16/28	33/32	6/38	1/45	1/49				103/24
748	Autumn	8/4	75/7	12/11		19/23	25/27	15/33	3/38						157/15
	1975														
753	Spring			16/13	23/18	5/22	7/28	23/32	9/37		1/47	1/54			85/25
758	Autumn	6/4	72/7	2/11		5/24	30/28	23/32	5/38	2/42	1/48				146/18
	1976														
762	Spring		2/10	7/12	6/16	1/25	15/28	11/32	14/37	5/42		1/53		1/64	63/29
767	Autumn	18/4	18/7	18/12		1/24	20/29	30/32	4/38	5/42	2/47	2/54			118/22
*Gulf of Maine -	733					3/23	1/29								4/25
	738	2/5	18/8	20/12	1/16							1/52			42/11
	748							1/35	2/37	2/43					5/39
	753					1/24	3/27	8/33	2/36			1/51			15/33
	762					5/23	5/26			1/44					11/26
*Western Nova Scotia	738	3/4	6/8	2/12			1/28								12/9

*These fish sampled in areas not targeted for collections.

Table 6. Number and average length (FL) of pollock sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Pollock (075)
AREA: Gulf of Maine
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																							
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	TOTAL
	1973																								
733	Spring						5/28	6/32	2/38	1/43	1/49	2/53	5/57	4/62		1/73	2/79	7/82	1/88						37/55
738	Autumn						3/28	12/34	8/37	1/41	1/46	2/52		2/63	4/67	12/73	6/77	10/83	13/87	7/93				1/120	82/66
	1974																								
744	Spring							4/33	1/37	4/44		1/54	8/57	1/62	2/68	4/74	3/77	4/82	6/88	1/95					39/65
748	Autumn							1/35			1/48	1/51	1/58	2/63	4/69	5/72	5/79	3/82	4/88	2/92					29/73
	1975																								
753	Spring							2/35	2/40	1/45	2/47			1/62	3/67	2/74	6/78	5/84	7/87	6/92	1/96				38/75
758	Autumn						1/29		1/39		1/49	3/53	9/58		1/69	4/72	3/79	4/83	1/88	1/92	1/98	1/105			31/68
	1976																								
762	Spring					6/22	9/28	7/32		2/42	2/48	1/51	2/58	3/63	3/67	6/72	3/80	5/83	6/87	2/91		1/104			58/56
767	Autumn					1/23	1/26						6/58	5/63	13/67	9/73	7/77	7/84	4/88	2/93	3/97				58/72

Table 6. Continued

SPECIES: Pollock (075)
AREA: Western Nova Scotia (Middle Atlantic, Southern New England, Georges Bank*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																								TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	
	1973																									
733	Spring					2/23	2/29	3/32	3/38	2/41	1/47		1/56	5/63	1/70	2/73	4/78	8/82	5/87							39/62
738	Autumn						3/27	4/34	14/38	2/42	1/46	2/53	5/57	10/63	1/67		4/78	3/83	2/87							51/53
	1974																									
744	Spring							2/33	1/37	6/42	1/47		3/58	5/63	11/67	5/73	4/78	4/84	3/87	2/92	2/99					49/67
748	Autumn					1/21	1/27		1/36	1/41				3/64	2/66	3/72	3/77	3/83	4/87							22/68
	1975																									
753	Spring							2/33	2/38	2/42	1/47	2/53	7/57	4/63	3/67	1/75	3/77	1/83		2/93	1/96					31/61
758	Autumn					1/24	1/30		3/38	3/43		2/53	7/58	5/61	2/67	3/72		3/83	2/87		1/98					33/60
	1976																									
762	Spring			1/15	15/17	1/21	9/29	3/32			2/47	1/52	2/58	3/63	5/68	3/72	6/77	6/83	1/89							58/47
767	Autumn										1/49					1/75	1/78			1/94	2/97					6/82
*Middle Atlantic - 733																2/72										2/72
*Southern New England - 762							1/28																			1/28
*Georges Bank - 733								2/34	4/39	1/44				1/63							1/97					9/40
738																				4/92						4/92
744								2/34	1/36									1/82	1/86	1/93	1/97					7/66
753																				2/93						2/93

*These fish sampled in areas not targeted for collections.

Table 7. Number and average length (TL) of red hake sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Red hake (077)

AREA: Southern New England (Middle Atlantic, Georges Bank, Gulf of Maine*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)												TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	
	1973													
733	Spring		3/9	1/12	1/17	1/25	5/27	11/34	15/37	2/41	1/46			40/32
738	Autumn				6/17	11/23	9/27	4/32	1/37	1/44				33/24
	1974													
744	Spring	25/4	7/8	17/12	1/17		2/29	8/33	8/37	4/43	1/48			73/17
748	Autumn					8/24	19/28	10/32	5/37	3/41	1/47			46/30
	1975													
753	Spring		3/7				6/29	10/33	10/38	6/42				35/33
758	Autumn	7/4	3/7			1/25	7/28	11/32	9/37	4/43	2/49			44/28
	1976													
762	Spring	1/1	6/7	7/12		11/23	30/28	20/32	20/37	7/42	5/47	1/52	1/60	109/30
767	Autumn	12/4	11/7	3/12	2/18	15/23	22/28	16/32	5/37	9/43	5/47	1/54		101/25
*Middle Atlantic -	744		1/10	8/13										9/13
	753		1/9	6/12	5/17	1/21		3/33						16/19
	767									1/43				1/43
*Georges Bank -	733					2/24	3/26	1/35						6/27
	738	18/4	31/7					1/34						50/6
	748							1/31						1/31
	753			1/14						3/42				4/35
	758	6/5	4/6											10/5
	767	7/4	3/6											10/5
*Gulf of Maine -	738			1/13										1/13

*These fish sampled in areas not targeted for collection

Table 8. Number and average length (TL) of spotted hake sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Spotted hake (078)

AREA: Middle Atlantic (Southern New England, Georges Bank *)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)									TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	
	1973										
733	Spring	1/5	9/9	7/11	1/16	10/23	10/27	7/32	2/38		47/21
738	Autumn			2/14	53/18	21/21	2/27		1/36		79/19
	1974										
744	Spring		8/9	3/14	1/17	7/23	4/27	6/32	1/38		30/21
748	Autumn			13/14	31/18	21/23	9/27				74/20
	1975										
753	Spring				3/19	29/22	17/27	11/32	5/37	1/45	66/26
758	Autumn				15/19	35/22	4/26				54/21
	1976										
762	Spring	1/5	30/8	13/12	1/17	3/24	25/28	13/33	1/37		87/19
767	Autumn			12/14	34/18	40/23					86/20
*Southern New England - 753						1/22					1/22
*Georges Bank - 762			6/7								6/7

*These fish sampled in areas not targeted for collections.

Table 9. Number and average length (TL) of white hake sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: White hake (076)
AREA: Gulf of Maine (Middle Atlantic, Southern New England, Georges Bank, Western Nova Scotia*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)																							TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	
	1973																								
733	Spring					1/25	2/28	4/31	6/37	7/42	7/40	4/52	3/58	3/63	2/67	1/75	2/77		1/86						43/48
738	Autumn					3/24	6/26	6/33	10/38	12/43	18/47	3/52	9/57	4/62	6/69	5/74	6/77		2/86						91/51
	1974																								
744	Spring							2/33		1/41	3/46	10/53	10/58	11/63	8/67	5/72	1/76	2/82		1/91					54/61
748	Autumn								5/39	7/43	2/48	3/52	4/57	9/63	8/67	10/72	5/78			1/91			1/106		55/62
	1975																								
753	Spring						4/28	10/32	7/38	3/43	7/47	5/52	5/57	3/63	5/68	8/73	2/80	1/81							61/51
758	Autumn			1/14	2/18	1/23	2/28		5/39	5/44	7/47	3/52	4/58	2/62	3/67	4/72	4/78	4/82	1/88						48/54
	1976																								
762	Spring					1/24	11/28	12/32	3/38	7/42	5/48	2/53	2/56	3/63	2/66	2/74	2/79	3/83							54/44
767	Autumn						1/28		10/38	8/42	8/49	6/53	7/57	4/62	6/67	4/74	2/78	1/83		1/95			1/110		59/55
*Middle Atlantic - 744							1/30	5/33	2/36																8/33
*Southern New England - 758										1/42															1/42
*Georges Bank - 738				1/12																					1/12
	748						2/27																		2/27
	753									2/43	1/48														3/45
*Western Nova Scotia - 733										1/44						1/73									2/59
	738					2/24			1/38	1/42		2/55			1/67	1/73	1/77		1/88	1/95					11/58
	744		1/9	11/13	5/18																				17/14
	748				2/20	7/24	8/27	7/31	3/39	4/42	1/46		2/59			1/72									30/34
	753											1/57													1/52
	758									2/42		1/54	1/58		3/67										7/57
	762										1/46	1/57													2/49

*These fish sampled in areas not targeted for collections

Table 10. Number and average length (TL) of ocean pout sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Ocean pout (193)
AREA: Southern New England
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring			1/15		1/24	3/28	1/34	6/38	4/43	11/48	8/53	5/58	9/67	49/49
738	Autumn			1/13		5/23	4/26	1/31	3/36	1/41					15/27
	1974														
744	Spring			1/15	1/16		4/29	10/33	11/37	9/42	3/48	6/52	6/57	2/71	53/42
748	Autumn						1/28	1/33							2/31
	1975														
753	Spring						1/30		3/38	5/43	5/47	1/51	6/58	10/75	31/56
758	Autumn														
	1976														
762	Spring			1/14				2/34	4/39	5/42	10/47	14/52	16/57	13/62	65/52
767	Autumn			1/15			8/29	7/31	3/36		1/49	11/51	1/57		32/39

Table 10. Continued

SPECIES: *Ocean pout (193)*

AREA: Georges Bank (Middle Atlantic, Gulf of Maine*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring							1/35	5/38	1/44	1/46	2/52	1/60	15/74	26/61
738	Autumn								2/38	1/45			3/57		6/49
	1974														
744	Spring			1/14	4/17	5/21	2/28	2/34	3/39	5/43	6/47	8/52	9/58	16/72	61/49
748	Autumn				1/20			1/34						3/76	5/56
	1975														
753	Spring					1/23			3/38	1/42	3/48		8/58	15/68	31/58
758	Autumn							1/34	1/40	1/43	2/47	1/55		1/66	7/47
	1976														
762	Spring						1/26		2/37	4/43	6/48	6/53	4/58	14/74	37/58
767	Autumn			1/15							2/48	3/53		4/75	10/57
*Middle Atlantic -	744											1/54			1/54
	753											3/53	1/57	3/62	7/57
*Gulf of Maine	733			1/14			2/27						1/56	4/66	8/49

*These fish sampled in areas not targeted for collections.

[illegible] according to area, year and season, and length category.

SPECIES: *Scup (143)*
AREA: Middle Atlantic (Southern New England, Georges Bank*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)								TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	
	1973									
733	Spring		1/8	1/15	14/17	11/22	7/27	3/33		37/21
738	Autumn		10/8	3/14	5/18	2/22				20/13
	1974									
744	Spring		7/9	3/11	5/18	5/21				20/15
748	Autumn		2/10	69/12	7/17	3/22				81/13
	1975									
753	Spring			12/11	16/18	27/23	3/26			58/19
758	Autumn		39/8	1/11	20/17	8/22				68/12
	1976									
762	Spring		10/9	22/11	11/18	16/23	8/26		3/37	70/17
767	Autumn		2/10	76/12	16/16					95/13
*Southern New England - 733					7/19					7/19
738					7/17	3/22				10/19
758			54/8	7/13	15/17	22/22	1/29			99/13
762					7/18	20/22	19/27	4/31		50/24
767			26/9	19/13	31/17	17/22	3/27			96/15
*Georges Bank - 748			3/9		2/20	4/22	1/26			10/18

*These fish sampled in areas not targeted for collections.

Table 12. Number and average length (FL) of butterfish sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Butterfish (131)
AREA: Middle Atlantic (Southern New England, Georges Bank*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)					TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	
	1973						
733	Spring			28/14	17/17	6/21	51/16
738	Autumn	4/5	54/7	75/13	6/16		139/11
	1974						
744	Spring			15/12	20/18		35/15
748	Autumn	7/3	15/9	119/13	26/16		167/13
	1975						
753	Spring		4/10	26/12	18/17	1/22	49/14
758	Autumn			31/13	23/16		54/14
	1976						
762	Spring		2/10	36/11	21/17	4/21	63/14
767	Autumn	9/5	32/9	64/12	13/16		118/11
*Southern New England - 733			8/8	2/12			10/9
738			1/6				1/6
748				1/12			1/12
758			20/9	18/13	59/17		97/15
762			1/10	68/11	64/17	4/21	137/14
767		3/5	14/10	67/13	63/16		147/14
*Georges Bank - 758			9/9	1/11			10/9

*These fish sampled in areas not targeted for collection

Table 13. Number and average length (FL) of redfish sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Redfish (155)

AREA: Gulf of Maine (Georges Bank, Western Nova Scotia*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)										TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	
	1973											
733	Spring		2/9	3/12	2/17	1/25	10/29	20/32	17/36			55/30
738	Autumn			2/13	1/16	3/24	29/28	46/32	26/37	3/41		110/32
	1974											
744	Spring				1/16	4/25	8/28	19/32	19/38	2/42		53/33
748	Autumn				3/17	2/23	9/29	13/32	20/37	1/41		48/32
	1975											
753	Spring			5/13	3/19		6/28	16/33	6/36		1/48	37/29
758	Autumn				2/19		7/28	14/33	17/37	8/41		48/34
	1976											
762	Spring				7/18	3/23	4/29	21/32	22/37			57/32
767	Autumn				2/19	12/24	16/27	11/33	4/36	1/42		46/27
*Georges Bank - 748								1/31				1/31
762									1/36			1/36
*Western Nova Scotia - 738				2/11			1/29	1/33				4/21
753								1/33				1/33
758								1/34	2/40	2/42		5/40

*These fish sampled in areas not targeted for collections.

Table 14. *Number and average length (TL) of longhorn sculpin sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.*

SPECIES: Longhorn sculpin (163)

AREA: Georges Bank (Southern New England, Gulf of Maine*)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)								TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	
	1973									
733	Spring				2/20	10/23	35/27	3/31		50/26
738	Autumn	4/4		1/15	11/18	29/23	25/27	3/32		73/23
	1974									
744	Spring	9/5	37/7	5/12	6/18	18/23	28/27	1/31		104/16
748	Autumn	1/5	17/7		2/19	16/23	24/28	11/31		71/22
	1975									
753	Spring	3/3	54/8	22/12	3/17	6/22	37/28	9/31		135/16
758	Autumn	19/4	27/6	2/15	14/18	18/23	20/28	5/31		105/16
	1976									
762	Spring		27/7	10/12	8/19	10/22	27/28	6/32	1/37	89/19
767	Autumn				8/19	27/23	22/27	4/31		61/24
*Southern New England - 753							1/30	2/33		3/32
762							5/28	12/31		17/30
*Gulf of Maine - 758			1/7							1/7

*These fish sampled in areas not targeted for collections.

Table 15. Number and average length (TL) of fourspot flounder sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Fourspot flounder (104)

AREA: Middle Atlantic (Southern New England *)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)										TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	
	1973											
733	Spring			2/14	9/18	11/23	11/26	3/32	1/38			37/23
738	Autumn	1/5	1/7	2/15	16/18	45/23	19/27	2/33	1/37			87/23
	1974											
744	Spring				4/19	20/23	14/28	3/33				41/25
748	Autumn				6/19	31/23	19/27	2/32				58/24
	1975											
753	Spring					6/23	10/27	2/33			1/48	19/27
758	Autumn					8/24	15/27	3/31		1/45		28/27
	1976											
762	Spring				2/20	15/22	12/28	12/31				41/26
767	Autumn					24/23	23/28	9/32				56/27
*Southern New England - 733					3/19	4/22	1/26					8/21
762						1/23	9/28					10/28

*These fish sampled in areas not targeted for collections.

Table 16. Number and average length (TL) of witch flounder sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Witch flounder (107)

AREA: Gulf of Maine

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	No. / >60	
	1973														
733	Spring			3/14	10/17	3/21			3/39	6/43	14/48	20/53	4/57		63/41
738	Autumn					5/24	4/26	1/31	3/38	6/43	23/47	9/53	5/58		56/44
	1974														
744	Spring		3/9	8/11		1/24	2/28	1/31	2/38	16/42	16/48	10/52	4/58		63/40
748	Autumn			2/15	2/18	9/21	8/28	3/33	1/39	2/43	14/48	7/52	7/57	1/62	56/39
	1975														
753	Spring							5/34	3/36	3/44	12/48	14/52	2/57	2/74	41/48
758	Autumn	2/5	3/6				1/29	8/33	8/37	6/43	8/47	14/52	7/57	1/61	58/42
	1976														
762	Spring		3/7					6/33	5/37	7/44	9/48	8/53	4/58	1/63	43/43
767	Autumn						1/28	4/34	7/37	4/43	10/48	9/54	6/57		41/46

Table 16. Continued

SPECIES: *Witch flounder (107)*
AREA: Western Nova Scotia (Southern New England, Georges Bank*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring						2/29	8/33	11/37	21/42	14/48	11/52	1/57		68/43
738	Autumn							1/32	9/38	22/43	20/47	20/53	11/57		83/48
	1974														
744	Spring				1/20		1/28	2/34	7/39	21/43	14/47	6/52	3/58		55/44
748	Autumn			1/15			5/28	8/33	6/38	9/43	7/49	11/52	4/58		51/43
	1975														
753	Spring										2/49	5/52	2/56		9/52
758	Autumn					2/24	6/28	4/33	11/37	13/43	13/48	6/52	7/57		62/43
	1976														
762	Spring		1/8		2/19	2/24	1/29	11/32	17/37	6/43	7/48	1/53	4/58	1/62	53/39
767	Autumn										2/49	2/51			4/50
*Southern New England - 762											2/48				2/48
*Georges Bank - 733							1/26	1/32	2/40	3/43	8/48	1/53	3/57		19/46
738		2/4	1/9												3/6
744										2/43	3/48				5/46
753											1/48	3/52	1/58	1/68	6/55

*These fish sampled in areas not targeted for collections.

Table 17. Number and average length (TL) of American plaice sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: American plaice (102)
AREA: Gulf of Maine
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring		1/10	16/13	19/18	7/22	4/29	9/33	12/37	13/42	2/48			2/63	85/28
738	Autumn				4/20	9/22	7/29	17/33	25/37	32/42	11/48	3/53			108/37
	1974														
744	Spring	1/5	54/7	11/13	3/18	7/22	9/28	11/32	14/38	5/43	1/49	2/53	3/58		121/20
748	Autumn			12/12	5/16	9/23	15/28	9/32	12/37	12/42	6/47	1/51			81/30
	1975														
753	Spring		3/7	13/13	8/17	1/23	9/28	9/32	6/37	3/42	6/47	3/51			63/27
758	Autumn			3/14	3/19	5/22	7/29	16/32	14/37	11/43	2/46	1/51	1/59	1/62	64/34
	1976														
762	Spring		37/8	8/13	5/17	2/24	7/29	16/33	19/37	9/42	6/47	4/52	1/56	2/63	116/26
767	Autumn	3/4				1/25	8/28	16/33	18/37	8/42	5/48	1/52		1/62	61/35

Table 17. Continued

SPECIES: American plaice (102)

AREA: Western Nova Scotia (Middle Atlantic, Southern New England, Georges Bank *)

PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)													TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. >60	
	1973														
733	Spring		4/9	14/12	20/18	25/23	13/27	8/33	3/38	7/42	5/48	3/53	5/57		107/27
738	Autumn		1/9	9/14	10/17	16/22	19/28	34/33	15/37	12/42	9/47	6/52	1/57	1/67	133/32
	1974														
744	Spring	2/4	21/8	26/12	8/17	14/23	10/28	5/32	4/37	3/44	1/50	4/53	1/56		99/20
748	Autumn		3/10	30/13	32/18	16/23	16/27	17/33	6/37	3/43	4/48	4/53	4/57	2/63	137/25
	1975														
753	Spring	1/1	2/7	9/14	8/17	9/23	11/27	12/32	6/37	3/43	6/47	6/52	1/56	5/65	79/32
758	Autumn		7/9	23/12	9/17	13/23	17/27	10/32	6/37	5/42	2/46	1/51	1/58		94/23
	1976														
762	Spring		4/10	32/12	20/17	8/22	8/27	2/33	10/37	3/42	4/48				91/21
767	Autumn		1/10		2/19	8/23	8/27	5/32	3/38	4/42	4/47	3/52	1/57	1/66	40/34
*Middle Atlantic	- 738						1/26								1/26
*Southern New England	- 753								1/36		1/47			1/69	1/69
	767														2/42
*Georges Bank	- 733									1/41					1/41
	738			1/12		1/21	1/30		1/39						4/26
	744			7/13			1/26	1/31	1/36			1/52			11/21
	753							1/32			1/47			1/62	3/47
	767						1/30								1/30

*These fish sampled in areas not targeted for collections.

Table 18. Number and average length (TL) of yellowtail flounder sampled for fish feeding studies during the years 1973-76 according to area, year and season, and length category.

SPECIES: Yellowtail flounder (105)
AREA: Southern New England
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)												TOTAL
		No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	
	1973													
733	Spring			6/11	1/17		10/28	29/32	13/37					59/30
738	Autumn				7/17	1/25	20/28	34/32	12/37	1/42				75/30
	1974													
744	Spring	1/5	10/8	5/11		1/25	6/29	34/33	10/37					67/27
748	Autumn							4/32						4/32
	1975													
753	Spring		5/9	1/12		2/25	18/29	38/32	17/37	1/41				83/31
758	Autumn						2/28	2/33						4/31
	1976													
762	Spring		10/7			14/24	33/27	28/32	14/38	13/42	1/46			113/29
767	Autumn			1/13	4/17	9/22	16/28	35/32	6/37	3/43				74/30

Table 18. Continued

SPECIES: Yellowtail flounder (105)
AREA: Georges Bank (Middle Atlantic, Gulf of Maine*)
PERIOD: 1973-1976; spring, autumn

Cruise Code	Period	Number of Fish and Average Length (cm)												TOTAL
		No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	
	1973													
733	Spring						8/29	12/31	17/37	3/42				40/34
738	Autumn					2/23	9/28	27/32	6/37	1/42	1/47			46/32
	1974													
744	Spring		14/8	3/11	1/20	2/24	6/28	17/33	14/37	6/41	3/47	1/51		67/28
748	Autumn	38/3	11/6	4/13	2/16	7/23	15/27	14/33	15/37	9/42	1/46			116/20
	1975													
753	Spring		5/9	1/12		1/25	5/29	18/32	13/38	10/42	7/47			60/34
758	Autumn				1/18	12/22	14/26	19/32	14/37	5/42	3/48		1/58	69/32
	1976													
762	Spring				1/20	6/23	16/28	12/32	12/38	3/41	1/46			51/32
767	Autumn				1/19	4/23	7/28	10/33	23/38	5/42	1/49	1/51		52/35
*Middle Atlantic -	738				5/19	2/21								7/20
	744							2/34						2/34
	753						1/27	2/34	4/37					7/35
*Gulf of Maine -	744								1/38					1/38

*These fish sampled in areas not targeted for collections.

Table 19. Number and average length of 17 species of fish sampled for fish feeding studies during the years 1973-76 according to area and length category for all years and seasons combined.

Species / Area	Number of Fish and Average Length (cm)																							TOTAL
	No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	No. / 61-65	No. / 66-70	No. / 71-75	No. / 76-80	No. / 81-85	No. / 86-90	No. / 91-95	No. / 96-100	No. / 101-105	No. / 106-110	No. / >110	
Little skate																								
Southern New England		10/10	19/12	26/17	15/22	19/28	39/33	74/38	124/43	146/47	13/51	2/58												487/38
Georges Bank		33/9	29/13	36/17	23/23	26/28	30/33	28/38	111/43	234/47	32/51	1/59												583/38
*Middle Atlantic			4/13	11/18	6/22	1/29	1/32	8/37	11/43	10/47														52/32
*Gulf of Maine									1/42	2/48		1/57												4/49
Atlantic cod																								
Georges Bank		19/8	17/13	13/18	14/23	33/28	45/33	37/37	36/43	53/48	37/53	47/58	49/62	52/67	33/72	32/77	27/83	16/88	4/92	8/97	5/102	7/108	3/122	587/53
Gulf of Maine	1/5	8/6	14/12	12/17	7/23	22/28	31/32	36/38	26/42	35/48	22/53	27/58	21/62	23/67	26/73	22/77	15/82	12/88	16/92	12/98	11/102	5/108	6/120	410/56
Western Nova Scotia	13/5	8/8	51/12	26/18	19/23	26/28	36/33	47/38	55/43	48/48	53/53	48/58	47/63	40/68	47/72	27/78	27/82	16/88	10/92	9/97	3/103	4/107	5/129	665/50
*Middle Atlantic					1/24																			1/24
*Southern New England			1/15				2/33			3/48	3/54	4/58	4/62	4/67	6/73	13/77	2/82		2/93	1/96				35/64
Haddock																								
Georges Bank	1/5		56/13	44/17	67/22	27/27	54/33	83/37	56/43	55/48	63/52	41/57	31/62	16/68	26/73	9/78	6/82	1/88						636/40
Western Nova Scotia	13/9		145/13	57/16	18/23	53/28	62/33	57/37	58/43	71/47	60/52	68/57	49/63	26/67	6/72	1/76	1/81							745/37
*Southern New England								1/36																1/36
*Gulf of Maine		4/9	7/11	1/20	6/23	4/28	12/33	13/37	6/43	4/47	5/53	6/59	3/62	8/68	3/72	4/79	1/82							97/38
Silver hake																								
Middle Atlantic	185/4	163/7	58/12	26/17	110/23	120/27	85/32	25/38	10/43	4/48	2/52					1/78								789/17
Southern New England	107/4	174/7	57/12	23/18	91/23	168/28	165/32	71/37	34/42	18/48	7/53	2/59												917/22
Georges Bank	59/4	263/7	87/12	39/18	42/23	161/28	186/32	52/37	16/42	6/48	6/53		1/64											918/20
*Gulf of Maine	2/5	18/8	20/12	1/16	9/23	9/27	9/33	4/37	3/43		2/52													77/20
*Western Nova Scotia	3/4	6/8	2/12			1/28																		12/9

*These fish sampled in areas not targeted for collections.

Table 19. Continued

Species / Area	Number of Fish and Average Length (cm)																							TO
	No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. 46-50	No. 51-55	No. 56-60	No. 61-65	No. 66-70	No. 71-75	No. 76-80	No. 81-85	No. 86-90	No. 91-95	No. 96-100	No. 101-105	No. 106-110	No. >110	
Pollock																								
Gulf of Maine					7/22	19/28	32/33	14/38	9/43	8/48	10/53	31/58	18/63	30/67	43/73	35/78	45/83	42/87	21/92	5/97	2/105		1/120	3
Western Nova Scotia			1/15	15/17	5/22	16/29	14/33	24/38	16/42	7/47	7/53	25/57	35/63	25/67	18/73	25/78	28/83	17/87	5/93	6/98				28 5
*Middle Atlantic															2/72									7
*Southern New England						1/28																		1 2
*Georges Bank							4/34	5/38	1/44				1/63				1/82	1/86	7/92	2/97				2 6
Red hake																								
Southern New England	45/4	33/7	28/12	10/17	47/23	100/28	90/32	73/37	36/42	15/47	2/53	1/60												48 2
*Middle Atlantic		2/10	14/13	5/17	1/21		3/33		1/43															2 1
Georges Bank	31/4	38/7	1/14		2/24	3/26	3/33		3/42															8 9
*Gulf of Maine			1/13																					1 1
Spotted hake																								
Middle Atlantic	2/5	47/8	50/13	139/18	166/22	71/27	37/32	10/37	1/45															52 21
*Southern New England					1/22																			1 22
*Georges Bank		6/7																						6 7
White hake																								
Gulf of Maine			1/14	2/18	6/24	26/28	34/32	46/38	50/42	57/47	36/53	44/57	38/63	40/67	39/73	24/78	11/82	4/87	3/92			2/108	1/112	46 53
*Middle Atlantic						1/30	5/33	2/36																8 33
*Southern New England									1/42															1 42
*Georges Bank			1/12			2/27			2/43	1/48														6 33
*Western Nova Scotia		1/9	11/13	7/19	9/24	8/27	2/31	4/39	8/42	2/46	5/54	3/59		4/67	3/73	1/77		1/88	1/95					70 37
Ocean pout																								
Southern New England			5/14	1/16	6/23	21/28	22/32	30/37	24/42	30/48	40/52	34/57		34/68										247 46
Georges Bank			2/15	5/18	6/21	3/27	5/34	16/38	13/43	20/48	20/53	25/58			68/72									183 55
*Middle Atlantic											4/53	1/57	3/62											8 57
*Gulf of Maine			1/14			2/27						1/56		4/66										8 49

*These fish samples in areas not targeted for collections.

Table 19. Continued

Species Area	Number of Fish and Average Length (cm)										TOTAL
	No. 1-5	No. 6-10	No. 11-15	No. 16-20	No. 21-25	No. 26-30	No. 31-35	No. 36-40	No. 41-45	No. >45	
Scup		71	187	94	72	18	3	3			448
Middle Atlantic		8	12	17	23	26	33	37			15
*Southern New England		80	26	67	62	23	4				262
		8	13	17	22	27	31				16
*Georges Bank		3		2	4	1					10
		9		20	22	26					18
Butterfish	20	107	394	144	11						676
Middle Atlantic	4	8	13	17	21						13
*Southern New England	3	44	156	186	4						393
	5	9	12	17	21						14
*Georges Bank		9	1								10
		9	11								9
Redfish		2	10	21	25	89	160	131	15	1	454
Gulf of Maine		7	13	18	24	28	32	37	41	48	31
*Georges Bank							1	1			2
							31	36			34
*Western Nova Scotia			2			1	3	2	2		10
			11			29	33	40	42		32
Longhorn sculpin	36	162	40	54	134	218	42	1			687
Georges Bank	4	7	12	18	23	27	31	37			19
*Southern New England						6	14				20
						28	31				30
*Gulf of Maine		1									1
		7									7
Fourspot flounder	1	1	4	37	160	123	36	2	1	1	366
Middle Atlantic	5	7	15	18	23	27	32	38	45	48	25
*Southern New England				3	5	10					18
				19	22	28					25

*These fish sampled in areas not targeted for collections.

Table 19. Continued

Species Area	Number of Fish and Average Length (cm)													TOTAL
	No. / 1-5	No. / 6-10	No. / 11-15	No. / 16-20	No. / 21-25	No. / 26-30	No. / 31-35	No. / 36-40	No. / 41-45	No. / 46-50	No. / 51-55	No. / 56-60	No. / >60	
Witch flounder														
Gulf of Maine	2/5	9/7	13/12	12/17	18/22	16/28	28/33	32/37	50/43	106/48	91/53	39/57	5/67	421/43
Western Nova Scotia		1/8	1/15	3/19	4/24	15/28	34/33	61/37	92/43	79/48	62/52	32/57	1/62	385/44
*Southern New England										2/48				2/48
*Georges Bank	2/4	1/9				1/26	1/32	2/40	5/43	14/48	4/52	4/57	1/68	33/44
American plaice														
Gulf of Maine	4/4	95/7	63/13	47/18	41/22	66/28	103/33	120/37	93/42	39/47	15/52	5/58	8/63	699/29
Western Nova Scotia	3/3	43/9	143/12	109/18	109/23	102/27	93/33	53/37	40/42	35/47	27/52	14/57	9/65	780/26
*Middle Atlantic						1/26								1/26
*Southern New England								1/36		1/47			1/69	3/51
*Georges Bank			8/13		1/21	3/29	2/32	2/38	1/41	1/47	1/52		1/62	20/28
Yellowtail flounder														
Southern New England	1/5	25/8	13/11	12/17	27/23	105/28	204/32	72/37	18/42	1/46				478/30
Georges Bank	38/3	30/7	8/12	6/18	34/23	80/28	129/32	114/37	42/42	17/47	2/51	1/57		501/29
*Middle Atlantic				5/19	2/21	1/27	4/34	4/37						16/28
*Gulf of Maine								1/38						1/38

*These fish sampled in areas not targeted for collections.

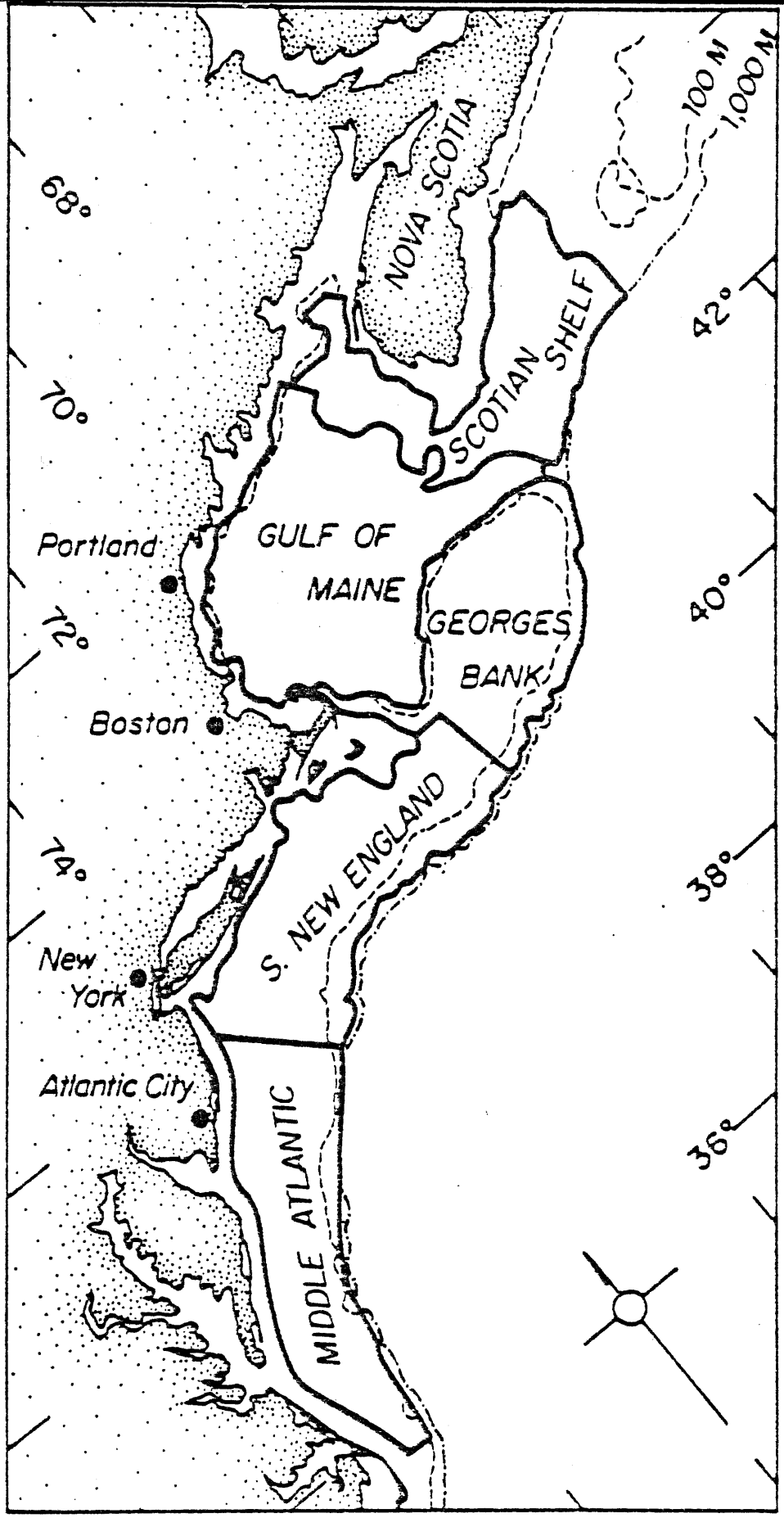

Figure 1. Geographic areas of the Northwest Atlantic sampled for fish feeding studies during the years 1973-76.

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