PROGRESS REPORT

State: **NEW HAMPSHIRE** **Grant:** **F-61-R-24/F21AF00591**

Grant Title: **NEW HAMPSHIRE'S MARINE FISHERIES INVESTIGATIONS**

Project III: **MULTI-SPECIES EVALUATION**

Job 1: **INSHORE TRAWL SURVEY**

Objective: To conduct a long-term fisheries independent monitoring program in the nearshore waters (5–60 fathoms) of New Hampshire and Maine.

Period Covered: January 1, 2021 – December 31, 2021

ABSTRACT

Between January 1, 2021 and December 31, 2021, the New Hampshire Fish and Game Department conducted one investigation as part of a long-term fisheries-independent monitoring program in the nearshore waters (5-60 fathoms) of New Hampshire and Maine. New Hampshire Fish and Game Department and Maine Department of Marine Resources have been cooperatively conducting a trawl survey since the fall of 2000 in the inshore area of the New Hampshire and Maine coastlines. Two virtually identical commercial vessels are contracted to conduct the survey using a modified design of a shrimp net used in Gulf of Maine waters. The survey has a stratified random design representing five areas and four depth strata. Surveys are conducted in the spring and fall with a target of sampling 120 stations during each survey. The Department provides scientific staff when the survey is sampling the Region 1 strata off New Hampshire and southern Maine.

One hundred and eighteen stations were sampled during the spring survey and eighty-nine stations were sampled during the fall survey in 2021. Fifty-three taxa were encountered during the spring survey in Region 1 with Silver Hake *Merluccius bilinearis*, Alewife *Alosa pseudoharengus*, and Blueback Herring *Alosa aestivalis* being the most abundant finfish by number. Results from the fall survey indicate fifty-six taxa were encountered with Silver Hake, Red Hake *Urophycis chuss*, and Butterfish *Peprilus triacanthus* being the most abundant finfish by number. The value of this survey is demonstrated by the request for

data received from scientists conducting stock assessments for species such as Atlantic Herring *Clupea harengus*, American Shad *Alosa sapidissima,* Haddock *Melanogrammus aeglefinus*, and Goosefish *Lophius americanus*.

INTRODUCTION

Declines in abundance of groundfish in the Gulf of Maine have resulted in regulatory restrictions being placed on recreational anglers as well as the for-hire and commercial fishing industries. The lack of fishery-independent survey data from historically important spawning and nursery grounds (Rich 1929; Collette and Klein-MacPhee 2002) in the nearshore waters of the Gulf of Maine has led to substantial gaps in information needed to assess current stock conditions of demersal finfish species for development of effective management strategies.

Fishery-independent trawl surveys are a well established and accepted method of developing relative abundance indices for fishery resources (Gosslein 1969). They reflect changes in true abundances of fish populations whereas recreational and commercial fishing practices change in response to fish availability, regulations, and fishing power as technological improvements in fish detection equipment and harvest gear are made. Abundance indices derived from research trawl surveys that maintain consistent and standardized efforts are largely free of these biases. Trawl surveys are synoptic investigations that provide comprehensive information on distribution and abundance of all types and sizes of organisms within towable survey areas. Knowledge of distribution and abundance of juvenile fish is critical to the study of recruitment and useful for predicting future abundance. Information about population sizes, instantaneous recruitment and mortality rates, and distributions are essential for effective management of any resource. Such knowledge is critical to understanding both the dynamics and the condition of that resource.

Surveying the inshore waters of Maine (ME) and New Hampshire (NH) has been a long-standing challenge. The rough terrain that characterizes the bottom of the nearshore areas of northern Gulf of Maine along with the great quantity of fixed gear in inshore waters limits the number of tows that can be made. While bottom trawl surveys have been conducted in the Gulf of Maine for many years by the National Marine Fisheries Service primarily in offshore waters and by the Massachusetts Division of Marine Fisheries in their nearshore waters, only sporadic trawl survey data have been collected in nearshore waters of NH and ME (Nelson et al. 1983; Langton et al. 1994).

To fill this information gap, personnel from the NH Fish and Game Department (NHFG) and the ME Department of Marine Resources (MEDMR) collaborated to design and implement a cooperative inshore trawl survey of the nearshore waters of the Gulf of Maine from the NH and Massachusetts state line north to the Canadian border. The first survey took place in the fall of 2000 and has continued every spring and fall with funding provided to MEDMR by the Northeast Consortium and the National Marine Fisheries Service.

PROCEDURES

The Maine/New Hampshire (ME-NH) inshore trawl survey is conducted during the spring and fall using commercial vessels contracted by MEDMR. The two vessels, the FV *Tara Lynn* and FV *Robert Michael*, are virtually identical 16.50 m Down East vessels with hull displacements of 74 metric tons. The trawl net used is a modified design of the shrimp net used in Gulf of Maine waters and fishes effectively for a variety of near-bottom dwelling species, not targeting any specific component. The net has a 21.35 m rope, 17.38 m head rope, and a mesh size of 6.35 cm in the front end, 5.08 cm in the belly, and a 1.27 cm mesh codend liner.

The survey is a stratified random design encompassing five regions along the coast based on oceanographic, geologic, and biological features with four different depth strata (5–20 fathoms, 21–35 fathoms, 36–55 fathoms, and greater than 56 fathoms, with an outer boundary roughly delineated by the 12-mile limit) (Figure 3.1–1). The survey design has 125 fixed stations with a target of sampling at least 120 stations, which results in a tow density of one tow every 40 square nautical miles. Approximately 25 stations occur in the NH and southern ME region. Standard 20-minute tow durations are conducted at each station.

Historically, about one-third of the tows were fixed stations and the remaining two-thirds were randomly selected stations. Following recommendations of a 2005 peer review of the survey methodologies, the total number of fixed stations was reduced to only 20 per survey. Fixed stations were removed entirely from the survey in 2015, resulting in all tow sites being selected at random.

Before the onset of each survey, advisors consisting of local commercial otter trawl harvesters and commercial lobster harvesters are consulted to determine if the randomly chosen stations have towable bottom or will result in gear conflicts. If the selected station is not towable, another station is randomly selected. All tows were conducted during daylight hours.

The catch is sorted by species and total weights for each species are recorded. Individuals of each finfish species (or a subsample) are counted and

measured centerline total length to the nearest centimeter with the exception of species with heterocercal caudal fins such as sturgeons *Acipenser* spp. and Spiny Dogfish *Squalus acanthias*. Spiny Dogfish and sturgeon are measured to the terminus of the upper caudal lobe. Additional biological data such as hard parts for aging, gonads for fecundity and maturation stage (Burnett et al. 1989), and stomachs for trophic analyses are collected as needed and time permitting. Care is taken to immediately separate, measure, weigh, and release alive all marine specimens. Environmental data including ocean and air temperatures, salinity profiles, wind, sea state, tide, and weather are collected at each station.

NHFG participation in this survey includes providing up to two scientists to work onboard the survey vessel when the survey is conducted off NH and southern ME waters (Region 1). In addition, a mass mailing is sent to all NH licensed fixed gear harvesters (e.g., lobster trap, gillnet, etc.) before each survey notifying of the station locations, survey dates, and requesting gear be temporarily moved if located in a station transect. Also, the mailing is used as an outreach opportunity to disseminate survey results and gain feedback on the survey from harvesters. Lastly, NHFG provides time for coordination and administration of this program. The Sport Fish Restoration Program funds these tasks for NHFG participation in the survey as MEDMR has secured other funding sources to pay for vessel costs, data analysis, and personnel costs for the survey.

RESULTS

Between January 1, 2021 and December 31, 2021, NHFG conducted one investigation as part of a long-term fisheries independent monitoring program in the nearshore waters (5-60 fathoms) of New Hampshire and Maine. In 2021, the survey was conducted during the spring from May 3 to June 4 and in the fall from September 27 to October 29 using the commercial vessels contracted by MEDMR. The spring survey was carried out using solely MEDMR personnel due to safety concerns over the COVID-19 pandemic. Due to various problems such as fixed gear interaction, untowable bottom, weather, and time constraints, not all stations were sampled. One hundred and eighteen stations were sampled during the spring survey, while in the fall survey eighty-nine stations were sampled. In Region 1, 23 of 25 stations selected were sampled in the spring and 21 of 25 selected were sampled in the fall.

Fifty-three taxa were encountered during the spring survey in Region 1. Finfish catches were dominated by Silver Hake *Merluccius bilinearis*, Haddock

Melanogrammus aeglefinus, and Alewife *Alosa pseudoharengus* by weight and Silver Hake, Alewife, and Blueback Herring *Alosa aestivalis* by number (Table 3.1-1). The fall survey in Region 1 encountered fifty-six taxa with Silver Hake, Red Hake *Urophycis chuss*, and White Hake *Urophycis tenuis* being the most abundant finfish by weight and Silver Hake, Red Hake, and Butterfish *Peprilus triacanthus* by number (Table 3.1-2).

The mean number per tow for selected species of interest in the Region 1 spring survey is shown in Figures 3.1-2 through 3.1-5, while Figures 3.1-6 through 3.1-9 show length frequencies for the selected species.

DISCUSSION

The ME-NH Inshore Trawl Survey was first conducted in the fall of 2000 and has continued annually each spring and fall. With over 20 years of surveys, the time series of data is providing usable results. Since 2012, the fall survey has begun a week earlier than in previous years to minimize the impact of bad weather. To obtain better success rates in the fall survey, historically the same stations are towed as those randomly selected in the spring with the exception of 2020 due to the COVID-19 pandemic. These factors, along with the outreach efforts of MEDMR to the fixed gear fishing community, contribute to the high completion rate commended in the survey's 2005 peer review (Chouinard et al. 2005).

The National Marine Fisheries Service's Northeast Fisheries Science Center has conducted an offshore bottom trawl survey in the Gulf of Maine waters since the 1960's and the Massachusetts Division of Marine Fisheries has surveyed their inshore waters since 1979. The ME-NH survey has filled a gap in resource monitoring that had existed in the Gulf of Maine. This and other inshore surveys tend to sample more of the juvenile or pre-recruit portion of certain fish populations such as Atlantic Cod *Gadus morhua*, White Hake, Haddock, and Goosefish *Lophius americanus* (Sherman et al. 2004). To achieve a better representation of total population sizes, both the fall and spring surveys should be utilized in future assessments.

The value of this survey has been demonstrated by the data requests for use in the Atlantic Herring *Clupea harengus*, American Shad *Alosa sapidissima*, Haddock, and Goosefish stock assessments.

Haddock, while showing an overall increasing trend since 2009 and a time series high in 2018, has decreased in recent years (Figure 3.1-3). Atlantic Cod and Atlantic Herring have been on a decreasing trend since 2011 and 2014, respectively, with levels at or near time series lows in 2021 (Figures 3.1-2

and 3.1-5). Winter Flounder *Pseudopleuronectes americanus* has been showing an overall increasing trend since 2011 (Figure 3.1-4). The observed value in 2019 was the highest in a decade but in 2021 the value declined to levels closer to the years immediately preceding.

Length frequency distribution shows that fish captured in the spring survey are primarily juvenile fish according to length at age and sexual maturity characteristics for each species described in Collette and Klein-MacPhee (2002). Two notable exceptions are the Haddock captured during the spring surveys beginning in 2016 and Atlantic Cod captured during the spring survey in 2017. Both species displayed length frequencies representative of sexually mature fish in the Gulf of Maine (Figures 3.1-6 to 3.1-9).

In conclusion, the survey has been conducted every spring and fall since the fall of 2000 with the exception of the spring survey in 2020, which was cancelled due to safety concerns early in the COVID-19 pandemic. One hundred and eighteen stations were sampled during the spring survey and eighty-nine stations were sampled during the fall survey in 2021. Fifty-three taxa were encountered during the spring survey and fifty-six taxa were encountered during the fall in Region 1. Silver Hake, Red Hake, Alewife, Blueback Herring, and Butterfish were the most abundant finfish by number. Length frequency information of selected species show that primarily juvenile fish are captured in the survey, although mature Haddock and Atlantic Cod are largely represented in recent sample years. The survey continues to fill a gap in resource monitoring, and has been valuable in stock assessments for several marine species.

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Table 3.1-1. Mean weight and number per tow of marine species captured in the Maine-New Hampshire Inshore Trawl Survey in Region 1, Spring 2021.

	Region 1 (NH to Cape Elizabeth)- Spring 2021									
	Stratum 1 5-20 fathoms		Stratum 2 21-35 fathoms		Stratum 3 36-55 fathoms		Stratum 4 56+ fathoms		Region 1 all strata	
Species	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow
Acadian Redfish	0.06	4.08	0.98	37.64	0.67	26.81	0.28	6.61	0.48	17.97
Alewife	0.12	9.33	3.22	181.77	7.74	337.58	6.60	255.00	4.47	196.54
Alligatorfish	0.00	0.00	0.00	0.21	0.00	1.20	0.00	0.00	0.00	0.36
American lobster	19.85	75.92	46.30	185.20	26.86	100.48	10.97	30.98	25.11	94.36
American Plaice	0.01	0.21	0.71	12.00	2.85	37.88	4.60	36.31	2.10	22.02
American Sand Lance	0.04	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.65
American Shad	0.01	1.08	0.39	13.31	0.13	3.06	0.12	2.50	0.15	4.63
Atlantic Cod	0.34	1.96	0.43	2.75	0.00	0.00	0.06	0.17	0.20	1.15
Atlantic Halibut	0.09	0.38	0.00	0.00	0.23	0.33	1.39	0.17	0.45	0.23
Atlantic Herring	0.01	0.58	0.47	10.69	4.21	78.61	0.27	3.72	1.27	23.95
Blood star	0.33	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.09	0.13
Blue mussel	0.00	0.00	0.01	0.21	0.00	0.00	0.00	0.00	0.00	0.05
Blueback Herring	0.08	5.88	2.49	123.54	3.91	178.19	1.29	46.81	1.92	87.09
Buckler Dory	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.04
Butterfish	0.00	0.00	0.00	0.00	0.01	0.33	0.00	0.17	0.00	0.13
Comb jelly	0.49	37.08	0.29	32.57	0.05	15.44	0.01	3.19	0.21	21.61
Crangon shrimp	0.01	4.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13
Cunner	0.12	1.67	0.90	16.16	0.00	0.00	0.00	0.00	0.23	3.95
Daubed Shanny	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.04
Dichelo shrimp	0.00	2.04	0.20	107.03	2.35	962.41	1.46	621.37	1.04	436.96
Fourbeard Rockling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.04
Fourspot Flounder	0.00	0.00	0.00	0.00	0.07	0.37	0.00	0.00	0.02	0.10
Haddock	0.00	1.00	0.04	0.71	1.14	8.62	30.67	46.13	8.31	14.70
Jonah crab	0.04	0.17	0.15	0.99	0.04	0.17	0.00	0.00	0.05	0.30
Longfin squid	0.02	2.67	0.00	0.29	0.01	0.73	0.00	0.00	0.01	0.95
Longhorn Sculpin	3.02	18.00	7.18	61.34	1.87	13.75	0.10	0.69	2.86	21.79
Lumpfish	0.04	0.21	0.33	0.20	0.49	0.86	0.55	1.00	0.35	0.58
Monkfish	0.00	0.00	0.03	0.20	0.09	0.89	0.32	1.02	0.12	0.54
Montagui shrimp	0.00	0.63	0.00	0.00	0.00	1.37	0.00	0.00	0.00	0.52
Northern shrimp	0.00	0.00	0.00	0.00	2.85	334.49	2.43	261.56	1.38	155.49
Ocean Pout	0.09	0.21	0.25	3.53	0.12	1.25	0.07	0.69	0.13	1.33
Pollock	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.17	0.00	0.04
Rainbow Smelt	0.02	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
Rat-tailed cucumber	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.04
Red cushion sea star	0.00	0.00	0.03	0.42	0.00	0.00	0.00	0.00	0.01	0.09
Red Hake	0.00	0.21	0.22	7.63	0.73	13.04	3.30	38.54	1.10	15.17
Rock crab	0.06	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.13
Sand dollar unclass.	0.01	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42
Scup	0.00	0.00	0.07	0.20	0.00	0.00	0.00	0.00	0.02	0.04
Sea anemone	0.00	0.00	0.00	0.00	0.19	0.50	0.00	0.00	0.05	0.13
Sea Raven	0.25	0.75	0.21	1.04	0.00	0.00	0.00	0.00	0.11	0.42
Sea scallop	0.01	0.63	0.05	6.11	0.00	0.00	0.00	0.00	0.01	1.49
Sea sponges	0.00	0.00	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.05
Sea urchin	0.00	0.00	0.00	0.20	0.00	0.18	0.00	0.00	0.00	0.09
Silver Hake	0.05	4.92	1.88	44.75	7.40	265.09	34.50	936.59	11.35	324.50
Smooth Skate	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.33	0.06	0.09
Snake Blenny	0.00	0.21	0.00	0.00	0.02	0.50	0.00	0.00	0.01	0.18
Thorny Skate	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.33	0.21	0.09
Toad crab	0.00	0.54	0.01	1.00	0.00	0.17	0.00	0.00	0.00	0.40
White Hake	0.00	0.00	0.02	0.49	0.05	0.33	0.31	1.83	0.10	0.67
Winter Flounder	1.44	16.42	3.05	33.01	0.78	5.85	0.45	2.69	1.36	13.68
Witch Flounder	0.00	0.00	0.00	0.00	0.03	1.02	0.16	3.06	0.05	1.06
Yellowtail Flounder	0.02	0.21	1.24	7.83	2.62	18.10	1.80	11.30	1.43	9.43

Table 3.1-2. Mean weight and number per tow of marine species captured in the Maine-New Hampshire Inshore Trawl Survey in Region 1, Fall 2021.

	Region 1 (NH to Cape Elizabeth)- Fall 2021									
	Stratum 1 5-20 fathoms		Stratum 2 21-35 fathoms		Stratum 3 36-55 fathoms		Stratum 4 56+ fathoms		Region 1 all strata	
Species	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow	kg/tow	#/tow
Acadian Redfish	0.84	22.61	0.16	6.42	1.25	40.18	4.34	95.67	1.83	45.42
Alewife	0.05	0.67	0.47	4.56	6.56	48.95	14.21	109.83	6.04	46.39
Alligatorfish	0.00	0.00	0.00	0.31	0.00	0.83	0.00	0.00	0.00	0.30
American lobster	37.91	161.36	41.73	192.94	15.19	45.14	1.56	3.33	21.76	89.02
American Plaice	0.00	0.00	0.27	1.42	5.00	53.29	11.24	92.17	4.69	41.83
American Shad	0.83	9.56	0.08	1.00	0.53	2.92	0.91	6.83	0.62	5.25
Atlantic Cod	0.03	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06
Atlantic Halibut	0.00	0.00	0.00	0.00	0.20	0.17	0.00	0.00	0.06	0.05
Atlantic Herring	0.00	0.00	0.92	12.46	1.20	8.83	0.38	3.50	0.63	5.90
Atlantic Mackerel	11.62	86.04	0.30	1.94	0.23	1.03	0.06	0.67	2.91	21.34
Atlantic Menhaden	0.06	0.60	0.00	0.00	0.05	0.17	0.06	0.17	0.04	0.24
Atlantic Torpedo	0.00	0.00	3.80	0.25	0.00	0.00	0.00	0.00	0.72	0.05
Barndoor Skate	0.00	0.00	0.00	0.00	1.73	0.33	0.00	0.00	0.49	0.10
Blood star	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.06
Blueback Herring	0.08	1.53	0.00	0.00	0.37	2.53	4.12	26.33	1.30	8.61
Bluefish	0.03	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05
Butterfish	0.90	50.42	4.22	189.13	3.68	51.52	3.40	48.67	3.04	76.65
Crangon shrimp	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Cunner	0.32	5.49	0.07	0.65	0.00	0.00	0.00	0.00	0.09	1.43
Dichelo shrimp	0.00	0.60	0.01	5.00	0.39	148.45	0.57	200.83	0.28	100.89
Fourbeard Rockling	0.00	0.00	0.00	0.00	0.01	0.17	0.15	2.17	0.05	0.67
Fourspot Flounder	0.00	0.00	0.11	0.67	0.28	1.50	0.04	0.33	0.11	0.65
Haddock	0.00	0.00	0.07	3.31	0.09	0.89	2.31	5.50	0.70	2.46
Jonah crab	0.03	0.47	0.00	0.00	0.13	0.73	0.12	1.17	0.08	0.65
Little Skate	0.15	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.10
Longfin squid	1.26	66.88	0.67	89.15	1.00	53.21	0.38	26.67	0.82	55.72
Longhorn Sculpin	0.21	1.56	3.67	33.69	0.25	2.17	0.02	0.17	0.83	7.45
Lumpfish	0.00	0.00	0.00	0.00	0.13	0.17	0.17	0.50	0.09	0.19
Monkfish	0.00	0.00	3.97	2.58	9.31	7.50	11.80	9.67	6.79	5.40
Montagui shrimp	0.00	0.00	0.00	0.00	0.00	0.00	0.18	65.33	0.05	18.67
Moon jelly	0.00	0.00	0.25	0.33	0.04	0.59	0.03	1.33	0.07	0.61
Northern shrimp	0.00	0.00	0.00	0.00	0.21	22.97	0.69	64.83	0.26	25.09
Ocean Pout	0.00	0.00	0.05	0.67	0.01	0.17	0.00	0.00	0.01	0.17
Pearlsides	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.50	0.00	0.29
Pollock	0.00	0.00	0.00	0.00	0.03	0.17	0.03	0.17	0.02	0.10
Rat-tailed cucumber	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Red Hake	0.02	0.64	3.70	45.15	17.94	129.89	41.38	263.33	17.66	121.10
Rock crab	0.04	6.29	0.14	0.67	0.00	0.00	0.00	0.00	0.04	1.63
Sculptured shrimp	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.17	0.00	0.14
Sea anemone	0.00	0.00	0.00	0.00	0.09	0.00	0.15	0.33	0.07	0.10
Sea scallop	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.10
Sea urchin	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Seaweed unclass.	1.90	0.00	0.00	0.00	0.17	0.00	0.02	0.00	0.51	0.00
Shortfin squid	0.00	0.00	0.17	1.00	1.36	7.45	1.38	8.67	0.81	4.80
Silver Hake	1.04	15.64	16.54	250.88	89.33	922.45	104.47	1,065.17	58.77	619.40
Silver Rag	0.00	0.27	0.02	1.00	0.01	0.33	0.09	0.17	0.03	0.40
Spiny Dogfish	0.00	0.00	1.57	0.75	10.46	6.39	19.60	12.50	8.89	5.54
Spiny lebbeid	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Striped Bass	10.16	8.63	0.00	0.00	0.00	0.00	0.00	0.00	2.42	2.06
Thorny Skate	0.00	0.00	0.00	0.00	0.00	0.00	4.00	1.33	1.14	0.38
Toad crab	0.00	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12
White Hake	0.04	0.60	1.13	6.17	14.91	22.47	20.02	28.00	10.21	15.74
Windowpane	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.17	0.00	0.05
Winter Flounder	1.17	7.96	4.82	38.73	1.43	3.75	0.05	0.33	1.62	10.44
Witch Flounder	0.00	0.00	0.05	1.83	4.28	47.01	9.41	51.33	3.92	28.45
Yellowtail Flounder	0.00	0.00	1.32	8.88	1.36	7.23	0.17	1.17	0.69	4.09

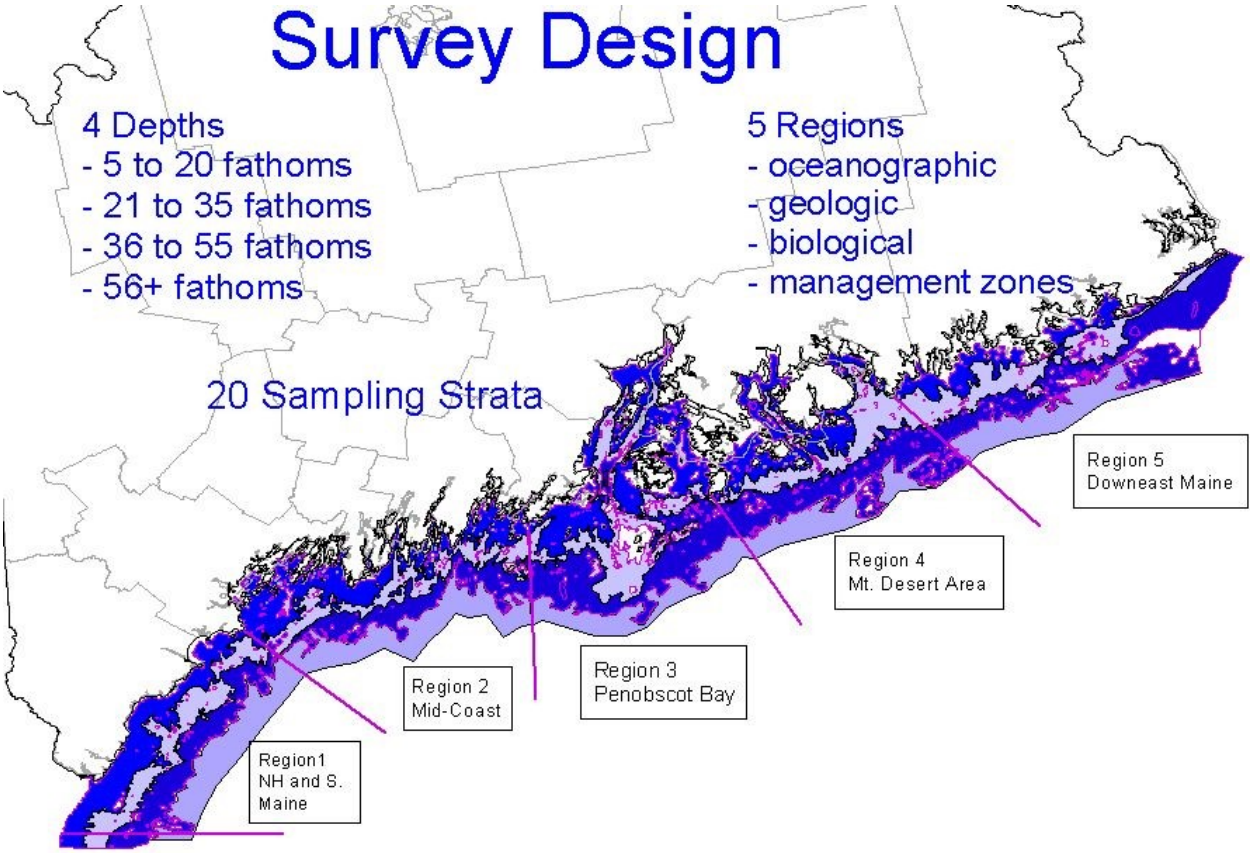

Figure 3.1-1. Sampling strata for **Maine-New Hampshire** Inshore Trawl Survey.

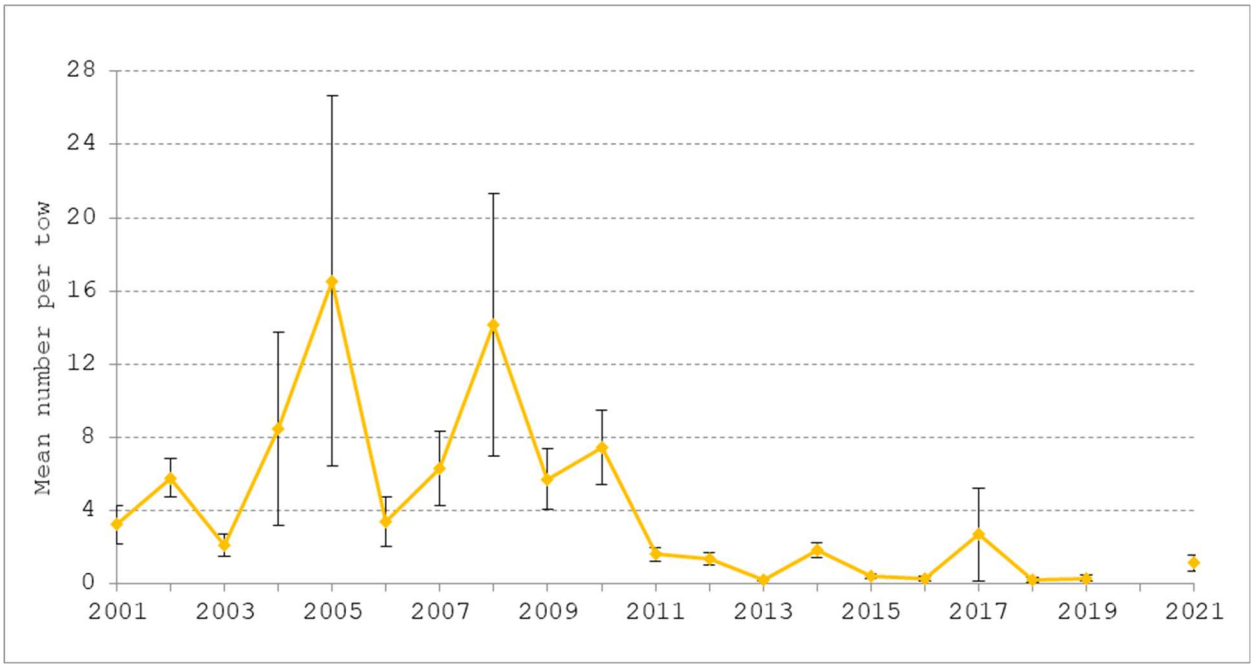

Figure 3.1-2. Mean number per tow of Atlantic Cod from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2001–2021. (No sampling conducted in spring 2020 due to COVID-19 pandemic.)

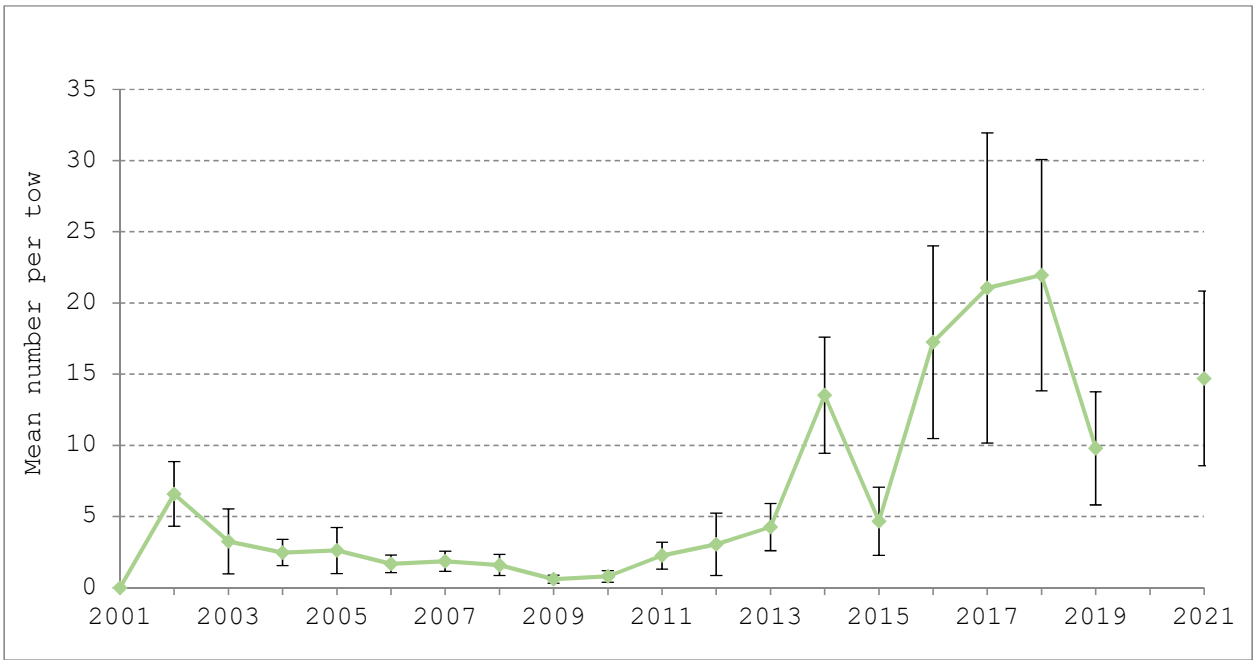

Figure 3.1-3. Mean number per tow of Haddock from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2001–2021. (No sampling conducted in spring 2020 due to COVID-19 pandemic.)

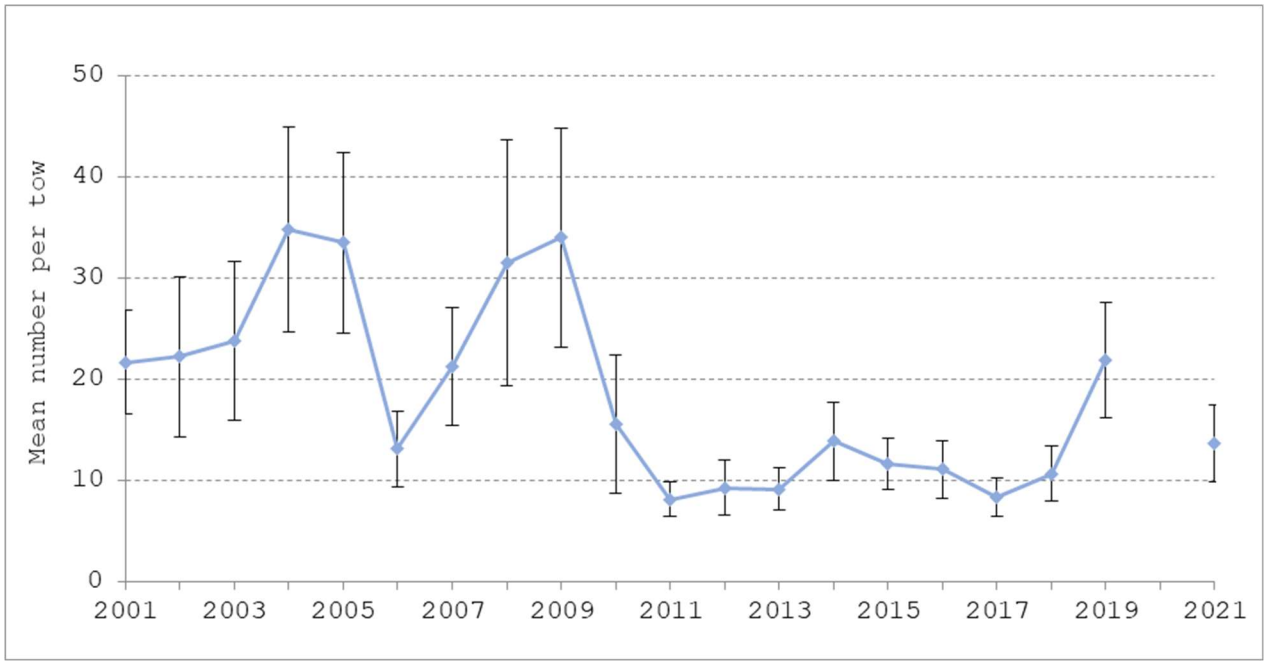

Figure 3.1-4. Mean number per tow of Winter Flounder from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2001–2021. (No sampling conducted in spring 2020 due to COVID-19 pandemic.)

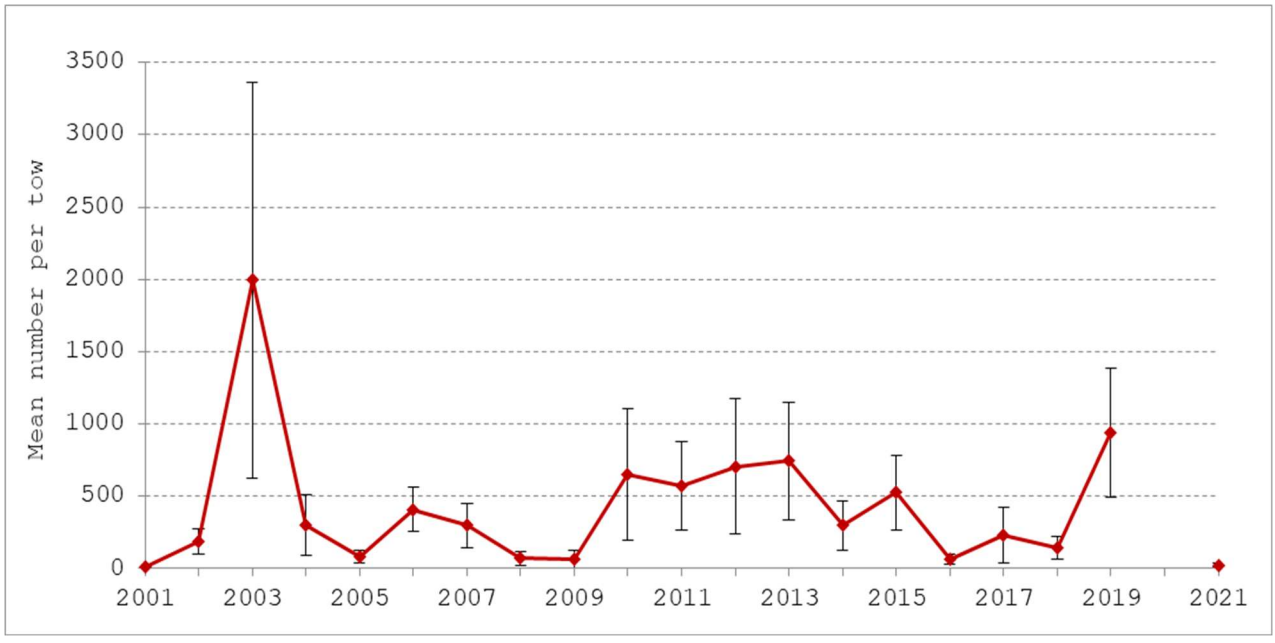

Figure 3.1-5. Mean number per tow of Atlantic Herring from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2001–2021. (No sampling conducted in spring 2020 due to COVID-19 pandemic.)

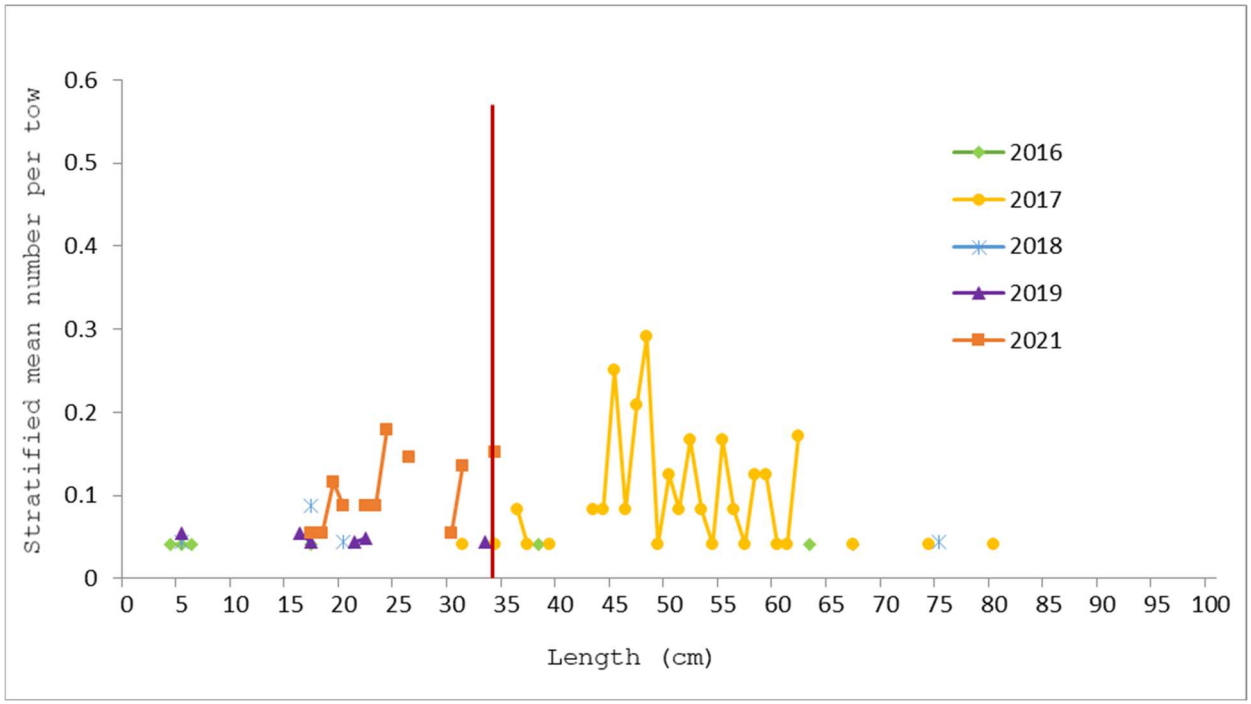

Figure 3.1-6. Length frequencies of Atlantic Cod sampled from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2016–2021 (red vertical line indicates approximate length at maturity; No sampling conducted in spring 2020 due to COVID-19 pandemic.)

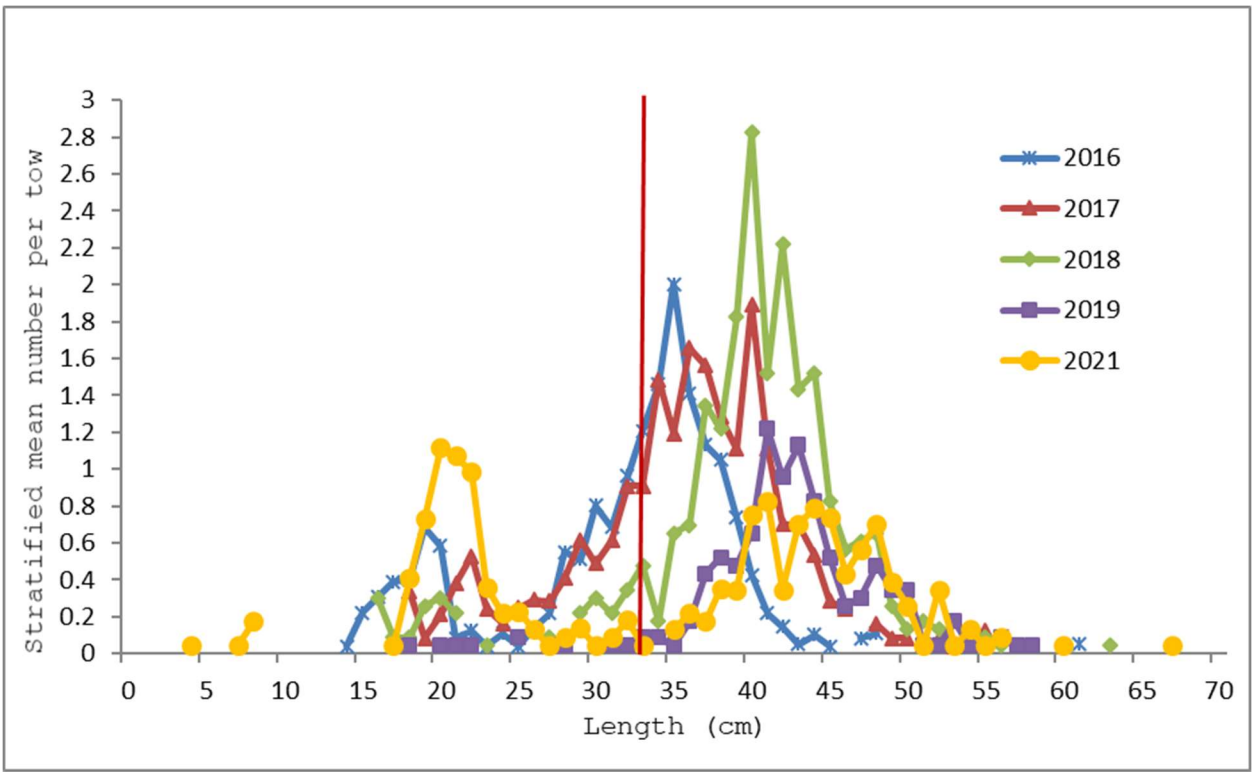

Figure 3.1-7. Length frequencies of Haddock sampled from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2016–2021 (red vertical line indicates approximate length at maturity; No sampling conducted in spring 2020 due to COVID-19 pandemic.)

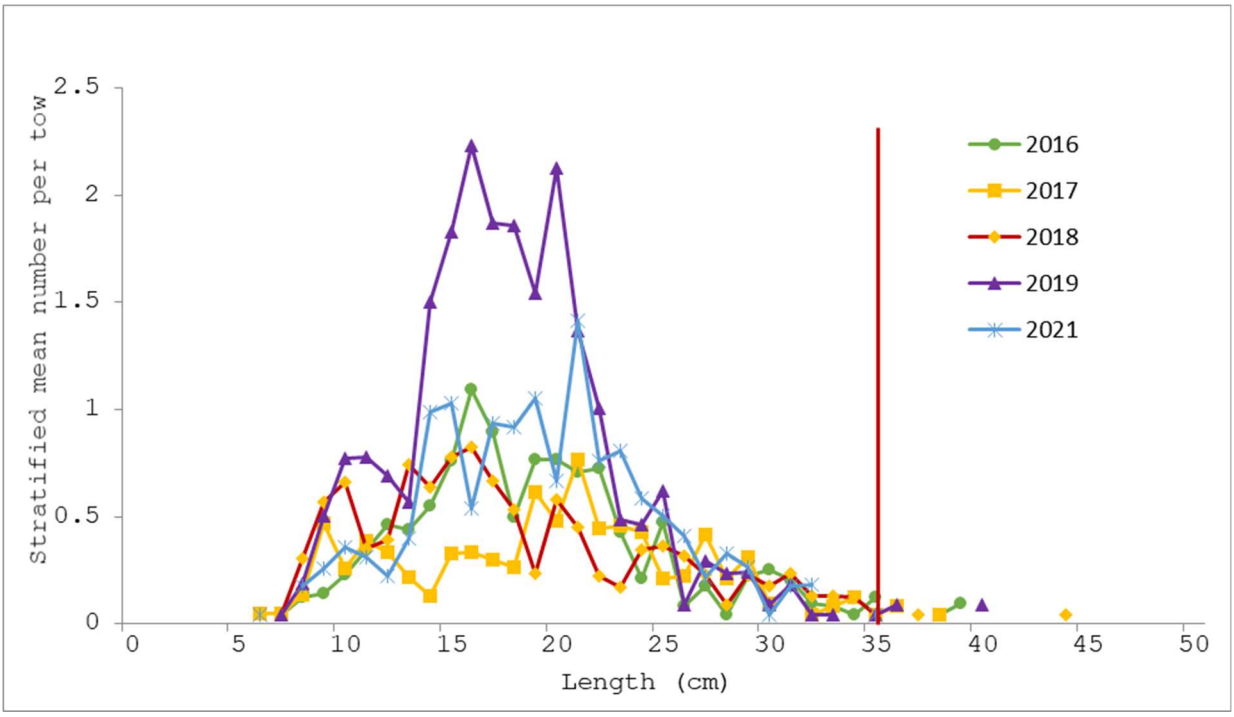

Figure 3.1-8. Length frequencies of Winter Flounder sampled from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2016–2021 (red vertical line indicates approximate length at maturity; No sampling conducted in spring 2020 due to COVID-19 pandemic.)

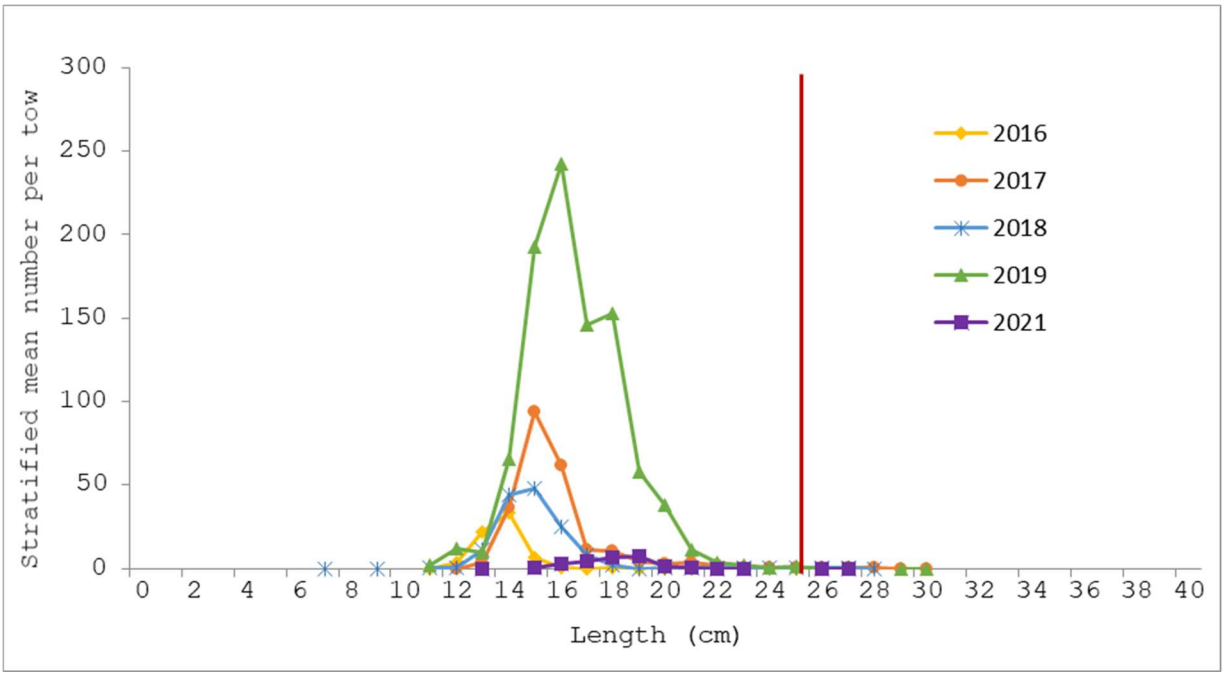

Figure 3.1-9. Length frequencies of Atlantic Herring sampled from Region 1 of the Maine-New Hampshire Inshore Trawl Survey during spring, 2016–2021 (red vertical line indicates approximate length at maturity; No sampling conducted in spring 2020 due to COVID-19 pandemic.)