Technical Report

Massachusetts Division of Marine Fisheries
Technical Report TR-38

Massachusetts Division of Marine Fisheries Trawl Survey Effort, Lists of Species Recorded, and Bottom Temperature Trends, 1978-2007

J. R. King, M. J. Camisa, and V. M. Manfredi

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Department of Fish and Game
Massachusetts Division of Marine Fisheries

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1213 Purchase Street
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Commonwealth of Massachusetts
Deval Patrick, Governor
Executive Office of Energy and Environmental Affairs
Ian Bowles, Secretary
Department of Fisheries, Wildlife and Environmental Law Enforcement
Mary B. Griffin, Commissioner
Massachusetts Division of Marine Fisheries
Paul Diodati, Director

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Abstract: The Massachusetts Division of Marine Fisheries (*MarineFisheries)* has conducted trawl surveys each spring and fall since 1978. Details on the survey effort, including numbers of stations accomplished, geographic distribution of stations, survey dates, and bottom temperature observations are presented to familiarize data users with available station data and assist with interpretation of survey results. Lists of species recorded, catch and length data, and summaries of catch composition by region reveal the broad array of species observed and provide the level of information available by species.

Introduction

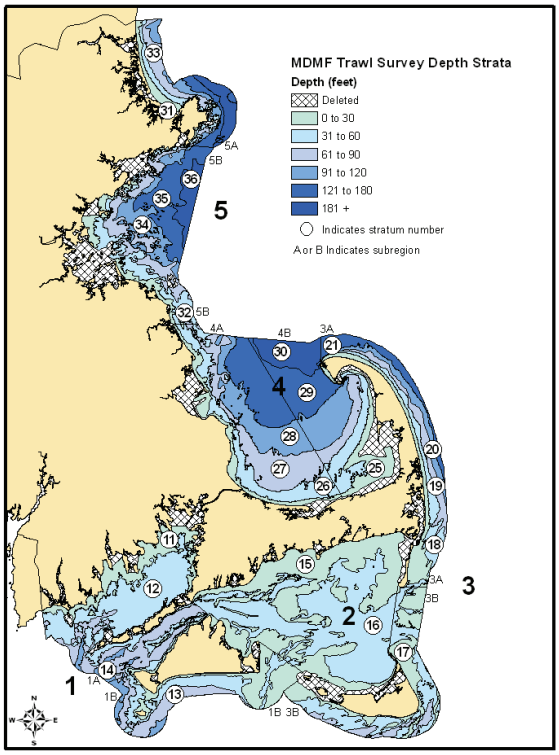
Massachusetts' coastal waters are inhabited by diverse and productive communities of fishes and invertebrates that contribute to state and regional fisheries. The Massachusetts Division of Marine Fisheries, as part of its responsibility to manage the Commonwealth's living marine resources, has conducted spring and fall trawl surveys since 1978 with the intent of quantifying the distribution, relative abundance, and size composition of finfish and select invertebrates within the territorial waters of Massachusetts (inclusive of Nantucket Sound). Standardized fisheries-independent trawl survey methodology is used. Data produced from the surveys contributes to the assessments of numerous regional fish stocks. In addition, the surveys inform fishery management decisions in state waters and contribute to evaluation of coastal alteration projects. *MarineFisheries* has endeavored to conduct the spring and fall surveys each year with consistency in method so that the ability to compare results over time is not diminished. However, adherence to strict consistency protocols is imperfect when working in the harsh elements of the marine environment on a task which requires approximately three weeks for completion each spring and fall.

The following pages document the *MarineFisheries* survey effort 1978 – 2007. Tables and figures including station counts, geographic distribution of stations, dates of accomplishment, and bottom temperature observations are provided to both familiarize data users with the *MarineFisheries* survey effort and as a companion to assist in interpretation of survey results. In addition to presentations by region, bottom temperatures and dates of accomplishment are summarized by regional groups that are commonly combined in survey data outputs, and in some cases align with stock area boundaries. Species lists with level of data availability and summaries of catch by species (occurrence, mean number and mean weight per tow) over the 30 year time period are also provided.

Methods

Survey Design: The study area is stratified based on five bio-geographic regions and six depth zones (Figure 1). Depth strata are based on lines of

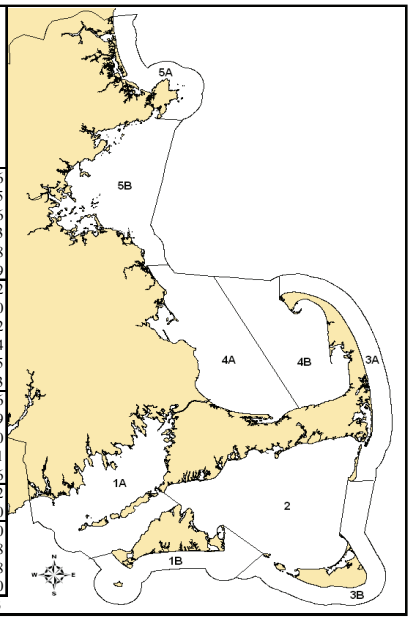
Figure 1. *MarineFisheries* trawl survey strata and regions.



bathymetry or interpolation of soundings of mean low water on NOAA charts. The shallowest strata, defined as less than 9.1m (<30ft) is functionally bound by the safe limits of operating the research vessel in shallow depths. Ninety-five percent of the sampling in the shallowest strata has been accomplished at depths greater than or equal to 6 m and sampling has never been achieved shallower than 4 m. The deepest strata (30 and 36), defined as greater than 55m (>180ft), are restricted by the limits of the state territorial waters. No survey stations have been completed in depths greater than 89m. Sampling intensity is approximately 1 station per 19 nmi^2. Stations are assigned in proportion to the area of each stratum (Figure 2). A minimum of two stations are assigned to each stratum. In 2005, station assignments were updated to reflect improved stratum area estimates. A net addition of 2 stations brought the total assignment up to 103. Survey timing is planned for availability of adult finfish in the inshore waters in spring (May) while the fall survey (September) is intended to sample juveniles prior to migration beyond state waters.

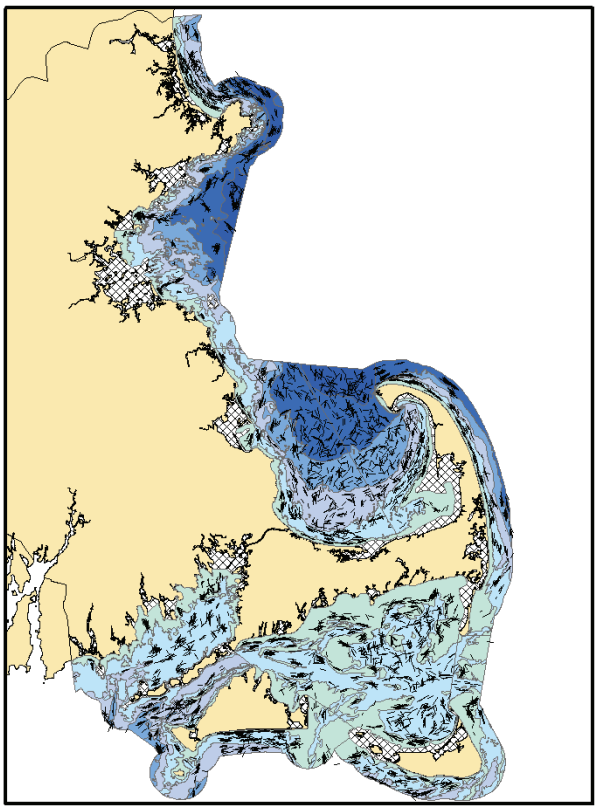
Figure 2. *MarineFisheries* trawl survey station assignments by stratum and sub-region.

Region #	Stratum #	Depth (FT)	Subregion A Assignment	Subregion B Assignment	Total Stratum Assignment	Stratum Area (NMI^2)
5	31	<= 30	2	1	3	36
	32	31- 60	1	2	3	55
	33	61 - 90	2	2	4	66
	34	91 - 120	2	2	4	53
	35	121 - 180	2	3	5	68
	36	>180	1	1	2	39
4	25	<= 30	2	2	4	62
	26	31- 60	3	2	5	90
	27	61 - 90	3	2	5	92
	28	91 - 120	3	2	5	94
	29	121 - 180	3	2	5	105
	30	>180	0	2	2	33
3	17	<= 30	2	3	5	86
	18	31- 60	2	3	5	89
	19	61 - 90	1	1	2	40
	20	91 - 120	2	0	2	21
	21	121 - 180	2	0	2	26
2	15	<= 30	-	-	10	192
	16	31- 60	-	-	11	210
1	11	<= 30	3	2	5	100
	12	31- 60	5	2	7	168
	13	61 - 90	3	2	5	88
	14	91 - 120	1	1	2	20
TOTAL			103	1833		



Since 1982, stations have been assigned a priori by a random selection process. Any randomly-selected station that is identified as being on an untowable site (based largely on previous survey experience) is rejected and another random selection is drawn. Hard bottom habitats, identified as untowable from previous experience, have effectively been removed from the station selection process (Figure 3).

Figure 3. *MarineFisheries* spring and fall survey stations completed 1978 – 2007.



Prior to 1982, unfamiliarity with trawlable bottom habitats and the excessive amount of time required to find suitable alternate sites when a randomly-selected station was assigned to an untrawlable location, led to a practical haphazard station selection process while at sea. Stations were occupied as trawlable bottom was identified in the appropriate geographic region and depth stratum. All tows are conducted during daylight hours. A standard tow (SHG 111) of 20 minutes duration at a speed of 2.5 knots is executed after reconnaissance at each site to assure a clear path. Catch data from tows of ≥ 13 minutes, but <20 minutes are Survey

expanded to the 20 minute standard and coded as acceptable, (SHG 121 – 136). Both standard and acceptable tows, (SHG ≤ 136) are considered representative. Tows of less than 13 minutes duration are considered non-representative (SHG >136) and are excluded from most indices (a notable exception being short tows in areas where spiny dogfish abundance is high). Standard bottom trawl survey techniques are used when processing the catch. The total weight and length frequency are recorded for each species on trawl logs. Sampling protocols and survey design largely follow the methods established by the Northeast Fisheries Science Center. Total weights are recorded to the nearest 0.1 kg for each species. Lengths for each species are measured according to the methods listed in Table 1. Lobster carapaces are measured to the nearest mm. All other lengths are recorded to the nearest cm.

Table 1. Method of length measurement on

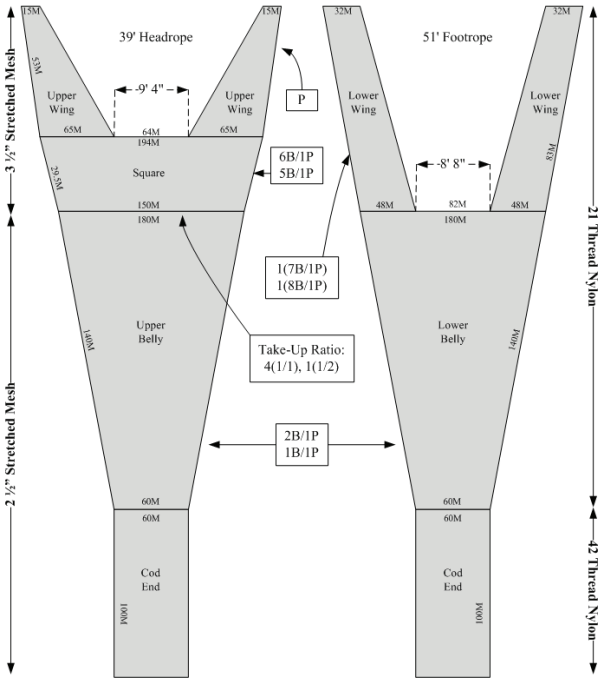
GROUP OR SPECIES	MEASUREMENT
FISHES	Midline length (fork or total length)
EXCEPTIONS	
SHARKS and STURGEONS	Total length to tip of heterocercal tail.
NORTHERN KINGFISH	Total length to tip of non-symmetrical tail.
ROUGHTAIL STINGRAY	Disk width
CORNETFISH	Extended fin ray at caudal fork disregarded.
LOBSTERS	Carapace length
CRABS	Carapace width
SQUIDS	Mantle length
HORSESHOE CRABS	Prosoma width
SCALLOPS	Shell height
CLAMS AND QUAHOGS	Shell length
WHELKS	Shell width
OCTOPUS	Mid-eye to top of mantle.

Survey Vessels and Sampling Gear: All spring and fall surveys from 1978 – 1981 were conducted aboard the F/V Frances Elizabeth. Surveys since 1982 have employed the R/V Gloria Michelle (Figure 4). Trawl design and trawl doors have been consistent for the duration of the survey. The net is a ¾ size North Atlantic type two seam otter trawl (39' headrope/51' footrope) rigged with a 3.5" rubber disc sweep and a ¼" knotless codend liner (1/2" stretched mesh) (Figure 5). The survey trawl is spread behind 72" x 40" 325 lb wooden trawl doors; 63', 3/8" chain bottom legs; and 60', 3/8" wire top legs (Appendix).

Figure 4. *MarineFisheries* trawl survey vessels and their specifications.

	F/V Frances Elizabeth	**R/V Gloria Michelle**
Years of Service	Spring 1978 - Fall 1981	Spring 1982 - Present
Type	Western rigged dragger	Western rigged dragger
Hull Material	Wood	Steel
Length Overall	55ft	72ft
Gross	36tons	96 tons
Draft	6.5ft	9.5ft
Speed	8.5 knots	9 knots
Engine	GMV 671. 170HP	Cat 3406. 365HP
Reduction Gear	3:01	6:01
USCG ID	246270	556572

Figure 5. *MarineFisheries* trawl survey net plan.



Survey Implementation: The survey plan has generally been to commence operations in Cape Cod Bay before proceeding to Massachusetts Bay and Ipswich Bay. After returning to Cape Cod Bay, the survey proceeds east of Cape Cod and then to Nantucket Sound. A circumnavigation of Nantucket is followed by surveys of Vineyard Sound and south of Martha's Vineyard, before finishing in Buzzards Bay. Efforts are made to adhere to this plan, particularly in Regions 3 – 5, in deference to lobstermen whose cooperation is sought by advertising a range of anticipated sampling dates in these heavily trap-fished regions. However, adverse weather has recurrently forced delays and/or completion of stations outside of the planned sequence, including portions of the survey accomplished in 'reverse' order.

Fishing operations were conducted by experienced owner/operator fishermen on the F/V Frances Elizabeth from 1978 - 1981. National Oceanic and Atmospheric Administration Commissioned Corps Officers (NOAA Corps) have led National Marine Fisheries Service (NMFS) staff or contracted fishermen in performing fishing operations on the R/V Gloria Michelle from 1982 – present. The scientific party has always been led by experienced *MarineFisheries* survey staff.

Record of Effort and Observations

Spring and fall survey effort and observations are presented in the following tables and figures which are designated I.A through I.F for spring surveys and II.A through II.F for fall surveys.

I. Spring Survey

A. Record of Station Accomplishment (See table and figure series I.A)

An average of 96 representative stations were completed each spring. Hard bottom habitats, sand waves, fixed fishing gear, abandoned fishing gear and other anthropogenic debris can cause early haulbacks or damage the survey trawl. In addition high algae or spiny dogfish densities may require reduced tow times, or result in unsuccessful haulbacks. Completion of the full complement of assigned stations is rarely accomplished as a result of these challenges in addition to other impediments such as foul weather, mechanical breakdowns and the limits of finite vessel and personnel time. Station allocation by stratum has been adjusted on more than one occasion, most recently in 2005, to reflect improved stratum area estimates.

Figure I.A.1. Count of representative (SHG ≤ 136) tows accomplished, *MarineFisheries* spring survey 1978 – 2007.

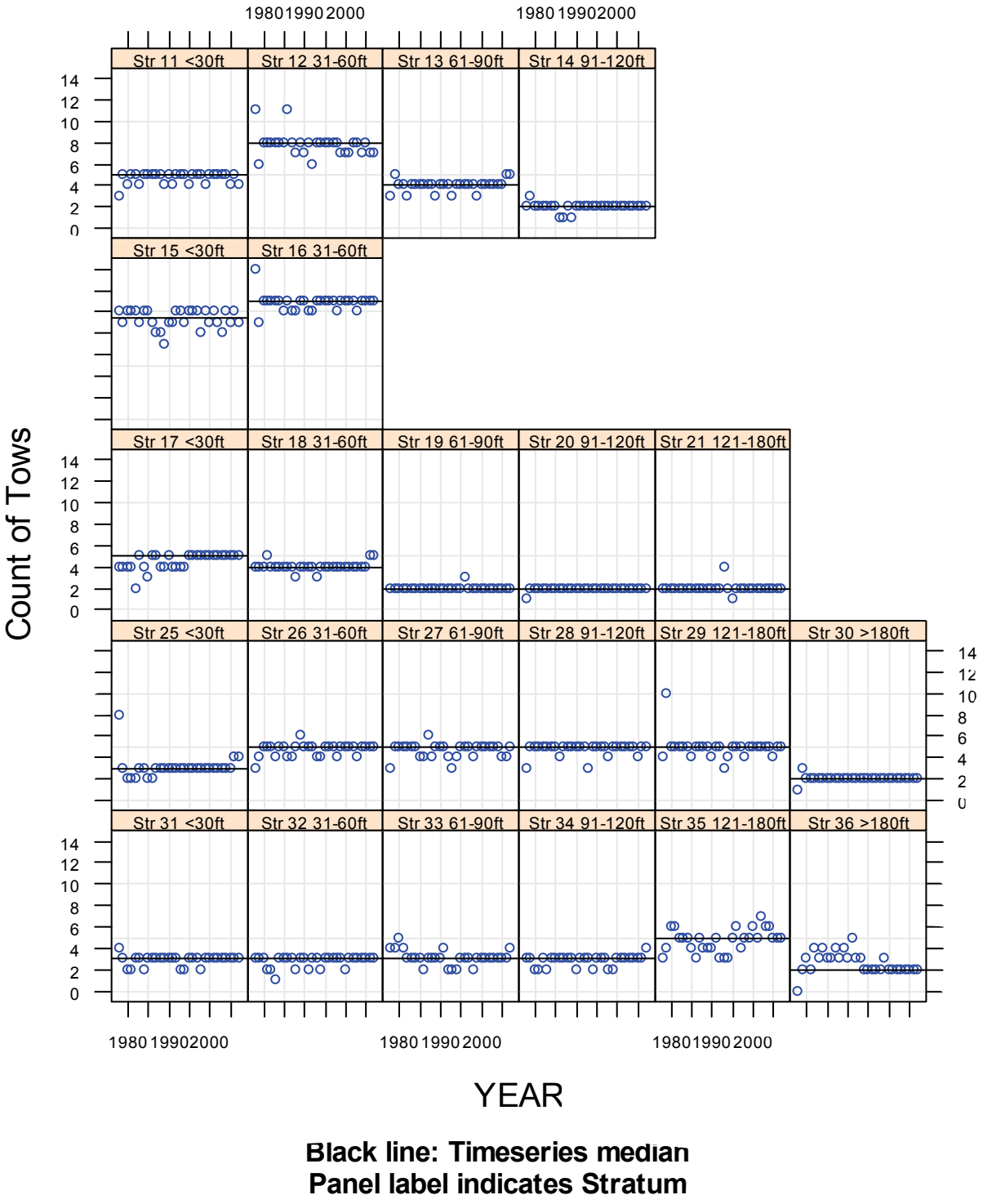


Figure I.A.2. Count of representative and non-representative (SHG ≤ 166) tows accomplished, *MarineFisheries* spring survey 1978 – 2007.

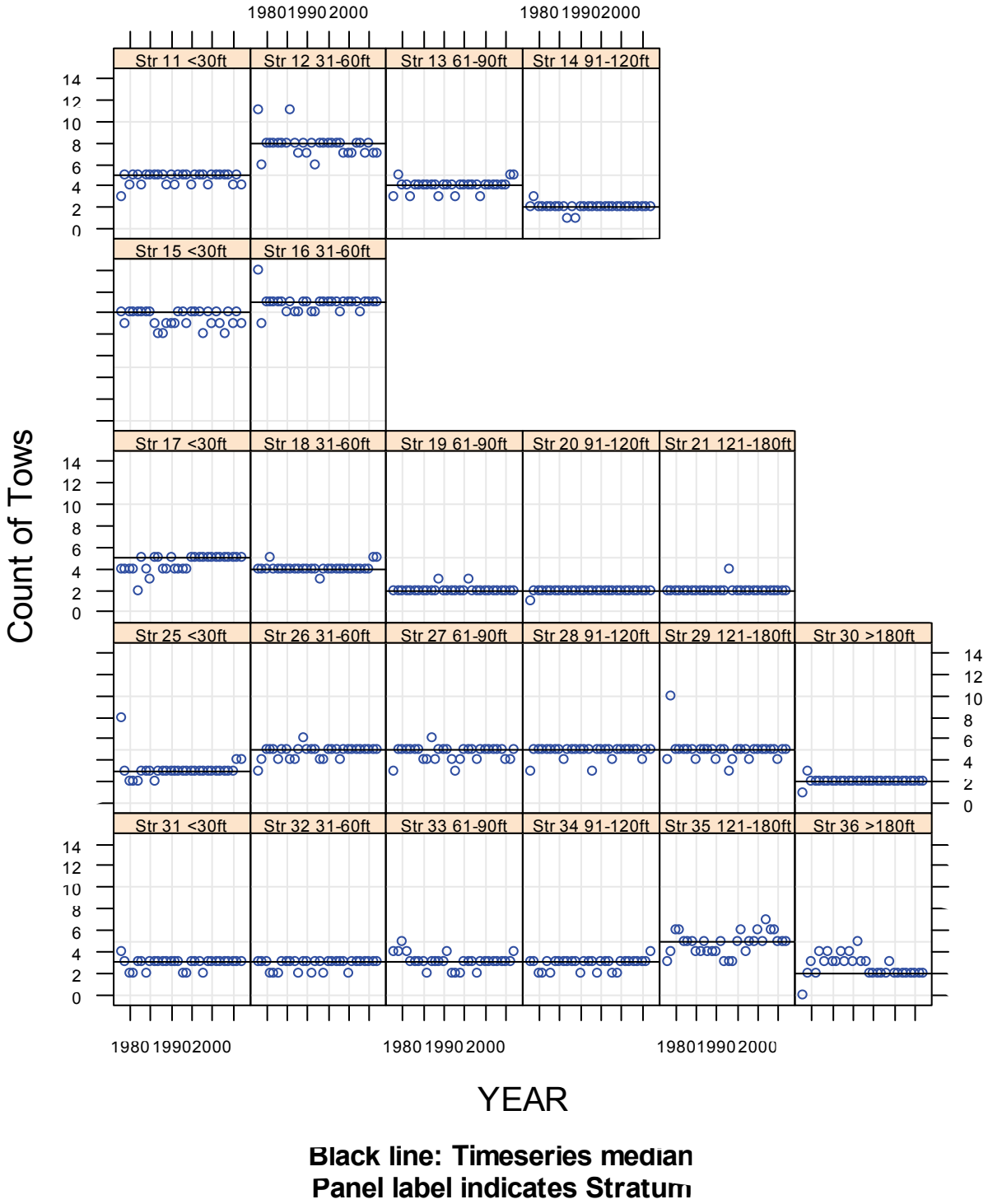


Table I.A.1. Count of representative (SHG ≤ 136) tows accomplished, *MarineFisheries* spring survey 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5						ALL STRATA
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**Sum**
1978	3	11	3	2	10	14	4	4	2	1	2	8	3	3	3	4	1	4	3	4	3	3	0	**95**
1979	5	6	5	3	9	9	4	4	2	2	2	3	4	5	5	10	3	3	3	4	3	4	2	**100**
1980	4	8	4	2	10	11	4	4	2	2	2	2	5	5	5	5	2	2	3	5	2	6	3	**98**
1981	5	8	4	2	10	11	4	5	2	2	2	2	5	5	5	5	2	2	2	4	2	6	2	**97**
1982	5	8	3	2	10	11	2	4	2	2	2	2	5	5	5	5	2	3	2	3	3	5	4	**95**
1983	4	8	4	2	9	11	5	4	2	2	2	3	4	5	5	5	2	3	1	3	2	5	3	**94**
1984	5	8	4	2	10	11	4	4	2	2	2	3	5	5	5	5	2	2	3	3	3	5	4	**99**
1985	5	8	4	2	10	10	3	4	2	2	2	2	5	4	5	4	2	3	3	3	3	4	3	**93**
1986	5	11	4	1	9	11	5	4	2	2	2	2	4	4	4	5	2	3	3	2	3	3	3	**94**
1987	5	8	4	1	8	10	5	4	2	2	2	3	4	6	5	5	2	3	3	3	3	5	4	**97**
1988	5	7	4	2	8	10	4	3	2	2	2	3	5	4	5	5	2	3	2	3	3	4	3	**91**
1989	4	8	3	1	7	11	4	4	2	2	2	3	6	5	5	5	2	3	3	3	3	4	4	**94**
1990	5	7	4	2	9	11	5	4	2	2	2	3	5	5	5	4	2	3	3	3	2	4	3	**95**
1991	4	8	4	2	9	10	4	4	2	2	2	3	5	5	5	5	2	3	2	4	3	5	5	**98**
1992	5	6	4	2	10	10	4	4	2	2	2	3	5	4	5	5	2	3	3	2	3	3	3	**92**
1993	5	8	3	2	10	11	4	3	2	2	4	3	4	3	3	3	2	2	3	2	3	3	3	**88**
1994	5	8	4	2	9	11	4	4	2	2	2	3	4	4	5	4	2	2	2	2	2	3	2	**88**
1995	4	8	4	2	10	11	5	4	2	2	1	3	5	5	5	5	2	3	3	3	3	5	2	**97**
1996	5	8	4	2	10	11	5	4	3	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**101**
1997	5	8	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	4	2	**98**
1998	5	8	4	2	8	10	5	4	2	2	2	3	4	4	4	4	2	2	3	2	2	5	2	**89**
1999	4	7	3	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	2	5	3	**96**
2000	5	7	4	2	9	11	5	4	2	2	2	3	5	5	5	5	2	3	2	3	3	6	2	**97**
2001	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	5	2	**98**
2002	5	8	4	2	9	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	7	2	**100**
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2004	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**99**
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2006	5	7	5	2	10	11	5	5	2	2	2	4	5	4	5	5	2	3	3	3	3	5	2	**100**
2007	4	7	5	2	9	11	5	5	2	2	2	4	5	5	5	5	2	3	3	4	4	5	2	**101**
Sum	140	234	118	58	279	324	134	121	61	59	61	92	141	139	143	147	60	85	82	92	84	142	78	2874
Mean	4.7	7.8	3.9	1.9	9.3	10.8	4.5	4.0	2.0	2.0	2.0	3.1	4.7	4.6	4.8	4.9	2.0	2.8	2.7	3.1	2.8	4.7	2.6	95.8
Str-wts	100	168	88	20	192	210	86	89	40	21	26	62	90	92	94	105	33	36	55	66	53	68	39	1833

Str-wts represent the area of each stratum in square nautical miles.

Table I.A.2. Count of representative and non-representative (SHG ≤ 166) tows accomplished, *MarineFisheries* spring survey 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5						ALL STRATA
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**Sum**
1978	3	11	3	2	10	14	4	4	2	1	2	8	3	3	3	4	1	4	3	4	3	3	0	**95**
1979	5	6	5	3	9	9	4	4	2	2	2	3	4	5	5	10	3	3	3	4	3	4	2	**100**
1980	4	8	4	2	10	11	4	4	2	2	2	2	5	5	5	5	2	2	3	5	2	6	3	**98**
1981	5	8	4	2	10	11	4	5	2	2	2	2	5	5	5	5	2	2	2	4	2	6	2	**97**
1982	5	8	3	2	10	11	2	4	2	2	2	2	5	5	5	5	2	3	2	3	3	5	4	**95**
1983	4	8	4	2	10	11	5	4	2	2	2	3	4	5	5	5	2	3	2	3	2	5	3	**96**
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1985	5	8	4	2	10	10	3	4	2	2	2	3	5	4	5	4	2	3	3	3	3	4	3	**94**
1986	5	11	4	2	9	11	5	4	2	2	2	2	4	4	4	5	2	3	3	2	3	4	3	**96**
1987	5	8	4	1	8	10	5	4	2	2	2	3	4	6	5	5	2	3	3	3	3	5	4	**97**
1988	5	7	4	2	8	10	4	4	2	2	2	3	5	4	5	5	2	3	2	3	3	4	3	**92**
1989	4	8	3	1	9	11	4	4	3	2	2	3	6	5	5	5	2	3	3	3	3	4	4	**97**
1990	5	7	4	2	9	11	5	4	2	2	2	3	5	5	5	4	2	3	3	3	2	4	3	**95**
1991	4	8	4	2	9	10	4	4	2	2	2	3	5	5	5	5	2	3	2	4	3	5	5	**98**
1992	5	6	4	2	10	10	4	4	2	2	2	3	5	4	5	5	2	3	3	2	3	3	3	**92**
1993	5	8	3	2	10	11	4	3	2	2	4	3	4	3	3	3	2	2	3	2	3	3	3	**88**
1994	5	8	4	2	9	11	4	4	2	2	2	3	4	4	5	4	2	2	2	2	2	3	2	**88**
1995	4	8	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	5	2	**98**
1996	5	8	4	2	10	11	5	4	3	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**101**
1997	5	8	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	4	2	**98**
1998	5	8	4	2	8	10	5	4	2	2	2	3	4	4	4	4	2	2	3	2	2	5	2	**89**
1999	4	7	3	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	2	5	3	**96**
2000	5	7	4	2	9	11	5	4	2	2	2	3	5	5	5	5	2	3	2	3	3	6	2	**97**
2001	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	5	2	**98**
2002	5	8	4	2	9	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	7	2	**100**
2003	5	8	4	2	8	10	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**97**
2004	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**99**
2005	4	8	4	2	9	11	5	4	2	2	2	3	5	4	4	4	2	3	3	3	3	5	2	**94**
2006	5	7	5	2	10	11	5	5	2	2	2	4	5	4	5	5	2	3	3	3	3	5	2	**100**
2007	4	7	5	2	9	11	5	5	2	2	2	4	5	5	5	5	2	3	3	4	4	5	2	**101**
Sum	140	234	118	59	282	324	134	122	62	59	62	93	142	139	143	147	60	85	83	92	84	143	78	2885
Mean	4.7	7.8	3.9	2.0	9.4	10.8	4.5	4.1	2.1	2.0	2.1	3.1	4.7	4.6	4.8	4.9	2.0	2.8	2.8	3.1	2.8	4.8	2.6	96.2
Str-wts	100	168	88	20	192	210	86	89	40	21	26	62	90	92	94	105	33	36	55	66	53	68	39	1833

Str-wts represent the area of each stratum in square nautical miles.

I. Spring Survey

B. Geographic Distribution of Survey Stations (See figure series I.B)

The locations of each completed station by cruise are provided based on recorded start and end coordinates. The dots represent the start location, while the connected line represents the vector of direction and distance to the point of haulback. Each station is labeled with the sequential station number. Aborted station attempts are noted with x's. Location of start and end positions recorded in the database correspond to the position when the trawl warp was fully deployed at the start and when retrieval of trawl warp commences (end). Precision of recorded location has improved as navigational technology has advanced over time. The start/end positions have been recorded with a Furuno GPS 32 navigation receiver since 2005. Prior to 2005 latitude/longitude position data was converted from Loran time delay readings. The six-digit cruise numbers in the figure labels use the following convention: year (YYYY) followed by a unique identifier (91) for *MarineFisheries* spring trawl surveys.

Figure I.B.1. Geographic distribution of survey stations completed on each Marine Fisheries spring survey, cruises 200791 – 197891.

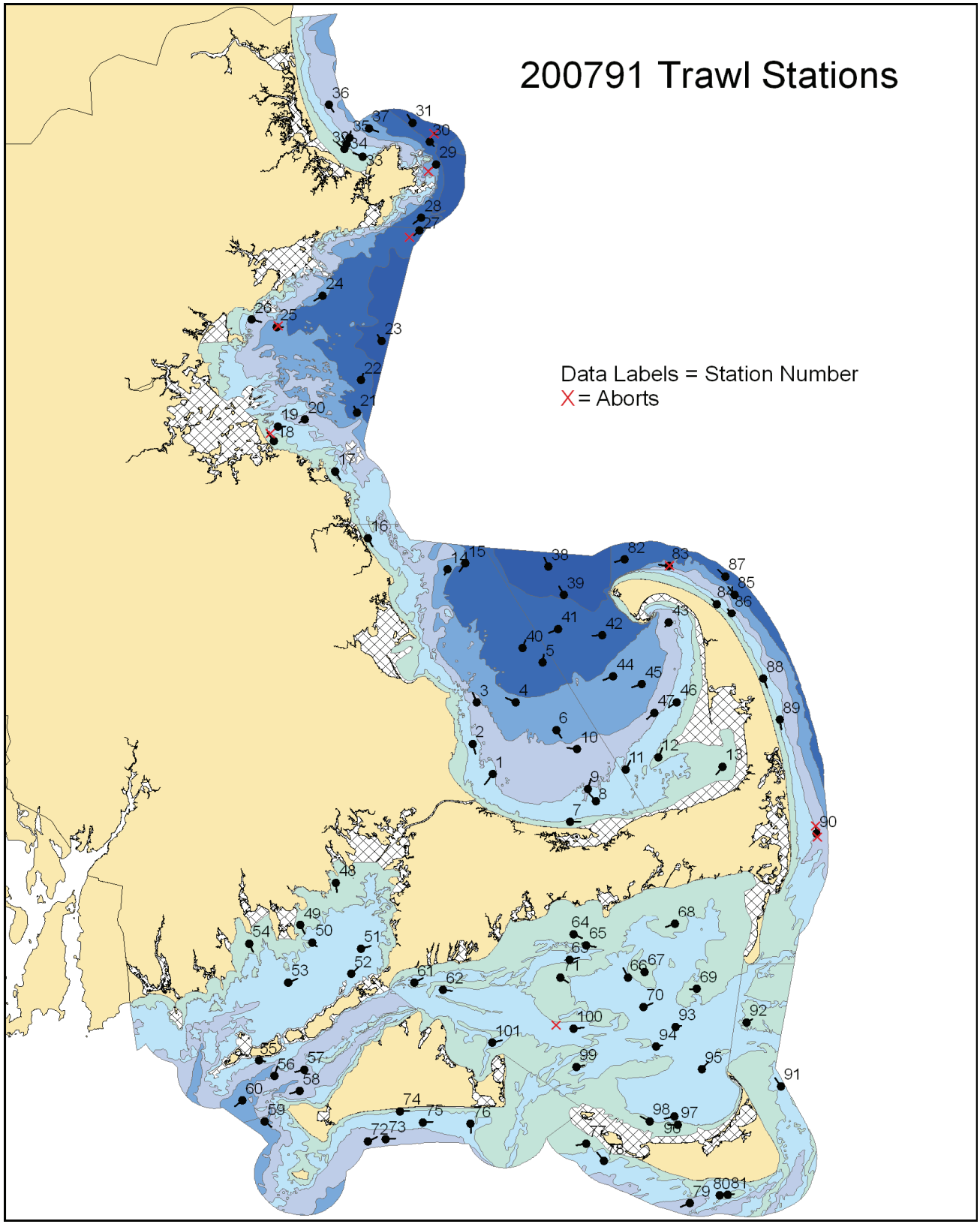


Figure I.B.1. continued.

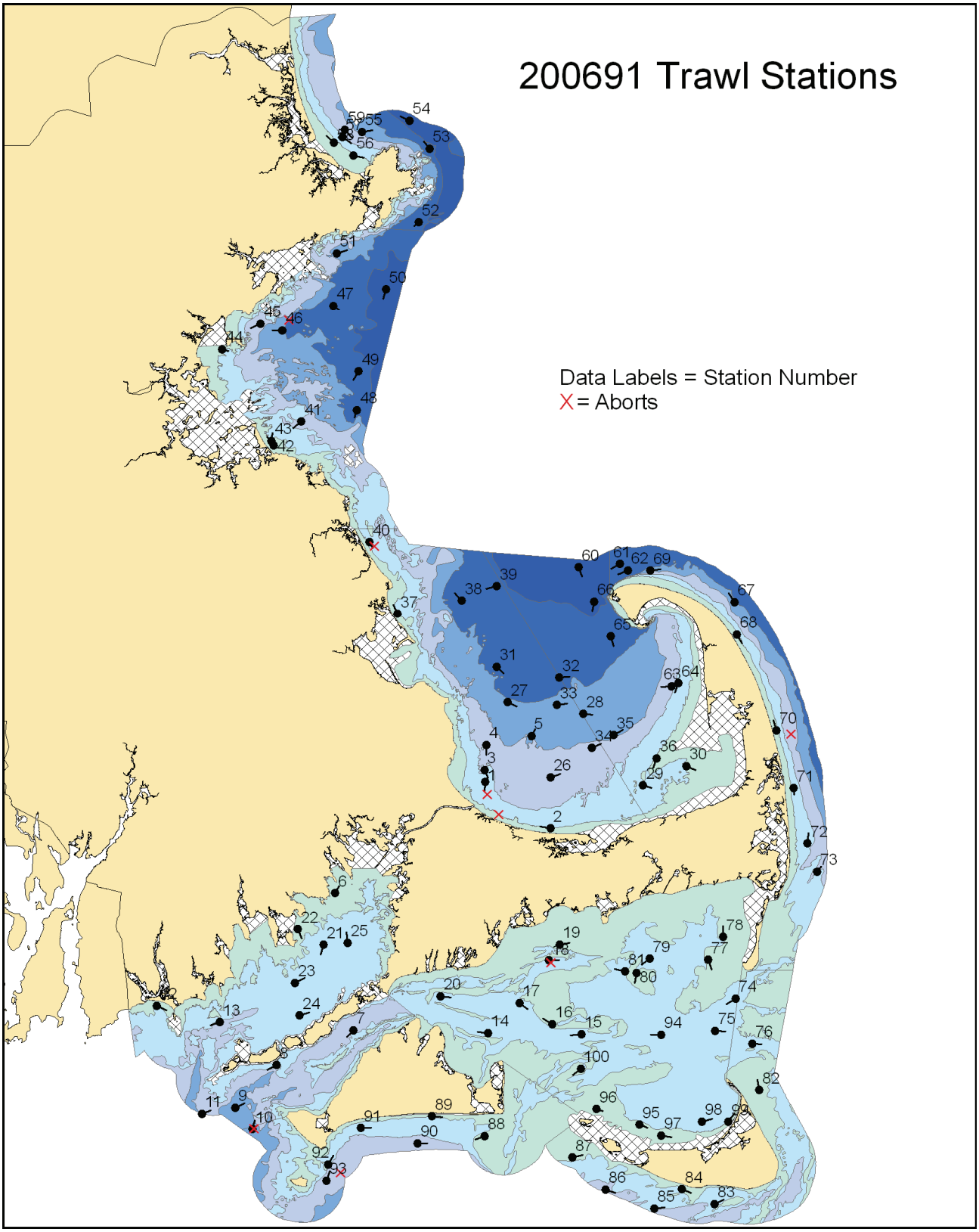


Figure I.B.1. continued.

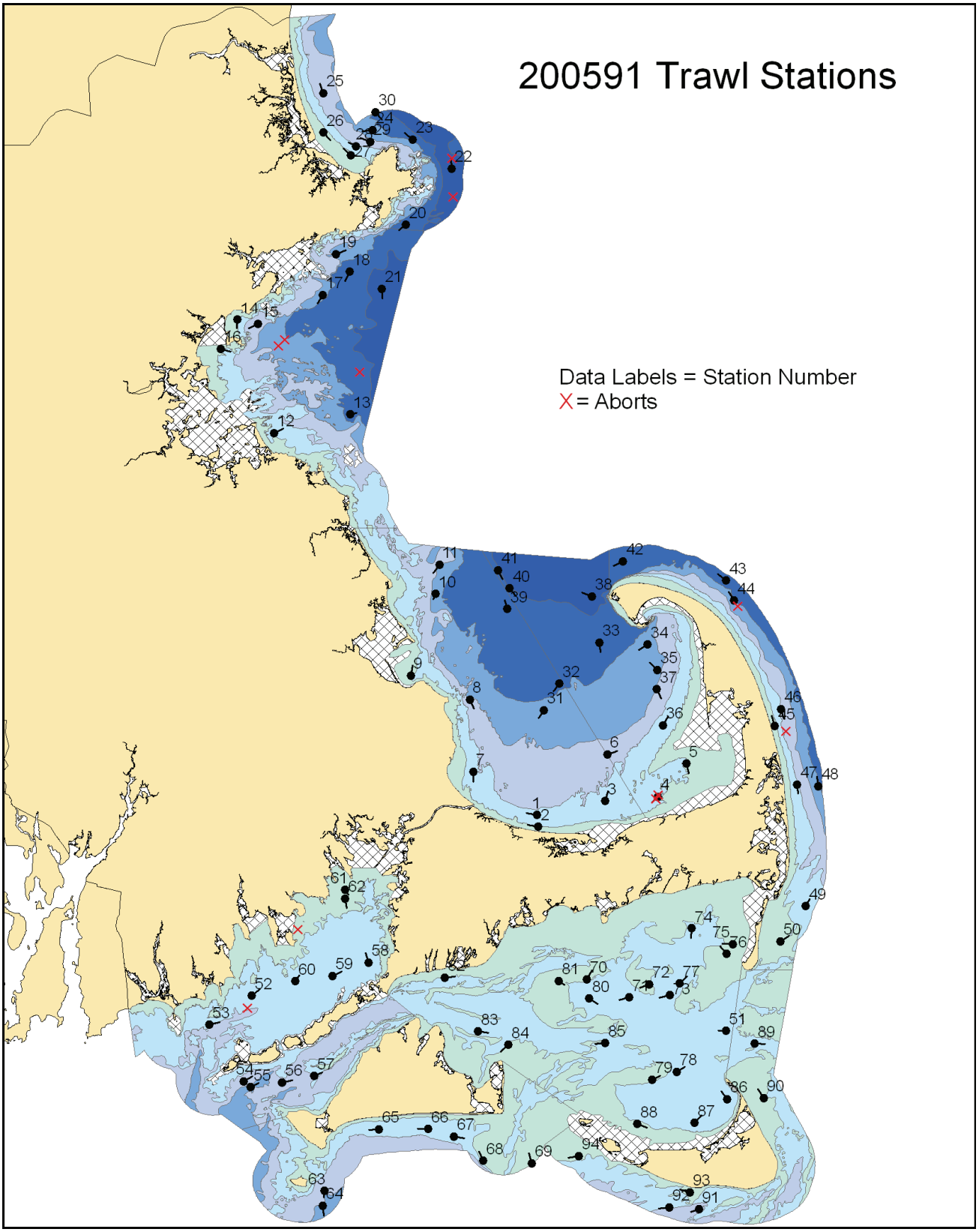


Figure I.B.1. continued.

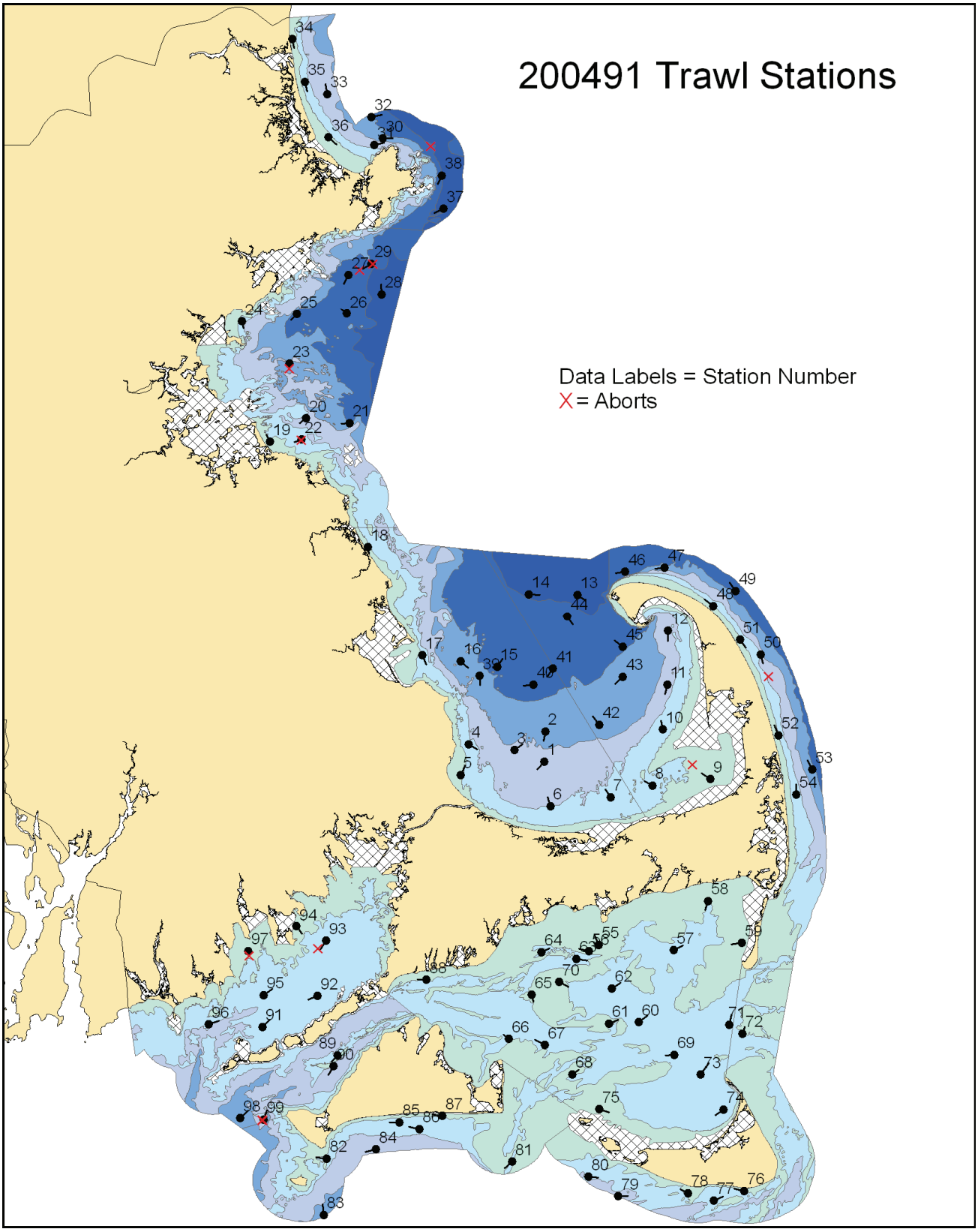


Figure I.B.1. continued.

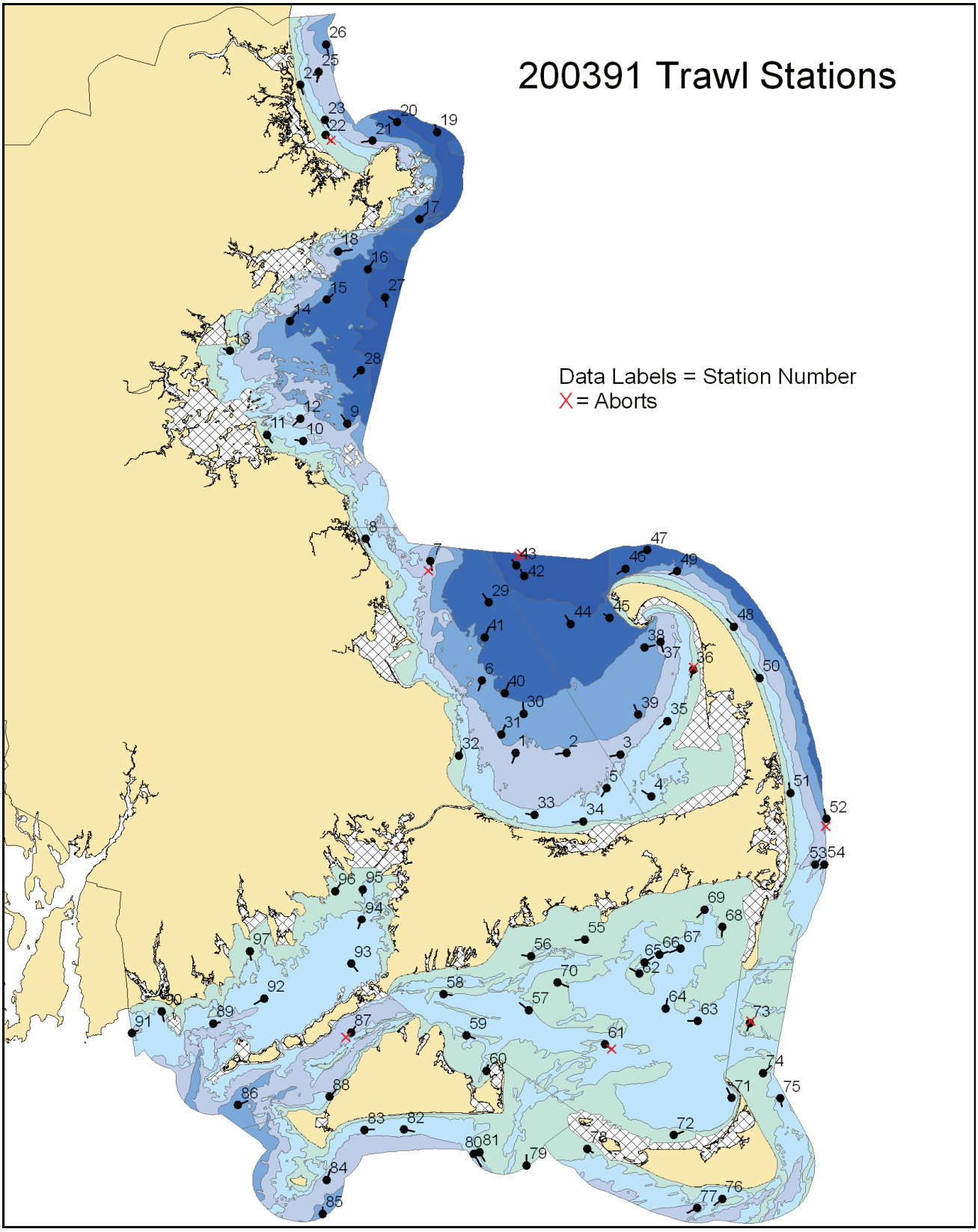


Figure I.B.1. continued.

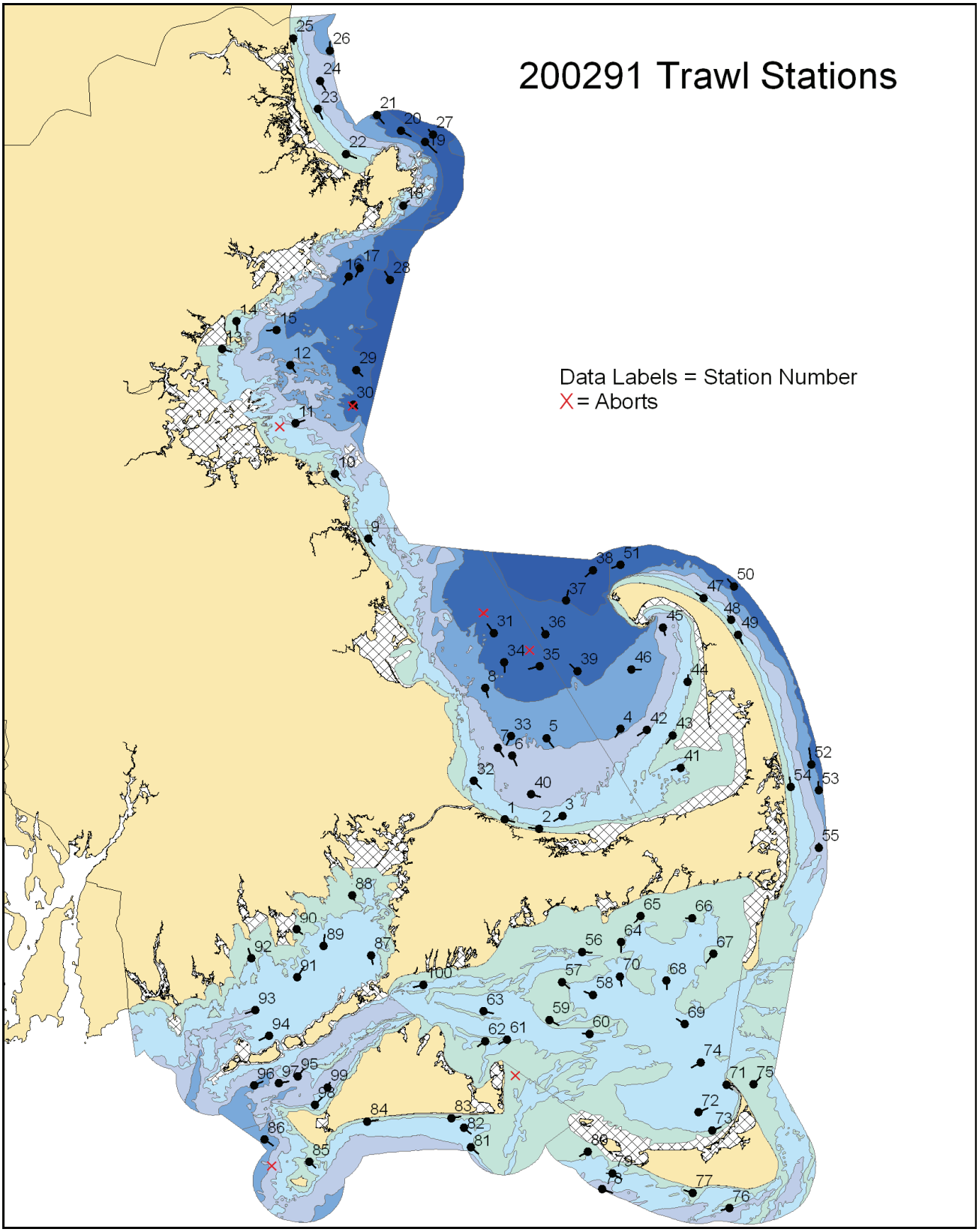


Figure I.B.1. continued.

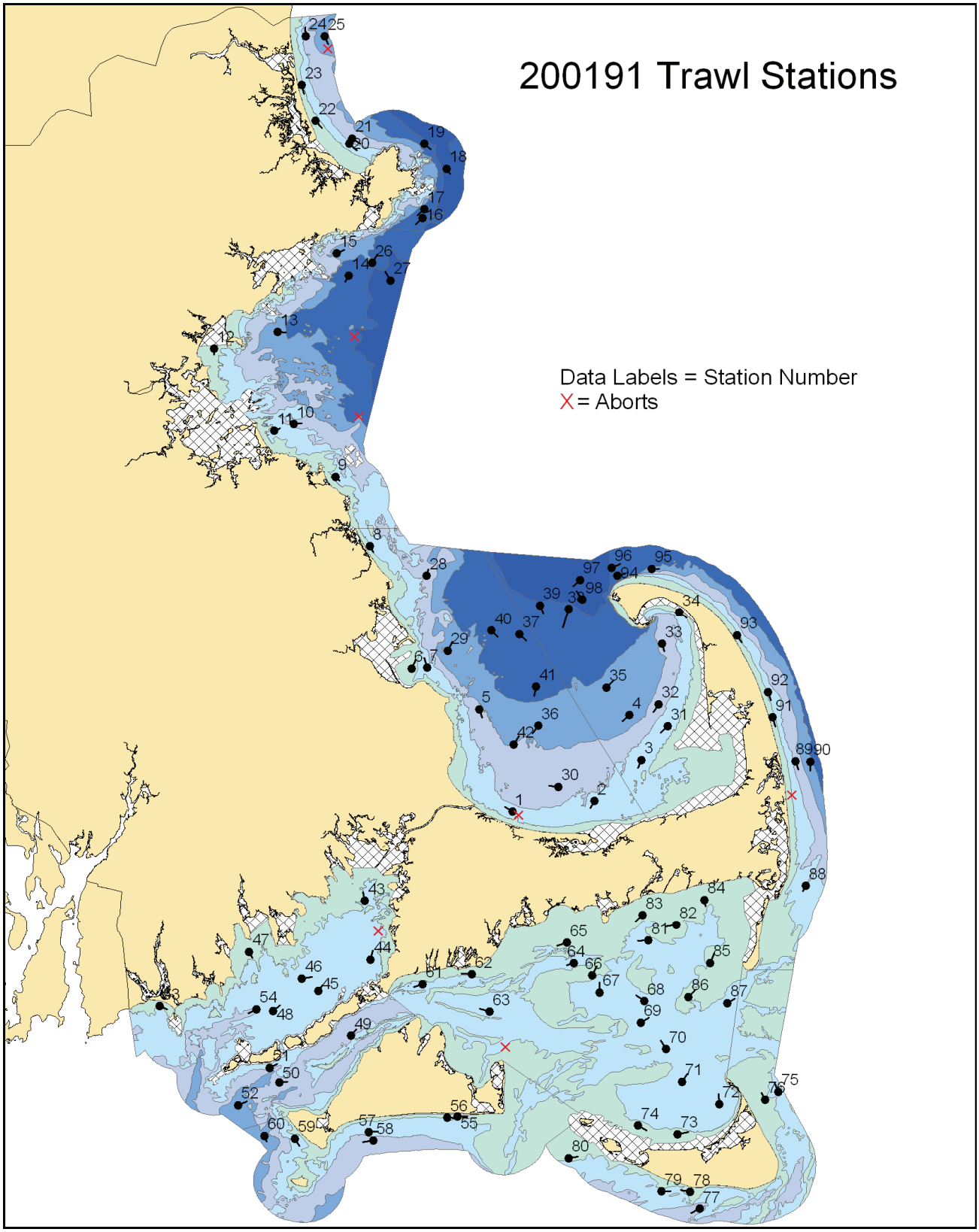


Figure I.B.1. continued.

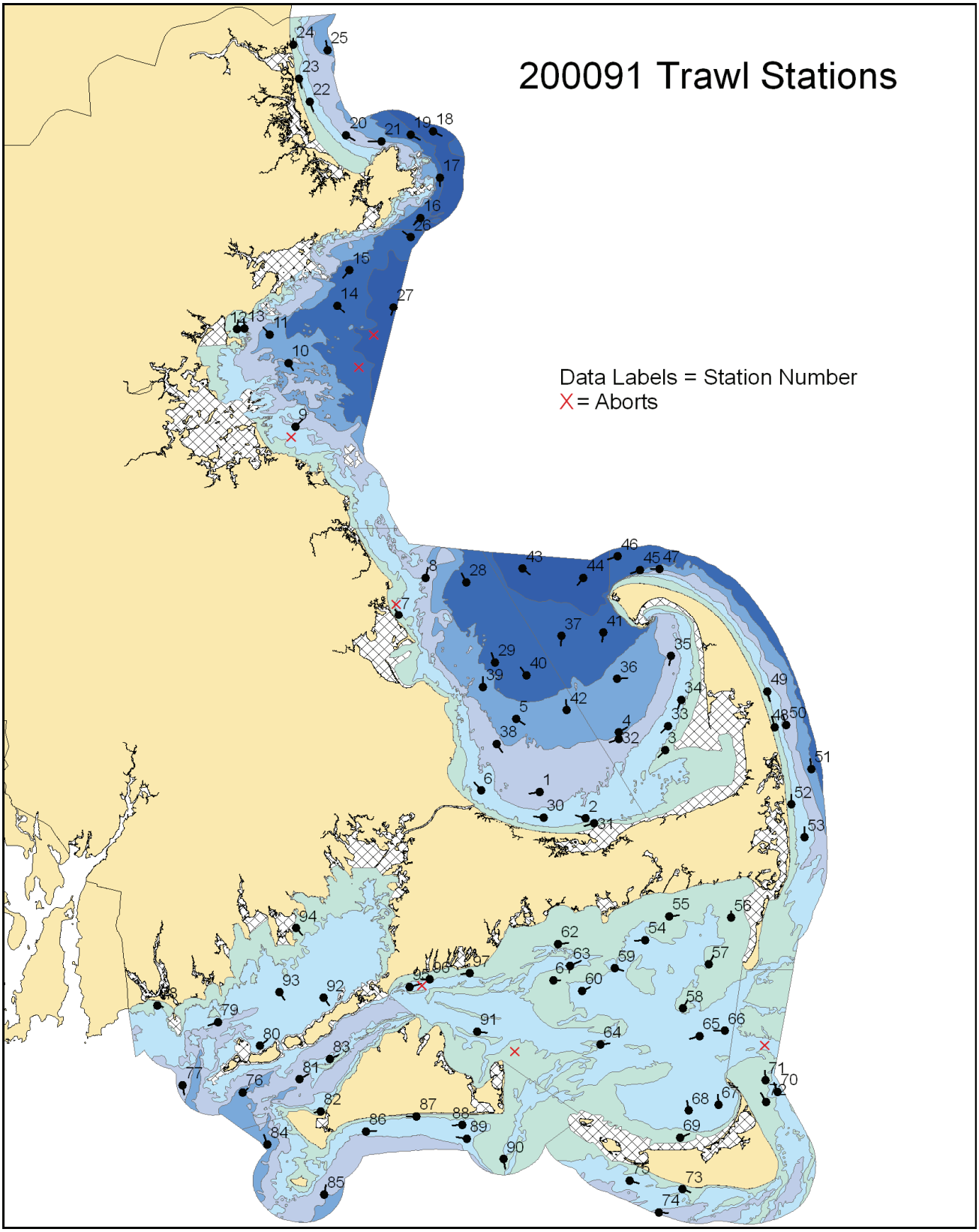
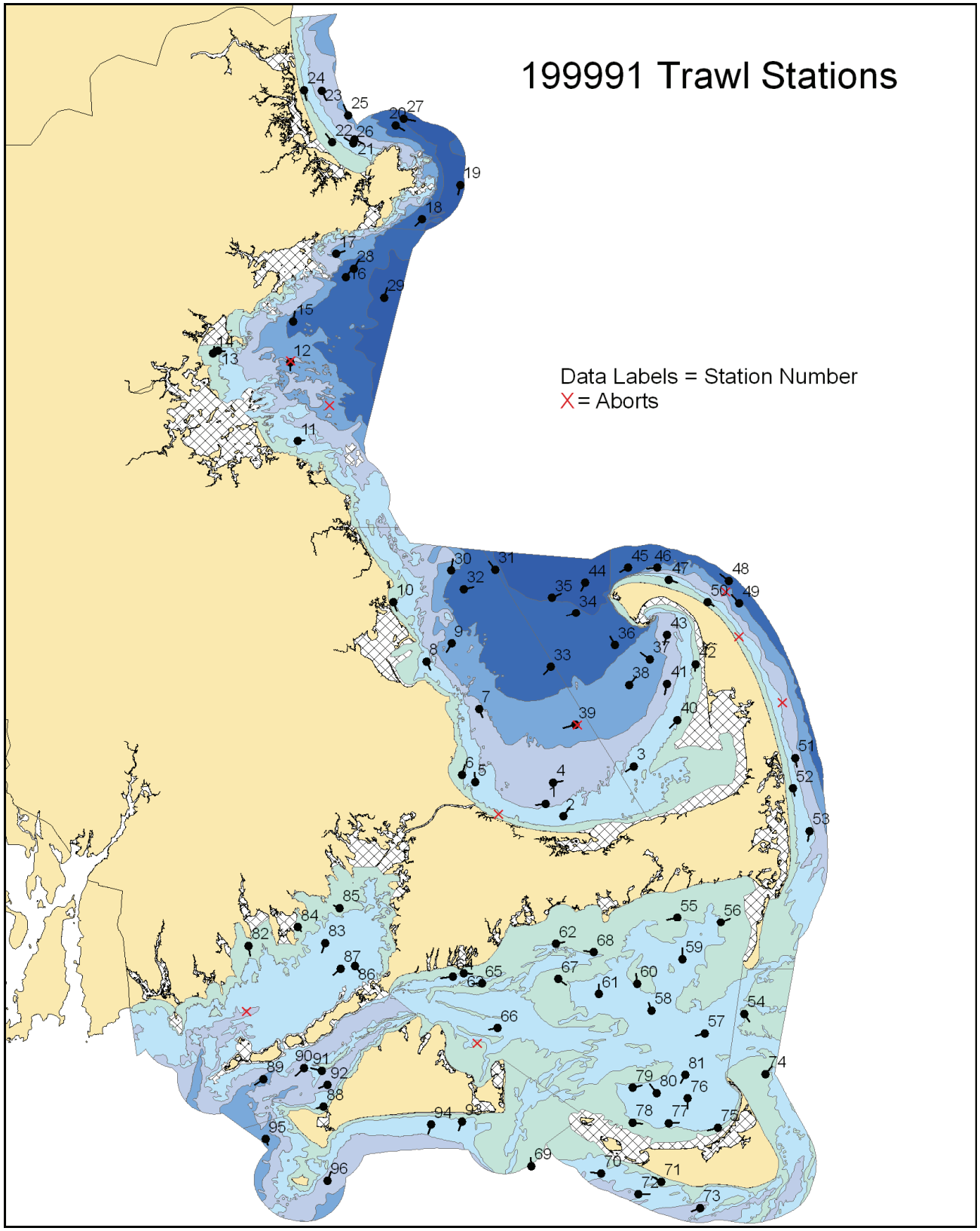


Figure I.B.1. continued.



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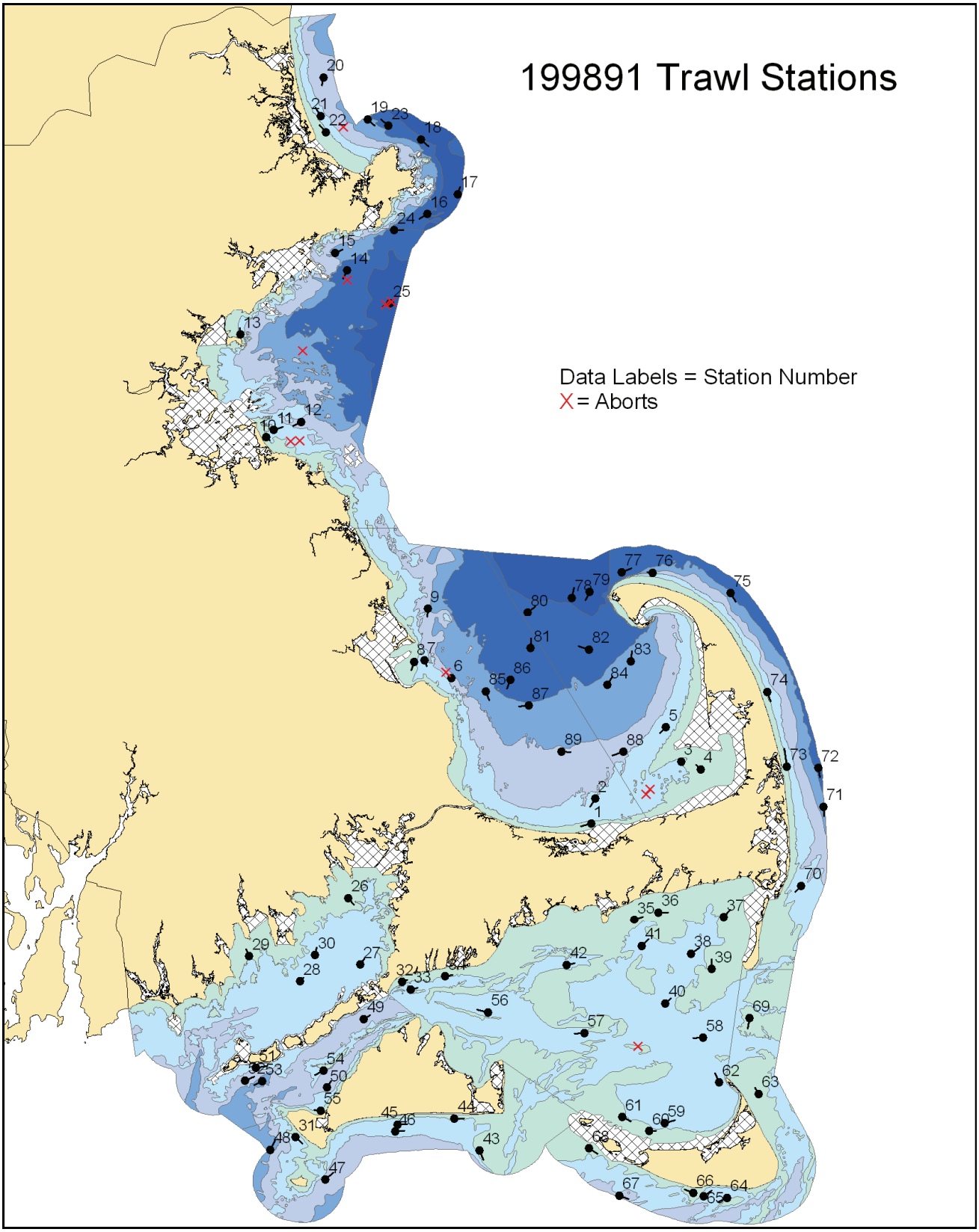


Figure I.B.1. continued.

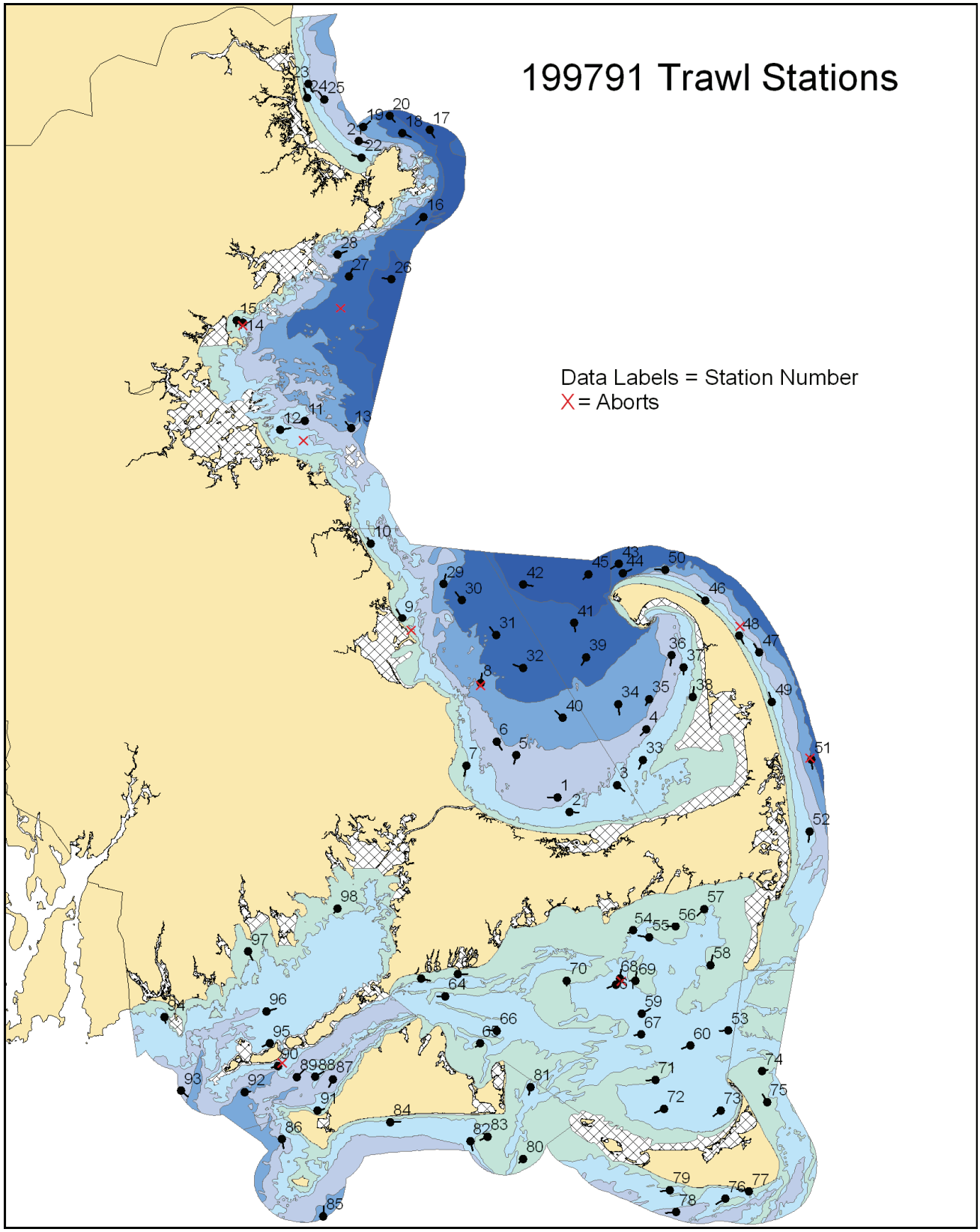


Figure I.B.1. continued.

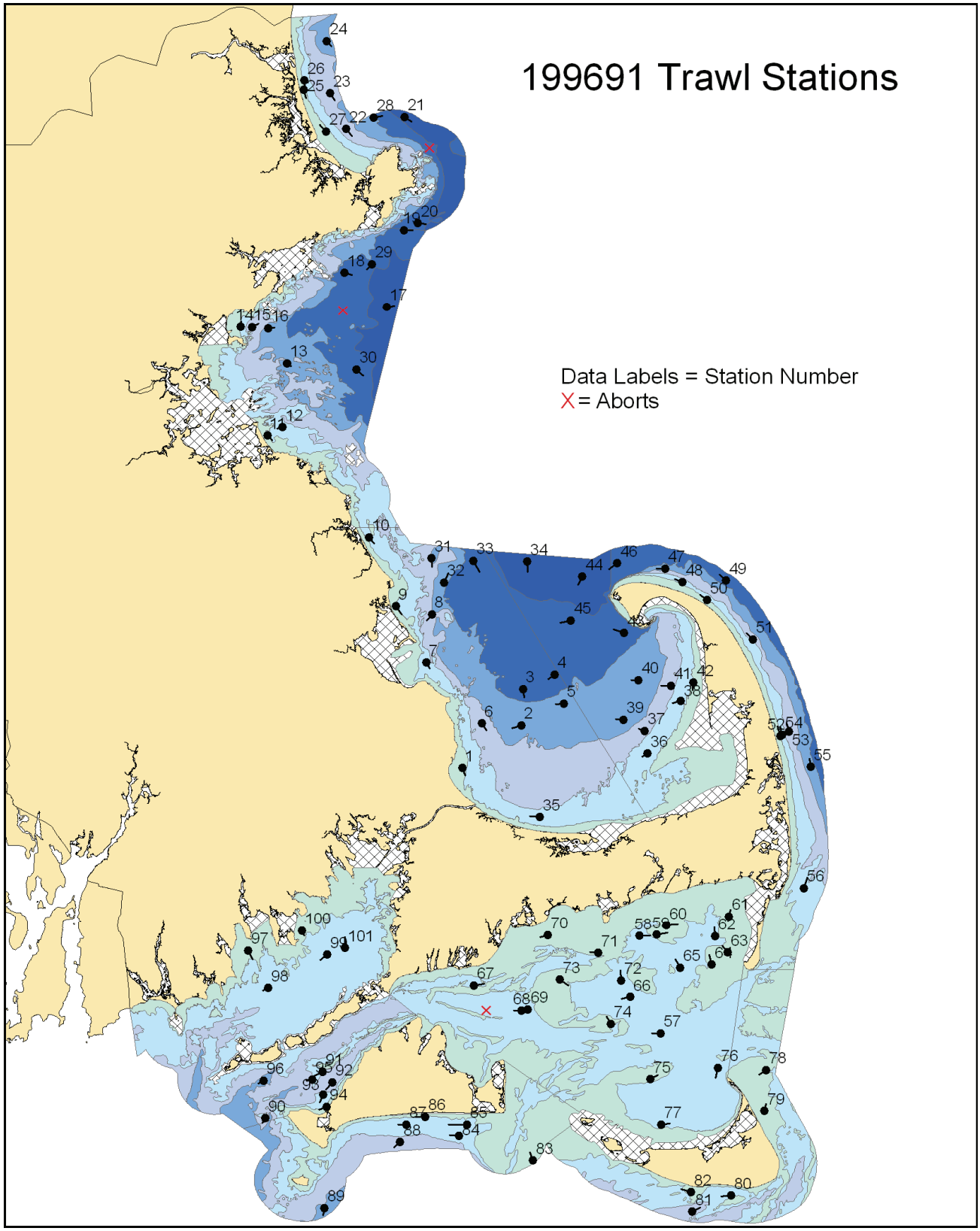


Figure I.B.1. continued.

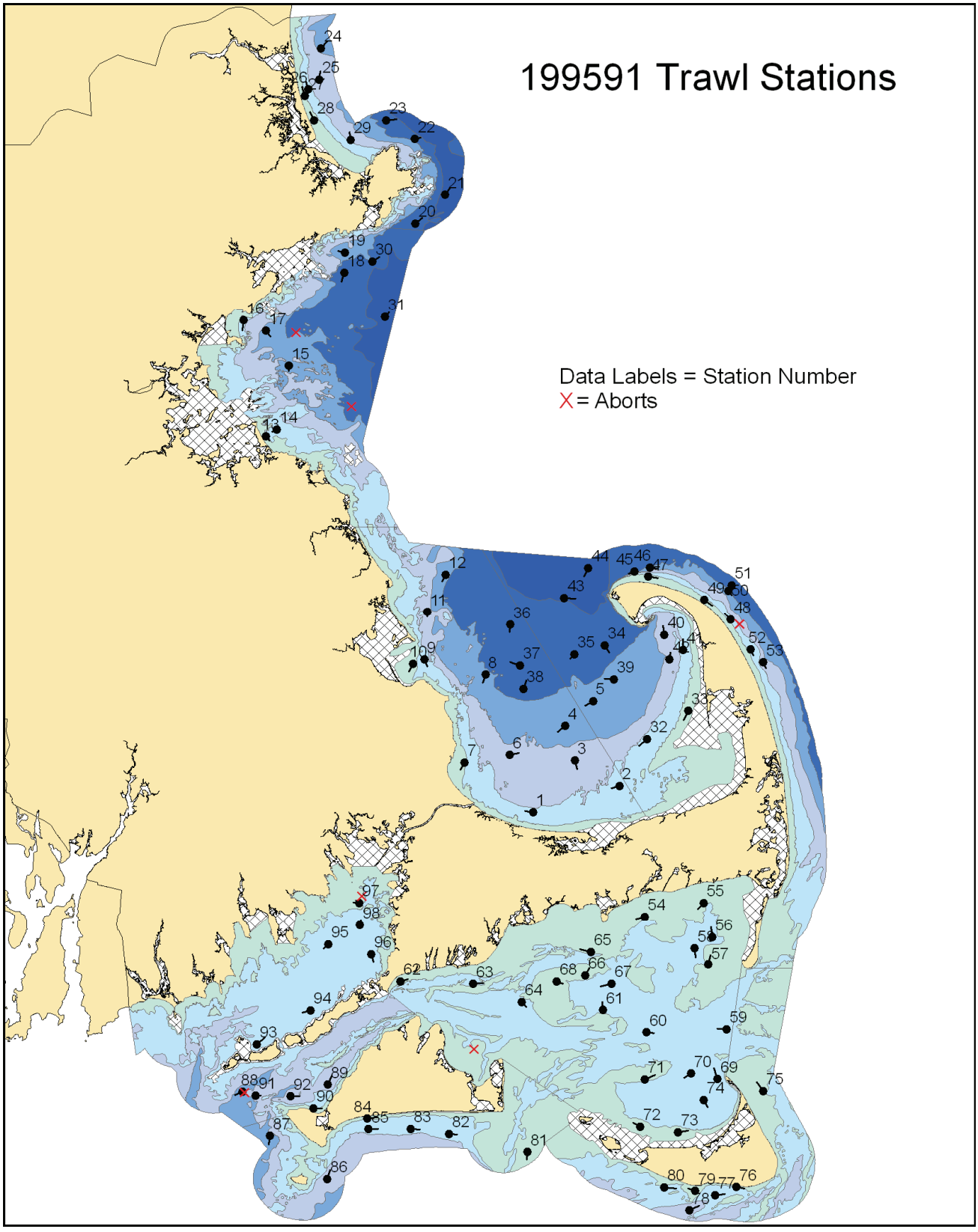


Figure I.B.1. continued.

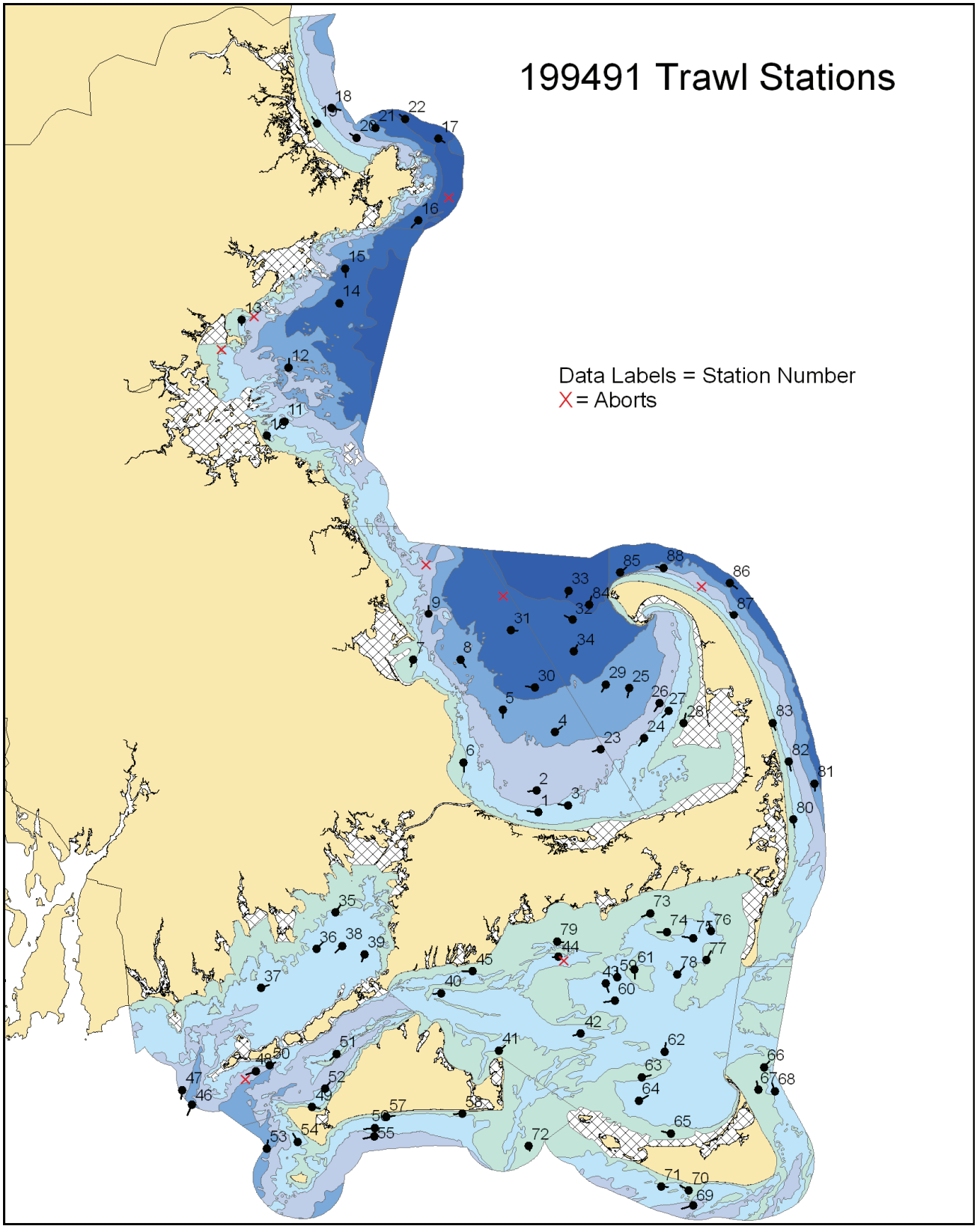
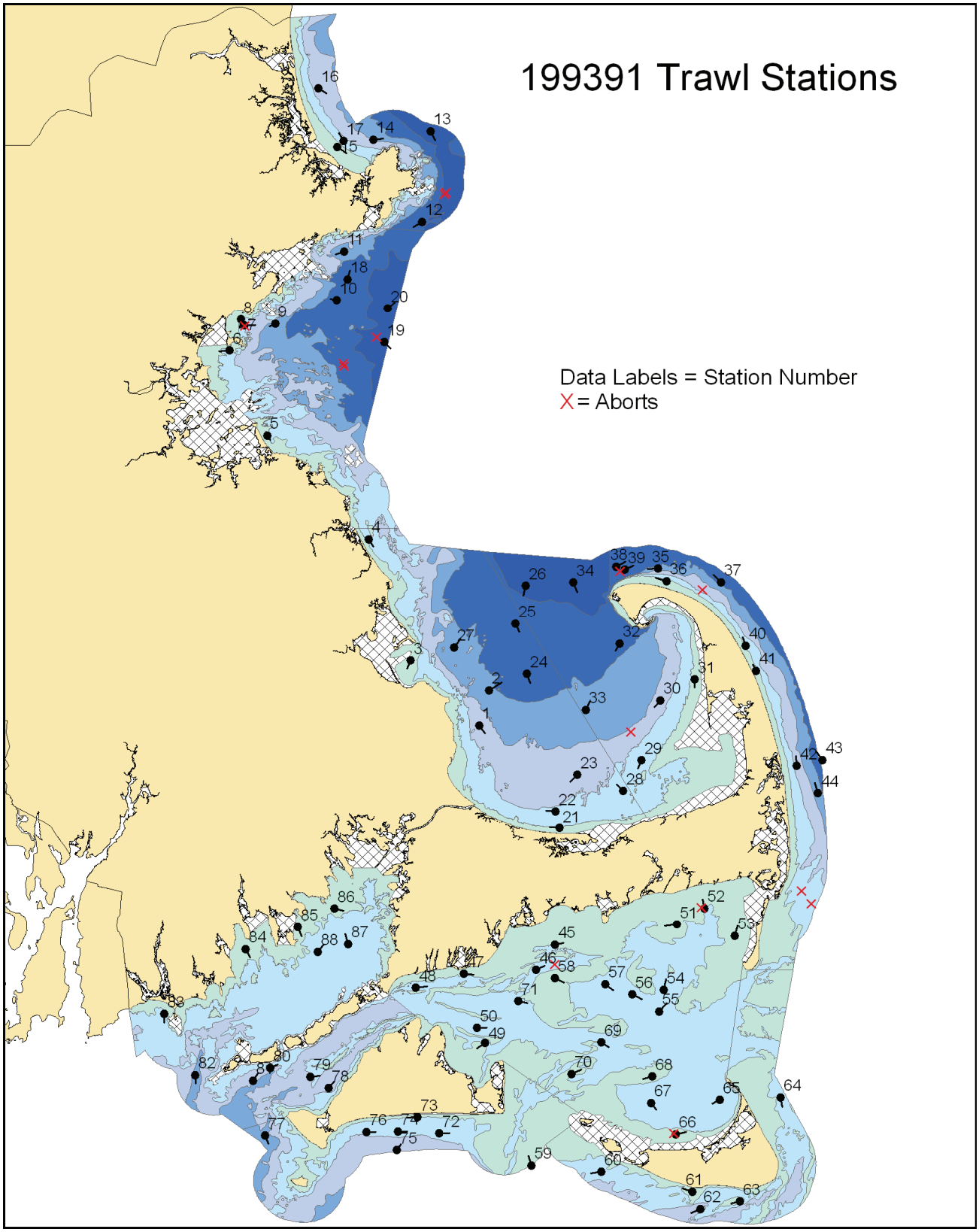


Figure I.B.1. continued.



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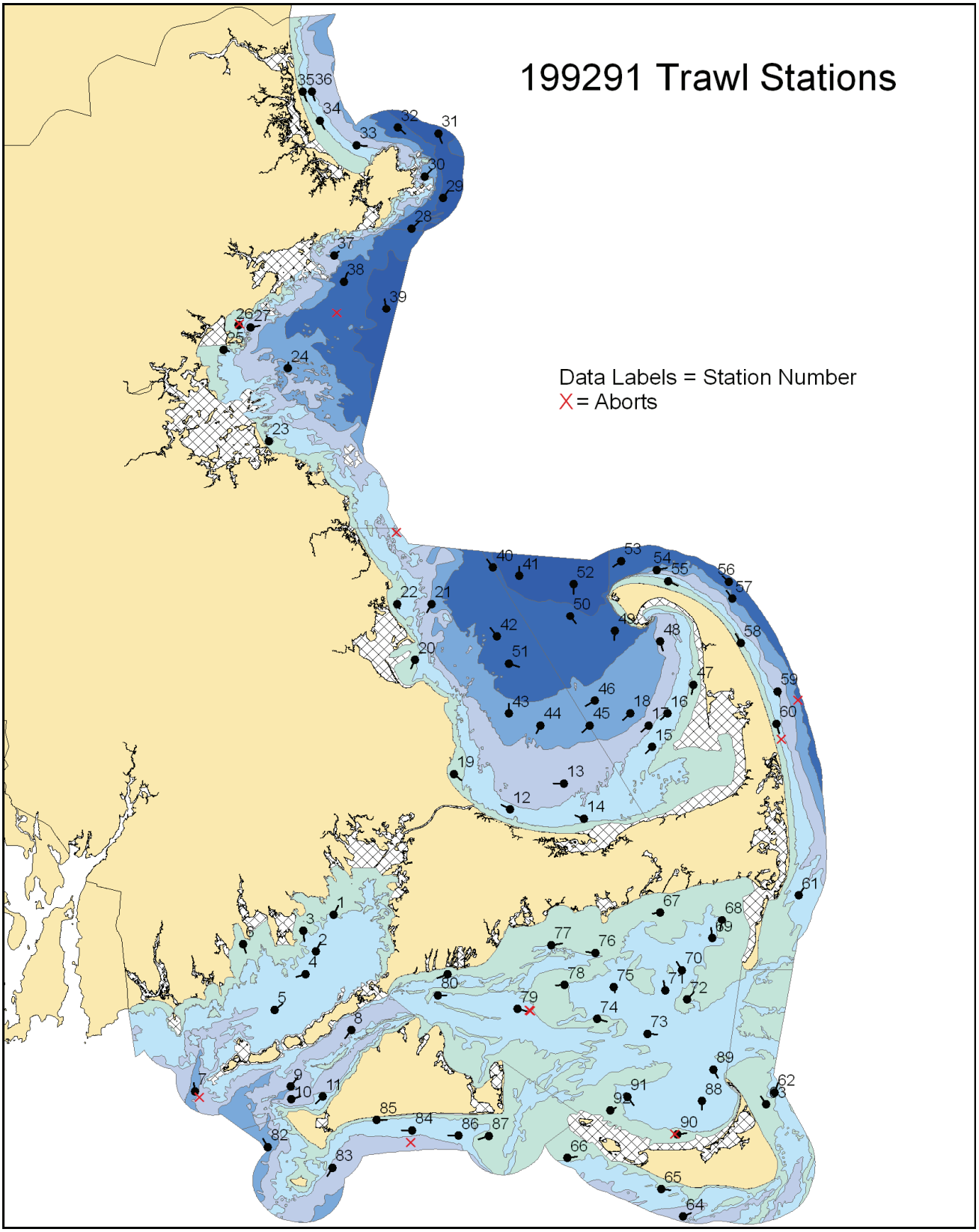

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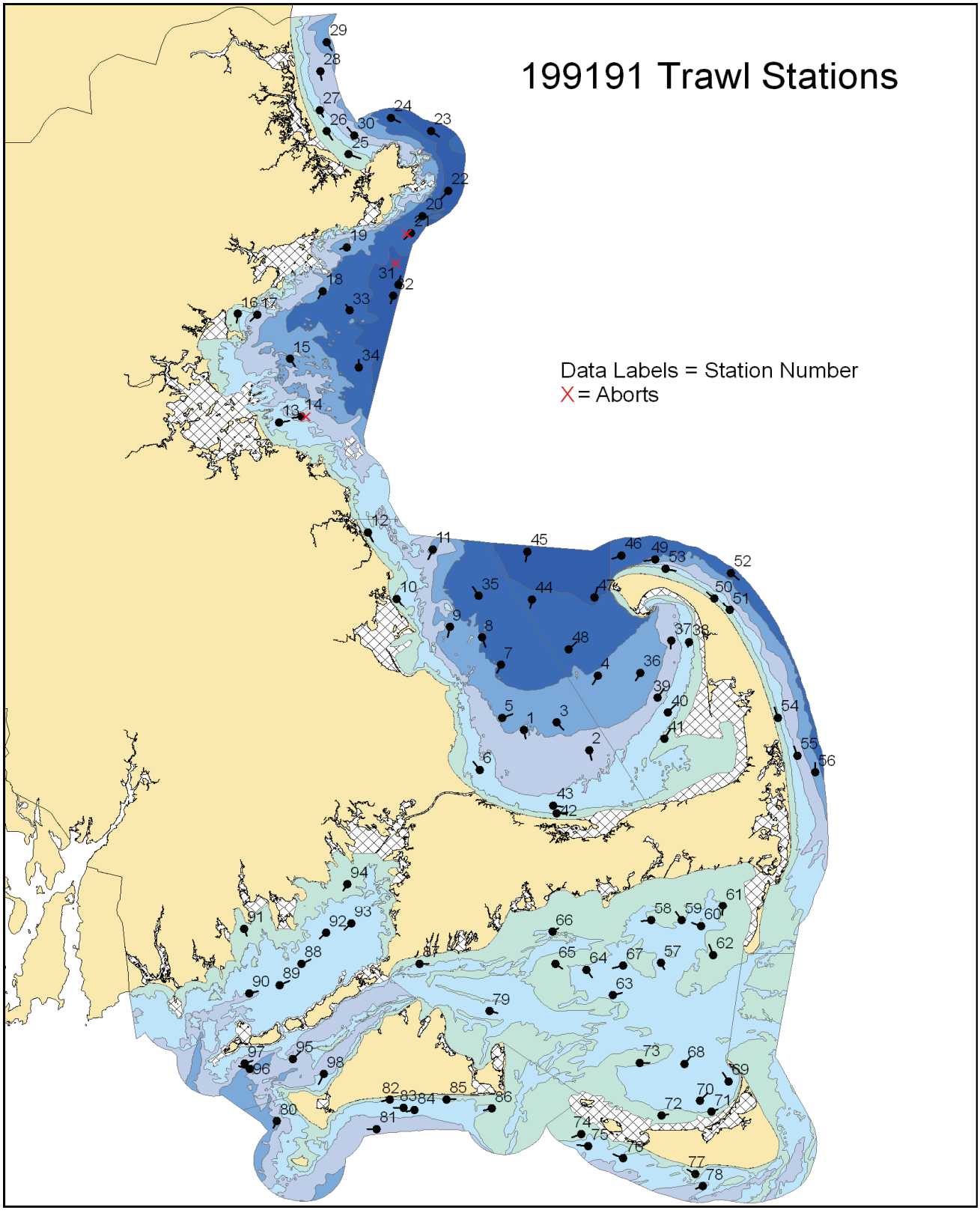

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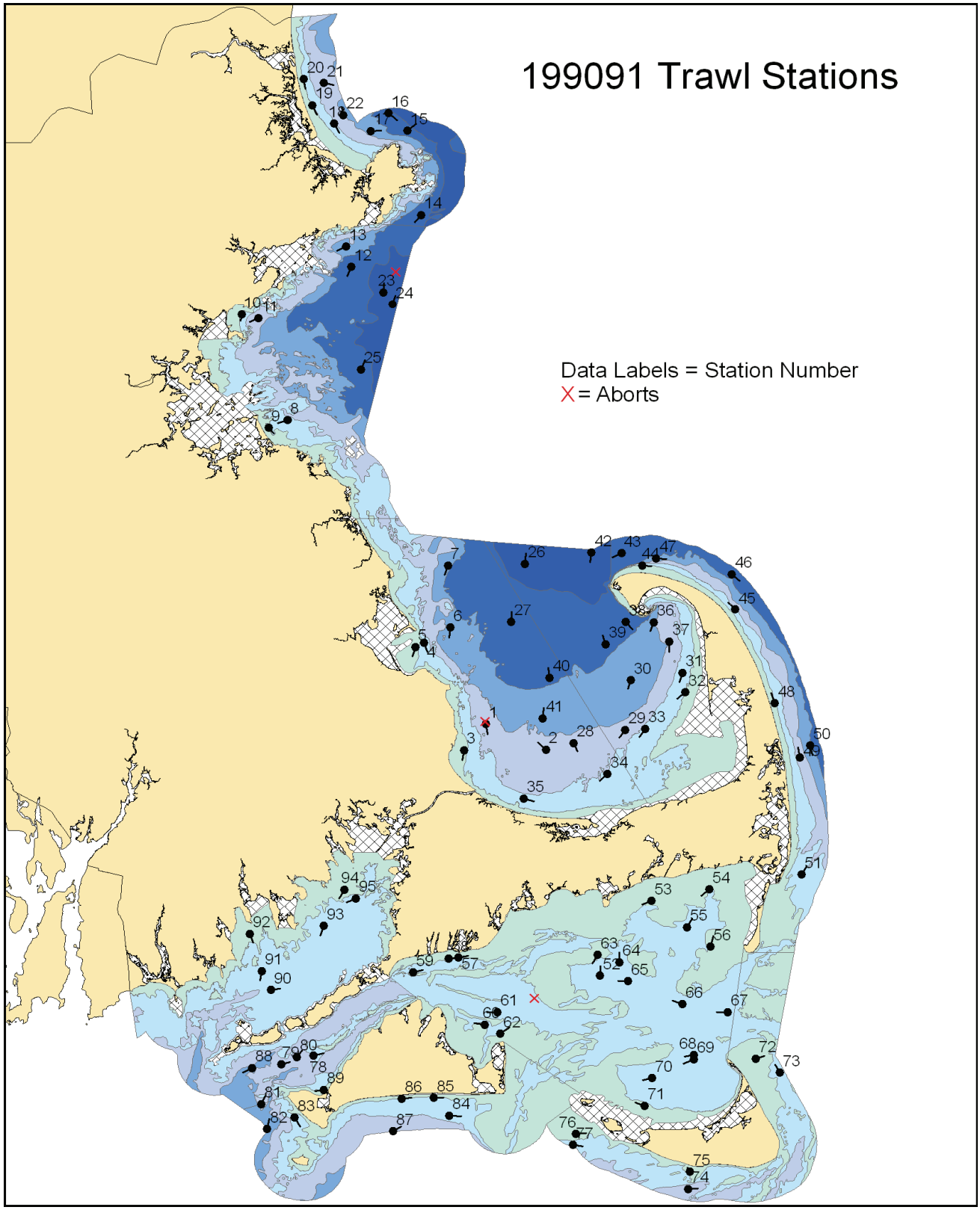


Figure I.B.1. continued.

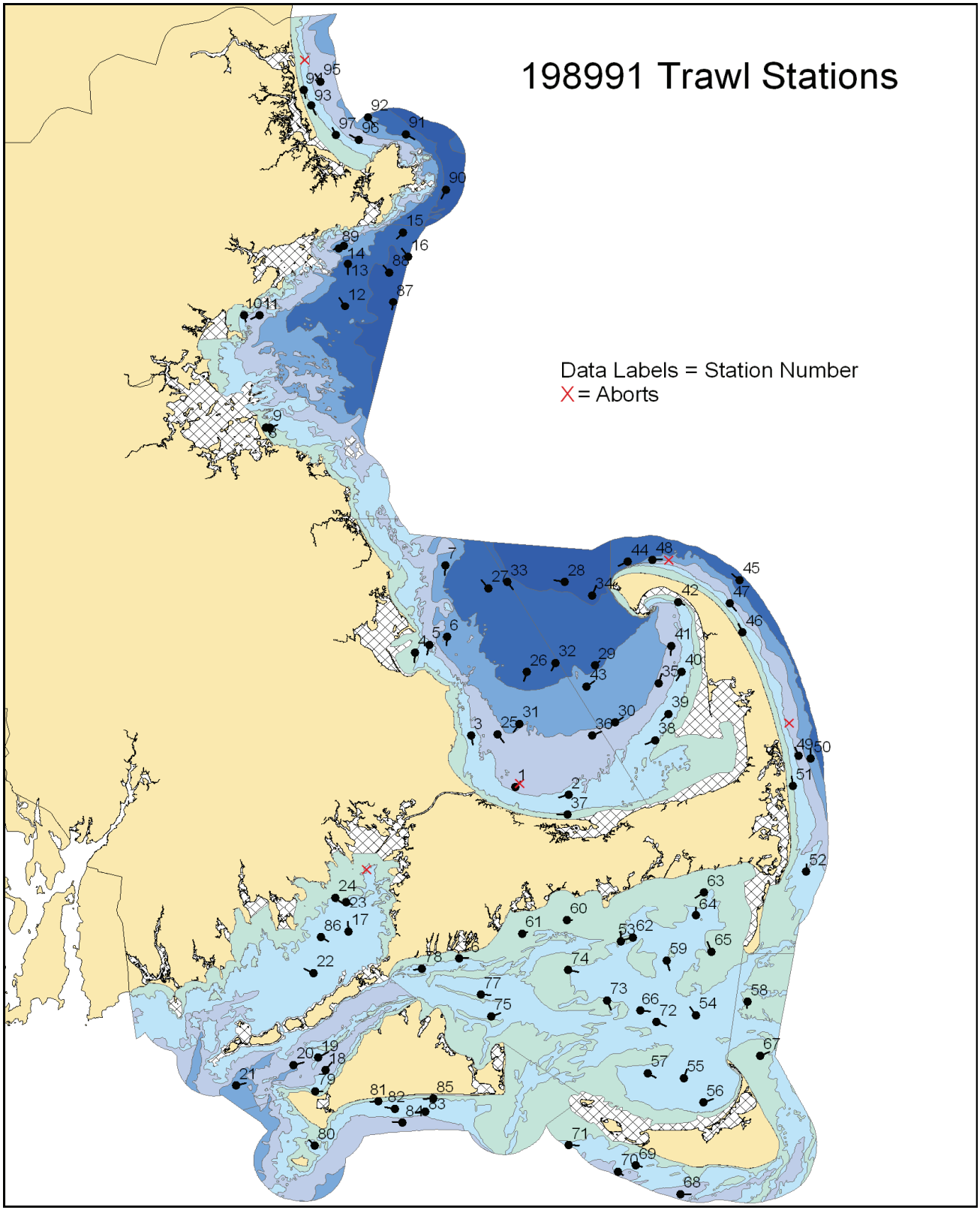
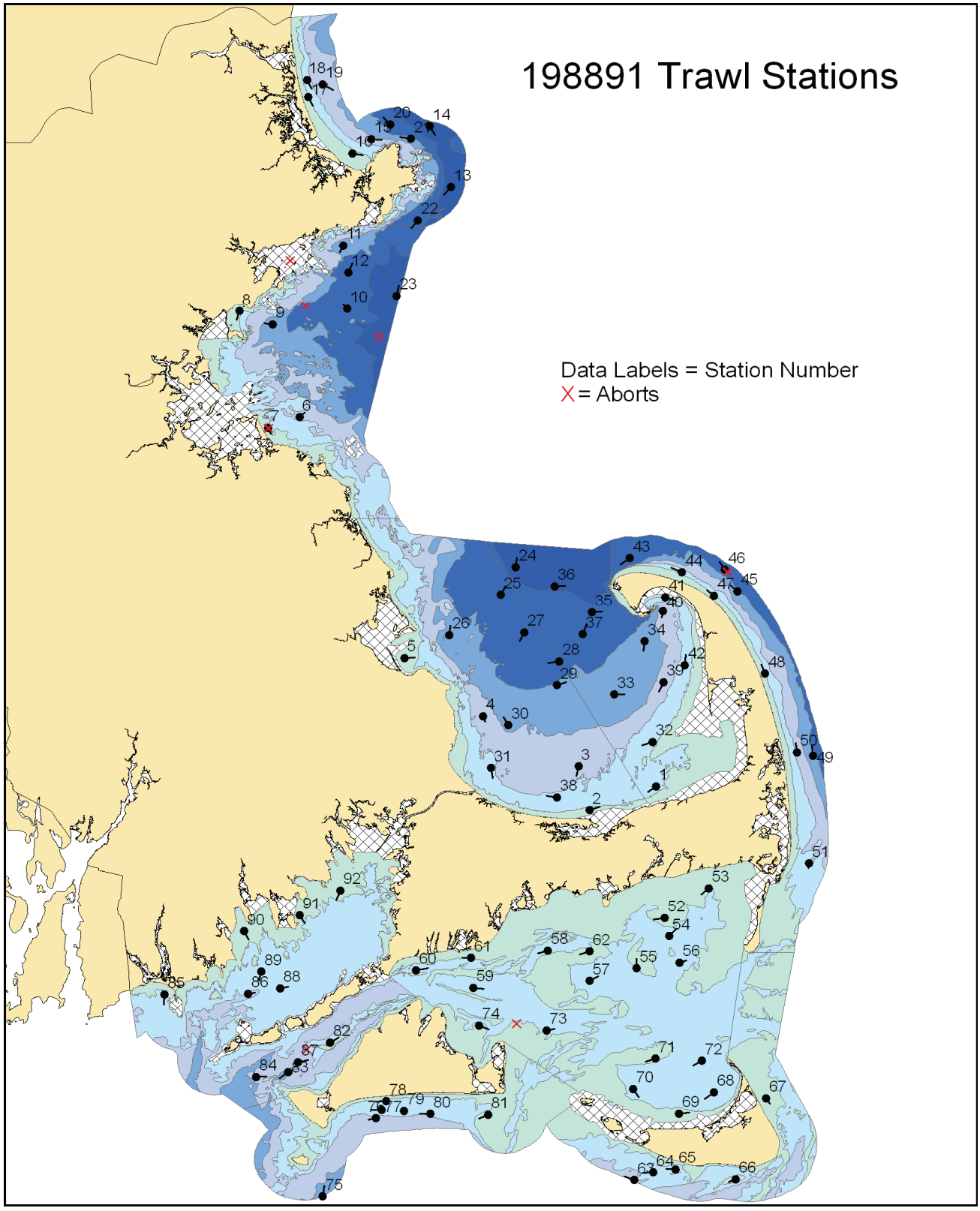


Figure I.B.1. continued.



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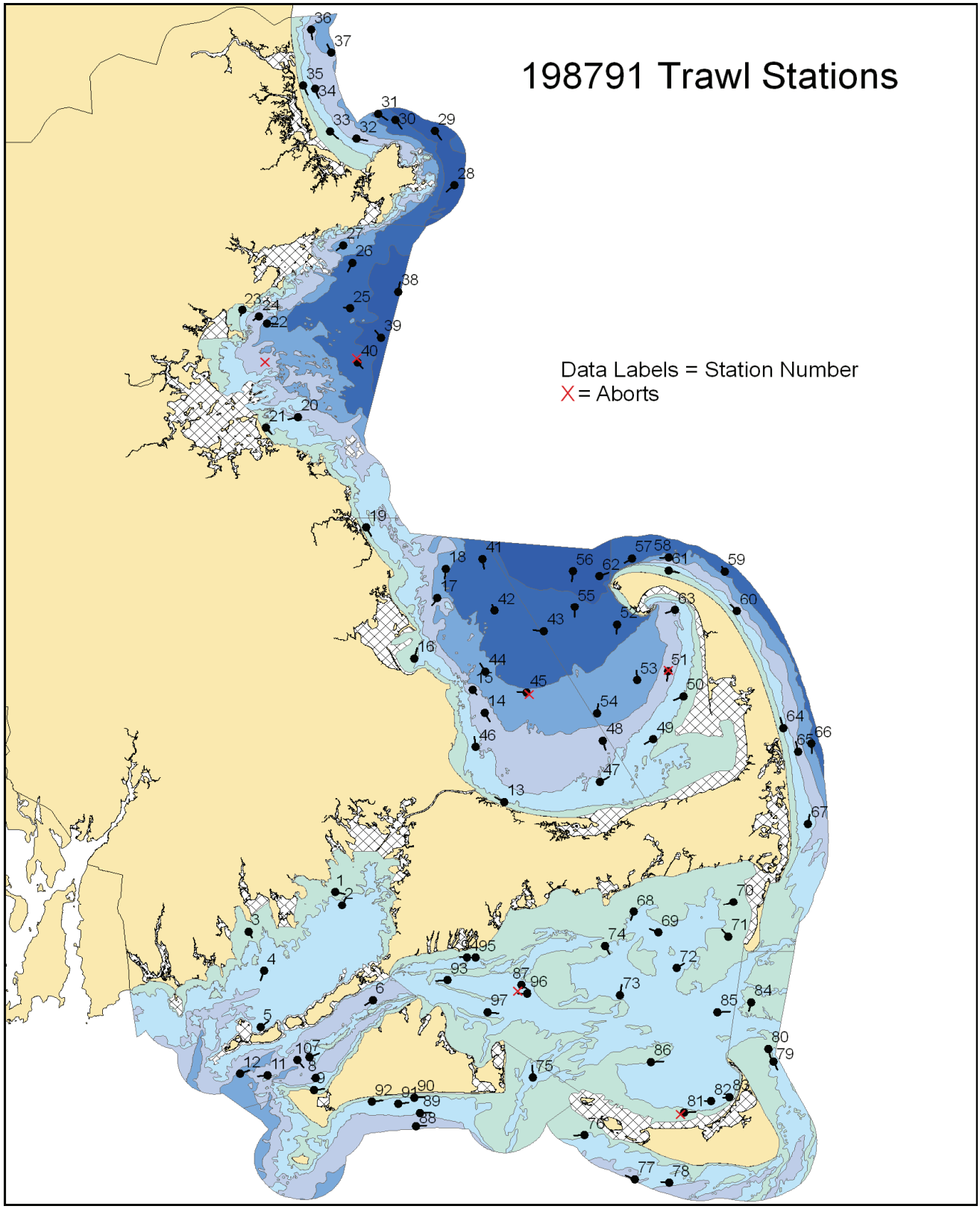


Figure I.B.1. continued.

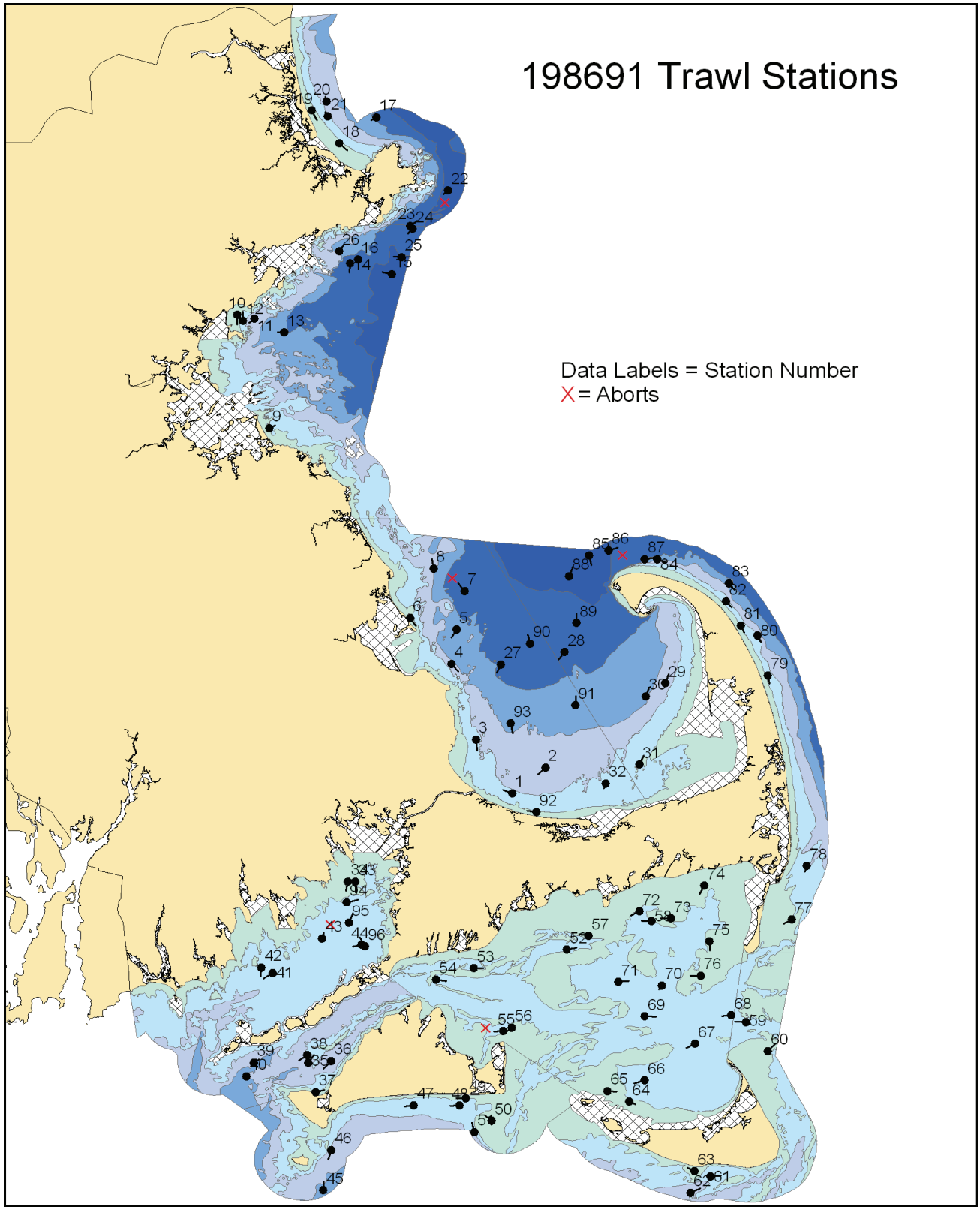


Figure I.B.1. continued.

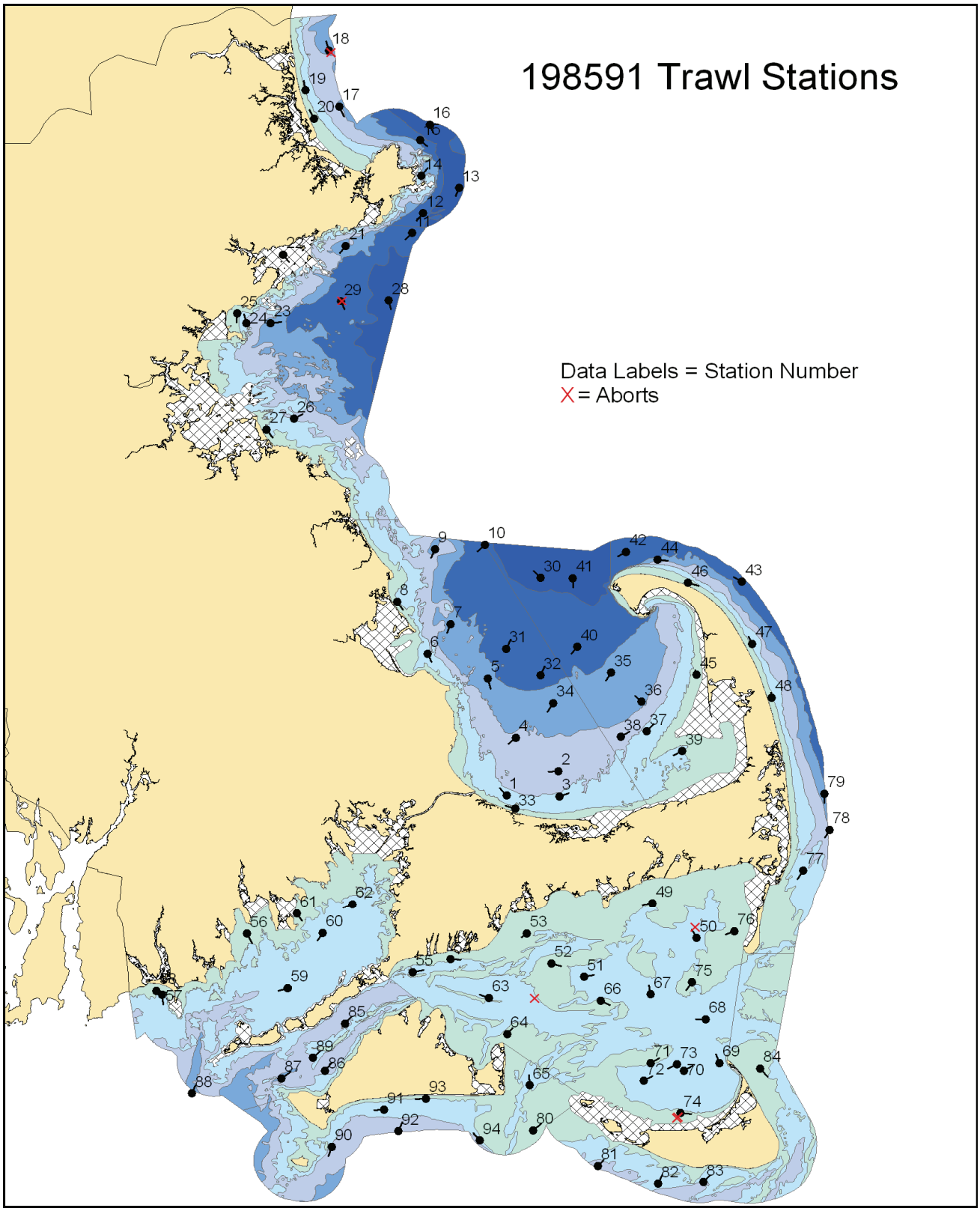


Figure I.B.1. continued.

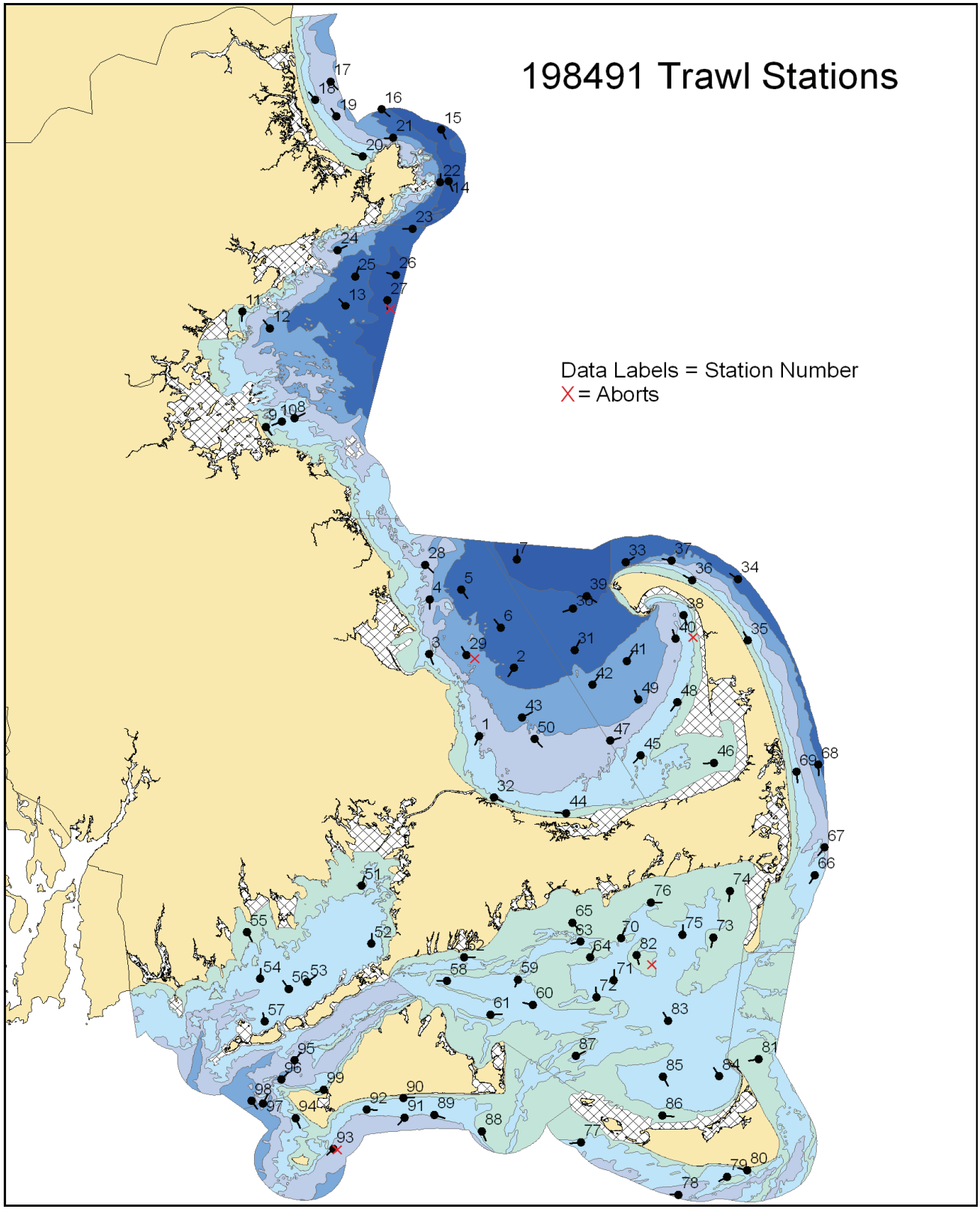
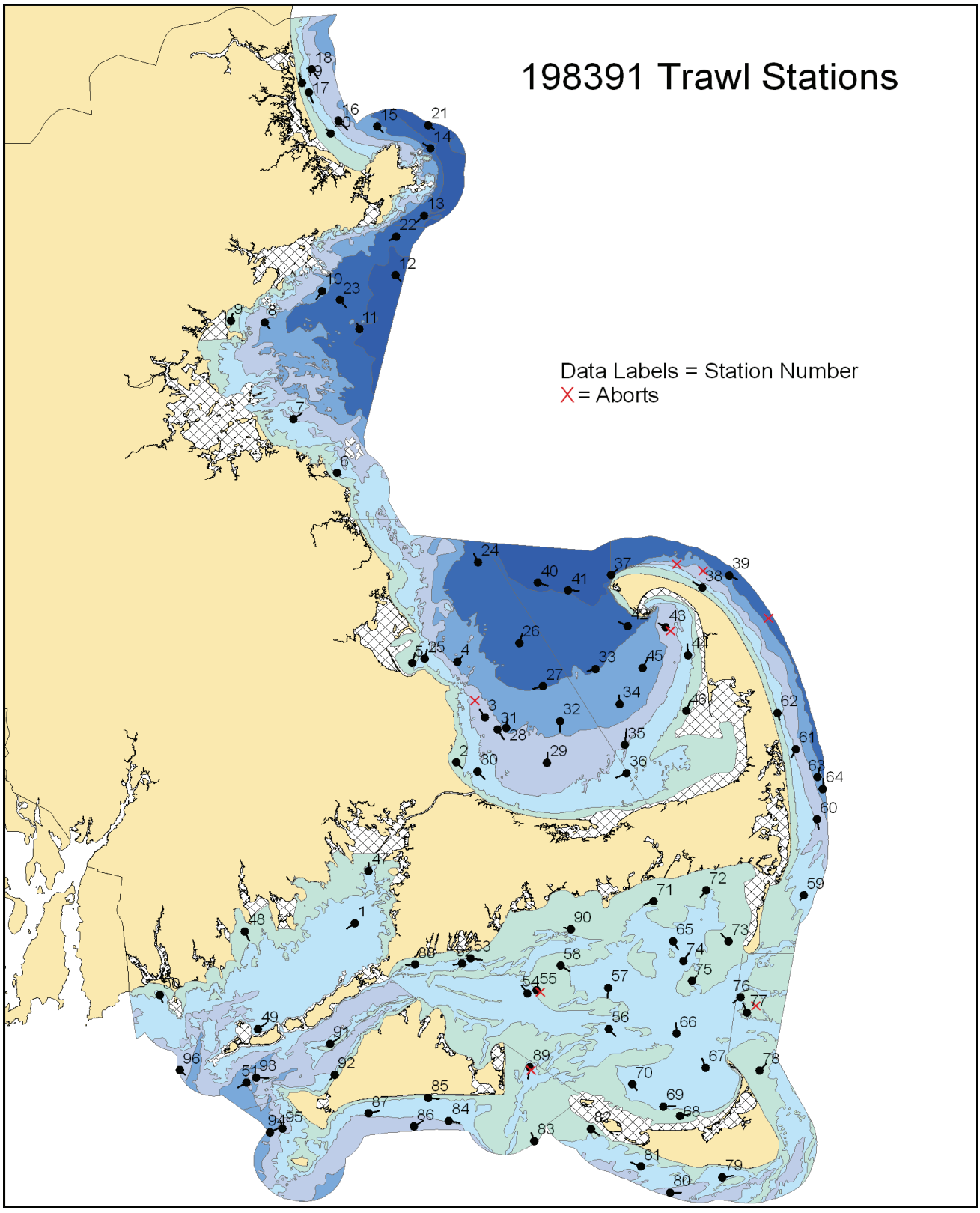


Figure I.B.1. continued.



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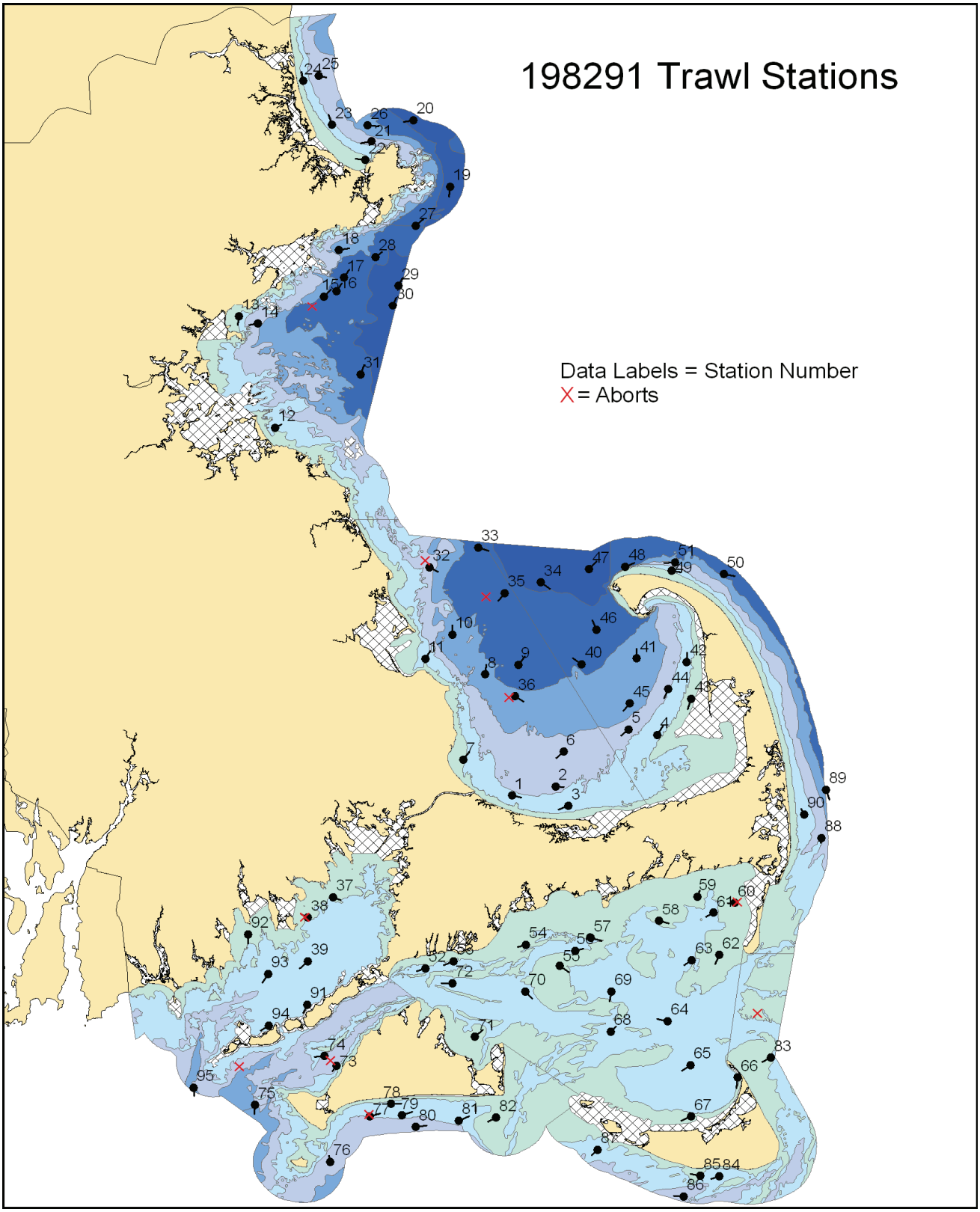

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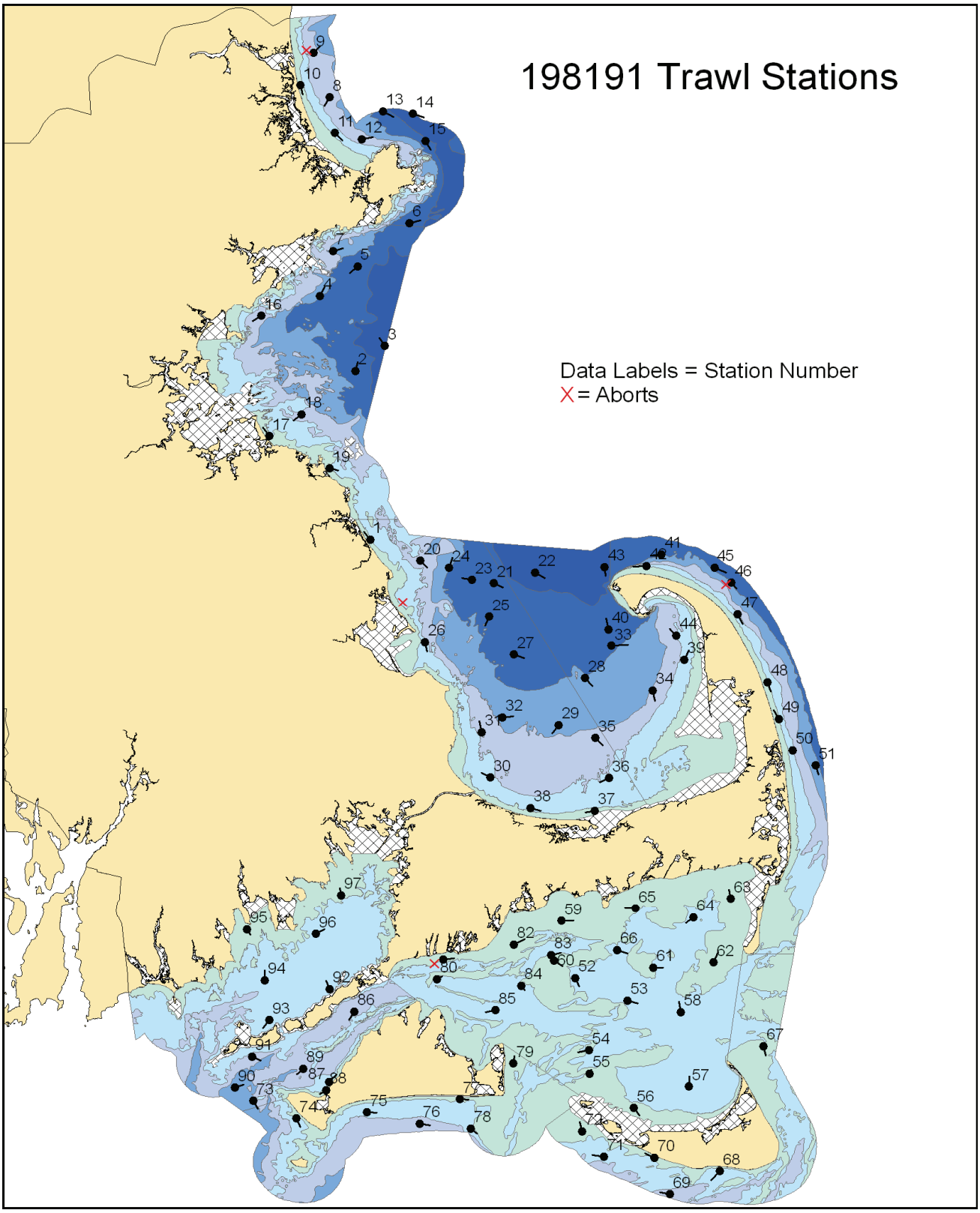

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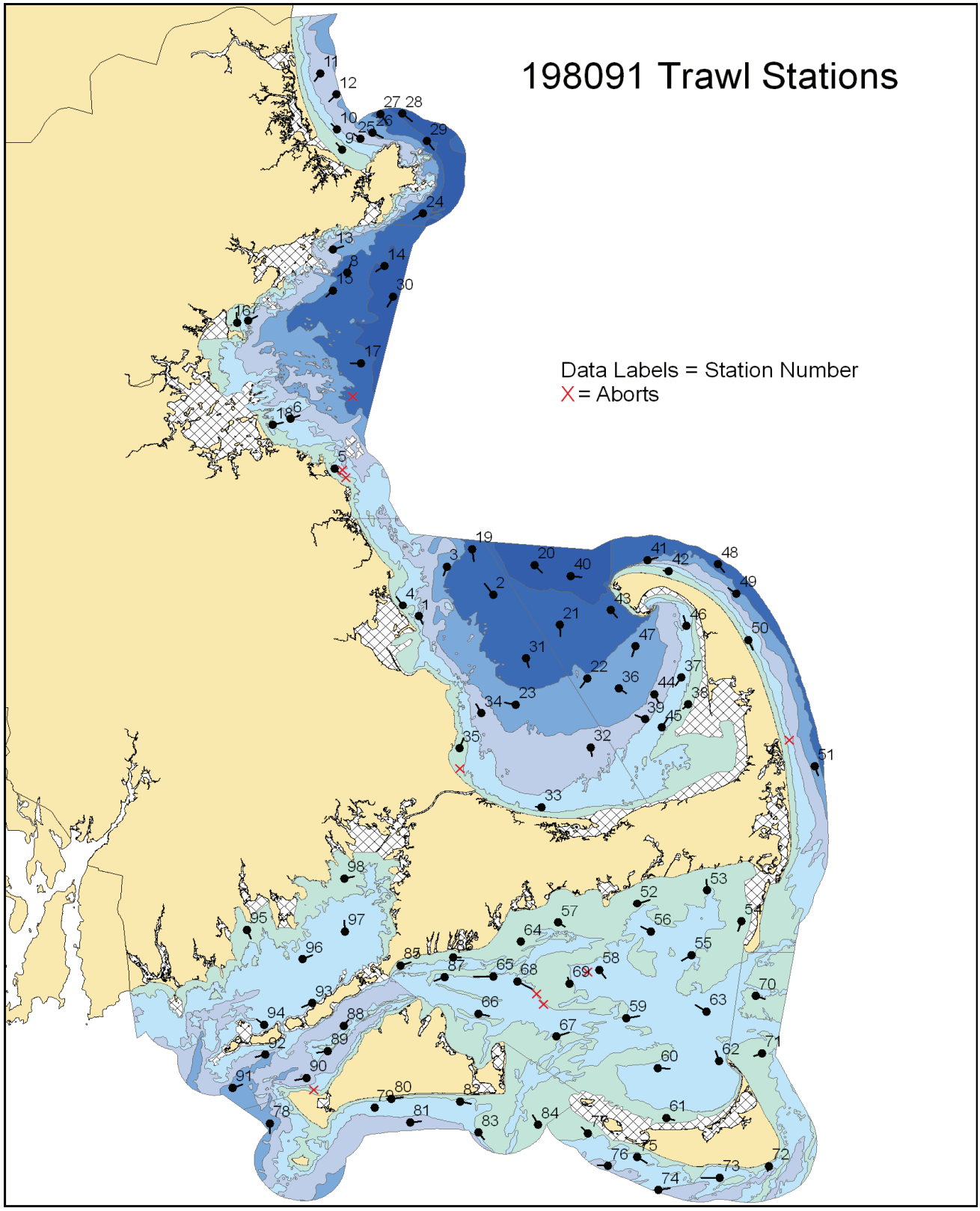

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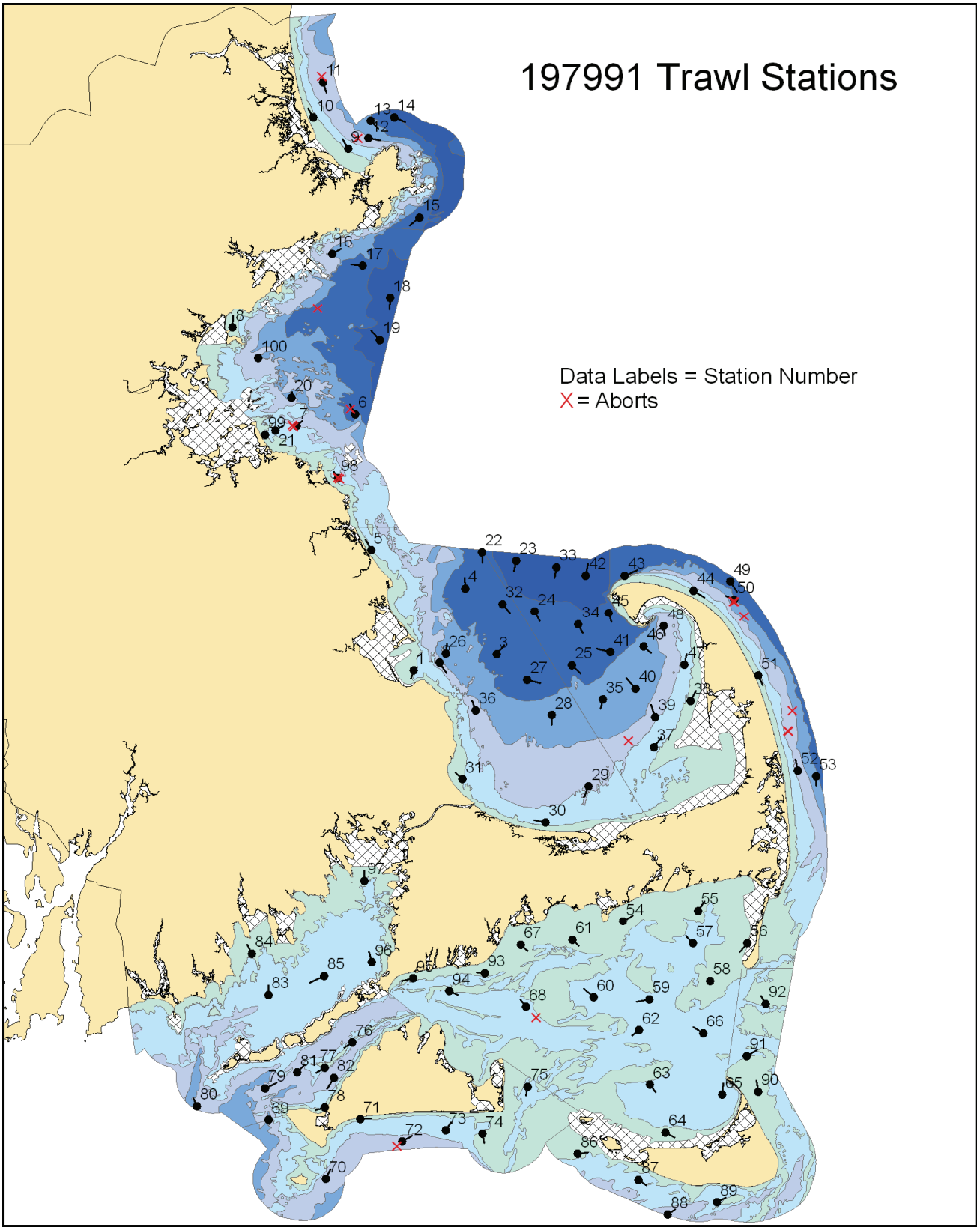

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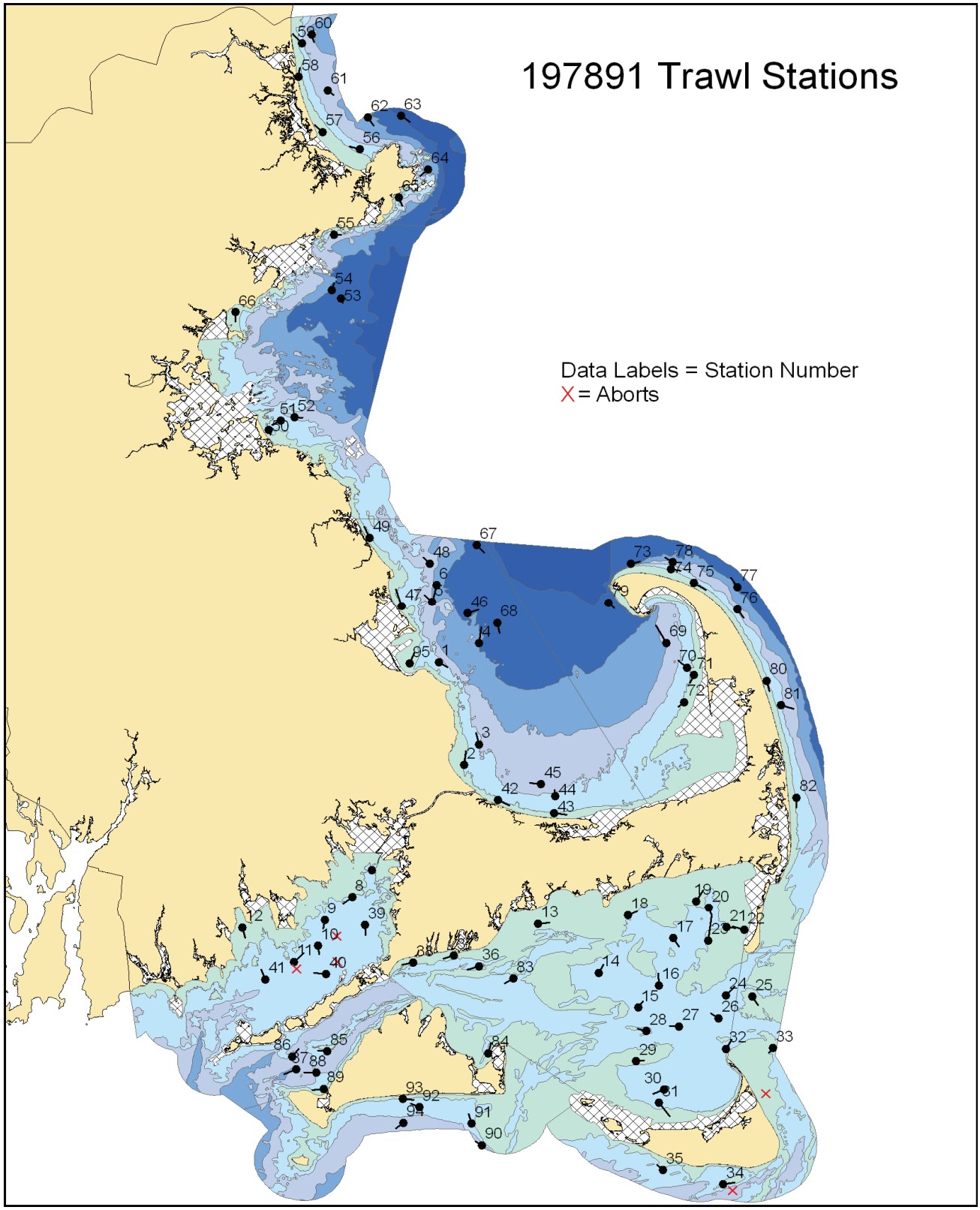


I. Spring Survey

C. Survey Timing (See table and figure series I.C)

With the exception of 1978-1979, all spring survey stations have been completed in May. The survey is conducted seven days per week unless weather or equipment repairs interrupt operations. Date of completion of each representative (SHG $\leq$ 136) station was converted to Julian date to facilitate comparisons between surveys. The box plots in section C demonstrate the median (solid line), interquartile range (box), 1.5x the interquartile range (whiskers), and outliers (open circles) of survey station dates on each cruise for each individual region, all regions combined, and regional groups.

Table I.C.1. List of *MarineFisheries* spring survey cruises, start/end dates and survey vessel.

YEAR	CRUISE	BEGIN	END	SURVEY VESSEL	HOME PORT
1978	197891	12-May	10-Jun	F/V Frances Elizabeth	Plymouth, MA
1979	197991	30-Apr	27-May	F/V Frances Elizabeth	Plymouth, MA
1980	198091	5-May	24-May	F/V Frances Elizabeth	Plymouth, MA
1981	198191	6-May	21-May	F/V Frances Elizabeth	Plymouth, MA
1982	198291	4-May	21-May	R/V Gloria Michelle	Quonset Point, RI
1983	198391	9-May	25-May	R/V Gloria Michelle	Quonset Point, RI
1984	198491	7-May	22-May	R/V Gloria Michelle	Quonset Point, RI
1985	198591	6-May	22-May	R/V Gloria Michelle	Quonset Point, RI
1986	198691	5-May	21-May	R/V Gloria Michelle	Quonset Point, RI
1987	198791	5-May	19-May	R/V Gloria Michelle	Quonset Point, RI
1988	198891	9-May	25-May	R/V Gloria Michelle	Quonset Point, RI
1989	198991	8-May	24-May	R/V Gloria Michelle	Quonset Point, RI
1990	199091	7-May	23-May	R/V Gloria Michelle	Quonset Point, RI
1991	199191	7-May	22-May	R/V Gloria Michelle	Sandy Hook, NJ
1992	199291	5-May	20-May	R/V Gloria Michelle	Sandy Hook, NJ
1993	199391	5-May	19-May	R/V Gloria Michelle	Sandy Hook, NJ
1994	199491	10-May	25-May	R/V Gloria Michelle	Sandy Hook, NJ
1995	199591	9-May	24-May	R/V Gloria Michelle	Sandy Hook, NJ
1996	199691	7-May	22-May	R/V Gloria Michelle	Sandy Hook, NJ
1997	199791	6-May	21-May	R/V Gloria Michelle	Sandy Hook, NJ
1998	199891	5-May	20-May	R/V Gloria Michelle	Sandy Hook, NJ
1999	199991	11-May	27-May	R/V Gloria Michelle	Sandy Hook, NJ
2000	200091	9-May	24-May	R/V Gloria Michelle	Sandy Hook, NJ
2001	200191	8-May	23-May	R/V Gloria Michelle	Woods Hole, MA
2002	200291	7-May	22-May	R/V Gloria Michelle	Woods Hole, MA
2003	200391	6-May	21-May	R/V Gloria Michelle	Woods Hole, MA
2004	200491	3-May	20-May	R/V Gloria Michelle	Woods Hole, MA
2005	200591	10-May	28-May	R/V Gloria Michelle	Woods Hole, MA
2006	200691	8-May	26-May	R/V Gloria Michelle	Woods Hole, MA
2007	200791	7-May	25-May	R/V Gloria Michelle	Woods Hole, MA

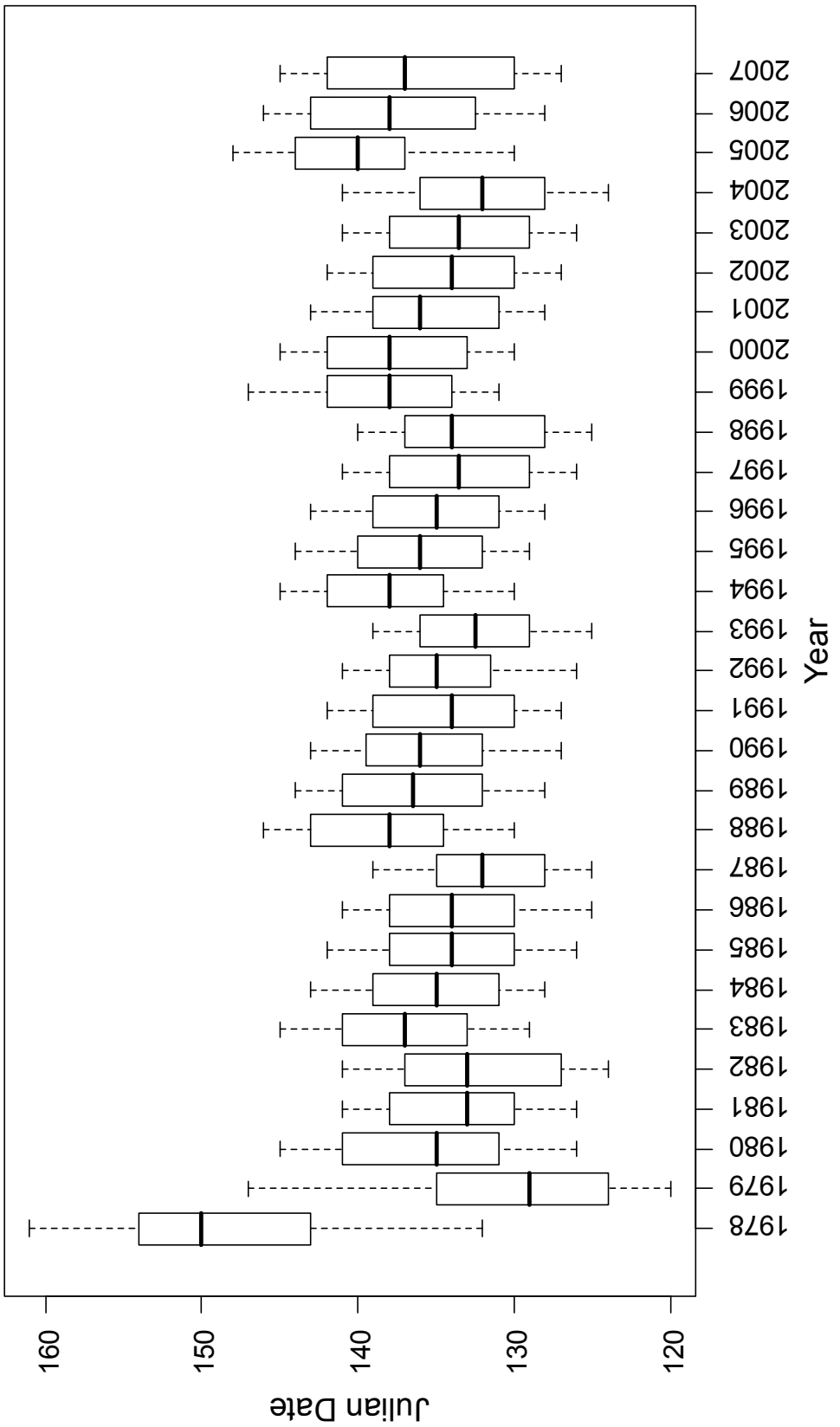


Figure I.C.1. Distribution of *MarineFisheries* spring survey station dates by cruise, 1978 – 2007, all regions.

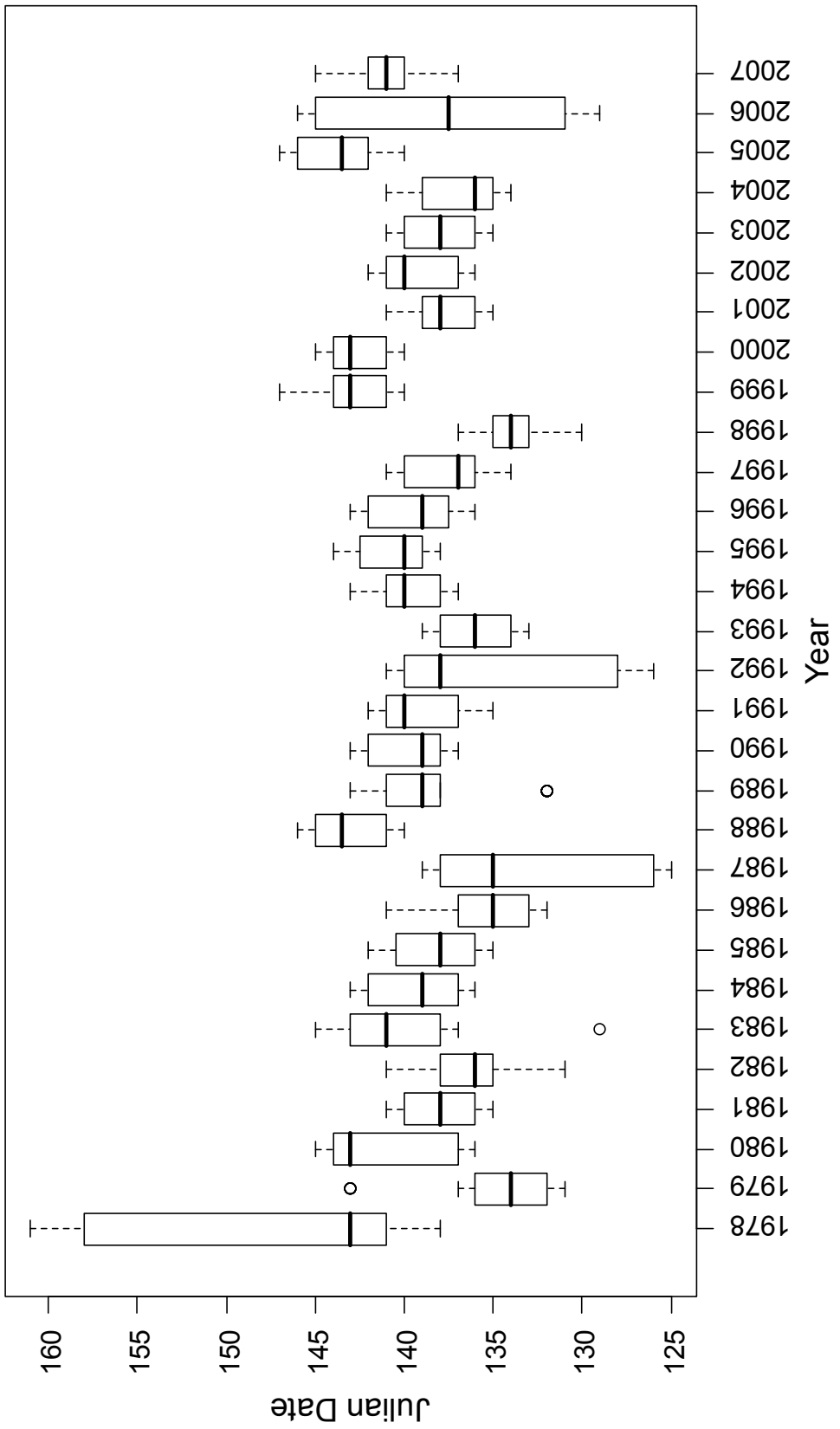


Figure I.C.2. Distribution of *MarineFisheries* spring survey station dates by cruise, 1978 – 2007, regions 1 - 2.

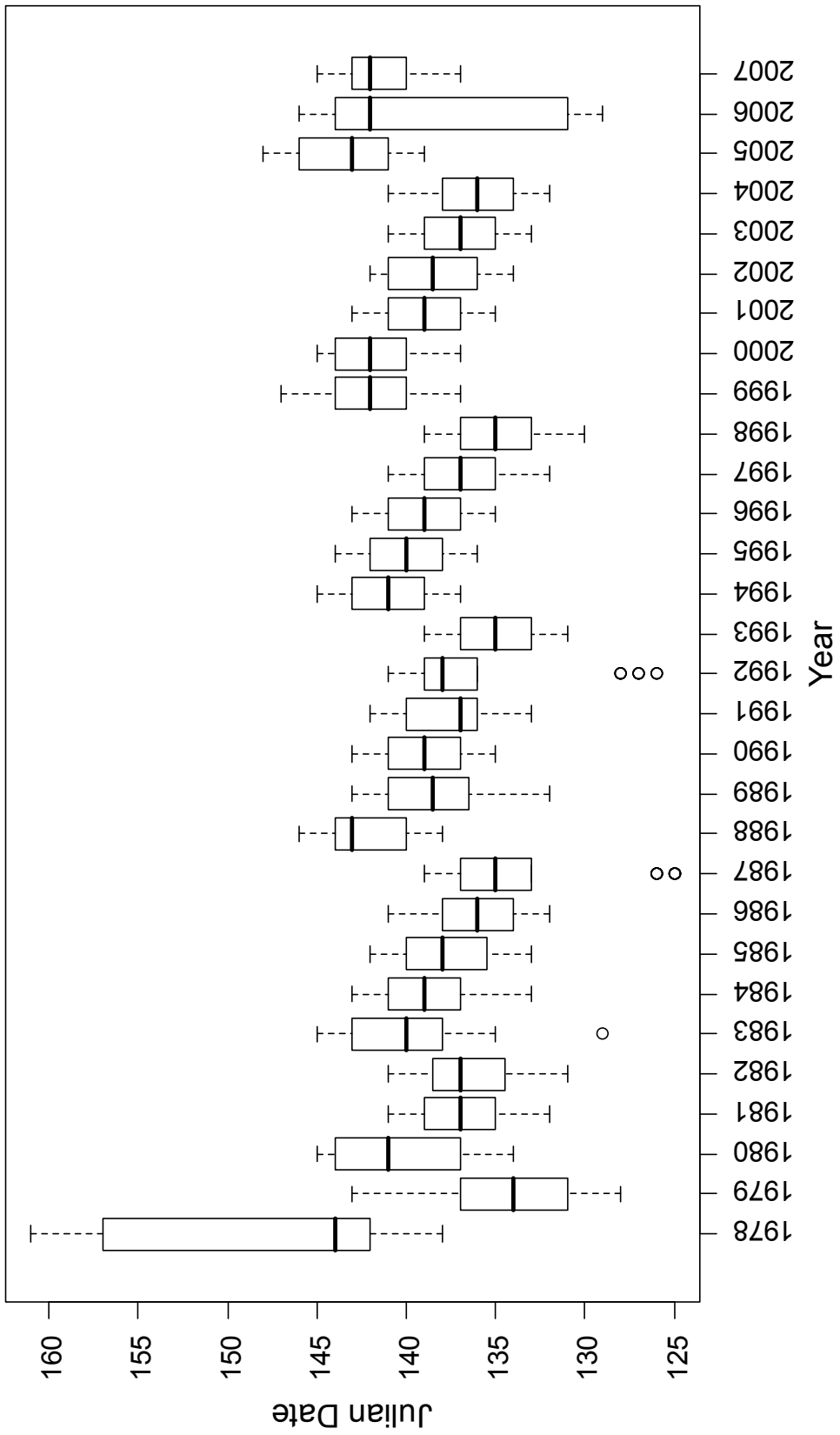


Figure I.C.3. Distribution of *MarineFisheries* spring survey station dates by cruise, 1978 – 2007, regions 1 - 3.

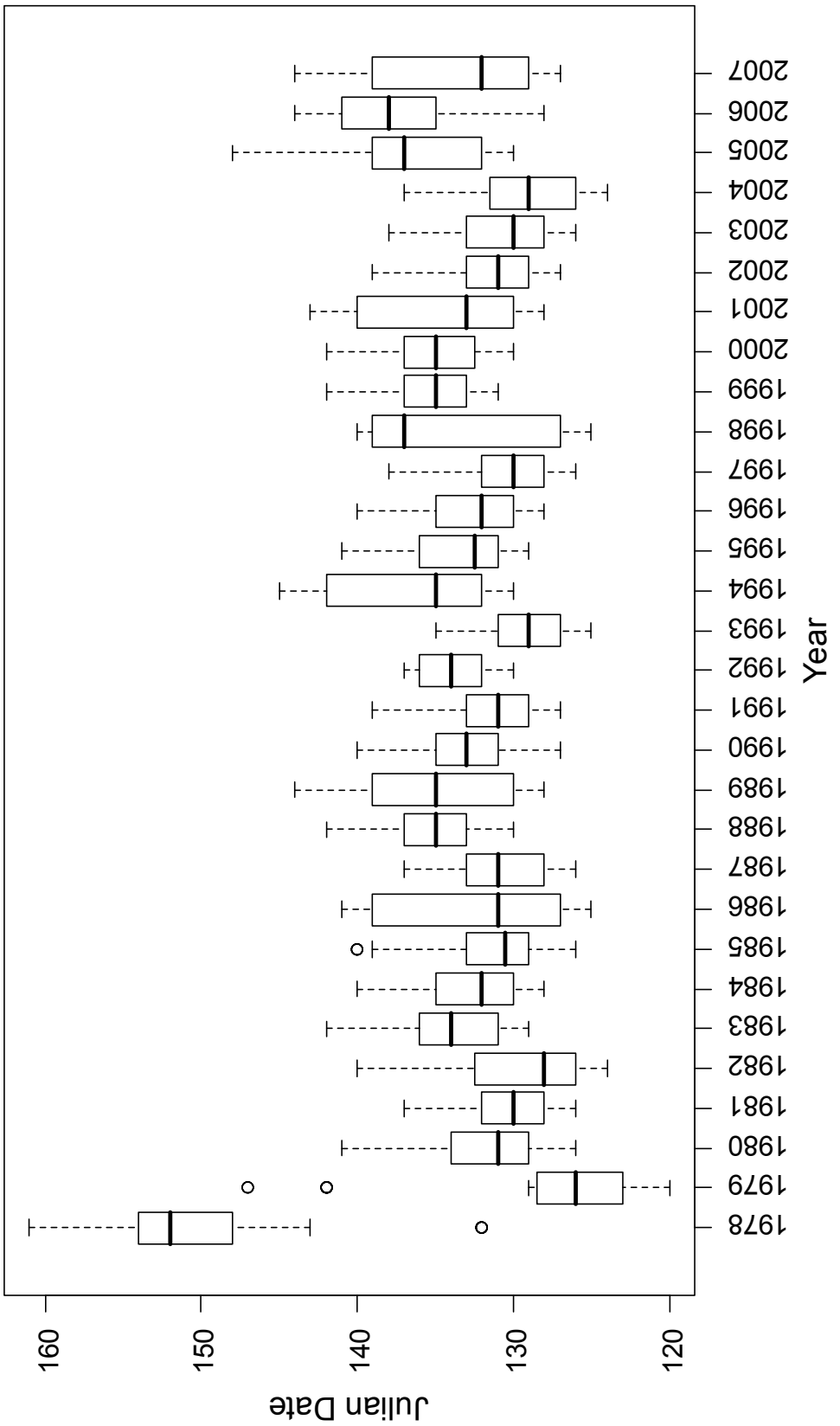


Figure I.C.4. Distribution of *MarineFisheries* spring survey station dates by cruise, 1978 – 2007, regions 3 - 5.

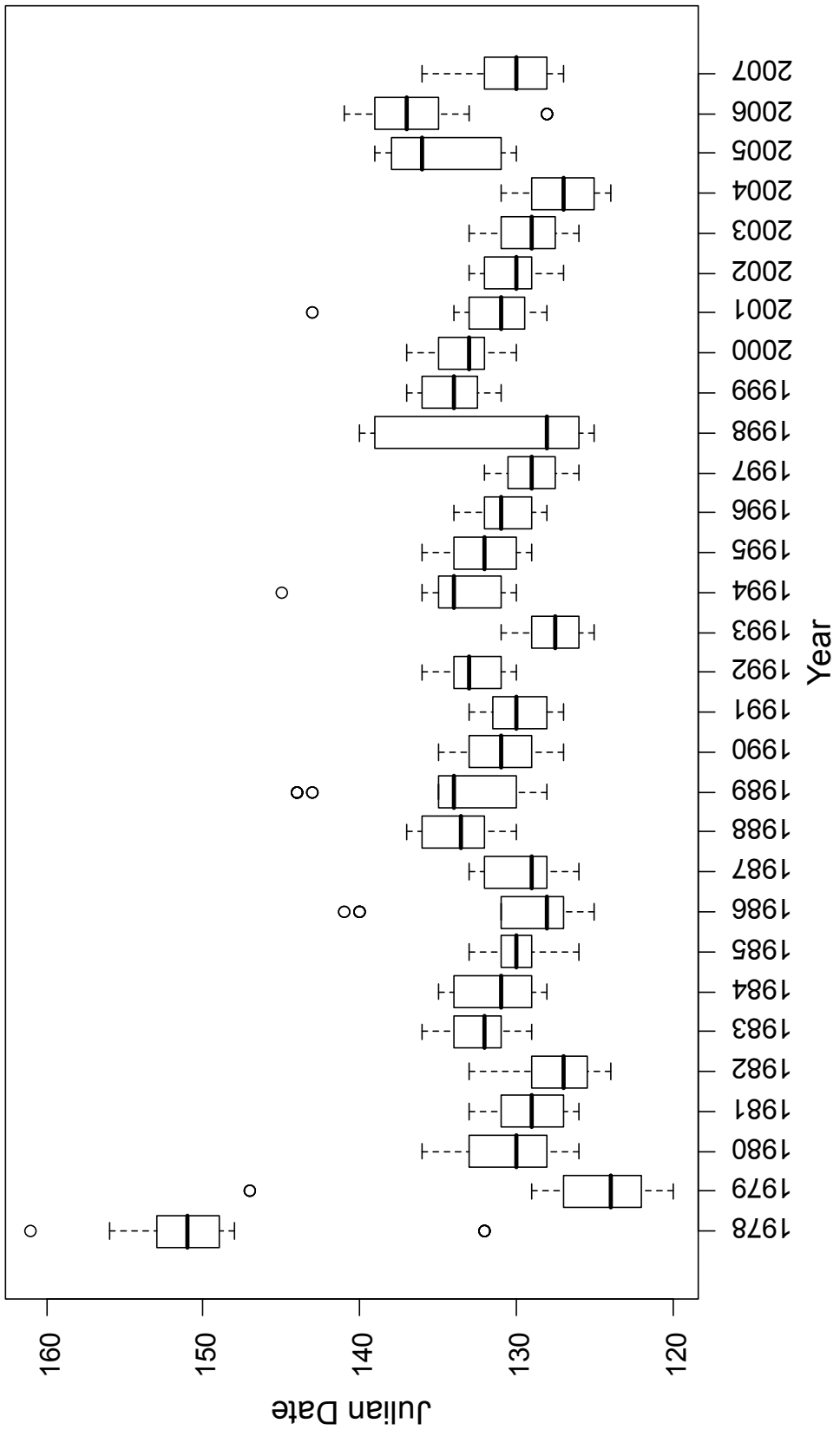


Figure I.C.5. Distribution of *MarineFisheries* spring survey station dates by cruise, 1978 – 2007, regions 4 - 5.

Figure I.C.6. Distribution of *MarineFisheries* spring survey station dates by region, 1978 – 2007.

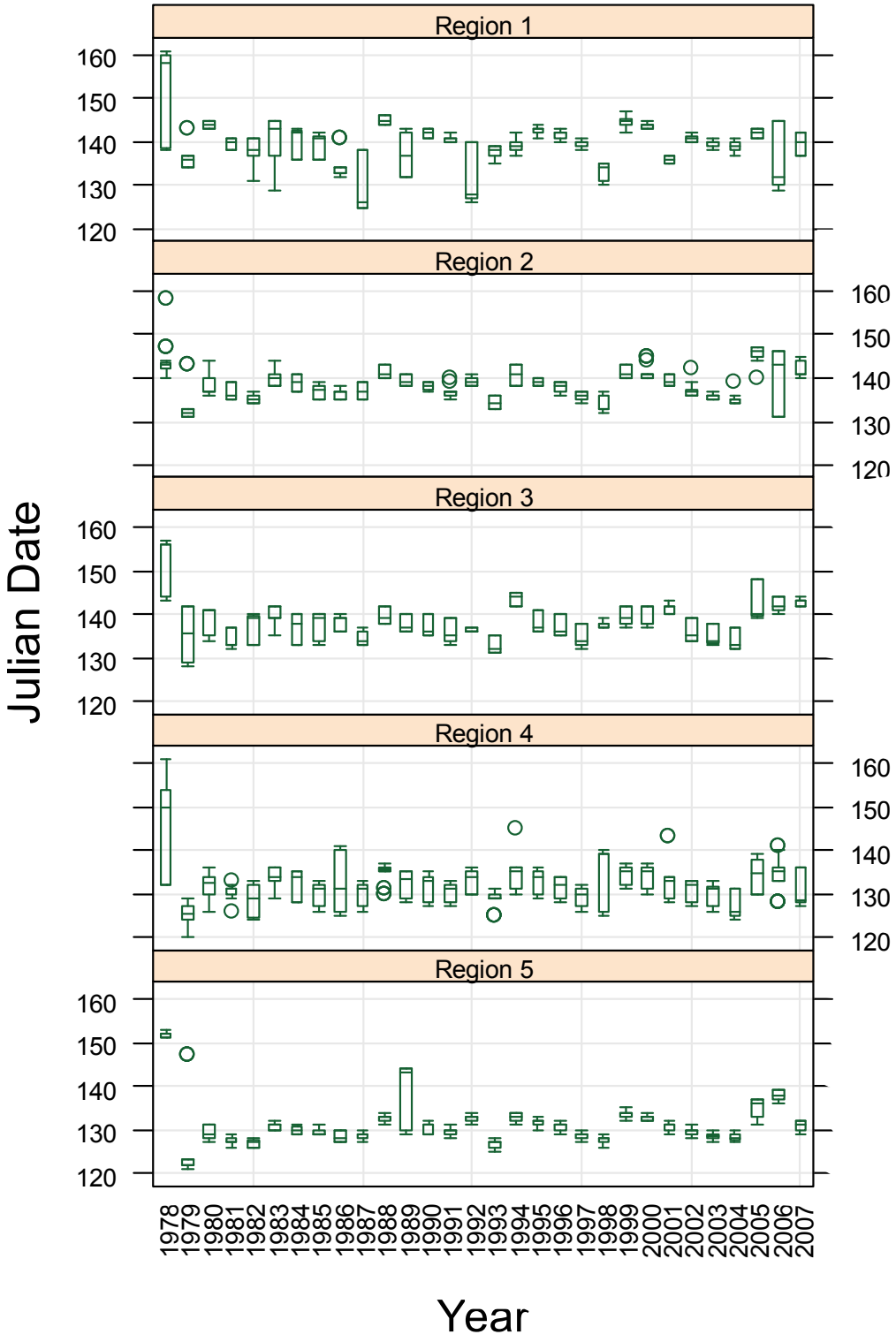


Table I.C.2. Median date of *MarineFisheries* spring survey station effort by regional groups, 1978 – 2007. Representative tows only (SHG ≤ 136).

	R1_5	R1_2	R1_3	R3_5	R4_5
1978	150	143	144	152	151
1979	129	134	134	126	124
1980	135	143	141	131	130
1981	133	138	137	130	129
1982	133	136	137	128	127
1983	137	141	140	134	132
1984	135	139	139	132	131
1985	134	138	138	130	130
1986	134	135	136	131	128
1987	132	135	135	131	129
1988	138	144	143	135	134
1989	136	139	138	135	134
1990	136	139	139	133	131
1991	134	140	137	131	130
1992	135	138	138	134	133
1993	132	136	135	129	128
1994	138	140	141	135	134
1995	136	140	140	132	132
1996	135	139	139	132	131
1997	134	137	137	130	129
1998	134	134	135	137	128
1999	138	143	142	135	134
2000	138	143	142	135	133
2001	136	138	139	133	131
2002	134	140	138	131	130
2003	134	138	137	130	129
2004	132	136	136	129	127
2005	140	144	143	137	136
2006	138	138	142	138	137
2007	137	141	142	132	130

Table I.C.3. Median date of *MarineFisheries* spring survey station effort by region, 1978 – 2007. Representative tows only (SHG ≤ 136).

	R1	R2	R3	R4	R5
1978	158	143	156	150	152
1979	136	132	136	126	122
1980	144	137	141	132	129
1981	140	136	133	131	127
1982	138	135	139	129	127
1983	143	140	139	134	131
1984	142	139	138	134	130
1985	141	138	139	131	129
1986	133	137	139	131	128
1987	126	137	134	131	129
1988	145	141	139	136	133
1989	137	139	137	134	143
1990	142	138	136	133	131
1991	141	137	135	131	130
1992	128	139	136	134	133
1993	138	134	132	129	127
1994	139	141	144	135	133
1995	143	139	137	134	132
1996	142	138	136	132	131
1997	140	136	134	130	129
1998	134	133	138	139	128
1999	145	141	139	135	134
2000	144	141	138	135	133
2001	136	139	142	133	131
2002	141	137	135	132	130
2003	140	136	134	131	128
2004	139	135	133	126	128
2005	142	146	140	134	136
2006	132	143	142	135	138
2007	140	141	143	128	131

I. Spring Survey

D. Bottom Temperature Observations (See table and figure series I.D)

From 1978 – 2003 bottom temperatures were measured after haulback at each station by lowering a Hydrolab T4 thermister (1978-1986) or Hydrolab Scout 2 CTD (1987 – 2003) to the bottom. In 2001, a Vemco Minilogger attached to the headrope of the trawl replaced the malfunctioning CTD at seventeen stations. From spring 2004 – present, bottom temperatures have been recorded with an Onset Computer Corp. Tidbit Temperature Logger (Tidbit). A mean of all recorded Tidbit temperatures between 5 minutes after the trawl is set until haulback is assigned as the bottom temperature for each station. Equipment failure or lack of station completion has resulted in gaps where no temperatures were available for a stratum within a season-year. Gaps within any single stratum have been "patched" with timeseries means from each stratum to generate tables and graphs of regional stratified mean bottom temperatures. Any region or regional group means using patched data are clearly noted in the tables and figures. Stratified mean bottom temperatures (Figures D3, D4 and Table D1) are generated with the equation:

$$\overline{C}^{\circ}_{str} = \frac{1}{A}\sum_{h=1}^{L} A_h \overline{C}^{\circ}_{h}$$

Where A_h is the area of stratum h, $\overline{C}^{\circ}_{h}$ is the mean bottom temperature of stratum h,

and A is the total area sampled.

Figure I.D.1. Trends in stratum mean bottom temperatures recorded on the *MarineFisheries* spring survey, 1978 – 2007.

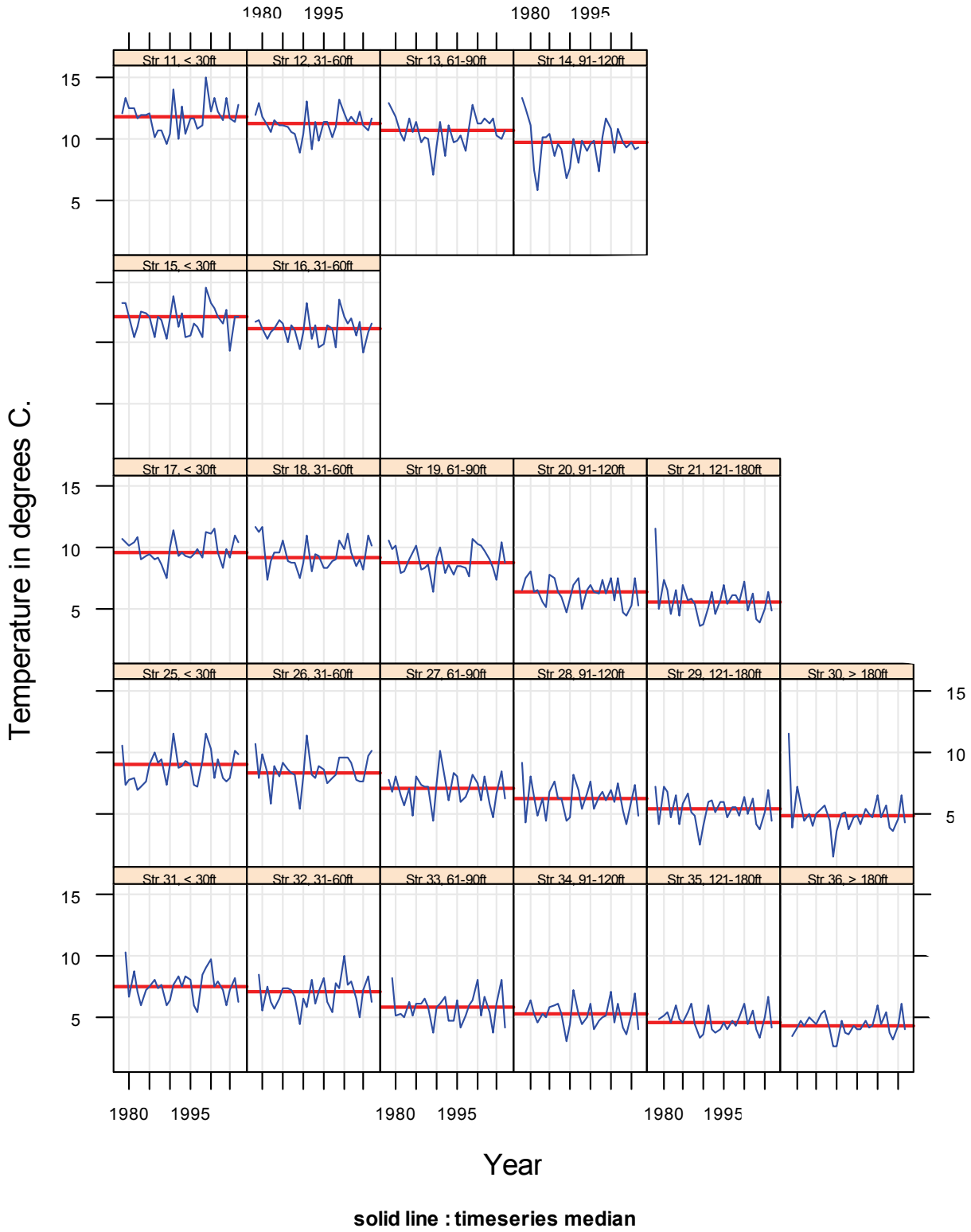


Table I.D.1. Stratum mean bottom temperatures recorded on the *MarineFisheries* spring survey, 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5					
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
1978	12.1	11.8	12.9	13.3	13.2	11.5	10.3	11.5	10.5	6.5	11.5	11.1	10.7	7.8	7.8	7.4	11.5	11.7	7.8	6.8	7.2	7.9	N/A
1979	13.3	12.8	11.8	12.5	13.3	11.5	12.0	11.9	9.9	7.5	5.0	7.3	7.9	6.7	4.2	4.0	3.9	10.4	8.5	6.4	5.5	4.9	3.5
1980	12.5	11.7	11.8	11.1	12.2	11.1	10.2	11.5	10.1	8.0	7.4	7.8	9.8	8.1	8.0	7.2	7.2	6.7	5.6	5.3	6.5	5.2	4.2
1981	12.4	11.0	10.4	7.5	10.5	10.4	10.5	7.6	7.9	6.5	6.5	7.9	8.2	6.5	6.3	6.6	5.8	8.8	7.6	5.4	5.3	5.4	4.8
1982	11.7	10.5	9.8	5.8	11.4	11.0	10.9	8.9	8.0	6.6	4.6	7.0	5.8	5.6	4.9	4.4	4.4	7.1	6.3	5.1	4.7	4.7	4.3
1983	11.9	11.7	11.6	10.1	12.4	11.2	9.2	9.5	9.0	5.5	6.5	7.2	8.9	7.0	6.2	6.5	5.0	6.0	5.8	6.2	5.3	6.0	5.0
1984	12.1	11.0	10.6	10.1	12.3	11.9	9.3	9.6	9.6	5.2	4.5	7.6	8.1	4.8	4.5	4.1	4.0	7.3	6.6	5.2	5.1	4.9	4.9
1985	12.1	11.1	11.4	10.5	12.1	11.6	9.4	10.6	10.1	7.8	7.0	9.1	8.9	8.0	6.8	5.8	5.0	7.6	7.3	6.2	5.9	4.7	4.5
1986	10.1	10.8	9.7	8.6	10.5	9.9	9.0	9.0	8.3	7.5	5.7	10.0	8.5	7.3	7.5	6.4	5.3	8.1	7.5	6.2	6.0	5.4	5.3
1987	10.7	10.4	10.2	9.5	12.1	11.4	9.2	8.7	8.3	6.4	5.9	9.1	8.1	7.2	6.2	5.1	5.7	7.4	7.3	6.6	6.2	6.2	5.6
1988	10.8	10.4	10.0	9.1	11.5	11.1	8.6	8.7	8.6	6.0	5.5	9.4	8.1	7.2	5.9	4.8	4.4	7.7	6.8	5.8	5.3	4.6	4.1
1989	9.5	9.0	7.1	6.7	10.4	9.5	7.5	7.5	6.5	4.7	3.6	7.4	5.4	4.4	4.3	2.4	1.5	6.1	4.5	3.8	3.0	3.3	2.6
1990	10.4	10.5	9.4	7.6	12.0	11.0	9.9	8.8	9.2	5.9	3.8	9.0	8.0	7.5	4.7	4.0	3.5	6.5	6.6	5.9	4.5	3.7	2.6
1991	14.1	13.0	11.3	9.9	13.8	13.3	11.4	10.9	10.0	7.0	5.2	11.6	11.3	10.2	8.1	6.0	5.0	7.8	5.9	6.2	7.2	6.1	4.7
1992	9.9	9.2	8.6	8.1	11.4	10.3	9.2	8.1	7.9	7.5	6.5	8.7	8.1	8.0	7.0	5.9	5.2	8.4	8.1	6.7	5.4	4.1	3.8
1993	12.6	11.5	11.1	9.9	12.4	11.5	9.7	9.4	8.6	5.0	4.5	8.9	7.9	6.0	5.4	5.0	3.7	7.6	6.1	4.7	4.6	3.7	3.7
1994	10.3	9.9	9.6	9.1	10.3	9.8	9.4	9.4	7.8	6.5	5.7	9.2	8.9	8.3	6.7	6.0	4.7	8.4	7.2	4.7	5.1	4.0	4.3
1995	11.7	11.2	9.9	9.6	10.6	10.0	9.2	8.4	8.5	6.9	6.9	9.0	8.6	8.0	7.6	6.0	4.9	7.9	8.2	6.5	6.2	4.7	4.1
1996	11.6	11.3	10.3	9.8	11.7	11.5	9.4	8.4	8.5	6.4	5.4	7.3	7.4	5.9	5.4	4.6	4.1	6.1	6.3	4.2	4.1	4.0	4.0
1997	10.9	10.1	9.0	7.3	11.4	11.2	9.9	8.9	8.4	6.2	6.1	7.2	7.9	6.6	6.4	5.5	5.3	5.5	5.4	5.2	4.7	4.7	4.7
1998	11.0	11.1	11.0	10.2	10.5	9.6	9.2	9.1	7.7	7.4	6.1	9.3	8.2	7.0	6.8	5.6	5.0	8.5	7.8	6.0	5.0	4.3	4.2
1999	15.0	13.3	12.7	11.7	14.6	13.6	11.3	10.6	10.7	6.2	5.5	11.5	9.6	8.2	6.1	4.8	4.7	9.1	7.3	6.4	5.2	4.9	4.3
2000	12.1	12.0	11.2	10.8	13.3	12.2	11.1	9.9	10.4	7.6	7.2	10.2	9.5	7.4	7.1	6.3	6.5	9.7	10.0	8.1	7.2	6.2	6.0
2001	13.3	11.5	11.2	8.8	12.9	11.6	11.5	11.1	10.2	5.7	4.9	7.9	9.7	6.1	6.0	4.9	4.6	7.6	7.7	5.2	4.7	4.5	4.5
2002	12.2	11.7	11.5	10.8	12.2	12.0	9.6	9.1	9.8	7.5	6.3	9.4	9.1	8.0	7.5	6.3	5.6	7.9	8.0	6.7	6.2	5.7	5.5
2003	11.5	11.3	11.2	9.7	11.6	10.8	8.4	8.5	9.1	4.7	4.2	7.9	7.7	5.8	5.2	4.1	3.8	7.2	6.5	5.4	4.2	4.0	3.9
2004	13.3	12.1	11.7	9.3	12.9	11.8	9.9	9.0	8.3	4.5	3.9	7.6	7.6	4.7	4.1	3.6	3.5	6.0	5.1	3.8	3.6	3.4	3.2
2005	11.6	11.2	10.4	9.8	9.3	9.2	9.1	8.2	7.4	5.3	5.0	7.9	7.6	6.6	6.0	5.1	4.6	7.2	7.3	6.1	5.3	5.0	4.4
2006	11.4	10.5	9.9	9.2	12.1	10.9	11.0	10.7	10.4	7.5	6.4	10.1	9.6	8.5	7.3	6.8	6.5	8.0	8.4	8.1	7.0	6.7	6.2
2007	12.8	11.6	10.7	9.2	12.2	11.6	10.5	10.2	8.8	5.3	4.9	9.9	10.1	6.2	4.8	4.4	4.3	6.3	6.3	4.2	4.1	4.2	4.1
Median	11.8	11.2	10.6	9.6	12.1	11.2	9.6	9.1	8.7	6.4	5.6	8.9	8.2	7.1	6.2	5.3	4.8	7.6	7.2	5.9	5.3	4.7	4.3
Mean	11.8	11.2	10.6	9.5	11.9	11.1	9.9	9.4	8.9	6.4	5.7	8.8	8.5	7.0	6.2	5.3	5.0	7.7	7.0	5.8	5.3	4.9	4.4

Figure I.D.2. Trends in region mean bottom temperatures recorded on the *MarineFisheries* spring survey, 1978 – 2007.

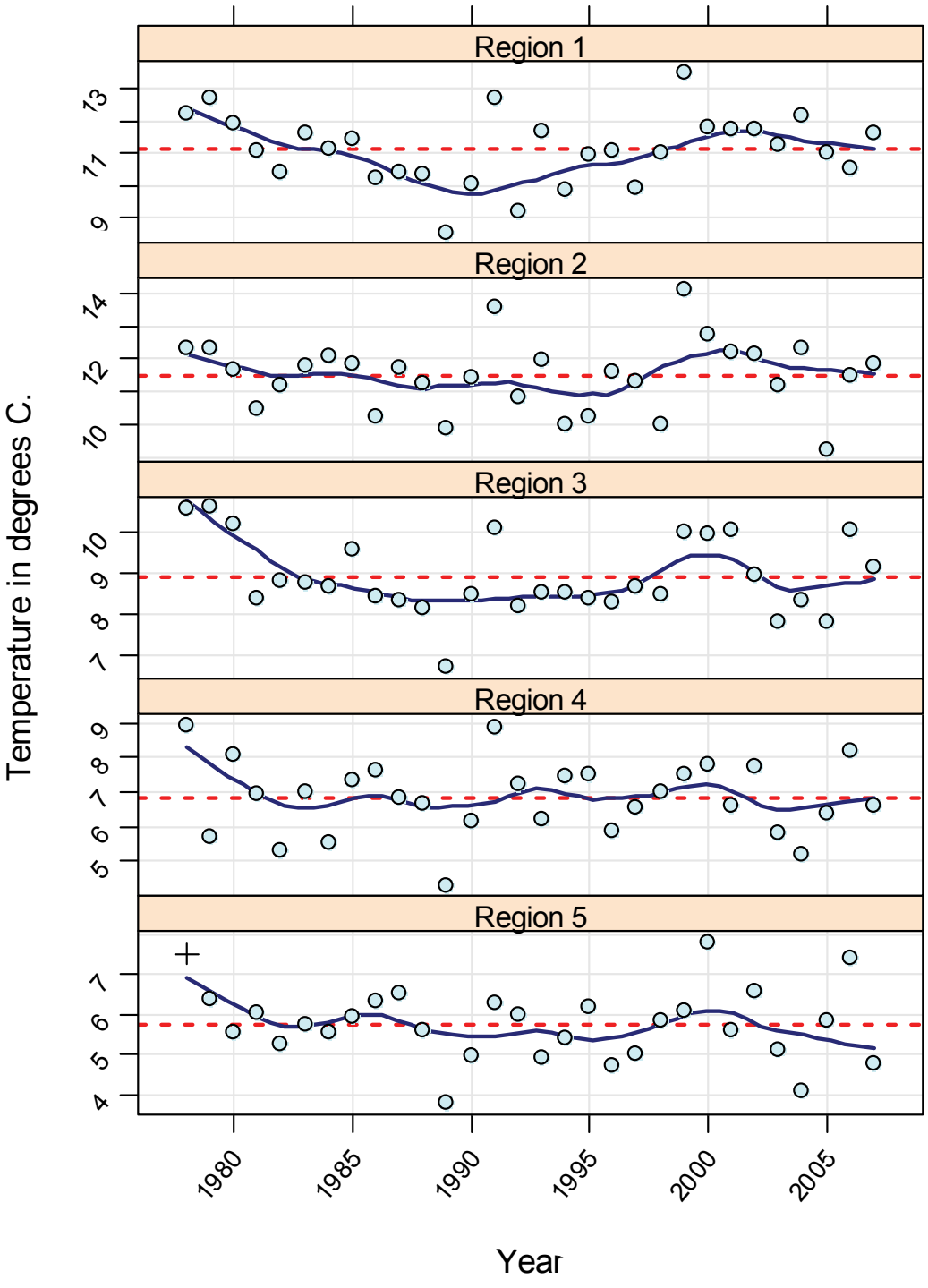


Figure I.D3. Trends in mean bottom temperatures recorded on the *MarineFisheries* spring survey, by regional groups, 1978 – 2007.

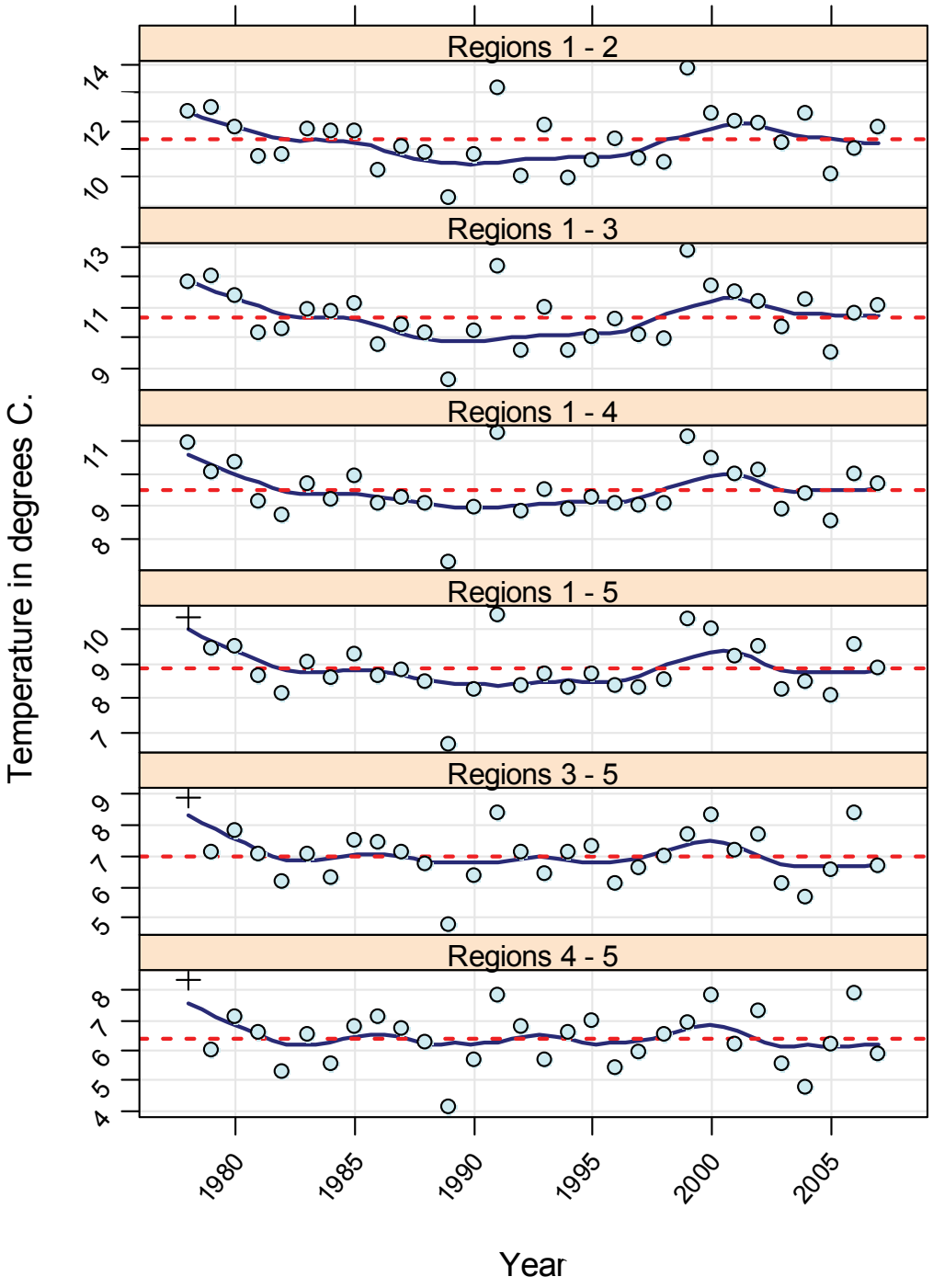


Table I.D.2. Stratified mean bottom temperatures recorded on the *MarineFisheries* spring survey, by region and regional groups, 1978 – 2007.

	Regions					Regional Groupings					
	1	2	3	4	5	1 - 2	1 - 3	1 - 4	1 - 5	3 - 5	4 - 5
1978	12.24	12.35	10.54	8.94	7.53	12.30	11.85	10.94	10.35	8.91	8.37
1979	12.67	12.32	10.58	5.71	6.39	12.49	12.01	10.03	9.40	7.12	5.98
1980	11.91	11.65	10.17	8.09	5.56	11.77	11.37	10.34	9.51	7.85	7.08
1981	11.06	10.46	8.39	6.93	6.06	10.75	10.16	9.14	8.61	7.03	6.58
1982	10.39	11.18	8.78	5.32	5.27	10.79	10.29	8.73	8.13	6.17	5.30
1983	11.60	11.79	8.73	6.98	5.76	11.70	10.95	9.70	9.02	7.05	6.50
1984	11.14	12.09	8.64	5.52	5.55	11.63	10.88	9.19	8.56	6.30	5.53
1985	11.42	11.83	9.55	7.36	5.96	11.63	11.11	9.93	9.24	7.48	6.80
1986	10.24	10.22	8.41	7.60	6.31	10.23	9.77	9.09	8.61	7.41	7.09
1987	10.38	11.75	8.32	6.86	6.53	11.09	10.39	9.28	8.81	7.12	6.73
1988	10.34	11.28	8.12	6.67	5.62	10.82	10.14	9.05	8.46	6.72	6.25
1989	8.55	9.90	6.70	4.31	3.78	9.25	8.61	7.26	6.66	4.75	4.10
1990	10.03	11.46	8.48	6.17	4.98	10.77	10.19	8.93	8.25	6.39	5.69
1991	12.71	13.55	10.05	8.86	6.27	13.14	12.37	11.27	10.40	8.38	7.83
1992	9.18	10.84	8.20	7.25	6.01	10.04	9.57	8.84	8.35	7.11	6.75
1993	11.65	11.96	8.53	6.23	4.93	11.81	10.98	9.49	8.70	6.41	5.71
1994	9.86	10.00	8.53	7.43	5.41	9.93	9.58	8.90	8.30	7.09	6.62
1995	10.92	10.27	8.39	7.49	6.20	10.59	10.03	9.23	8.71	7.33	6.97
1996	11.07	11.61	8.28	5.85	4.72	11.35	10.58	9.09	8.34	6.11	5.39
1997	9.89	11.30	8.63	6.54	5.02	10.62	10.12	8.99	8.31	6.60	5.93
1998	10.99	10.00	8.46	7.02	5.84	10.48	9.97	9.04	8.49	7.02	6.55
1999	13.52	14.11	9.98	7.49	6.09	13.82	12.86	11.17	10.29	7.69	6.93
2000	11.77	12.74	9.91	7.81	7.80	12.27	11.68	10.46	10.00	8.33	7.80
2001	11.73	12.22	10.03	6.62	5.59	11.98	11.49	9.96	9.20	7.16	6.20
2002	11.72	12.13	8.94	7.73	6.58	11.93	11.18	10.10	9.49	7.69	7.27
2003	11.23	11.18	7.79	5.80	5.11	11.20	10.34	8.92	8.26	6.09	5.52
2004	12.19	12.31	8.31	5.19	4.09	12.25	11.26	9.35	8.44	5.63	4.75
2005	11.02	9.24	7.81	6.38	5.85	10.10	9.52	8.53	8.07	6.58	6.17
2006	10.53	11.50	10.04	8.17	7.42	11.03	10.78	9.96	9.52	8.41	7.87
2007	11.60	11.88	9.15	6.63	4.77	11.74	11.09	9.69	8.84	6.69	5.88
Mean	11.12	11.50	8.88	6.83	5.77	11.32	10.70	9.49	8.84	7.02	6.41

Grey cells indicate stratum timeseries mean utilized to fill in missing data.

I. Spring Survey

E. Species List and Recorded Level of Observation in Catch and Length Tables (See table series I.E)

Sections I.E list with exception, all finfish and a subset of commercially and/or recreationally-harvested invertebrates encountered by the survey trawl which have been weighed, measured, and recorded in the catch and length tables (not presented here). Several species were not separated out and recorded in catch and length records from the start of the survey, but were added to the recorded species list in subsequent years. The years of data availability for each species can be determined by referencing the tables in I.E. In addition, any species that has been recorded under more than one species code, including less specific, 'unclassified codes' are identified to alert data users that combining of species codes may be appropriate in some cases. Species that have catch and length data available for separate sexes, or egg bearing status (American lobster only) are identified in tables I.E.1. Length frequency records generally correspond with the catch records. Table I.E.2 identifies the few invertebrate species which were counted rather than measured and lack length frequency records for specific cruises. Table 1.E.2 also identifies the few invertebrate species that have incomplete length frequency records for individual cruises meaning that length frequencies were not completed at all stations in a survey. A representative length frequency may be generated in these cases, but the sum of length records will not match the catch records.

Table I.E.1. List of species documented on the *MarineFisheries* spring survey and level of recorded observations in catch table, 1978 – 2007.

x Indicates that species was consistently recorded in catch tables whenever observed.
O Indicates that species was separated by sex and recorded consistently in catch tables whenever observed.
- Indicates that species was not consistently recorded in catch tables whenever observed.
z Indicates that egg bearing lobsters were separated from other female lobsters in catch records.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
155	Acadian redfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
33	alewife	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
165	alligatorfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
384	American eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
301	American lobster	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
102	American plaice	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
35	American shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
73	Atlantic cod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1	Atlantic hagfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
101	Atlantic halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
32	Atlantic herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
121	Atlantic mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
36	Atlantic menhaden	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
313	Atlantic rock crab	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
170	Atlantic seasnail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
113	Atlantic silverside	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
380	Atlantic sturgeon	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
403	Atlantic surfclam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
453	Atlantic tomcod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	Atlantic torpedo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
192	Atlantic wolfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	barndoor skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
43	bay anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
402	bay scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
141	black sea bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
314	blue crab	x	x	x	x	x	x	x	x	x	x	x	x	x	O	O	O	O	O	O	x	O	O	O	O	O	O	O	O	O	O
343	blue mussel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
34	blueback herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
135	bluefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
131	butterfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
336	channeled whelk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
24	clearnose skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
390	conger eel uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
63	conger eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
460	crested cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
176	cunner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
183	daubed shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
83	fourbeard rockling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
104	fourspot flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
197	goosefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
166	grubby	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
109	Gulf Stream flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
74	haddock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
80	hake uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
318	horseshoe crab	x	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
340	Iceland scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
167	inquiline snailfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
312	Jonah crab	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
337	knobbed whelk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
322	lady crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	little skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
503	longfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
520	longfin squid egg mops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x
163	longhorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
133	lookdown	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table I.E.1 continued.

x Indicates that species was consistently recorded in catch tables whenever observed.
O Indicates that species was separated by sex and recorded consistently in catch tables whenever observed.
- Indicates that species was not consistently recorded in catch tables whenever observed.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
168	lumpfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
323	mantis shrimp uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
161	moustache sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
342	northern horsemussel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
146	northern kingfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
348	northern moonsnail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x
116	northern pipefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
196	northern puffer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
413	northern quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
181	Northern sand lance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
171	Northern searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
502	northern shortfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
306	northern shrimp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
193	ocean pout	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
409	ocean quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
510	octopus uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
185	oyster toadfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
75	pollock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
184	radiated shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
45	rainbow smelt	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
77	red hake*	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
180	rock gunnel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
212	rough scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
31	round herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
143	scup	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	sea lamprey	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
164	sea raven	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
401	sea scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
331	sea urchin uncl (green urchin)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
162	shorthorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
72	silver hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
117	smallmouth flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	smooth dogfish	x	x	x	x	x	x	x	x	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
27	smooth skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
182	snakeblenny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
325	snow crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
317	spider crab uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	spiny dogfish	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
78	spotted hake*	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
44	striped anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
139	striped bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
188	striped cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
172	striped searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
103	summer flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
177	tautog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	thorny skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
115	threespine stickleback	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
145	weakfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
76	white hake*	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
108	windowpane	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
106	winter flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	winter skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
107	witch flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
191	wrymouth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
105	yellowtail flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O	O	O	O	O	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table I.E.2. List of species documented on the *MarineFisheries* spring survey, and level of recorded observations in length table, 1978 – 2007.

x Indicates that length frequencies consistently recorded in length table whenever species observed.
x Indicates that length frequency records are incomplete for given survey year.
- indicates that length frequency observations were not consistently recorded for given year.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
155	Acadian redfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
33	alewife	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
165	alligatorfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
384	American eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
301	American lobster	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
102	American plaice	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
35	American shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
73	Atlantic cod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1	Atlantic hagfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
101	Atlantic halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
32	Atlantic herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
121	Atlantic mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
36	Atlantic menhaden	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
313	Atlantic rock crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
170	Atlantic seasnail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
113	Atlantic silverside	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
380	Atlantic sturgeon	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
403	Atlantic surfclam	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
453	Atlantic tomcod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	Atlantic torpedo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
192	Atlantic wolfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	barndoor skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
43	bay anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
402	bay scallop	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
141	black sea bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
314	blue crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
343	blue mussel*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	blueback herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
135	bluefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
131	butterfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
336	channeled whelk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x
24	clearnose skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
390	conger eel uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
63	conger eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
460	crested cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
176	cunner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
183	daubed shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
83	fourbeard rockling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
104	fourspot flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
197	goosefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
166	grubby	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
109	Gulf Stream flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
74	haddock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
80	hake uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
318	horseshoe crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
340	Iceland scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
167	inquiline snailfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
312	Jonah crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
337	knobbed whelk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x
322	lady crab	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	little skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
503	longfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
520	longfin squid egg mops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
163	longhorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
133	lookdown	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
168	lumpfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table I.E.2 continued.

x	Indicates that length frequencies consistently recorded in length table whenever species observed.
x	Indicates that length frequency records are incomplete for given survey year.
-	indicates that length frequency observations were not consistently recorded for given year.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
323	mantis shrimp uncl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
161	moustache sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
342	northern horsemussel*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
146	northern kingfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
348	northern moonsnail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116	northern pipefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
196	northern puffer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
413	northern quahog	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
181	Northern sand lance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
171	Northern searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
502	northern shortfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
306	northern shrimp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
193	ocean pout	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
409	ocean quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	-	x	x	x	x	x	x	x	x	x	x	-	x	x
510	octopus uncl*	x	x	x	-	x	x	x	-	x	x	-	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
185	oyster toadfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
75	pollock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
184	radiated shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
45	rainbow smelt	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
77	red hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
180	rock gunnel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
212	rough scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
31	round herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
143	scup	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	sea lamprey	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
164	sea raven	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
401	sea scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
331	sea urchin uncl (green urchin)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
162	shorthorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
72	silver hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
117	smallmouth flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	smooth dogfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	smooth skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
182	snakeblenny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
325	snow crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
317	spider crab uncl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	spiny dogfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
78	spotted hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
44	striped anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
139	striped bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
188	striped cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
172	striped searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
103	summer flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
177	tautog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	thorny skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
115	threespine stickleback	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
145	weakfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
76	white hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
108	windowpane	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
106	winter flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	winter skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
107	witch flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
191	wrymouth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
105	yellowtail flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

I. Spring Survey

F. Catch Composition Summaries (See tables I.F)

Approximately 110 species have been recorded in the *MarineFisheries* spring trawl surveys 1978 - 2007. Summary tables of catch composition for the entire survey area, and as each individual survey region, are presented in section I.F. The species lists are sorted in descending order according to percent occurrence of each species (# of positive tows/total # of tows). The count of cruises with recorded observations of each species is also provided to document how commonly each species has occurred in the survey over time. Mean number per tow and mean weight per tow (kg) are presented as an unweighted indication of the abundance and biomass encountered in the survey for each region and species. Species that have not been consistently recorded when observed, or that have been recorded under more than one species code at any time are noted in Table II.F. The inconsistently recorded species should be considered underrepresented in the summary statistics. The denominator (ntows) has not been adjusted to reflect reduced station counts for individual species that were not recorded when observed in catch tables in all years.

Table I.F.1. *MarineFisheries* spring survey regions 1-5 catch summary, 1978-2007.

ntows=2,874 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
106	winter flounder	*Pseudopleuronectes americanus*	93.8	55.1	12.6	30	1978
26	little skate*	*Leucoraja erinacea*	74.7	28.7	15.7	30	1978
108	windowpane	*Scophthalmus aquosus*	73.3	17.2	4.3	30	1978
73	Atlantic cod	*Gadus morhua*	69.5	63.0	6.3	30	1978
313	Atlantic rock crab	*Cancer irroratus*	64.4	13.1	1.4	30	1978
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	63.6	42.2	6.5	30	1978
301	American lobster	*Homarus americanus*	56.8	6.6	1.7	30	1978
23	winter skate*	*Leucoraja ocellata*	54.8	17.3	17.2	30	1978
105	yellowtail flounder	*Limanda ferruginea*	47.9	17.4	4.4	30	1978
193	ocean pout	*Macrozoarces americanus*	46.8	26.8	16.7	30	1978
72	silver hake	*Merluccius bilinearis*	45.1	15.9	1.5	30	1978
171	Northern searobin	*Prionotus carolinus*	43.7	48.8	8.7	30	1978
77	red hake*	*Urophycis chuss*	43.4	12.5	2.5	30	1978
503	longfin squid	*Loligo pealeii*	42.5	32.5	2.0	30	1978
104	fourspot flounder	*Paralichthys oblongus*	40.5	2.3	0.5	30	1978
103	summer flounder	*Paralichthys dentatus*	32.3	1.5	1.1	30	1978
317	spider crab uncl	*Majidae*	32.3	22.8	2.4	30	1978
33	alewife	*Alosa pseudoharengus*	29.7	8.9	0.4	30	1978
338	moon snail and shark eye*	*Naticidae*	29.0	4.0	0.4	27	1978
164	sea raven	*Hemitripterus americanus*	28.8	0.7	0.5	30	1978
143	scup	*Stenotomus chrysops*	24.1	38.1	4.8	30	1978
102	American plaice	*Hippoglossoides platessoides*	23.7	41.8	3.6	30	1978
15	spiny dogfish	*Squalus acanthias*	23.0	5.0	11.4	30	1978
32	Atlantic herring	*Clupea harengus*	22.1	31.1	0.3	30	1978
141	black sea bass	*Centropristis striata*	18.5	0.7	0.4	30	1978
322	lady crab	*Ovalipes ocellatus*	18.5	3.8	0.2	30	1978
176	cunner	*Tautogolabrus adspersus*	16.9	3.2	0.2	30	1978
181	Northern sand lance	*Ammodytes dubius*	16.9	70.9	0.6	30	1978
76	white hake*	*Urophycis tenuis*	16.2	1.0	0.1	30	1978
34	blueback herring	*Alosa aestivalis*	15.8	2.4	0.0	30	1978
131	butterfish	*Peprilus triacanthus*	15.7	6.0	0.3	30	1978
177	tautog	*Tautoga onitis*	15.1	1.7	3.1	30	1978
336	channeled whelk	*Busycotypus canaliculatus*	14.9	0.7	0.1	30	1978
401	sea scallop	*Placopecten magellanicus*	12.8	1.5	0.1	30	1978
75	pollock	*Pollachius virens*	12.6	2.6	0.1	30	1978
182	snakeblenny	*Lumpenus lumpretaeformis*	12.0	4.0	0.2	30	1978
183	daubed shanny	*Lumpenus maculatus*	11.0	3.2	0.0	30	1978
35	American shad	*Alosa sapidissima*	10.7	0.7	0.0	27	1981
45	rainbow smelt	*Osmerus mordax*	9.3	1.8	0.0	30	1978
197	goosefish	*Lophius americanus*	8.5	0.1	0.4	30	1978
312	Jonah crab	*Cancer borealis*	8.5	0.3	0.0	30	1978
13	smooth dogfish	*Mustelus canis*	7.7	0.2	0.9	29	1978
318	horseshoe crab	*Limulus polyphemus*	7.5	0.2	0.2	30	1978
107	witch flounder	*Glyptocephalus cynoglossus*	7.0	0.3	0.2	28	1978
180	rock gunnel	*Pholis gunnellus*	6.5	0.3	0.0	29	1978
28	thorny skate	*Amblyraja radiata*	6.3	0.2	0.2	30	1978
337	knobbed whelk	*Busycon carica*	6.1	0.5	0.2	29	1978
165	alligatorfish	*Aspidophoroides monopterygius*	5.8	0.3	0.0	28	1978
83	fourbeard rockling	*Enchelyopus cimbrius*	5.7	0.3	0.0	28	1978
348	northern moonsnail*	*Euspira heros*	5.5	0.6	0.0	6	2001
74	haddock	*Melanogrammus aeglefinus*	5.5	0.4	0.3	27	1978

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.1 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
78	spotted hake*	*Urophycis regia*	4.9	0.2	0.0	21	1978
172	striped searobin	*Prionotus evolans*	4.7	0.1	0.1	24	1978
403	Atlantic surfclam	*Spisula solidissima*	4.5	0.1	0.0	26	1978
117	smallmouth flounder	*Etropus microstomus*	4.3	0.1	0.0	20	1988
409	ocean quahog	*Arctica islandica*	3.6	0.1	0.0	28	1978
116	northern pipefish	*Syngnathus fuscus*	3.6	0.1	0.0	27	1978
343	blue mussel*	*Mytilus edulis*	2.8	46.9	0.6	25	1978
139	striped bass	*Morone saxatalis*	2.4	0.1	0.1	20	1987
192	Atlantic wolfish	*Anarhichas lupus*	2.4	0.0	0.2	21	1978
121	Atlantic mackerel	*Scomber scombrus*	2.1	0.1	0.0	22	1978
109	Gulf Stream flounder	*Citharichthys arctifrons*	2.0	0.1	0.0	17	1984
520	longfin squid egg mops*	*Loligo pealeii*	1.7		0.1	9	1999
402	bay scallop	*Argopecten irradians*	1.6	0.1	0.0	23	1978
155	Acadian redfish	*Sebastes fasciatus*	1.5	0.1	0.0	20	1979
166	grubby	*Myoxocephalus aenaeus*	1.1	0.2	0.0	18	1978
510	octopus uncl	*Octopoda*	1.0	0.0	0.0	17	1979
168	lumpfish	*Cyclopterus lumpus*	1.0	0.0	0.0	17	1979
314	blue crab	*Callinectes sapidus*	0.9	0.0	0.0	14	1980
323	mantis shrimp uncl	*Stomatopoda*	0.8	0.0	0.0	14	1981
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.7	0.0	0.0	4	1978
191	wrymouth	*Cryptacanthodes maculatus*	0.7	0.0	0.0	15	1979
44	striped anchovy	*Anchoa hepsetus*	0.7	0.1	0.0	10	1978
342	northern horsemussel*	*Modiolus modiolus*	0.6	0.0	0.0	12	1979
43	bay anchovy	*Anchoa mitchilli*	0.6	0.1	0.0	9	1981
113	Atlantic silverside	*Menidia menidia*	0.6	0.0	0.0	11	1978
413	northern quahog	*Mercenaria mercenaria*	0.5	0.0	0.0	7	1978
185	oyster toadfish	*Opsanus tau*	0.5	0.0	0.0	11	1984
36	Atlantic menhaden	*Brevoortia tyrannus*	0.5	0.0	0.0	8	1978
101	Atlantic halibut	*Hippoglossus hippoglossus*	0.5	0.0	0.0	11	1978
502	northern shortfin squid	*Illex illecebrosus*	0.5	0.0	0.0	8	1978
170	Atlantic seasnail	*Liparis atlanticus*	0.4	0.0	0.0	10	1979
146	northern kingfish	*Menticirrhus saxatalis*	0.4	0.0	0.0	6	1978
80	hake uncl*	*Gadidae*	0.3	0.3	0.1	1	1978
135	bluefish	*Pomatomus saltatrix*	0.3	0.0	0.0	7	1980
63	conger eel*	*Conger oceanicus*	0.3	0.0	0.0	8	1978
453	Atlantic tomcod	*Microgadus tomcod*	0.3	0.0	0.0	7	1978
306	northern shrimp*	*Pandalus borealis*	0.2	0.0	0.0	1	2007
162	shorthorn sculpin	*Myoxocephalus scorpius*	0.2	0.0	0.0	5	1996
161	moustache sculpin	*Triglops murrayi*	0.2	0.0	0.0	6	1981
24	clearnose skate	*Raja eglanteria*	0.2	0.0	0.0	5	1978
384	American eel	*Anguilla rostrata*	0.2	0.0	0.0	6	1978
390	conger eel uncl*	*Congridae*	0.1	0.0	0.0	2	1999
115	threespine stickleback	*Gasterosteus aculeatus*	0.1	0.0	0.0	2	1987
1	Atlantic hagfish	*Myxine glutinosa*	0.1	0.0	0.0	3	1986
2	sea lamprey	*Petromyzon marinus*	0.1	0.0	0.0	2	1981
145	weakfish	*Cynoscion regalis*	0.1	0.0	0.0	3	1980
184	radiated shanny	*Ulvaria subbifurcata*	0.1	0.0	0.0	2	1980
27	smooth skate	*Malacoraja senta*	0.1	0.0	0.0	3	1978
167	inquiline snailfish*	*Liparis inquilinus*	0.1	0.0	0.0	2	1978
212	rough scad*	*Trachurus lathami*	0.0	0.0	0.0	1	2002
460	crested cusk-eel*	*Ophidion welshi*	0.0	0.0	0.0	1	1998
188	striped cusk-eel*	*Ophidion marginatum*	0.0	0.0	0.0	1	1987
21	Atlantic torpedo	*Torpedo nobiliana*	0.0	0.0	0.0	1	2000

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.1 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
31	round herring	*Etrumeus teres*	0.0	0.0	0.0	1	1999
22	barndoor skate	*Dipturus laevis*	0.0	0.0	0.0	1	1994
133	lookdown	*Selene vomer*	0.0	0.0	0.0	1	1992
325	snow crab	*Chionoecetes opilio*	0.0	0.0	0.0	1	1990
340	Iceland scallop	*Chlamys islandica*	0.0	0.0	0.0	1	1988
380	Atlantic sturgeon	*Acipenser oxyrhynchus*	0.0	0.0	0.0	1	1986
196	northern puffer	*Sphoeroides maculatus*	0.0	0.0	0.0	1	1985

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.2. *MarineFisheries* spring survey region 1 catch summary, 1978-2007.

ntows=550 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
26	little skate*	*Leucoraja erinacea*	93.3	70.0	35.0	30
106	winter flounder	*Pseudopleuronectes americanus*	93.3	58.6	14.1	30
503	longfin squid	*Loligo pealeii*	83.1	43.9	2.4	30
108	windowpane	*Scophthalmus aquosus*	74.2	10.0	2.0	30
103	summer flounder	*Paralichthys dentatus*	72.2	4.9	3.8	30
313	Atlantic rock crab	*Cancer irroratus*	65.8	21.3	1.9	30
171	Northern searobin	*Prionotus carolinus*	64.2	10.4	1.3	30
23	winter skate*	*Leucoraja ocellata*	63.3	25.4	16.4	30
143	scup	*Stenotomus chrysops*	59.8	150.9	16.5	30
104	fourspot flounder	*Paralichthys oblongus*	53.5	4.8	1.1	30
73	Atlantic cod	*Gadus morhua*	51.6	16.1	0.2	30
301	American lobster	*Homarus americanus*	48.7	5.8	1.1	30
317	spider crab uncl	*Majidae*	48.5	15.2	1.5	30
72	silver hake	*Merluccius bilinearis*	47.6	38.8	4.2	30
15	spiny dogfish	*Squalus acanthias*	42.4	5.1	13.4	29
141	black sea bass	*Centropristis striata*	42.2	1.5	0.8	30
177	tautog	*Tautoga onitis*	38.2	7.0	12.9	30
131	butterfish	*Peprilus triacanthus*	37.6	9.3	0.6	30
338	moon snail and shark eye*	*Naticidae*	36.2	10.3	1.2	25
77	red hake*	*Urophycis chuss*	34.7	17.4	3.9	30
322	lady crab	*Ovalipes ocellatus*	27.1	4.2	0.3	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	26.2	6.3	1.5	30
176	cunner	*Tautogolabrus adspersus*	23.3	14.7	0.7	29
13	smooth dogfish	*Mustelus canis*	22.9	0.5	1.6	27
76	white hake*	*Urophycis tenuis*	21.8	1.8	0.1	25
193	ocean pout	*Macrozoarces americanus*	20.7	7.4	4.3	30
33	alewife	*Alosa pseudoharengus*	19.6	4.7	0.3	28
336	channeled whelk	*Busycotypus canaliculatus*	16.4	0.5	0.1	26
172	striped searobin	*Prionotus evolans*	15.5	0.4	0.2	24
32	Atlantic herring	*Clupea harengus*	14.4	41.3	0.1	26
78	spotted hake*	*Urophycis regia*	14.4	0.7	0.0	19
164	sea raven	*Hemitripterus americanus*	13.8	0.3	0.2	23
35	American shad	*Alosa sapidissima*	12.9	1.2	0.0	26
75	pollock	*Pollachius virens*	12.9	4.6	0.0	26
180	rock gunnel	*Pholis gunnellus*	12.7	0.8	0.0	24
181	Northern sand lance	*Ammodytes dubius*	12.2	91.7	0.6	27
197	goosefish	*Lophius americanus*	10.2	0.2	0.7	23
117	smallmouth flounder	*Etropus microstomus*	7.5	0.2	0.0	19
348	northern moonsnail*	*Euspira heros*	6.9	1.6	0.1	6
34	blueback herring	*Alosa aestivalis*	6.5	1.1	0.0	18
403	Atlantic surfclam	*Spisula solidissima*	6.4	0.2	0.1	18
116	northern pipefish	*Syngnathus fuscus*	6.2	0.2	0.0	20
105	yellowtail flounder	*Limanda ferruginea*	5.8	0.4	0.1	18
109	Gulf Stream flounder	*Citharichthys arctifrons*	5.1	0.3	0.0	14
318	horseshoe crab	*Limulus polyphemus*	5.1	0.1	0.2	15
343	blue mussel*	*Mytilus edulis*	5.1	242.2	2.9	14
44	striped anchovy	*Anchoa hepsetus*	3.8	0.7	0.0	10
312	Jonah crab	*Cancer borealis*	3.5	0.1	0.0	15
314	blue crab	*Callinectes sapidus*	3.5	0.1	0.0	12
337	knobbed whelk	*Busycon carica*	2.9	0.1	0.0	11
83	fourbeard rockling	*Enchelyopus cimbrius*	2.7	0.0	0.0	9

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.2 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
139	striped bass	*Morone saxatalis*	2.7	0.0	0.1	13
402	bay scallop	*Argopecten irradians*	2.5	0.1	0.0	13
43	bay anchovy	*Anchoa mitchilli*	2.4	0.3	0.0	7
185	oyster toadfish	*Opsanus tau*	2.4	0.0	0.0	10
323	mantis shrimp uncl	*Stomatopoda*	2.2	0.0	0.0	10
166	grubby	*Myoxocephalus aenaeus*	2.0	0.8	0.0	8
63	conger eel*	*Conger oceanicus*	1.8	0.0	0.0	8
409	ocean quahog	*Arctica islandica*	1.8	0.0	0.0	7
401	sea scallop	*Placopecten magellanicus*	1.6	0.1	0.0	7
413	northern quahog	*Mercenaria mercenaria*	1.5	0.0	0.0	6
36	Atlantic menhaden	*Brevoortia tyrannus*	1.3	0.0	0.0	5
80	hake uncl*	*Gadidae*	1.1	1.0	0.2	1
453	Atlantic tomcod	*Microgadus tomcod*	1.1	0.0	0.0	6
146	northern kingfish	*Menticirrhus saxatalis*	0.9	0.0	0.0	4
384	American eel	*Anguilla rostrata*	0.9	0.0	0.0	5
121	Atlantic mackerel	*Scomber scombrus*	0.7	0.2	0.0	3
74	haddock	*Melanogrammus aeglefinus*	0.5	0.0	0.0	3
135	bluefish	*Pomatomus saltatrix*	0.5	0.0	0.0	3
145	weakfish	*Cynoscion regalis*	0.5	0.0	0.0	3
390	conger eel uncl*	*Congridae*	0.5	0.0	0.0	2
28	thorny skate	*Amblyraja radiata*	0.4	0.0	0.0	2
45	rainbow smelt	*Osmerus mordax*	0.4	0.0	0.0	2
168	lumpfish	*Cyclopterus lumpus*	0.4	0.0	0.0	2
502	northern shortfin squid	*Illex illecebrosus*	0.4	0.0	0.0	2
21	Atlantic torpedo	*Torpedo nobiliana*	0.2	0.0	0.0	1
22	barndoor skate	*Dipturus laevis*	0.2	0.0	0.0	1
102	American plaice	*Hippoglossoides platessoides*	0.2	0.0	0.0	1
113	Atlantic silverside	*Menidia menidia*	0.2	0.0	0.0	1
188	striped cusk-eel*	*Ophidion marginatum*	0.2	0.0	0.0	1
196	northern puffer	*Sphoeroides maculatus*	0.2	0.0	0.0	1
212	rough scad*	*Trachurus lathami*	0.2	0.0	0.0	1
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.2	0.0	0.0	1
342	northern horsemussel*	*Modiolus modiolus*	0.2	0.0	0.0	1
460	crested cusk-eel*	*Ophidion welshi*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.3. *MarineFisheries* spring survey region 2 catch summary, 1978-2007.

ntows=603 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
503	longfin squid	*Loligo pealeii*	90.5	100.4	7.1	30
317	spider crab uncl	*Majidae*	88.2	93.7	10.0	30
106	winter flounder	*Pseudopleuronectes americanus*	87.9	26.0	7.8	30
108	windowpane	*Scophthalmus aquosus*	79.6	35.9	10.4	30
26	little skate*	*Leucoraja erinacea*	78.6	12.6	7.6	30
313	Atlantic rock crab	*Cancer irroratus*	69.0	13.0	1.3	30
171	Northern searobin	*Prionotus carolinus*	68.8	205.4	37.9	30
23	winter skate*	*Leucoraja ocellata*	60.9	9.3	12.6	30
103	summer flounder	*Paralichthys dentatus*	55.4	1.7	1.4	30
336	channeled whelk	*Busycotypus canaliculatus*	54.7	2.7	0.6	30
73	Atlantic cod	*Gadus morhua*	53.4	9.9	0.0	30
143	scup	*Stenotomus chrysops*	47.9	39.2	7.7	30
322	lady crab	*Ovalipes ocellatus*	44.3	5.0	0.4	30
141	black sea bass	*Centropristis striata*	30.0	1.6	0.9	29
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	27.9	1.8	0.5	25
301	American lobster	*Homarus americanus*	27.7	0.7	0.2	29
337	knobbed whelk	*Busycon carica*	26.4	2.4	0.8	29
177	tautog	*Tautoga onitis*	26.2	1.7	2.9	30
131	butterfish	*Peprilus triacanthus*	24.7	17.5	0.8	27
338	moon snail and shark eye*	*Naticidae*	24.4	1.8	0.1	27
318	horseshoe crab	*Limulus polyphemus*	20.7	0.4	0.5	28
176	cunner	*Tautogolabrus adspersus*	16.4	0.5	0.0	27
13	smooth dogfish	*Mustelus canis*	15.1	0.7	2.7	25
75	pollock	*Pollachius virens*	13.9	3.4	0.0	24
77	red hake*	*Urophycis chuss*	13.8	0.5	0.0	26
181	Northern sand lance	*Ammodytes dubius*	13.8	10.0	0.0	25
104	fourspot flounder	*Paralichthys oblongus*	12.8	0.3	0.1	24
33	alewife	*Alosa pseudoharengus*	12.3	3.8	0.3	24
164	sea raven	*Hemitripterus americanus*	11.6	0.2	0.1	25
180	rock gunnel	*Pholis gunnellus*	11.4	0.4	0.0	23
72	silver hake	*Merluccius bilinearis*	11.3	0.3	0.0	22
32	Atlantic herring	*Clupea harengus*	9.5	24.2	0.0	21
76	white hake*	*Urophycis tenuis*	9.3	0.2	0.0	22
117	smallmouth flounder	*Etropus microstomus*	8.3	0.1	0.0	12
15	spiny dogfish	*Squalus acanthias*	7.5	0.6	2.3	15
116	northern pipefish	*Syngnathus fuscus*	7.5	0.4	0.0	18
172	striped searobin	*Prionotus evolans*	7.1	0.2	0.1	18
78	spotted hake*	*Urophycis regia*	5.6	0.2	0.0	12
520	longfin squid egg mops*	*Loligo pealeii*	5.6		0.2	8
402	bay scallop	*Argopecten irradians*	5.1	0.4	0.0	19
35	American shad	*Alosa sapidissima*	4.5	0.2	0.0	12
403	Atlantic surfclam	*Spisula solidissima*	3.6	0.1	0.0	11
121	Atlantic mackerel	*Scomber scombrus*	3.3	0.2	0.1	13
139	striped bass	*Morone saxatalis*	3.3	0.6	0.5	12
348	northern moonsnail*	*Euspira heros*	3.2	0.3	0.0	6
105	yellowtail flounder	*Limanda ferruginea*	2.7	0.0	0.0	11
166	grubby	*Myoxocephalus aenaeus*	2.5	0.1	0.0	9
343	blue mussel*	*Mytilus edulis*	2.3	1.3	0.0	11
34	blueback herring	*Alosa aestivalis*	2.0	0.2	0.0	11
109	Gulf Stream flounder	*Citharichthys arctifrons*	2.0	0.0	0.0	3
401	sea scallop	*Placopecten magellanicus*	1.7	0.0	0.0	7

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.3. continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
323	mantis shrimp uncl	*Stomatopoda*	1.5	0.0	0.0	6
314	blue crab	*Callinectes sapidus*	1.2	0.0	0.0	5
36	Atlantic menhaden	*Brevoortia tyrannus*	1.0	0.0	0.0	6
135	bluefish	*Pomatomus saltatrix*	0.8	0.0	0.0	4
502	northern shortfin squid	*Illex illecebrosus*	0.8	0.0	0.0	3
43	bay anchovy	*Anchoa mitchilli*	0.7	0.0	0.0	4
146	northern kingfish	*Menticirrhus saxatalis*	0.7	0.0	0.0	3
168	lumpfish	*Cyclopterus lumpus*	0.7	0.0	0.0	3
193	ocean pout	*Macrozoarces americanus*	0.7	0.0	0.0	1
312	Jonah crab	*Cancer borealis*	0.5	0.0	0.0	3
28	thorny skate	*Amblyraja radiata*	0.3	0.0	0.0	1
74	haddock	*Melanogrammus aeglefinus*	0.3	0.0	0.0	1
113	Atlantic silverside	*Menidia menidia*	0.3	0.0	0.0	2
170	Atlantic seasnail	*Liparis atlanticus*	0.3	0.0	0.0	2
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.3	0.0	0.0	2
409	ocean quahog	*Arctica islandica*	0.3	0.0	0.0	1
2	sea lamprey	*Petromyzon marinus*	0.2	0.0	0.0	1
45	rainbow smelt	*Osmerus mordax*	0.2	0.0	0.0	1
83	fourbeard rockling	*Enchelyopus cimbrius*	0.2	0.0	0.0	1
165	alligatorfish	*Aspidophoroides monopterygius*	0.2	0.0	0.0	1
182	snakeblenny	*Lumpenus lumpretaeformis*	0.2	0.0	0.0	1
185	oyster toadfish	*Opsanus tau*	0.2	0.0	0.0	1
197	goosefish	*Lophius americanus*	0.2	0.0	0.0	1
384	American eel	*Anguilla rostrata*	0.2	0.0	0.0	1
413	northern quahog	*Mercenaria mercenaria*	0.2	0.0	0.0	1
453	Atlantic tomcod	*Microgadus tomcod*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.4. *MarineFisheries* spring survey region 3 catch summary, 1978-2007.

ntows=436 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
106	winter flounder	*Pseudopleuronectes americanus*	93.8	21.6	6.6	30
23	winter skate*	*Leucoraja ocellata*	83.9	59.4	65.9	30
313	Atlantic rock crab	*Cancer irroratus*	76.1	10.0	1.1	30
73	Atlantic cod	*Gadus morhua*	75.7	39.6	8.2	30
171	Northern searobin	*Prionotus carolinus*	70.4	23.0	2.9	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	67.4	60.0	9.0	30
108	windowpane	*Scophthalmus aquosus*	67.2	28.9	7.2	30
26	little skate*	*Leucoraja erinacea*	64.9	20.1	9.4	30
105	yellowtail flounder	*Limanda ferruginea*	56.2	21.7	4.6	30
181	Northern sand lance	*Ammodytes dubius*	44.5	310.3	2.8	30
338	moon snail and shark eye*	*Naticidae*	44.3	4.7	0.4	25
503	longfin squid	*Loligo pealeii*	39.7	19.8	0.5	30
301	American lobster	*Homarus americanus*	38.1	1.1	0.5	30
72	silver hake	*Merluccius bilinearis*	36.7	7.8	1.0	30
103	summer flounder	*Paralichthys dentatus*	35.1	1.0	0.8	30
164	sea raven	*Hemitripterus americanus*	33.9	0.9	0.6	30
193	ocean pout	*Macrozoarces americanus*	32.3	17.1	14.5	30
15	spiny dogfish	*Squalus acanthias*	30.0	13.7	26.3	29
104	fourspot flounder	*Paralichthys oblongus*	29.8	0.6	0.1	28
77	red hake*	*Urophycis chuss*	28.0	13.5	5.1	30
322	lady crab	*Ovalipes ocellatus*	26.1	12.4	0.5	28
141	black sea bass	*Centropristis striata*	19.0	0.4	0.1	25
33	alewife	*Alosa pseudoharengus*	14.2	1.9	0.1	28
143	scup	*Stenotomus chrysops*	14.0	6.3	0.3	22
131	butterfish	*Peprilus triacanthus*	13.1	3.7	0.2	20
197	goosefish	*Lophius americanus*	12.6	0.1	0.7	26
317	spider crab uncl	*Majidae*	12.6	0.6	0.1	23
32	Atlantic herring	*Clupea harengus*	11.0	34.5	0.1	19
403	Atlantic surfclam	*Spisula solidissima*	11.0	0.3	0.1	20
76	white hake*	*Urophycis tenuis*	10.8	0.4	0.0	20
102	American plaice	*Hippoglossoides platessoides*	10.8	1.7	0.1	24
348	northern moonsnail*	*Euspira heros*	10.6	0.9	0.1	6
74	haddock	*Melanogrammus aeglefinus*	8.9	0.8	0.5	21
75	pollock	*Pollachius virens*	7.3	0.3	0.0	15
401	sea scallop	*Placopecten magellanicus*	6.7	0.3	0.0	20
117	smallmouth flounder	*Etropus microstomus*	6.2	0.1	0.0	15
35	American shad	*Alosa sapidissima*	5.5	0.2	0.0	15
78	spotted hake*	*Urophycis regia*	4.8	0.2	0.0	9
312	Jonah crab	*Cancer borealis*	4.4	0.1	0.0	15
34	blueback herring	*Alosa aestivalis*	4.1	0.2	0.0	16
192	Atlantic wolfish	*Anarhichas lupus*	4.1	0.1	0.4	10
121	Atlantic mackerel	*Scomber scombrus*	3.0	0.0	0.0	10
165	alligatorfish	*Aspidophoroides monopterygius*	3.0	0.2	0.0	11
176	cunner	*Tautogolabrus adspersus*	2.8	0.0	0.0	12
109	Gulf Stream flounder	*Citharichthys arctifrons*	2.3	0.0	0.0	7
28	thorny skate	*Amblyraja radiata*	2.1	0.0	0.1	7
409	ocean quahog	*Arctica islandica*	2.1	0.1	0.0	7
116	northern pipefish	*Syngnathus fuscus*	1.8	0.0	0.0	7
180	rock gunnel	*Pholis gunnellus*	1.8	0.0	0.0	8
318	horseshoe crab	*Limulus polyphemus*	1.8	0.0	0.0	6
101	Atlantic halibut	*Hippoglossus hippoglossus*	1.6	0.0	0.0	6

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.4 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
183	daubed shanny	*Lumpenus maculatus*	1.4	0.0	0.0	4
502	northern shortfin squid	*Illex illecebrosus*	1.4	0.0	0.0	5
13	smooth dogfish	*Mustelus canis*	1.1	0.0	0.0	4
177	tautog	*Tautoga onitis*	1.1	0.0	0.0	5
107	witch flounder	*Glyptocephalus cynoglossus*	0.9	0.0	0.0	4
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.9	0.0	0.0	2
139	striped bass	*Morone saxatalis*	0.7	0.0	0.0	3
161	moustache sculpin	*Triglops murrayi*	0.7	0.0	0.0	2
172	striped searobin	*Prionotus evolans*	0.7	0.0	0.0	3
24	clearnose skate	*Raja eglanteria*	0.5	0.0	0.0	2
45	rainbow smelt	*Osmerus mordax*	0.5	0.0	0.0	2
83	fourbeard rockling	*Enchelyopus cimbrius*	0.5	0.0	0.0	2
113	Atlantic silverside	*Menidia menidia*	0.5	0.0	0.0	1
146	northern kingfish	*Menticirrhus saxatalis*	0.5	0.0	0.0	1
168	lumpfish	*Cyclopterus lumpus*	0.5	0.0	0.0	2
336	channeled whelk	*Busycotypus canaliculatus*	0.5	0.0	0.0	2
43	bay anchovy	*Anchoa mitchilli*	0.2	0.0	0.0	1
115	threespine stickleback	*Gasterosteus aculeatus*	0.2	0.0	0.0	1
135	bluefish	*Pomatomus saltatrix*	0.2	0.0	0.0	1
155	Acadian redfish	*Sebastes fasciatus*	0.2	0.0	0.0	1
170	Atlantic seasnail	*Liparis atlanticus*	0.2	0.0	0.0	1
182	snakeblenny	*Lumpenus lumpretaeformis*	0.2	0.0	0.0	1
191	wrymouth	*Cryptacanthodes maculatus*	0.2	0.0	0.0	1
323	mantis shrimp uncl	*Stomatopoda*	0.2	0.0	0.0	1
340	Iceland scallop	*Chlamys islandica*	0.2	0.0	0.0	1
342	northern horsemussel*	*Modiolus modiolus*	0.2	0.0	0.0	1
343	blue mussel*	*Mytilus edulis*	0.2	0.1	0.0	1
380	Atlantic sturgeon	*Acipenser oxyrhynchus*	0.2	0.0	0.0	1
390	conger eel uncl	*Congridae*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.5. *MarineFisheries* spring survey region 4 catch summary, 1978-2007.

ntows=722 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
106	winter flounder	*Pseudopleuronectes americanus*	96.8	78.6	15.5	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	95.3	54.3	9.7	30
193	ocean pout	*Macrozoarces americanus*	83.5	57.8	35.4	30
301	American lobster	*Homarus americanus*	77.1	6.7	1.9	30
105	yellowtail flounder	*Limanda ferruginea*	76.3	16.6	3.6	30
26	little skate*	*Leucoraja erinacea*	75.1	26.4	16.8	30
73	Atlantic cod	*Gadus morhua*	74.7	158.4	3.6	30
108	windowpane	*Scophthalmus aquosus*	72.0	5.7	1.1	30
77	red hake*	*Urophycis chuss*	71.9	17.1	2.6	30
313	Atlantic rock crab	*Cancer irroratus*	69.7	14.9	2.0	30
72	silver hake	*Merluccius bilinearis*	66.8	18.6	1.6	30
104	fourspot flounder	*Paralichthys oblongus*	63.6	4.5	0.9	30
33	alewife	*Alosa pseudoharengus*	51.9	15.7	0.6	30
102	American plaice	*Hippoglossoides platessoides*	44.5	49.7	3.8	30
32	Atlantic herring	*Clupea harengus*	42.0	35.9	1.0	30
164	sea raven	*Hemitripterus americanus*	41.6	1.0	0.6	30
23	winter skate*	*Leucoraja ocellata*	37.0	2.6	3.0	30
15	spiny dogfish	*Squalus acanthias*	32.4	7.3	16.9	25
34	blueback herring	*Alosa aestivalis*	32.4	5.7	0.1	30
182	snakeblenny	*Lumpenus lumpretaeformis*	31.6	11.7	0.6	30
401	sea scallop	*Placopecten magellanicus*	27.0	2.6	0.4	30
338	moon snail and shark eye*	*Naticidae*	24.5	2.4	0.2	25
171	Northern searobin	*Prionotus carolinus*	24.2	1.0	0.2	26
183	daubed shanny	*Lumpenus maculatus*	23.7	6.1	0.0	30
176	cunner	*Tautogolabrus adspersus*	21.3	0.8	0.1	29
45	rainbow smelt	*Osmerus mordax*	16.8	1.9	0.0	29
76	white hake*	*Urophycis tenuis*	15.9	0.9	0.1	23
312	Jonah crab	*Cancer borealis*	15.8	0.4	0.1	28
181	Northern sand lance	*Ammodytes dubius*	14.8	13.7	0.2	27
35	American shad	*Alosa sapidissima*	13.7	1.1	0.0	24
197	goosefish	*Lophius americanus*	11.6	0.1	0.6	27
83	fourbeard rockling	*Enchelyopus cimbrius*	11.4	0.3	0.0	25
165	alligatorfish	*Aspidophoroides monopterygius*	10.8	0.8	0.0	24
107	witch flounder	*Glyptocephalus cynoglossus*	10.1	0.3	0.2	19
317	spider crab uncl	*Majidae*	9.1	0.6	0.1	23
75	pollock	*Pollachius virens*	8.2	0.6	0.1	23
177	tautog	*Tautoga onitis*	8.0	0.1	0.2	24
409	ocean quahog	*Arctica islandica*	7.3	0.1	0.0	23
28	thorny skate	*Amblyraja radiata*	7.2	0.2	0.3	20
103	summer flounder	*Paralichthys dentatus*	5.5	0.1	0.0	17
318	horseshoe crab	*Limulus polyphemus*	5.5	0.1	0.1	21
503	longfin squid	*Loligo pealeii*	5.1	0.1	0.0	14
180	rock gunnel	*Pholis gunnellus*	4.8	0.1	0.0	19
348	northern moonsnail*	*Euspira heros*	4.6	0.1	0.0	6
141	black sea bass	*Centropristis striata*	3.6	0.0	0.0	8
131	butterfish	*Peprilus triacanthus*	3.5	0.1	0.0	12
403	Atlantic surfclam	*Spisula solidissima*	3.2	0.1	0.0	14
343	blue mussel*	*Mytilus edulis*	3.0	0.4	0.0	14
139	striped bass	*Morone saxatalis*	2.6	0.0	0.0	9
121	Atlantic mackerel	*Scomber scombrus*	2.2	0.1	0.0	13
116	northern pipefish	*Syngnathus fuscus*	2.1	0.0	0.0	12

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.5 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
191	wrymouth	*Cryptacanthodes maculatus*	1.9	0.0	0.0	11
74	haddock	*Melanogrammus aeglefinus*	1.8	0.1	0.0	9
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	1.7	0.2	0.0	4
342	northern horsemussel*	*Modiolus modiolus*	1.7	0.1	0.0	10
113	Atlantic silverside	*Menidia menidia*	1.5	0.0	0.0	9
143	scup	*Stenotomus chrysops*	1.4	0.0	0.0	9
336	channeled whelk	*Busycotypus canaliculatus*	1.0	0.0	0.0	6
78	spotted hake*	*Urophycis regia*	0.8	0.0	0.0	4
109	Gulf Stream flounder	*Citharichthys arctifrons*	0.8	0.0	0.0	5
166	grubby	*Myoxocephalus aenaeus*	0.8	0.0	0.0	6
117	smallmouth flounder	*Etropus microstomus*	0.7	0.0	0.0	4
155	Acadian redfish	*Sebastes fasciatus*	0.7	0.0	0.0	5
170	Atlantic seasnail	*Liparis atlanticus*	0.7	0.0	0.0	4
192	Atlantic wolfish	*Anarhichas lupus*	0.7	0.0	0.0	5
510	octopus uncl*	*Octopoda*	0.7	0.0	0.0	5
168	lumpfish	*Cyclopterus lumpus*	0.6	0.0	0.0	3
80	hake uncl*	*Gadidae*	0.4	0.4	0.2	1
184	radiated shanny	*Ulvaria subbifurcata*	0.4	0.1	0.0	2
27	smooth skate	*Malacoraja senta*	0.3	0.0	0.0	2
101	Atlantic halibut	*Hippoglossus hippoglossus*	0.3	0.0	0.0	2
162	shorthorn sculpin	*Myoxocephalus scorpius*	0.3	0.0	0.0	2
172	striped searobin	*Prionotus evolans*	0.3	0.0	0.0	2
322	lady crab	*Ovalipes ocellatus*	0.3	0.1	0.0	2
413	northern quahog	*Mercenaria mercenaria*	0.3	0.0	0.0	2
2	sea lamprey	*Petromyzon marinus*	0.1	0.0	0.0	1
31	round herring	*Etrumeus teres*	0.1	0.0	0.0	1
133	lookdown	*Selene vomer*	0.1	0.0	0.0	1
146	northern kingfish	*Menticirrhus saxatalis*	0.1	0.0	0.0	1
161	moustache sculpin	*Triglops murrayi*	0.1	0.0	0.0	1
167	inquiline snailfish*	*Liparis inquilinus*	0.1	0.0	0.0	1
337	knobbed whelk	*Busycon carica*	0.1	0.0	0.0	1
402	bay scallop	*Argopecten irradians*	0.1	0.0	0.0	1
502	northern shortfin squid	*Illex illecebrosus*	0.1	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.6. *MarineFisheries* spring survey region 5 catch summary, 1978-2007.

ntows=563 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
106	winter flounder	*Pseudopleuronectes americanus*	96.6	78.3	17.4	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	95.0	91.3	11.6	30
105	yellowtail flounder	*Limanda ferruginea*	94.7	50.5	14.4	30
73	Atlantic cod	*Gadus morhua*	92.7	61.3	20.8	30
193	ocean pout	*Macrozoarces americanus*	86.0	42.0	24.3	30
301	American lobster	*Homarus americanus*	84.0	17.8	4.6	30
108	windowpane	*Scophthalmus aquosus*	72.3	9.8	2.0	30
26	little skate*	*Leucoraja erinacea*	59.3	15.2	8.7	30
77	red hake*	*Urophycis chuss*	59.1	13.8	1.5	30
72	silver hake	*Merluccius bilinearis*	57.4	13.1	0.7	30
102	American plaice	*Hippoglossoides platessoides*	55.6	148.5	13.5	30
313	Atlantic rock crab	*Cancer irroratus*	42.3	5.3	0.7	30
33	alewife	*Alosa pseudoharengus*	41.7	15.0	0.5	29
164	sea raven	*Hemitripterus americanus*	41.7	1.0	1.0	30
23	winter skate*	*Leucoraja ocellata*	40.3	4.4	3.3	30
104	fourspot flounder	*Paralichthys oblongus*	36.2	0.8	0.2	30
34	blueback herring	*Alosa aestivalis*	27.4	3.3	0.1	29
32	Atlantic herring	*Clupea harengus*	26.3	19.6	0.3	29
45	rainbow smelt	*Osmerus mordax*	24.9	6.6	0.1	30
183	daubed shanny	*Lumpenus maculatus*	24.9	8.3	0.1	28
76	white hake*	*Urophycis tenuis*	22.6	1.6	0.2	28
107	witch flounder	*Glyptocephalus cynoglossus*	22.0	1.1	0.6	27
401	sea scallop	*Placopecten magellanicus*	22.0	4.2	0.3	29
28	thorny skate	*Amblyraja radiata*	20.8	0.7	0.4	29
338	moon snail and shark eye*	*Naticidae*	20.8	1.8	0.2	24
75	pollock	*Pollachius virens*	20.6	3.9	0.4	26
182	snakeblenny	*Lumpenus lumpretaeformis*	20.4	5.6	0.3	26
74	haddock	*Melanogrammus aeglefinus*	17.9	1.3	0.9	23
176	cunner	*Tautogolabrus adspersus*	16.3	0.5	0.1	25
312	Jonah crab	*Cancer borealis*	16.0	0.6	0.1	26
35	American shad	*Alosa sapidissima*	15.3	0.8	0.0	22
165	alligatorfish	*Aspidophoroides monopterygius*	13.5	0.5	0.0	24
83	fourbeard rockling	*Enchelyopus cimbrius*	11.2	1.2	0.1	25
197	goosefish	*Lophius americanus*	8.5	0.1	0.2	22
192	Atlantic wolfish	*Anarhichas lupus*	8.0	0.1	0.5	20
155	Acadian redfish	*Sebastes fasciatus*	6.6	0.4	0.0	20
181	Northern sand lance	*Ammodytes dubius*	6.4	3.6	0.0	20
409	ocean quahog	*Arctica islandica*	5.3	0.1	0.0	19
510	octopus uncl*	*Octopoda*	4.4	0.1	0.0	16
15	spiny dogfish	*Squalus acanthias*	3.4	0.2	0.4	6
348	northern moonsnail*	*Euspira heros*	3.4	0.1	0.0	6
168	lumpfish	*Cyclopterus lumpus*	3.0	0.0	0.2	15
318	horseshoe crab	*Limulus polyphemus*	2.7	0.0	0.0	11
343	blue mussel*	*Mytilus edulis*	2.5	0.7	0.0	11
139	striped bass	*Morone saxatalis*	2.3	0.0	0.0	9
131	butterfish	*Peprilus triacanthus*	2.1	0.1	0.0	8
141	black sea bass	*Centropristis striata*	2.0	0.0	0.0	6
503	longfin squid	*Loligo pealeii*	1.6	0.1	0.0	4
317	spider crab uncl	*Majidae*	1.2	0.0	0.0	2
121	Atlantic mackerel	*Scomber scombrus*	1.1	0.0	0.0	6
171	Northern searobin	*Prionotus carolinus*	1.1	0.0	0.0	4

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table I.F.6 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
180	rock gunnel	*Pholis gunnellus*	1.1	0.1	0.0	6
103	summer flounder	*Paralichthys dentatus*	0.9	0.0	0.0	3
191	wrymouth	*Cryptacanthodes maculatus*	0.9	0.0	0.0	5
24	clearnose skate	*Raja eglanteria*	0.7	0.0	0.0	3
101	Atlantic halibut	*Hippoglossus hippoglossus*	0.7	0.0	0.0	4
143	scup	*Stenotomus chrysops*	0.7	0.0	0.0	4
170	Atlantic seasnail	*Liparis atlanticus*	0.7	0.0	0.0	4
177	tautog	*Tautoga onitis*	0.7	0.0	0.0	4
1	Atlantic hagfish	*Myxine glutinosa*	0.5	0.1	0.0	3
161	moustache sculpin	*Triglops murrayi*	0.5	0.0	0.0	3
162	shorthorn sculpin	*Myoxocephalus scorpius*	0.5	0.0	0.0	3
342	northern horsemussel*	*Modiolus modiolus*	0.5	0.0	0.0	2
78	spotted hake*	*Urophycis regia*	0.4	0.0	0.0	2
109	Gulf Stream flounder	*Citharichthys arctifrons*	0.4	0.0	0.0	2
115	threespine stickleback	*Gasterosteus aculeatus*	0.4	0.0	0.0	2
116	northern pipefish	*Syngnathus fuscus*	0.4	0.0	0.0	2
403	Atlantic surfclam	*Spisula solidissima*	0.4	0.0	0.0	2
413	northern quahog	*Mercenaria mercenaria*	0.4	0.0	0.0	1
27	smooth skate	*Malacoraja senta*	0.2	0.0	0.0	1
113	Atlantic silverside	*Menidia menidia*	0.2	0.0	0.0	1
167	inquiline snailfish*	*Liparis inquilinus*	0.2	0.0	0.0	1
172	striped searobin	*Prionotus evolans*	0.2	0.0	0.0	1
322	lady crab	*Ovalipes ocellatus*	0.2	0.0	0.0	1
325	snow crab	*Chionoecetes opilio*	0.2	0.0	0.0	1
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.2	0.0	0.0	1
453	Atlantic tomcod	*Microgadus tomcod*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

II. Fall Survey

A. Record of Station Accomplishment (See table and figure series II.A)

An average of 90 representative stations have been completed each fall. Hard bottom habitats, sand waves, fixed fishing gear, abandoned fishing gear and other anthropogenic debris can cause early haulbacks or damage the survey trawl. In addition high algae or spiny dogfish densities may require reduced tow times, or result in unsuccessful haulbacks. Completion of the full complement of assigned stations is rarely accomplished as a result of these challenges in addition to other impediments such as foul weather, mechanical breakdowns and the limits of finite vessel and personnel time. Station allocation by stratum has been adjusted on more than one occasion, most recently in 2005, to reflect improved stratum area estimates.

Figure II.A.1. Count of representative (SHG ≤ 136) tows accomplished, *MarineFisheries* fall survey 1978 – 2007.

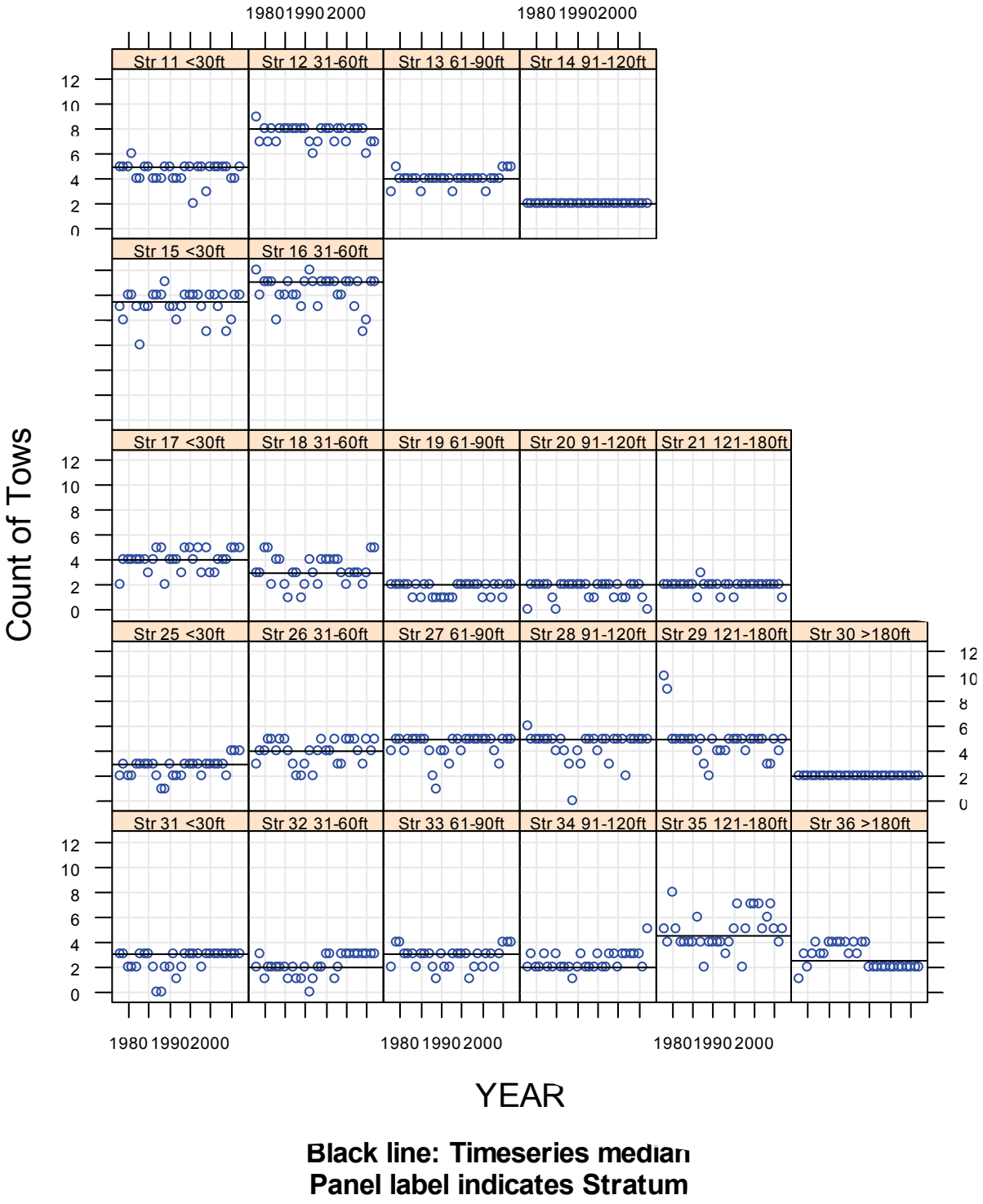


Figure II.A.2. Count of representative and non-representative (SHG ≤ 166) tows accomplished, *MarineFisheries* fall survey, 1978 – 2007.

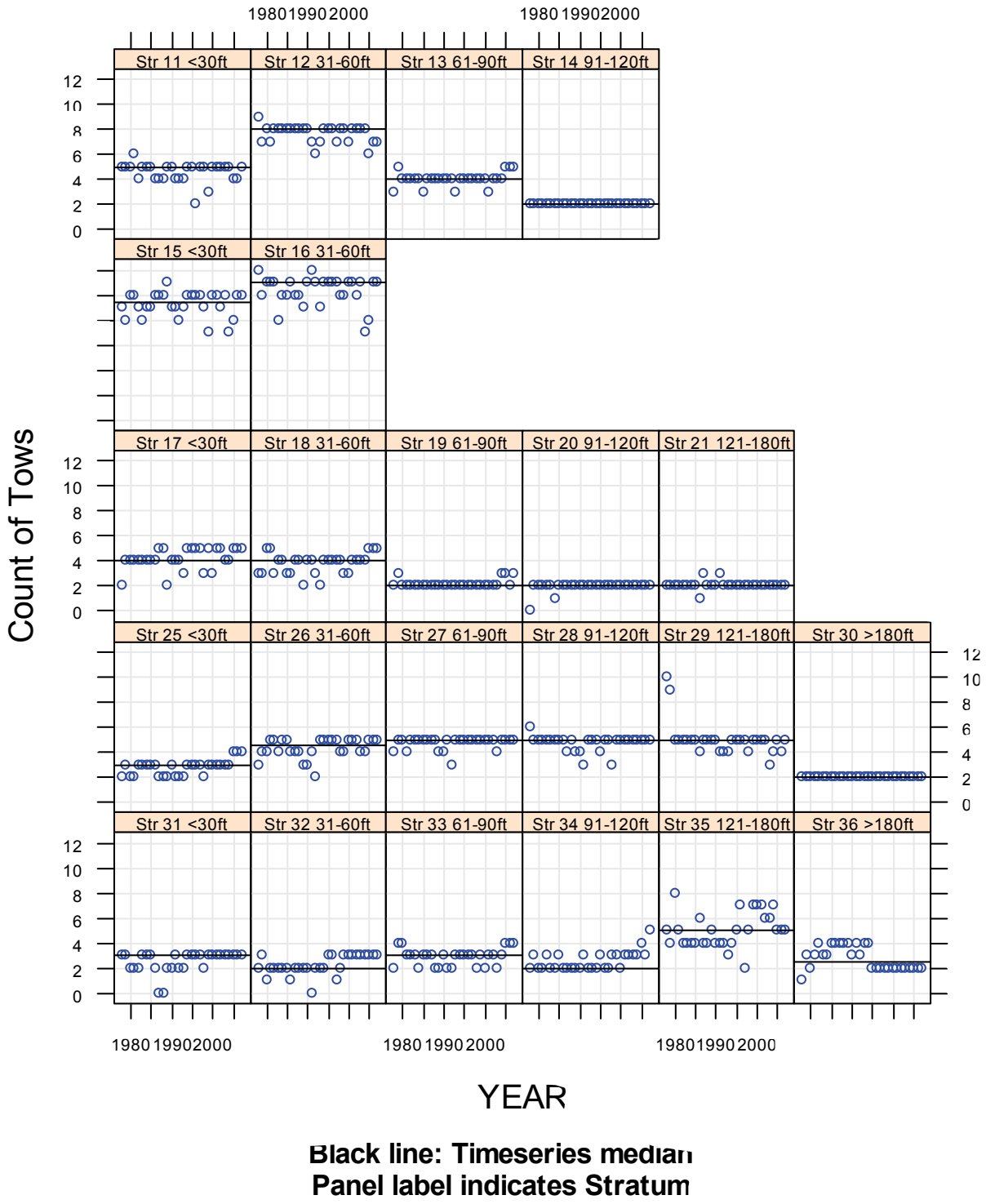


Table II.A.1. Count of representative (SHG ≤ 136) tows accomplished, *MarineFisheries* fall survey 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5						ALL STRATA
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**Sum**
1978	5	9	3	2	9	12	2	3	2	0	2	2	3	4	6	10	2	3	2	2	2	5	1	**91**
1979	5	7	5	2	8	10	4	3	2	2	2	3	4	5	5	9	2	3	3	4	3	4	3	**98**
1980	5	8	4	2	10	11	4	5	2	2	2	2	4	5	5	5	2	2	1	4	2	8	2	**97**
1981	6	7	4	2	10	11	4	5	2	2	2	2	5	4	5	5	2	2	2	3	2	5	3	**95**
1982	4	8	4	2	9	11	4	2	2	2	2	3	5	5	5	5	2	2	2	3	3	4	4	**93**
1983	4	7	4	2	6	8	4	4	1	2	2	3	4	5	5	5	2	3	2	3	2	4	3	**85**
1984	5	8	4	2	9	10	4	4	2	1	2	3	5	5	5	5	2	3	2	2	2	4	3	**92**
1985	5	8	3	2	9	10	3	2	1	0	2	3	5	5	4	5	2	3	2	3	3	4	4	**88**
1986	4	8	4	2	10	11	4	1	2	2	1	3	4	5	5	4	2	2	1	3	2	6	4	**90**
1987	4	8	4	2	10	10	5	3	2	2	3	2	3	4	4	5	2	0	2	3	2	4	4	**88**
1988	4	8	4	2	10	10	5	3	1	2	2	1	2	2	3	3	2	0	1	2	2	2	4	**75**
1989	5	8	4	2	11	9	2	1	1	2	2	1	2	1	0	2	2	2	1	1	1	4	4	**68**
1990	5	8	4	2	9	11	4	2	1	2	2	3	3	4	4	5	2	2	2	3	2	4	3	**87**
1991	4	7	4	2	9	12	4	4	1	2	2	2	4	4	3	4	2	3	0	2	3	4	4	**86**
1992	4	6	4	2	8	11	4	3	1	2	1	2	2	3	5	4	2	1	1	2	2	4	3	**77**
1993	4	7	3	2	9	9	3	2	1	1	2	2	4	5	5	4	2	2	2	3	2	3	4	**81**
1994	5	8	4	2	10	11	5	4	2	1	2	3	5	5	5	5	2	3	2	3	2	4	4	**97**
1995	5	8	4	2	10	11	5	4	2	2	1	3	4	4	4	5	2	3	3	3	3	5	2	**95**
1996	2	8	4	2	10	11	4	4	2	2	2	3	4	5	5	5	2	3	3	3	2	7	2	**95**
1997	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	1	1	2	2	2	**90**
1998	5	8	4	2	9	10	3	4	2	2	2	2	3	5	3	4	2	2	2	2	3	5	2	**86**
1999	3	8	4	2	7	10	5	3	2	1	2	3	3	5	5	5	2	3	3	3	3	7	2	**91**
2000	5	7	4	2	10	11	3	2	1	2	2	3	5	5	5	5	2	3	3	2	2	7	2	**93**
2001	5	8	3	2	10	11	3	3	2	1	2	3	5	5	5	5	2	3	3	3	3	7	2	**96**
2002	5	8	4	2	9	9	4	3	1	1	2	3	5	5	2	5	2	3	3	3	3	5	2	**89**
2003	5	8	4	2	10	11	4	3	2	2	2	3	4	4	5	3	2	3	3	2	3	6	2	**93**
2004	5	8	4	2	7	7	4	2	2	2	2	2	3	3	5	3	2	3	3	3	3	7	2	**84**
2005	4	6	5	2	8	8	5	3	1	2	2	4	5	5	5	5	2	3	3	4	3	5	2	**92**
2006	4	7	5	2	10	11	5	5	2	1	2	4	4	5	5	4	2	3	3	4	2	4	2	**96**
2007	5	7	5	2	10	11	5	5	2	0	1	4	5	5	5	5	2	3	3	4	5	5	2	**101**
Sum	136	228	120	60	276	309	120	96	49	47	57	80	119	132	133	144	60	74	64	83	74	145	83	2689
Mean	4.5	7.6	4.0	2.0	9.2	10.3	4.0	3.2	1.6	1.6	1.9	2.7	4.0	4.4	4.4	4.8	2.0	2.5	2.1	2.8	2.5	4.8	2.8	89.6
Str-wts	100	168	88	20	192	210	86	89	40	21	26	62	90	92	94	105	33	36	55	66	53	68	39	1833

Str-wts represent the area of each stratum in square nautical miles.

Table II.A.2. Count of representative and non-representative (SHG ≤ 166) tows accomplished, *MarineFisheries* fall survey 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5						ALL STRATA
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**Sum**
1978	5	9	3	2	9	12	2	3	2	0	2	2	3	4	6	10	2	3	2	2	2	5	1	**91**
1979	5	7	5	2	8	10	4	3	3	2	2	3	4	5	5	9	2	3	3	4	3	4	3	**99**
1980	5	8	4	2	10	11	4	5	2	2	2	2	4	5	5	5	2	2	1	4	2	8	2	**97**
1981	6	7	4	2	10	11	4	5	2	2	2	2	5	4	5	5	2	2	2	3	2	5	3	**95**
1982	4	8	4	2	9	11	4	3	2	2	2	3	5	5	5	5	2	2	2	3	3	4	4	**94**
1983	5	8	4	2	8	8	4	4	2	2	2	3	4	5	5	5	2	3	2	3	2	4	3	**90**
1984	5	8	4	2	9	10	4	4	2	1	2	3	5	5	5	5	2	3	2	2	2	4	3	**92**
1985	5	8	3	2	9	10	4	3	2	2	2	3	5	5	5	5	2	3	2	3	3	4	4	**94**
1986	4	8	4	2	10	11	4	3	2	2	1	3	4	5	5	4	2	2	1	3	2	6	4	**92**
1987	4	8	4	2	10	10	5	4	2	2	3	2	4	5	4	5	2	0	2	3	2	4	4	**91**
1988	4	8	4	2	10	10	5	4	2	2	2	2	4	5	5	5	2	0	2	2	2	4	4	**90**
1989	5	8	4	2	11	9	2	2	2	2	2	2	3	4	4	5	2	2	2	2	2	5	4	**86**
1990	5	8	4	2	9	11	4	4	2	2	2	3	3	4	4	5	2	2	2	3	2	4	3	**90**
1991	4	7	4	2	9	12	4	4	2	2	3	2	4	5	3	4	2	3	0	2	3	4	4	**89**
1992	4	6	4	2	8	11	4	3	2	2	2	2	2	3	5	4	2	2	2	2	2	4	3	**81**
1993	4	7	3	2	9	9	3	2	2	2	2	2	5	5	5	4	2	2	2	3	2	3	4	**84**
1994	5	8	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	2	3	2	4	4	**98**
1995	5	8	4	2	10	11	5	4	2	2	2	3	5	5	4	5	2	3	3	3	3	5	2	**98**
1996	2	8	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	2	7	2	**97**
1997	5	7	4	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	1	3	2	2	2	**92**
1998	5	8	4	2	9	10	3	4	2	2	2	2	4	5	3	4	2	2	2	2	3	5	2	**87**
1999	3	8	4	2	7	10	5	3	2	2	2	3	4	5	5	5	2	3	3	3	3	7	2	**93**
2000	5	7	4	2	10	11	3	3	2	2	2	3	5	5	5	5	2	3	3	2	2	7	2	**95**
2001	5	8	3	2	10	11	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	7	2	**100**
2002	5	8	4	2	9	10	5	4	2	2	2	3	5	5	5	5	2	3	3	3	3	6	2	**98**
2003	5	8	4	2	10	11	4	4	2	2	2	3	4	4	5	3	2	3	3	2	3	6	2	**94**
2004	5	8	4	2	7	7	4	4	3	2	2	3	4	5	5	4	2	3	3	3	3	7	2	**92**
2005	4	6	5	2	8	8	5	5	3	2	2	4	5	5	5	5	2	3	3	4	4	5	2	**97**
2006	4	7	5	2	10	11	5	5	2	2	2	4	5	5	5	4	2	3	3	4	3	5	2	**100**
2007	5	7	5	2	10	11	5	5	3	2	2	4	5	5	5	5	2	3	3	4	5	5	2	**105**
Sum	137	229	120	60	278	310	125	113	64	57	61	83	130	143	143	150	60	75	67	86	77	150	83	2801
Mean	4.6	7.6	4.0	2.0	9.3	10.3	4.2	3.8	2.1	1.9	2.0	2.8	4.3	4.8	4.8	5.0	2.0	2.5	2.2	2.9	2.6	5.0	2.8	93.4
Str-wts	100	168	88	20	192	210	86	89	40	21	26	62	90	92	94	105	33	36	55	66	53	68	39	1833

Str-wts represent the area of each stratum in square nautical miles.

II. Fall Survey

B. Geographic Distribution of Survey Stations (See figure series II.B)

The locations of each completed station by cruise are provided based on recorded start and end coordinates. The dots represent the start location, while the connected line represents the vector of direction and distance to the point of haulback. Each station is labeled with the sequential station number. Aborted station attempts are noted with x's. Location of start and end positions recorded in the database correspond to the position when the trawl warp was fully deployed at the start and when retrieval of trawl warp commences (end). Precision of recorded location has improved as navigational technology has advanced over time. The start/end positions have been recorded with a Furuno GPS 32 navigation receiver since 2005. Prior to 2005 latitude/longitude position data was converted from Loran time delay readings. The six-digit cruise numbers in the figure labels use the following convention: year (YYYY), followed by a unique identifier (92) for *Marine-Fisheries* fall trawl surveys.

Figure II.B.1. Geographic distribution of survey stations completed on each *MarineFisheries* fall survey, cruises 200791 – 197891.

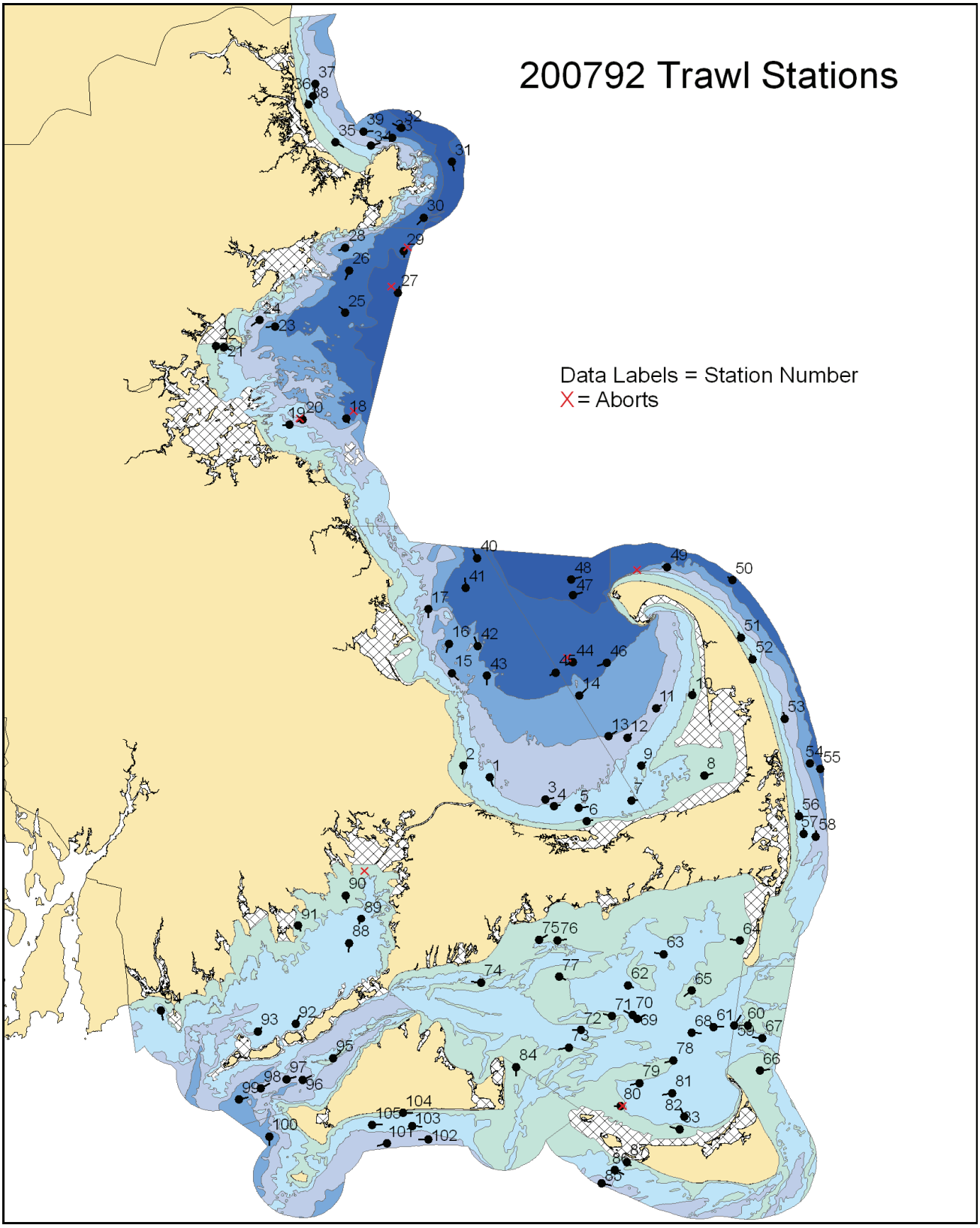


Figure II.B.1. continued.

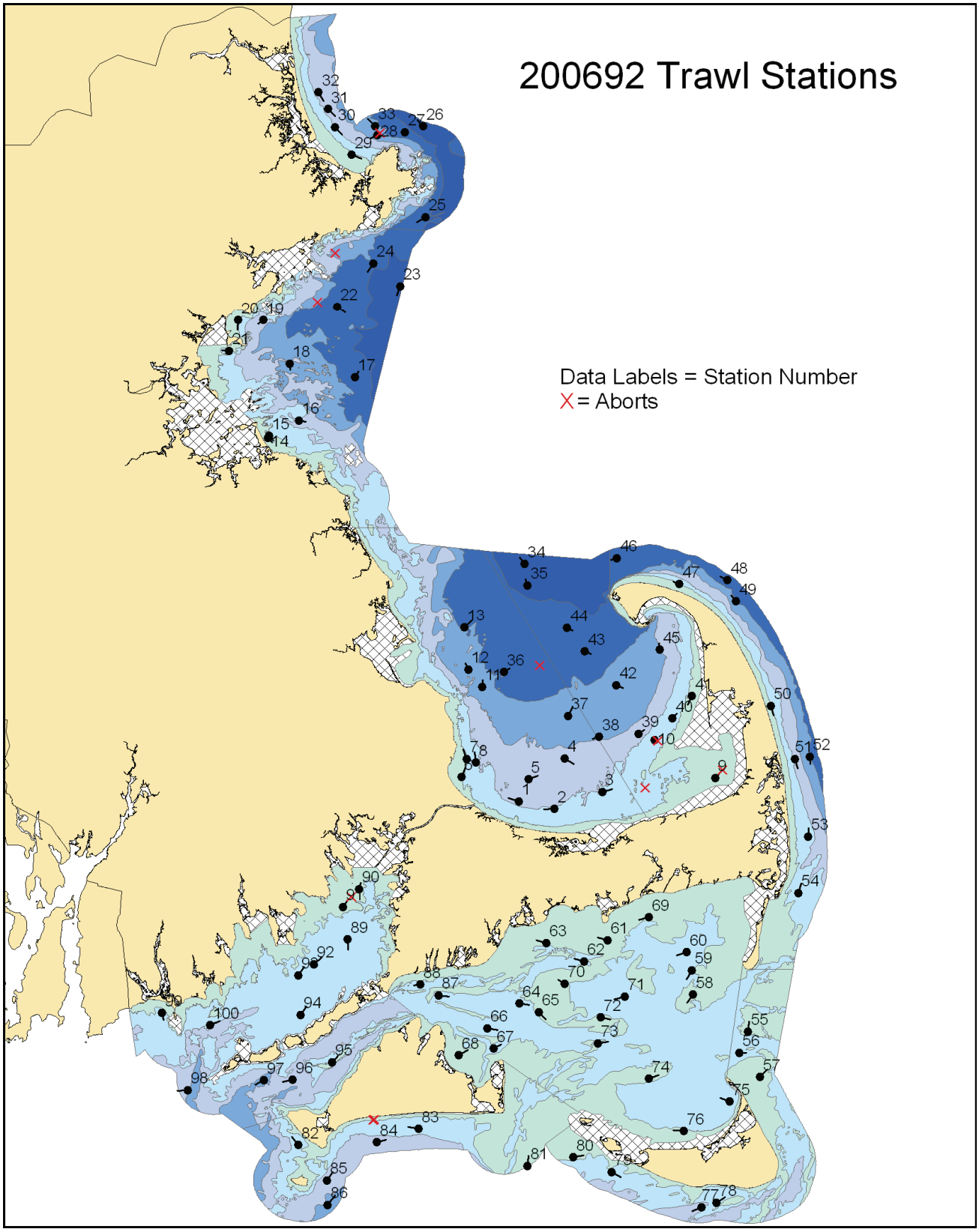


Figure II.B.1. continued.

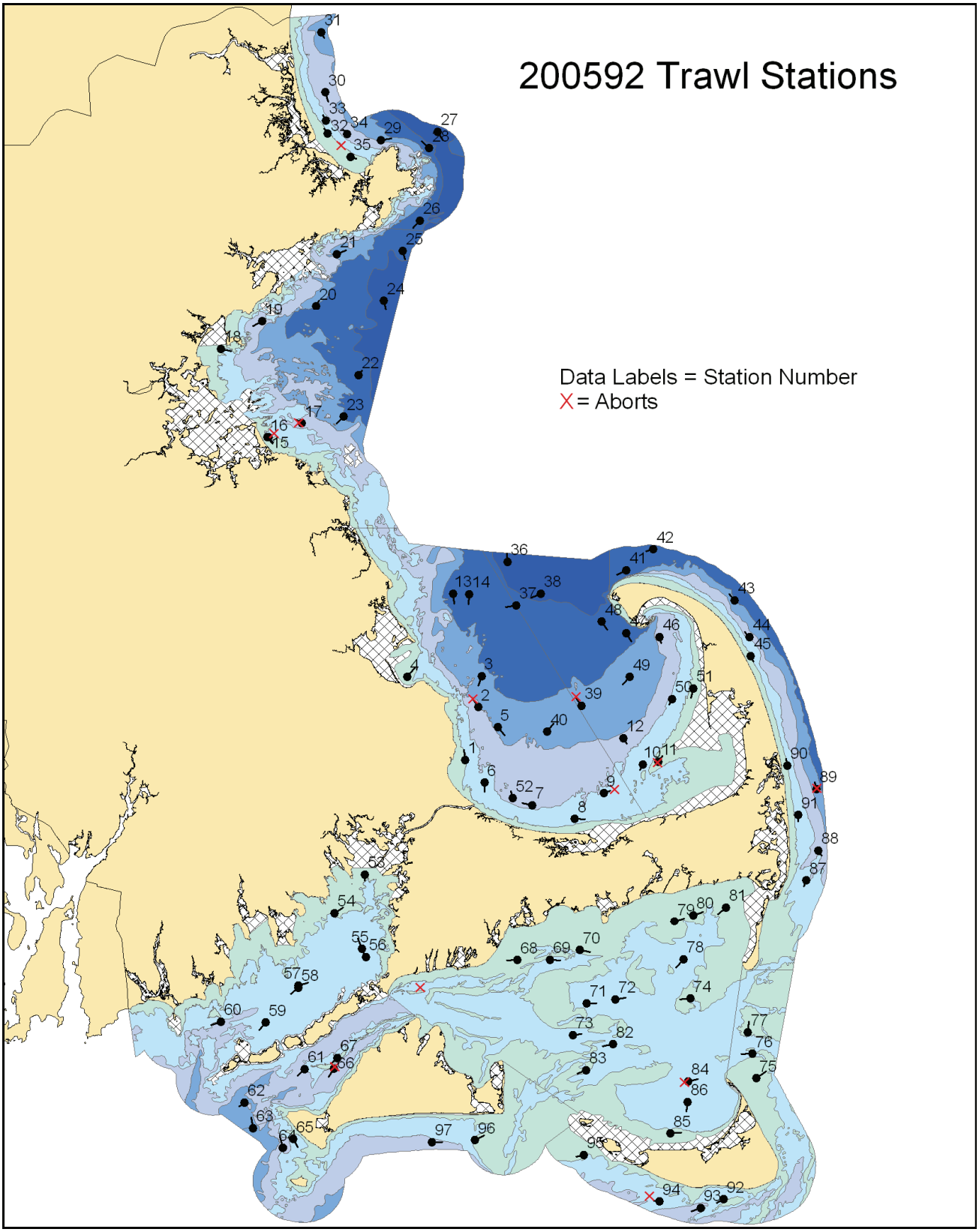


Figure II.B.1. continued.

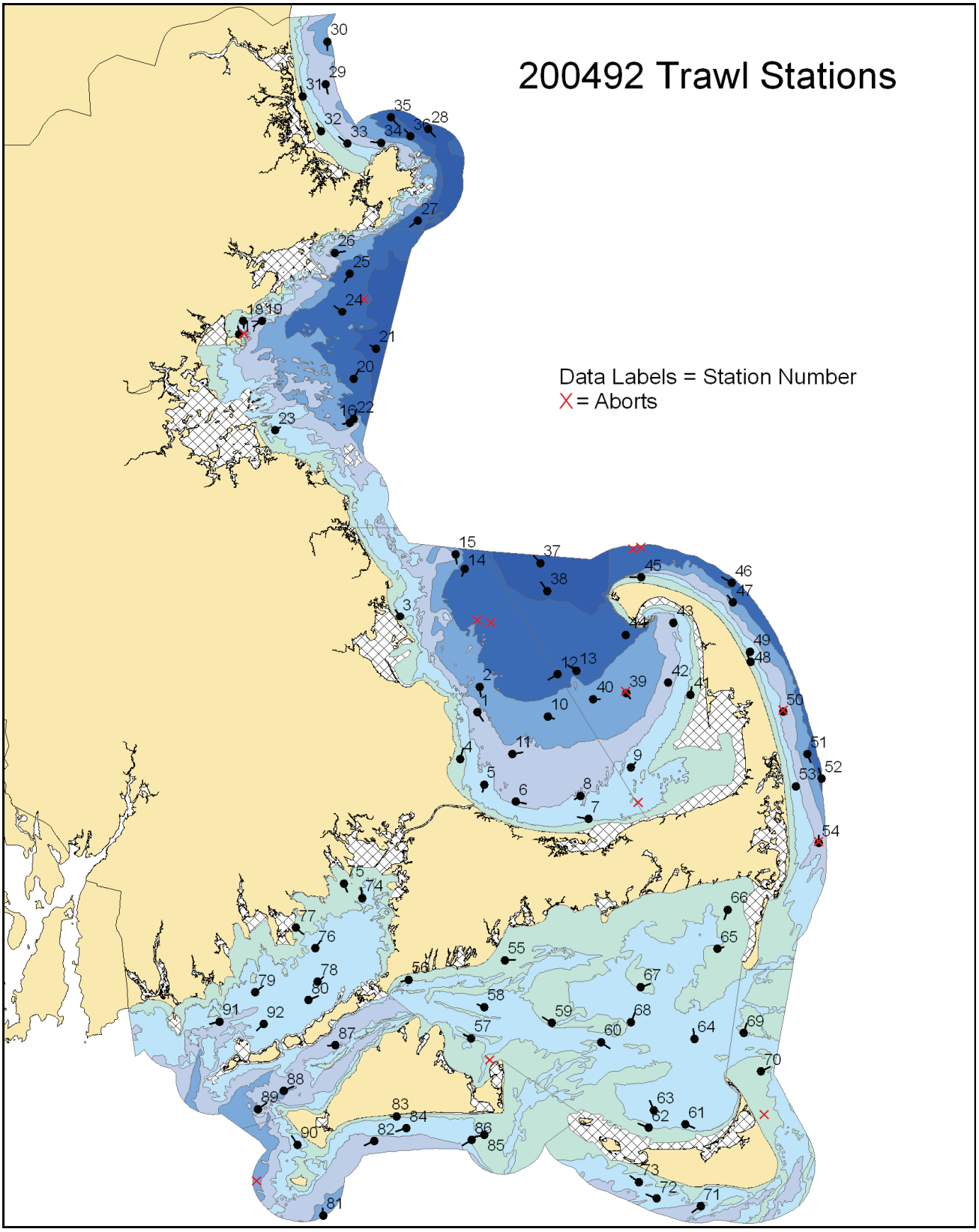


Figure II.B.1. continued.

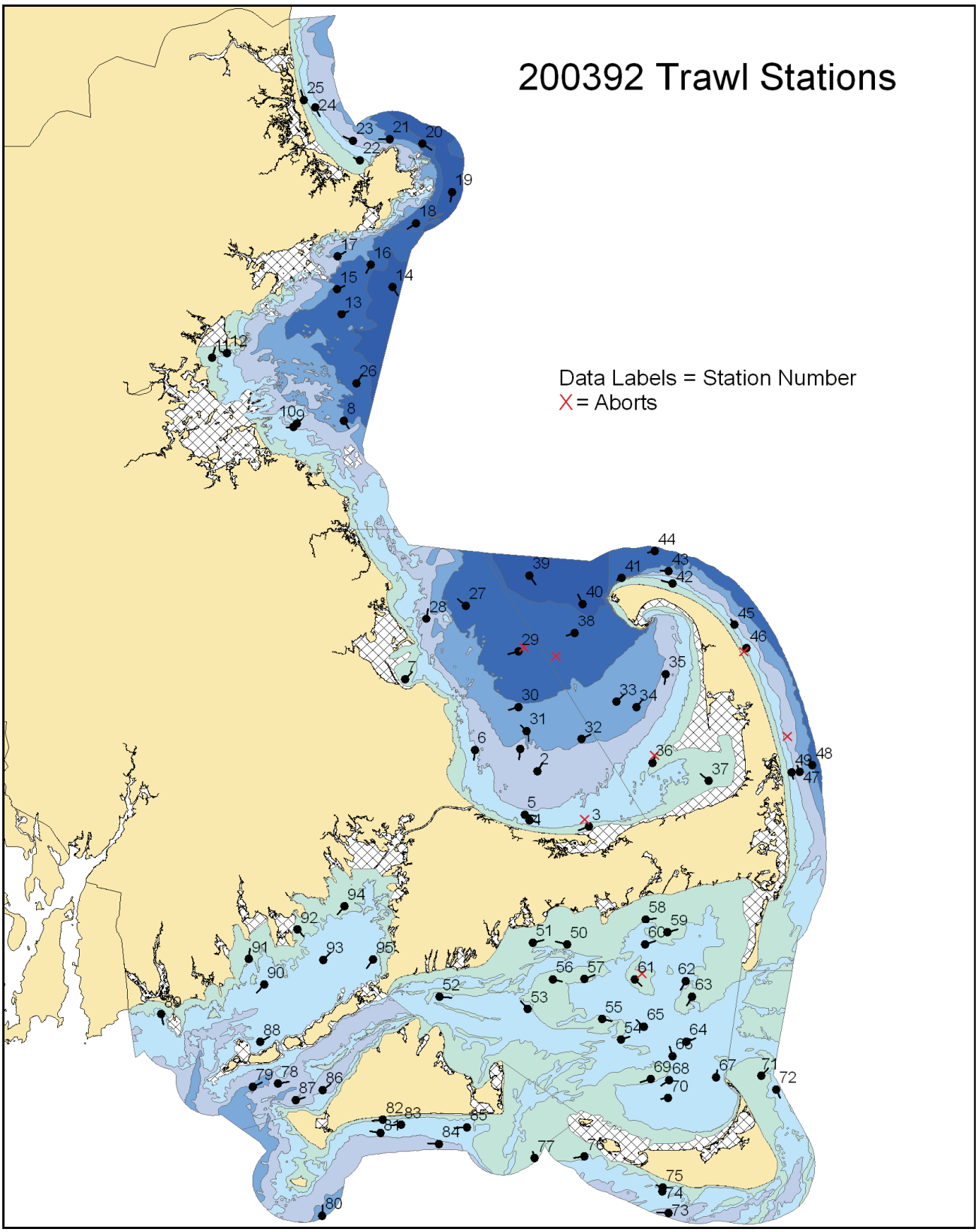


Figure II.B.1. continued.

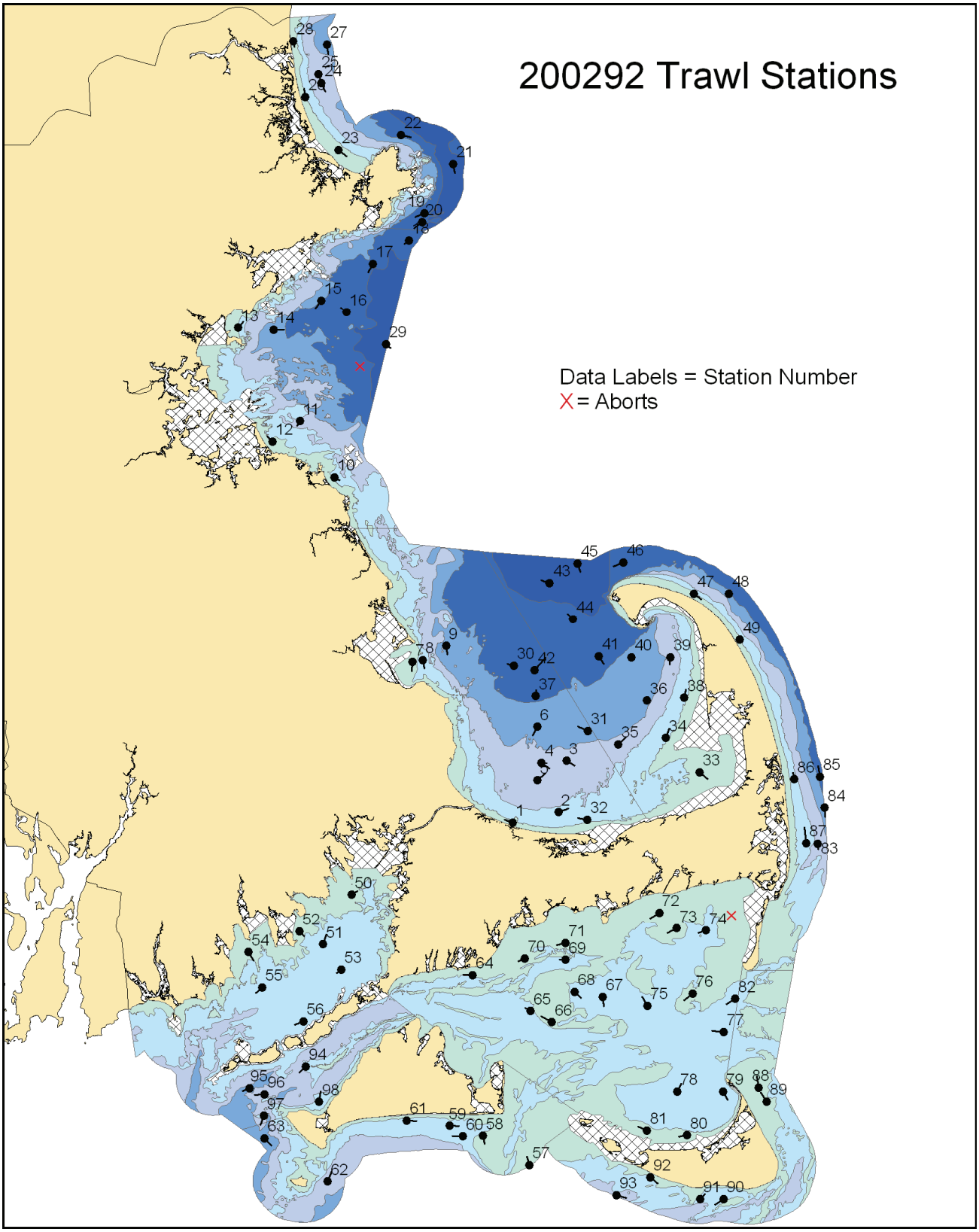


Figure II.B.1. continued.

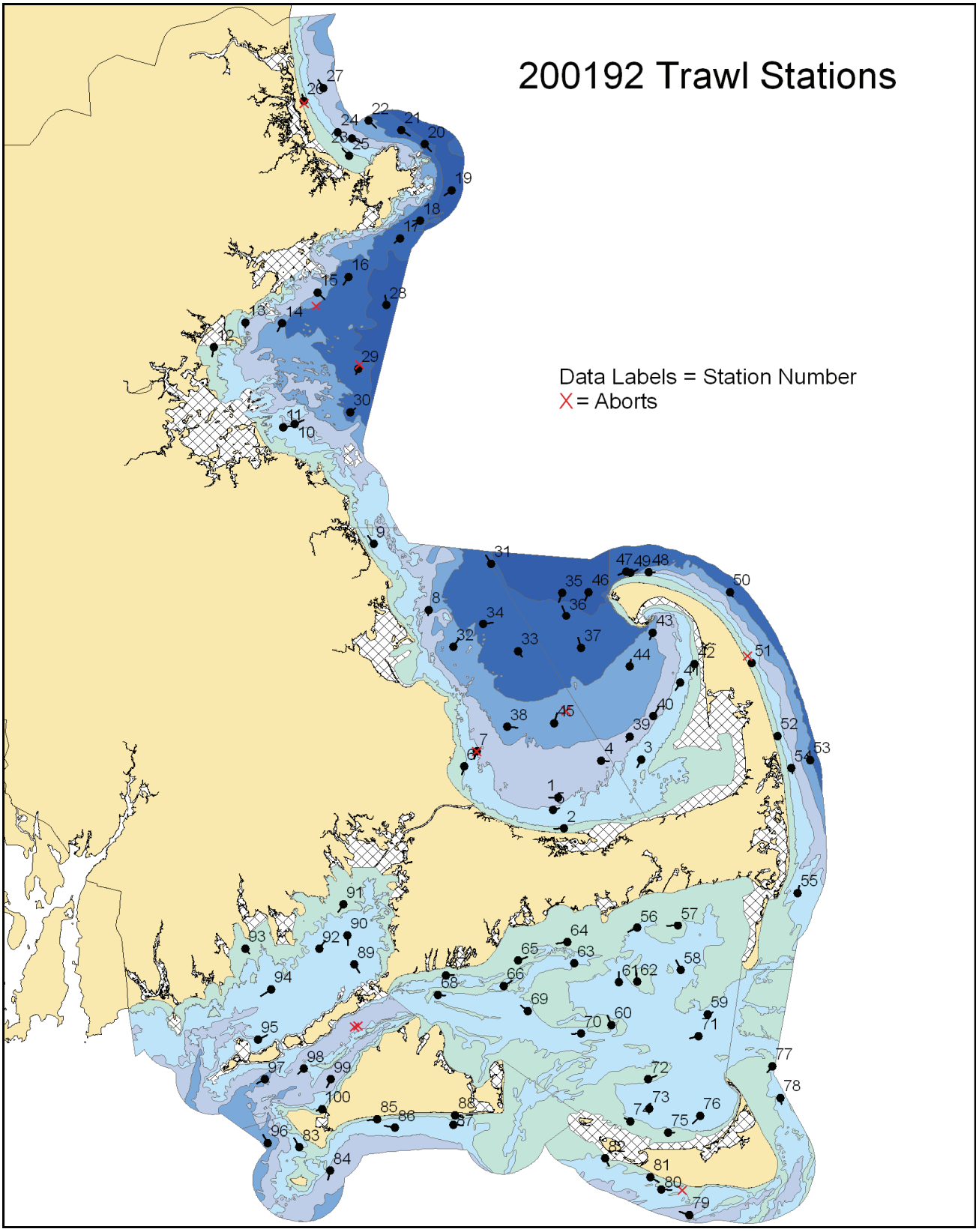


Figure II.B.1. continued.

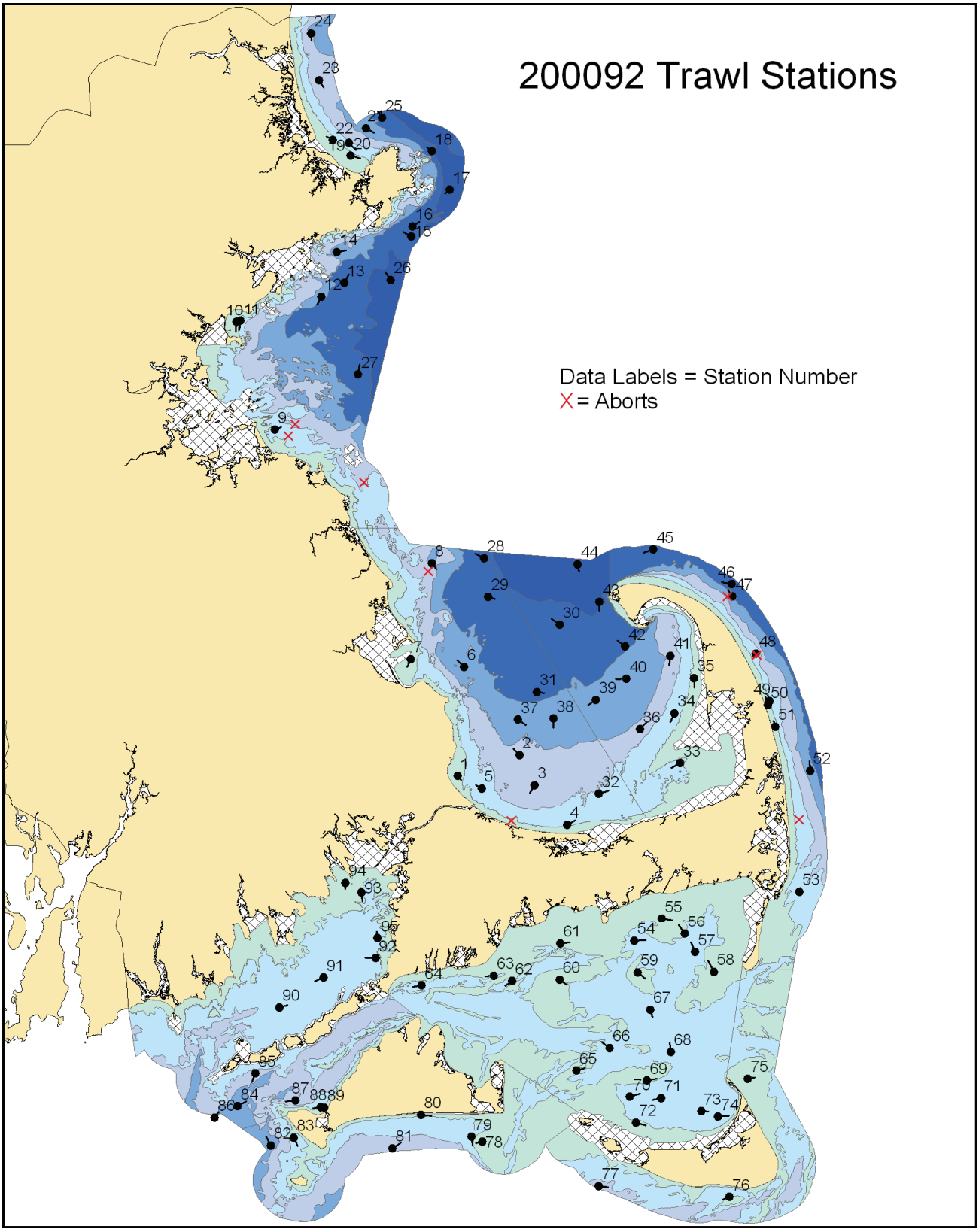


Figure II.B.1. continued.

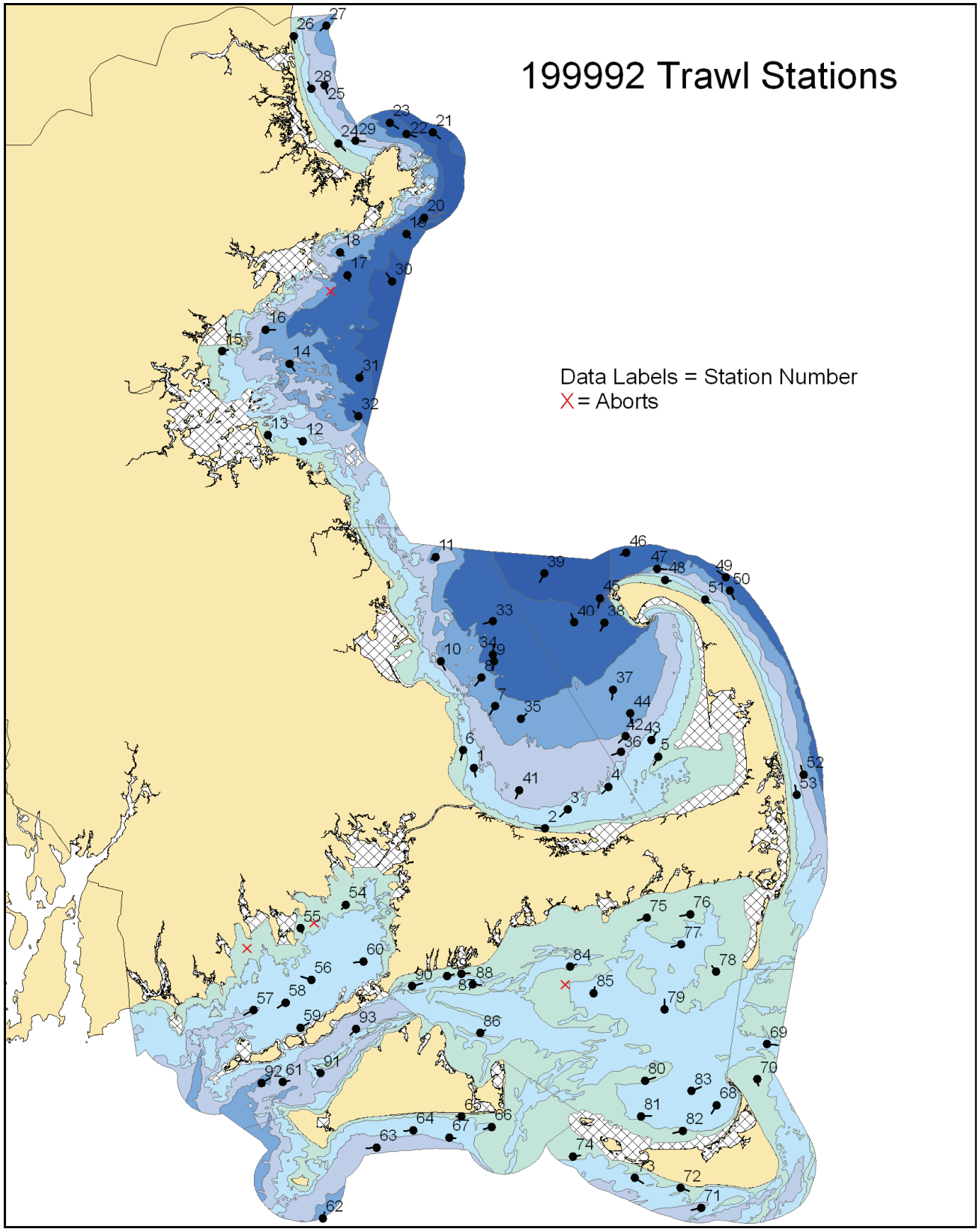


Figure II.B.1. continued.

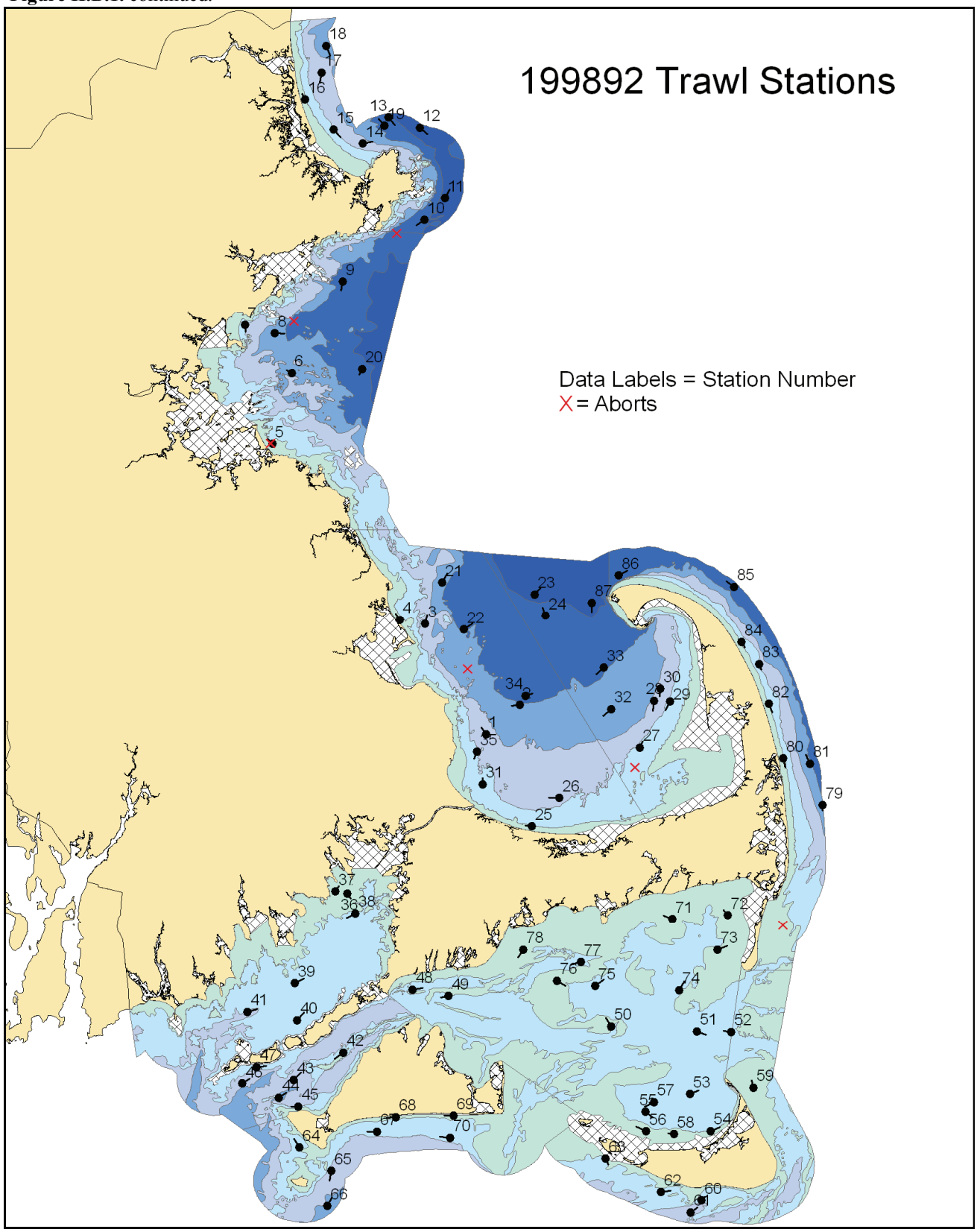


Figure II.B.1. continued.

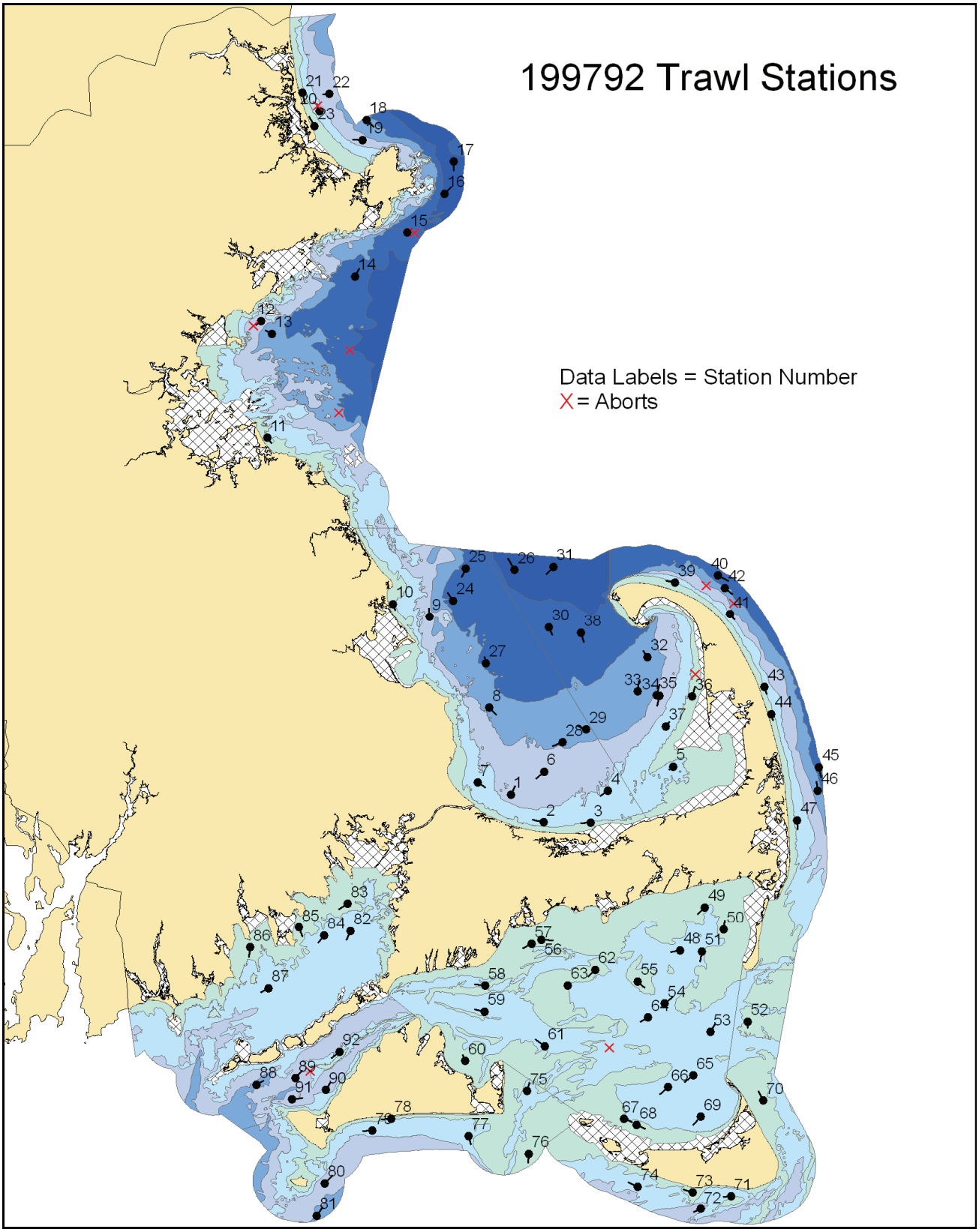


Figure II.B.1. continued.

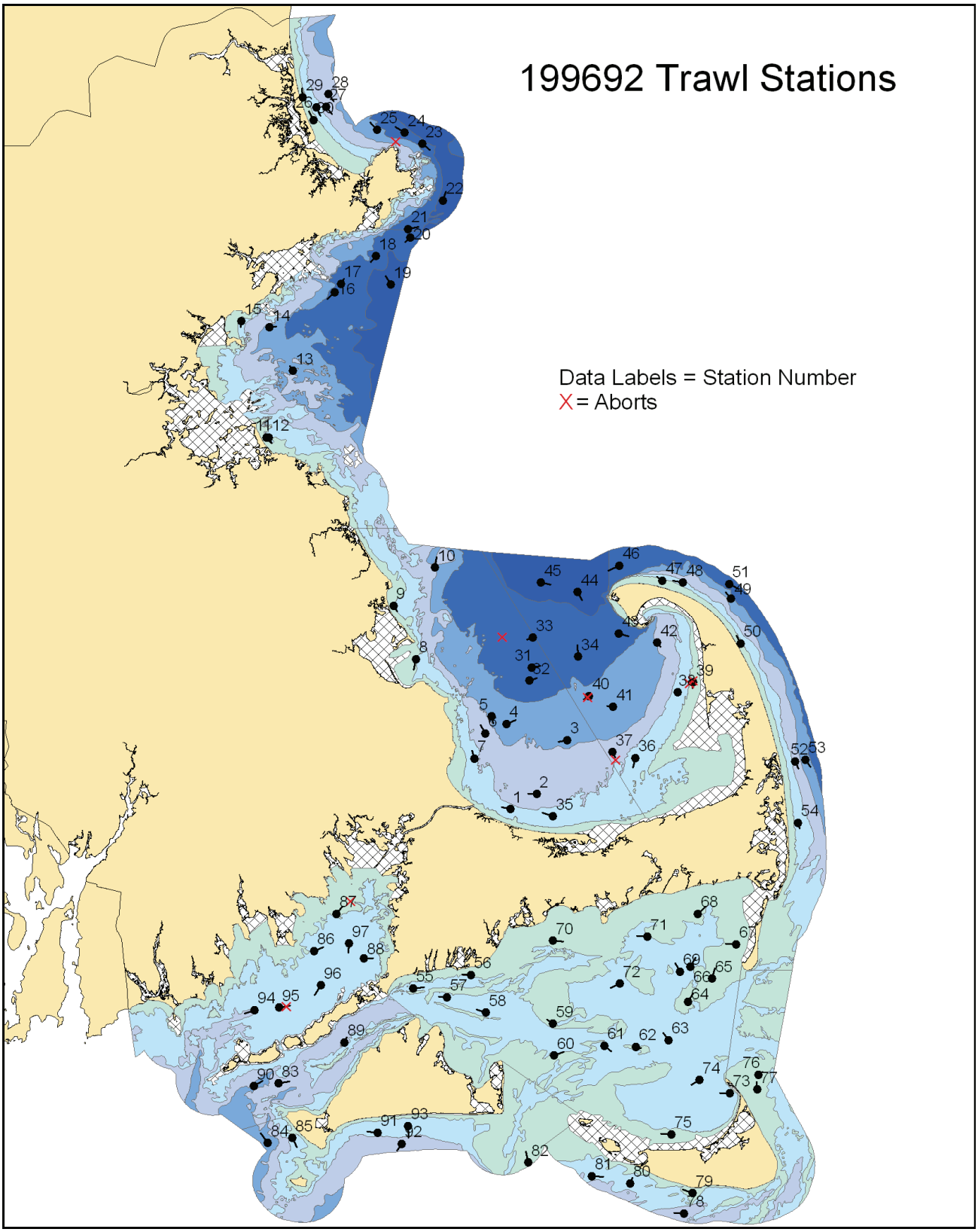


Figure II.B.1. continued.

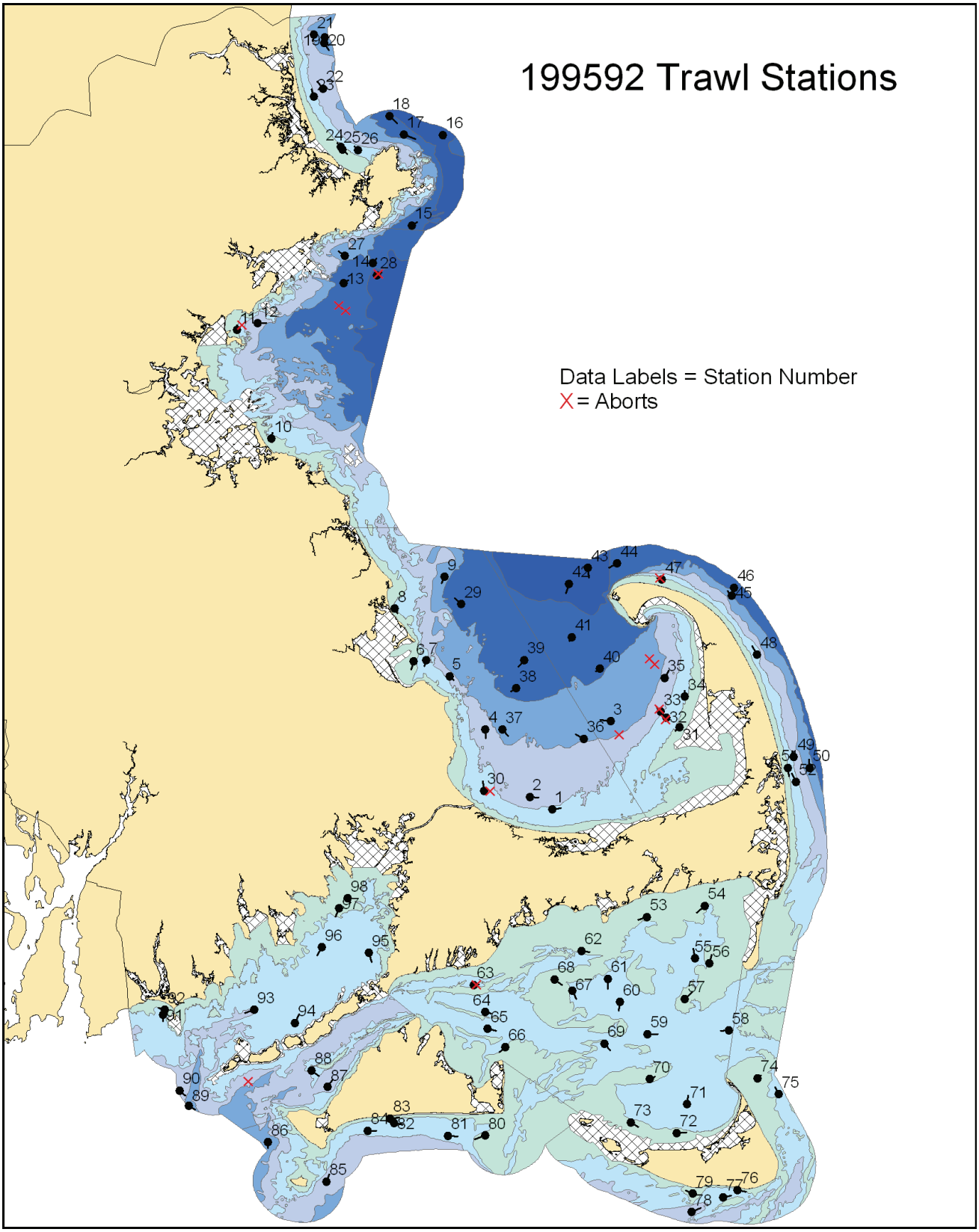


Figure II.B.1. continued.

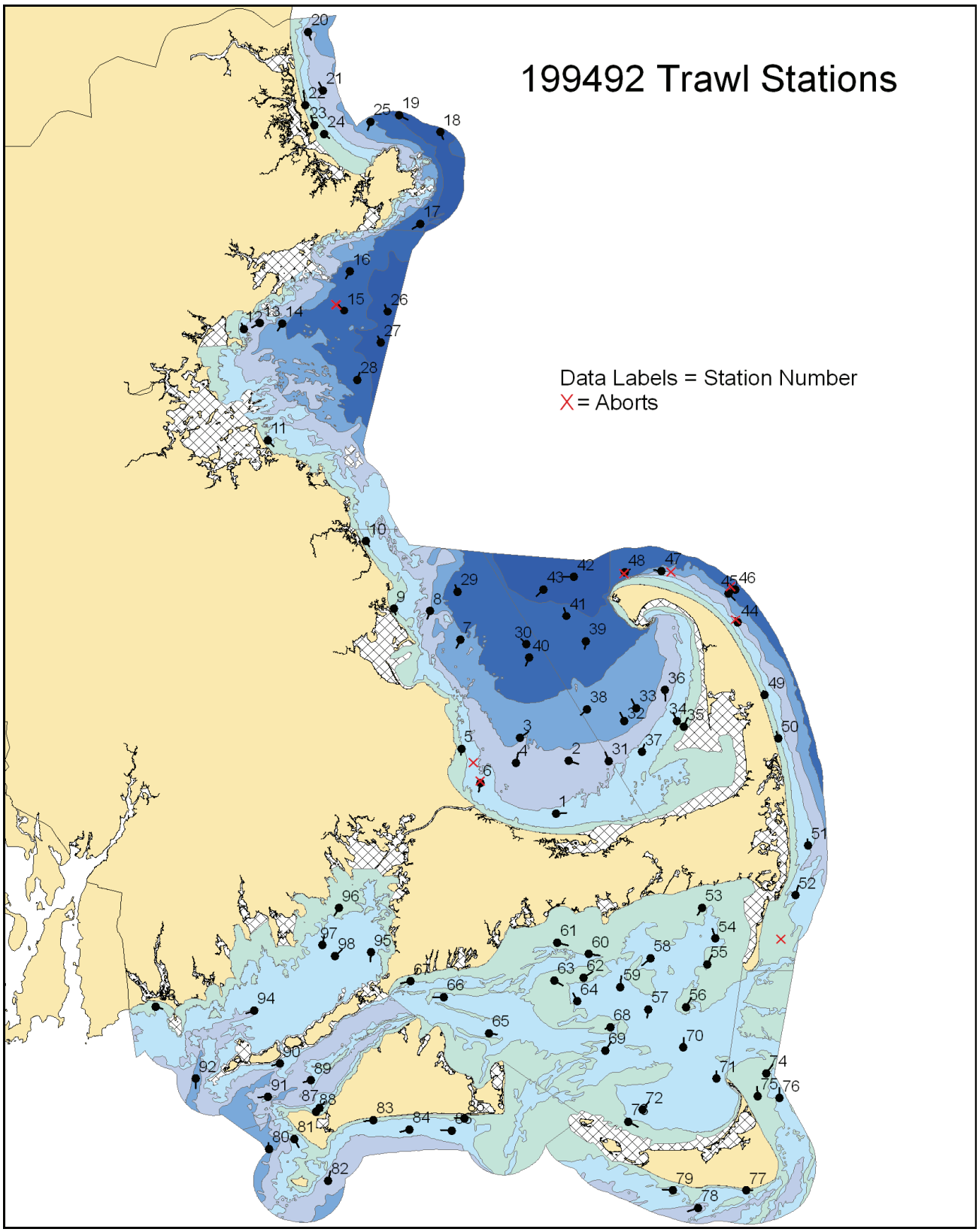


Figure II.B.1. continued.

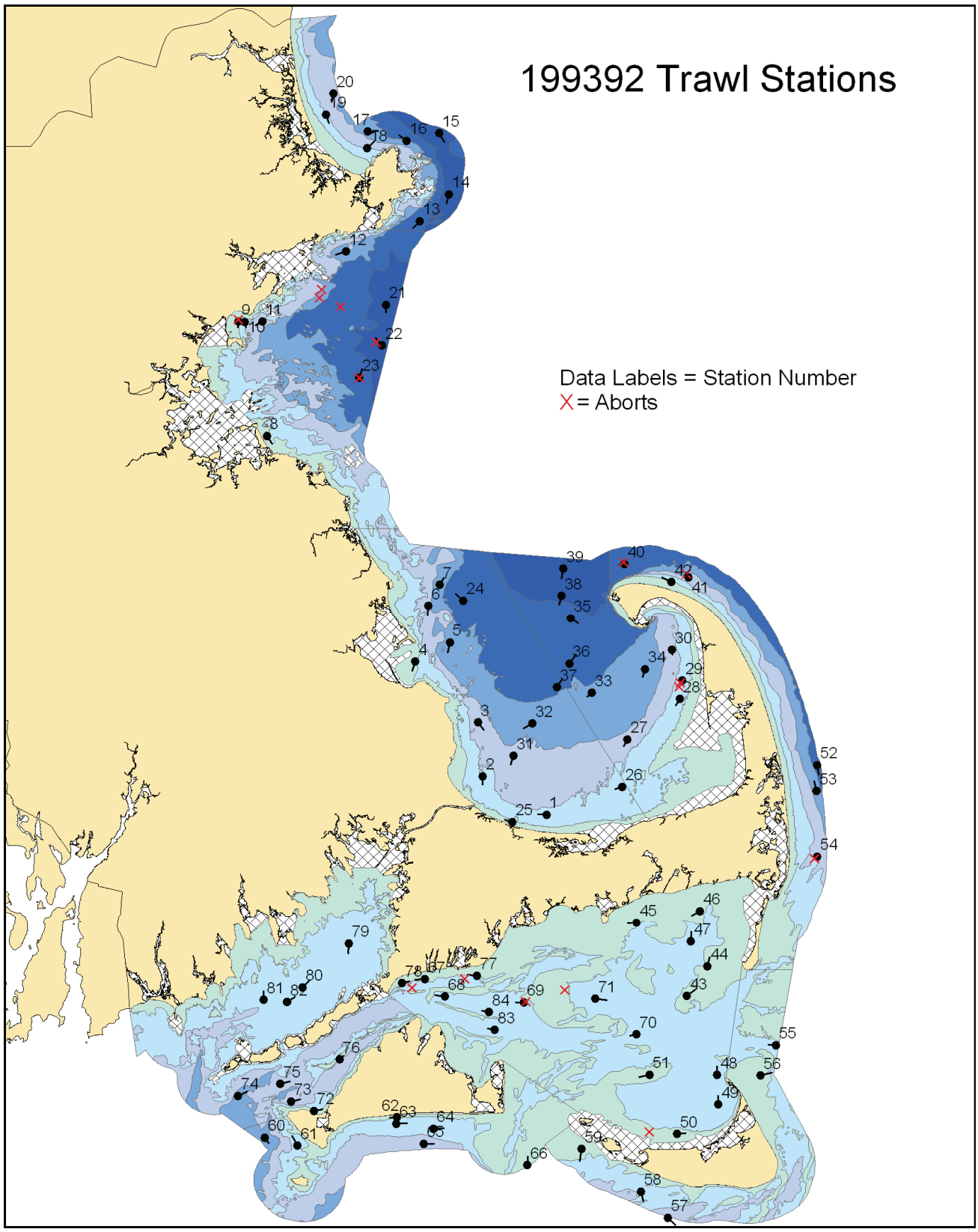


Figure II.B.1. continued.

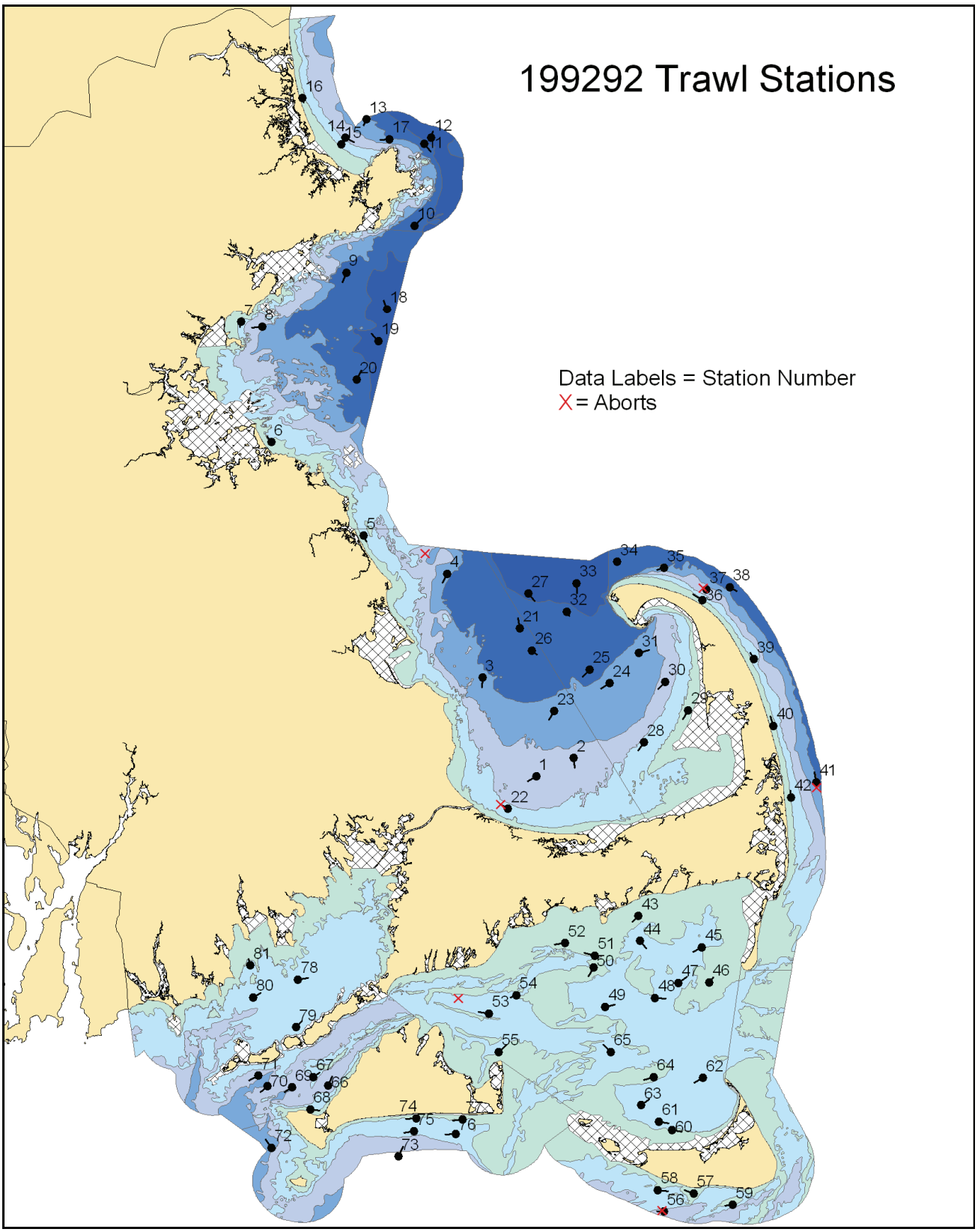


Figure II.B.1. continued.

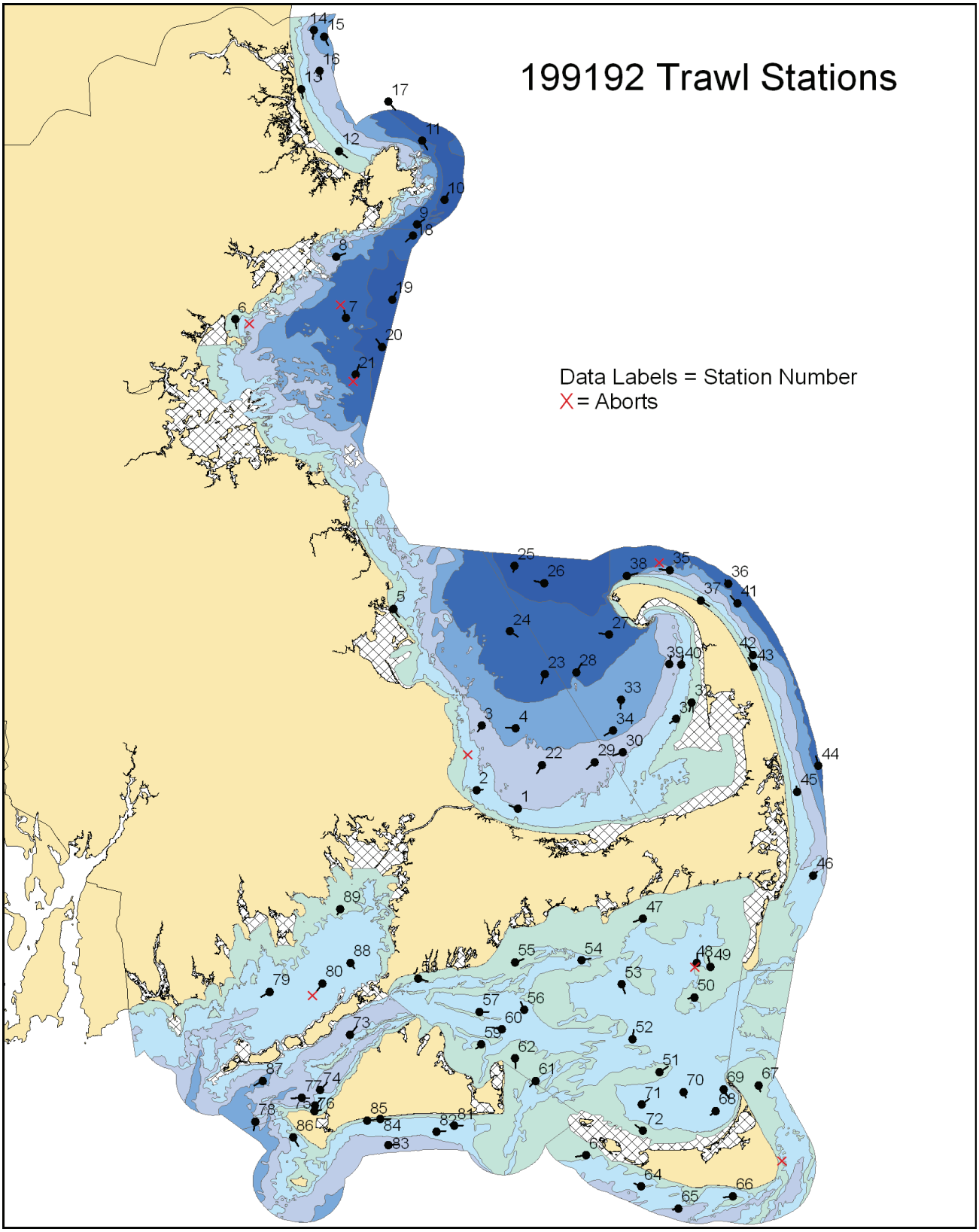


Figure II.B.1. continued.

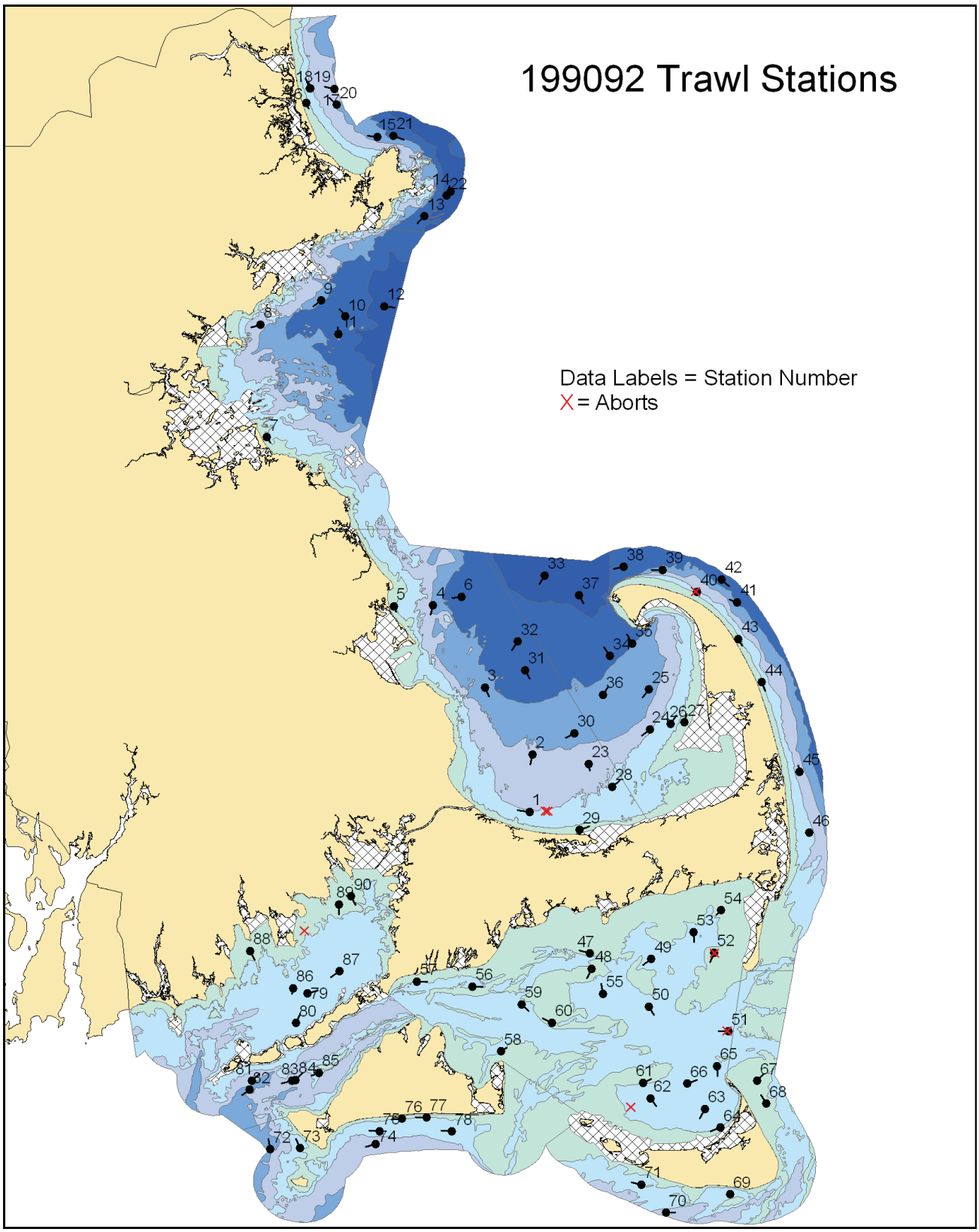


Figure II.B.1. continued.

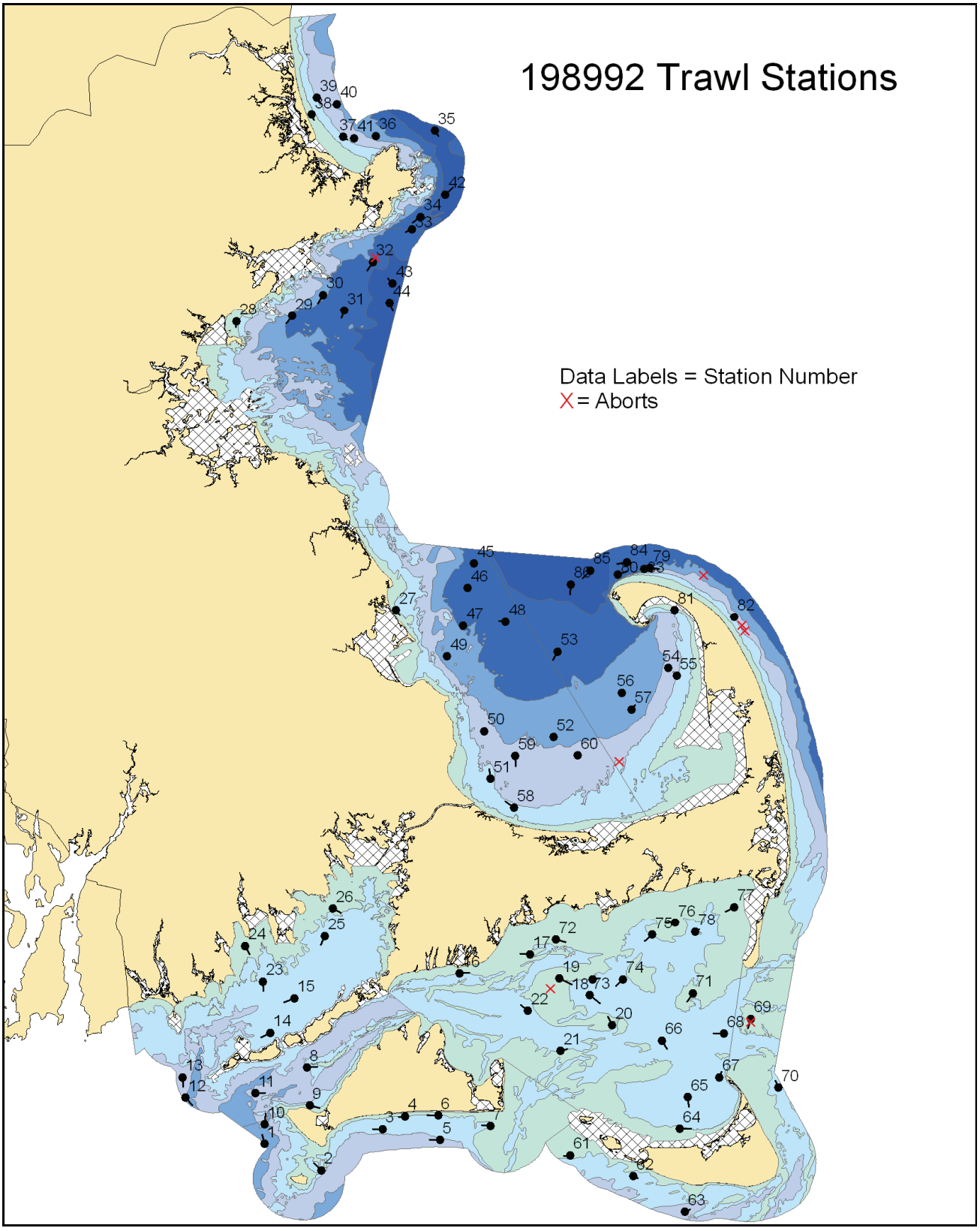


Figure II.B.1. continued.

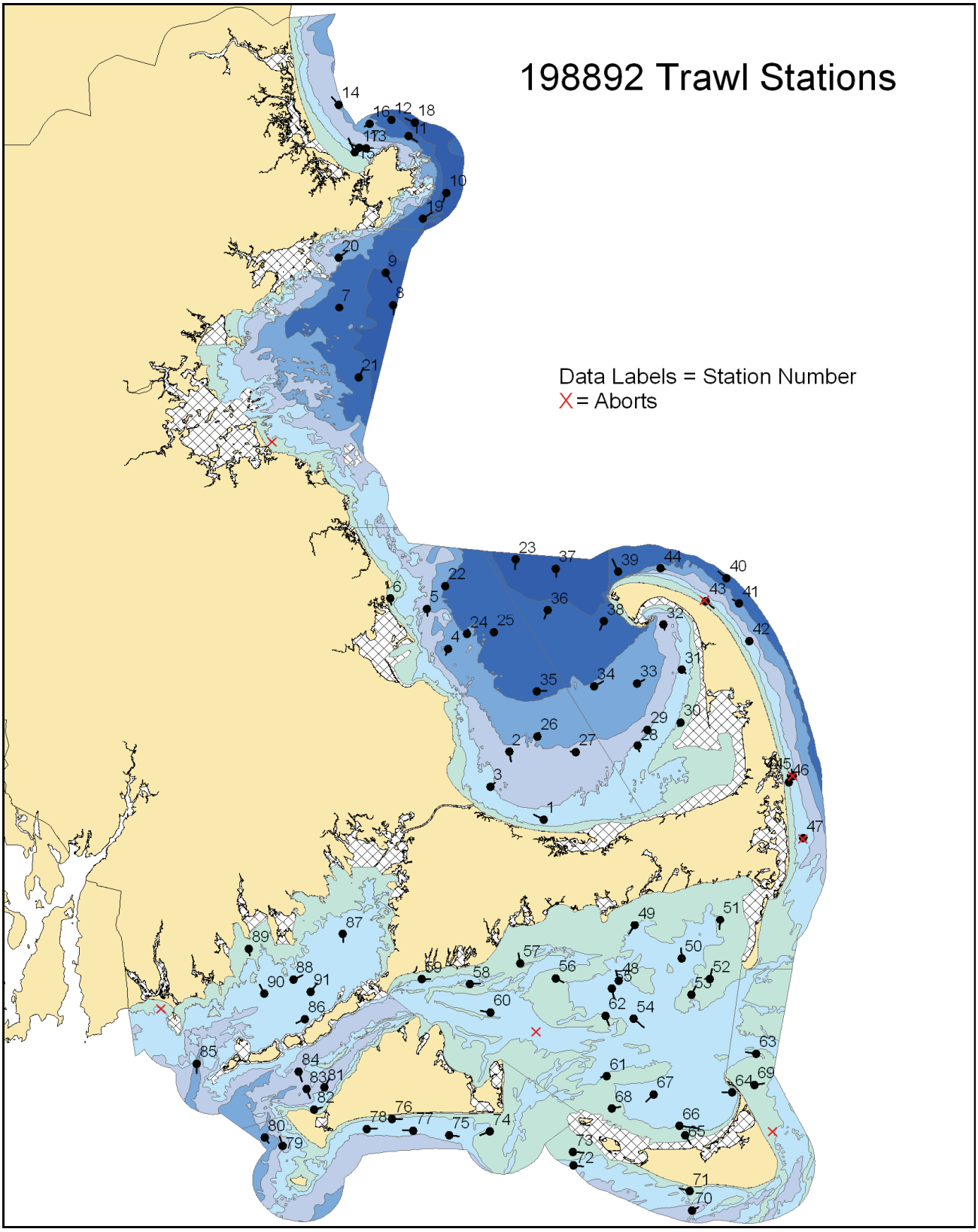


Figure II.B.1. continued.

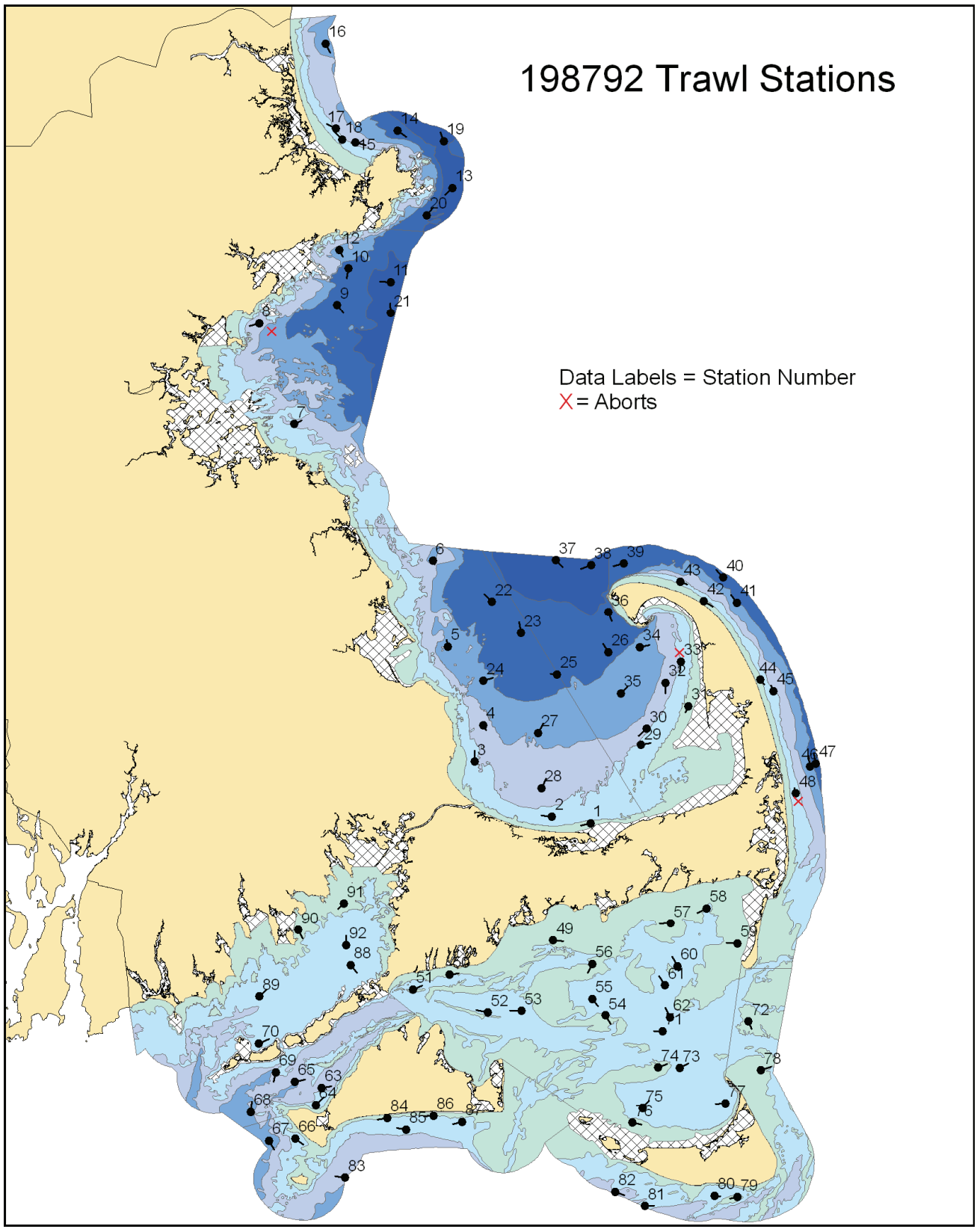


Figure II.B.1. continued.

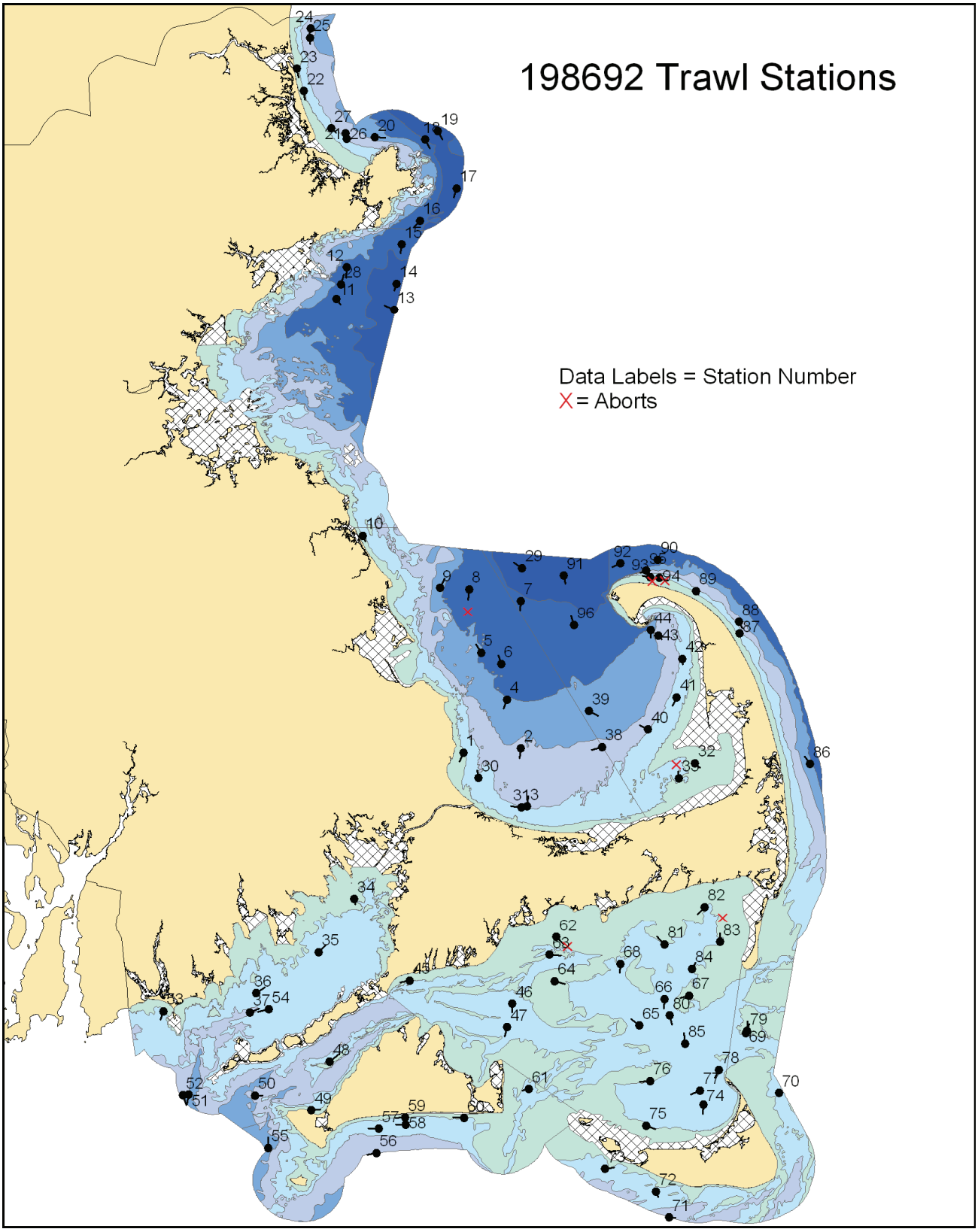


Figure II.B.1. continued.

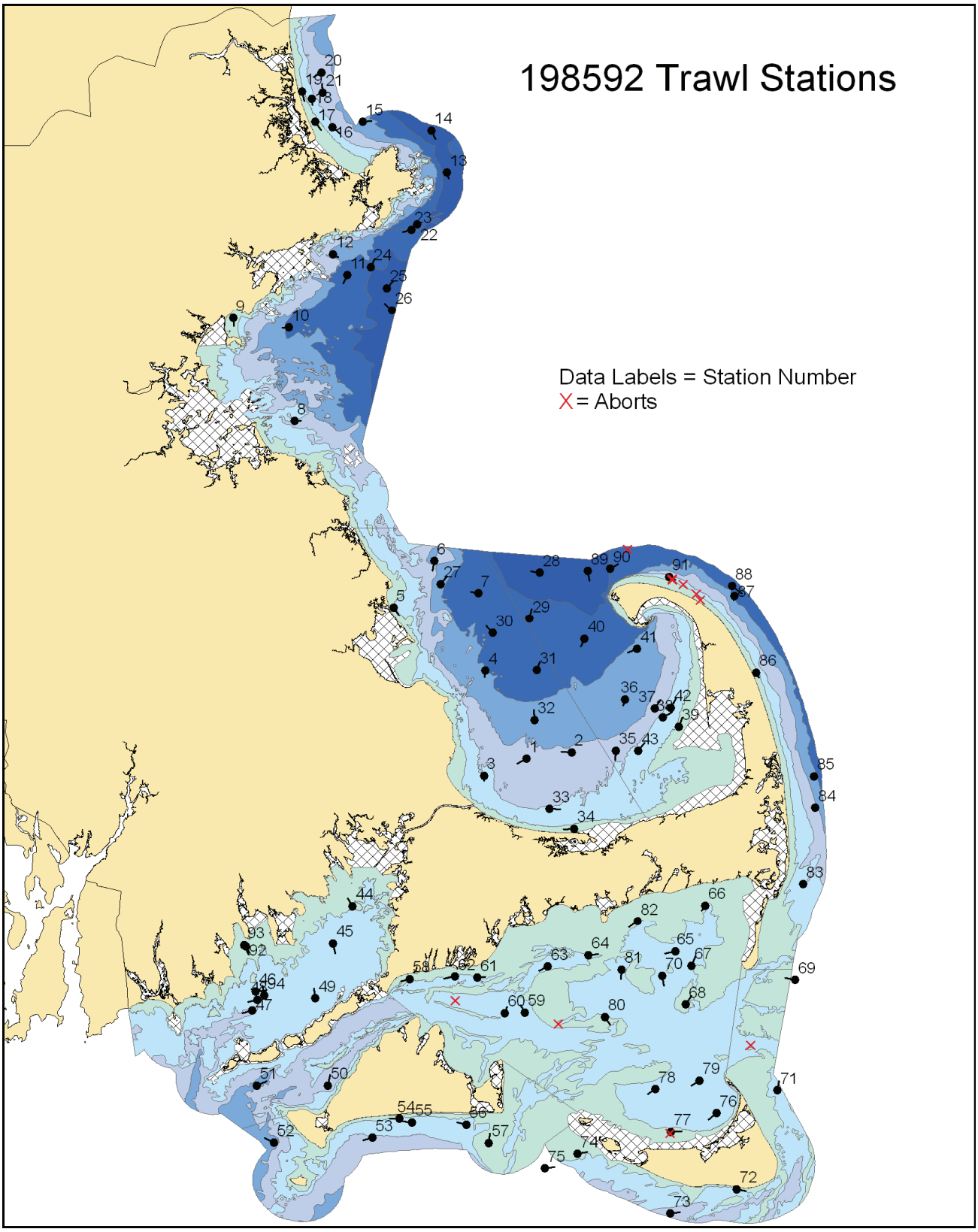


Figure II.B.1. continued.

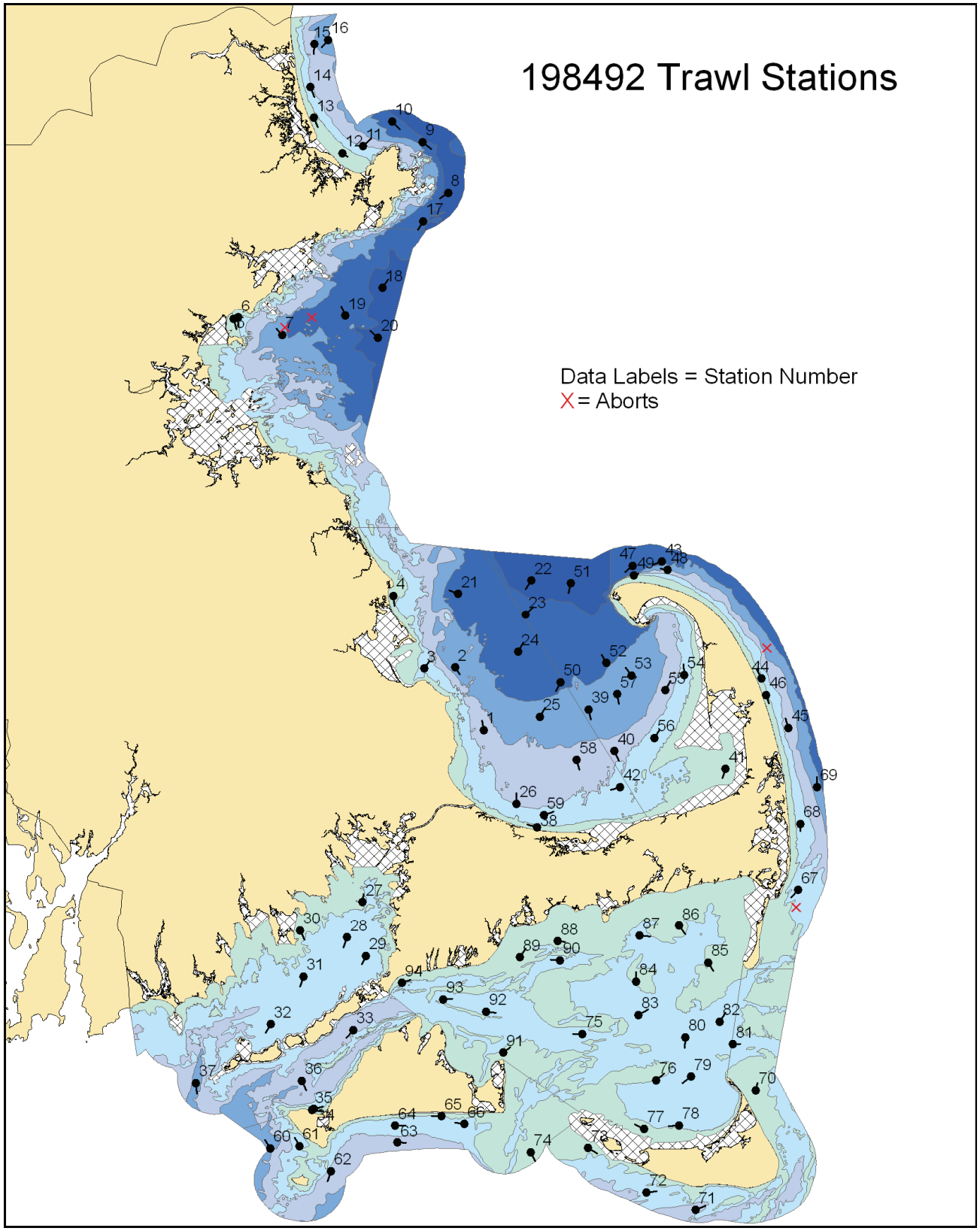


Figure II.B.1. continued.

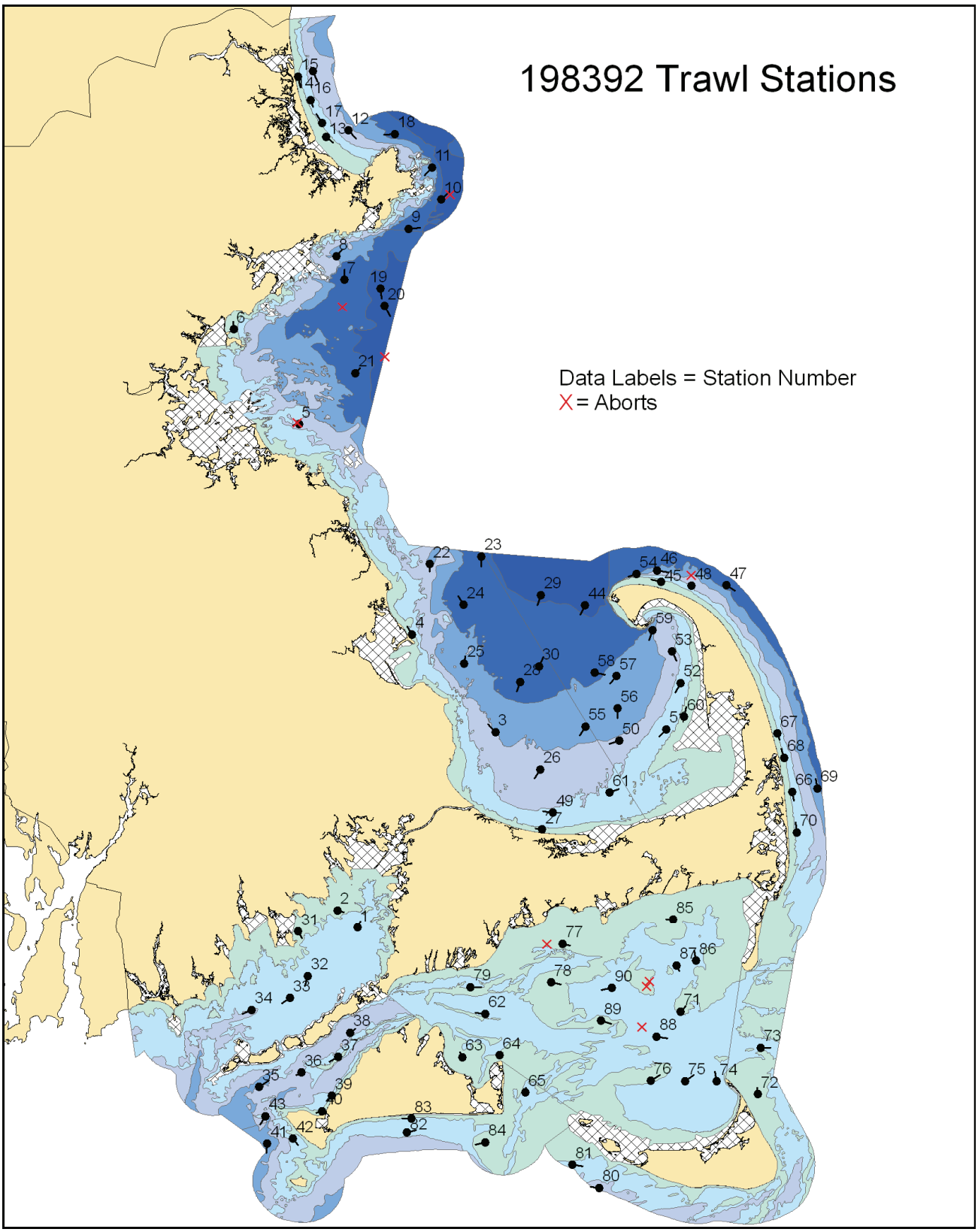


Figure II.B.1. continued.

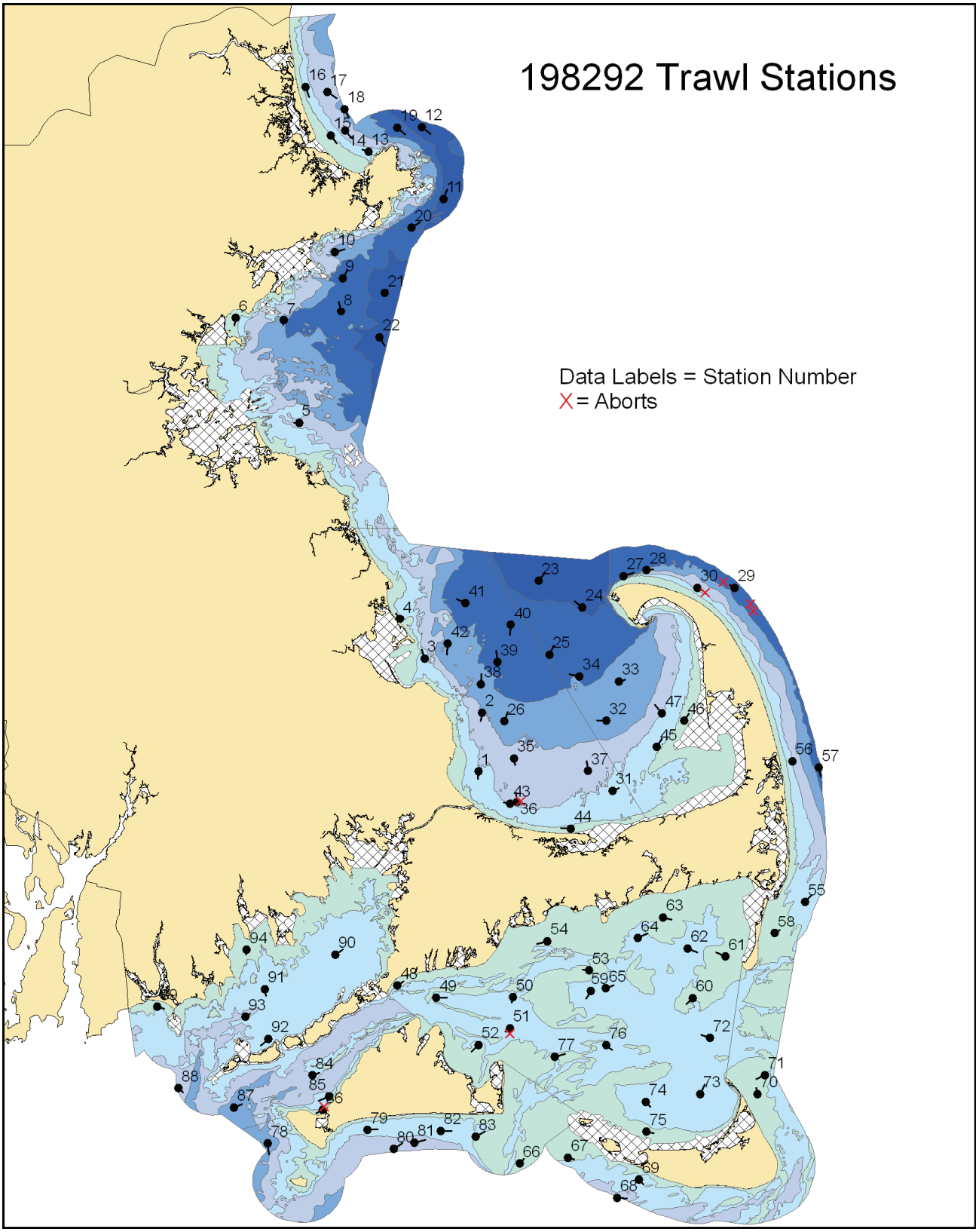


Figure II.B.1. continued.

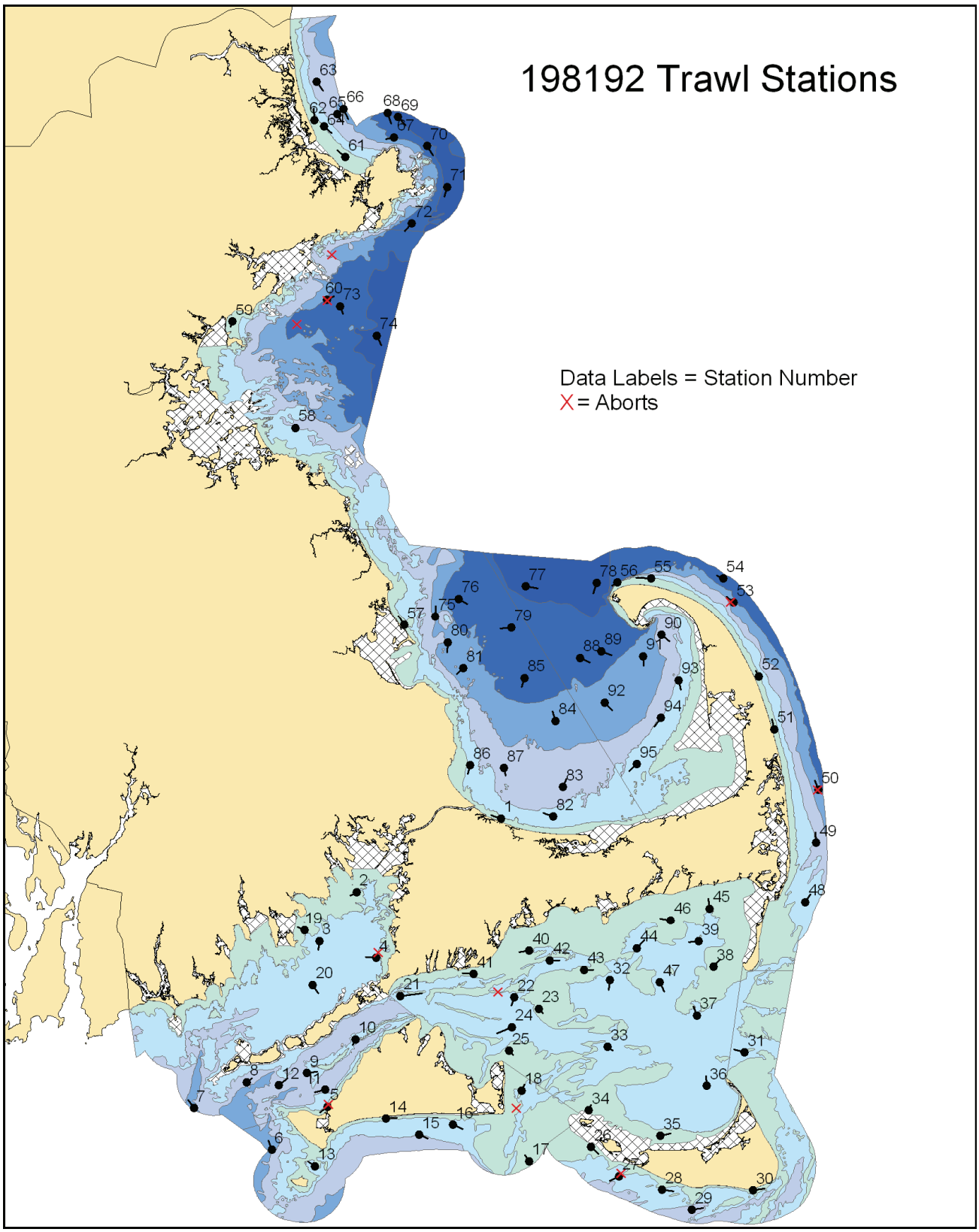


Figure II.B.1. continued.

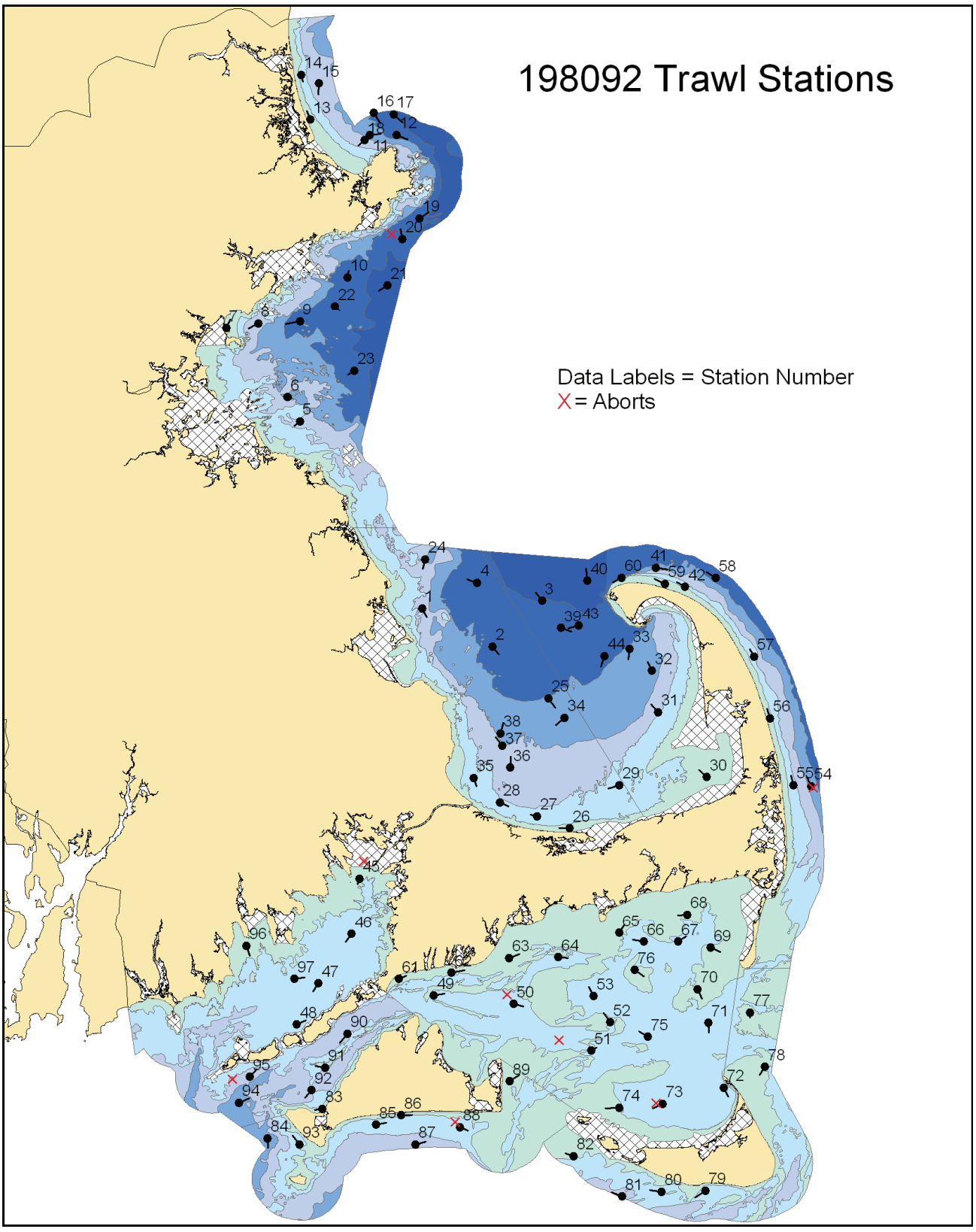


Figure II.B.1. continued.

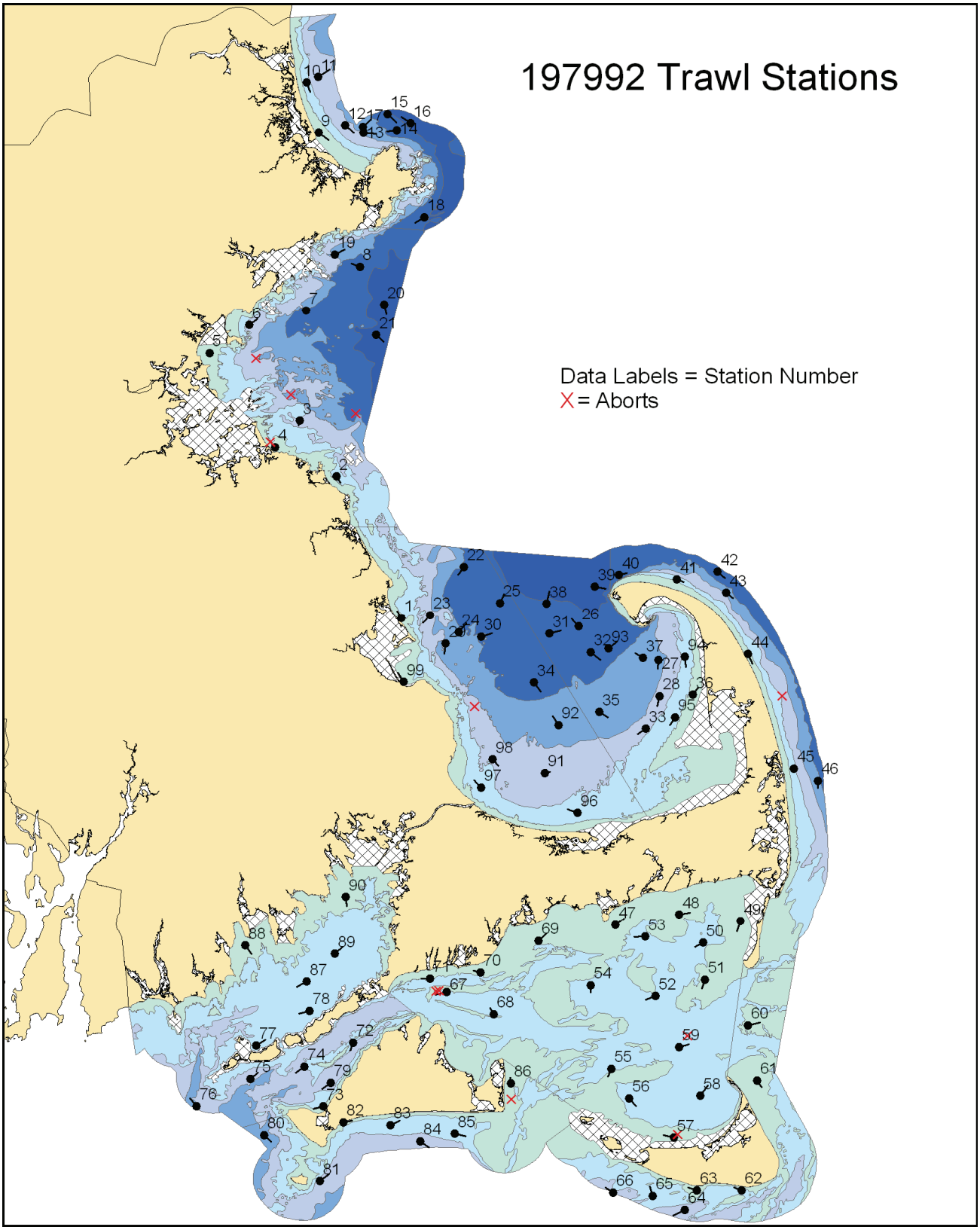
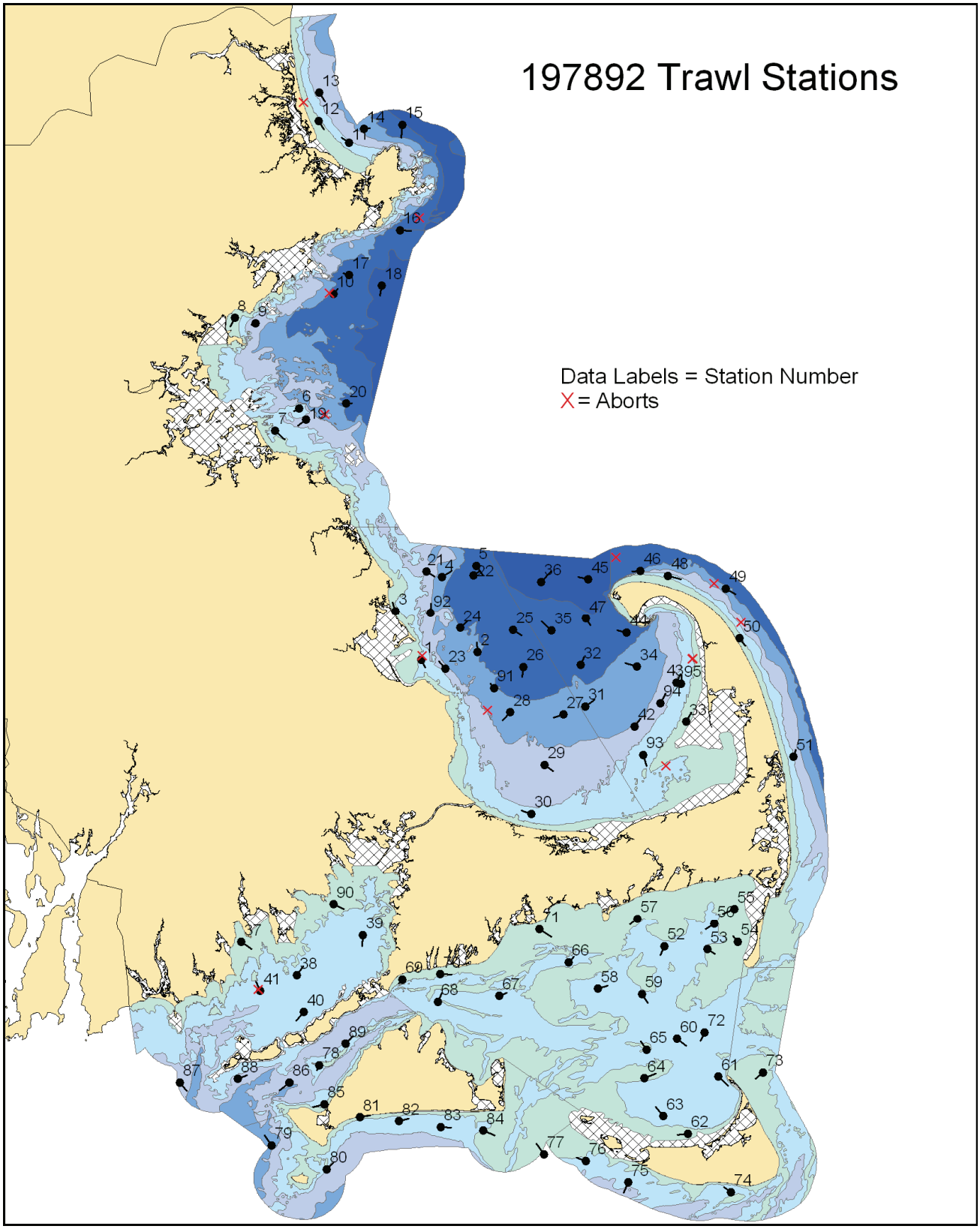


Figure II.B.1. continued.



II. Fall Survey

C. Survey Timing (See table and figure series II.C)

The fall survey has always commenced in September. Survey completion extended into October in 1978, 1979, 1981 and again in 2004. The survey is conducted seven days per week unless weather or equipment repairs interrupt operations. Date of completion of each representative (SHG $\leq$ 136) station was converted to Julian date to facilitate comparisons between surveys. The box plots in section C demonstrate the median (solid line), interquartile range (box), 1.5x the interquartile range (whiskers), and outliers (open circles) of survey station dates on each cruise for each individual region, all regions combined, and regional groups.

Table II.C.1. List of *MarineFisheries* fall survey cruises, start/end dates and survey vessel.

YEAR	CRUISE	BEGIN	END	SURVEY VESSEL	HOME PORT
1978	197892	5-Sep	2-Oct	F/V Frances Elizabeth	Plymouth, MA
1979	197992	11-Sep	4-Oct	F/V Frances Elizabeth	Plymouth, MA
1980	198092	8-Sep	29-Sep	F/V Frances Elizabeth	Plymouth, MA
1981	198192	14-Sep	5-Oct	F/V Frances Elizabeth	Plymouth, MA
1982	198292	8-Sep	27-Sep	R/V Gloria Michelle	Quonset Point, RI
1983	198392	7-Sep	24-Sep	R/V Gloria Michelle	Quonset Point, RI
1984	198492	10-Sep	27-Sep	R/V Gloria Michelle	Quonset Point, RI
1985	198592	3-Sep	19-Sep	R/V Gloria Michelle	Quonset Point, RI
1986	198692	8-Sep	24-Sep	R/V Gloria Michelle	Quonset Point, RI
1987	198792	8-Sep	27-Sep	R/V Gloria Michelle	Quonset Point, RI
1988	198892	6-Sep	22-Sep	R/V Gloria Michelle	Quonset Point, RI
1989	198992	6-Sep	20-Sep	R/V Gloria Michelle	Quonset Point, RI
1990	199092	4-Sep	19-Sep	R/V Gloria Michelle	Quonset Point, RI
1991	199192	4-Sep	19-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1992	199292	9-Sep	24-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1993	199392	8-Sep	23-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1994	199492	7-Sep	22-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1995	199592	6-Sep	21-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1996	199692	4-Sep	19-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1997	199792	9-Sep	24-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1998	199892	10-Sep	27-Sep	R/V Gloria Michelle	Sandy Hook, NJ
1999	199992	8-Sep	23-Sep	R/V Gloria Michelle	Sandy Hook, NJ
2000	200092	6-Sep	20-Sep	R/V Gloria Michelle	Sandy Hook, NJ
2001	200192	5-Sep	20-Sep	R/V Gloria Michelle	Woods Hole, MA
2002	200292	4-Sep	20-Sep	R/V Gloria Michelle	Woods Hole, MA
2003	200392	3-Sep	18-Sep	R/V Gloria Michelle	Woods Hole, MA
2004	200492	7-Sep	7-Oct	R/V Gloria Michelle	Woods Hole, MA
2005	200592	6-Sep	22-Sep	R/V Gloria Michelle	Woods Hole, MA
2006	200692	5-Sep	26-Sep	R/V Gloria Michelle	Woods Hole, MA
2007	200792	4-Sep	20-Sep	R/V Gloria Michelle	Woods Hole, MA

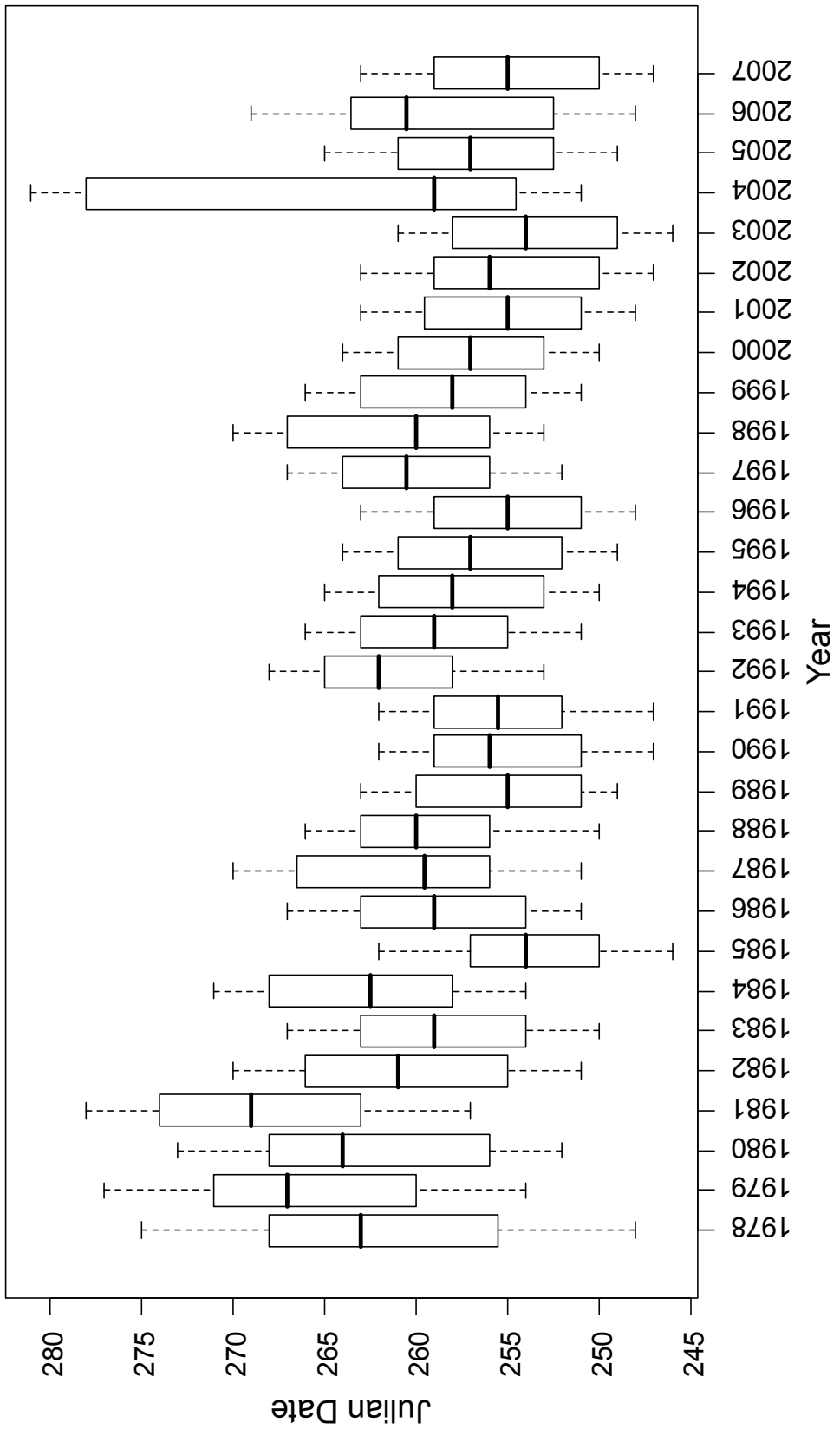


Figure II.C.1. Distribution of *MarineFisheries* fall survey station dates by cruise, 1978 – 2007, all regions.

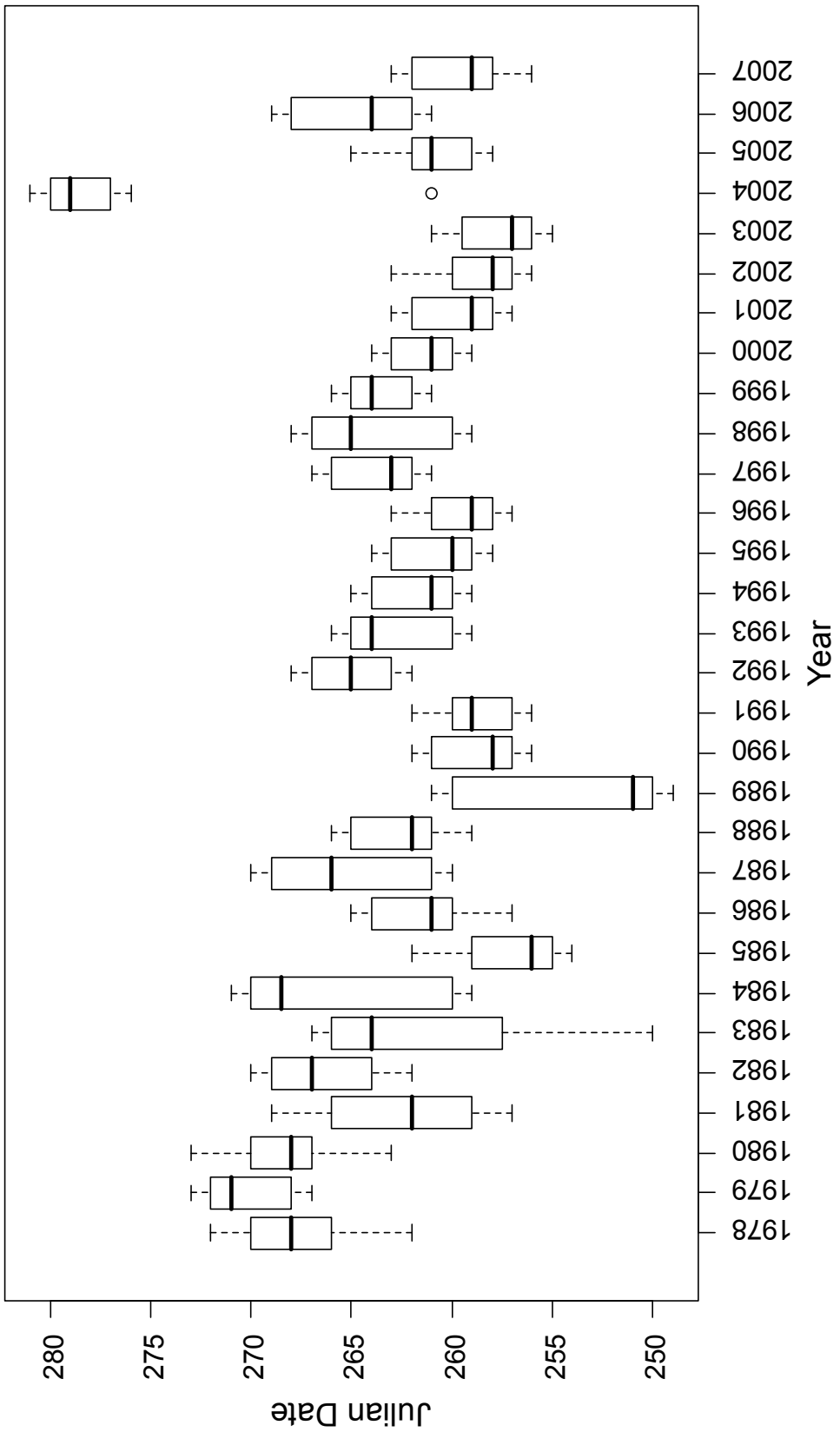


Figure II.C.2. Distribution of *MarineFisheries* fall survey station dates by cruise, 1978 – 2007, regions 1 - 2.

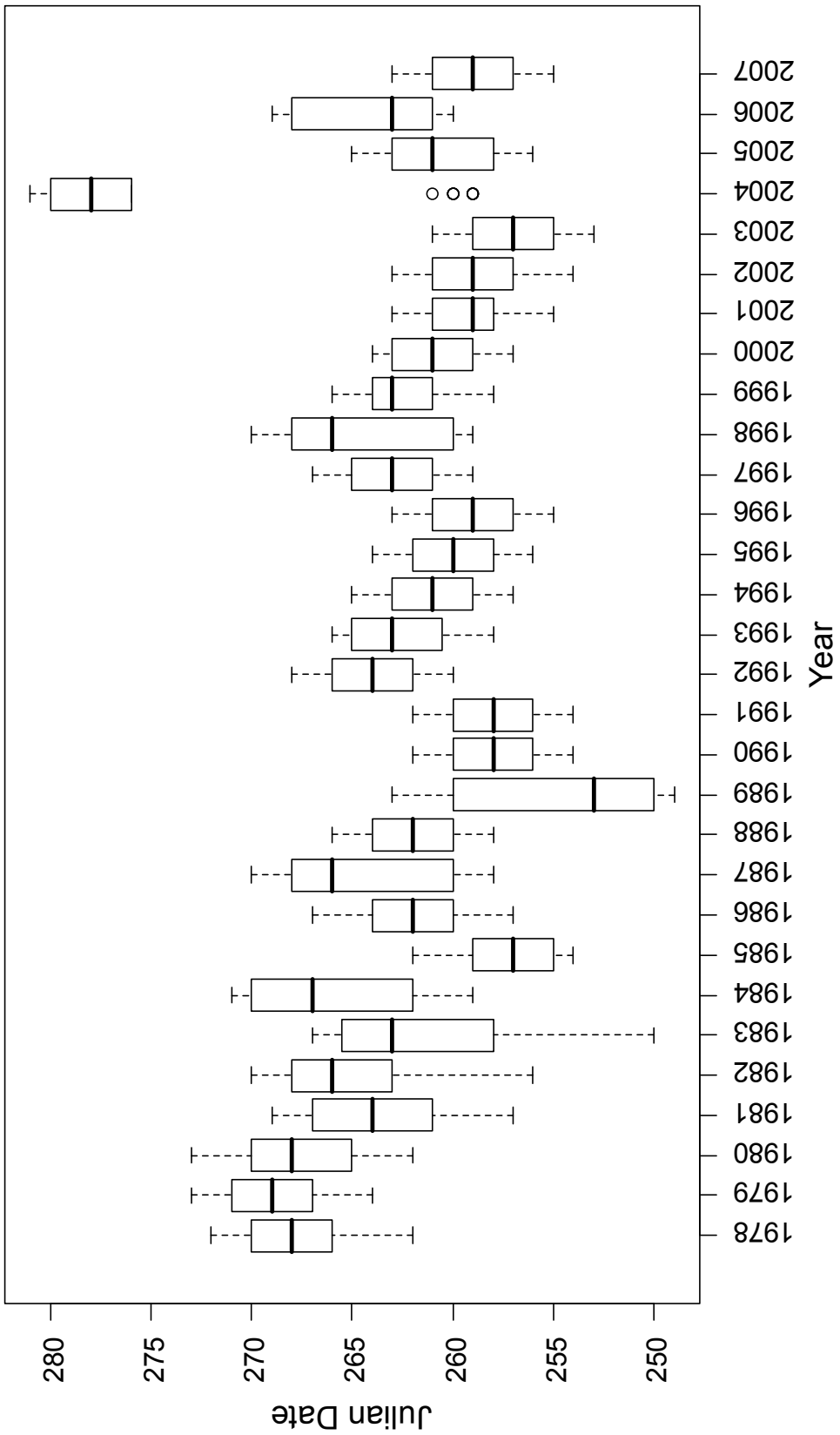


Figure II.C.3. Distribution of *MarineFisheries* fall survey station dates by cruise, 1978 – 2007, regions 1 - 3.

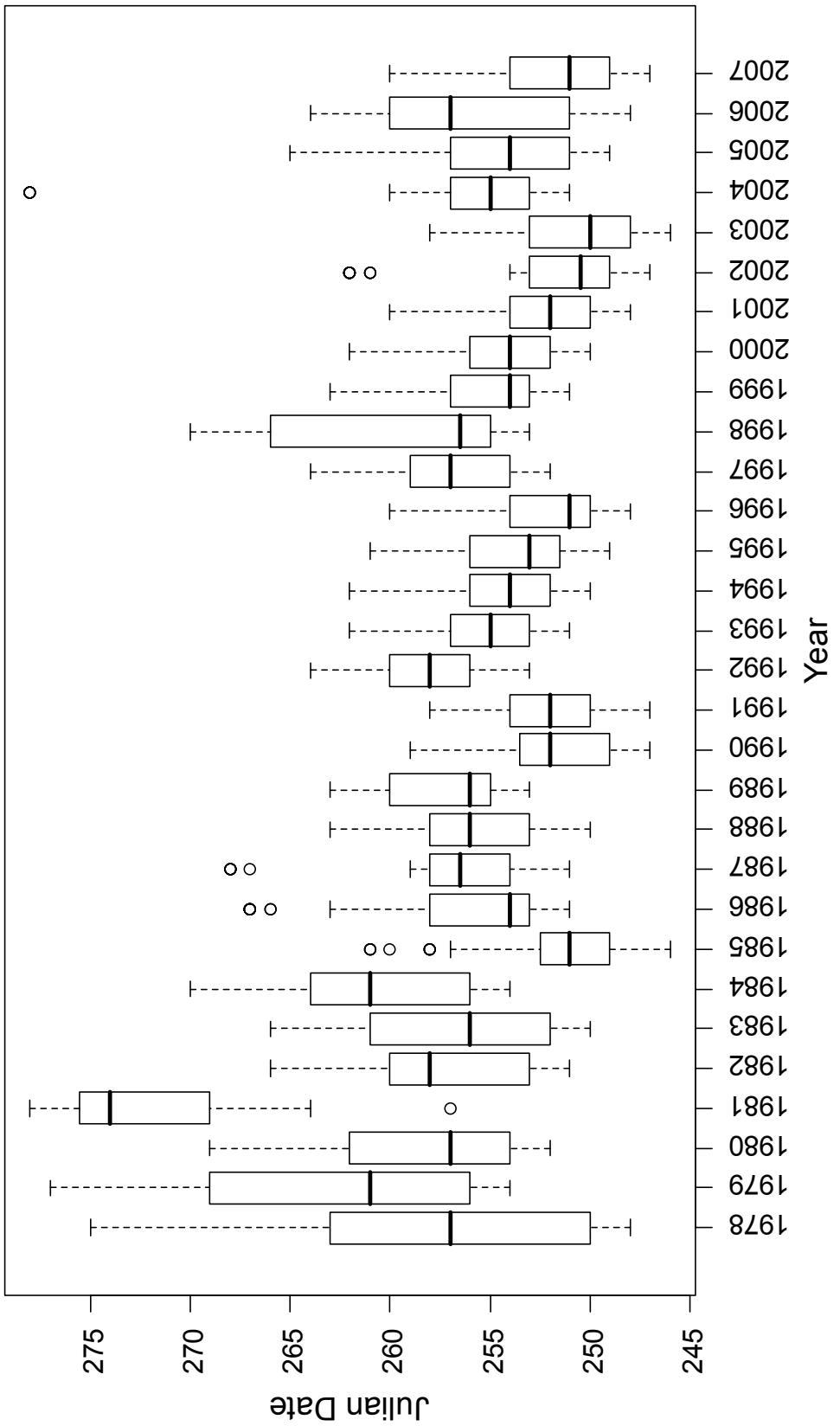


Figure II.C.4. Distribution of *MarineFisheries* fall survey station dates by cruise, 1978 – 2007, regions 3 - 5.

Figure II.C.5. Distribution of *MarineFisheries* fall survey station dates by cruise, 1978 – 2007, regions 4 - 5.

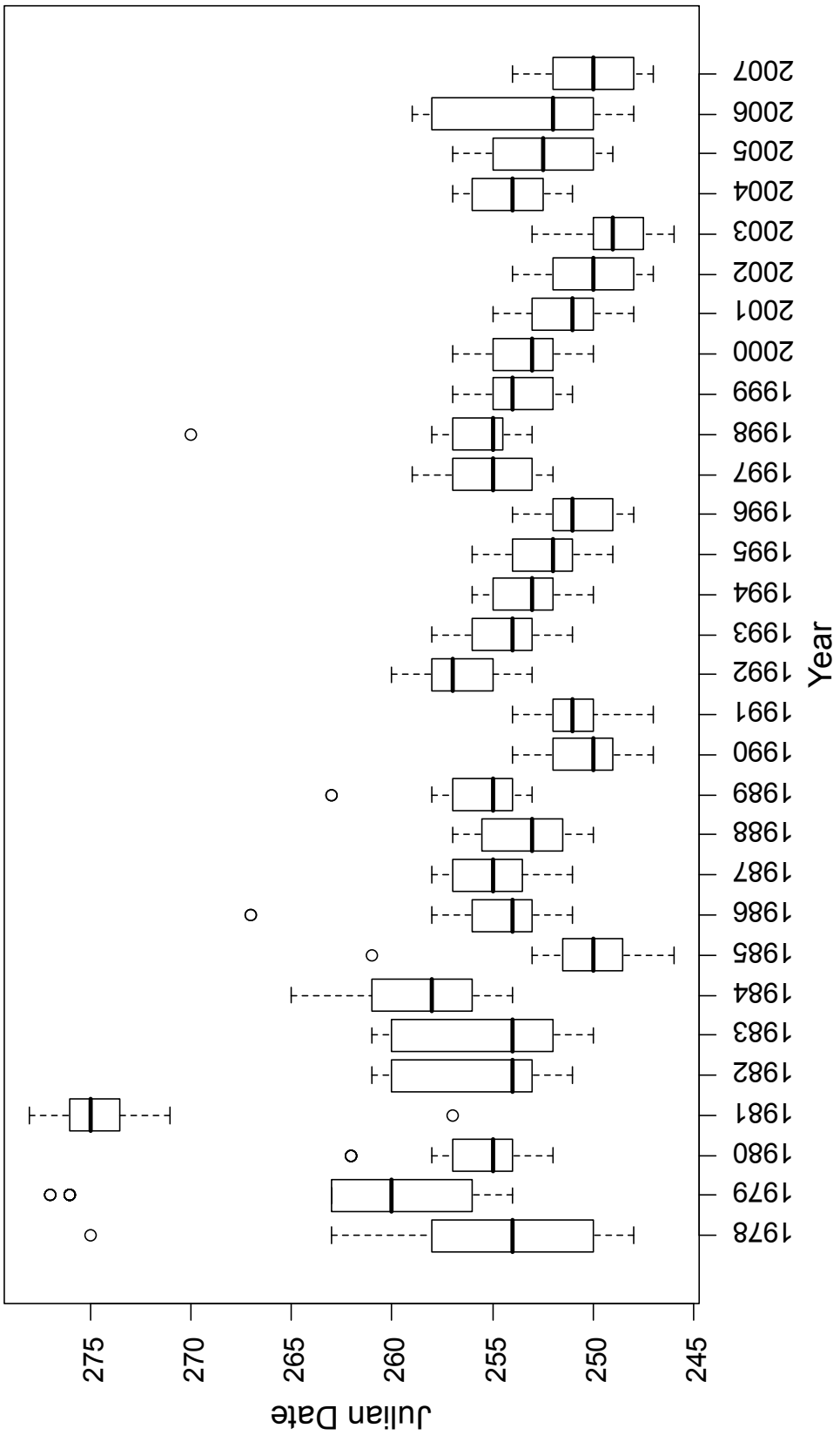


Figure II.C.6. Distribution of *MarineFisheries* fall survey station dates by region, 1978 – 2007.

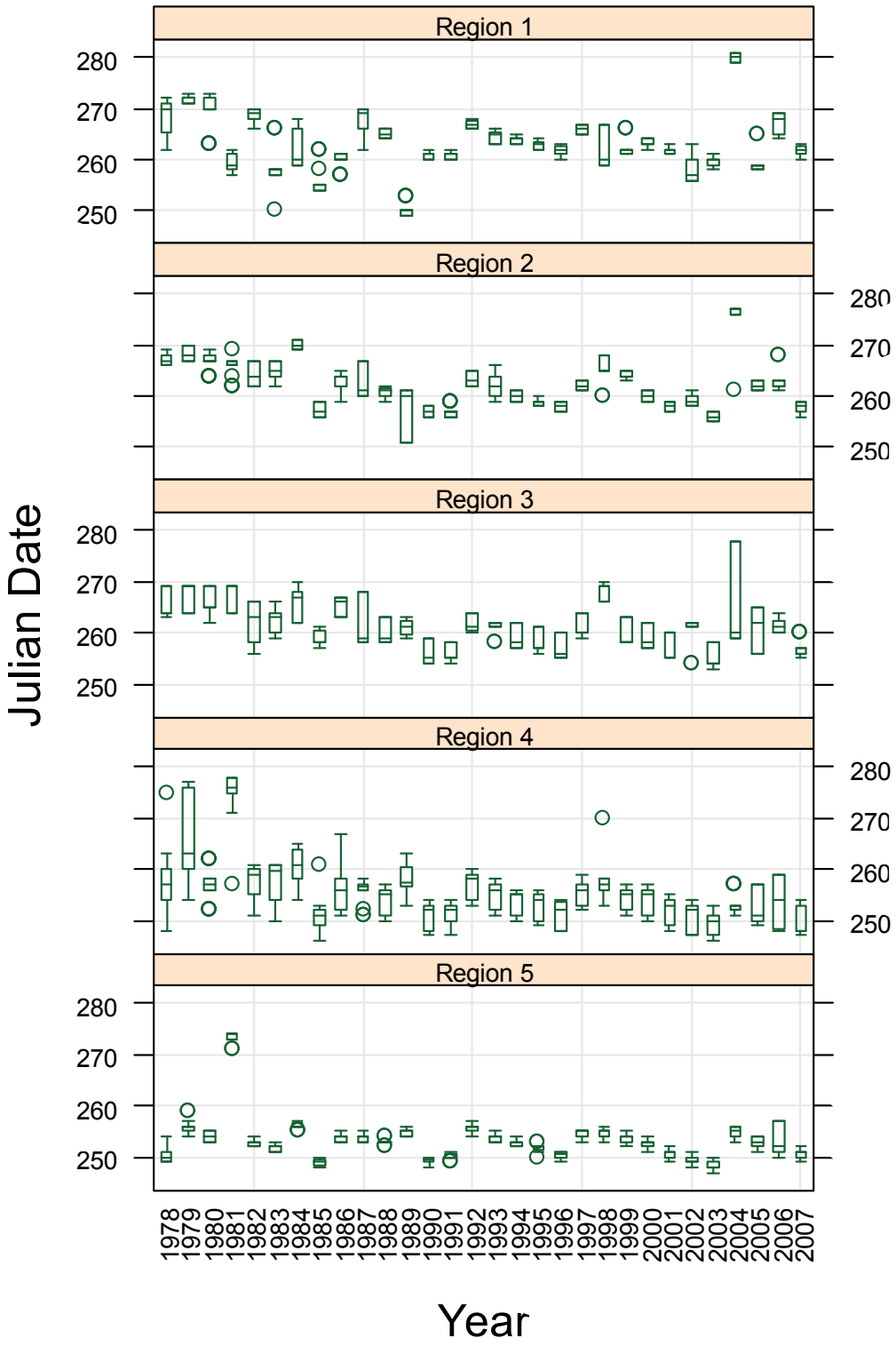


Table II.C.2. Median date of *MarineFisheries* fall survey station effort by regional groups, 1978 – 2007. Representative tows only (SHG ≤ 136).

	R1_5	R1_2	R1_3	R3_5	R4_5
1978	263	268	268	257	254
1979	267	271	269	261	260
1980	264	268	268	257	255
1981	269	262	264	274	275
1982	261	267	266	258	254
1983	259	264	263	256	254
1984	262	268	267	261	258
1985	254	256	257	251	250
1986	259	261	262	254	254
1987	260	266	266	256	255
1988	260	262	262	256	253
1989	255	251	253	256	255
1990	256	258	258	252	250
1991	256	259	258	252	251
1992	262	265	264	258	257
1993	259	264	263	255	254
1994	258	261	261	254	253
1995	257	260	260	253	252
1996	255	259	259	251	251
1997	260	263	263	257	255
1998	260	265	266	256	255
1999	258	264	263	254	254
2000	257	261	261	254	253
2001	255	259	259	252	251
2002	256	258	259	250	250
2003	254	257	257	250	249
2004	259	279	278	255	254
2005	257	261	261	254	252
2006	260	264	263	257	252
2007	255	259	259	251	250

Table II.C.3. Median date of *MarineFisheries* fall survey station effort by region, 1978 – 2007. Representative tows only (SHG ≤ 136).

	R1	R2	R3	R4	R5
1978	270	267	264	257	250
1979	272	268	269	263	256
1980	270	267	265	257	254
1981	259	266	269	276	274
1982	269	264	263	259	253
1983	258	265	263	260	252
1984	260	270	267	261	256
1985	255	257	258	251	249
1986	260	264	266	256	254
1987	269	261	259	256	254
1988	265	261	259	255	253
1989	250	260	261	258	255
1990	261	257	255	252	250
1991	261	257	255	252	250
1992	267	263	261	258	256
1993	265	262	262	256	254
1994	264	260	258	255	253
1995	263	259	257	254	252
1996	262	258	256	252	250
1997	266	262	260	256	255
1998	260	265	269	257	255
1999	262	264	258	255	254
2000	263	260	258	255	253
2001	262	258	260	253	251
2002	257	259	262	252	249
2003	260	256	254	250	248
2004	280	277	260	252	255
2005	259	262	262	251	253
2006	268	262	261	254	252
2007	262	258	256	248	251

II. Fall Survey

D. Bottom Temperature Observations (See table and figure series II.D)

From 1978 – 2003 bottom temperatures were measured after haulback at each station by lowering a Hydrolab T4 thermister (1978-1986) or Hydrolab Scout 2 CTD (1987 – 2003) to the bottom. In 2001, a Vemco Minilogger attached to the headrope of the trawl replaced the malfunctioning CTD at seventeen stations. From spring 2004 – present, bottom temperatures have been recorded with an Onset Computer Corp. Tidbit Temperature Logger (Tidbit). A mean of all recorded Tidbit temperatures between 5 minutes after the trawl is set until haulback is assigned as the bottom temperature for each station. Equipment failure or lack of station completion has resulted in gaps where no temperatures were available for a stratum within a season-year. Gaps within any single stratum have been "patched" with timeseries means from each stratum to generate tables and graphs of regional stratified mean bottom temperatures. Any region or regional group means using patched data are clearly noted in the tables and figures. Missing temperature observations across all strata in fall 1983 Region 5 and 1995 Region 1 resulted in gaps in all sets that included those regions. Stratified mean bottom temperatures (Figs. D3, D4 and Table D1) are generated with the equation:

$$\overline{C}^{\circ}_{str} = \frac{1}{A}\sum_{h=1}^{L} A_h \overline{C}^{\circ}_{h}$$

Where A_h is the area of stratum h, $\overline{C}^{\circ}_{h}$ is the mean bottom temperature of stratum h,

and A is the total area sampled.

Figure II.D.1. Trends in stratum mean bottom temperatures recorded on the *MarineFisheries* fall Survey, 1978 – 2007.

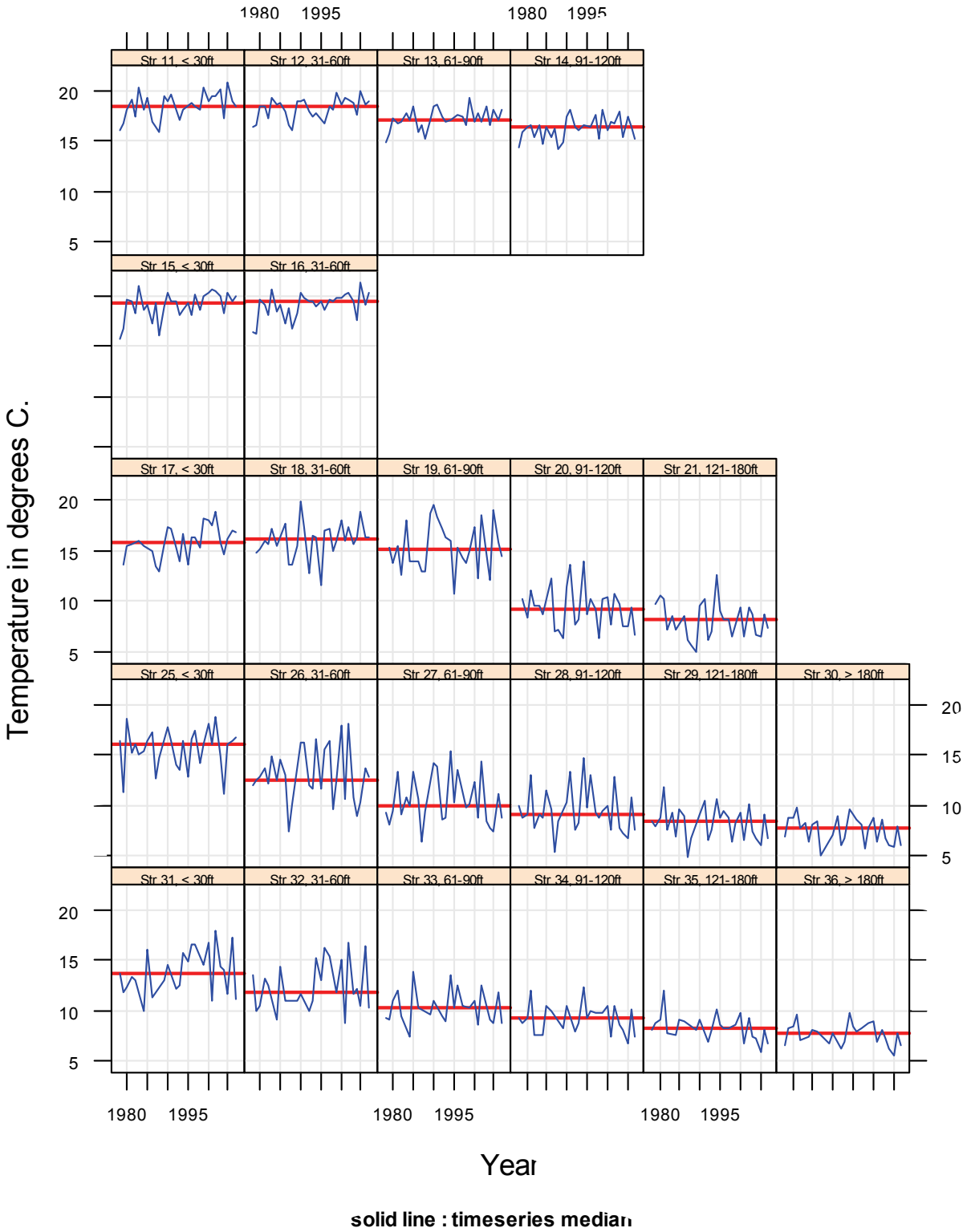
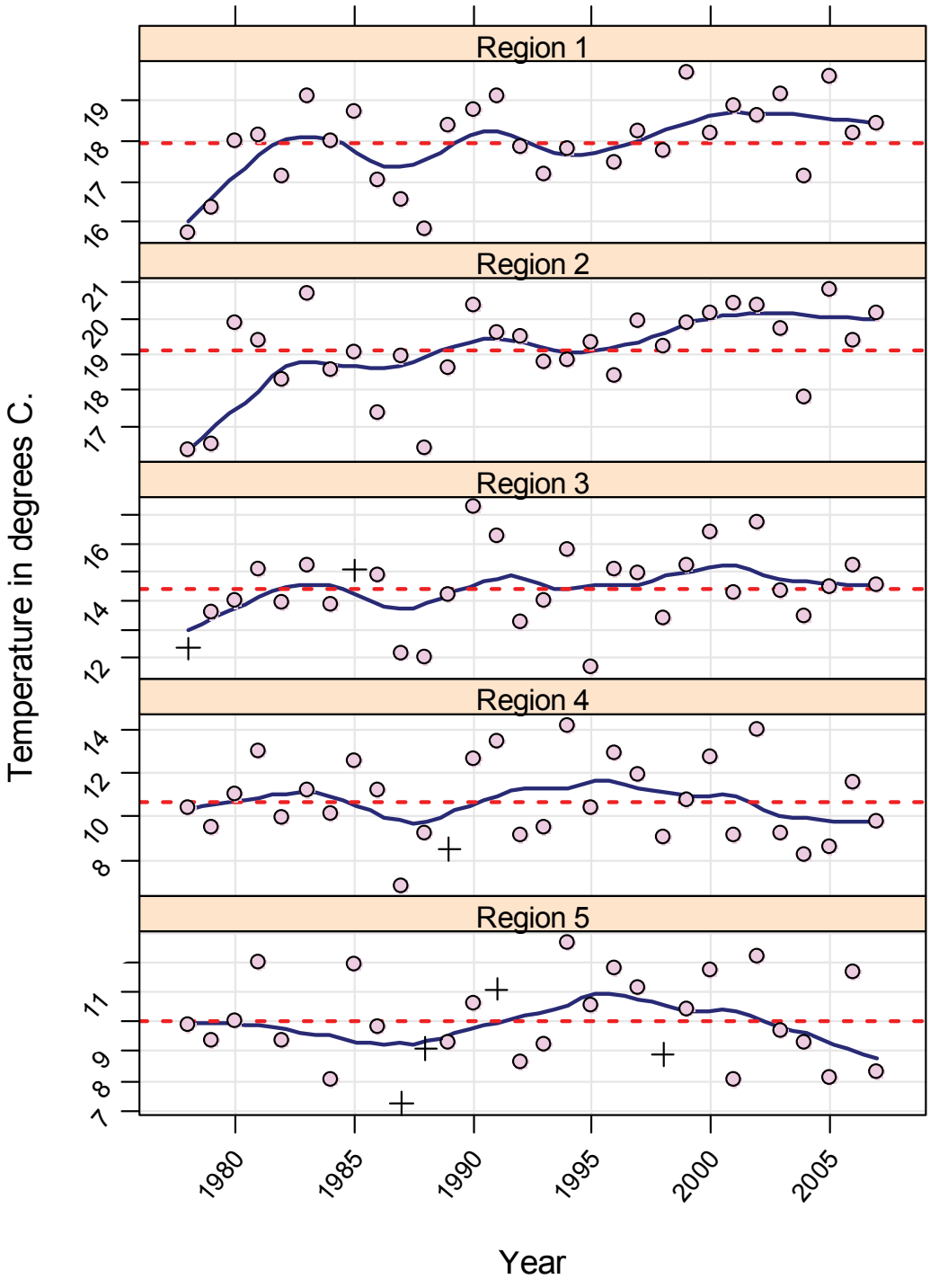


Table II.D.1. Stratum mean bottom temperatures recorded on the *MarineFisheries* fall survey, 1978 – 2007.

	Region 1				Region 2		Region 3					Region 4						Region 5					
Year	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**
1978	16.0	16.3	14.7	14.5	16.1	16.5	13.0	13.7	12.6	N/A	7.8	16.5	12.0	9.4	9.6	8.2	7.0	13.7	13.6	9.3	9.3	8.1	6.5
1979	16.7	16.5	15.8	16.0	16.9	16.1	13.6	14.7	15.3	10.2	9.7	11.3	12.3	8.1	8.9	7.9	8.8	11.7	10.0	9.1	8.8	8.8	8.2
1980	18.1	18.5	17.4	16.5	19.9	19.8	15.5	15.1	13.7	8.4	10.6	18.7	12.9	9.6	9.2	8.6	8.8	12.3	10.5	10.9	9.2	9.1	8.4
1981	19.2	18.4	16.8	16.6	19.6	19.1	16.2	16.4	15.5	11.0	10.2	15.3	13.7	13.5	12.9	11.9	9.9	13.4	13.1	12.2	12.0	11.8	9.6
1982	17.3	17.4	16.9	15.4	18.3	18.3	15.9	15.6	12.6	9.5	7.3	16.1	12.3	9.2	7.8	7.5	7.8	13.0	12.5	9.4	7.5	7.7	7.1
1983	20.3	19.4	17.8	16.7	20.9	20.5	16.0	16.6	18.1	9.5	8.5	15.0	14.9	10.8	9.2	9.0	8.3	N/A	N/A	N/A	N/A	N/A	N/A
1984	18.6	18.5	17.2	14.7	18.6	18.6	15.5	15.5	13.9	8.7	7.3	15.4	13.0	10.0	8.8	6.9	6.4	10.0	9.1	7.5	7.5	7.5	7.4
1985	19.3	18.8	18.5	16.5	19.1	19.0	17.1	15.4	17.0	N/A	9.1	16.4	14.6	13.6	11.6	9.8	8.2	16.2	14.4	13.8	10.4	9.2	8.1
1986	16.9	17.8	16.0	15.5	17.3	17.4	15.0	17.7	14.0	12.3	8.5	17.2	13.1	10.6	9.7	9.0	8.4	11.4	11.0	10.2	9.9	8.9	7.8
1987	16.4	16.7	16.7	16.3	19.3	18.6	13.5	13.6	12.9	7.0	6.1	12.7	7.5	6.4	5.4	5.0	5.1	N/A	8.6	6.4	6.2	5.6	4.9
1988	16.0	16.2	15.5	14.3	16.1	16.7	13.0	13.6	13.0	7.3	5.7	14.8	10.2	9.5	8.4	6.7	5.9	N/A	10.8	10.1	8.5	6.2	6.4
1989	19.3	18.9	17.2	14.9	19.0	18.3	15.7	15.4	18.7	6.3	5.0	12.0	9.2	7.8	N/A	6.7	5.1	13.0	10.9	9.6	8.2	7.9	6.8
1990	19.0	19.0	18.4	17.5	20.5	20.3	17.3	19.9	19.5	11.5	9.5	17.9	16.3	14.2	10.3	9.1	7.2	14.6	11.6	10.9	10.5	9.1	7.8
1991	19.6	19.2	18.6	18.1	19.5	19.7	17.2	16.8	18.3	13.7	10.2	16.4	16.2	14.0	13.3	10.5	9.0	16.6	N/A	12.1	9.7	9.0	8.5
1992	18.2	18.0	17.6	16.5	19.6	19.4	15.3	12.8	17.2	7.7	6.2	14.1	12.0	8.7	7.7	6.7	6.2	12.2	10.0	9.4	8.0	6.8	6.2
1993	17.1	17.5	16.9	16.2	18.1	19.4	13.9	16.6	16.4	8.1	7.0	13.6	11.8	8.8	8.3	7.7	6.9	12.6	11.0	9.0	8.8	8.0	6.9
1994	18.2	18.1	17.2	16.6	18.8	18.9	16.6	16.3	15.9	14.0	12.6	16.4	16.6	15.5	14.8	10.6	9.7	15.8	15.2	13.4	12.4	10.1	9.8
1995	N/A	N/A	N/A	N/A	19.2	19.4	13.7	11.7	10.7	8.7	9.1	12.8	11.7	10.4	9.8	8.8	9.2	14.9	13.0	10.3	9.3	8.6	8.5
1996	18.8	16.8	17.6	16.5	18.2	18.6	16.4	17.0	15.3	10.2	8.2	16.6	15.6	13.5	13.0	9.4	8.6	16.5	16.2	12.8	10.0	8.3	8.0
1997	18.4	18.6	17.5	17.7	20.2	19.7	16.4	17.2	14.3	9.3	8.3	17.4	16.3	11.4	9.3	8.9	8.1	16.5	15.4	10.4	9.8	8.2	8.3
1998	18.7	18.1	16.6	15.2	19.0	19.4	15.4	14.9	13.8	6.3	6.5	14.3	9.7	9.4	8.8	6.4	5.7	13.9	10.8	8.4	7.9	6.8	N/A
1999	20.3	19.8	19.3	18.2	19.9	19.9	18.1	16.0	14.9	10.2	7.7	16.2	12.7	10.2	9.5	8.4	7.8	14.6	11.8	10.4	9.7	8.6	8.7
2000	18.9	18.7	17.0	16.2	20.4	20.0	18.0	18.0	17.3	10.4	9.4	18.5	17.7	12.4	10.1	9.2	8.8	16.7	15.1	11.0	10.4	9.7	8.9
2001	19.5	19.3	17.8	16.9	20.7	20.2	17.5	15.9	12.2	7.7	6.5	16.2	10.7	8.7	7.4	6.6	6.4	10.9	8.7	8.5	7.3	6.8	6.9
2002	19.4	19.2	17.0	16.8	20.4	20.3	18.8	17.4	18.6	10.7	9.4	18.8	18.1	14.4	12.9	10.1	8.7	17.9	16.7	12.5	10.2	9.2	8.1
2003	20.2	19.0	18.6	18.0	20.0	19.4	15.8	15.6	14.7	9.7	8.7	15.0	10.9	8.3	7.7	7.5	6.8	14.4	11.6	10.5	8.6	7.3	7.2
2004	17.5	17.4	16.7	15.5	18.0	17.6	14.7	16.3	12.1	7.5	6.7	12.0	9.2	8.4	7.3	6.6	6.1	14.0	12.2	9.1	8.0	7.5	6.3
2005	20.9	20.0	18.1	17.5	20.3	21.2	16.1	15.9	16.6	7.5	6.5	16.2	10.3	7.5	6.7	6.2	5.9	11.6	10.4	8.8	6.9	6.0	5.5
2006	18.9	18.6	17.0	16.5	19.5	19.3	17.0	16.3	15.8	10.1	8.7	16.4	13.8	11.1	10.7	9.1	7.9	17.2	16.4	11.8	10.0	8.4	7.7
2007	18.4	19.0	18.1	15.3	19.9	20.3	16.8	16.3	14.5	6.6	7.3	16.8	12.8	8.8	7.6	6.8	6.1	11.1	10.3	8.7	7.4	6.7	6.6
Median	18.7	18.5	17.2	16.5	19.4	19.4	15.9	16.0	15.1	9.4	8.2	16.2	12.8	9.8	9.2	8.3	7.8	13.9	11.6	10.2	9.2	8.2	7.7
Mean	18.5	18.3	17.2	16.3	19.1	19.1	15.8	15.8	15.2	9.3	8.1	15.6	12.9	10.5	9.5	8.2	7.5	13.9	12.2	10.2	9.0	8.1	7.6

Figure II.D.2. Trends in region mean bottom temperatures recorded on the *MarineFisheries* fall survey, 1978 – 2007.



solid line : loess trend, span = 0.3, degree = 1
dashed line : timeseries mean
(+) missing stratum/year patched with timeseries mean

Figure II.D3. Trends in mean bottom temperatures recorded on the *MarineFisheries* fall survey, by regional groups, 1978 – 2007.

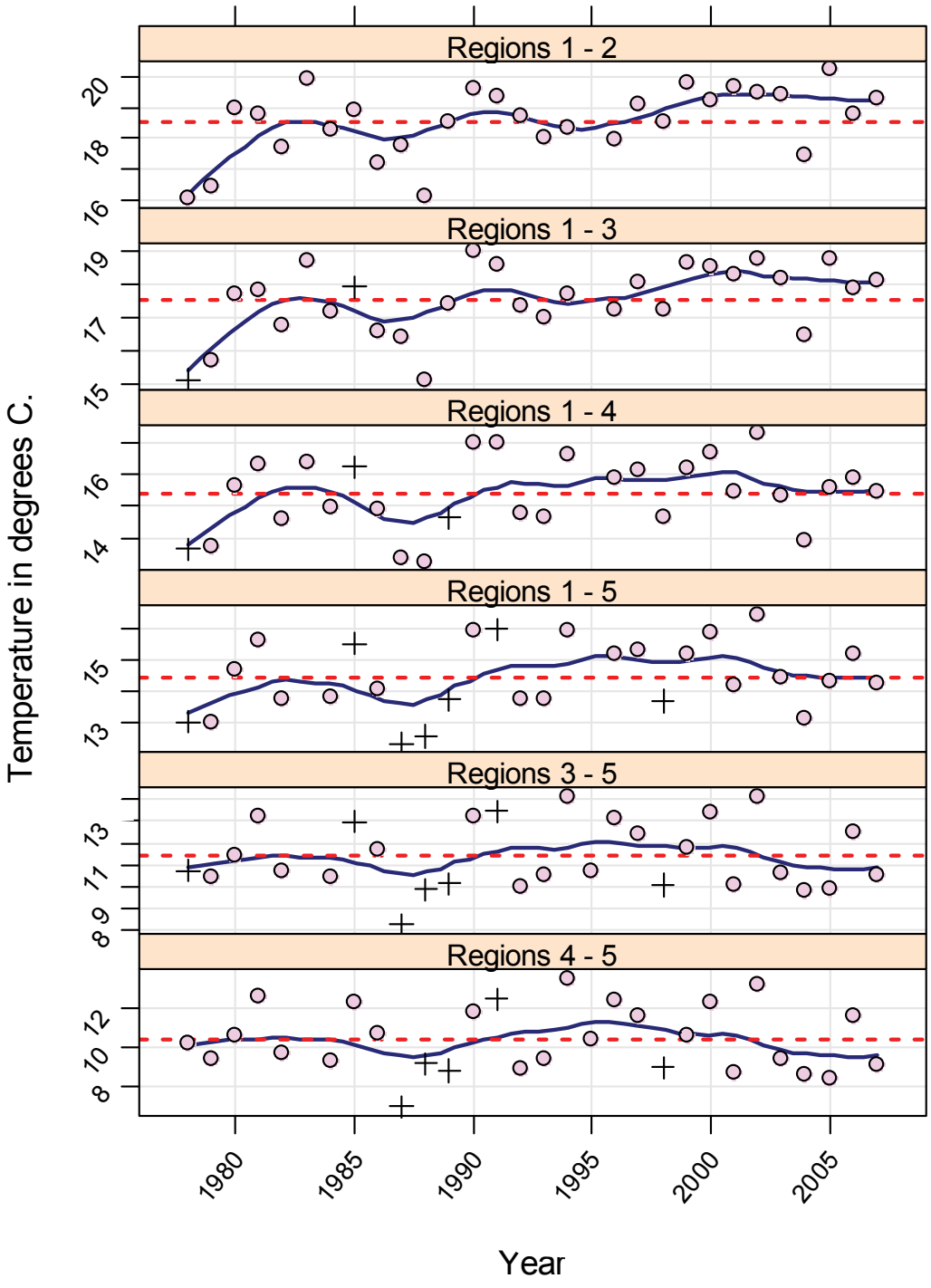


Table II.D.2. Stratified mean bottom temperatures recorded on the *MarineFisheries* fall survey, by region and regional groups, 1978 – 2007.

	Regions					Regional Groupings					
	1	2	3	4	5	1 - 2	1 - 3	1 - 4	1 - 5	3 - 5	4 - 5
1978	15.76	16.33	12.34	10.41	9.91	16.05	15.12	13.64	12.99	10.74	10.21
1979	16.37	16.47	13.57	9.47	9.34	16.43	15.71	13.75	12.98	10.45	9.42
1980	18.00	19.86	14.00	11.06	10.00	18.96	17.71	15.62	14.65	11.47	10.64
1981	18.13	19.35	15.11	13.03	12.03	18.76	17.84	16.33	15.59	13.25	12.63
1982	17.13	18.29	13.91	9.93	9.37	17.73	16.77	14.62	13.71	10.75	9.71
1983	19.11	20.69	15.23	11.23	NA	19.93	18.74	16.38	NA	NA	NA
1984	18.01	18.58	13.88	10.10	8.04	18.31	17.19	14.96	13.77	10.42	9.27
1985	18.75	19.04	15.08	12.55	11.92	18.90	17.94	16.24	15.50	12.98	12.29
1986	17.02	17.34	14.88	11.25	9.84	17.18	16.60	14.92	14.04	11.73	10.69
1987	16.57	18.95	12.15	6.82	7.24	17.80	16.38	13.38	12.31	8.27	6.99
1988	15.85	16.40	12.02	9.22	9.10	16.13	15.10	13.25	12.53	9.88	9.17
1989	18.38	18.64	14.24	8.51	9.27	18.52	17.44	14.64	13.71	10.16	8.81
1990	18.76	20.36	17.26	12.68	10.60	19.59	19.00	17.02	15.91	13.19	11.84
1991	19.11	19.61	16.26	13.46	11.10	19.37	18.59	16.98	15.96	13.45	12.52
1992	17.87	19.50	13.23	9.17	8.62	18.71	17.33	14.77	13.71	10.02	8.95
1993	17.19	18.79	14.03	9.50	9.22	18.01	17.01	14.65	13.71	10.54	9.39
1994	17.81	18.86	15.77	14.21	12.65	18.35	17.70	16.60	15.92	14.13	13.59
1995	NA	19.31	11.67	10.40	10.53	NA	NA	NA	NA	10.75	10.45
1996	17.48	18.42	15.09	12.97	11.77	17.97	17.24	15.90	15.18	13.13	12.49
1997	18.24	19.94	14.96	11.90	11.13	19.12	18.07	16.13	15.27	12.43	11.59
1998	17.76	19.22	13.36	9.07	8.89	18.51	17.22	14.66	13.66	10.08	9.00
1999	19.71	19.87	15.25	10.75	10.40	19.80	18.65	16.17	15.17	11.76	10.61
2000	18.22	20.17	16.42	12.78	11.71	19.23	18.52	16.72	15.85	13.36	12.35
2001	18.88	20.42	14.27	9.16	8.05	19.67	18.31	15.44	14.16	10.09	8.72
2002	18.63	20.35	16.71	14.01	12.20	19.52	18.81	17.30	16.42	14.14	13.29
2003	19.15	19.69	14.37	9.25	9.72	19.43	18.16	15.36	14.38	10.66	9.44
2004	17.14	17.80	13.47	8.25	9.30	17.48	16.47	13.89	13.10	9.86	8.67
2005	19.62	20.80	14.48	8.60	8.08	20.23	18.78	15.58	14.29	9.90	8.39
2006	18.19	19.41	15.21	11.56	11.67	18.82	17.91	15.91	15.18	12.50	11.60
2007	18.46	20.13	14.54	9.73	8.32	19.32	18.12	15.49	14.25	10.50	9.17
Mean	17.98	19.09	14.43	10.70	10.00	18.55	17.53	15.39	14.43	11.40	10.41

Grey cells indicate stratum timeseries mean utilized to fill in missing data.

II. Fall Survey

E. Species List and Recorded Level of Observation in Catch and Length Tables (See table series II.E)

Sections II.E list with exception, all finfish and a subset of commercially and/or recreationally-harvested invertebrates encountered by the survey trawl which have been weighed, measured, and recorded in the catch and length tables (not presented here). Several species were not separated out and recorded in catch and length records from the start of the survey, but were added to the recorded species list in subsequent years. The years of data availability for each species can be determined by referencing the tables in series II.E. In addition, any species that has been recorded under more than one species code, including less specific, 'unclassified codes' are identified to alert data users that combining of species codes may be appropriate in some cases. Species that have catch and length data available for separate sexes, or egg bearing status (American lobster only) are identified in table II.E.1. Length frequency records generally correspond with the catch records. Table II.E.2 identifies the few invertebrate species which were counted rather than measured and lack length frequency records for specific cruises. Table II.E.2 also identifies the few invertebrate species that have incomplete length frequency records for individual cruises meaning that length frequencies were not completed at all stations in a survey. A representative length frequency may be generated in these cases, but the sum of length records will not match the catch records.

Table II.E.1. List of species documented on the *MarineFisheries* fall survey, and level of recorded observations in catch table, 1978 – 2007.

x Indicates that species was consistently recorded in catch tables whenever observed.
O Indicates that species was separated by sex and recorded consistently in catch tables whenever observed.
- Indicates that species was not consistently recorded in catch tables whenever observed.
z Indicates that egg bearing lobsters were separated from other female lobsters in catch records.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
155	Acadian redfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
568	African pompano	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
33	alewife	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
165	alligatorfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
384	American eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
301	American lobster	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z
102	American plaice	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
35	American shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
73	Atlantic cod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
126	Atlantic cutlassfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1	Atlantic hagfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
101	Atlantic halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
32	Atlantic herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
121	Atlantic mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
36	Atlantic menhaden	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
132	Atlantic moonfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
313	Atlantic rock crab	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
205	Atlantic saury	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
170	Atlantic seasnail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
113	Atlantic silverside	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
403	Atlantic surfclam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
453	Atlantic tomcod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	Atlantic torpedo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O	x	x	x	x	x	O	O	O	O	
192	Atlantic wolfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
651	banded drum	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
204	banded rudderfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
43	bay anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
402	bay scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
134	bigeye	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
209	bigeye scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
141	black sea bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
314	blue crab	x	x	O	x	x	x	x	x	x	x	x	x	O	O	O	O	O	O	O	O	O	O	x	O	O	O	O	O	O	O
343	blue mussel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
129	blue runner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
34	blueback herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
135	bluefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
120	bluespotted cornetfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
913	brown shrimp	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
112	buckler dory	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
131	butterfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
336	channeled whelk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
24	clearnose skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
63	conger eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
490	cornetfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
460	crested cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
570	crevalle jack	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
176	cunner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
84	cusk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
461	cusk-eel uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
183	daubed shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
657	dwarf goatfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
194	fawn cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
328	flame box crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
175	flying gurnard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
83	fourbeard rockling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table II.E.1 continued.

x Indicates that species was consistently recorded in catch tables whenever observed.
O Indicates that species was separated by sex and recorded consistently in catch tables whenever observed.
- Indicates that species was not consistently recorded in catch tables whenever observed.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
104	fourspot flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
541	gag*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
556	glasseye snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
739	goby uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
197	goosefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
590	gray snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
202	gray triggerfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
99	Greenland halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
166	grubby	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
695	guaguanche*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
109	Gulf Stream flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
74	haddock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
80	hake uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
37	hickory shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
118	hogchoker	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
159	hookear sculpin uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
318	horseshoe crab	x	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
340	Iceland scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
435	inshore lizardfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
312	Jonah crab	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
337	knobbed whelk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
322	lady crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
492	lined seahorse	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	little skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
852	lizardfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
503	longfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
520	longfin squid egg mops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x
163	longhorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
133	lookdown	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
168	lumpfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
249	lumpfish snailfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
208	mackerel scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
323	mantis shrimp uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
161	moustache sculpin*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
738	naked goby*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
538	Nassau grouper*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
342	northern horsemussel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
146	northern kingfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
348	northern moonsnail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x
116	northern pipefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
196	northern puffer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
413	northern quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
181	Northern sand lance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
171	Northern searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
694	northern sennet*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
502	northern shortfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
306	northern shrimp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x
324	northern stone crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
193	ocean pout	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
409	ocean quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
510	octopus uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
69	offshore hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
832	orange filefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
185	oyster toadfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
201	planehead filefish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
75	pollock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
184	radiated shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table II.E.1 continued.

x Indicates that species was consistently recorded in catch tables whenever observed.
O Indicates that species was separated by sex and recorded consistently in catch tables whenever observed.
- Indicates that species was not consistently recorded in catch tables whenever observed.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
45	rainbow smelt	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
489	red cornetfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
187	red goatfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
77	red hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
641	red porgy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
663	reef butterflyfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
180	rock gunnel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
531	rock hind*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
212	rough scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	roughtail stingray	x	x	x	x	x	x	x	x	x	x	x	x	O	O	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O	O
31	round herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
211	round scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	sand tiger	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O	O
542	scamp*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
833	scrawled filefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
143	scup	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
164	sea raven	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
401	sea scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
331	sea urchin uncl (green urchin)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x
557	short bigeye	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
162	shorthorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
865	silver anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
72	silver hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
213	silver rag	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
117	smallmouth flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	smooth dogfish	x	x	x	x	x	x	x	x	x	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
27	smooth skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
182	snakeblenny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
439	snakefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
537	snowy grouper*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
745	Spanish mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
317	spider crab uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	spiny dogfish	x	x	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
512	spoonarm octopus*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
149	spot	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
662	spotfin butterflyfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
78	spotted hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
44	striped anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
139	striped bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
188	striped cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
172	striped searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
103	summer flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O
177	tautog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	thorny skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
840	trunkfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
978	unknown 01(Lactophrys spp)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
596	vermilion snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
145	weakfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
76	white hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
690	white mullet	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
108	windowpane	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
106	winter flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	winter skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
107	witch flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
191	wrymouth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
569	yellow jack	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
105	yellowtail flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	O	O	O	O	O	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table II.E.2. List of species documented on the *MarineFisheries* fall survey, and level of recorded observations in length table, 1978 – 2007.

x Indicates that length frequencies consistently recorded in length table whenever species observed.
x Indicates that length frequency records are incomplete for given survey year.
- indicates that length frequency observations were not consistently recorded for given year.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
155	Acadian redfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
568	African pompano	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
33	alewife	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
165	alligatorfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
384	American eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
301	American lobster	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
102	American plaice	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
35	American shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
73	Atlantic cod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
126	Atlantic cutlassfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1	Atlantic hagfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
101	Atlantic halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
32	Atlantic herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
121	Atlantic mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
36	Atlantic menhaden	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
132	Atlantic moonfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
313	Atlantic rock crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
205	Atlantic saury	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
170	Atlantic seasnail	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
113	Atlantic silverside	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
403	Atlantic surfclam	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
453	Atlantic tomcod	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	Atlantic torpedo	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
192	Atlantic wolfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
651	banded drum	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
204	banded rudderfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
43	bay anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
402	bay scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x
134	bigeye	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
209	bigeye scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
141	black sea bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
314	blue crab	x	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	-	x	x	x	x	x	x	x
343	blue mussel*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
129	blue runner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
34	blueback herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
135	bluefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
120	bluespotted cornetfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
913	brown shrimp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
112	buckler dory	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
131	butterfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
336	channeled whelk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x
24	clearnose skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
63	conger eel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
490	cornetfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
460	crested cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
570	crevalle jack	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
176	cunner	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
84	cusk	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
461	cusk-eel uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
183	daubed shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
657	dwarf goatfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
194	fawn cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
328	flame box crab	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
175	flying gurnard	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
83	fourbeard rockling	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
104	fourspot flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

Table II.E.2 continued.

x Indicates that length frequencies consistently recorded in length table whenever species observed.
x Indicates that length frequency records are incomplete for given survey year.
- indicates that length frequency observations were not consistently recorded for given year.

Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
541	gag*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
556	glasseye snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
739	goby uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
197	goosefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
590	gray snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
202	gray triggerfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
99	Greenland halibut	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
166	grubby	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
695	guaguanche*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
109	Gulf Stream flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
74	haddock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
80	hake uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
37	hickory shad	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
118	hogchoker	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
159	hookear sculpin uncl	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
318	horseshoe crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
340	Iceland scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
435	inshore lizardfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
312	Jonah crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
337	knobbed whelk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	x	x	x	x	x	x	x	x	x	x	x	x	x
322	lady crab	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
492	lined seahorse	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	little skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
852	lizardfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
503	longfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
520	longfin squid egg mops	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
163	longhorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
133	lookdown	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
168	lumpfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
249	lumpfish snailfish uncl*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
208	mackerel scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
323	mantis shrimp uncl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
161	moustache sculpin*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
738	naked goby*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
538	Nassau grouper*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
342	northern horsemussel*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
146	northern kingfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
348	northern moonsnail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
116	northern pipefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
196	northern puffer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
413	northern quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
181	Northern sand lance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
171	Northern searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
694	northern sennet*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
502	northern shortfin squid	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
306	northern shrimp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
324	northern stone crab	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
193	ocean pout	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
409	ocean quahog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
510	octopus uncl*	x	x	x	x	x	x	x	-	x	x	-	x	x	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x	x	x
69	offshore hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
832	orange filefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
185	oyster toadfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
201	planehead filefish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
75	pollock	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
184	radiated shanny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
45	rainbow smelt	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

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Table II.E.2 continued.

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Species Code	Common Name	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
489	red cornetfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
187	red goatfish*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
77	red hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
641	red porgy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
663	reef butterflyfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
180	rock gunnel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
531	rock hind*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
212	rough scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	roughtail stingray	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
31	round herring	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
211	round scad*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	sand tiger	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
542	scamp*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
833	scrawled filefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
143	scup	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
164	sea raven	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
401	sea scallop	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
331	sea urchin uncl (green urchin)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
557	short bigeye	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
162	shorthorn sculpin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
865	silver anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
72	silver hake	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
213	silver rag	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
117	smallmouth flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	smooth dogfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	smooth skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
182	snakeblenny	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
439	snakefish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
537	snowy grouper*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
745	Spanish mackerel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
317	spider crab uncl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	spiny dogfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
512	spoonarm octopus*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
149	spot	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
662	spotfin butterflyfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
78	spotted hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
44	striped anchovy	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
139	striped bass	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
188	striped cusk-eel*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
172	striped searobin	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
103	summer flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
177	tautog	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	thorny skate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
840	trunkfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
978	unknown 01	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
596	vermilion snapper	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
145	weakfish	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
76	white hake*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
690	white mullet	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
108	windowpane	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
106	winter flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	winter skate*	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
107	witch flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
191	wrymouth	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
569	yellow jack	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
105	yellowtail flounder	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

*Observations may be recorded under additional species code in one or more years.

II. Fall Survey

F. Catch Composition Summaries (See table series II.F)

Approximately 170 species have been recorded in the fall *MarineFisheries* trawl surveys 1978 - 2007. Summary tables of catch composition for the entire survey area, and as each individual survey region, are presented in section II.F. The species lists are sorted in descending order according to percent occurrence of each species (# of positive tows/total # of tows). The count of cruises with recorded observations of each species is also provided to document how commonly each species has occurred in the survey over time. Mean number per tow and mean weight per tow (kg) are presented as an unweighted indication of the abundance and biomass encountered in the survey for each region and species. Species that have not been consistently recorded when observed, or that have been recorded under more than one species code at any time are noted in Table II.F. The inconsistently recorded species should be considered underrepresented in the summary statistics presented since the denominator (ntows) has not been adjusted to reflect reduced station counts for individual species that were not recorded when observed in catch tables in all years.

Table II.F.1. *MarineFisheries* fall survey regions 1-5 catch summary, 1978-2007.

ntows=2,689 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
503	longfin squid	*Loligo pealeii*	87.7	367.9	2.8	30	1978
131	butterfish	*Peprilus triacanthus*	79.3	324.0	3.5	30	1978
26	little skate*	*Leucoraja erinacea*	70.7	24.0	13.5	30	1978
313	Atlantic rock crab	*Cancer irroratus*	65.5	27.3	2.3	30	1978
106	winter flounder	*Pseudopleuronectes americanus*	62.6	36.4	7.2	30	1978
143	scup	*Stenotomus chrysops*	50.5	1271.8	10.8	30	1978
23	winter skate*	*Leucoraja ocellata*	48.6	12.1	13.4	30	1978
108	windowpane	*Scophthalmus aquosus*	48.3	5.3	0.8	30	1978
72	silver hake	*Merluccius bilinearis*	47.4	34.0	2.3	30	1978
301	American lobster	*Homarus americanus*	45.0	17.5	3.4	30	1978
77	red hake*	*Urophycis chuss*	40.8	20.3	3.5	30	1978
322	lady crab	*Ovalipes ocellatus*	37.3	20.2	1.0	30	1978
103	summer flounder	*Paralichthys dentatus*	36.6	2.0	1.6	30	1978
104	fourspot flounder	*Paralichthys oblongus*	35.5	2.0	0.4	30	1978
141	black sea bass	*Centropristis striata*	35.4	53.7	0.4	30	1978
171	Northern searobin	*Prionotus carolinus*	35.1	10.9	0.6	30	1978
105	yellowtail flounder	*Limanda ferruginea*	35.0	10.2	1.9	30	1978
317	spider crab uncl	*Majidae*	33.5	7.9	0.5	30	1978
15	spiny dogfish	*Squalus acanthias*	33.0	33.5	66.9	30	1978
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	29.6	11.7	1.1	30	1978
73	Atlantic cod	*Gadus morhua*	29.3	26.1	0.7	30	1978
76	white hake*	*Urophycis tenuis*	28.2	4.3	0.3	30	1978
13	smooth dogfish	*Mustelus canis*	26.9	3.0	2.9	30	1978
193	ocean pout	*Macrozoarces americanus*	24.2	6.2	0.9	30	1978
102	American plaice	*Hippoglossoides platessoides*	21.8	41.6	3.4	30	1978
312	Jonah crab	*Cancer borealis*	21.3	1.2	0.2	30	1978
164	sea raven	*Hemitripterus americanus*	16.9	0.4	0.2	30	1978
32	Atlantic herring	*Clupea harengus*	16.8	14.7	0.5	30	1978
401	sea scallop	*Placopecten magellanicus*	15.5	7.0	0.4	30	1978
338	moon snail and shark eye*	*Naticidae*	14.8	1.2	0.1	26	1978
336	channeled whelk	*Busycotypus canaliculatus*	14.7	0.7	0.2	29	1978
176	cunner	*Tautogolabrus adspersus*	13.9	1.9	0.0	30	1978
337	knobbed whelk	*Busycon carica*	13.5	1.2	0.5	30	1978
502	northern shortfin squid	*Illex illecebrosus*	13.5	1.0	0.2	30	1978
116	northern pipefish	*Syngnathus fuscus*	13.2	3.8	0.0	30	1978
197	goosefish	*Lophius americanus*	12.8	0.3	0.7	30	1978
83	fourbeard rockling	*Enchelyopus cimbrius*	12.5	0.8	0.0	30	1978
208	mackerel scad*	*Decapterus macarellus*	12.3	3.4	0.0	30	1978
135	bluefish	*Pomatomus saltatrix*	12.3	1.8	0.1	30	1978
172	striped searobin	*Prionotus evolans*	11.6	0.6	0.1	30	1978
117	smallmouth flounder	*Etropus microstomus*	11.6	0.8	0.0	20	1987
33	alewife	*Alosa pseudoharengus*	11.0	1.3	0.1	30	1978
74	haddock	*Melanogrammus aeglefinus*	10.7	1.7	0.0	29	1978
177	tautog	*Tautoga onitis*	10.0	0.7	0.4	30	1978
318	horseshoe crab	*Limulus polyphemus*	9.0	0.3	0.5	30	1978
196	northern puffer	*Sphoeroides maculatus*	8.3	0.3	0.0	29	1978
107	witch flounder	*Glyptocephalus cynoglossus*	8.1	0.4	0.2	30	1978
132	Atlantic moonfish	*Selene setapinnis*	7.6	2.3	0.0	28	1978
182	snakeblenny	*Lumpenus lumpretaeformis*	7.2	0.4	0.0	30	1978
28	thorny skate	*Amblyraja radiata*	7.1	0.2	0.3	30	1978
146	northern kingfish	*Menticirrhus saxatalis*	6.7	0.3	0.0	28	1978

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.1 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
45	rainbow smelt	*Osmerus mordax*	6.1	7.9	0.1	29	1978
44	striped anchovy	*Anchoa hepsetus*	5.8	23.8	0.0	26	1978
165	alligatorfish	*Aspidophoroides monopterygius*	5.5	0.4	0.0	29	1978
201	planehead filefish*	*Monacanthus hispidus*	5.4	0.2	0.0	24	1978
43	bay anchovy	*Anchoa mitchilli*	5.4	36.7	0.0	22	1978
34	blueback herring	*Alosa aestivalis*	5.3	0.8	0.0	29	1978
78	spotted hake*	*Urophycis regia*	5.2	0.2	0.0	27	1978
181	Northern sand lance	*Ammodytes dubius*	4.6	25.3	0.1	27	1978
403	Atlantic surfclam	*Spisula solidissima*	3.9	0.1	0.0	26	1978
409	ocean quahog	*Arctica islandica*	3.7	0.1	0.0	28	1978
75	pollock	*Pollachius virens*	3.6	0.2	0.0	26	1978
180	rock gunnel	*Pholis gunnellus*	3.4	0.1	0.0	25	1979
109	Gulf Stream flounder	*Citharichthys arctifrons*	3.2	0.2	0.0	19	1982
520	longfin squid egg mops*	*Loligo pealeii*	3.0		0.0	9	1999
343	blue mussel*	*Mytilus edulis*	2.9	103.8	1.1	27	1978
35	American shad	*Alosa sapidissima*	2.9	0.1	0.0	25	1980
145	weakfish	*Cynoscion regalis*	2.8	0.7	0.0	26	1978
155	Acadian redfish	*Sebastes fasciatus*	2.6	0.2	0.0	23	1978
212	rough scad*	*Trachurus lathami*	2.5	0.1	0.0	20	1984
402	bay scallop	*Argopecten irradians*	2.0	0.2	0.0	26	1978
120	bluespotted cornetfish*	*Fistularia tabacaria*	1.9	0.0	0.0	16	1978
348	northern moonsnail*	*Euspira heros*	1.9	0.1	0.0	7	2000
183	daubed shanny	*Lumpenus maculatus*	1.8	0.0	0.0	17	1982
134	bigeye	*Priacanthus arenatus*	1.8	0.1	0.0	17	1980
121	Atlantic mackerel	*Scomber scombrus*	1.8	0.9	0.0	16	1978
314	blue crab	*Callinectes sapidus*	1.7	0.1	0.0	24	1978
36	Atlantic menhaden	*Brevoortia tyrannus*	1.7	0.9	0.0	18	1980
557	short bigeye	*Pristigenys alta*	1.6	0.0	0.0	16	1982
211	round scad*	*Decapterus punctatus*	1.6	1.2	0.0	8	1999
435	inshore lizardfish*	*Synodus foetens*	1.4	0.0	0.0	9	1986
191	wrymouth	*Cryptacanthodes maculatus*	1.3	0.0	0.0	18	1978
187	red goatfish*	*Mullus auratus*	1.3	0.0	0.0	17	1980
213	silver rag	*Ariomma bondi*	1.3	0.0	0.0	10	1987
21	Atlantic torpedo	*Torpedo nobiliana*	1.2	0.0	0.3	22	1979
323	mantis shrimp uncl	*Stomatopoda*	1.2	0.0	0.0	18	1980
510	octopus uncl*	*Octopoda*	1.2	0.0	0.0	17	1979
118	hogchoker	*Trinectes maculatus*	1.1	0.0	0.0	18	1980
209	bigeye scad*	*Selar crumenophthalmus*	1.0	0.0	0.0	17	1978
168	lumpfish	*Cyclopterus lumpus*	1.0	0.0	0.0	17	1978
139	striped bass	*Morone saxatalis*	1.0	0.0	0.1	10	1990
342	northern horsemussel*	*Modiolus modiolus*	0.9	0.0	0.0	12	1982
31	round herring	*Etrumeus teres*	0.8	0.0	0.0	15	1978
695	guaguanche*	*Sphyraena guachancho*	0.8	0.0	0.0	13	1981
556	glasseye snapper	*Priacanthus cruentatus*	0.8	0.0	0.0	6	1999
113	Atlantic silverside	*Menidia menidia*	0.7	0.5	0.0	13	1978
129	blue runner	*Caranx crysos*	0.7	0.0	0.0	11	1980
185	oyster toadfish	*Opsanus tau*	0.6	0.0	0.0	14	1981
202	gray triggerfish*	*Balistes capriscus*	0.6	0.0	0.0	9	1983
192	Atlantic wolfish	*Anarhichas lupus*	0.6	0.0	0.0	9	1979
832	orange filefish	*Aluterus schoepfi*	0.6	0.0	0.0	8	1981
657	dwarf goatfish*	*Upeneus parvus*	0.6	0.0	0.0	4	2003
166	grubby	*Myoxocephalus aenaeus*	0.5	0.0	0.0	11	1979
694	northern sennet*	*Sphyraena borealis*	0.5	0.0	0.0	10	1988

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.1 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
537	snowy grouper*	*Epinephelus niveatus*	0.5	0.0	0.0	10	1978
439	snakefish	*Trachinocephalus myops*	0.5	0.1	0.0	7	1978
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.5	0.0	0.0	6	1978
4	roughtail stingray	*Dasyatis centroura*	0.4	0.0	0.3	9	1981
413	northern quahog	*Mercenaria mercenaria*	0.4	0.0	0.0	9	1979
188	striped cusk-eel*	*Ophidion marginatum*	0.4	0.0	0.0	7	1980
27	smooth skate	*Malacoraja senta*	0.4	0.0	0.0	6	1978
161	moustache sculpin*	*Triglops murrayi*	0.3	0.0	0.0	8	1979
170	Atlantic seasnail	*Liparis atlanticus*	0.3	0.0	0.0	7	1978
384	American eel	*Anguilla rostrata*	0.3	0.0	0.0	6	1978
460	crested cusk-eel*	*Ophidion welshi*	0.3	0.0	0.0	5	1989
101	Atlantic halibut	*Hippoglossus hippoglossus*	0.3	0.0	0.0	5	1979
133	lookdown	*Selene vomer*	0.3	0.0	0.0	4	1982
489	red cornetfish*	*Fistularia petimba*	0.3	0.0	0.0	3	2003
596	vermilion snapper	*Rhomboplites aurorubens*	0.3	0.3	0.0	3	1988
24	clearnose skate	*Raja eglanteria*	0.2	0.0	0.0	5	1979
175	flying gurnard	*Dactylopterus volitans*	0.2	0.0	0.0	4	1982
194	fawn cusk-eel*	*Lepophidium profundorum*	0.2	0.0	0.0	3	1983
852	lizardfish uncl*	*Synodontidae*	0.1	0.0	0.0	4	1979
149	spot	*Leiostomus xanthurus*	0.1	0.0	0.0	4	1985
739	goby uncl*	*Gobiidae*	0.1	0.0	0.0	3	1994
662	spotfin butterflyfish	*Chaetodon ocellatus*	0.1	0.0	0.0	3	1999
833	scrawled filefish	*Aluterus scriptus*	0.1	0.0	0.0	3	1990
570	crevalle jack	*Caranx hippos*	0.1	0.0	0.0	3	1988
204	banded rudderfish	*Seriola zonata*	0.1	0.0	0.0	3	1984
12	sand tiger	*Carcharias taurus*	0.1	0.0	0.0	3	1981
63	conger eel	*Conger oceanicus*	0.1	0.0	0.0	3	1981
324	northern stone crab	*Lithodes maja*	0.1	0.0	0.0	2	1983
249	lumpfish snailfish uncl*	*Cyclopteridae*	0.1	0.0	0.0	2	2003
461	cusk-eel uncl*	*Ophidiidae*	0.1	0.0	0.0	2	1996
490	cornetfish uncl*	*Fistularia sp*	0.1	0.0	0.0	2	1980
541	gag*	*Mycteroperca microlepis*	0.1	0.0	0.0	2	1999
542	scamp*	*Mycteroperca phenax*	0.1	0.0	0.0	2	1999
112	buckler dory	*Zenopsis conchifera*	0.1	0.0	0.0	2	1993
568	African pompano	*Alectis ciliaris*	0.1	0.0	0.0	2	1990
492	lined seahorse	*Hippocampus erectus*	0.1	0.0	0.0	2	1989
340	Iceland scallop	*Chlamys islandica*	0.1	0.0	0.0	2	1985
453	Atlantic tomcod	*Microgadus tomcod*	0.1	0.0	0.0	2	1985
738	naked goby*	*Gobiosoma bosc*	0.1	0.0	0.0	2	1985
184	radiated shanny	*Ulvaria subbifurcata*	0.1	0.0	0.0	2	1983
1	Atlantic hagfish	*Myxine glutinosa*	0.1	0.0	0.0	2	1980
306	northern shrimp*	*Pandalus borealis*	0.1	0.0	0.0	1	2007
651	banded drum	*Larimus fasciatus*	0.1	0.0	0.0	1	2000
978	unknown 01(Lactophrys spp)	*Lactophrys spp*	0.0	0.0	0.0	1	2007
913	brown shrimp	*Penaeus aztecus*	0.0	0.0	0.0	1	2006
512	spoonarm octopus*	*Bathypolypus arcticus*	0.0	0.0	0.0	1	2004
159	hookear sculpin uncl	*Artediellus sp*	0.0	0.0	0.0	1	1987
80	hake uncl*	*Gadidae*	0.0	0.0	0.0	1	1983
328	flame box crab	*Calappa flammea*	0.0	0.0	0.0	1	2001
69	offshore hake	*Merluccius albidus*	0.0	0.0	0.0	1	1982
99	Greenland halibut	*Reinhardtius hippoglossoides*	0.0	0.0	0.0	1	2006
690	white mullet	*Mugil curema*	0.0	0.0	0.0	1	2006
126	Atlantic cutlassfish	*Trichiurus lepturus*	0.0	0.0	0.0	1	2001

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.1 continued.

Spp Code	Common Name	*Scientific Name*	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count	First Occ.
162	shorthorn sculpin	*Myoxocephalus scorpius*	0.0	0.0	0.0	1	2000
538	Nassau grouper*	*Epinephelus striatus*	0.0	0.0	0.0	1	1999
531	rock hind*	*Epinephelus adscensionis*	0.0	0.0	0.0	1	1996
641	red porgy	*Pagrus sedecim*	0.0	0.0	0.0	1	1994
663	reef butterflyfish	*Chaetodon sedentarius*	0.0	0.0	0.0	1	1994
745	Spanish mackerel	*Scomberomorus maculatus*	0.0	0.0	0.0	1	1994
569	yellow jack	*Caranx bartholomaei*	0.0	0.0	0.0	1	1991
840	trunkfish	*Lactophrys trigonus*	0.0	0.0	0.0	1	1991
205	Atlantic saury	*Scomberesox saurus*	0.0	0.0	0.0	1	1985
37	hickory shad	*Alosa mediocris*	0.0	0.0	0.0	1	1982
590	gray snapper	*Lutjanus griseus*	0.0	0.0	0.0	1	1981
84	cusk	*Brosme brosme*	0.0	0.0	0.0	1	1978
865	silver anchovy	*Engraulis eurystole*	0.0	0.0	0.0	1	1978

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.2. *MarineFisheries* fall survey region 1 catch summary, 1978-2007.

ntows=544 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
143	scup	*Stenotomus chrysops*	99.3	2747.8	25.5	30
503	longfin squid	*Loligo pealeii*	99.1	453.4	4.9	30
131	butterfish	*Peprilus triacanthus*	91.7	840.3	9.4	30
26	little skate*	*Leucoraja erinacea*	84.0	41.5	22.4	30
103	summer flounder	*Paralichthys dentatus*	75.4	4.9	3.9	30
141	black sea bass	*Centropristis striata*	72.4	139.5	0.7	30
106	winter flounder	*Pseudopleuronectes americanus*	56.8	6.4	1.1	30
171	Northern searobin	*Prionotus carolinus*	56.1	21.2	0.5	30
322	lady crab	*Ovalipes ocellatus*	55.1	37.7	2.0	30
108	windowpane	*Scophthalmus aquosus*	55.0	8.7	0.8	30
317	spider crab uncl	*Majidae*	49.8	15.8	0.8	30
23	winter skate*	*Leucoraja ocellata*	47.4	11.6	8.3	30
313	Atlantic rock crab	*Cancer irroratus*	45.4	17.6	0.7	30
13	smooth dogfish	*Mustelus canis*	41.5	2.3	2.7	30
172	striped searobin	*Prionotus evolans*	31.6	2.1	0.4	30
72	silver hake	*Merluccius bilinearis*	30.0	19.5	0.2	30
135	bluefish	*Pomatomus saltatrix*	29.6	5.4	0.3	27
104	fourspot flounder	*Paralichthys oblongus*	28.3	2.2	0.3	30
301	American lobster	*Homarus americanus*	27.6	1.9	0.4	29
196	northern puffer	*Sphoeroides maculatus*	23.2	0.8	0.0	29
177	tautog	*Tautoga onitis*	22.2	1.2	1.3	30
208	mackerel scad*	*Decapterus macarellus*	21.1	4.4	0.0	29
116	northern pipefish	*Syngnathus fuscus*	19.1	4.5	0.0	28
338	moon snail and shark eye*	*Naticidae*	19.1	1.2	0.1	22
117	smallmouth flounder	*Etropus microstomus*	18.4	0.7	0.0	20
336	channeled whelk	*Busycotypus canaliculatus*	17.5	0.5	0.2	26
132	Atlantic moonfish	*Selene setapinnis*	16.9	8.2	0.0	27
77	red hake*	*Urophycis chuss*	16.5	2.3	0.1	29
78	spotted hake*	*Urophycis regia*	15.3	1.0	0.1	24
44	striped anchovy	*Anchoa hepsetus*	14.9	83.4	0.1	24
201	planehead filefish*	*Monacanthus hispidus*	14.2	0.6	0.0	21
76	white hake*	*Urophycis tenuis*	13.8	3.5	0.1	23
33	alewife	*Alosa pseudoharengus*	13.6	3.5	0.1	25
145	weakfish	*Cynoscion regalis*	13.4	3.2	0.1	26
43	bay anchovy	*Anchoa mitchilli*	13.2	79.9	0.1	18
146	northern kingfish	*Menticirrhus saxatalis*	12.9	0.8	0.1	23
176	cunner	*Tautogolabrus adspersus*	10.3	0.7	0.0	21
312	Jonah crab	*Cancer borealis*	10.3	0.7	0.1	22
32	Atlantic herring	*Clupea harengus*	9.9	2.9	0.0	20
318	horseshoe crab	*Limulus polyphemus*	8.8	0.2	0.4	24
337	knobbed whelk	*Busycon carica*	8.6	0.3	0.1	20
212	rough scad*	*Trachurus lathami*	7.7	0.4	0.0	19
34	blueback herring	*Alosa aestivalis*	7.4	2.4	0.1	22
314	blue crab	*Callinectes sapidus*	7.2	0.3	0.0	23
343	blue mussel*	*Mytilus edulis*	6.4	512.5	5.2	19
520	longfin squid egg mops*	*Loligo pealeii*	6.1		0.0	9
403	Atlantic surfclam	*Spisula solidissima*	5.7	0.2	0.1	19
83	fourbeard rockling	*Enchelyopus cimbrius*	5.3	0.1	0.0	16
181	Northern sand lance	*Ammodytes dubius*	5.3	5.0	0.0	15
118	hogchoker	*Trinectes maculatus*	5.1	0.1	0.0	18
15	spiny dogfish	*Squalus acanthias*	5.0	1.8	3.0	10

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.2 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
323	mantis shrimp uncl	*Stomatopoda*	5.0	0.1	0.0	17
187	red goatfish*	*Mullus auratus*	4.8	0.1	0.0	16
109	Gulf Stream flounder	*Citharichthys arctifrons*	4.6	0.4	0.0	11
557	short bigeye	*Pristigenys alta*	4.6	0.1	0.0	15
120	bluespotted cornetfish*	*Fistularia tabacaria*	4.2	0.1	0.0	11
402	bay scallop	*Argopecten irradians*	4.0	0.4	0.0	18
31	round herring	*Etrumeus teres*	3.9	0.1	0.0	15
435	inshore lizardfish*	*Synodus foetens*	3.7	0.1	0.0	6
134	bigeye	*Priacanthus arenatus*	3.3	0.5	0.0	10
180	rock gunnel	*Pholis gunnellus*	2.9	0.1	0.0	12
695	guaguanche*	*Sphyraena guachancho*	2.9	0.1	0.0	11
348	northern moonsnail*	*Euspira heros*	2.8	0.1	0.0	6
409	ocean quahog	*Arctica islandica*	2.8	0.1	0.0	11
185	oyster toadfish	*Opsanus tau*	2.6	0.1	0.1	12
211	round scad*	*Decapterus punctatus*	2.6	4.0	0.0	5
21	Atlantic torpedo	*Torpedo nobiliana*	2.2	0.0	0.7	11
188	striped cusk-eel*	*Ophidion marginatum*	2.0	0.1	0.0	7
129	blue runner	*Caranx crysos*	1.8	0.0	0.0	8
209	bigeye scad*	*Selar crumenophthalmus*	1.8	0.0	0.0	7
556	glasseye snapper	*Priacanthus cruentatus*	1.8	0.0	0.0	4
36	Atlantic menhaden	*Brevoortia tyrannus*	1.5	2.1	0.0	6
105	yellowtail flounder	*Limanda ferruginea*	1.5	0.0	0.0	7
401	sea scallop	*Placopecten magellanicus*	1.5	0.0	0.0	7
537	snowy grouper*	*Epinephelus niveatus*	1.5	0.0	0.0	6
596	vermilion snapper	*Rhomboplites aurorubens*	1.5	1.2	0.0	2
657	dwarf goatfish*	*Upeneus parvus*	1.5	0.0	0.0	3
694	northern sennet*	*Sphyraena borealis*	1.5	0.0	0.0	7
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	1.3	0.0	0.0	5
202	gray triggerfish*	*Balistes capriscus*	1.3	0.0	0.0	6
439	snakefish	*Trachinocephalus myops*	1.3	0.2	0.0	3
164	sea raven	*Hemitripterus americanus*	1.1	0.1	0.0	5
460	crested cusk-eel*	*Ophidion welshi*	1.1	0.1	0.0	4
73	Atlantic cod	*Gadus morhua*	0.9	0.0	0.0	5
121	Atlantic mackerel	*Scomber scombrus*	0.9	0.0	0.0	3
139	striped bass	*Morone saxatalis*	0.9	0.0	0.0	5
384	American eel	*Anguilla rostrata*	0.9	0.0	0.0	4
413	northern quahog	*Mercenaria mercenaria*	0.9	0.0	0.0	5
489	red cornetfish*	*Fistularia petimba*	0.9	0.0	0.0	2
133	lookdown	*Selene vomer*	0.7	0.1	0.0	4
194	fawn cusk-eel*	*Lepophidium profundorum*	0.7	0.0	0.0	2
832	orange filefish	*Aluterus schoepfi*	0.7	0.0	0.0	3
4	roughtail stingray	*Dasyatis centroura*	0.6	0.0	0.1	3
24	clearnose skate	*Raja eglanteria*	0.6	0.0	0.0	3
35	American shad	*Alosa sapidissima*	0.6	0.0	0.0	2
74	haddock	*Melanogrammus aeglefinus*	0.6	0.0	0.0	2
75	pollock	*Pollachius virens*	0.6	0.0	0.0	3
113	Atlantic silverside	*Menidia menidia*	0.6	0.2	0.0	3
197	goosefish	*Lophius americanus*	0.6	0.0	0.1	3
342	northern horsemussel*	*Modiolus modiolus*	0.6	0.0	0.0	3
570	crevalle jack	*Caranx hippos*	0.6	0.0	0.0	3
739	goby uncl*	*Gobiidae*	0.6	0.1	0.0	3
63	conger eel	*Conger oceanicus*	0.4	0.0	0.0	2
102	American plaice	*Hippoglossoides platessoides*	0.4	0.0	0.0	2

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.2 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
149	spot	*Leiostomus xanthurus*	0.4	0.0	0.0	2
166	grubby	*Myoxocephalus aenaeus*	0.4	0.0	0.0	2
175	flying gurnard	*Dactylopterus volitans*	0.4	0.0	0.0	2
204	banded rudderfish	*Seriola zonata*	0.4	0.0	0.0	1
453	Atlantic tomcod	*Microgadus tomcod*	0.4	0.0	0.0	1
461	cusk-eel uncl*	*Ophidiidae*	0.4	0.0	0.0	1
490	cornetfish uncl*	*Fistularia sp*	0.4	0.0	0.0	2
492	lined seahorse	*Hippocampus erectus*	0.4	0.0	0.0	2
541	gag*	*Mycteroperca microlepis*	0.4	0.0	0.0	2
738	naked goby*	*Gobiosoma bosc*	0.4	0.0	0.0	2
45	rainbow smelt	*Osmerus mordax*	0.2	0.0	0.0	1
80	hake uncl*	*Gadidae*	0.2	0.1	0.0	1
126	Atlantic cutlassfish	*Trichiurus lepturus*	0.2	0.0	0.0	1
170	Atlantic seasnail	*Liparis atlanticus*	0.2	0.0	0.0	1
193	ocean pout	*Macrozoarces americanus*	0.2	0.0	0.0	1
538	Nassau grouper*	*Epinephelus striatus*	0.2	0.0	0.0	1
590	gray snapper	*Lutjanus griseus*	0.2	0.0	0.0	1
641	red porgy	*Pagrus sedecim*	0.2	0.0	0.0	1
651	banded drum	*Larimus fasciatus*	0.2	0.0	0.0	1
662	spotfin butterflyfish	*Chaetodon ocellatus*	0.2	0.0	0.0	1
690	white mullet	*Mugil curema*	0.2	0.0	0.0	1
745	Spanish mackerel	*Scomberomorus maculatus*	0.2	0.0	0.0	1
833	scrawled filefish	*Aluterus scriptus*	0.2	0.0	0.0	1
852	lizardfish uncl*	*Synodontidae*	0.2	0.0	0.0	1
865	silver anchovy	*Engraulis eurystole*	0.2	0.0	0.0	1
913	brown shrimp	*Penaeus aztecus*	0.2	0.0	0.0	1
978	unknown 01(Lactophrys spp)	*Lactophrys spp*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.3. *MarineFisheries* fall survey region 2 catch summary, 1978-2007.

ntows=585 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
503	longfin squid	*Loligo pealeii*	99.8	427.2	3.6	30
143	scup	*Stenotomus chrysops*	99.7	2987.7	24.0	30
131	butterfish	*Peprilus triacanthus*	91.8	416.1	4.1	30
141	black sea bass	*Centropristis striata*	81.0	113.3	1.3	30
317	spider crab uncl	*Majidae*	77.9	17.1	1.4	30
13	smooth dogfish	*Mustelus canis*	71.5	11.2	10.2	30
322	lady crab	*Ovalipes ocellatus*	67.5	40.8	2.0	29
171	Northern searobin	*Prionotus carolinus*	65.3	23.1	1.9	30
103	summer flounder	*Paralichthys dentatus*	64.6	3.5	2.8	30
26	little skate*	*Leucoraja erinacea*	61.5	12.4	7.2	30
337	knobbed whelk	*Busycon carica*	53.8	5.2	2.0	30
336	channeled whelk	*Busycotypus canaliculatus*	48.7	2.6	0.7	29
23	winter skate*	*Leucoraja ocellata*	46.5	7.5	6.7	30
313	Atlantic rock crab	*Cancer irroratus*	35.9	3.6	0.2	30
108	windowpane	*Scophthalmus aquosus*	32.8	1.1	0.3	30
117	smallmouth flounder	*Etropus microstomus*	30.4	2.9	0.0	20
106	winter flounder	*Pseudopleuronectes americanus*	23.8	1.9	0.2	29
318	horseshoe crab	*Limulus polyphemus*	23.1	0.7	1.3	29
135	bluefish	*Pomatomus saltatrix*	22.9	2.8	0.3	29
172	striped searobin	*Prionotus evolans*	18.8	0.5	0.1	28
116	northern pipefish	*Syngnathus fuscus*	17.1	0.9	0.0	27
146	northern kingfish	*Menticirrhus saxatalis*	17.1	0.4	0.0	26
177	tautog	*Tautoga onitis*	15.9	1.4	0.3	29
208	mackerel scad*	*Decapterus macarellus*	14.5	0.9	0.0	25
196	northern puffer	*Sphoeroides maculatus*	11.8	0.2	0.0	26
176	cunner	*Tautogolabrus adspersus*	10.6	1.6	0.0	29
201	planehead filefish*	*Monacanthus hispidus*	10.3	0.2	0.0	19
301	American lobster	*Homarus americanus*	9.7	0.3	0.1	25
43	bay anchovy	*Anchoa mitchilli*	9.4	86.8	0.1	16
132	Atlantic moonfish	*Selene setapinnis*	9.2	1.8	0.0	19
44	striped anchovy	*Anchoa hepsetus*	8.9	30.4	0.0	18
338	moon snail and shark eye*	*Naticidae*	8.2	0.2	0.0	19
104	fourspot flounder	*Paralichthys oblongus*	8.0	0.1	0.0	22
109	Gulf Stream flounder	*Citharichthys arctifrons*	5.8	0.3	0.0	7
134	bigeye	*Priacanthus arenatus*	4.8	0.2	0.0	11
402	bay scallop	*Argopecten irradians*	4.8	0.7	0.0	21
120	bluespotted cornetfish*	*Fistularia tabacaria*	4.6	0.1	0.0	10
72	silver hake	*Merluccius bilinearis*	4.3	0.2	0.0	9
15	spiny dogfish	*Squalus acanthias*	3.4	0.2	0.5	10
181	Northern sand lance	*Ammodytes dubius*	3.4	1.0	0.0	10
403	Atlantic surfclam	*Spisula solidissima*	3.1	0.1	0.0	14
77	red hake*	*Urophycis chuss*	2.9	0.1	0.0	10
435	inshore lizardfish*	*Synodus foetens*	2.9	0.1	0.0	6
180	rock gunnel	*Pholis gunnellus*	2.7	0.2	0.0	10
520	longfin squid egg mops*	*Loligo pealeii*	2.6		0.0	6
32	Atlantic herring	*Clupea harengus*	2.4	0.2	0.0	10
76	white hake*	*Urophycis tenuis*	2.2	0.1	0.0	8
212	rough scad*	*Trachurus lathami*	2.1	0.1	0.0	9
36	Atlantic menhaden	*Brevoortia tyrannus*	1.9	0.1	0.0	5
556	glasseye snapper	*Priacanthus cruentatus*	1.9	0.1	0.0	4
343	blue mussel*	*Mytilus edulis*	1.7	0.1	0.0	6

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.3 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
557	short bigeye	*Pristigenys alta*	1.7	0.0	0.0	5
129	blue runner	*Caranx crysos*	1.5	0.0	0.0	6
4	roughtail stingray	*Dasyatis centroura*	1.4	0.0	1.3	7
78	spotted hake*	*Urophycis regia*	1.2	0.0	0.0	6
187	red goatfish*	*Mullus auratus*	1.2	0.0	0.0	5
211	round scad*	*Decapterus punctatus*	1.2	0.0	0.0	4
832	orange filefish	*Aluterus schoepfi*	1.2	0.0	0.0	5
33	alewife	*Alosa pseudoharengus*	1.0	0.0	0.0	6
314	blue crab	*Callinectes sapidus*	1.0	0.0	0.0	5
439	snakefish	*Trachinocephalus myops*	1.0	0.1	0.0	5
34	blueback herring	*Alosa aestivalis*	0.9	0.0	0.0	4
166	grubby	*Myoxocephalus aenaeus*	0.9	0.1	0.0	4
202	gray triggerfish*	*Balistes capriscus*	0.9	0.0	0.0	3
209	bigeye scad*	*Selar crumenophthalmus*	0.9	0.0	0.0	3
694	northern sennet*	*Sphyraena borealis*	0.9	0.0	0.0	5
695	guaguanche*	*Sphyraena guachancho*	0.9	0.0	0.0	3
175	flying gurnard	*Dactylopterus volitans*	0.7	0.0	0.0	2
323	mantis shrimp uncl	*Stomatopoda*	0.7	0.0	0.0	4
342	northern horsemussel*	*Modiolus modiolus*	0.7	0.0	0.0	4
537	snowy grouper*	*Epinephelus niveatus*	0.7	0.0	0.0	4
657	dwarf goatfish*	*Upeneus parvus*	0.7	0.1	0.0	2
12	sand tiger	*Carcharias taurus*	0.5	0.0	0.1	3
312	Jonah crab	*Cancer borealis*	0.5	0.0	0.0	3
348	northern moonsnail*	*Euspira heros*	0.5	0.0	0.0	3
413	northern quahog	*Mercenaria mercenaria*	0.5	0.0	0.0	2
489	red cornetfish*	*Fistularia petimba*	0.5	0.0	0.0	2
662	spotfin butterflyfish	*Chaetodon ocellatus*	0.5	0.0	0.0	2
852	lizardfish uncl*	*Synodontidae*	0.5	0.0	0.0	3
63	conger eel	*Conger oceanicus*	0.3	0.0	0.0	2
83	fourbeard rockling	*Enchelyopus cimbrius*	0.3	0.0	0.0	2
133	lookdown	*Selene vomer*	0.3	0.0	0.0	1
139	striped bass	*Morone saxatalis*	0.3	0.0	0.0	2
149	spot	*Leiostomus xanthurus*	0.3	0.0	0.0	2
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	0.3	0.0	0.0	2
204	banded rudderfish	*Seriola zonata*	0.3	0.0	0.0	2
542	scamp*	*Mycteroperca phenax*	0.3	0.0	0.0	2
568	African pompano	*Alectis ciliaris*	0.3	0.0	0.0	2
833	scrawled filefish	*Aluterus scriptus*	0.3	0.0	0.0	2
24	clearnose skate	*Raja eglanteria*	0.2	0.0	0.0	1
45	rainbow smelt	*Osmerus mordax*	0.2	0.0	0.0	1
73	Atlantic cod	*Gadus morhua*	0.2	0.0	0.0	1
118	hogchoker	*Trinectes maculatus*	0.2	0.0	0.0	1
145	weakfish	*Cynoscion regalis*	0.2	0.0	0.0	1
164	sea raven	*Hemitripterus americanus*	0.2	0.0	0.0	1
185	oyster toadfish	*Opsanus tau*	0.2	0.0	0.0	1
328	flame box crab	*Calappa flammea*	0.2	0.0	0.0	1
384	American eel	*Anguilla rostrata*	0.2	0.0	0.0	1
409	ocean quahog	*Arctica islandica*	0.2	0.0	0.0	1
531	rock hind*	*Epinephelus adscensionis*	0.2	0.0	0.0	1
541	gag*	*Mycteroperca microlepis*	0.2	0.0	0.0	1
569	yellow jack	*Caranx bartholomaei*	0.2	0.0	0.0	1
739	goby uncl*	*Gobiidae*	0.2	0.0	0.0	1
840	trunkfish	*Lactophrys trigonus*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.4. *MarineFisheries* fall survey region 3 catch summary, 1978-2007.

ntows=369 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
23	winter skate*	*Leucoraja ocellata*	95.4	48.8	64.6	30
313	Atlantic rock crab	*Cancer irroratus*	79.7	35.2	2.8	30
503	longfin squid	*Loligo pealeii*	78.0	335.5	1.5	30
26	little skate*	*Leucoraja erinacea*	77.2	15.4	8.5	30
131	butterfish	*Peprilus triacanthus*	74.3	191.9	0.8	30
108	windowpane	*Scophthalmus aquosus*	68.3	10.3	2.0	30
322	lady crab	*Ovalipes ocellatus*	56.4	23.2	1.0	30
106	winter flounder	*Pseudopleuronectes americanus*	49.1	10.4	3.1	30
15	spiny dogfish	*Squalus acanthias*	45.5	80.5	161.7	30
72	silver hake	*Merluccius bilinearis*	43.6	27.9	1.4	30
143	scup	*Stenotomus chrysops*	42.8	385.1	2.3	30
105	yellowtail flounder	*Limanda ferruginea*	37.4	25.7	4.3	29
77	red hake*	*Urophycis chuss*	33.1	27.9	2.2	30
171	Northern searobin	*Prionotus carolinus*	33.1	10.3	0.2	30
338	moon snail and shark eye*	*Naticidae*	29.5	1.5	0.2	20
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	28.7	27.4	2.3	29
301	American lobster	*Homarus americanus*	28.2	1.1	0.6	30
104	fourspot flounder	*Paralichthys oblongus*	26.8	1.6	0.3	28
76	white hake*	*Urophycis tenuis*	25.5	5.0	0.1	27
73	Atlantic cod	*Gadus morhua*	24.9	78.2	0.8	29
103	summer flounder	*Paralichthys dentatus*	24.9	0.8	0.8	25
317	spider crab uncl	*Majidae*	24.9	2.3	0.1	29
208	mackerel scad*	*Decapterus macarellus*	22.0	12.7	0.1	25
116	northern pipefish	*Syngnathus fuscus*	17.6	18.2	0.0	27
141	black sea bass	*Centropristis striata*	17.6	4.3	0.0	23
401	sea scallop	*Placopecten magellanicus*	17.3	7.8	0.2	28
181	Northern sand lance	*Ammodytes dubius*	16.8	172.2	1.0	20
312	Jonah crab	*Cancer borealis*	15.7	0.6	0.1	23
74	haddock	*Melanogrammus aeglefinus*	14.9	3.3	0.1	22
164	sea raven	*Hemitripterus americanus*	14.9	0.6	0.2	28
193	ocean pout	*Macrozoarces americanus*	14.9	2.0	0.3	28
197	goosefish	*Lophius americanus*	13.0	0.3	1.4	23
13	smooth dogfish	*Mustelus canis*	12.7	0.3	0.7	21
502	northern shortfin squid	*Illex illecebrosus*	11.4	0.6	0.1	24
132	Atlantic moonfish	*Selene setapinnis*	8.4	0.6	0.0	17
403	Atlantic surfclam	*Spisula solidissima*	8.4	0.2	0.0	17
176	cunner	*Tautogolabrus adspersus*	7.9	5.2	0.0	15
117	smallmouth flounder	*Etropus microstomus*	7.6	0.4	0.0	13
196	northern puffer	*Sphoeroides maculatus*	5.4	0.2	0.0	11
135	bluefish	*Pomatomus saltatrix*	5.1	0.3	0.1	13
348	northern moonsnail*	*Euspira heros*	5.1	0.3	0.0	7
32	Atlantic herring	*Clupea harengus*	4.9	0.4	0.0	13
102	American plaice	*Hippoglossoides platessoides*	4.3	0.4	0.0	15
109	Gulf Stream flounder	*Citharichthys arctifrons*	4.3	0.1	0.0	9
44	striped anchovy	*Anchoa hepsetus*	3.8	1.9	0.0	6
211	round scad*	*Decapterus punctatus*	3.8	2.5	0.0	4
172	striped searobin	*Prionotus evolans*	3.5	0.3	0.0	8
43	bay anchovy	*Anchoa mitchilli*	3.0	11.6	0.0	6
75	pollock	*Pollachius virens*	3.0	0.2	0.0	10
78	spotted hake*	*Urophycis regia*	3.0	0.1	0.0	9
139	striped bass	*Morone saxatalis*	3.0	0.1	0.3	7

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.4 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
177	tautog	*Tautoga onitis*	3.0	0.1	0.0	10
21	Atlantic torpedo	*Torpedo nobiliana*	2.4	0.0	0.5	9
201	planehead filefish*	*Monacanthus hispidus*	2.4	0.1	0.0	8
318	horseshoe crab	*Limulus polyphemus*	2.4	0.0	0.1	8
336	channeled whelk	*Busycotypus canaliculatus*	2.2	0.1	0.0	7
520	longfin squid egg mops*	*Loligo pealeii*	2.2	0.0	0.0	6
180	rock gunnel	*Pholis gunnellus*	1.9	0.1	0.0	7
212	rough scad*	*Trachurus lathami*	1.9	0.2	0.0	6
409	ocean quahog	*Arctica islandica*	1.9	0.0	0.0	7
36	Atlantic menhaden	*Brevoortia tyrannus*	1.6	3.2	0.0	3
146	northern kingfish	*Menticirrhus saxatalis*	1.4	0.0	0.0	4
832	orange filefish	*Aluterus schoepfi*	1.4	0.0	0.0	3
33	alewife	*Alosa pseudoharengus*	1.1	0.0	0.0	4
209	bigeye scad*	*Selar crumenophthalmus*	1.1	0.0	0.0	4
213	silver rag	*Ariomma bondi*	1.1	0.0	0.0	3
343	blue mussel*	*Mytilus edulis*	1.1	0.1	0.0	4
557	short bigeye	*Pristigenys alta*	1.1	0.0	0.0	3
34	blueback herring	*Alosa aestivalis*	0.8	0.0	0.0	3
202	gray triggerfish*	*Balistes capriscus*	0.8	0.0	0.0	2
342	northern horsemussel*	*Modiolus modiolus*	0.8	0.0	0.0	3
657	dwarf goatfish*	*Upeneus parvus*	0.8	0.0	0.0	2
121	Atlantic mackerel	*Scomber scombrus*	0.5	0.1	0.0	2
134	bigeye	*Priacanthus arenatus*	0.5	0.0	0.0	2
155	Acadian redfish	*Sebastes fasciatus*	0.5	0.0	0.0	2
165	alligatorfish	*Aspidophoroides monopterygius*	0.5	0.0	0.0	1
187	red goatfish*	*Mullus auratus*	0.5	0.0	0.0	1
194	fawn cusk-eel*	*Lepophidium profundorum*	0.5	0.0	0.0	2
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.5	0.1	0.0	2
461	cusk-eel uncl*	*Ophidiidae*	0.5	0.1	0.0	1
27	smooth skate	*Malacoraja senta*	0.3	0.0	0.0	1
31	round herring	*Etrumeus teres*	0.3	0.0	0.0	1
69	offshore hake	*Merluccius albidus*	0.3	0.0	0.0	1
83	fourbeard rockling	*Enchelyopus cimbrius*	0.3	0.0	0.0	1
107	witch flounder	*Glyptocephalus cynoglossus*	0.3	0.0	0.0	1
113	Atlantic silverside	*Menidia menidia*	0.3	0.0	0.0	1
120	bluespotted cornetfish*	*Fistularia tabacaria*	0.3	0.0	0.0	1
129	blue runner	*Caranx crysos*	0.3	0.0	0.0	1
145	weakfish	*Cynoscion regalis*	0.3	0.0	0.0	1
161	moustache sculpin*	*Triglops murrayi*	0.3	0.0	0.0	1
162	shorthorn sculpin	*Myoxocephalus scorpius*	0.3	0.0	0.0	1
168	lumpfish	*Cyclopterus lumpus*	0.3	0.0	0.0	1
170	Atlantic seasnail	*Liparis atlanticus*	0.3	0.0	0.0	1
188	striped cusk-eel*	*Ophidion marginatum*	0.3	0.0	0.0	1
314	blue crab	*Callinectes sapidus*	0.3	0.0	0.0	1
340	Iceland scallop	*Chlamys islandica*	0.3	0.0	0.0	1
435	inshore lizardfish*	*Synodus foetens*	0.3	0.0	0.0	1
439	snakefish	*Trachinocephalus myops*	0.3	0.0	0.0	1
460	crested cusk-eel*	*Ophidion welshi*	0.3	0.0	0.0	1
537	snowy grouper*	*Epinephelus niveatus*	0.3	0.0	0.0	1
596	vermilion snapper	*Rhomboplites aurorubens*	0.3	0.0	0.0	1
651	banded drum	*Larimus fasciatus*	0.3	0.0	0.0	1
663	reef butterflyfish	*Chaetodon sedentarius*	0.3	0.0	0.0	1
694	northern sennet*	*Sphyraena borealis*	0.3	0.0	0.0	1
695	guaguanche*	*Sphyraena guachancho*	0.3	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.5. *MarineFisheries* fall survey region 4 catch summary, 1978-2007.

ntows=668 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
313	Atlantic rock crab	*Cancer irroratus*	91.5	50.2	4.9	30
106	winter flounder	*Pseudopleuronectes americanus*	89.1	81.3	15.3	30
503	longfin squid	*Loligo pealeii*	87.1	390.1	2.4	30
72	silver hake	*Merluccius bilinearis*	76.5	63.4	5.3	30
77	red hake*	*Urophycis chuss*	73.5	39.9	8.6	30
131	butterfish	*Peprilus triacanthus*	73.5	92.3	1.5	30
26	little skate*	*Leucoraja erinacea*	72.3	27.9	16.6	30
301	American lobster	*Homarus americanus*	67.8	22.4	4.4	30
104	fourspot flounder	*Paralichthys oblongus*	67.2	4.4	0.8	30
105	yellowtail flounder	*Limanda ferruginea*	65.7	11.6	2.0	30
15	spiny dogfish	*Squalus acanthias*	62.4	58.8	123.7	30
73	Atlantic cod	*Gadus morhua*	53.1	24.6	0.5	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	50.9	11.6	1.1	30
108	windowpane	*Scophthalmus aquosus*	50.7	3.7	0.7	30
193	ocean pout	*Macrozoarces americanus*	50.3	17.9	2.5	30
76	white hake*	*Urophycis tenuis*	45.7	4.2	0.5	30
102	American plaice	*Hippoglossoides platessoides*	44.9	63.5	5.7	30
312	Jonah crab	*Cancer borealis*	35.5	1.6	0.3	30
23	winter skate*	*Leucoraja ocellata*	33.7	2.4	2.7	30
164	sea raven	*Hemitripterus americanus*	32.2	0.8	0.2	30
401	sea scallop	*Placopecten magellanicus*	29.9	5.3	0.5	30
32	Atlantic herring	*Clupea harengus*	29.8	48.6	1.1	30
83	fourbeard rockling	*Enchelyopus cimbrius*	29.0	1.3	0.1	30
502	northern shortfin squid	*Illex illecebrosus*	23.1	1.7	0.3	30
176	cunner	*Tautogolabrus adspersus*	19.6	1.8	0.0	30
197	goosefish	*Lophius americanus*	19.2	0.3	0.9	30
182	snakeblenny	*Lumpenus lumpretaeformis*	17.5	0.8	0.0	29
171	Northern searobin	*Prionotus carolinus*	17.1	0.5	0.1	22
33	alewife	*Alosa pseudoharengus*	15.7	1.2	0.1	29
74	haddock	*Melanogrammus aeglefinus*	13.6	0.9	0.0	18
103	summer flounder	*Paralichthys dentatus*	13.2	0.4	0.5	27
322	lady crab	*Ovalipes ocellatus*	12.6	2.0	0.1	28
338	moon snail and shark eye*	*Naticidae*	12.3	0.9	0.1	20
317	spider crab uncl	*Majidae*	11.5	2.5	0.2	27
143	scup	*Stenotomus chrysops*	10.5	52.4	0.3	21
107	witch flounder	*Glyptocephalus cynoglossus*	8.7	0.2	0.1	21
165	alligatorfish	*Aspidophoroides monopterygius*	8.7	1.2	0.0	23
28	thorny skate	*Amblyraja radiata*	8.5	0.2	0.4	23
116	northern pipefish	*Syngnathus fuscus*	8.4	0.7	0.0	23
409	ocean quahog	*Arctica islandica*	7.3	0.2	0.1	21
75	pollock	*Pollachius virens*	6.9	0.6	0.1	17
34	blueback herring	*Alosa aestivalis*	6.7	0.8	0.0	16
177	tautog	*Tautoga onitis*	6.6	0.5	0.0	23
318	horseshoe crab	*Limulus polyphemus*	6.6	0.4	0.4	23
180	rock gunnel	*Pholis gunnellus*	6.3	0.1	0.0	19
35	American shad	*Alosa sapidissima*	4.9	0.1	0.0	16
13	smooth dogfish	*Mustelus canis*	4.3	0.1	0.2	14
45	rainbow smelt	*Osmerus mordax*	3.6	1.0	0.0	13
78	spotted hake*	*Urophycis regia*	3.6	0.1	0.0	15
403	Atlantic surfclam	*Spisula solidissima*	3.4	0.1	0.0	13
191	wrymouth	*Cryptacanthodes maculatus*	3.1	0.0	0.0	13

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.5 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
208	mackerel scad*	*Decapterus macarellus*	3.1	0.6	0.0	11
213	silver rag	*Ariomma bondi*	3.0	0.1	0.0	9
121	Atlantic mackerel	*Scomber scombrus*	2.8	0.5	0.0	9
141	black sea bass	*Centropristis striata*	2.8	1.1	0.0	11
520	longfin squid egg mops*	*Loligo pealeii*	2.7		0.1	8
172	striped searobin	*Prionotus evolans*	2.5	0.1	0.0	13
135	bluefish	*Pomatomus saltatrix*	2.2	0.0	0.0	5
36	Atlantic menhaden	*Brevoortia tyrannus*	2.1	0.1	0.0	10
183	daubed shanny	*Lumpenus maculatus*	1.9	0.0	0.0	11
342	northern horsemussel*	*Modiolus modiolus*	1.9	0.1	0.0	9
343	blue mussel*	*Mytilus edulis*	1.9	0.1	0.0	10
155	Acadian redfish	*Sebastes fasciatus*	1.8	0.0	0.0	9
21	Atlantic torpedo	*Torpedo nobiliana*	1.3	0.0	0.3	7
168	lumpfish	*Cyclopterus lumpus*	1.3	0.0	0.0	7
181	Northern sand lance	*Ammodytes dubius*	1.3	0.0	0.0	7
196	northern puffer	*Sphoeroides maculatus*	1.2	0.1	0.0	8
132	Atlantic moonfish	*Selene setapinnis*	1.0	0.1	0.0	5
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	1.0	0.1	0.0	4
43	bay anchovy	*Anchoa mitchilli*	0.9	0.0	0.0	4
117	smallmouth flounder	*Etropus microstomus*	0.9	0.0	0.0	4
336	channeled whelk	*Busycotypus canaliculatus*	0.9	0.0	0.0	6
348	northern moonsnail*	*Euspira heros*	0.9	0.0	0.0	3
27	smooth skate	*Malacoraja senta*	0.7	0.0	0.0	3
44	striped anchovy	*Anchoa hepsetus*	0.7	0.0	0.0	5
109	Gulf Stream flounder	*Citharichthys arctifrons*	0.7	0.0	0.0	5
146	northern kingfish	*Menticirrhus saxatalis*	0.7	0.0	0.0	4
209	bigeye scad*	*Selar crumenophthalmus*	0.7	0.0	0.0	5
402	bay scallop	*Argopecten irradians*	0.7	0.0	0.0	5
139	striped bass	*Morone saxatalis*	0.6	0.0	0.0	3
170	Atlantic seasnail	*Liparis atlanticus*	0.6	0.0	0.0	3
211	round scad*	*Decapterus punctatus*	0.4	0.2	0.0	1
212	rough scad*	*Trachurus lathami*	0.4	0.0	0.0	2
113	Atlantic silverside	*Menidia menidia*	0.3	0.0	0.0	2
166	grubby	*Myoxocephalus aenaeus*	0.3	0.0	0.0	2
24	clearnose skate	*Raja eglanteria*	0.1	0.0	0.0	1
37	hickory shad	*Alosa mediocris*	0.1	0.0	0.0	1
84	cusk	*Brosme brosme*	0.1	0.0	0.0	1
112	buckler dory	*Zenopsis conchifera*	0.1	0.0	0.0	1
161	moustache sculpin*	*Triglops murrayi*	0.1	0.0	0.0	1
185	oyster toadfish	*Opsanus tau*	0.1	0.0	0.0	1
249	lumpfish snailfish uncl*	*Cyclopteridae*	0.1	0.0	0.0	1
384	American eel	*Anguilla rostrata*	0.1	0.0	0.0	1
413	northern quahog	*Mercenaria mercenaria*	0.1	0.0	0.0	1
453	Atlantic tomcod	*Microgadus tomcod*	0.1	0.0	0.0	1
510	octopus uncl	*Octopoda*	0.1	0.0	0.0	1
537	snowy grouper*	*Epinephelus niveatus*	0.1	0.0	0.0	1
557	short bigeye	*Pristigenys alta*	0.1	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.6. *MarineFisheries* fall survey region 5 catch summary, 1978-2007.

ntows=523 ncruises=30 shg ≤ 136 (representative tows only)

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
106	winter flounder	*Pseudopleuronectes americanus*	88.0	67.4	14.1	30
301	American lobster	*Homarus americanus*	85.5	58.3	10.9	30
72	silver hake	*Merluccius bilinearis*	79.3	53.5	3.9	30
313	Atlantic rock crab	*Cancer irroratus*	76.3	28.9	2.5	30
77	red hake*	*Urophycis chuss*	72.1	31.3	5.4	30
503	longfin squid	*Loligo pealeii*	70.0	207.0	1.2	30
105	yellowtail flounder	*Limanda ferruginea*	68.3	19.3	4.0	30
163	longhorn sculpin	*Myoxocephalus ocotodecemspinosus*	65.4	26.0	2.5	30
73	Atlantic cod	*Gadus morhua*	64.2	47.4	2.5	30
131	butterfish	*Peprilus triacanthus*	63.5	73.4	1.0	30
26	little skate*	*Leucoraja erinacea*	60.2	19.7	10.7	30
76	white hake*	*Urophycis tenuis*	51.8	9.4	0.6	30
102	American plaice	*Hippoglossoides platessoides*	51.4	132.7	10.0	30
193	ocean pout	*Macrozoarces americanus*	49.5	7.8	1.2	30
15	spiny dogfish	*Squalus acanthias*	48.9	38.3	68.3	29
312	Jonah crab	*Cancer borealis*	41.7	3.1	0.5	29
108	windowpane	*Scophthalmus aquosus*	41.3	4.8	0.9	30
104	fourspot flounder	*Paralichthys oblongus*	39.4	1.3	0.3	30
23	winter skate*	*Leucoraja ocellata*	38.0	4.2	3.6	30
164	sea raven	*Hemitripterus americanus*	33.8	0.7	0.3	30
502	northern shortfin squid	*Illex illecebrosus*	32.1	2.6	0.4	29
32	Atlantic herring	*Clupea harengus*	31.9	9.9	0.9	29
197	goosefish	*Lophius americanus*	31.5	1.1	1.3	30
107	witch flounder	*Glyptocephalus cynoglossus*	30.4	2.0	1.0	30
401	sea scallop	*Placopecten magellanicus*	27.9	23.7	1.3	30
45	rainbow smelt	*Osmerus mordax*	26.6	39.3	0.4	29
74	haddock	*Melanogrammus aeglefinus*	26.4	5.1	0.1	26
28	thorny skate	*Amblyraja radiata*	25.4	1.0	0.7	28
83	fourbeard rockling	*Enchelyopus cimbrius*	21.2	2.4	0.1	30
33	alewife	*Alosa pseudoharengus*	20.5	1.3	0.1	29
176	cunner	*Tautogolabrus adspersus*	18.5	1.3	0.1	30
165	alligatorfish	*Aspidophoroides monopterygius*	16.8	0.6	0.0	27
182	snakeblenny	*Lumpenus lumpretaeformis*	14.7	1.2	0.0	25
155	Acadian redfish	*Sebastes fasciatus*	10.9	1.0	0.1	20
338	moon snail and shark eye*	*Naticidae*	10.7	2.4	0.3	17
34	blueback herring	*Alosa aestivalis*	9.4	0.4	0.0	21
35	American shad	*Alosa sapidissima*	7.8	0.2	0.0	22
75	pollock	*Pollachius virens*	6.9	0.4	0.0	18
183	daubed shanny	*Lumpenus maculatus*	6.7	0.2	0.0	13
510	octopus uncl*	*Octopoda*	5.7	0.1	0.0	17
116	northern pipefish	*Syngnathus fuscus*	5.5	0.3	0.0	15
208	mackerel scad*	*Decapterus macarellus*	5.5	2.0	0.0	17
409	ocean quahog	*Arctica islandica*	5.2	0.1	0.0	15
121	Atlantic mackerel	*Scomber scombrus*	4.2	4.0	0.1	10
171	Northern searobin	*Prionotus carolinus*	4.0	0.0	0.0	10
132	Atlantic moonfish	*Selene setapinnis*	3.8	0.4	0.0	10
103	summer flounder	*Paralichthys dentatus*	3.3	0.1	0.1	8
322	lady crab	*Ovalipes ocellatus*	3.3	0.2	0.0	12
168	lumpfish	*Cyclopterus lumpus*	3.1	0.1	0.0	13
78	spotted hake*	*Urophycis regia*	2.9	0.0	0.0	12
191	wrymouth	*Cryptacanthodes maculatus*	2.9	0.0	0.0	12

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Table II.F.6 continued.

Spp Code	Common Name	Scientific Name	% Occ.	Mean #/Tow	Mean Wt/Tow	Cruise Count
192	Atlantic wolfish	*Anarhichas lupus*	2.9	0.0	0.1	9
343	blue mussel*	*Mytilus edulis*	2.9	0.4	0.0	12
113	Atlantic silverside	*Menidia menidia*	2.3	2.5	0.0	9
213	silver rag	*Ariomma bondi*	2.3	0.0	0.0	7
180	rock gunnel	*Pholis gunnellus*	1.9	0.1	0.0	9
36	Atlantic menhaden	*Brevoortia tyrannus*	1.5	0.0	0.0	6
101	Atlantic halibut	*Hippoglossus hippoglossus*	1.3	0.0	0.0	5
161	moustache sculpin*	*Triglops murrayi*	1.3	0.0	0.0	7
348	northern moonsnail*	*Euspira heros*	1.3	0.0	0.0	3
520	longfin squid egg mops*	*Loligo pealeii*	1.3		0.1	3
143	scup	*Stenotomus chrysops*	1.1	0.2	0.0	3
211	round scad*	*Decapterus punctatus*	1.1	0.2	0.0	2
317	spider crab uncl	*Majidae*	1.1	0.0	0.0	5
318	horseshoe crab	*Limulus polyphemus*	1.1	0.0	0.0	6
27	smooth skate	*Malacoraja senta*	1.0	0.0	0.0	3
109	Gulf Stream flounder	*Citharichthys arctifrons*	1.0	0.0	0.0	4
139	striped bass	*Morone saxatalis*	1.0	0.0	0.0	3
166	grubby	*Myoxocephalus aenaeus*	1.0	0.0	0.0	4
181	Northern sand lance	*Ammodytes dubius*	1.0	2.2	0.0	5
212	rough scad*	*Trachurus lathami*	0.8	0.1	0.0	2
331	sea urchin uncl (green urchin)*	*Strongylocentrotus drobachiensis*	0.8	0.1	0.0	3
21	Atlantic torpedo	*Torpedo nobiliana*	0.6	0.0	0.2	3
44	striped anchovy	*Anchoa hepsetus*	0.6	0.0	0.0	3
135	bluefish	*Pomatomus saltatrix*	0.6	0.0	0.0	3
557	short bigeye	*Pristigenys alta*	0.6	0.0	0.0	3
1	Atlantic hagfish	*Myxine glutinosa*	0.4	0.0	0.0	2
13	smooth dogfish	*Mustelus canis*	0.4	0.0	0.0	2
170	Atlantic seasnail	*Liparis atlanticus*	0.4	0.0	0.0	2
184	radiated shanny	*Ulvaria subbifurcata*	0.4	0.0	0.0	2
209	bigeye scad*	*Selar crumenophthalmus*	0.4	0.0	0.0	2
324	northern stone crab	*Lithodes maja*	0.4	0.0	0.0	2
24	clearnose skate	*Raja eglanteria*	0.2	0.0	0.0	1
99	Greenland halibut	*Reinhardtius hippoglossoides*	0.2	0.0	0.0	1
112	buckler dory	*Zenopsis conchifera*	0.2	0.0	0.0	1
133	lookdown	*Selene vomer*	0.2	0.0	0.0	1
134	bigeye	*Priacanthus arenatus*	0.2	0.0	0.0	1
159	hookear sculpin uncl	*Artediellus sp*	0.2	0.0	0.0	1
205	Atlantic saury	*Scomberesox saurus*	0.2	0.0	0.0	1
249	lumpfish snailfish uncl*	*Cyclopteridae*	0.2	0.0	0.0	1
340	Iceland scallop	*Chlamys islandica*	0.2	0.0	0.0	1
342	northern horsemussel*	*Modiolus modiolus*	0.2	0.0	0.0	1
403	Atlantic surfclam	*Spisula solidissima*	0.2	0.0	0.0	1
413	northern quahog	*Mercenaria mercenaria*	0.2	0.0	0.0	1
512	spoonarm octopus*	*Bathypolypus arcticus*	0.2	0.0	0.0	1

*Summary data may be incomplete. Observations not available for all years and/or may be recorded under additional species codes in one or more years.

Acknowledgements

Successful completion of the *MarineFisheries* trawl survey for thirty years and counting is the result of steadfast support from successive administrations and granting authorities in addition to a cadre of capable and dedicated professionals to operate the vessel, work up the catch, vigilantly oversee the data integrity, and pay the bills. The staff that has made the survey a success over 30 years is in the hundreds. Even as the personnel have changed, the dedication to the survey goals established by Arnold Howe, Phil Coates and Dan Arnold continues. Thanks to all who provide data and vessel support at the NEFSC, the NOAA Corps officers, and the *MarineFisheries* staff who continue to rise to the challenge each year. Funding support by USFWS through the Sportfish Restoration Act (1991- present) and NOAA/NMFS (1978 – 1990) in partnership with *MarineFisheries* has provided the essential stability in funding. Thanks to Steven Correia for instructing the authors in graphical presentations.

Appendix: *MarineFisheries* Survey Net, Bridle, and Idler Construction Details

Appendix 1. Specifications for the Construction of Massachusetts Division of Marine Fisheries Bottom Trawl Survey Net (¾ Whiting Net with 39' Headrope and 51' Footrope)

Body of the net:

The dimensions of the net sections are given in the accompanying net plans. The knotted diamond webbing for the upper and lower wings, square and both bellies are made of 21 thread (#21) twisted white nylon. The webbing is depth stretched and bonded.

The mesh size of the upper and lower wings and square are 3.5 in. stretch mesh (knot to knot). The bellies are 2.5 in. knot to knot.

The net sections are sewn together by sewing a half mesh row of contrasting color twine for easy identification of net sections. The colored twine is 2.5mm Euro-Flex.

The top and bottom sections of the net are joined together at their sides by a gore or laceage that gathers three meshes from each of the top and bottom sections. These are seized every 9 inches (approximate) and wrapped in between the seizing using single # 54 virgin nylon twine.

A single row of dog-ear meshes are woven onto the top and bottom wings with # 54 nylon twine.

Codend:

The twine in the codend is 42 thread (#42) twisted white nylon. The knotted diamond webbing is bonded and depth stretched, and measures 2.5 inches knot to knot.

The codend measures 100 meshes long and 60 meshes across. There are three meshes gathered on each side on each gore. The codend is constructed from one panel of 120 meshes wide by 100 meshes deep.

Rings are hung at the end of the codend at a ratio of one ring for every 4 meshes (30 rings). The 2-inch ID rings are made from 1/4 inch stainless steel.

Chaffing mesh (used codend halves) is placed on the bottom of the codend. Chaffing gear runs from gore to gore and extends one full mesh beyond the end of the rings.

Liner:

The codend is lined with #147 knotless white nylon webbing of ½ inch stretch mesh

The codend liner is reinforced along the forward edge by gathering and seizing a ½ inch roll. A braided #54 line, with overhand knots every six inches, is seized to the roll of liner material. This same technique is used to make a gore with the two edges of the liner. A false gore is then made on the opposite side using a knotted line.

The liner is attached by seizing to the codend starting one and one-half meshes from the top. The liner is lashed to each mesh and seized to every third mesh in a ring around the codend. The liner should hang 2 feet beyond the rings at the bottom of the codend.

The section of liner for each net will be approximately 23 feet long by 17 feet wide. This section is folded over to make a finished liner that is 23 feet long by roughly 8.5 feet wide.

Hanging:

Dog-ear meshes on the upper and lower wings are hung tight and seized to both the headrope and footrope with #54 braided nylon twine. The square and belly selvedge meshes are evenly hung tight and seized on the headrope and footrope with #54 braided nylon twine.

Hanging ratios for top and bottom wings along the footrope and headrope are 1:1. The meshes in the bosom of the lower belly, square and up-and-down lines are attached with a hanging ratio of 1:2.

Appendix 1. (continued)

Gore lines:

Gore lines are ½ inch diameter stable poly blend ropes (i.e., Steeline) that are tied to the up-and-down line and extend to the after end of the belly where an eye splice is made. The codend has a separate ½ inch gore line, which extends to two meshes from the aft end and is tied at the forward end into the eye splice with a fishermen's bend. The gore lines are slightly shorter than the laceage and seized to it at approximate 12-inch intervals with single #54 nylon.

Headrope:

The headrope is made of ½ inch diameter stainless steel combination rope swaged at each end with light thimbles. The headrope measures 39 feet long eye-to-eye.

Footrope:

A 51-foot, ½ inch diameter stainless combination rope swaged at each end with light thimbles serves as the footrope.

Up-and-down line:

The wing-end meshes are attached to the up-and-down line with a hanging ratio of 1:2

The length of the up-and-down line is ±51.25 inches. It is constructed of 5/8-inch diameter, stable poly blend and is attached to the eyes of the headrope and footrope with doubled #54 braided twine to act as a weak link.

Sweep:

The sweep is 51 feet of ⅜ trawlex chain with tightly spaced 3.5-inch x 1.5-inch rubber cookies. The rubber cookies are made from stamped rubber truck tires. The stamping process results in the cookies having varying diameters of ± ⅜ inches. The sweep is connected to the footrope using ⅜ iron shackles connected to 2 inch inside diameter 5/16 inch steel rings spaced and seized along the footrope with doubled #54 braided nylon twine at 10 link intervals starting at the center. There are a total of 37 shackles and 37 rings used to connect the sweep to the footrope.

Floats:

Attached to the headrope are seven, 8-inch diameter aluminum/plastic floats with double beckets. The floats are lashed with a six foot length of ½ inch stable poly blend with an eye splice on one end. The tag end is passed around the headrope and through the eye-splice, woven through the double becket and finished with a clove hitch and stopper knot. The cans are spaced with one at the center of the headrope, one approximately 1 foot in from each wing end, one at the junction of the square and upper wings on both sides, and one centered between the junction can and the wing end can at both sides.

Legs:

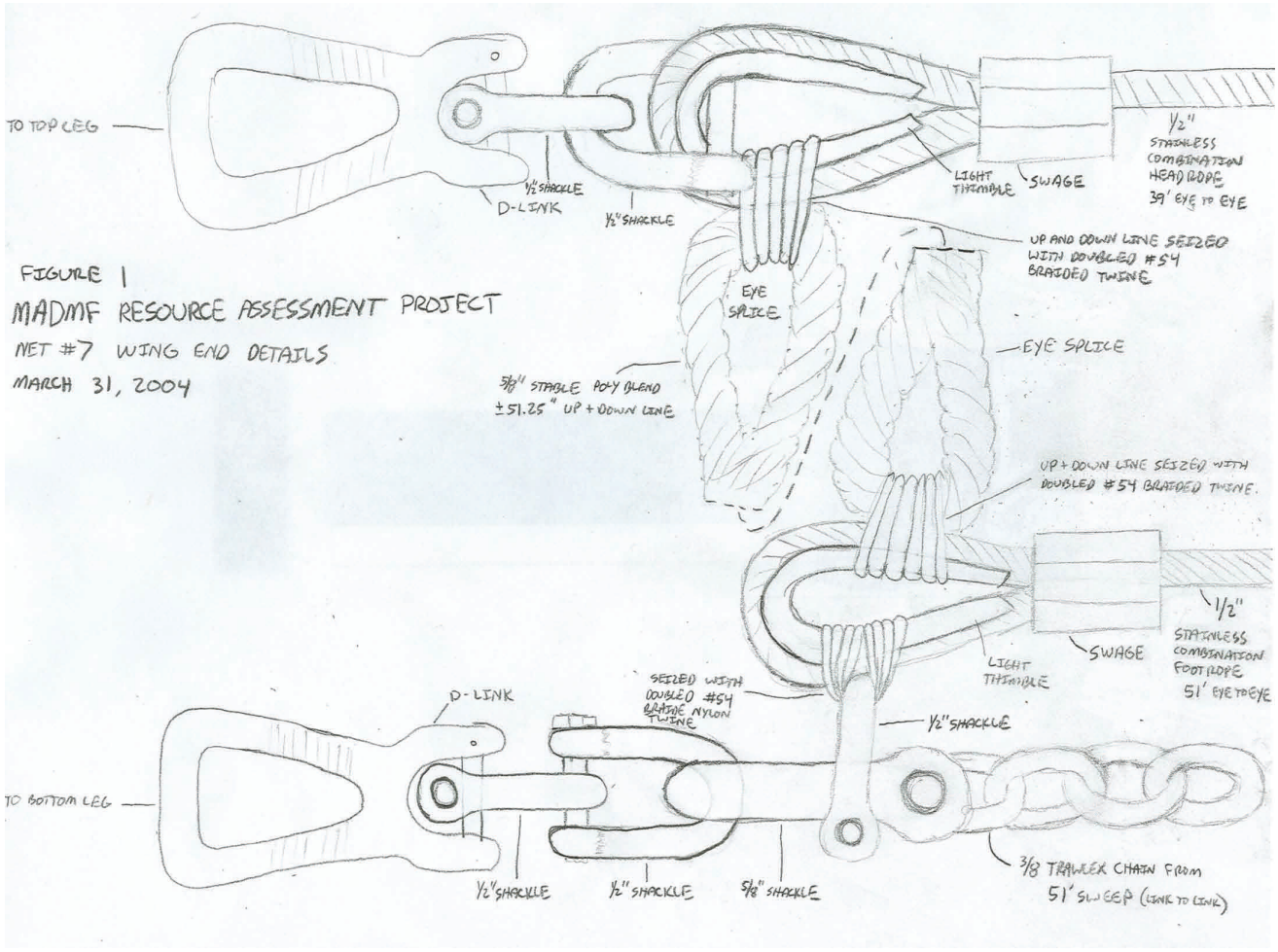
Top legs are 60 feet of 3/8 wire measured eye to eye. Eye splices are swaged without thimbles. A ½ inch G-hook is swaged onto the rear eye splice for attaching to the net.

Bottom legs are 63 feet of 3/8-trawlex chain

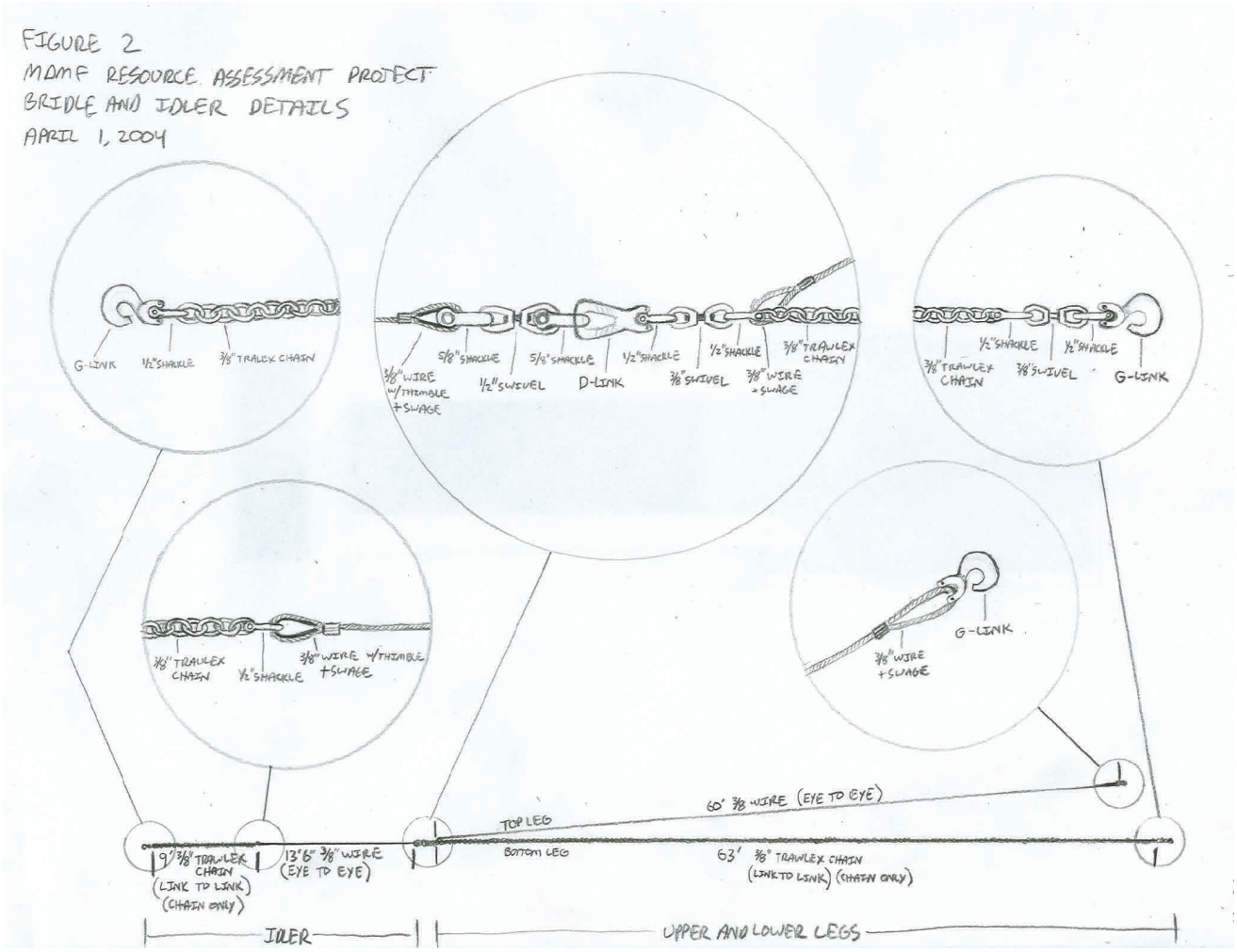
Doors:

Wooden Tomkiewicz flat otter trawl doors, 40-inches X 72-inches X 1.25 inches thick, 325 lbs. Upper and lower planks are oak, middle three planks are pine. Painted with roofing tar that has been thinned with gasoline to penetrate and preserve the wood.

Appendix 2. *MarineFisheries* **Trawl Survey Net Terminal Gear Details.**



Appendix 3. *MarineFisheries* **Trawl Survey Bridle and Idler Details.**



Appendix 4.*MarineFisheries* **Trawl Survey Door, Bridle and Idler details.**