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# Preliminary results from the groundfish and shrimp multidisciplinary survey in August 2016 in the Estuary and northern Gulf of St. Lawrence

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**Foreword**

This series documents the scientific basis for the evaluation of aquatic resources and ecosystems in Canada. As such, it addresses the issues of the day in the time frames required and the documents it contains are not intended as definitive statements on the subjects addressed but rather as progress reports on ongoing investigations.

Research documents are produced in the official language in which they are provided to the Secretariat.

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## TABLE OF CONTENTS

## ABSTRACT

Fisheries and Oceans Canada conducts an annual multidisciplinary survey in the Estuary and northern Gulf of St. Lawrence. The objectives of this survey are varied: assess the biodiversity of species found near the sea bottom, estimate the abundance of groundfish and invertebrates, assess physical and biological oceanographic conditions (phytoplankton and zooplankton), monitor the pelagic ecosystem, take inventories of marine mammals and seabirds, and collect samples for various research projects. In 2016, the survey was conducted between August 1 and September 2 on board the *CCGS Teleost*. The survey successfully carried out 167 trawl tows as well as 109 CTD water column casts, and 70 zooplankton samples.

This report presents the results from catches from the 167 tows. In total, 76 fish taxa and 196 invertebrate taxa were identified during the mission. Historical perspectives (catch rates, spatial distribution and length frequency) are presented for 23 taxa. These commercial fishery-independent data will be used in several stock assessments (e.g., cod, redfish, Greenland Halibut, Atlantic Halibut and Northern Shrimp). The increase in biomass of Deepwater Redfish (*Sebastes mentella*) is significant, accounting for almost two thirds of the total catch. The biomass of Cod, Greenland Halibut and Atlantic Halibut remains steady while the biomass of Northern Shrimp is decreasing.

A preliminary analysis of water temperature data collected in 2016 shows that conditions have remained warm in deep waters (150 m and 200 m) and have warmed further (record since 1915) at 300 m. The August cold intermediate layer and summer surface waters were slightly warmer on average in 2016 than during the same period in 2015.

## RÉSUMÉ

Pêches et Océans Canada réalise annuellement un relevé multidisciplinaire dans l'estuaire et le nord du golfe du Saint-Laurent. Les objectifs de ce relevé sont multiples : évaluer la biodiversité des espèces présentes près du fond; estimer l'abondance des poissons de fonds et des invertébrés; évaluer les conditions océanographiques physiques et biologiques (phytoplancton et zooplancton); monitorer l'écosystème pélagique; inventorier les mammifères et les oiseaux marins; et récolter des échantillons pour divers projets de recherche. En 2016, le relevé s'est déroulé du 1er août au 2 septembre, à bord du *NGCC Teleost*. Lors de cette mission, 167 traits de chalut ont été réussis ainsi que 109 profils verticaux de la colonne d'eau afin de caractériser les conditions océanographies et 70 échantillons de zooplancton.

Ce rapport présente les résultats des captures des 167 traits de chalut. Au total, 76 taxons de poissons et 196 taxons d'invertébrés ont été identifiés lors de la mission. Les perspectives historiques (taux de capture, répartition spatiale, fréquence de longueur) sont présentées pour 23 taxons. Ces données indépendantes de la pêche commerciale serviront à plusieurs évaluations de stocks, dont la morue, les sébastes, le flétan du Groenland, le flétan atlantique et la crevette nordique. L'augmentation de la biomasse de sébaste atlantique (*Sebastes mentella*) est significative, à lui seul, il constituait près des deux-tiers du total des captures. Les biomasses de la morue, du flétan du Groenland et du flétan atlantique se maintiennent alors que la biomasse de la crevette nordique diminue.

L'analyse préliminaire des données de température de l'eau mesurée en 2016 montre des conditions qui se sont maintenues chaudes à 150 et 200 m et qui se sont réchauffées (record depuis 1915) à 300 m. La couche intermédiaire froide du mois d'août ainsi que les eaux de surface estivales étaient légèrement plus chaudes en moyenne en 2016 qu'aux mêmes périodes de 2015.

## INTRODUCTION

Fisheries and Oceans Canada conducts an annual bottom trawl survey in the Estuary and the northern Gulf of St. Lawrence. This is a multi-species, commercial fishery-independent survey. Its purpose is to assess the ecosystem with consistent, standardized protocols to examine the spatial and temporal changes in 1) the distribution, relative abundance and assemblages of fishes, and 2) the biological parameters of commercial species.

The main objectives are to:

1. assess groundfish and Northern Shrimp population abundance and condition;
2. assess environmental conditions;
3. take a biodiversity inventory;
4. assess phytoplankton and mesozooplankton abundance;
5. monitor the pelagic ecosystem;
6. take an inventory of marine mammals;
7. take an inventory of seabirds;
8. collect samples for various research projects.

In 2016, the survey was conducted between August 1 and September 2 on board the *CCGS Teleost* (mission IML-2016-037).

## SURVEY DESCRIPTION

The survey covers the waters of the Laurentian Channel and north of it, from the Lower Estuary in the west to the Strait of Belle Isle and the Cabot Strait in the east, namely, the Northwest Atlantic Fisheries Organization (NAFO) divisions 4R, 4S and the northern part of 4T (Figure 1). Since 2008, coverage of division 4T has been increased in the upstream part of the Lower Estuary in order to sample the depths between 37 and 183 m. The area of the study area is 118,587 $km^2$.

A stratified random sampling strategy is used for this survey. This technique consists in subdividing the study area into more homogeneous strata. This area is divided into 54 strata, which were divided based on depth, NAFO division and substrate type (Figure 2). A total of 200 trawl stations was initially allocated in the study area, a number proportional to the stratum surface, with a minimum of two stations per stratum. The tow positions were chosen randomly within each stratum. Since 2014, a new rule was added to respect a minimum distance of 10 km between stations in the same stratum.

The fishing gear used on the *CCGS Teleost* is a four-sided Campelen 1800 shrimp trawl equipped with a Rockhopper footgear (“bicycle”) (McCallum and Walsh 2002). The trawl lengthening and codend are equipped with a 12.7-mm knotless nylon lining. Standard trawling tows last 15 minutes, starting from the time the trawl touched the sea floor as determined by the *Scanmar*™ hydroacoustic system. Towing speed is 3 knots. Information on trawl geometry (horizontal spread of the doors and wings, vertical opening of the trawl, depth) was recorded for each tow using *Scanmar*™ hydroacoustic sensors mounted on the fishing gear.

In 2016, 167 fishing stations were successful, 48 in 4R, 79 in 4S and 40 in 4T (Appendix 1). Coverage of the study area was very good; only one stratum strata were not covered with a minimum of two stations (Figure 3, Annexe 1).

For each fishing tow, the catch was sorted and weighed by taxa; biological data were then collected. For fish, crab and squid, size and weight are gathered by individual and, for some species, sex, gonad maturity, and the weight of certain organs (stomach, liver, gonads) are also

evaluated. Count of soft rays of the anal fin for Redfish, and otoliths are saved for Atlantic Cod, Atlantic Halibut, and Witch Flounder. A roughly 2-kg shrimp sample is sorted and weighed by species (and by stage of maturity for Northern Shrimp). The shrimp are measured individually. The other invertebrates are counted (no individual measurements) and photographed. The photos are archived in a photo catalogue with keywords (station description, scientific name, etc.).

In recent years, efforts to better describe catches of non-commercial species have intensified. Efforts were increased in 2003 for fish and in 2006 for invertebrates. An identification guide for marine fishes of the estuary and northern Gulf of St. Lawrence (Nozères et al. 2010) and a guide for invertebrates (Nozères et al. 2014) were used to identify most taxa at the species level.

Additional samples were taken for various scientific projects. These samples include:

1. Small fishes (Variegated Snailfish, Atlantic Spiny Lumpsucker, Eelpouts, Unernaks) and invertebrates (Ascidians, sponges) to verify their identification and to add to the permanent collection at the Maurice Lamontagne Institute (MLI);
2. Boxes of shrimp and capelin for requests for aquaculture purposes from the MLI tank room;
3. Black Dogfish embryos and juveniles, and Skate capsules in order to study their developmental morphology and their chondrification and mineralization processes;
4. Invasive species (tunicates) to confirm their genetic and microscopic identification;
5. Fish stomachs (Atlantic Halibut, Greenland Halibut, Lumpfish, White Barracudina, Cod, American Plaice, Witch Flounder, Redfish) and squid (Short-fin Squid) to enhance knowledge of their diet;
6. Silver Hake studied for its trophic role, growth and origin;
7. Small redfish (< 11 cm) for genetic identification of the species (*Sebastes fasciatus* or *S. mentella*) and the population of new cohorts observed in the Gulf;
8. Greenland Halibut to study the population dynamic;
9. Marine mammal prey (several fish species and Northern Shrimp) to follow the development of St. Lawrence ecosystem key species' isotropic signatures;
10. Capsules of Skate to identify them to the species and to locate the spawning sites.

Oceanographic conditions such as temperature, conductivity (salinity), turbidity, dissolved oxygen, luminosity and fluorescence were sampled during this survey. A total of 109 vertical profiles of the water column were done, 18 of which were at extra stations that fall under the Atlantic Zone Monitoring Program (AZMP). The various equipment, *CTD SeaBird 911Plus*™, dissolved oxygen sensor (*SBE 43*), photometer (*Biospherical*) and fluorometer (*Eco-FLNTU Wetlabs*) are coupled to the rosette of Niskin bottles. For each profile obtained using the rosette, water samples are also taken at many depths to determine their salinity, dissolved oxygen concentration (Winkler titration), nutritive salt content (nitrite, nitrate, phosphate, silicate) and chlorophyll content. In addition, a *CTD SBE 19Plus*™ device (temperature and salinity), coupled to a dissolved oxygen sensor (*SBE 63*), was also installed on the back of the trawl, thereby allowing oceanographic data to be collected for the 167 fishing tows.

To study zooplankton distribution and biomass for the entire territory covered by the survey, a sampling program component consisted in using a zooplankton net (202 µm), pulled vertically from the floor to the surface at 70 stations.

Continuously throughout the mission, water column hydroacoustic data at four frequencies (38, 70, 120 and 200 kHz) were recorded using a *SIMRAD™ EK60* echosounder. These data will be used to develop a three-dimensional database to map the pelagic ecosystem.

A marine mammal and seabird inventory in the study area was taken by two observers stationed at the front of the bridge when conditions permitted.

## DATA ANALYSIS

The analysis of 2016 abundance and biomass data were integrated into the combined annual summer survey series initiated in 1990. This combined series was developed following a comparative study between the two vessel-gear tandems (1990-2005: *CCGS Alfred Needler – URI 81'/114'* trawl; 2004-2016: *CCGS Teleost – Campelen 1800* trawl) to establish specific correction factors for about twenty species caught (Bourdages et al. 2007). This resulted in adjustment of *Needler* catches into *Teleost* equivalent catches.

Given that over the years, some strata were not sampled by a minimum of two successful tows (Appendix 1), a multiplicative model was used to estimate their catch rate indexes in number and weight. This model provides a predicted value for strata with less than two tows with the data of the current year and the previous three years. Thus, indicators presented for the series are representative of a standard total area 116 115 $km^2$, the sum of the area of all strata. In addition, reference points were also added to the catch rate figures. The solid line represents the 1990-2015 period average (long-term average) and the two dotted lines associated to the mean ±0.5 standard deviation corresponding respectively to the upper and lower reference limits. Note that for Capelin and Herring, the calculated indices are instead probability values (%) of encountering species during the survey. Indeed, due to the pelagic character of these two species, the bottom trawl is not an ideal fishing gear for their capture and, therefore, to accurately estimate abundance.

Note that the distinction between the two redfish species, *Sebastes fasciatus and S. mentella*, is based on the analysis of the soft anal fin rays count and the depth of capture of individuals (H. Bourdages, DFO Mont-Joli, pers. comm.).

Length frequency distributions are presented in two different forms. The first figure shows the distribution for the last two years of the series plus the average distribution for the 1990-2015 period (long-term average distribution). Frequency values are expressed as the average number of individuals caught per tow in increment of 1 cm, except for Northern Shrimp (0.5 mm) and Atlantic Halibut (3 cm). The second figure represents the length distributions in length mean per class length for each year of the historical surveys series (1990 to 2016).

The geographical distribution of catches by weight per tow (kg/15 minutes tow, except for sea pens number/15 minutes tow) was made for periods of four years. The interpolation of CPUE was performed on a grid covering the study area using a ponderation inversely proportional to the distance (R version 2.13.0, Rgeos library; R Development Core Team 2011). The isoline contours were then plotted for four CPUE levels which approximate the $20^{th}$, $40^{th}$, $60^{th}$ and $80^{th}$ percentiles of the non-zero values. The catch rates distribution for the 2016 survey only is also presented in a bubbles type map.

The preliminary results for the abundance and biomass indices, the catch rate distribution maps, and the size frequency distributions for about 20 taxa commercially fished are presented at figures 4 to 60. These results are preliminary and must be considered as such until validations and laboratory analyses have been completed.

The average weight per tow for 56 taxa of fish and 97 taxa of invertebrates is given in figures 61 and 62. In these figures, a color code is used to represent the difference between the CPUE in a given year and the average CPUE in the time series divided by the standard deviation of this average for each taxon.

The catches per tow for fish taxa are available on the St. Lawrence Global Observatory (SLGO).

Finally, Appendix 2 provides a list of all taxa, vertebrates and invertebrates, caught among the 167 successful tows achieved during the 2016 survey. The occurrence, or the number of tows where the species was identified, as well as the total catch, by weight and numbers, are also presented. The number of specimens measured per taxon and some descriptive statistics for the length parameter are also presented in Appendix 3.

# RESULTS

**Attention**: the bottom trawl survey is designed to sample demersal species. However, catches may also include pelagic species and species associated with coastal or rocky habitats which are more difficult to trawl. Although these taxa are found in catches, they have a low catchability by trawl net. Some caution is required in interpreting the results obtained for these taxa.

## BIODIVERSITY

In total, 76 fish taxa and 196 invertebrate taxa were identified during the mission.

Nearly three-quarters of catches consisted of Redfish.

A new species of fish, the Big Eye (*Epigonus pandionis*), was captured for the first time in the Gulf. It is a southern fish, rarely caught on the Scotian Shelf.

## Fish

**American Plaice** (*Hippoglossoides platessoides*) and **Witch Flounder** (*Glyptocephalus cynoglossus*) were caught very frequently, and their abundance was stable.

The abundance and biomass of **Atlantic Halibut** (*Hippoglossus hippoglossus*) remained high in 2016 and are above the historical average

The abundance of **Black Dogfish** (*Centroscyllium fabricii*) decreased in 2016 and is comparable to the historical average.

The average probability of catching **Capelin** (*Mallotus villosus*) remains below the historical average for the past three years.

The abundance and biomass indices for **Cod** (*Gadus morhua*) were comparable to 2014 and 2015 levels and above the historical average. More and more Cod is being observed in 4S, especially around Anticosti Island.

The biomass of **Greenland Halibut** (*Reinhardtius hippoglossoides*) was stable and above the average since 2014. The 2015 cohort is low and explains the decline in abundance in 2016.

The average probability of catching **Herring** (*Clupea harengus*) was stable and above the average in 4R, but increased in 4S.

The abundance of **Longfin Hake** (*Phycis chesteri*) remained low, and distribution was restricted to a portion of the Laurentian Channel. None have been caught in the estuary for several years.

The **Lumpfish** (*Cyclopterus lumpus*) is low in catches but regular of this survey. Abundance and biomass have been on the rise for 4 years to reach the highest values in the historical series.

In recent years, an increase in the abundance of **Redfish** has been observed. There have been three strong cohorts of Deepwater Redfish (*Sebastes mentella*), with the most abundant being the 2011 cohort, which now has a modal length of 18 cm. These young Redfish were distributed throughout the northern Gulf.

Since 2007, **Silver Hake** (*Merluccius bilinearis*) has been present in the northern Gulf more frequently. The abundance of this species has been decreasing since 2013.

**Thorny Skate** (*Amblyraja radiata*) and **Smooth Skate** (*Malacoraja senta*) were very frequent in captures, and their abundance was stable.

The abundance of **White Hake** (*Urophycis tenuis*) is comparable to 2015 and is above the historical average.

### Invertebrates

Biomass decreased for fifteen main **Shrimp** species found in the northern Gulf of St. Lawrence.

The abundance and biomass of **Northern Shrimp** (*Pandalus borealis*) decreased to below the historical average.

The presence of **Northern Shortfin Squid** (*Illex illecebrosus*), a southern and seasonal pelagic species, continues to be at very low levels since 2013.

The **Moon Jellyfish** (*Aurelia aurita*) had reduced presence following two years of abundant catches off the coast of Newfoundland. This species was very rarely observed before 2014 in this survey

There are four species of **Sea Pens** in the Northern Gulf of St Lawrence. The larger sea pens (*Anthoptilum grandiflorum*, *Halipteris finmarchica*, *Pennatula grandis*) are distributed in deep areas of the Laurentian Channel, while the smaller sea pen (*Pennatula aculeata*) is more widely distributed.

## PHYSICAL OCEANOGRAPHIC CONDITIONS

A preliminary analysis of water temperature data collected in 2016 (Figures 63 and 64) shows that conditions have remained warm in deep waters (150 m and 200 m) and have warmed further (record since 1915) at 300 m. Compared to conditions observed in 2015, Central Gulf waters deeper than 250 m have notably warmed. The August cold intermediate layer and summer surface waters were slightly warmer on average in 2016 than during the same period in 2015.

Air temperatures over the Gulf were above normal from December 2015 to February 2016 as a result of the El Niño event, then below normal in March and April followed by near-normal to above-normal until August. This combination led to near-normal average surface water temperatures for the May–August period and slightly above-normal for July–August (+0.6 SD relative to the 1985–2010 climatology).

After this mild winter, temperatures in the summer cold intermediate water layer were above normal climatological levels by 1 SD (Figure 64), and much warmer in the Cabot Strait region (Figure 63).

Beneath the cold intermediate water layer, the estuarial flow that carries deep water to the channel heads has carried the warm waters that had been in the Cabot Strait, central Gulf and Esquiman Channel for the past few years further upstream. Consequently, temperatures measured in August have increased since 2015 at 200 and 300 m in the estuary, as well as in northwestern Gulf below 300 m (Figure 63). Note the large temperature increase since 2015 in Central Gulf below 225 m (Figure 63).

Taking into consideration all the data recorded in different months of the year, the northwestern Gulf is currently experiencing record temperatures since 1915 at 200 m (temperatures of 5.3°C). At 300 m, the four regions along the deep Laurentian Channel, meaning the Estuary, northwestern Gulf, Central Gulf and Cabot Strait, are experiencing record temperatures (5.6°C, 5.9°C, 6.3°C, 6.5°C). The Gulf-wide average temperature reached a record level since 1915 at 300 m (Figure 64).

## ACKNOWLEDGEMENTS

We would like to thank both crews of the *CCGS Teleost* and wish to highlight the excellent work of the 2016 scientific team. The science team consisted of David Beauchesne, Denis Bernier, Hugo Bourdages, Claude Brassard, Sylvain Chartrand, Valérie de Carufel, Mathieu Desgagnés, Johanne Gauthier, Léopold Ghinter, Tanya Hansen, Caroline Lafleur, David Leblanc, Jean-François Lussier, Marie-Claude Marquis, Chantale Méthot, Samuel Mongrain, Claude Nozères, Éric Parent, David Picard, David Poissant, Pierre-Marc Scallon-Chouinard, Félix St-Pierre, Sylvie St-Pierre, Alexandra Valentin and Sara Wing.

Finally, we would like to thank Denis Bernier and Claude Savenkoff for reviewing this document.

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## FIGURES

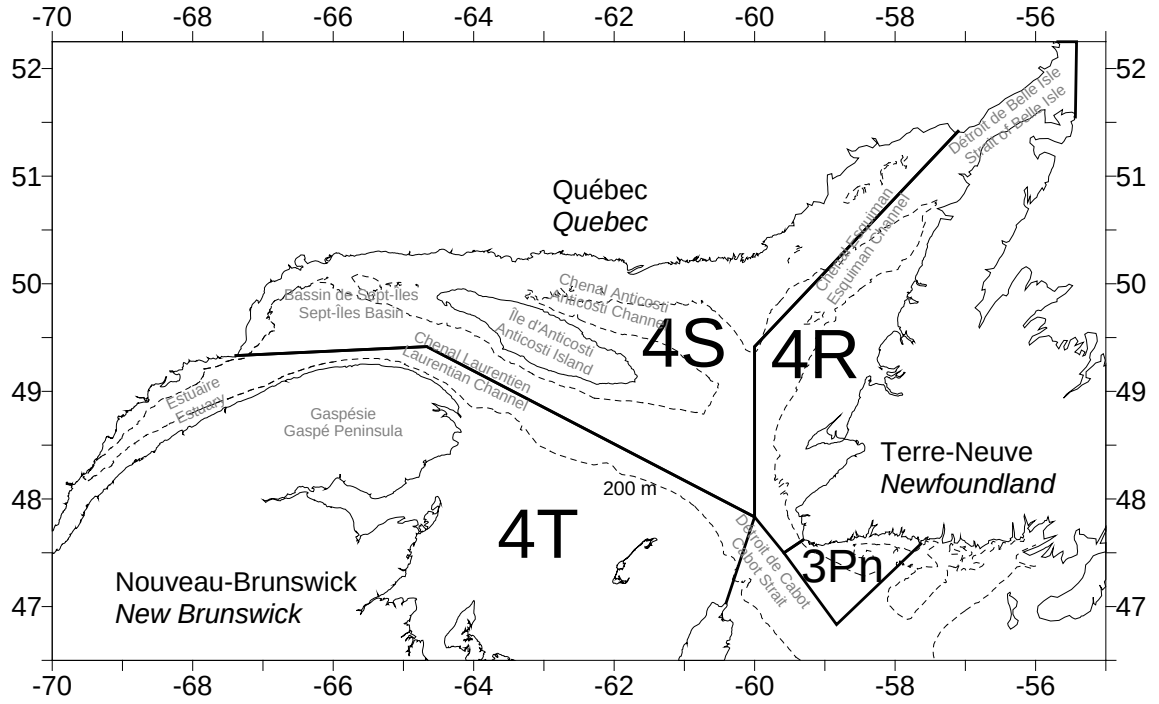



*Figure 1. NAFO Divisions of the Estuary and Gulf of St. Lawrence and names of locations mentioned in the text.*

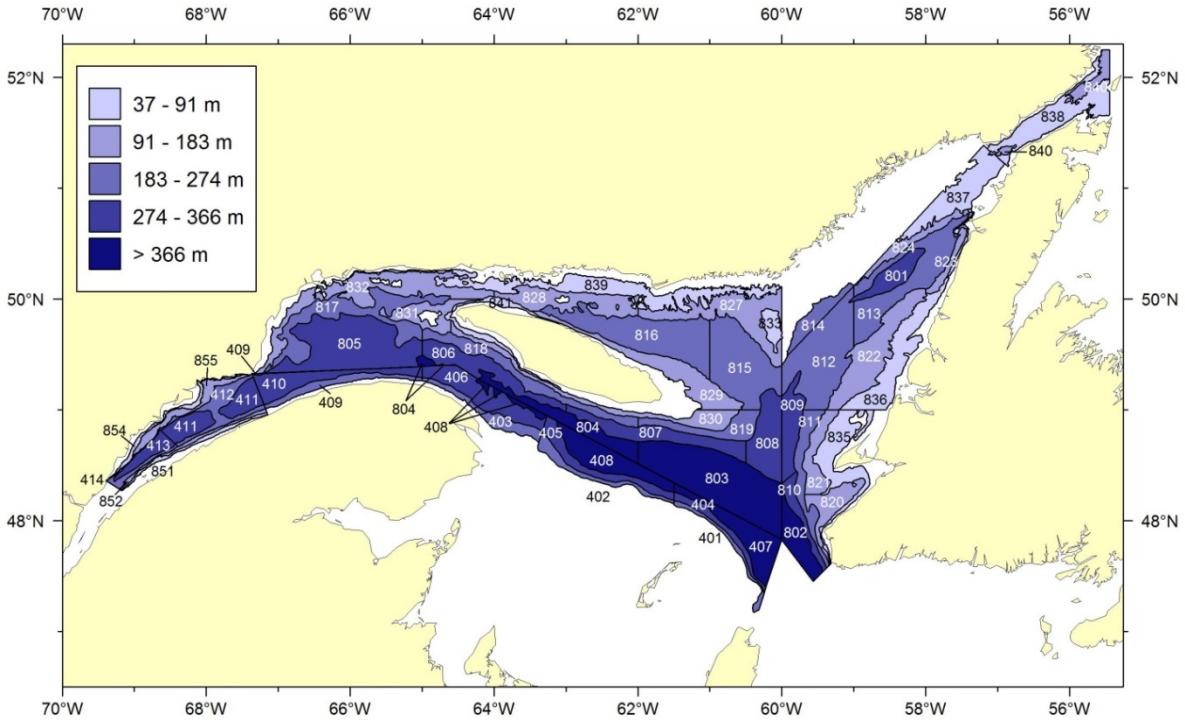



*Figure 2. Stratification scheme used for the groundfish and shrimp research survey in the Estuary and northern Gulf of St. Lawrence.*

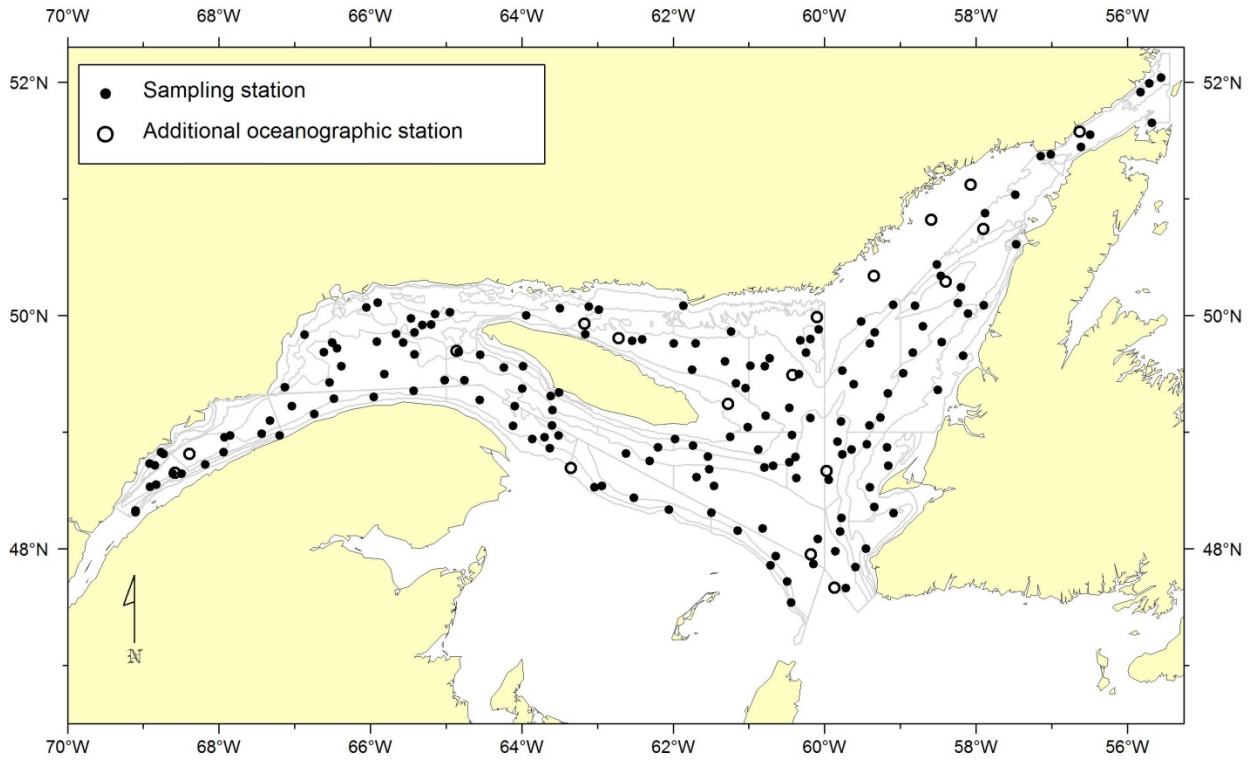



*Figure 3. Locations of successful sampling stations (trawl and oceanography) and additional oceanographic stations for the 2016 survey.*

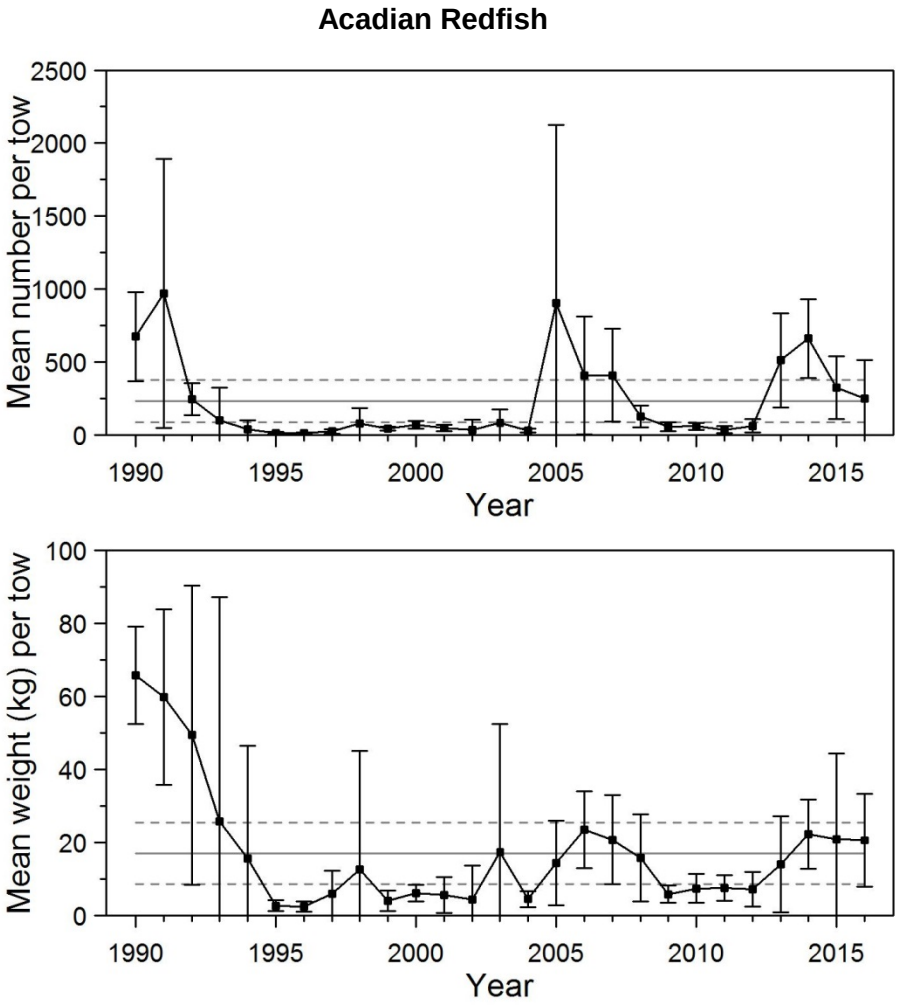



*Figure 4. Mean numbers and mean weights per 15 minutes tow observed during the survey for Acadian Redfish in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

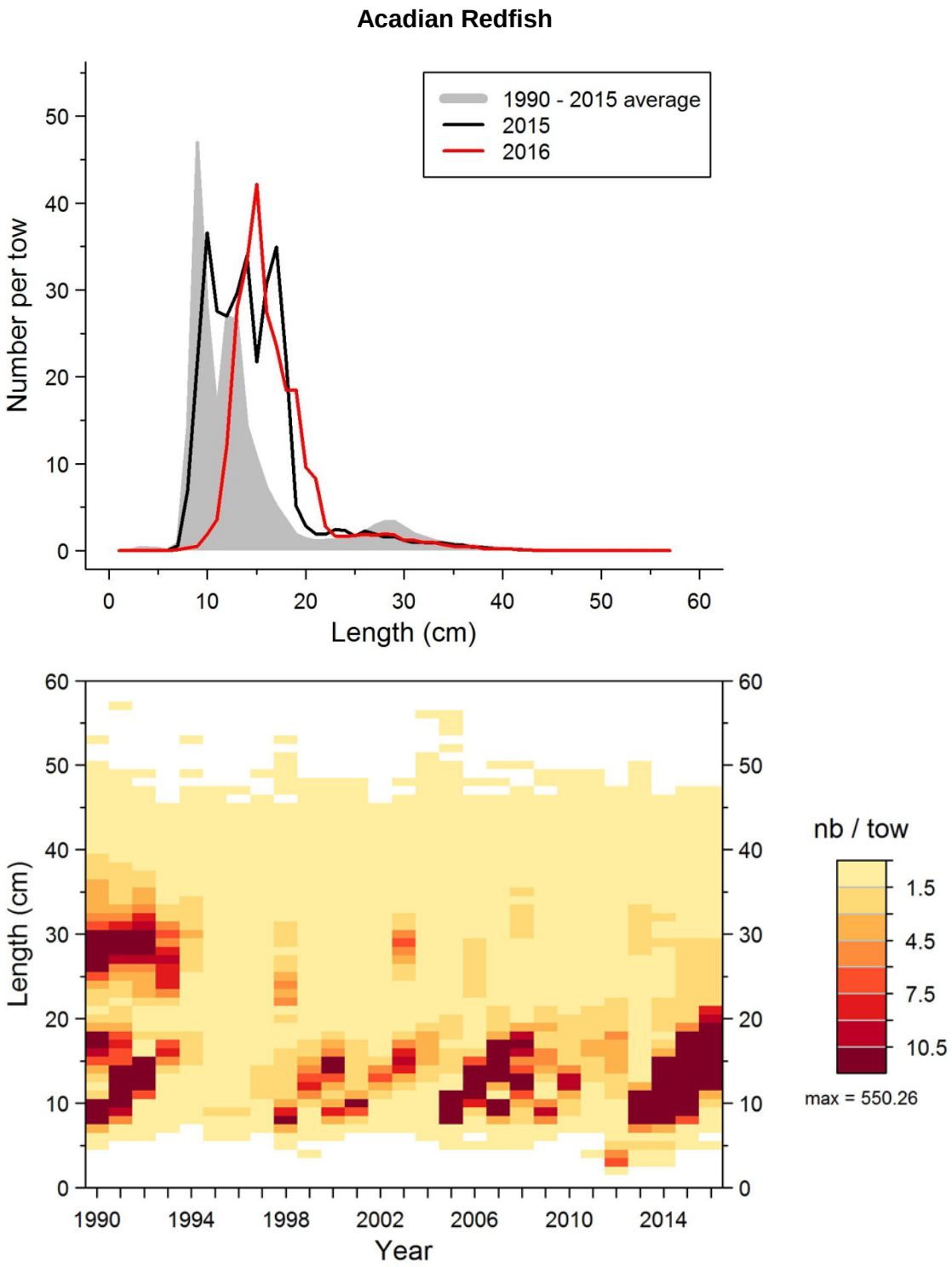



*Figure 5. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Acadian Redfish in 4RST.*

**Acadian Redfish**

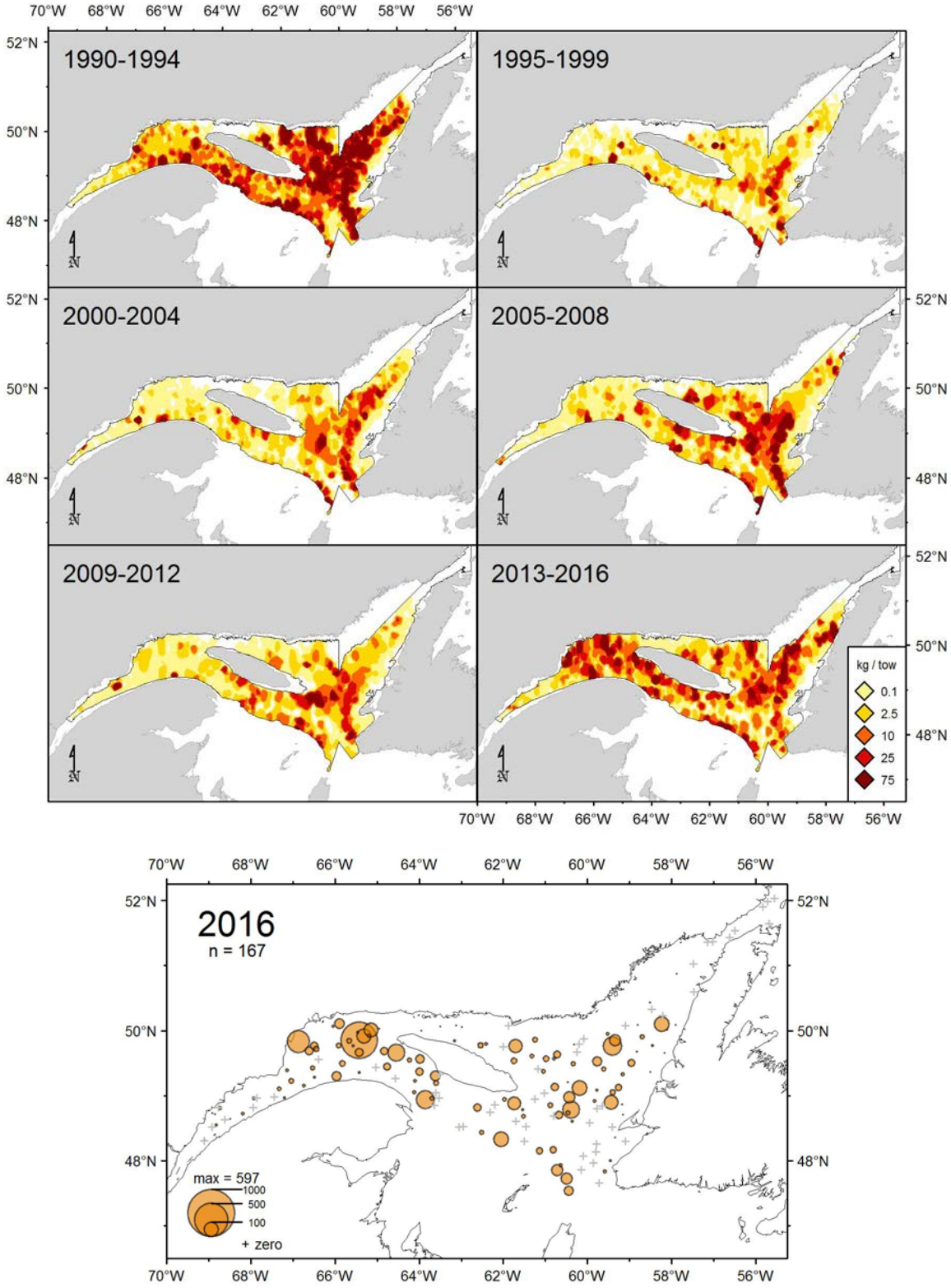



*Figure 6. Acadian Redfish catch rates (kg/15 minutes tow) distribution.*

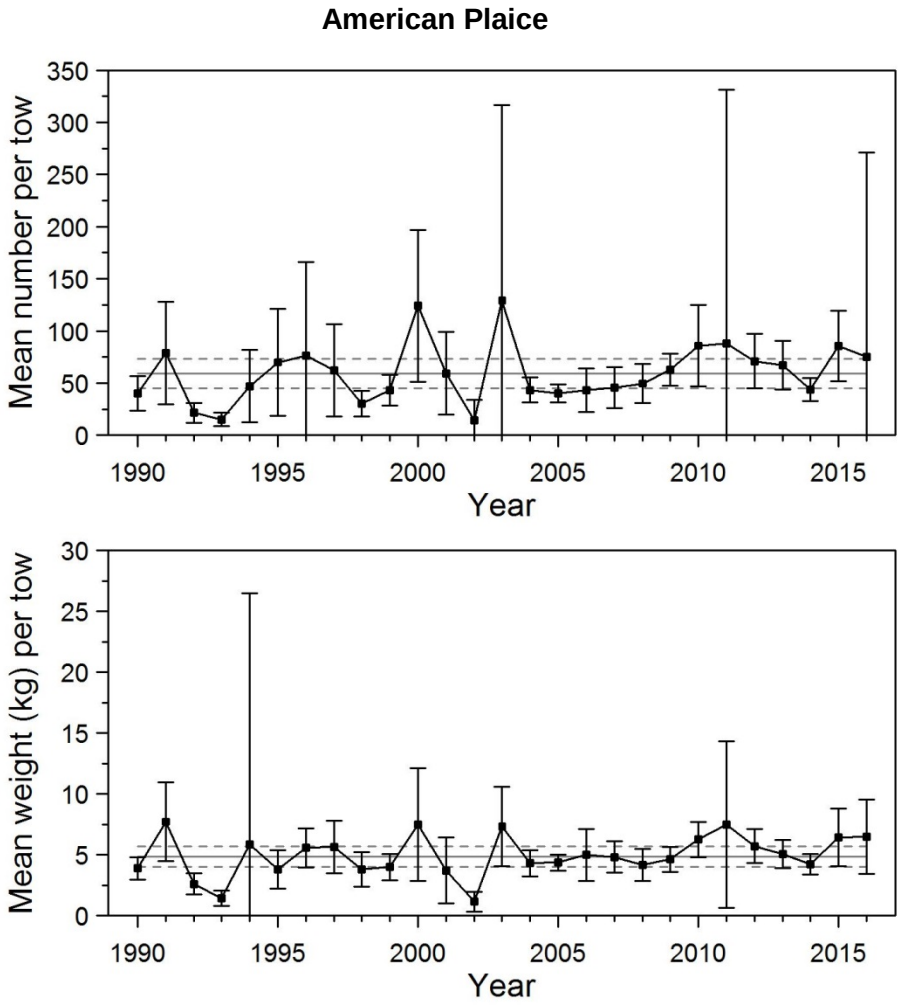



*Figure 7. Mean numbers and mean weights per 15 minutes tow observed during the survey for American Plaice in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

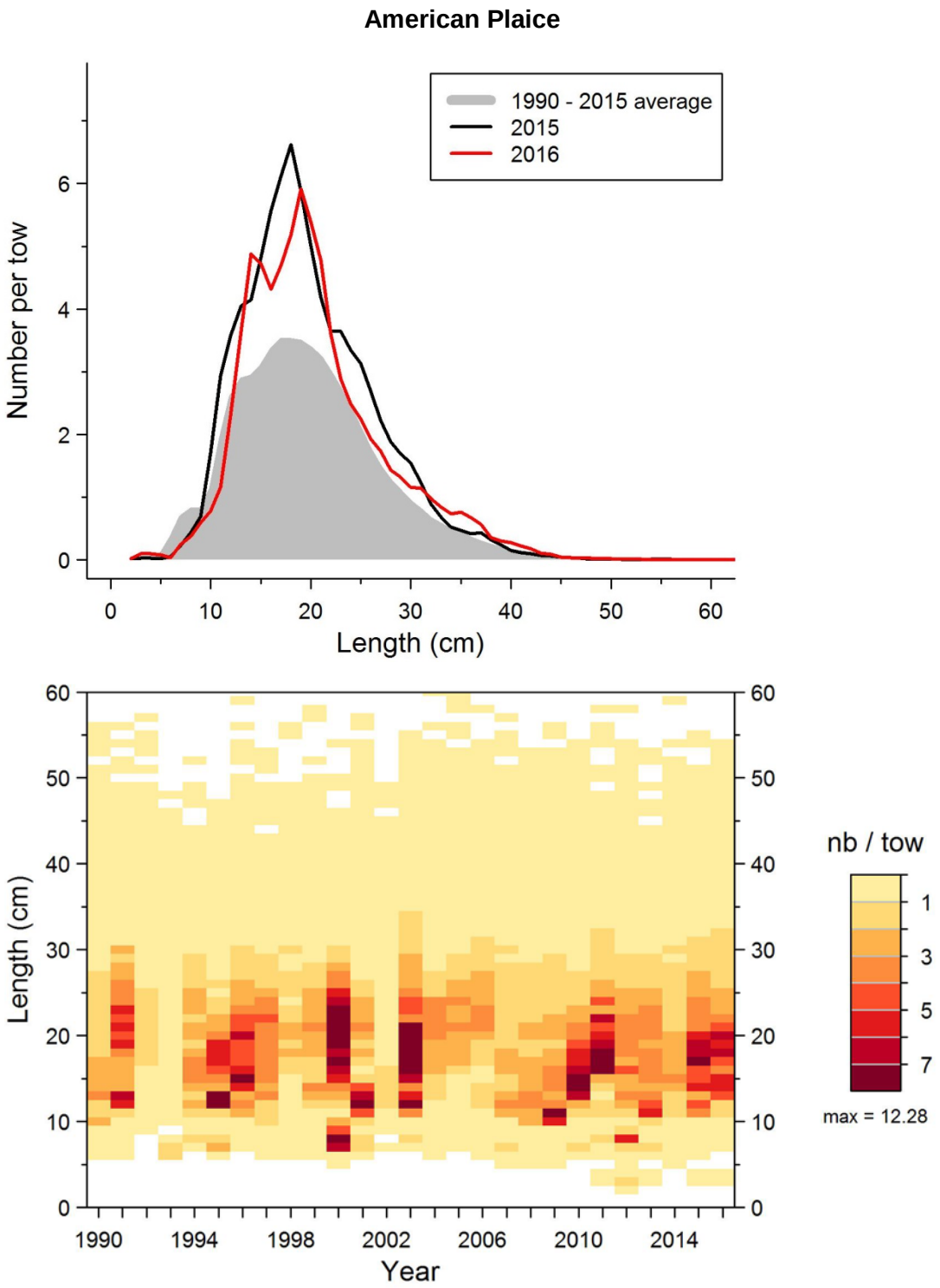



*Figure 8. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for American Plaice in 4RST.*

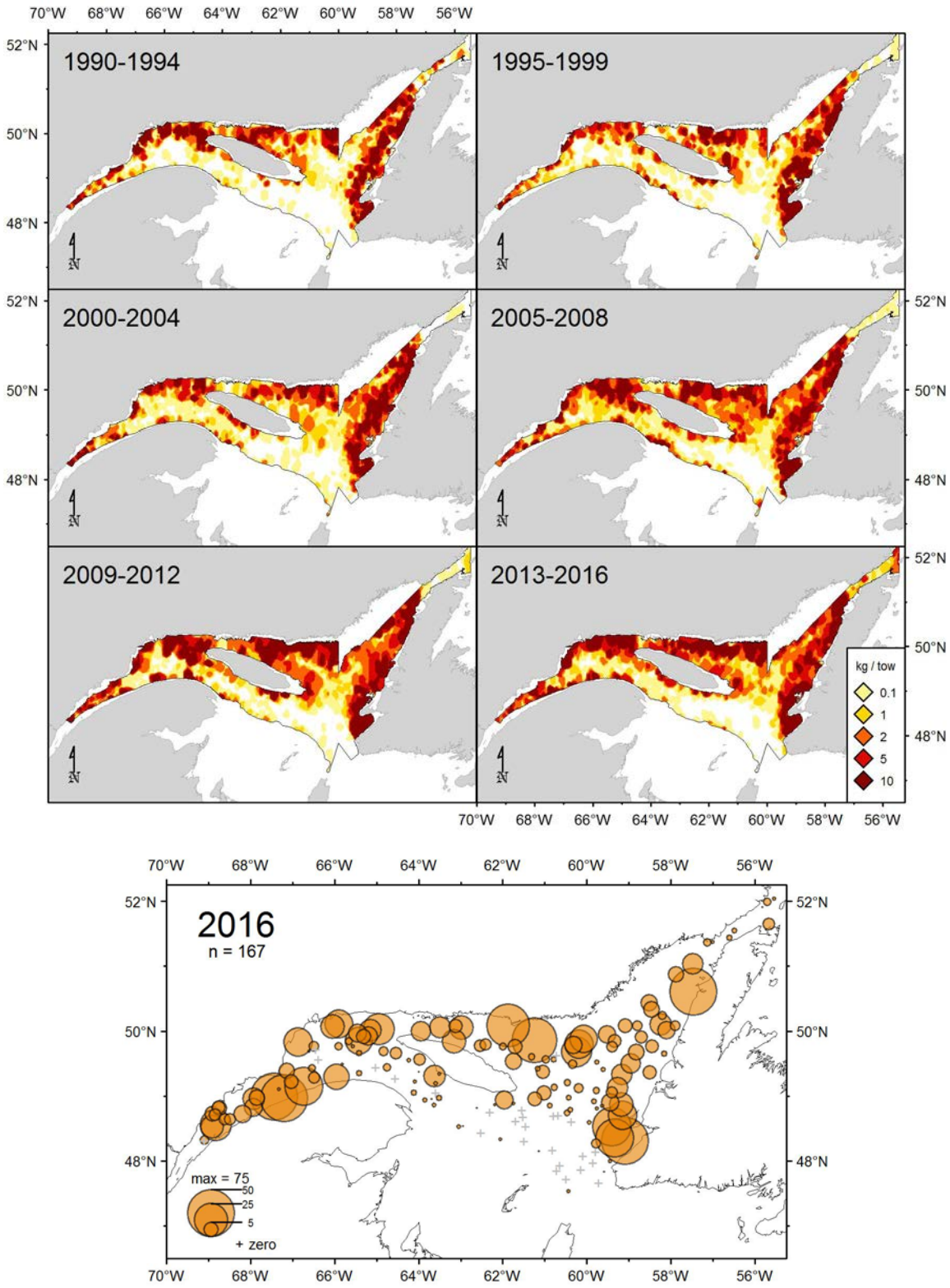



*Figure 9. American Plaice catch rates (kg/15 minutes tow) distribution.*

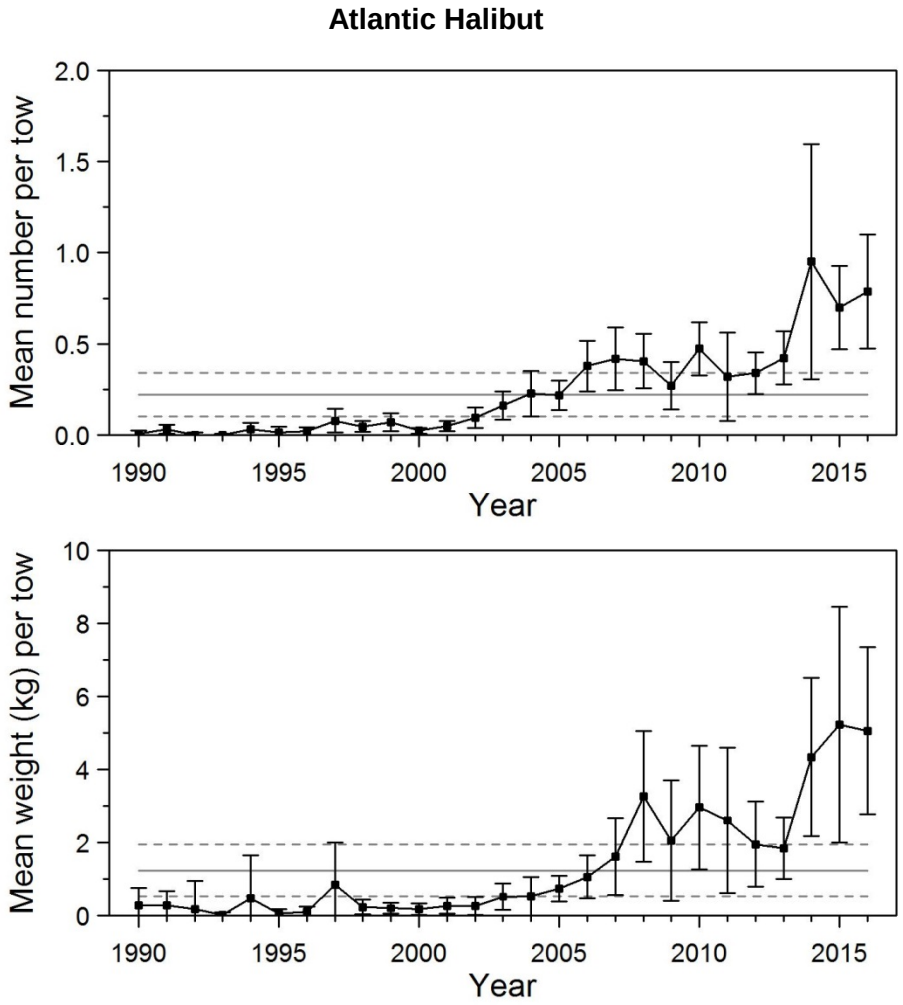



*Figure 10. Mean numbers and mean weights per 15 minutes tow observed during the survey for Atlantic Halibut in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

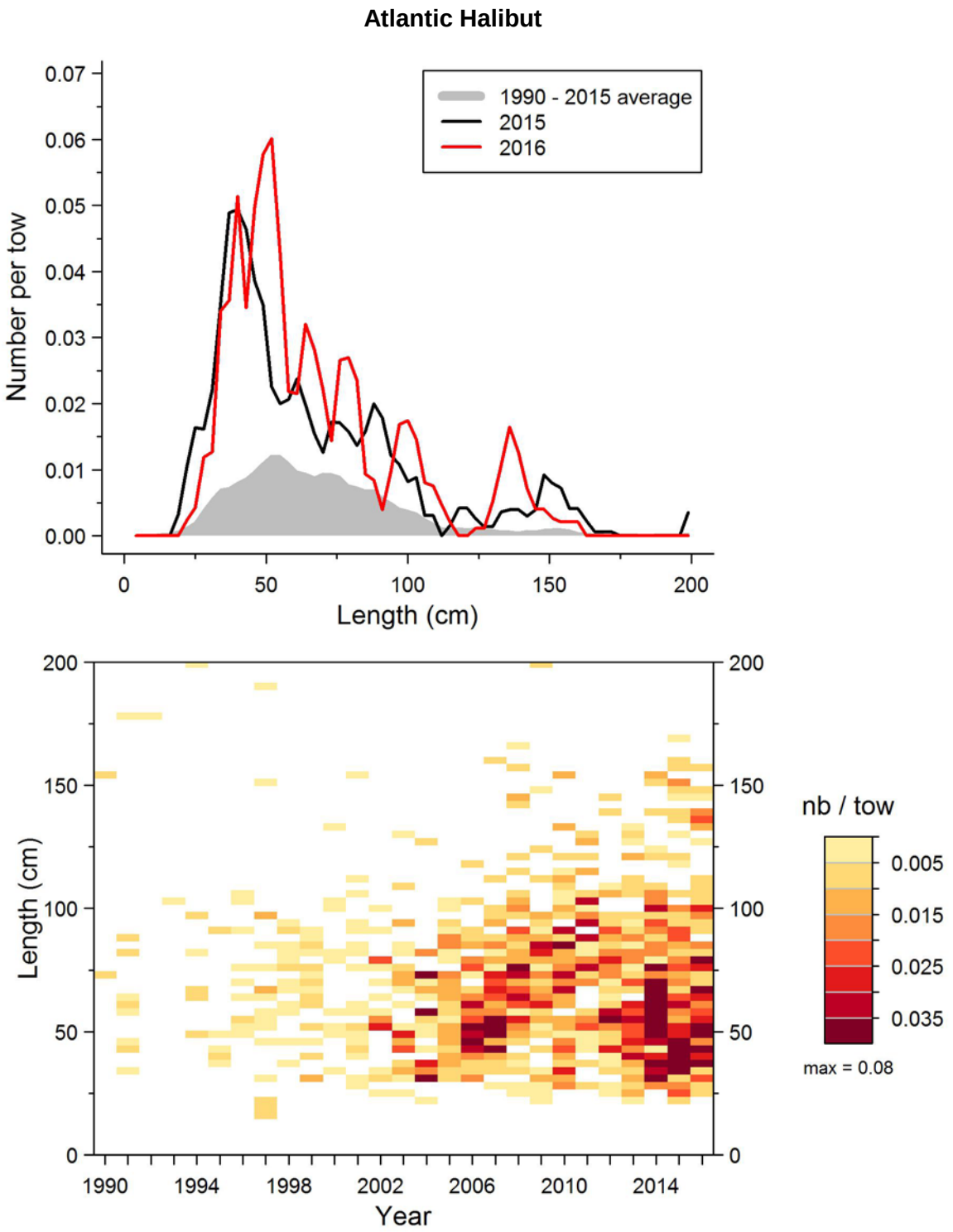



*Figure 11. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Atlantic Halibut in 4RST.*

**Atlantic Halibut**

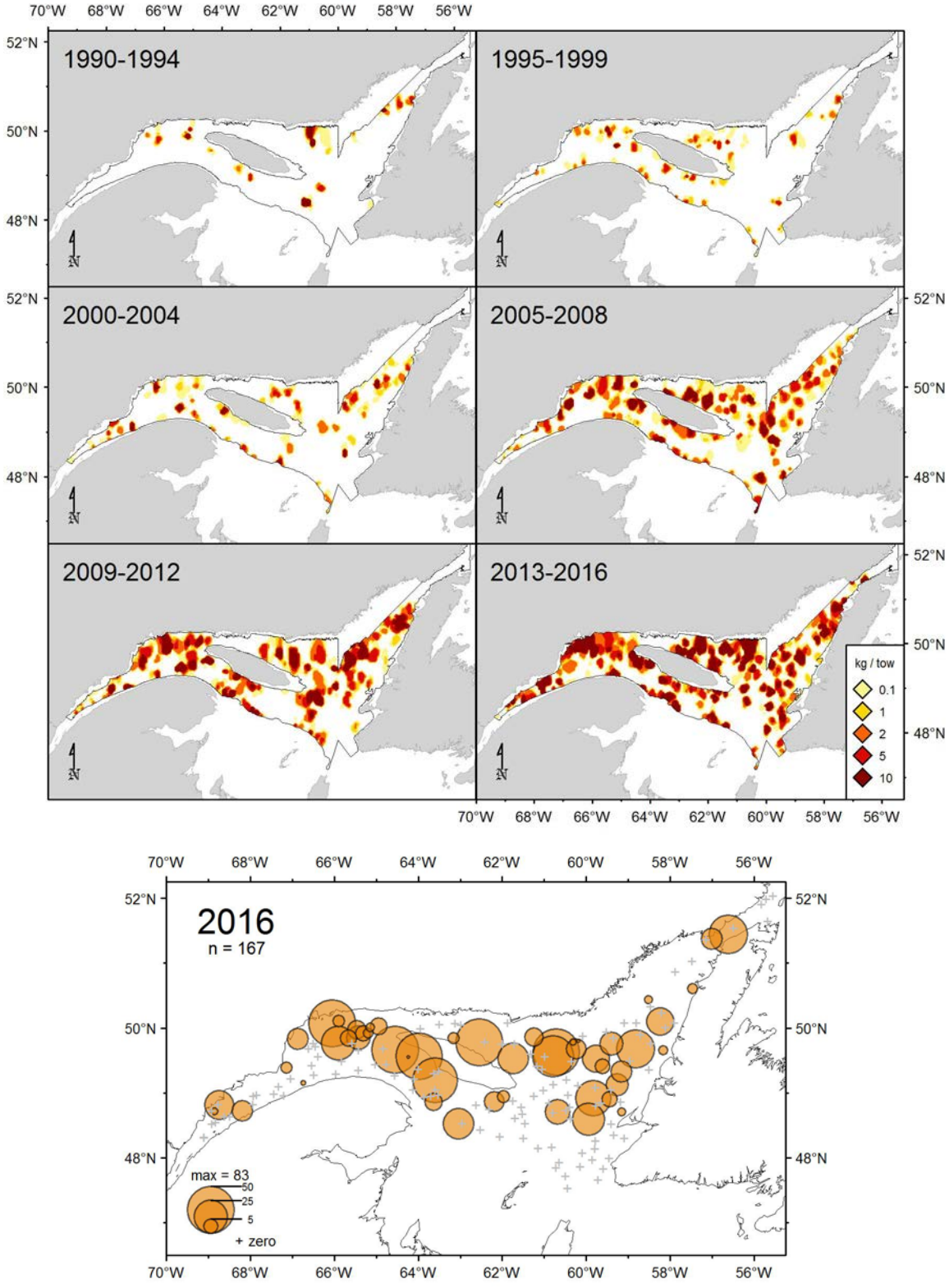



*Figure 12. Atlantic Halibut catch rates (kg/15 minutes tow) distribution.*

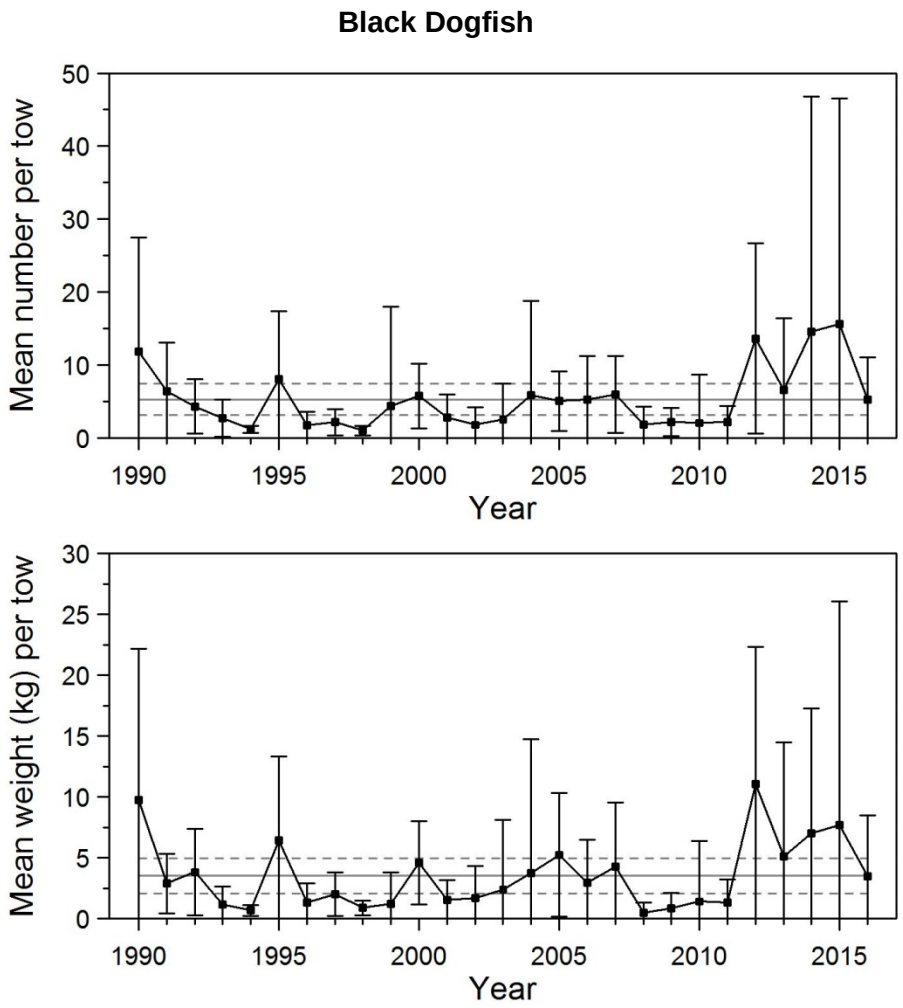



*Figure 13. Mean numbers and mean weights per 15 minutes tow observed during the survey for Black Dogfish in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

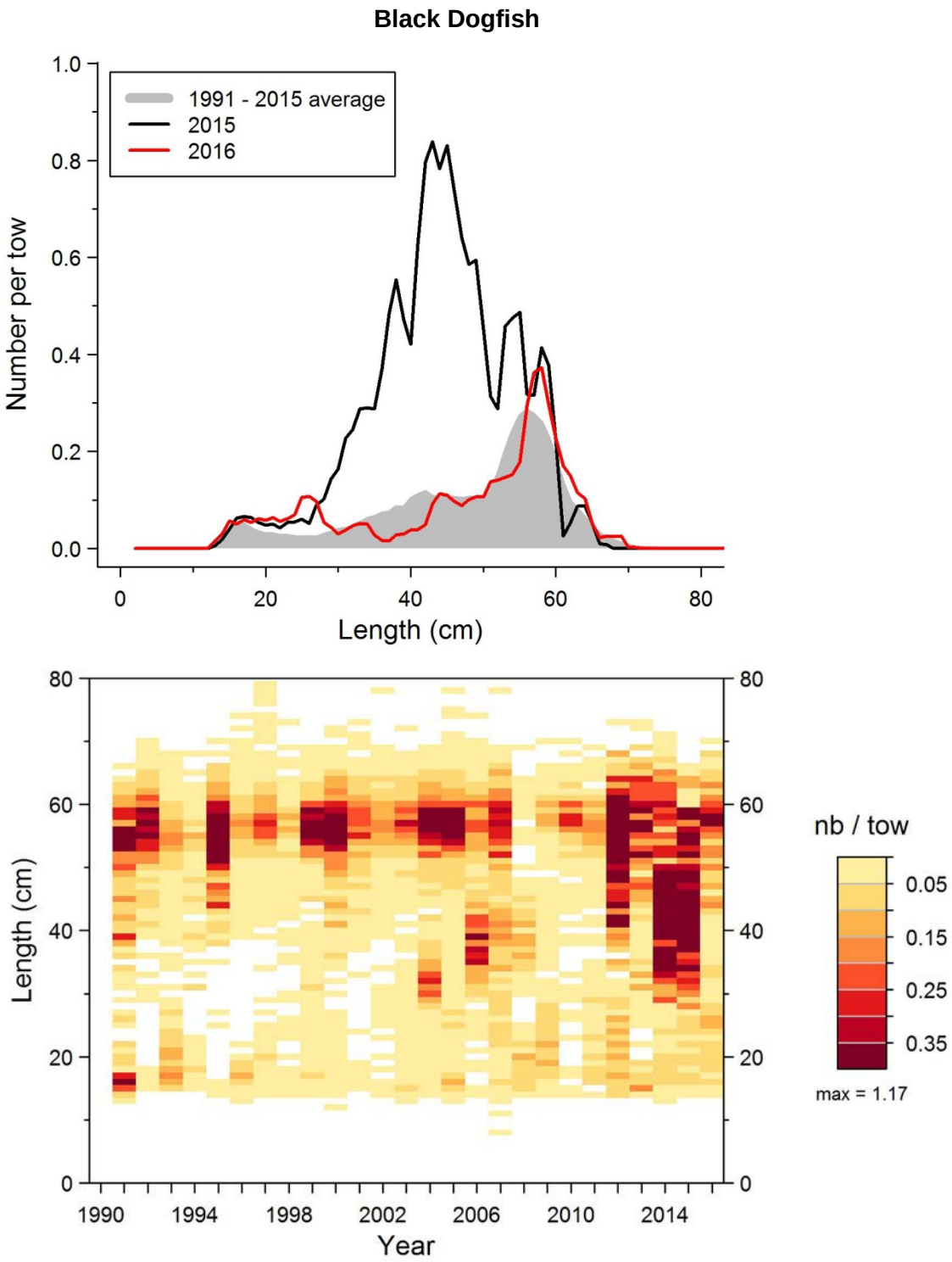



*Figure 14. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Black Dogfish in 4RST.*

**Black Dogfish**

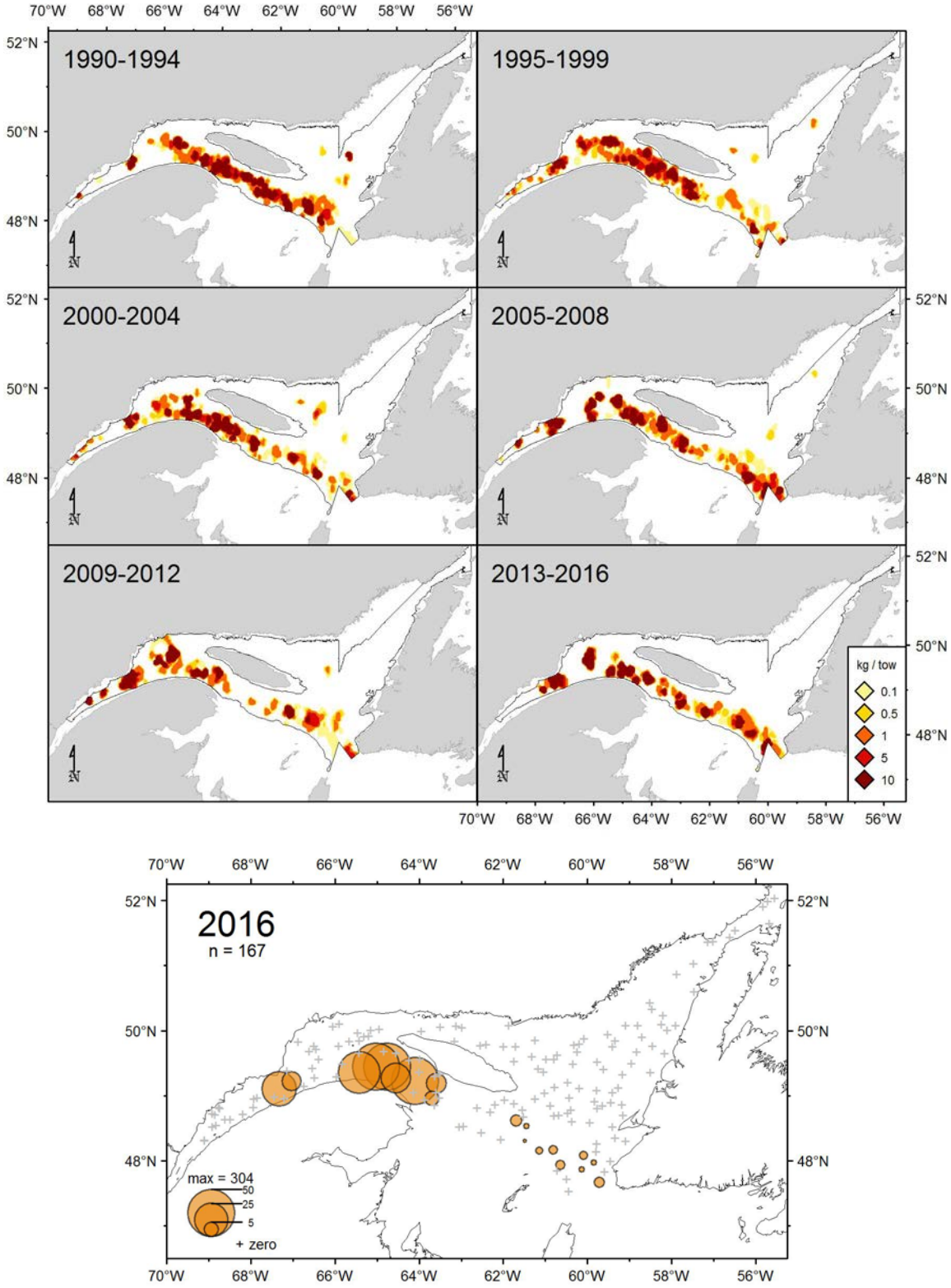



*Figure 15. Black Dogfish catch rates (kg/15 minutes tow) distribution.*

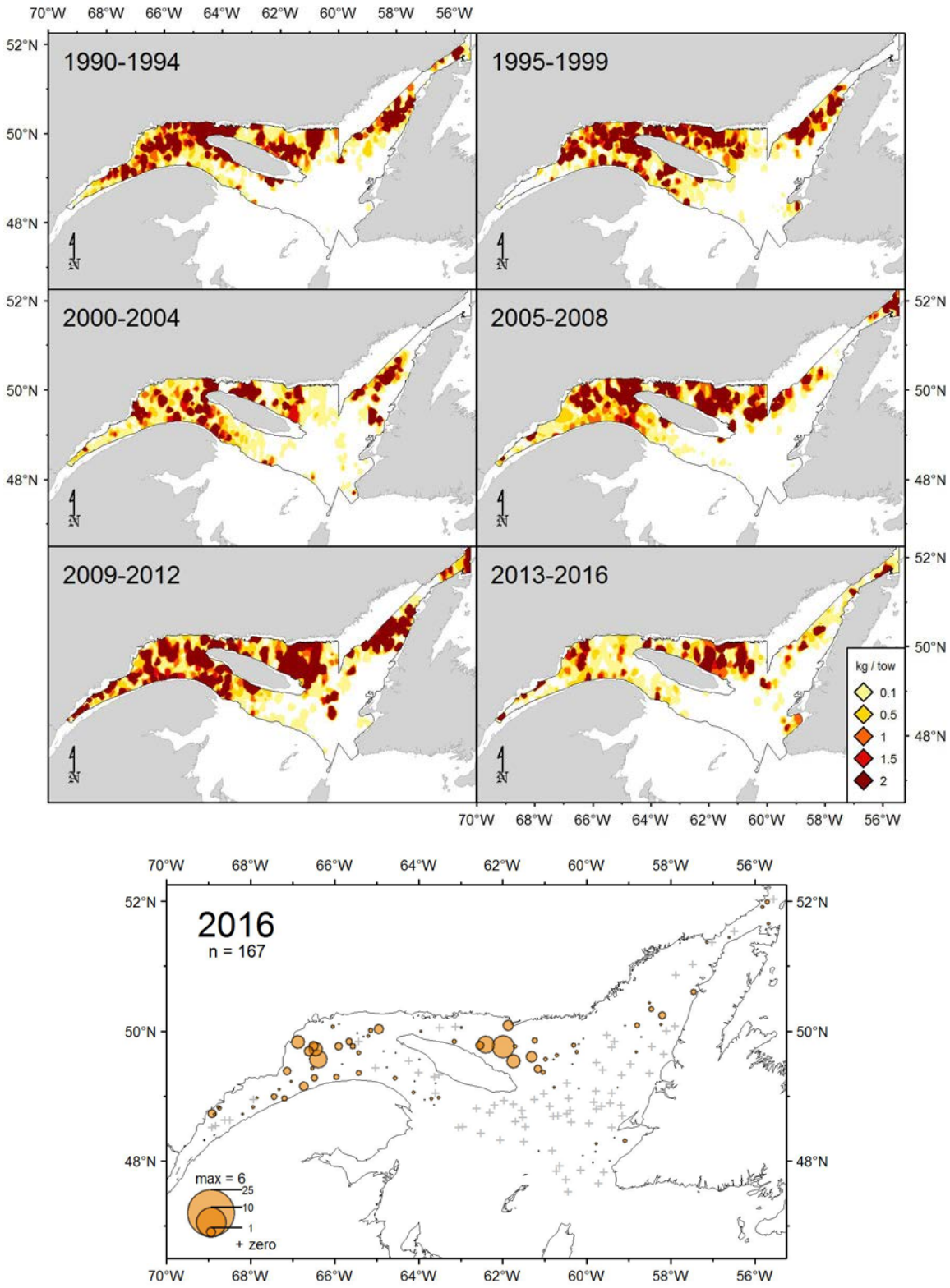



*Figure 16. Capelin catch rates (kg/15 minutes tow) distribution.*

## Capelin

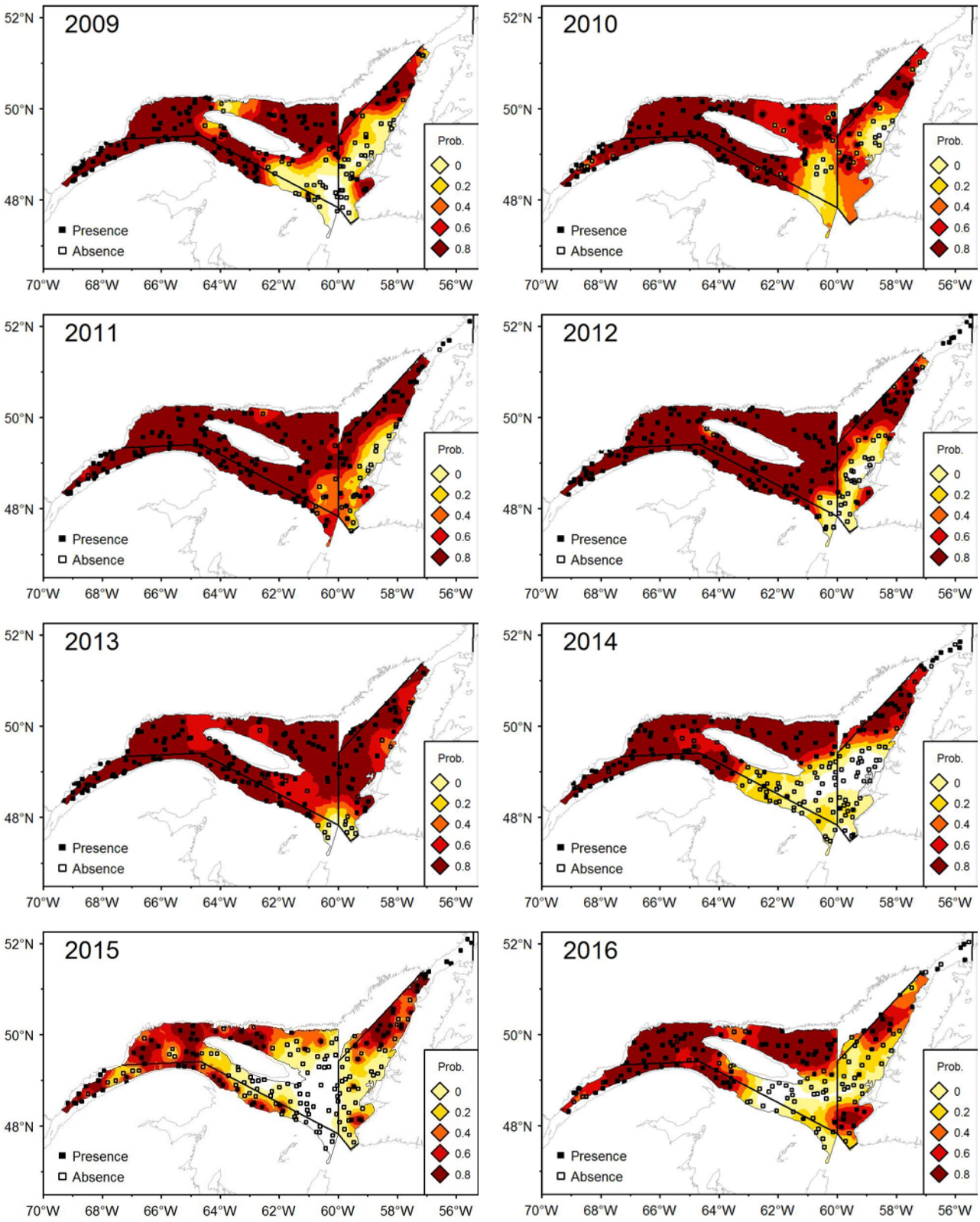
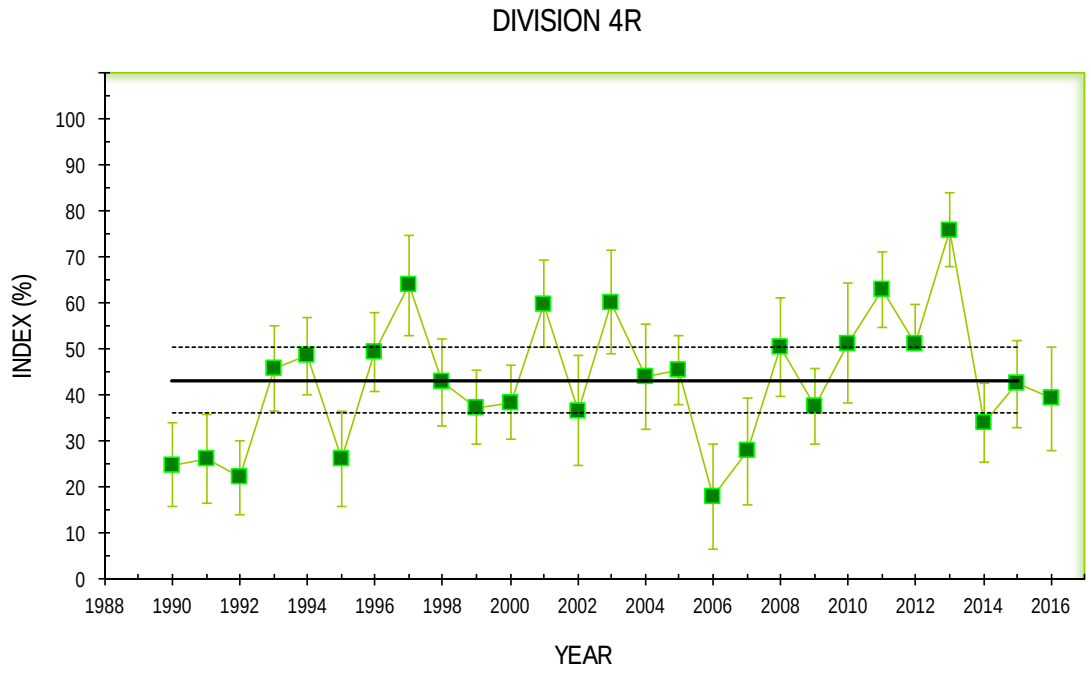



*Figure 17. Probabilities areas (%) associated with the presence of Capelin.*

**Capelin**



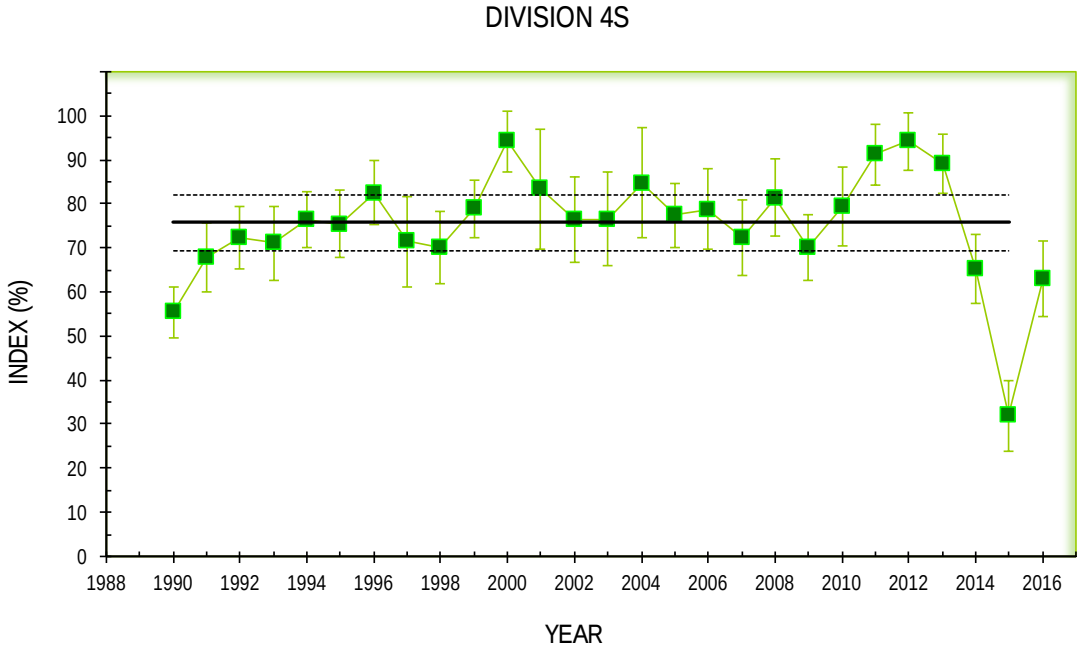




*Figure 18. Mean probabilities of finding Capelin in NAFO Divisions 4R and 4S. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

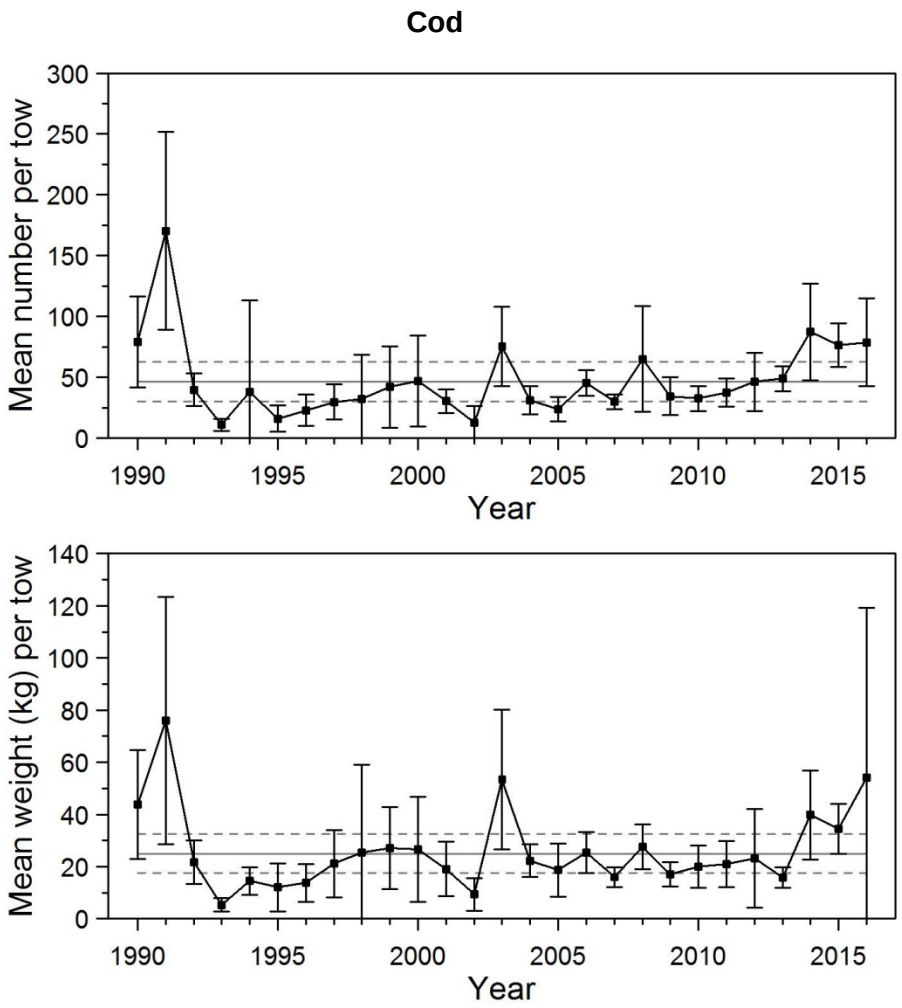



*Figure 19. Mean numbers and mean weights per 15 minutes tow observed during the survey for Cod in 4RS. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

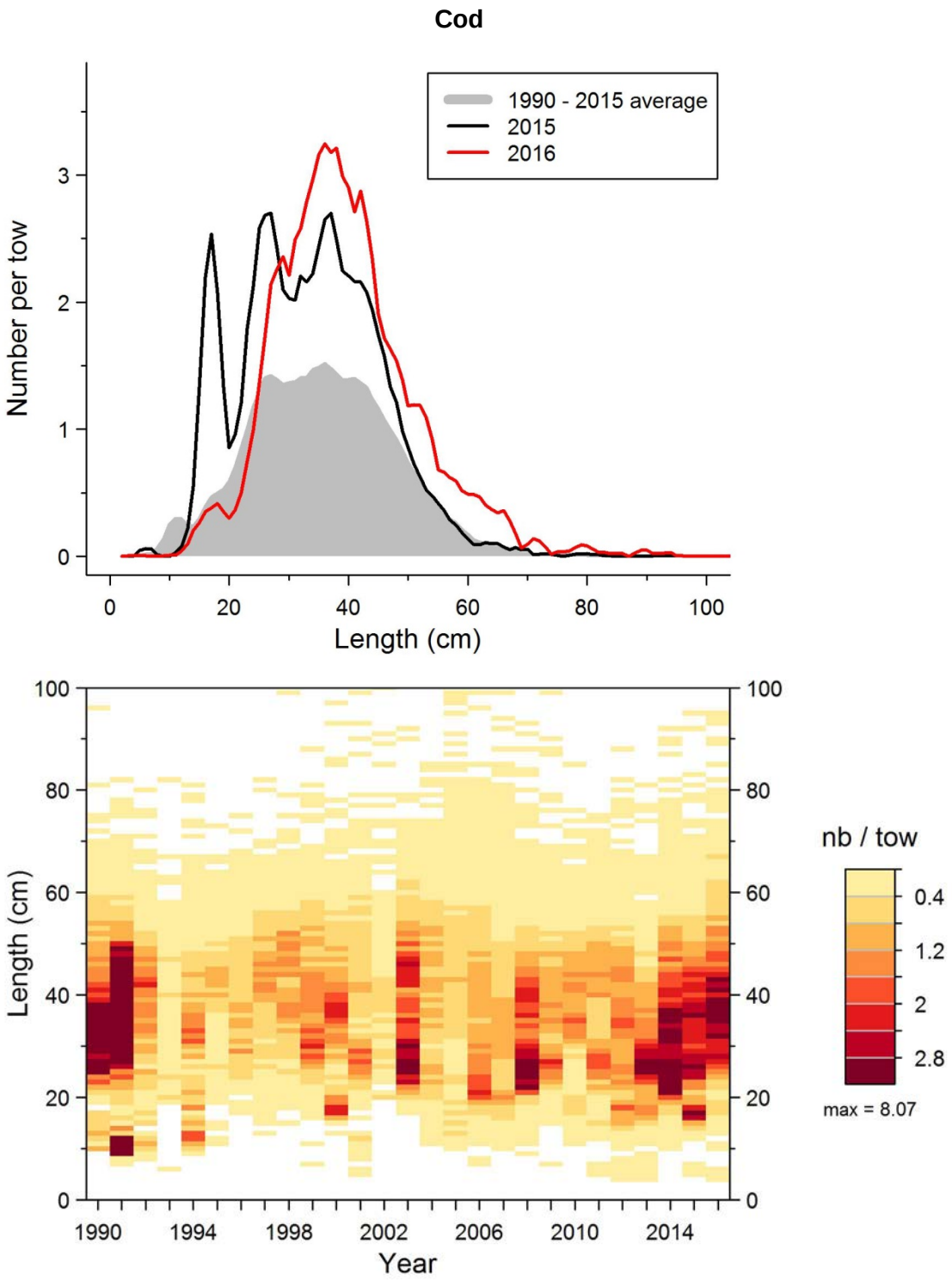



*Figure 20. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Cod in 4RS.*

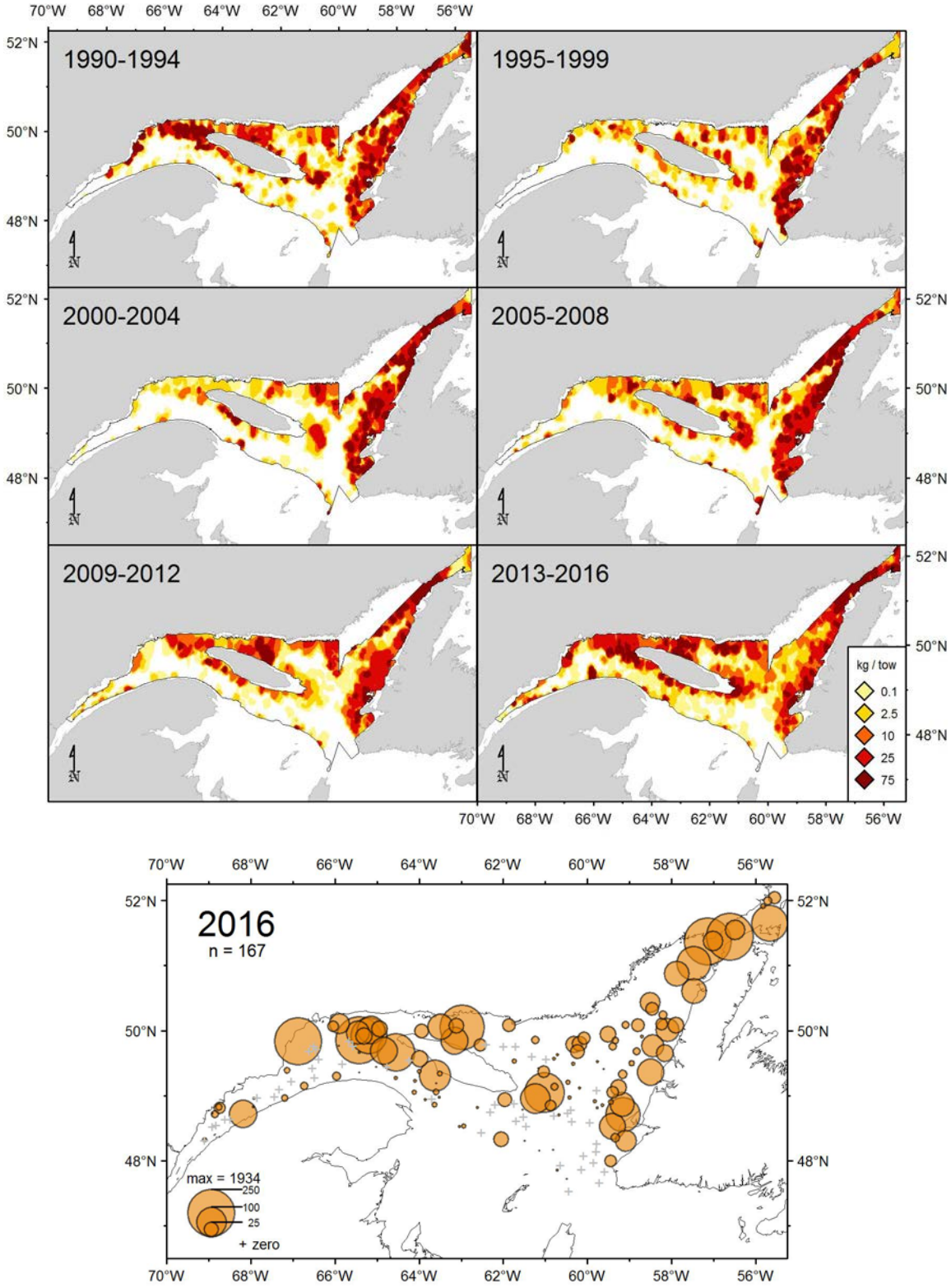



*Figure 21. Cod catch rates (kg/15 minutes tow) distribution.*

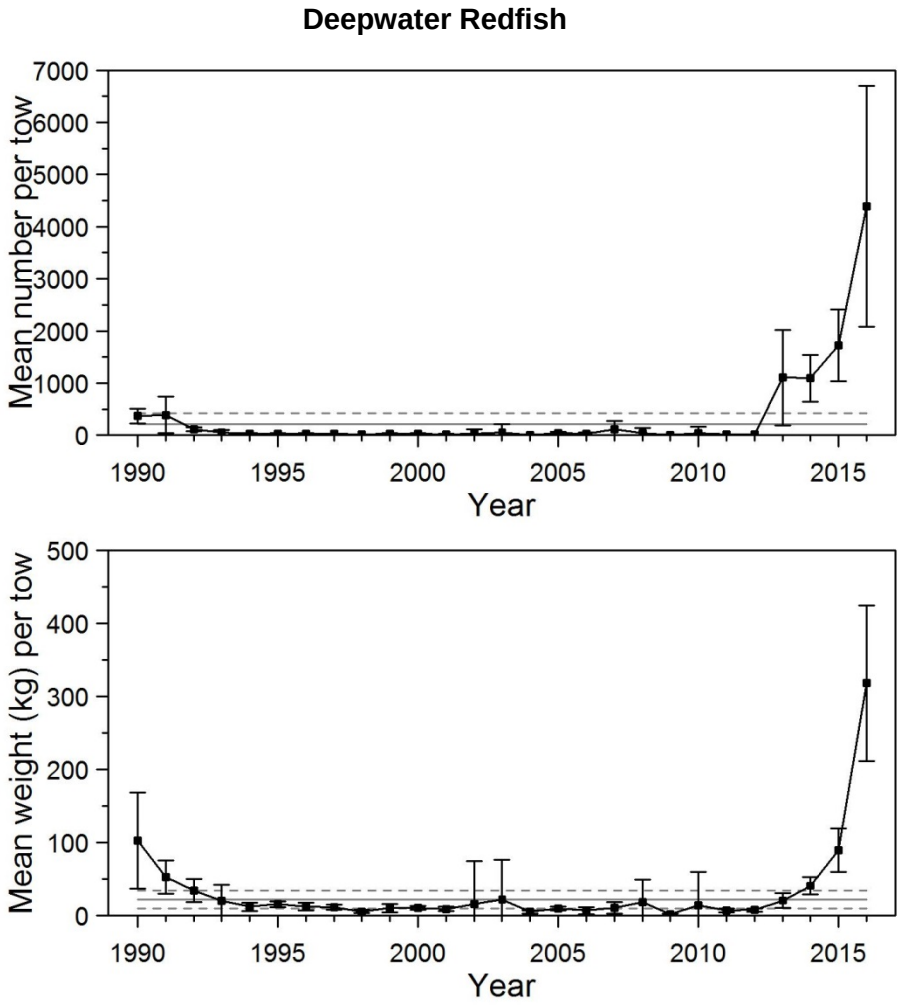



*Figure 22. Mean numbers and mean weights per 15 minutes tow observed during the survey for Deepwater Redfish in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

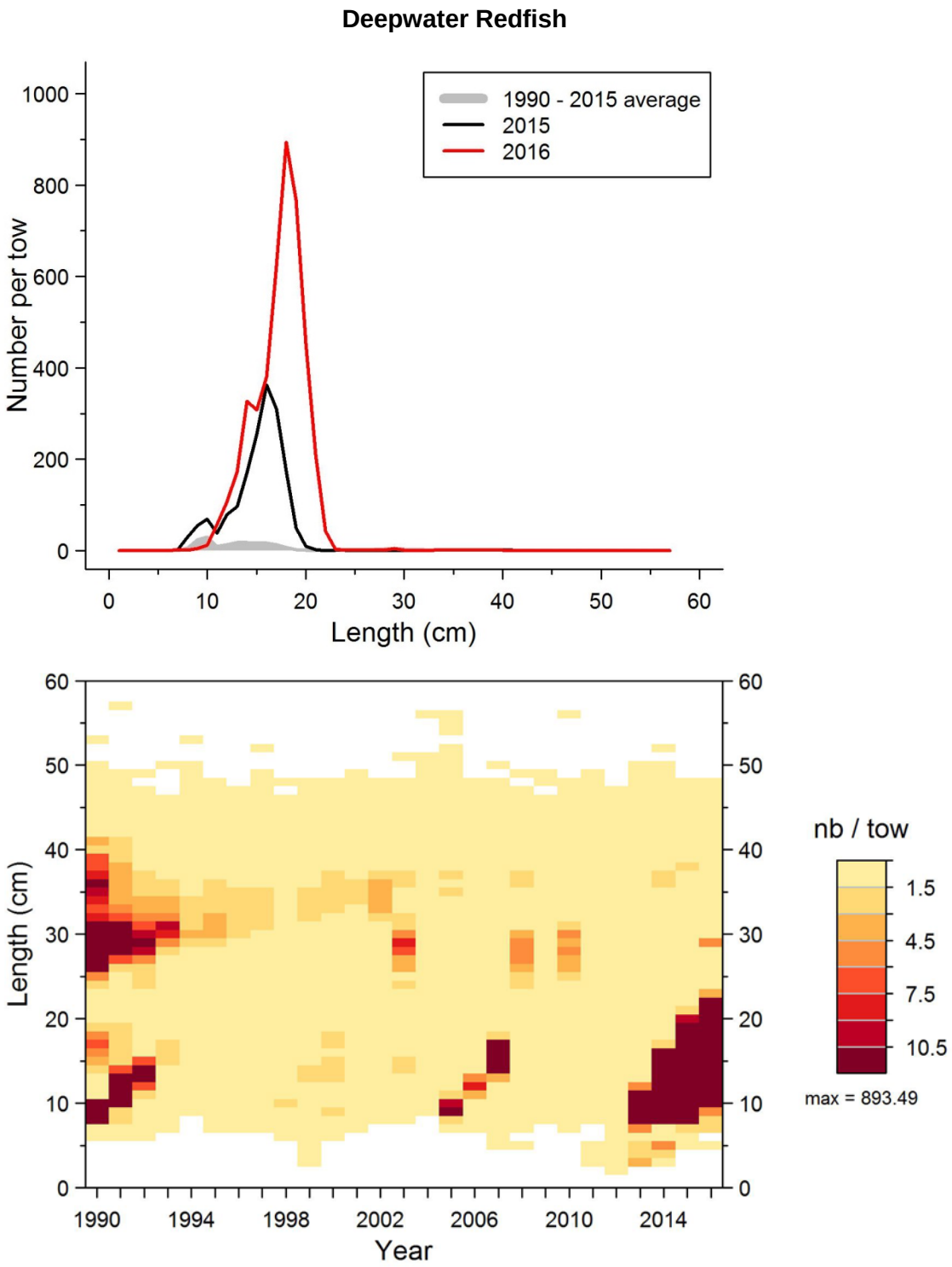



*Figure 23. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Deepwater Redfish in 4RST.*

**Deepwater Redfish**

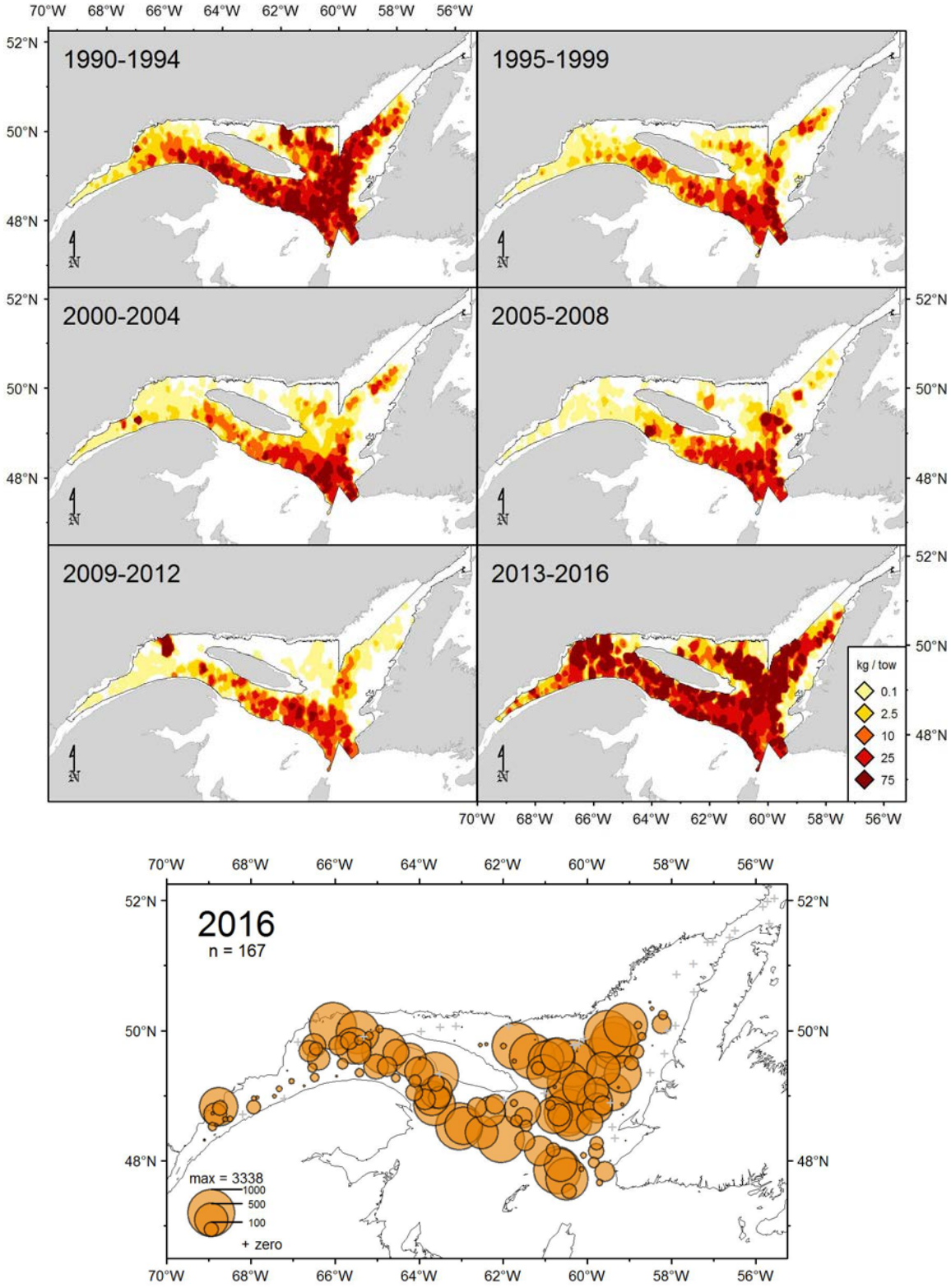



*Figure 24. Deepwater Redfish catch rates (kg/15 minutes tow) distribution.*

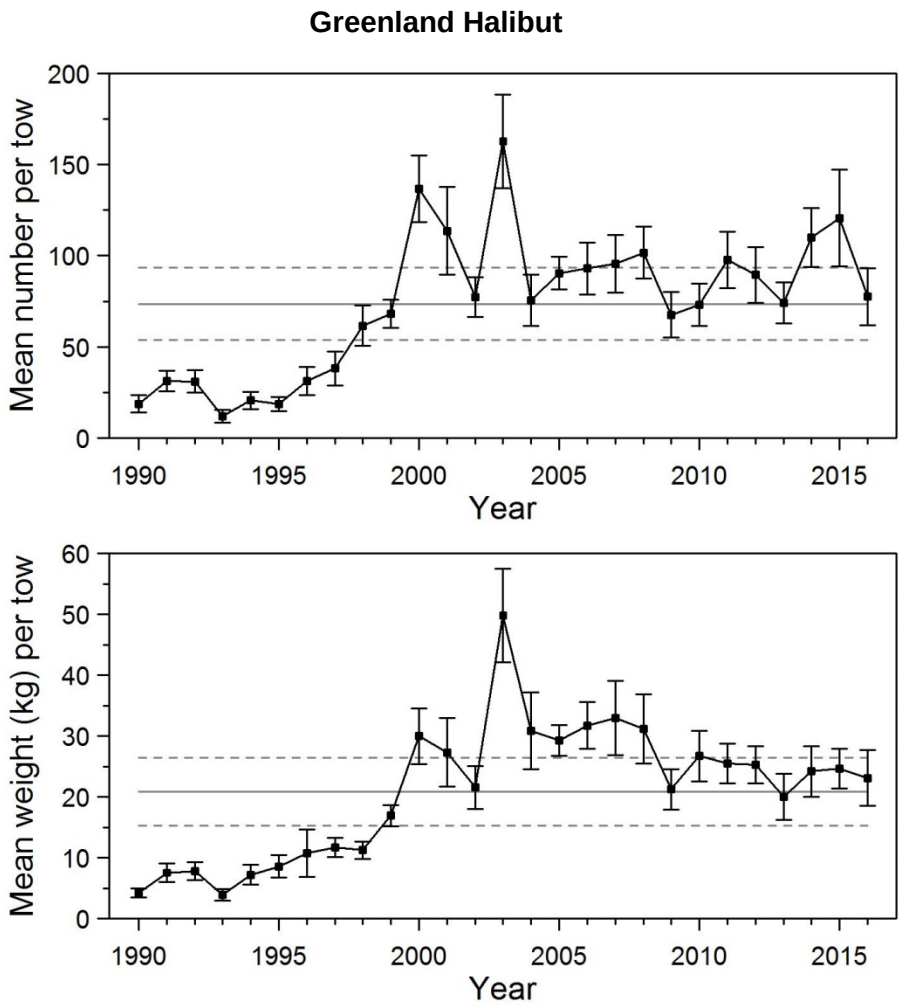



*Figure 25. Mean numbers and mean weights per 15 minutes tow observed during the survey for Greenland Halibut in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

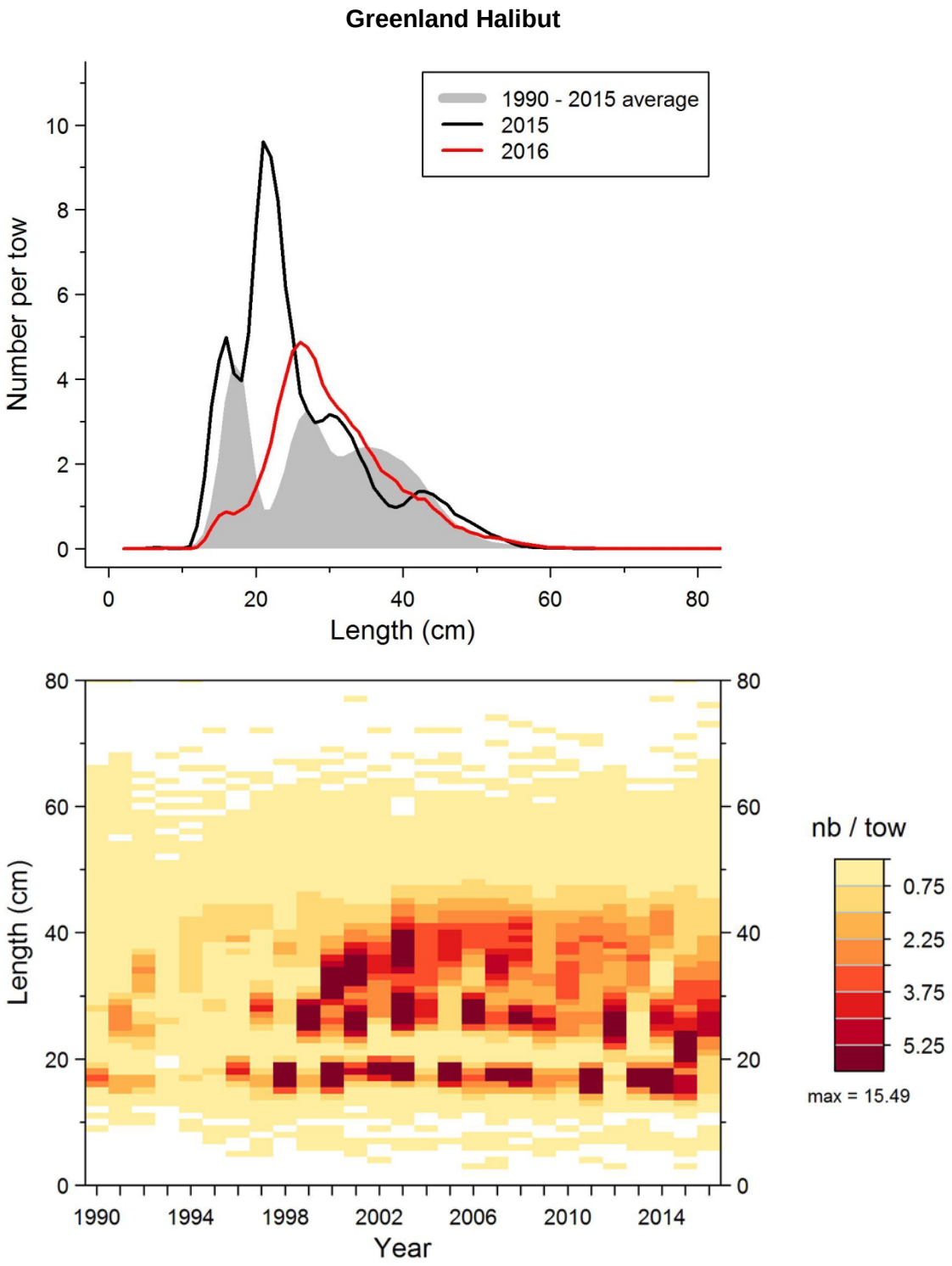



*Figure 26. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Greenland Halibut in 4RST.*

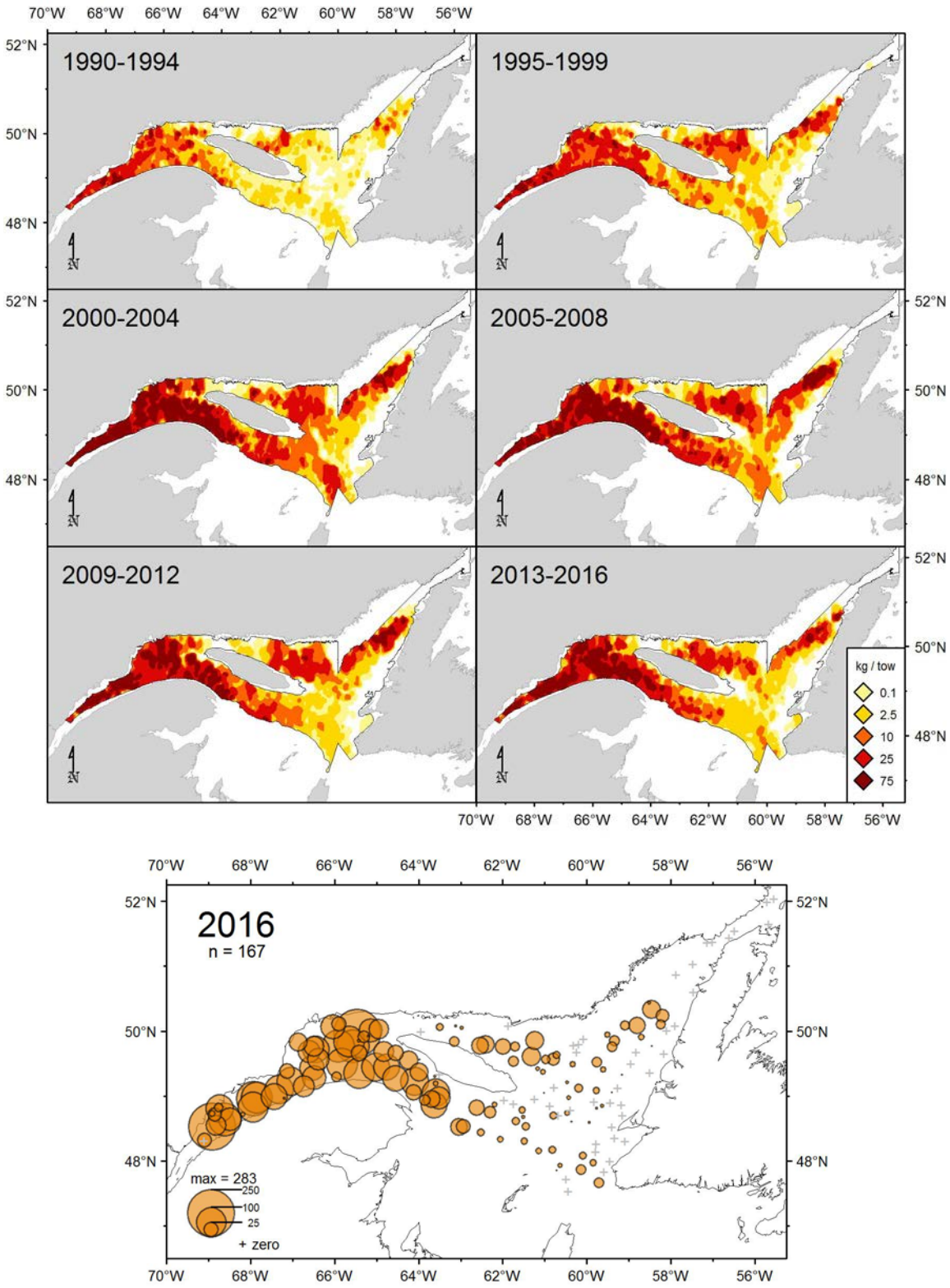



*Figure 27. Greenland Halibut catch rates (kg/15 minutes tow) distribution.*

**Herring**

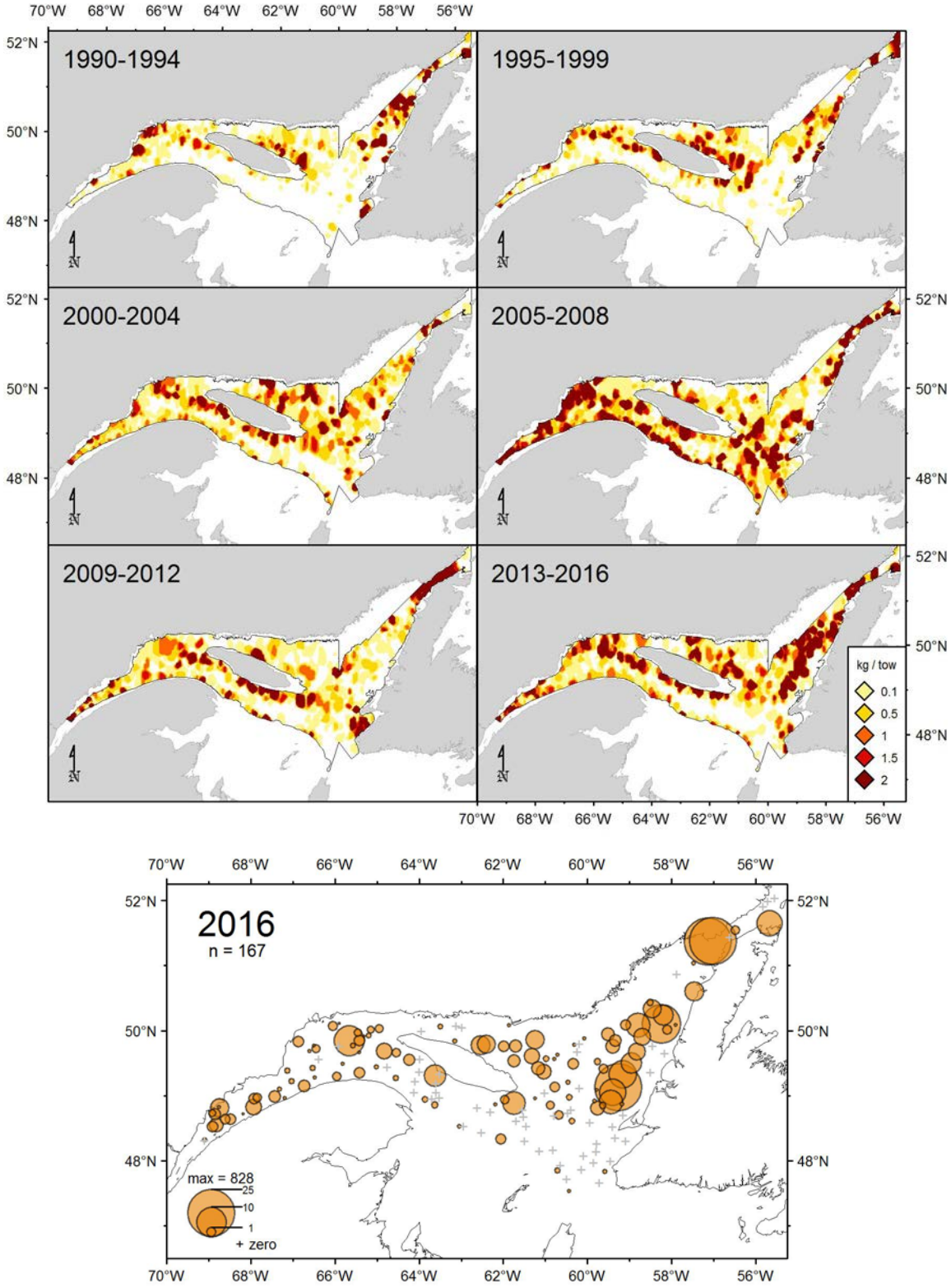



*Figure 28. Herring catch rates (kg/15 minutes tow) distribution.*

## Herring

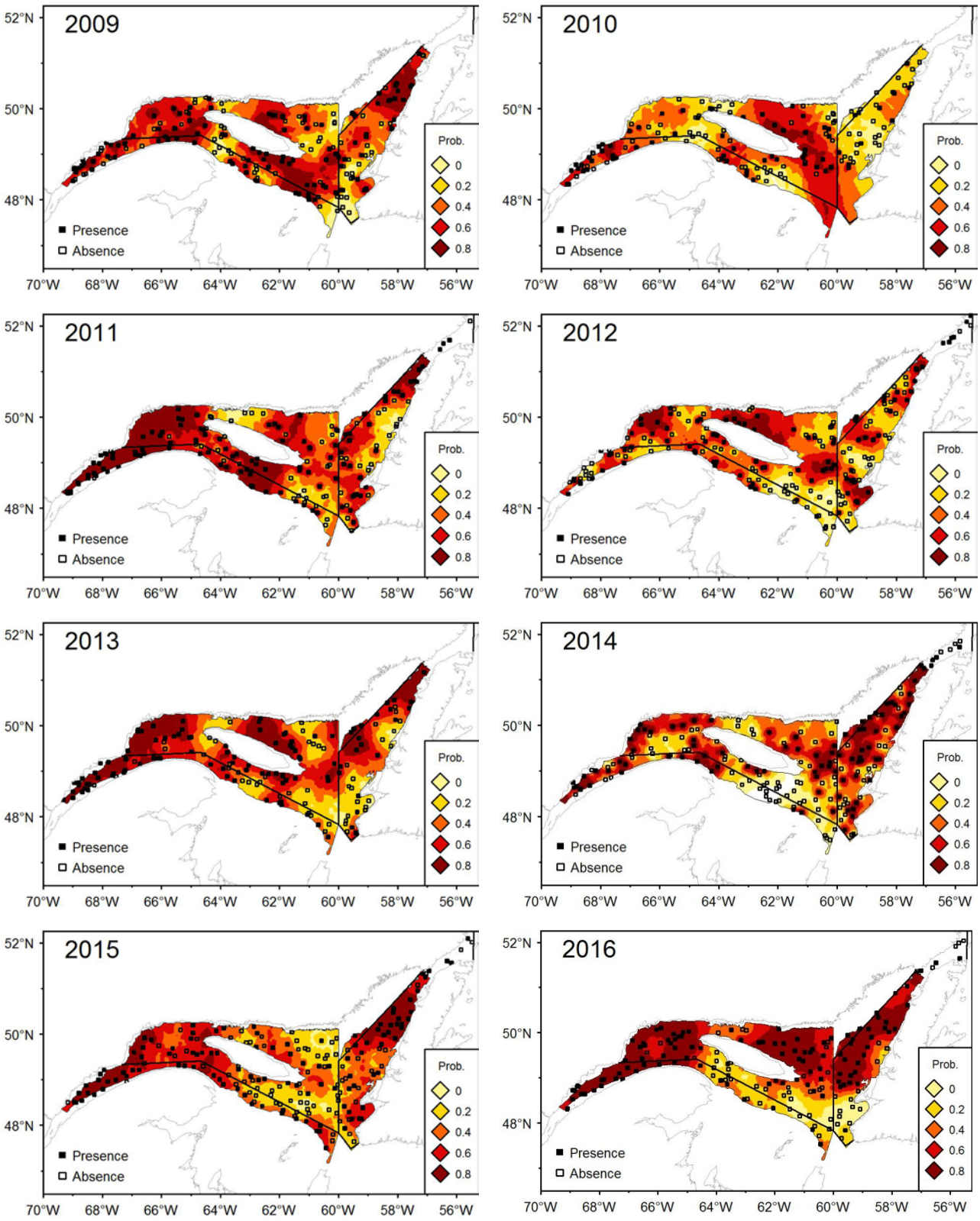



*Figure 29. Probabilities areas (%) associated with the presence of Herring.*

**Herring**

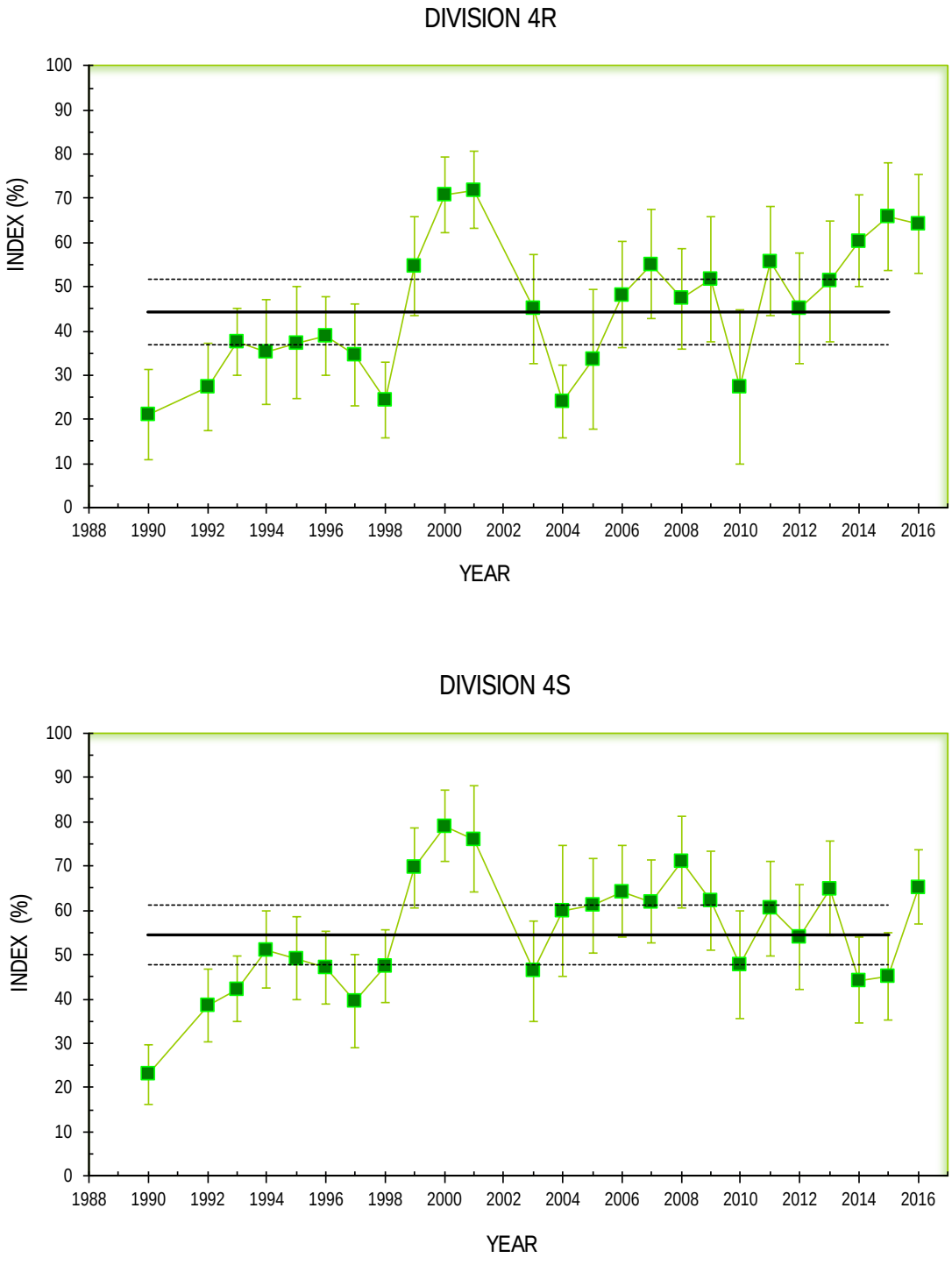



*Figure 30. Mean probabilities of finding Herring in NAFO Divisions 4R and 4S. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

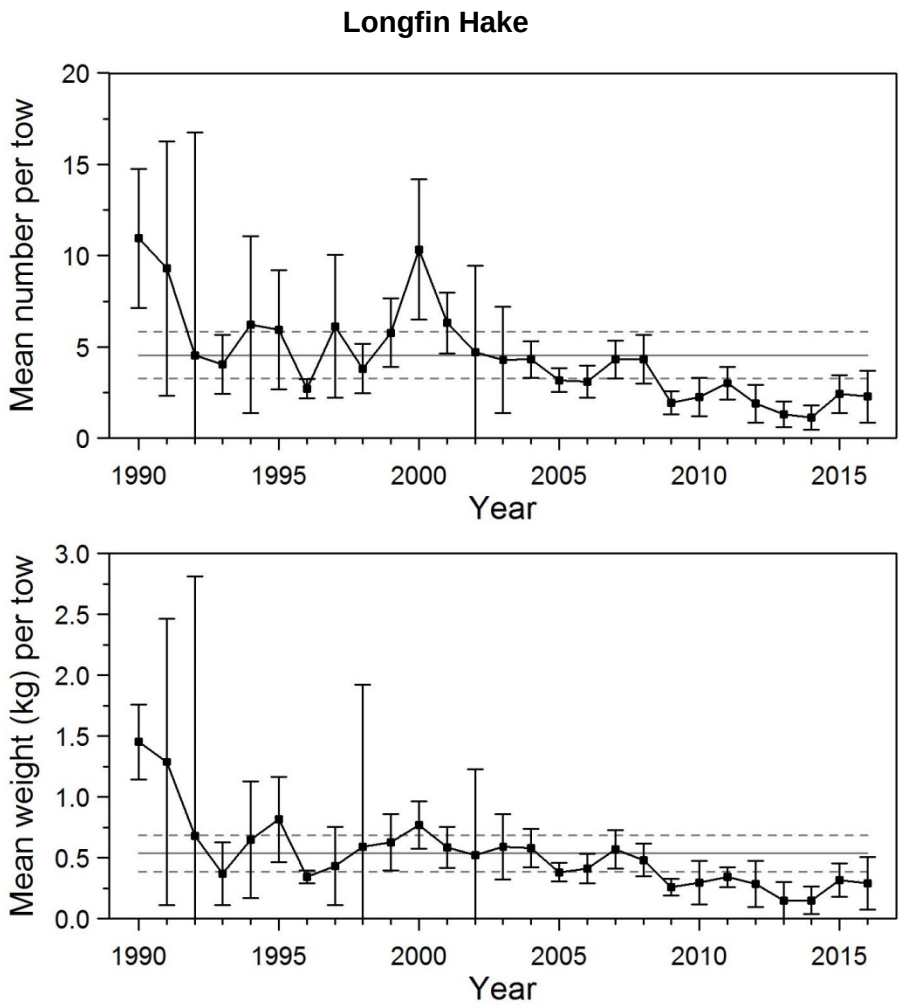



*Figure 31. Mean numbers and mean weights per 15 minutes tow observed during the survey for Longfin Hake in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

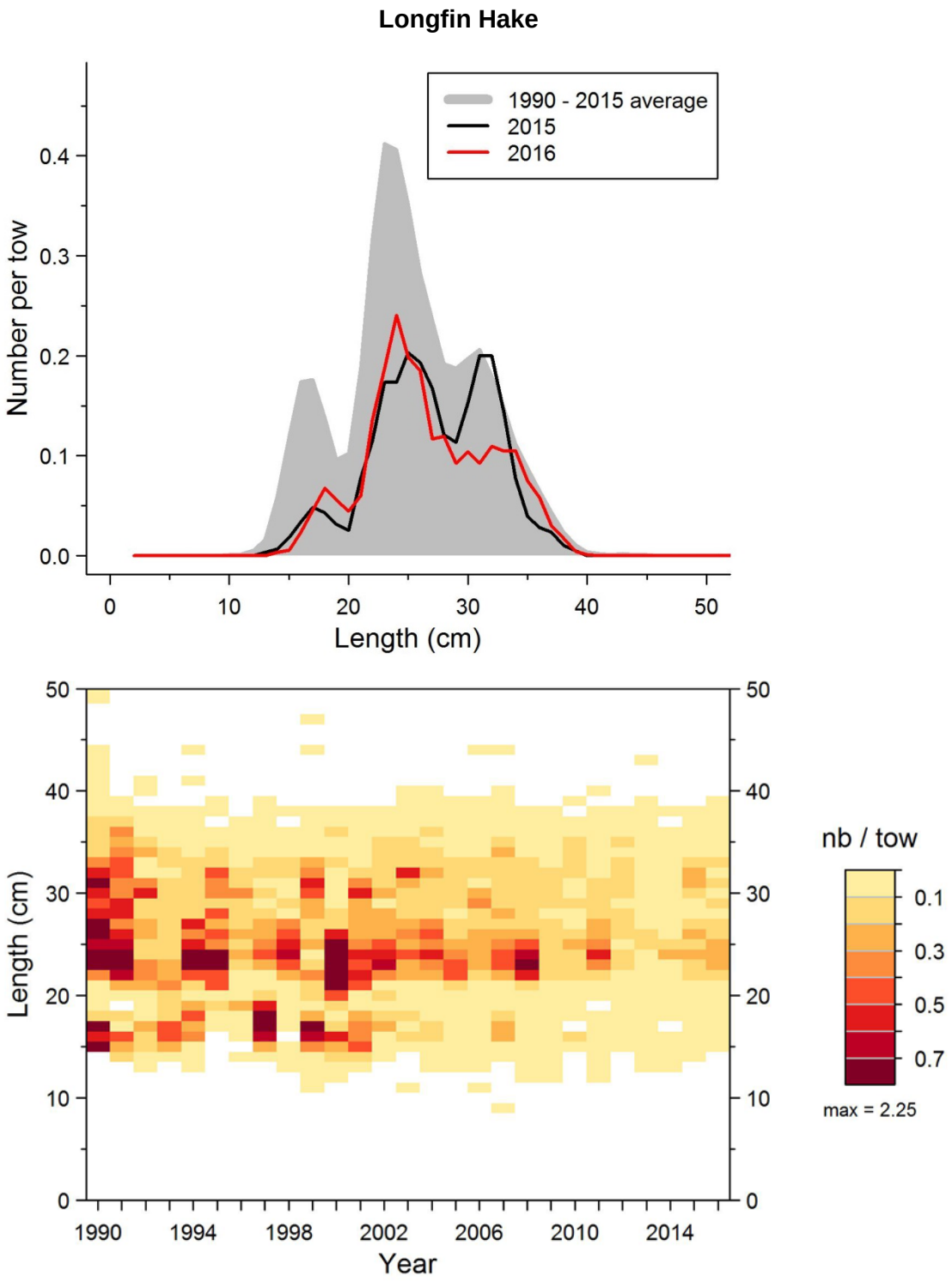



*Figure 32. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Longfin Hake in 4RST.*

**Longfin Hake**

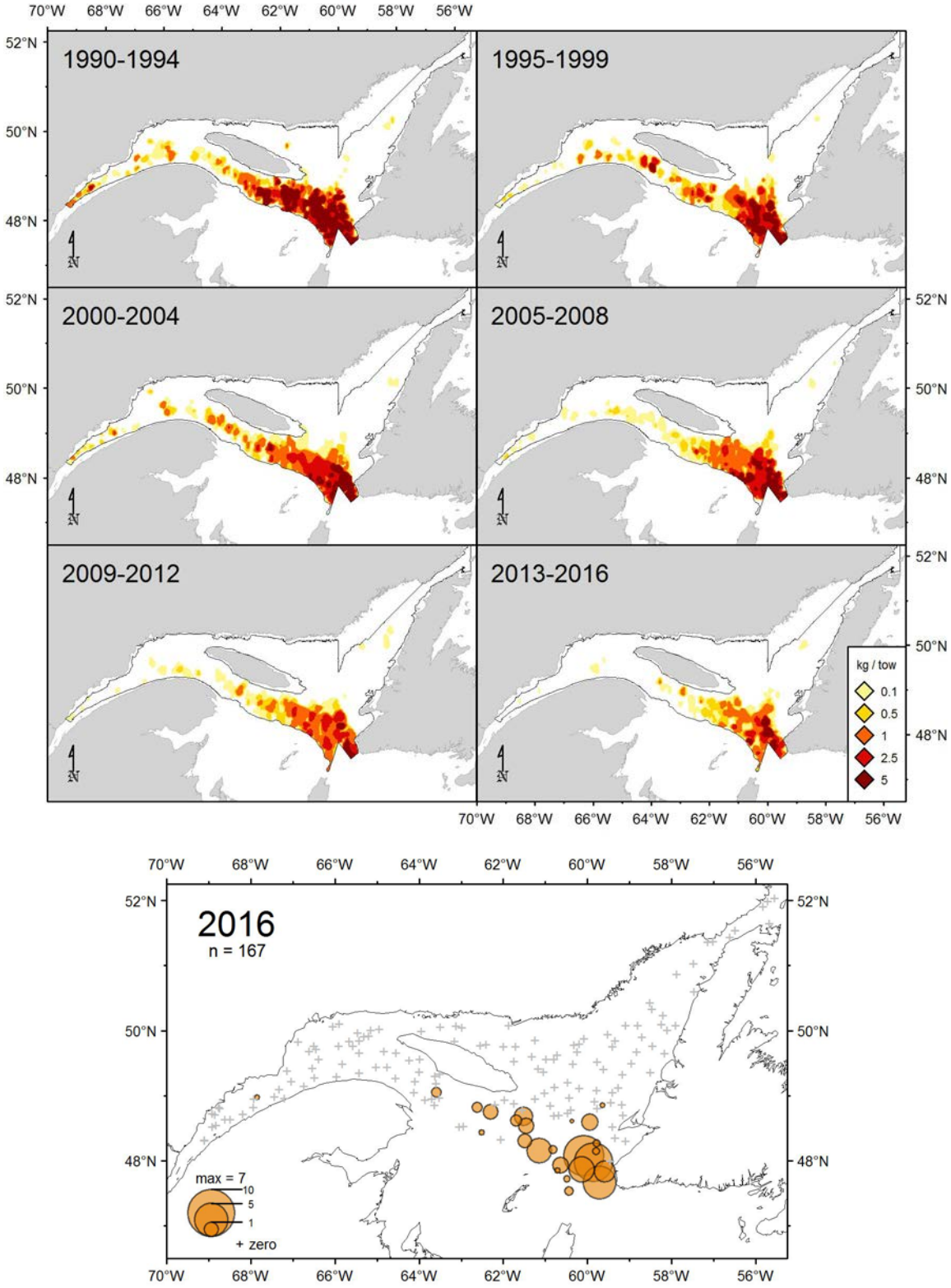



*Figure 33. Longfin Hake catch rates (kg/15 minutes tow) distribution.*

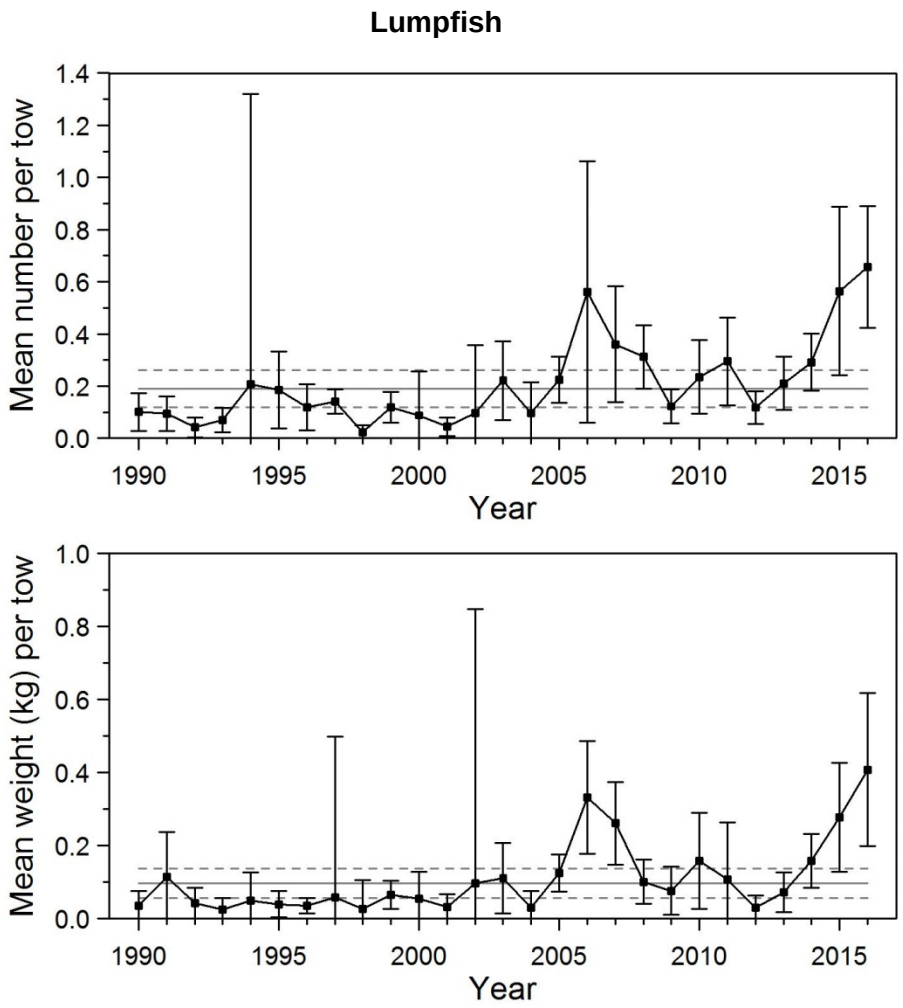



*Figure 34. Mean numbers and mean weights per 15 minutes tow observed during the survey for Lumpfish in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

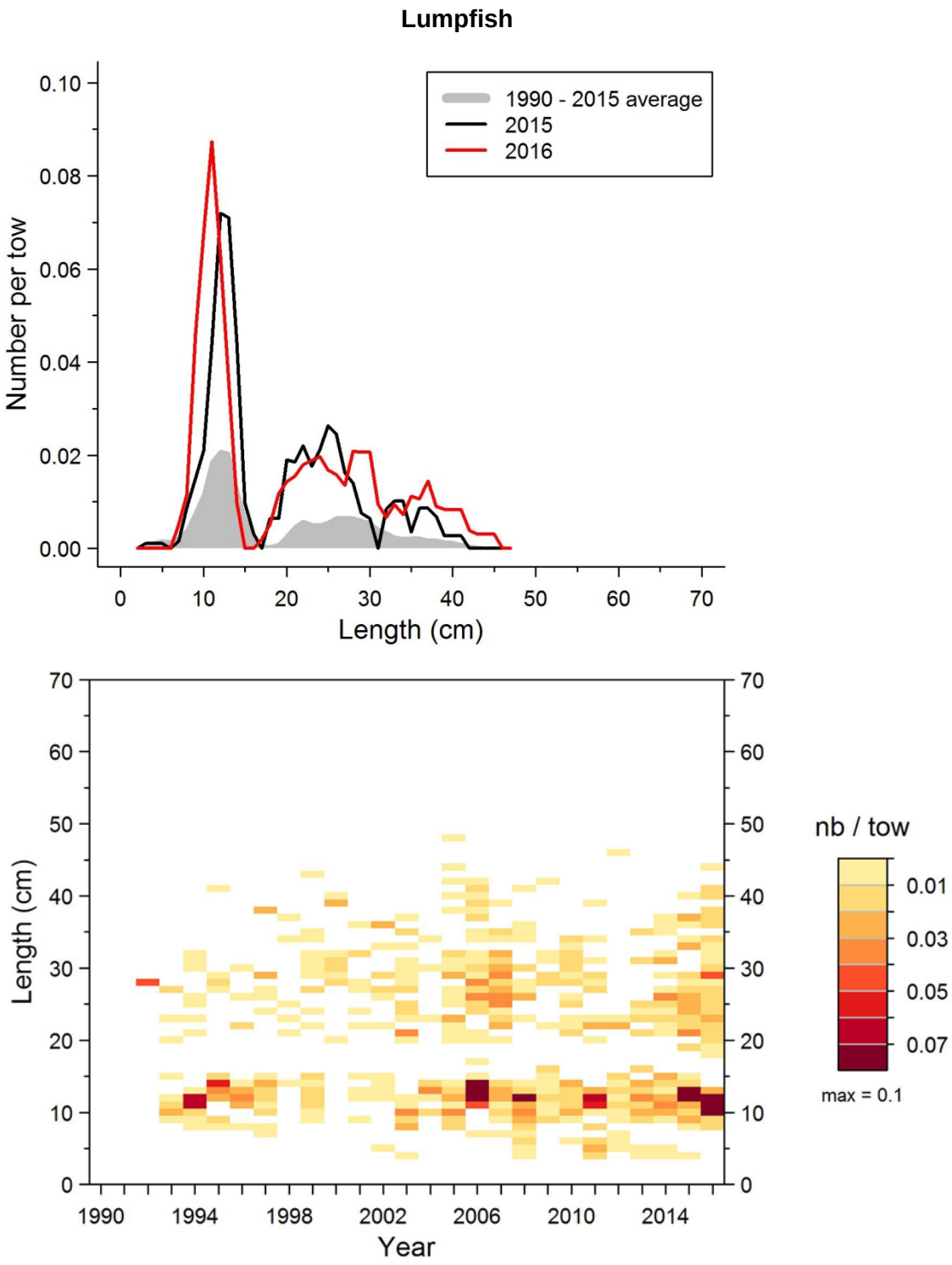



*Figure 35. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Lumpfish in 4RST.*

**Lumpfish**

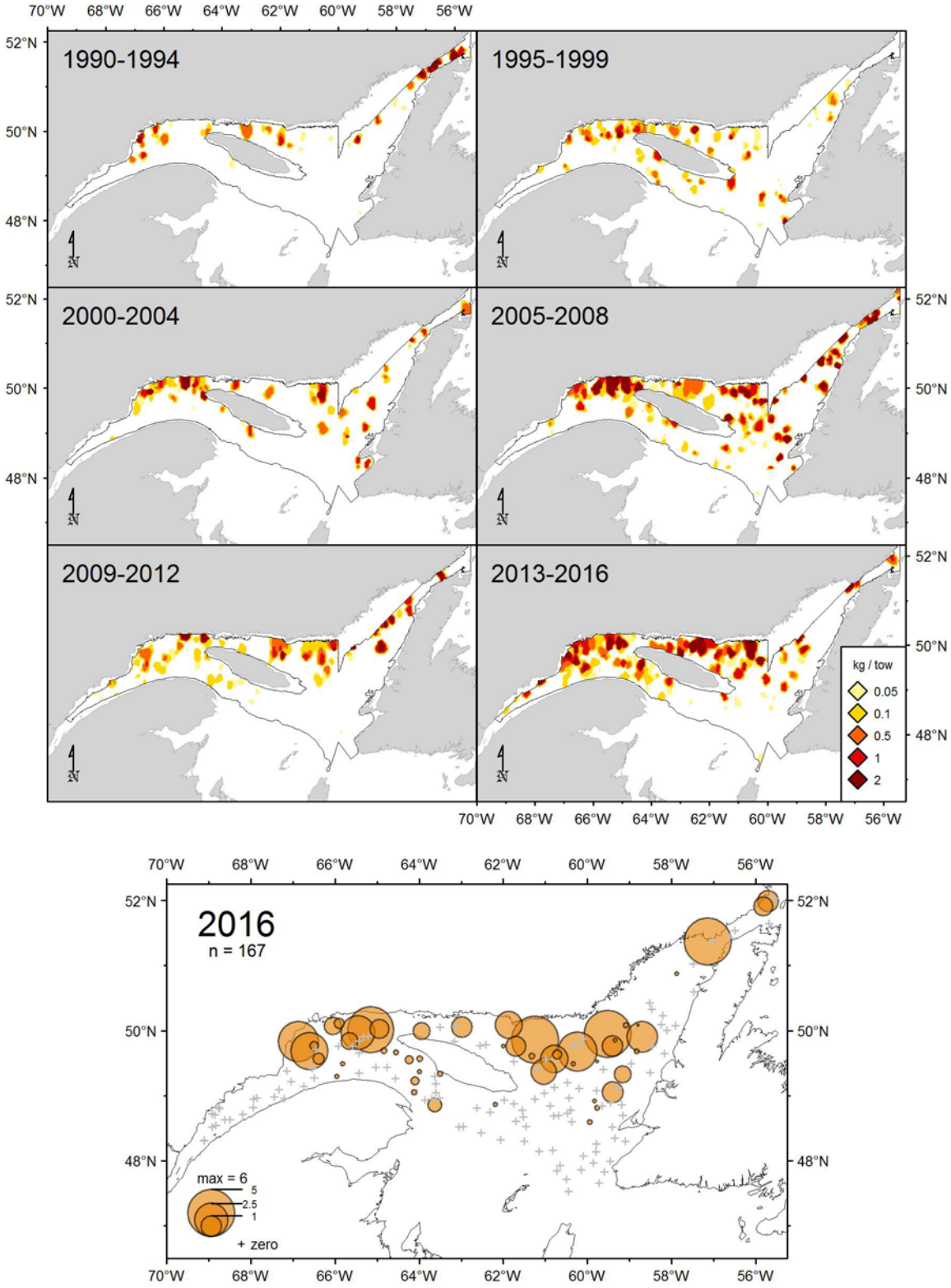



*Figure 36. Lumpfish catch rates (kg/15 minutes tow) distribution.*

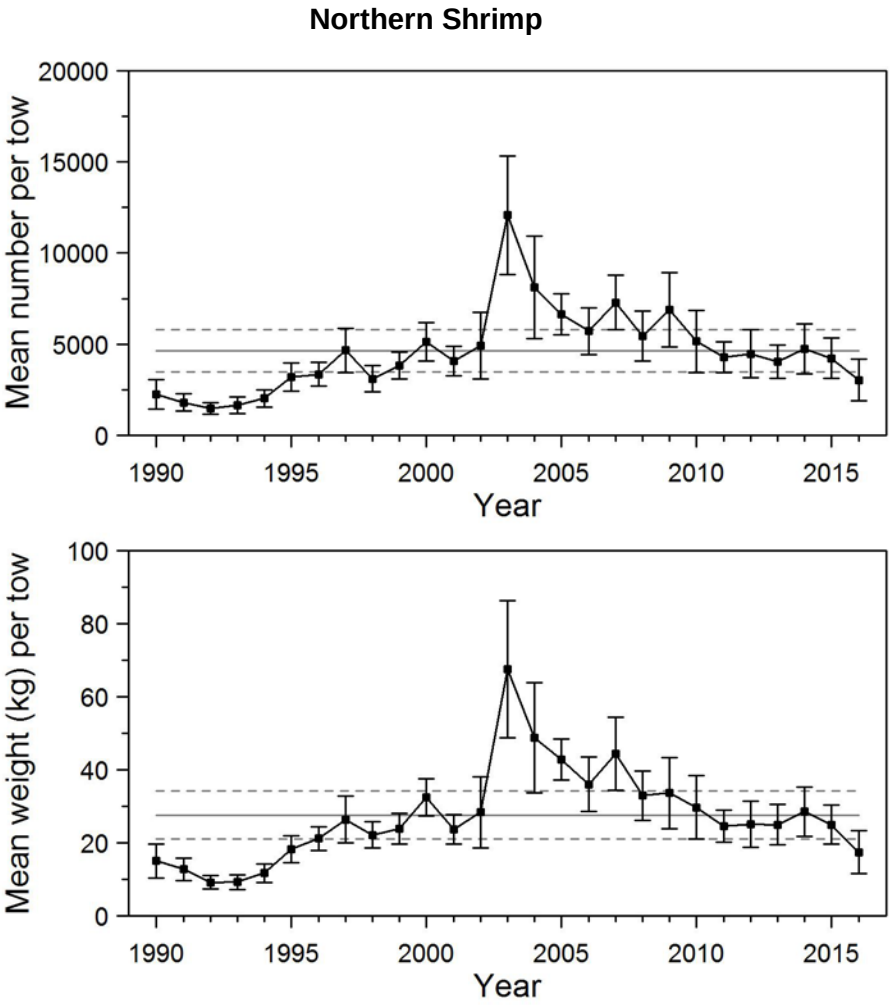



*Figure 37. Mean numbers and mean weights per 15 minutes tow observed during the survey for Northern Shrimp in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

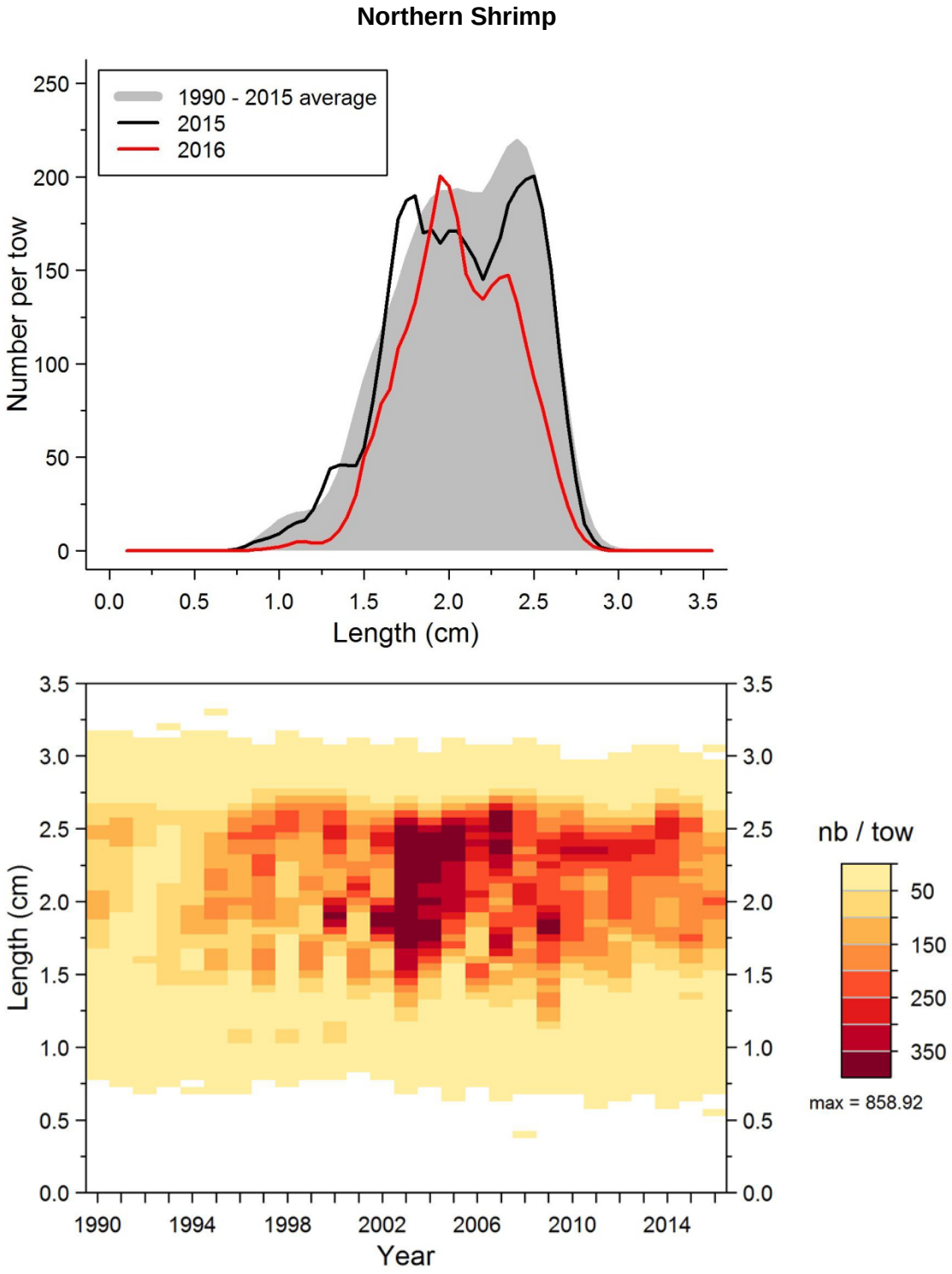



*Figure 38. Carapace length frequency distributions (mean number per 15 minutes tow) observed during the survey for Northern Shrimp in 4RST.*

**Northern Shrimp**

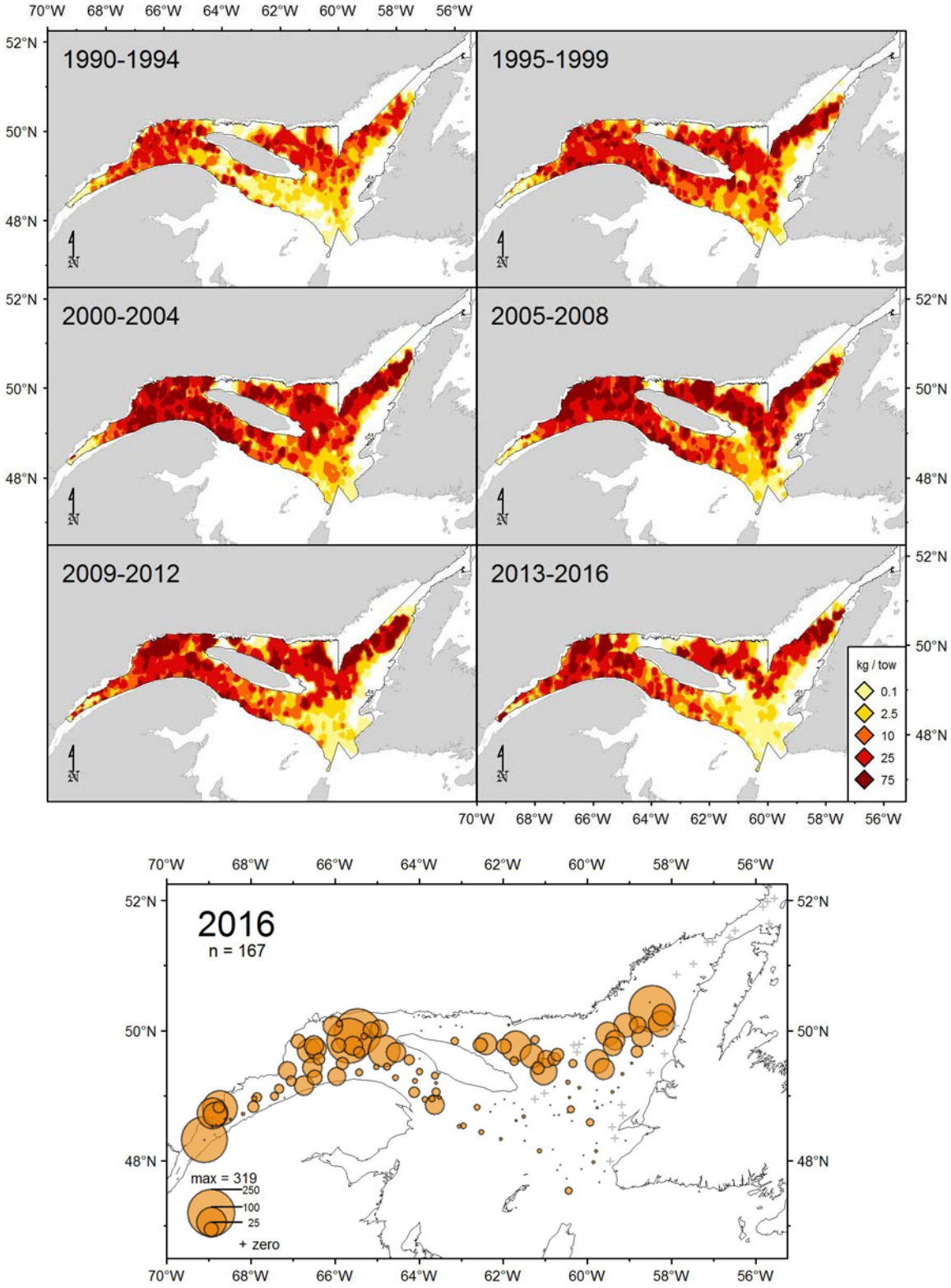



*Figure 39. Northern Shrimp catch rates (kg/15 minutes tow) distribution.*

**Sea pen (*Anthoptilum grandiflorum*)**

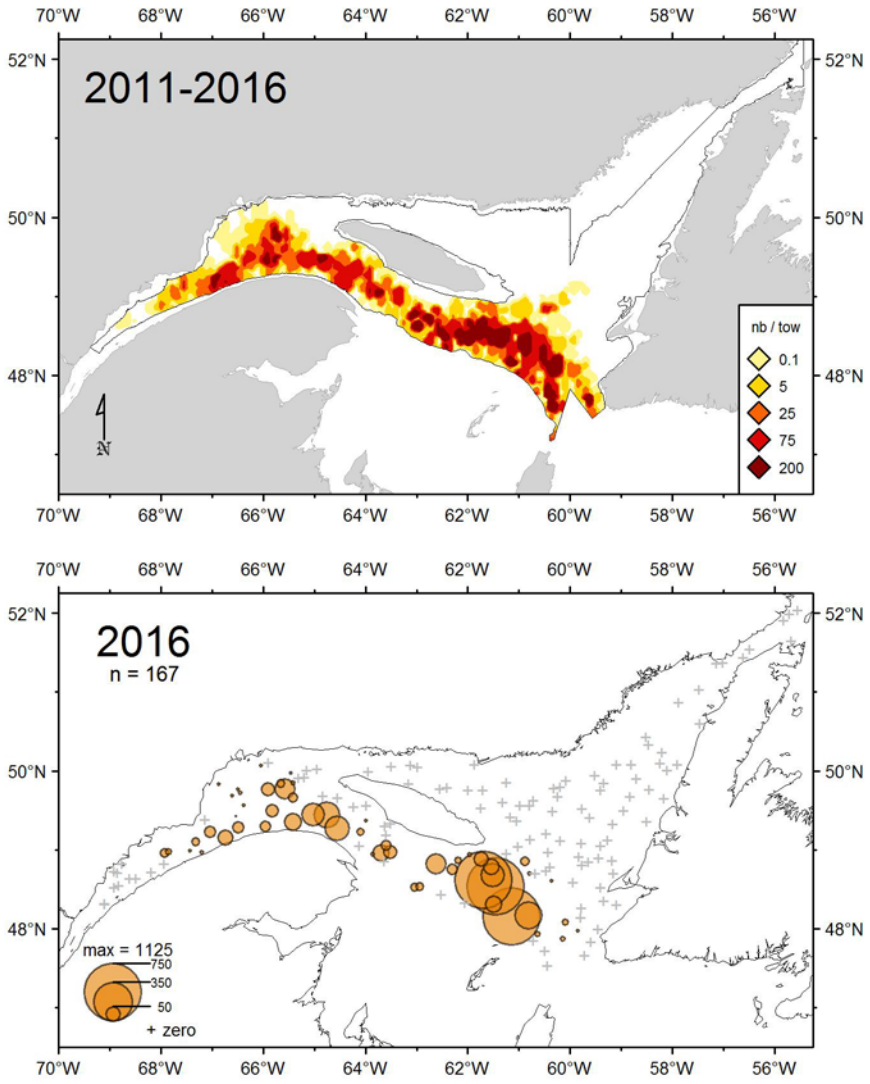



*Figure 40. Sea pen Anthoptilum grandiflorum catch rates (nb/15 minutes tow) distribution.*

**Sea pen (*Halipteris finmarchica*)**

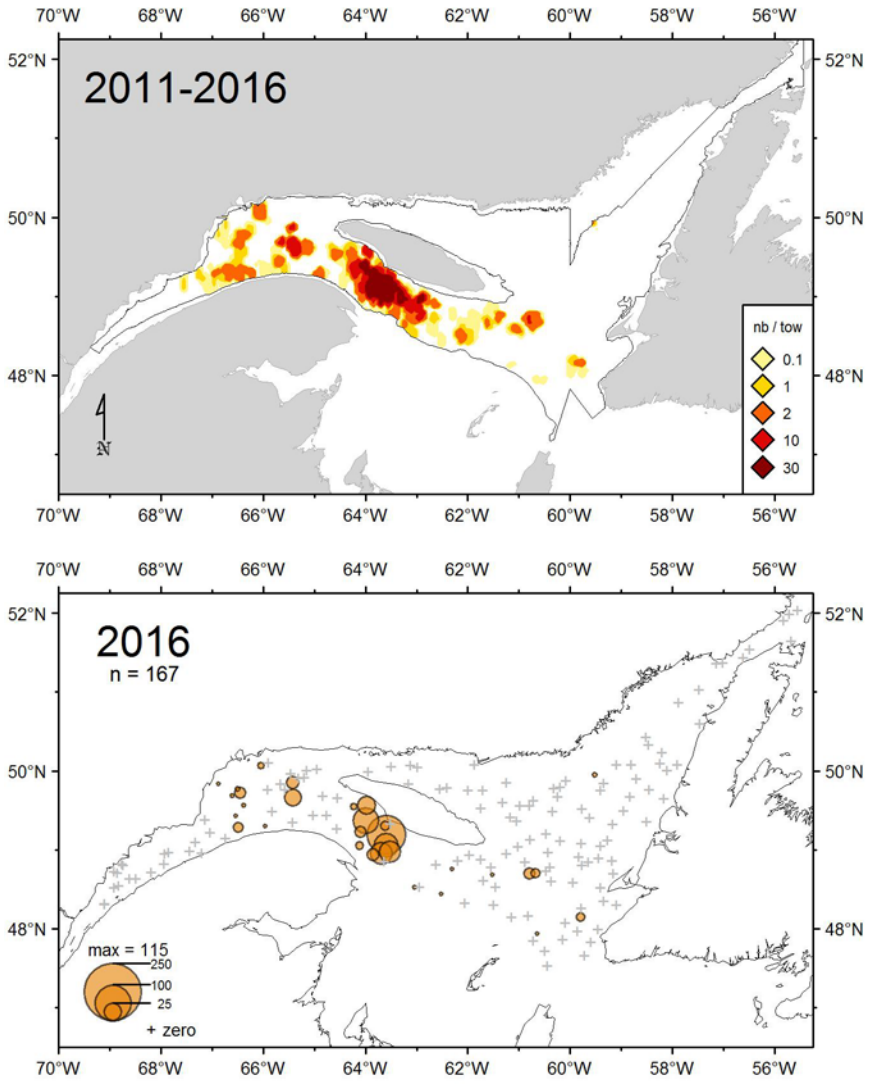



*Figure 41. Sea pen Halipteris finmarchica catch rates (nb/15 minutes tow) distribution.*

**Sea pen (*Pennatula aculeata*)**

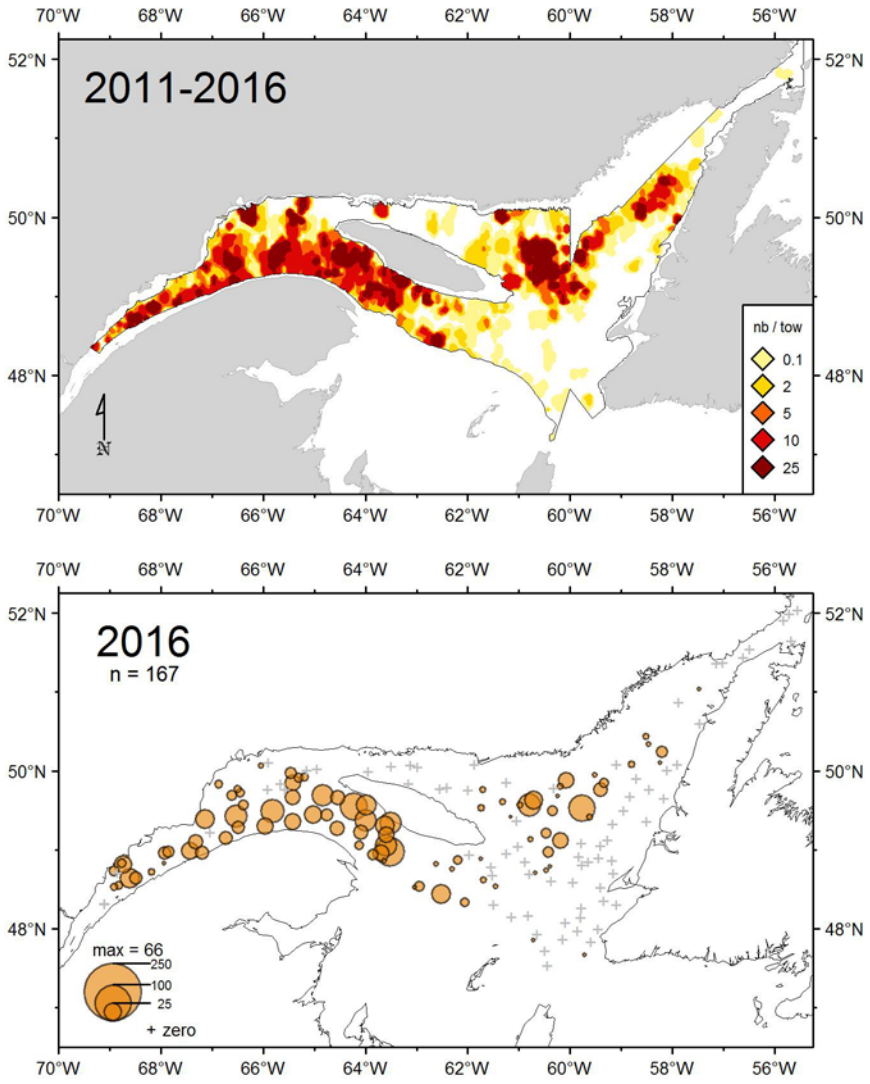



*Figure 42. Sea pen Pennatula aculeata catch rates (nb/15 minutes tow) distribution.*

**Sea pen (*Pennatula grandis*)**

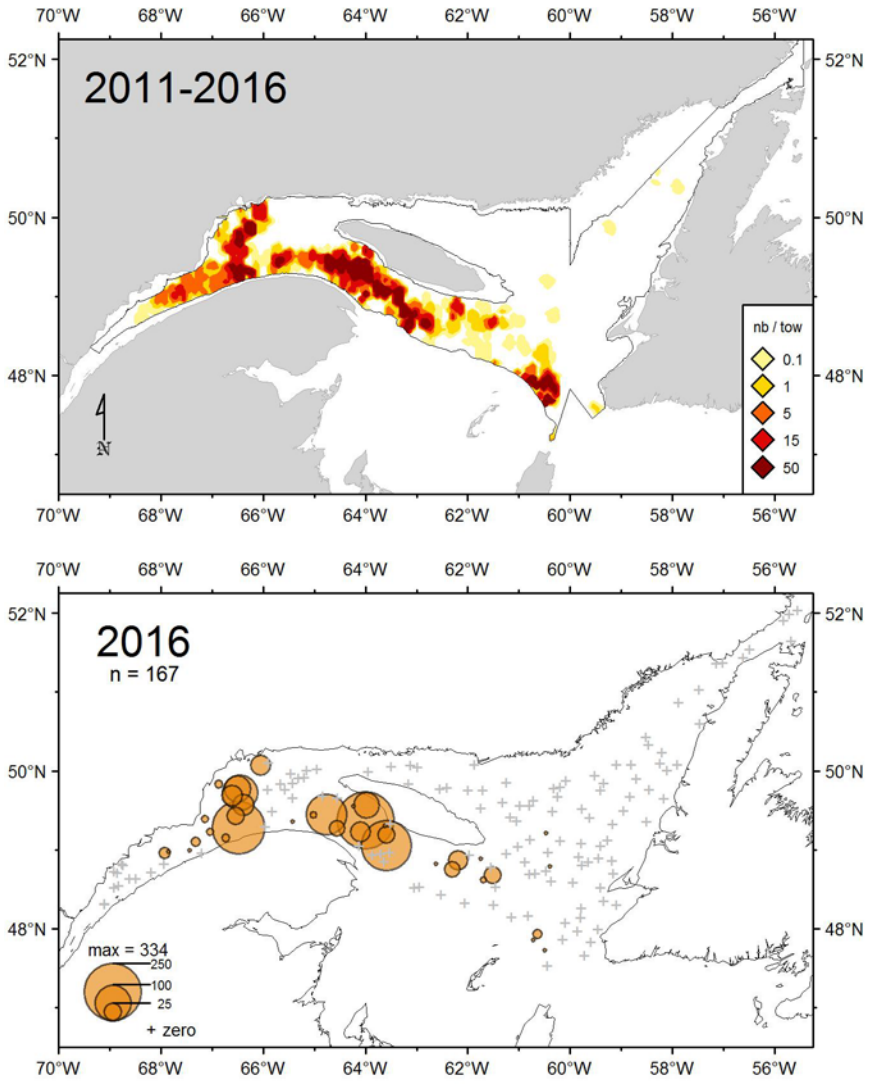



*Figure 43. Sea pen Pennatula grandis catch rates (nb/15 minutes tow) distribution.*

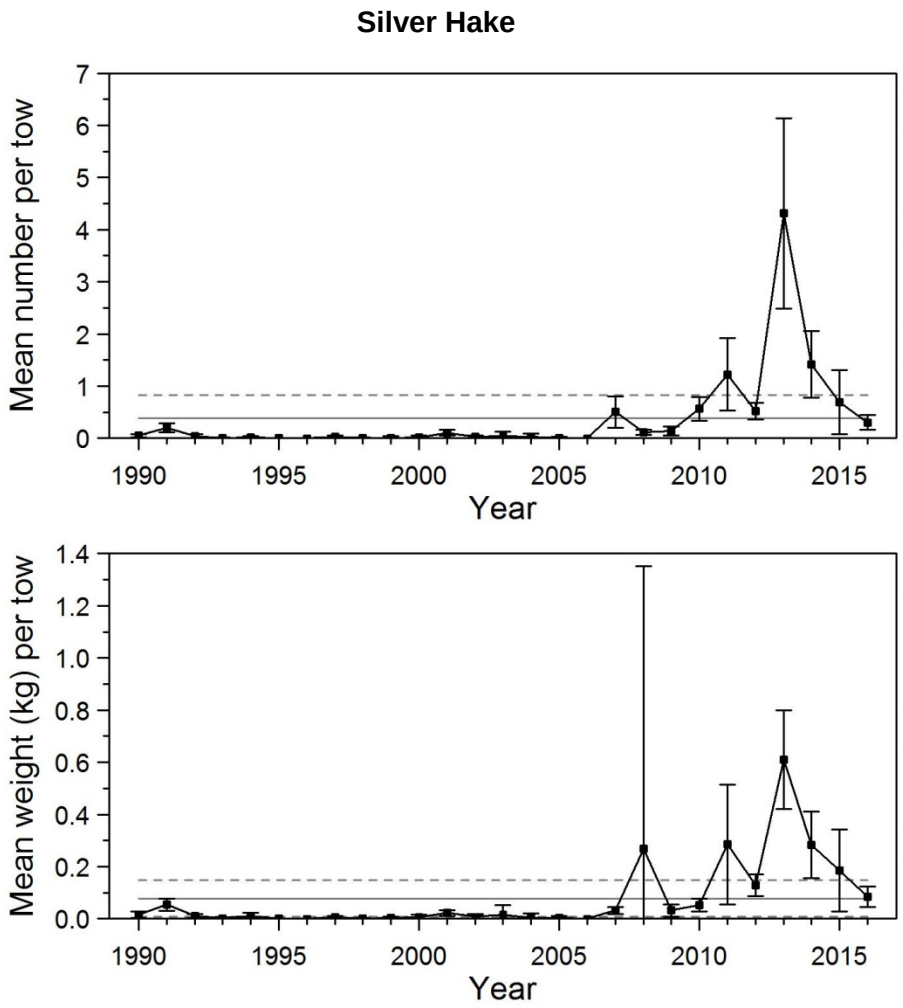



*Figure 44. Mean numbers and mean weights per 15 minutes tow observed during the survey for Silver Hake in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

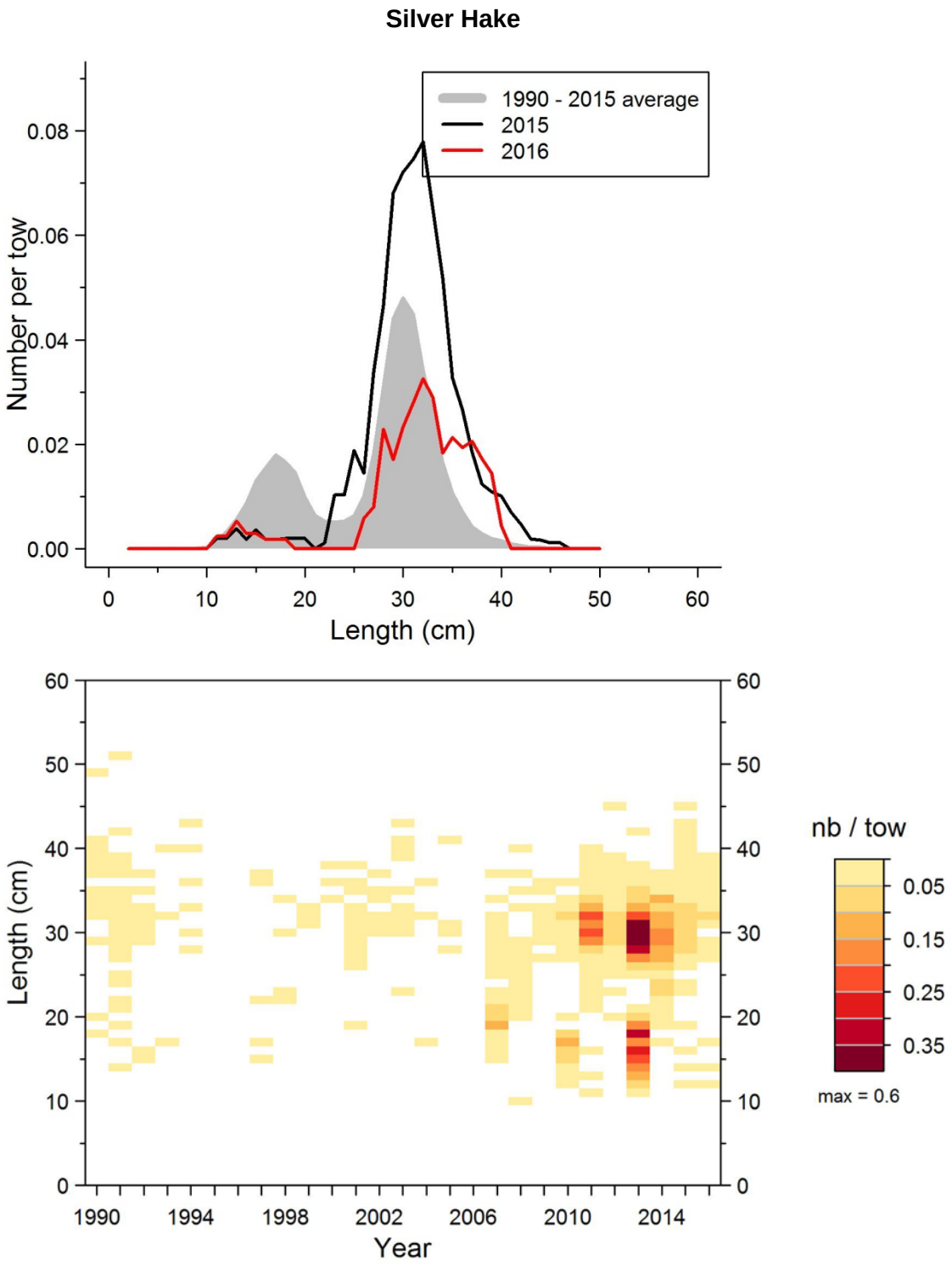



*Figure 45. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Silver Hake in 4RST.*

**Silver Hake**

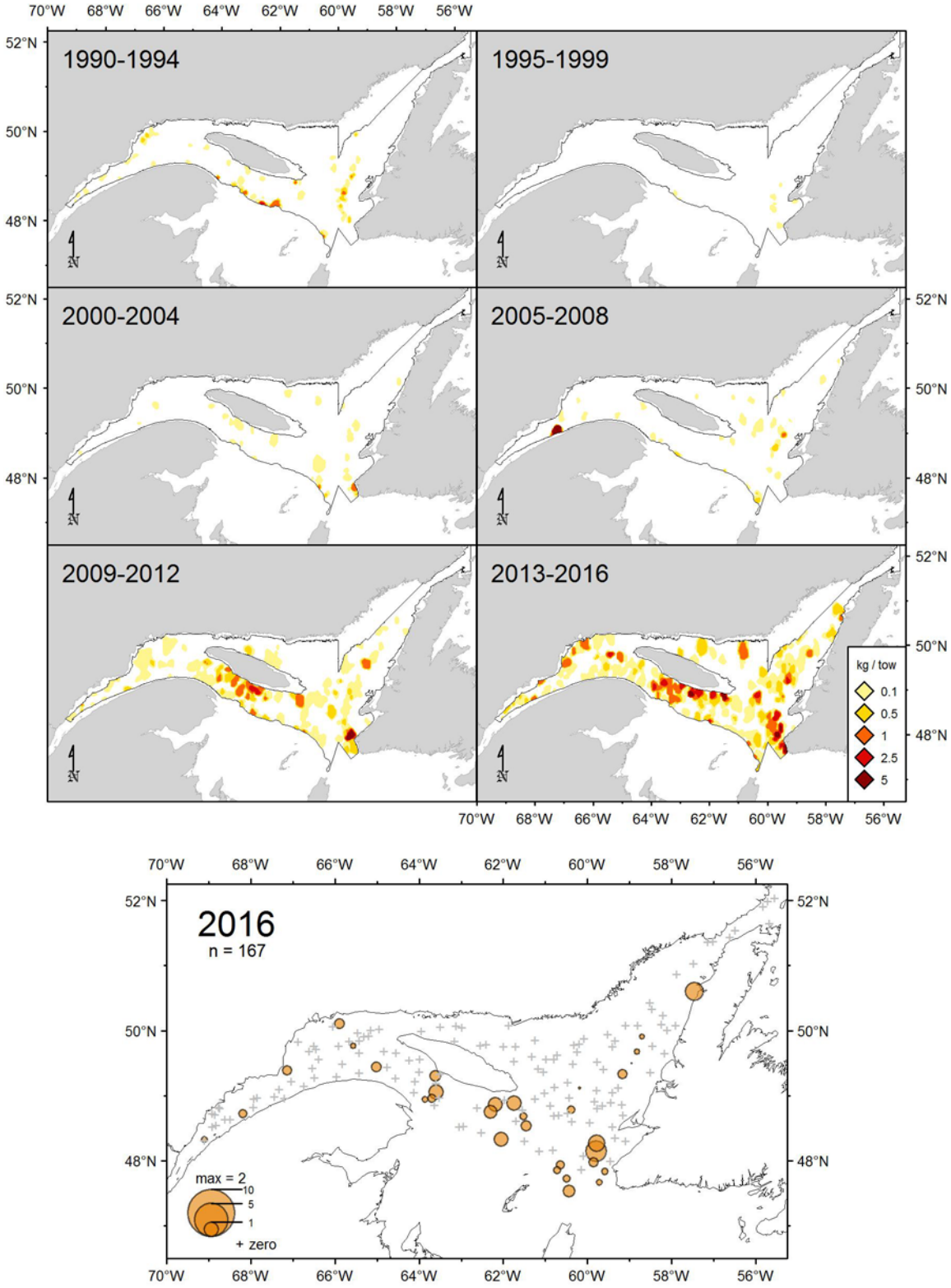



*Figure 46. Silver Hake catch rates (kg/15 minutes tow) distribution.*

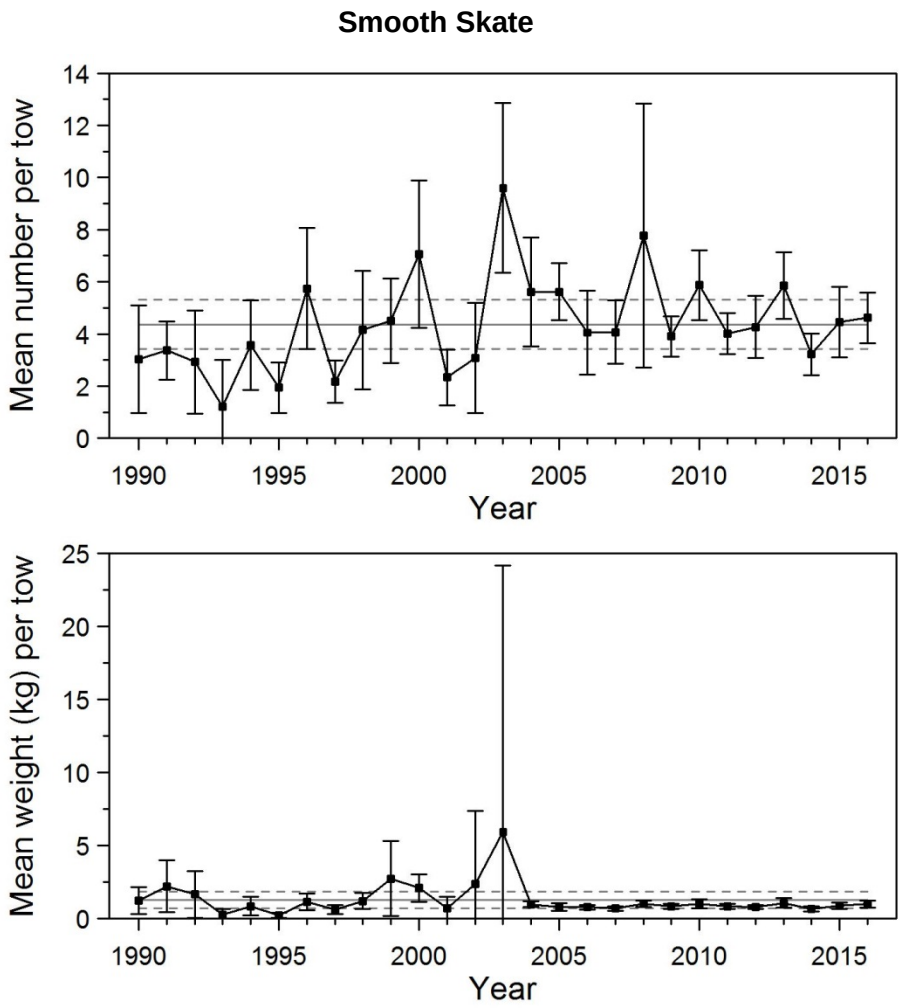



*Figure 47. Mean numbers and mean weights per 15 minutes tow observed during the survey for Smooth Skate in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

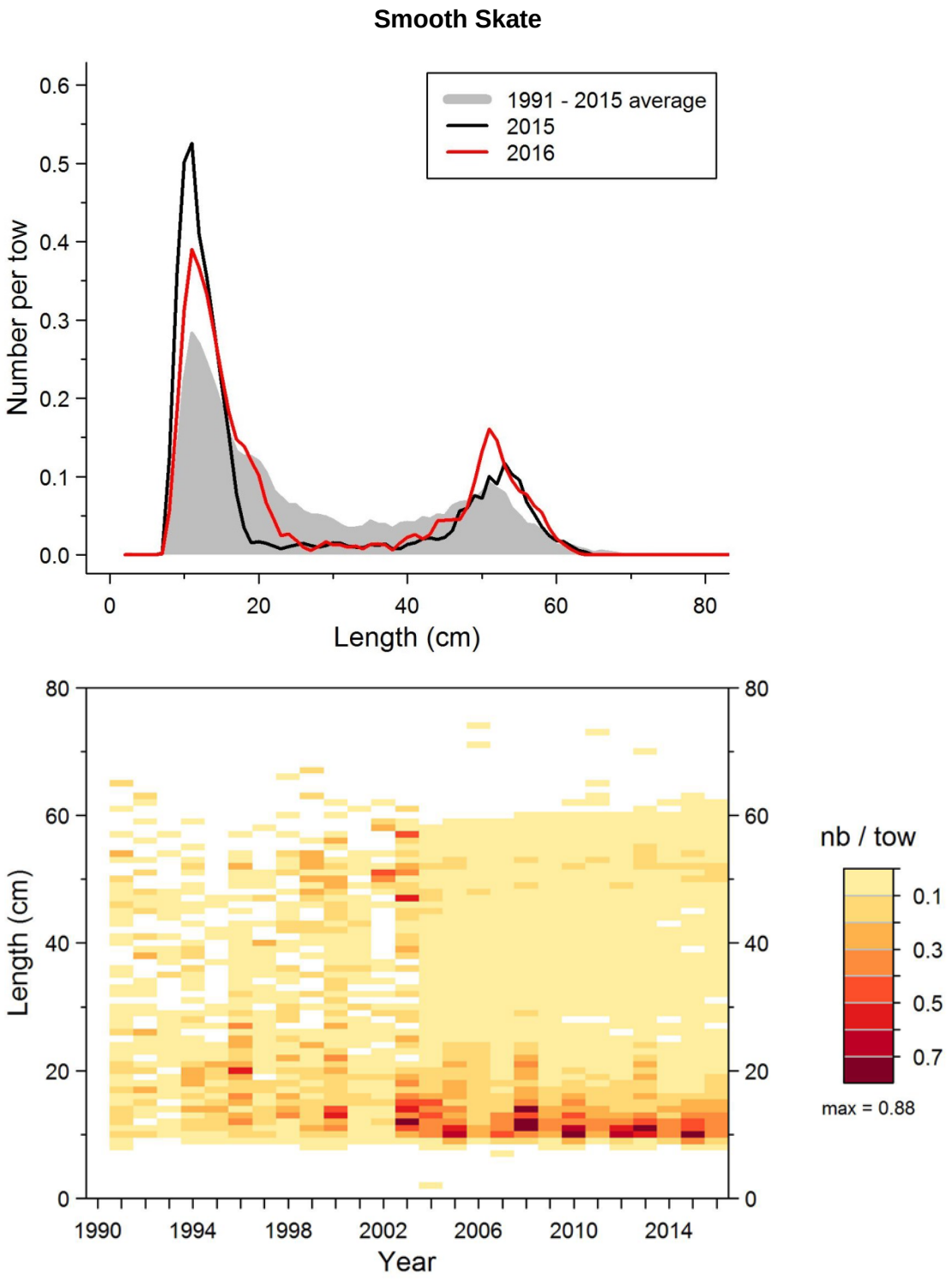



*Figure 48. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Smooth Skate in 4RST.*

**Smooth Skate**

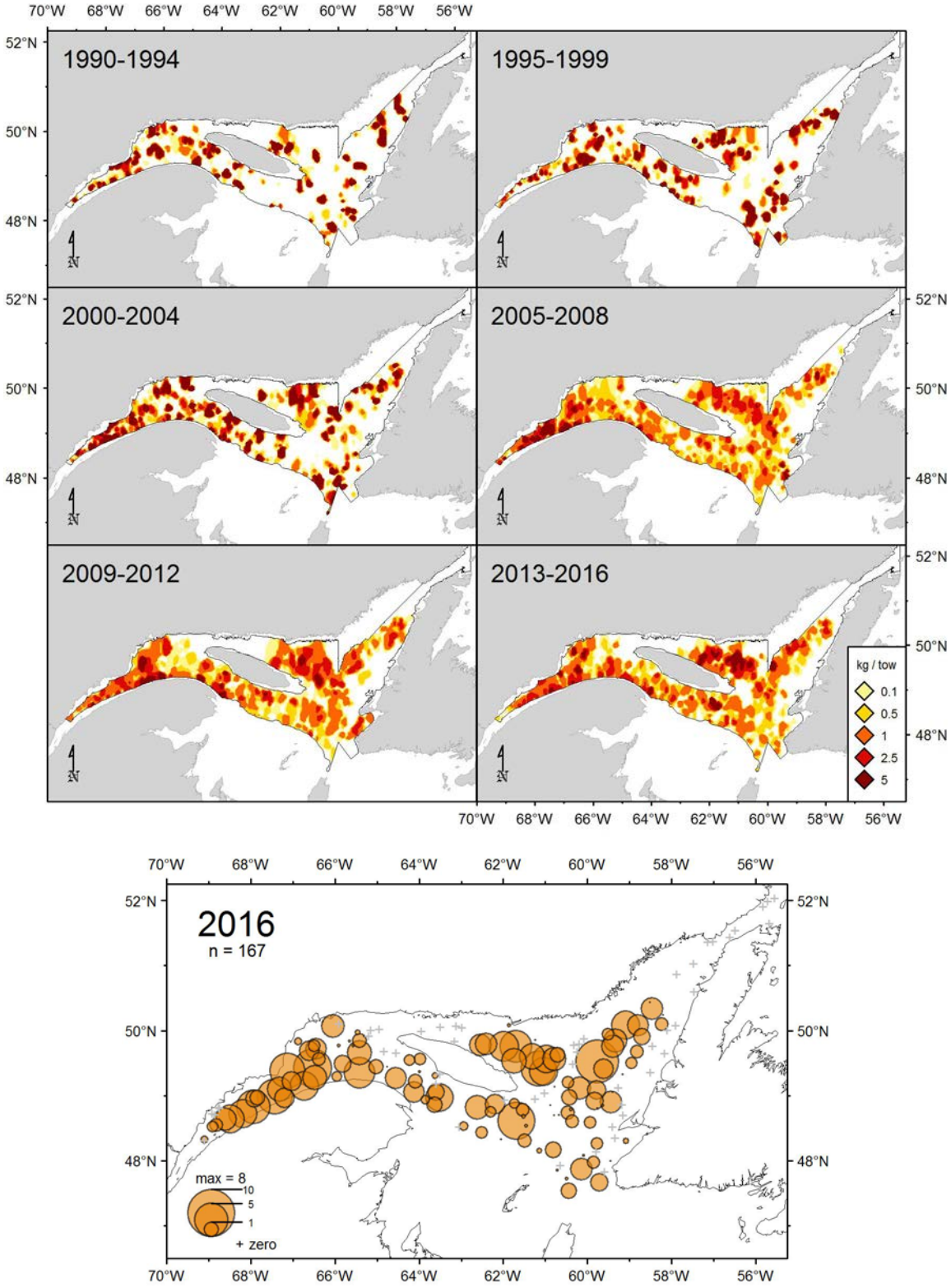



*Figure 49. Smooth Skate catch rates (kg/15 minutes tow) distribution.*

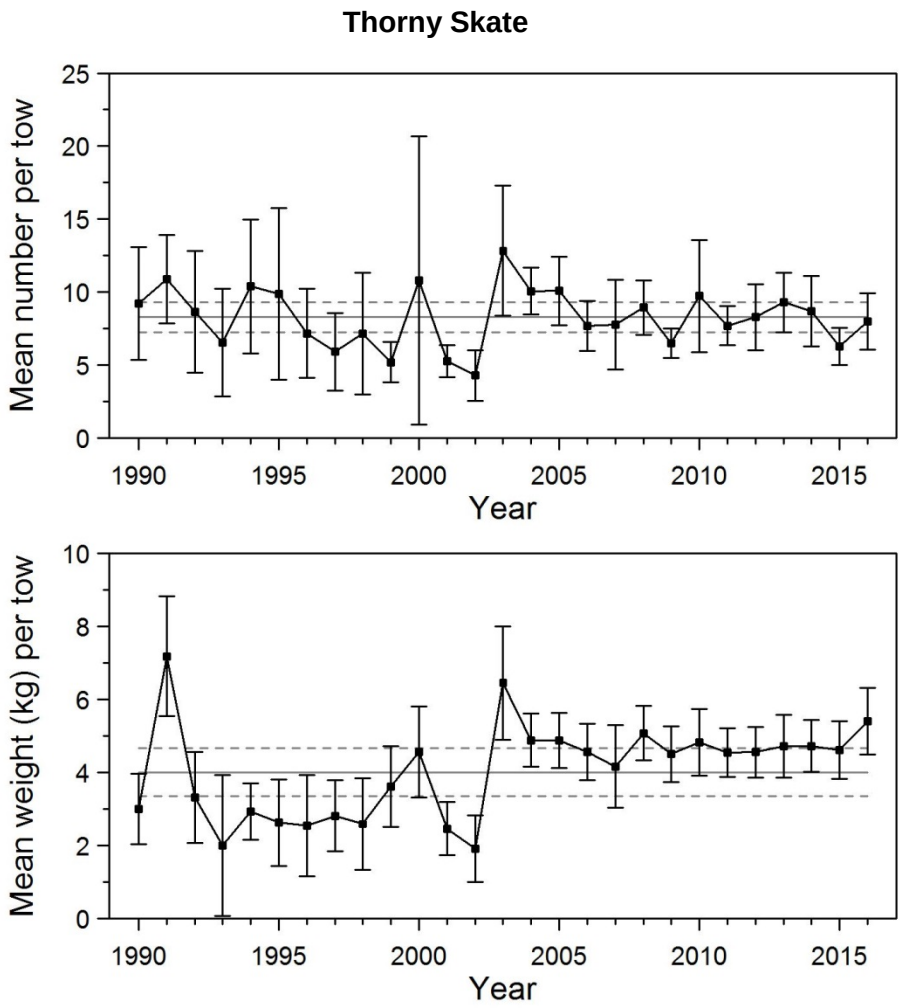



*Figure 50. Mean numbers and mean weights per 15 minutes tow observed during the survey for Thorny Skate in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

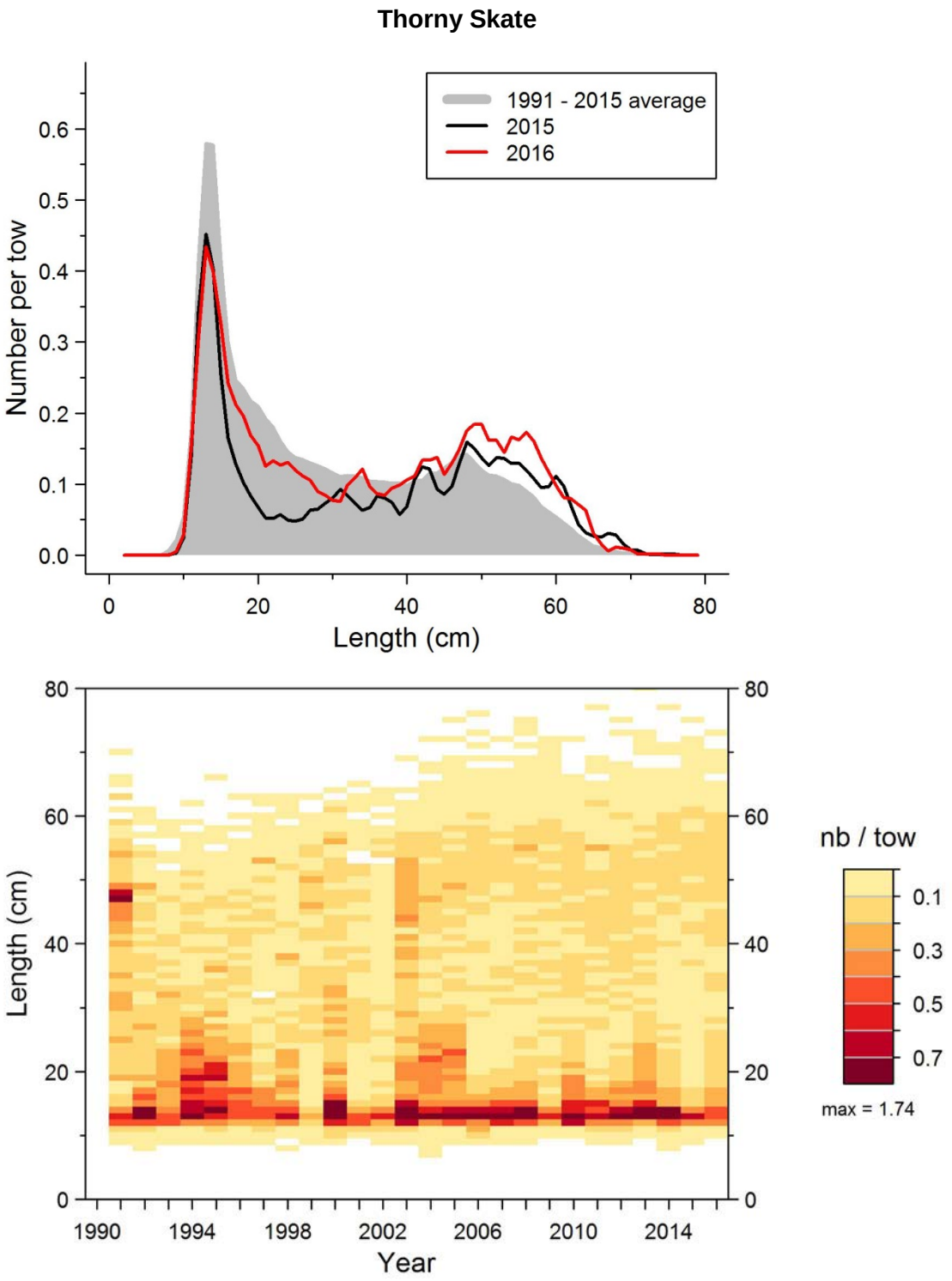



*Figure 51. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Thorny Skate in 4RST.*

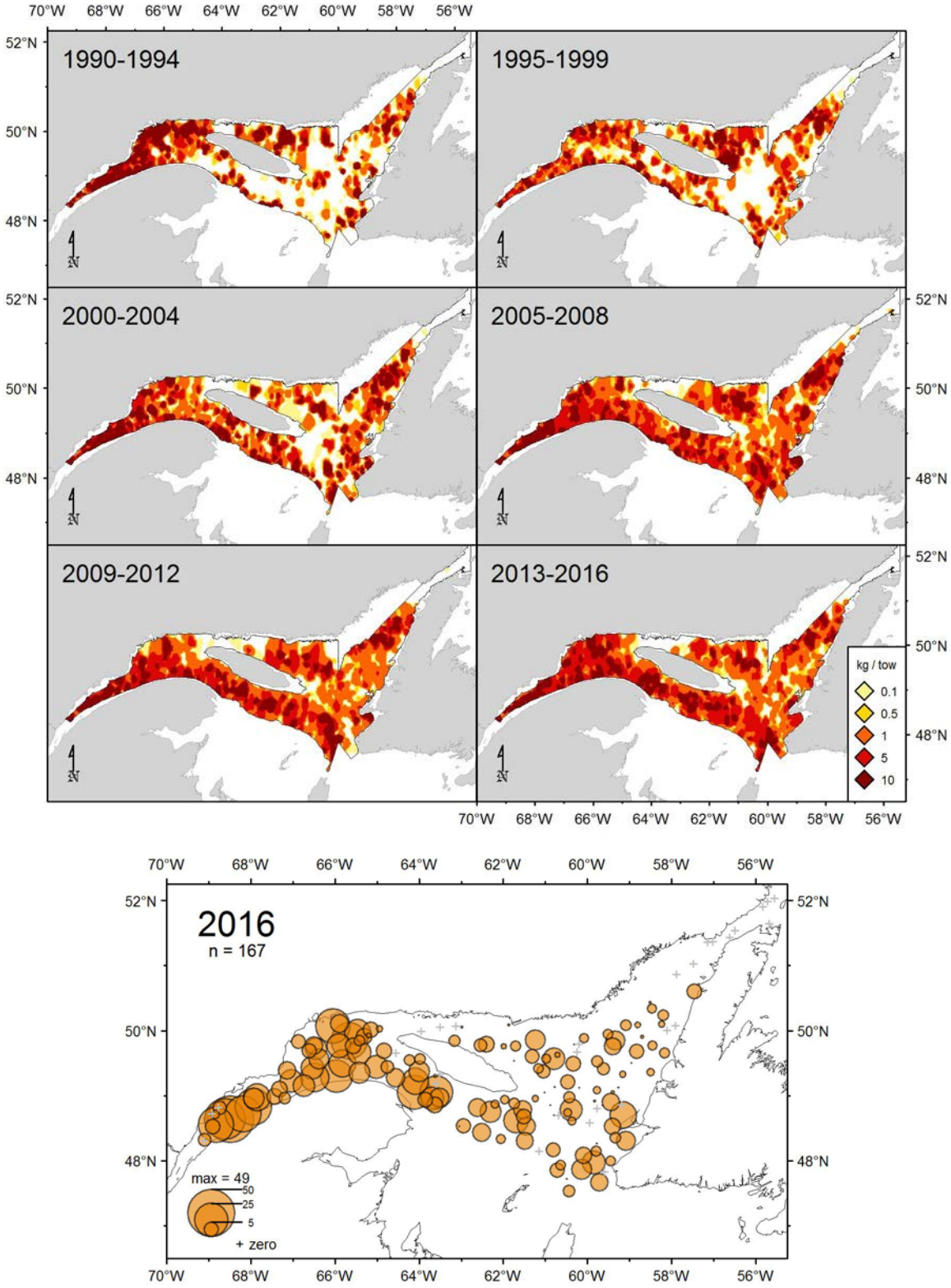



*Figure 52. Thorny Skate catch rates (kg/15 minutes tow) distribution.*

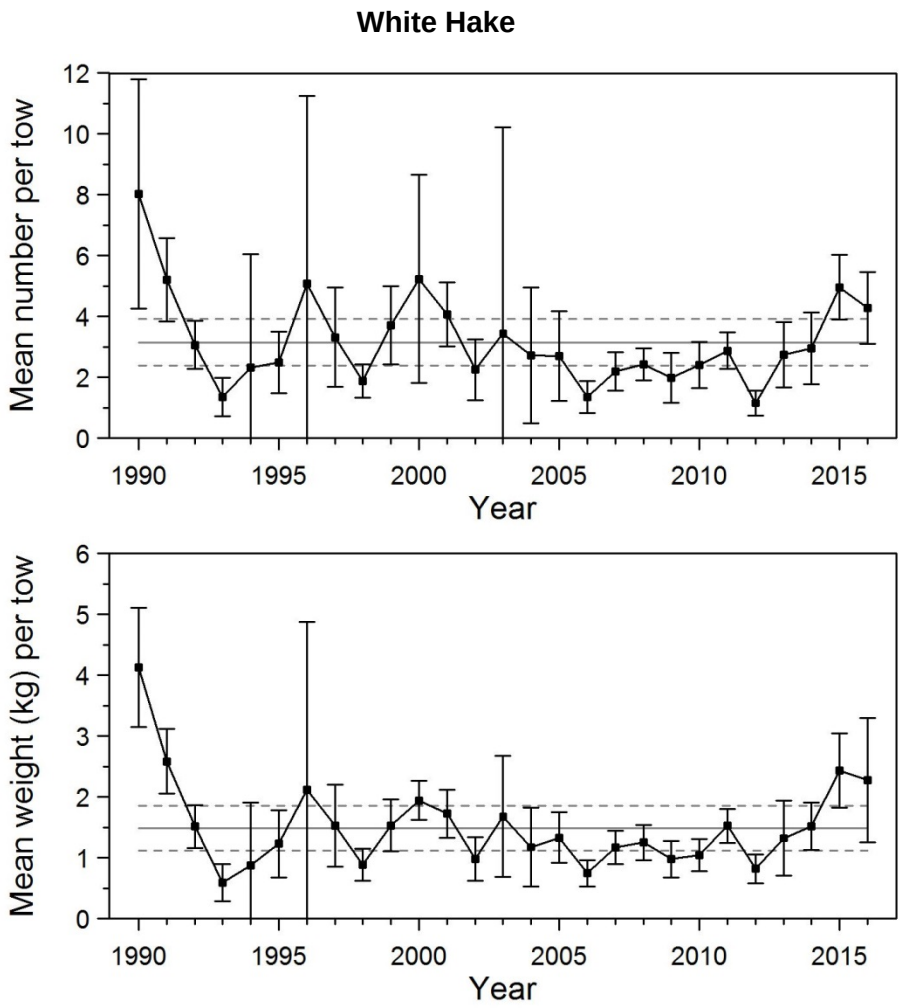



*Figure 53. Mean numbers and mean weights per 15 minutes tow observed during the survey for White Hake in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

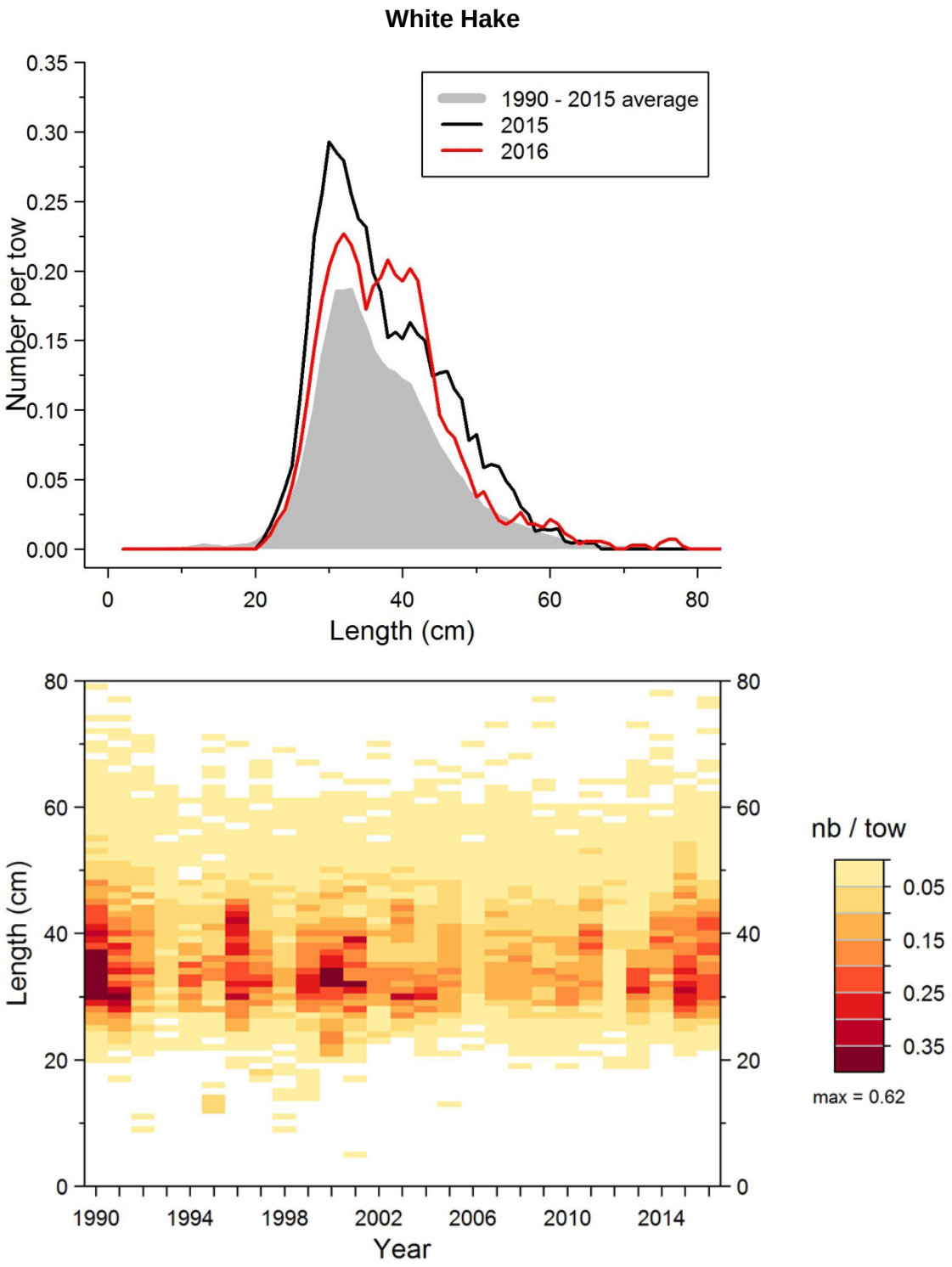



*Figure 54. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for White Hake in 4RST.*

**White Hake**

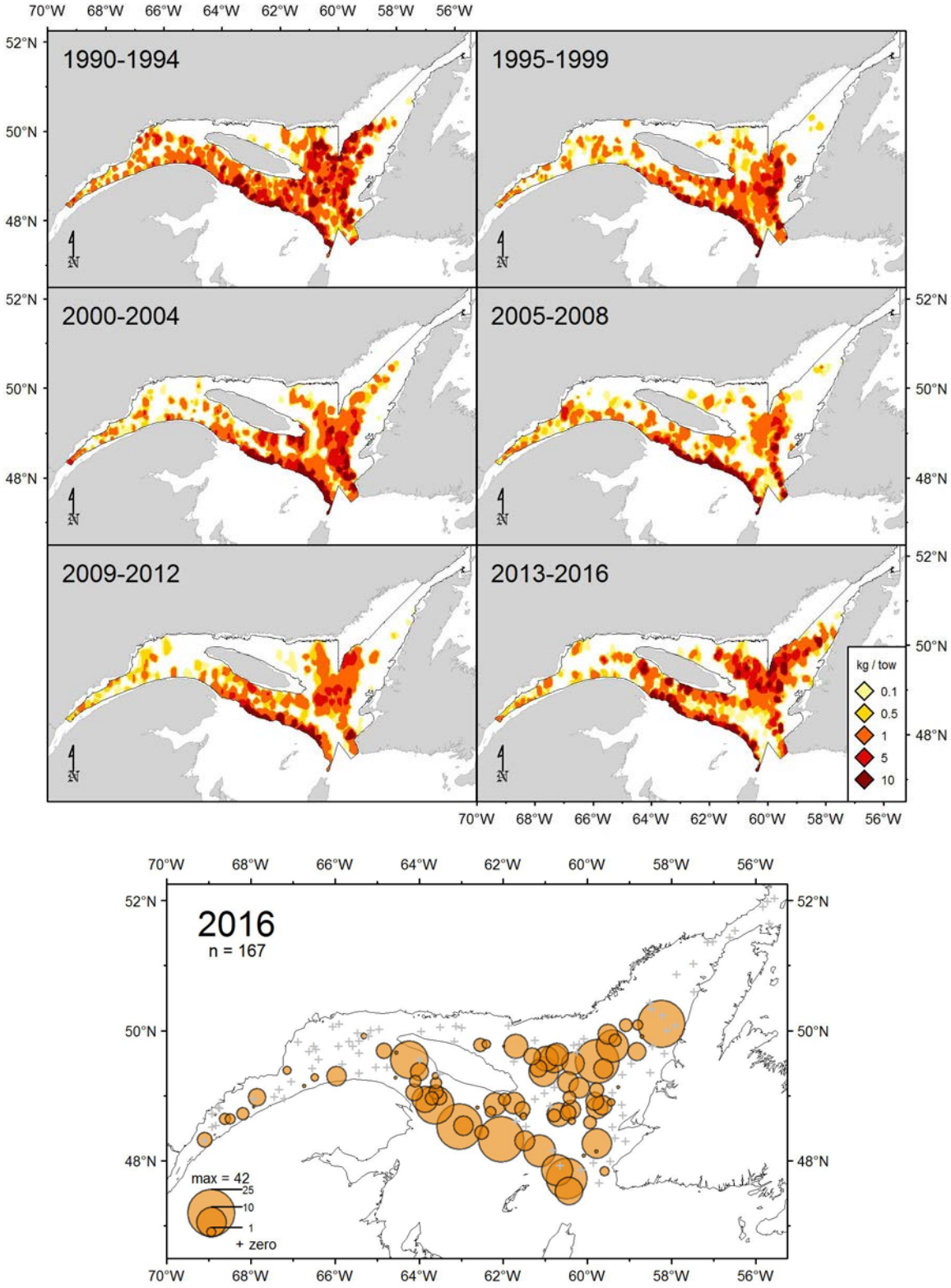



*Figure 55. White Hake catch rates (kg/15 minutes tow) distribution.*

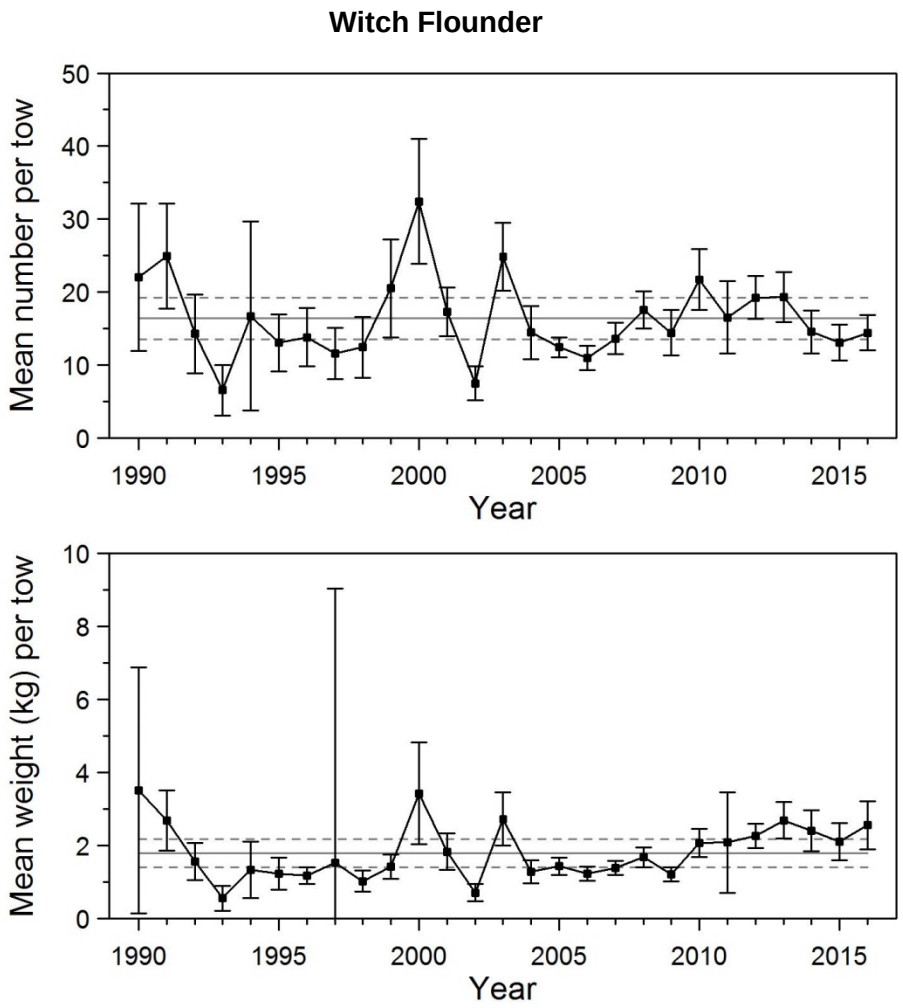



*Figure 56. Mean numbers and mean weights per 15 minutes tow observed during the survey for Witch Flounder in 4RST. Error bars indicate the 95% confidence interval and the horizontal lines indicate the mean of the 1990-2015 period (solid line) and upper and lower reference (see text) limits (dashed lines).*

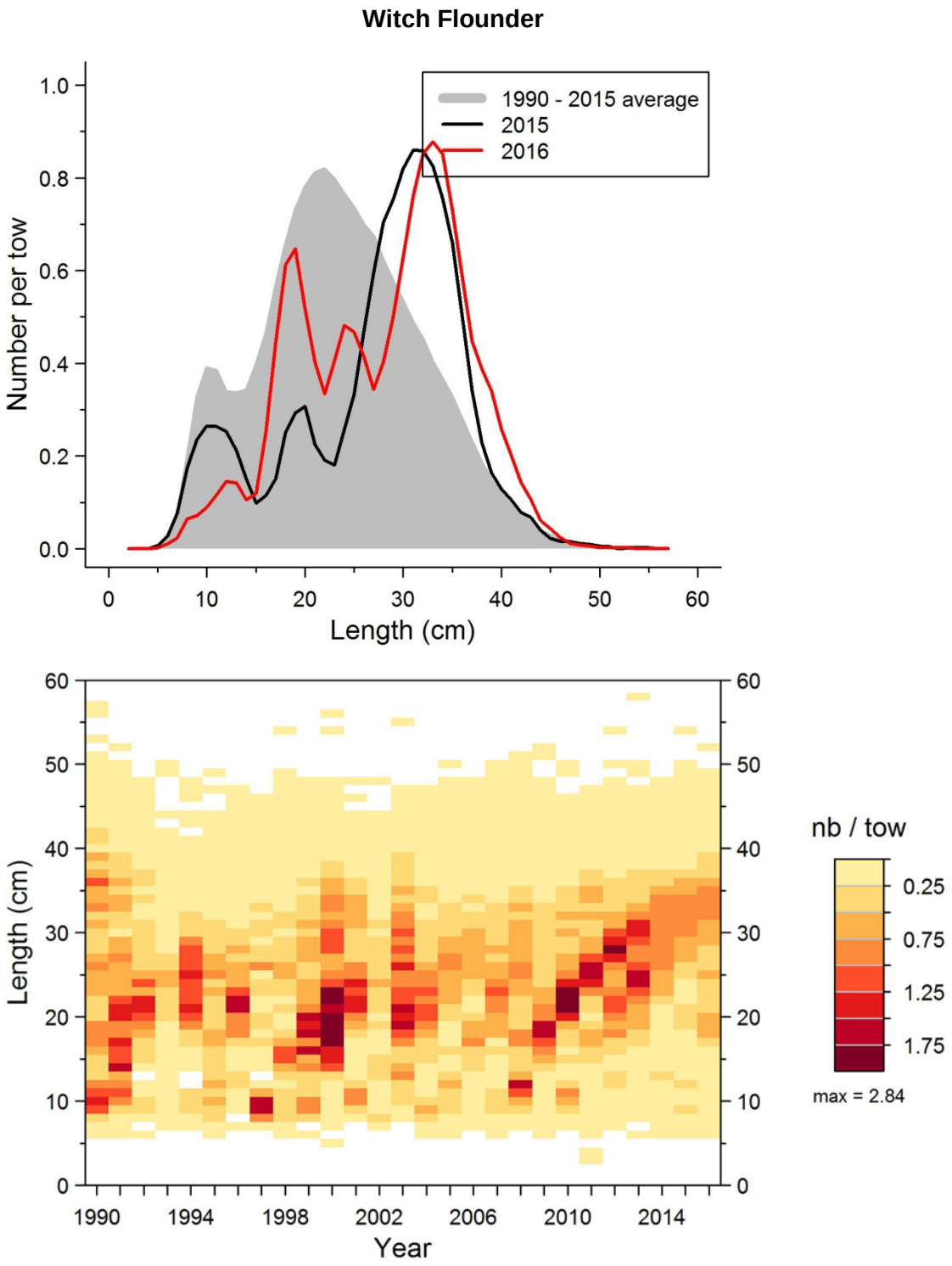



*Figure 57. Length frequency distributions (mean number per 15 minutes tow) observed during the survey for Witch Flounder in 4RST.*

**Witch Flounder**

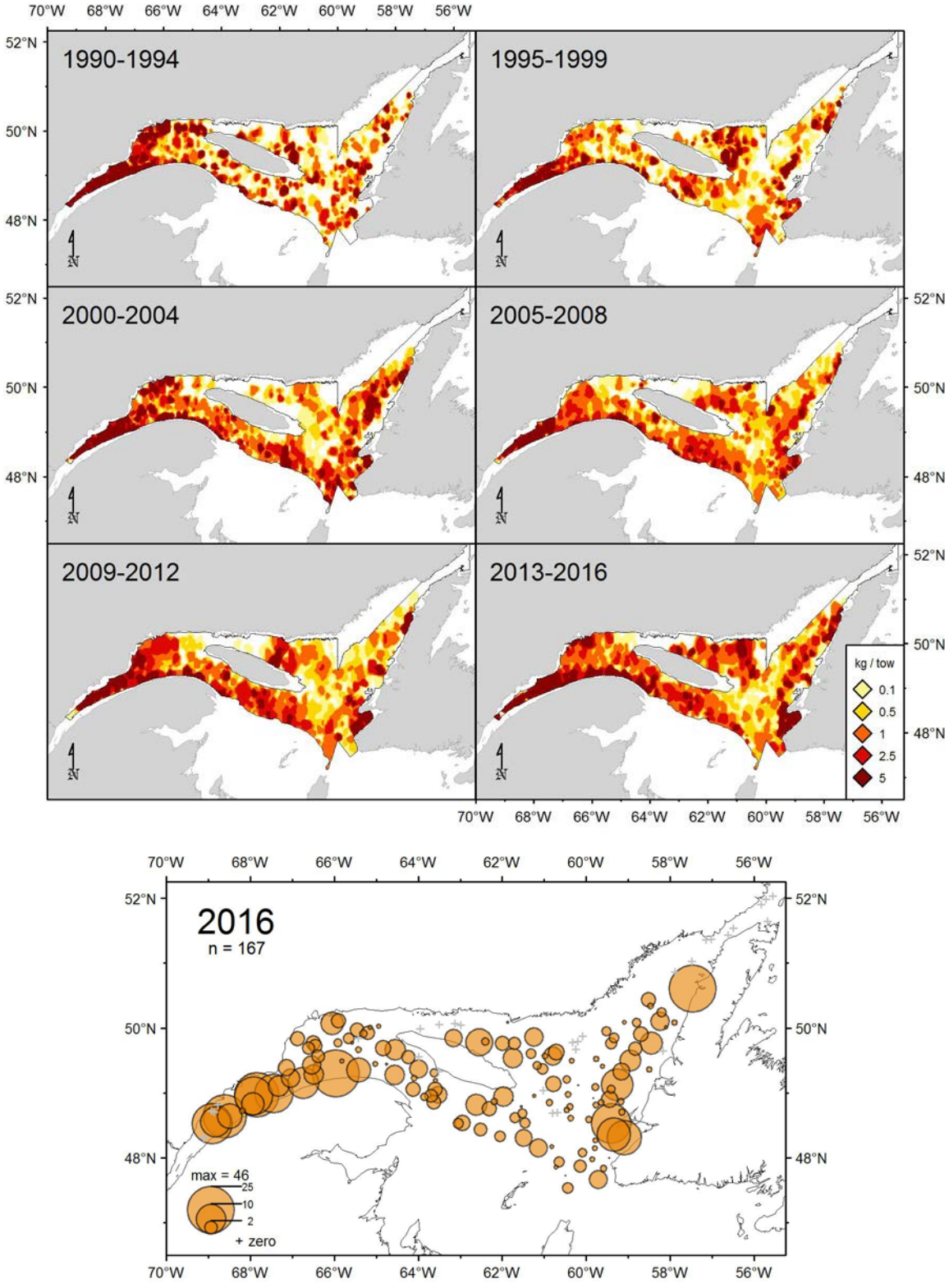



*Figure 58. Witch Flounder catch rates (kg/15 minutes tow) distribution.*

**Wolffish, Atlantic Wolffish**

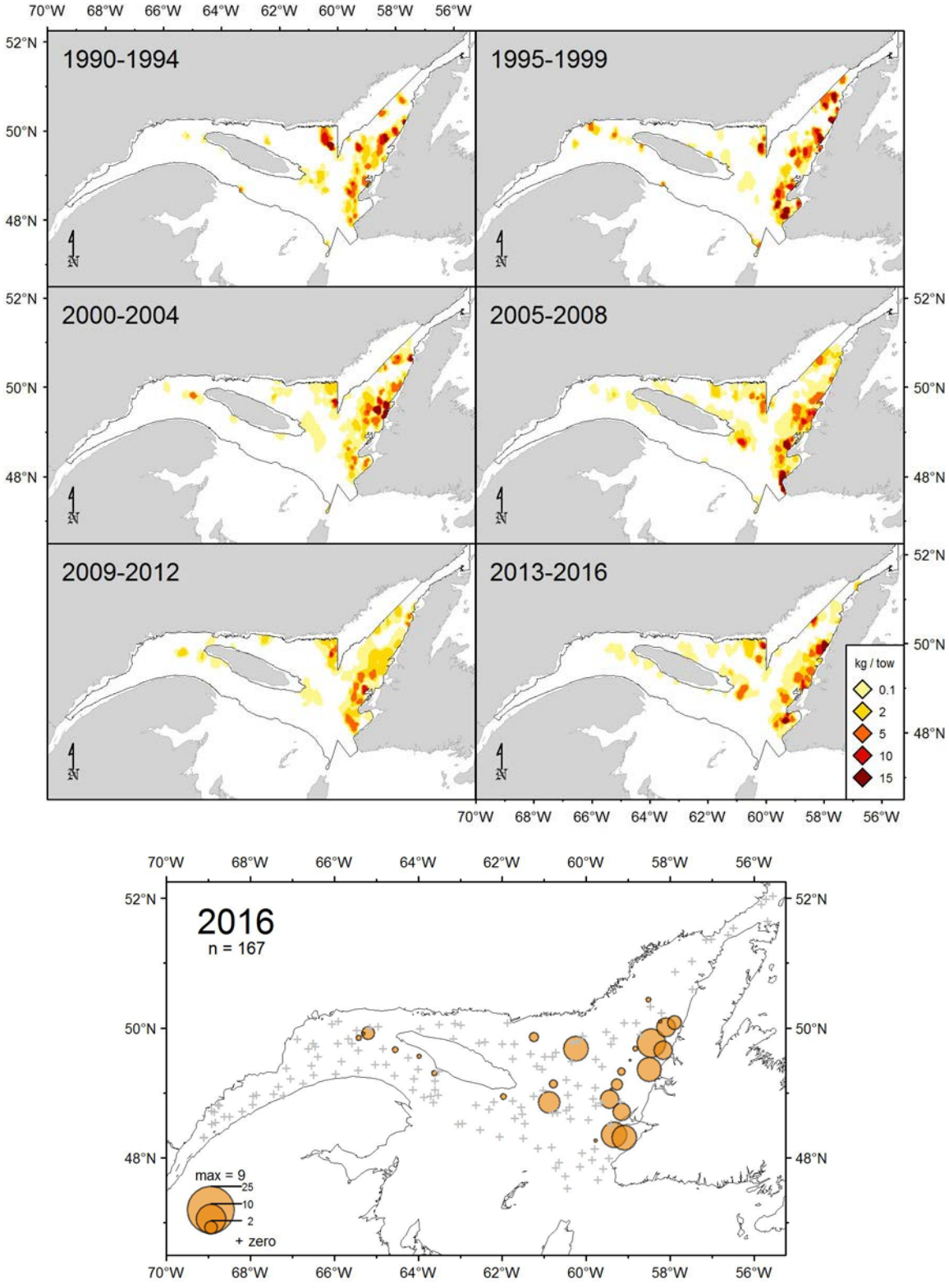



*Figure 59. Atlantic Wolffish catch rates (kg/15 minutes tow) distribution.*

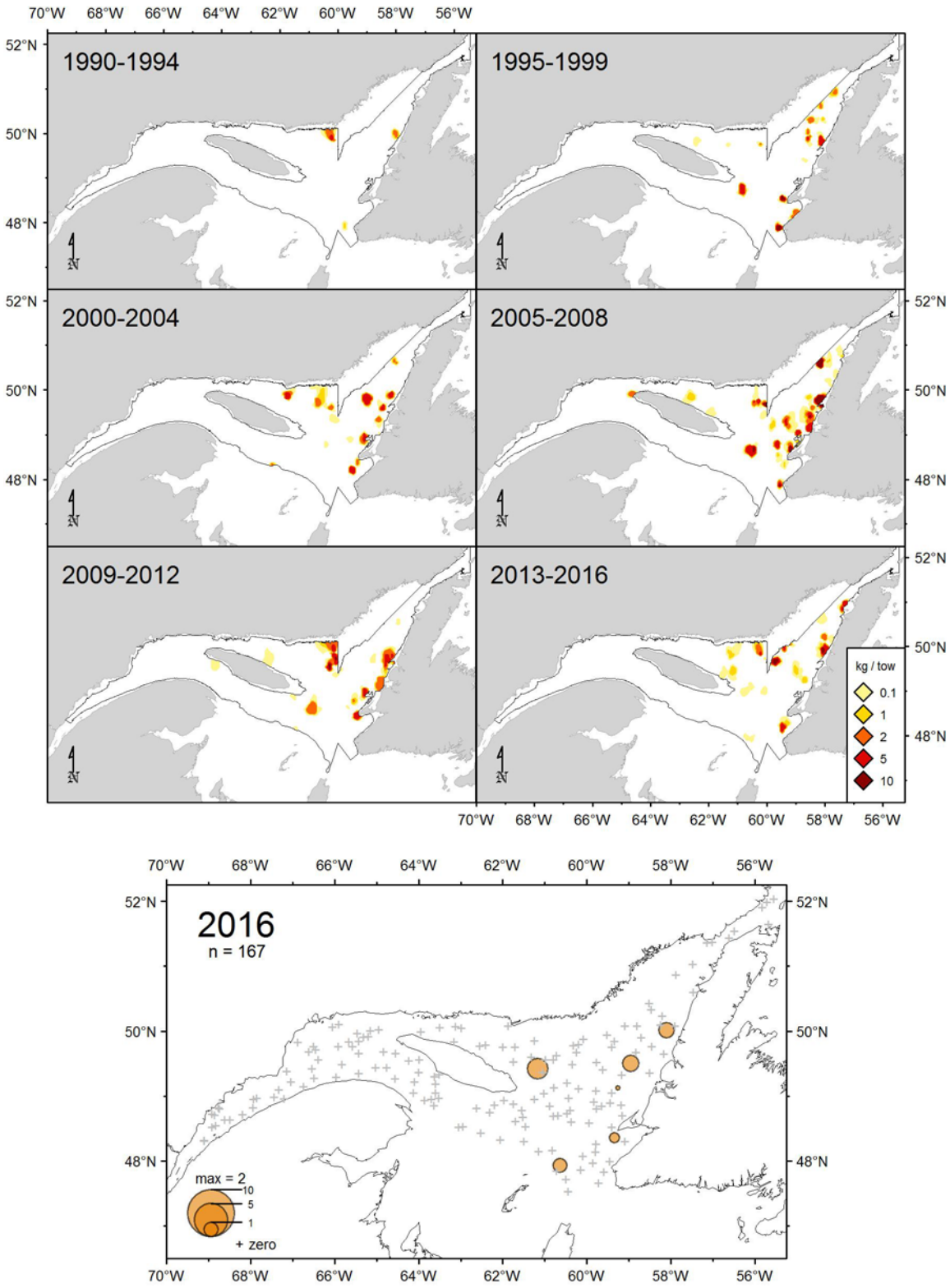



*Figure 60. Spotted Wolffish catch rates (kg/15 minutes tow) distribution.*

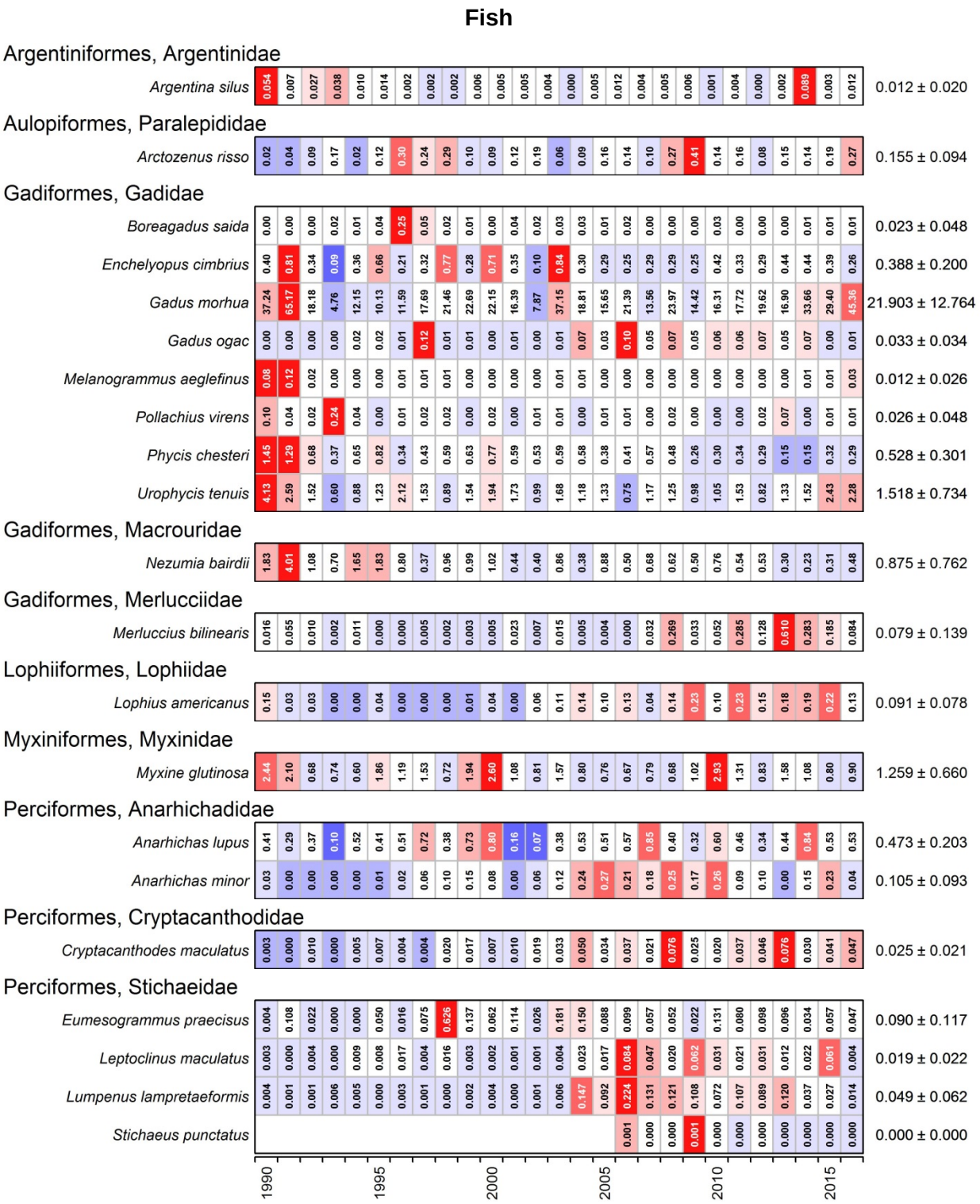



*Figure 61. Average weight per 15-minute tow during the fish taxa survey. The colour code represents the anomaly value of the difference between the CPUE in a given year and the average CPUE in the time series divided by the standard deviation of this average for each taxon.*

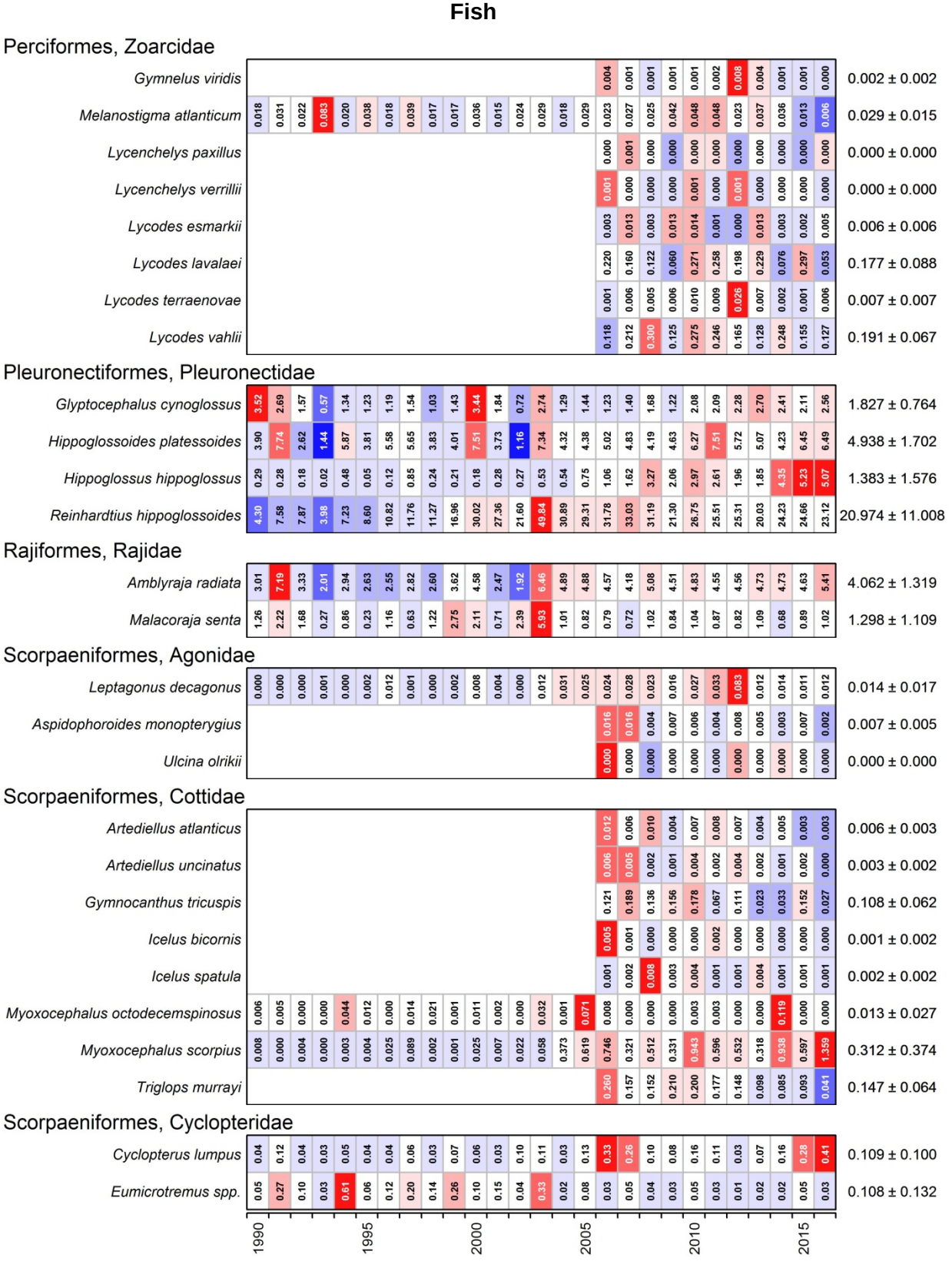



*Figure 61. Continued.*

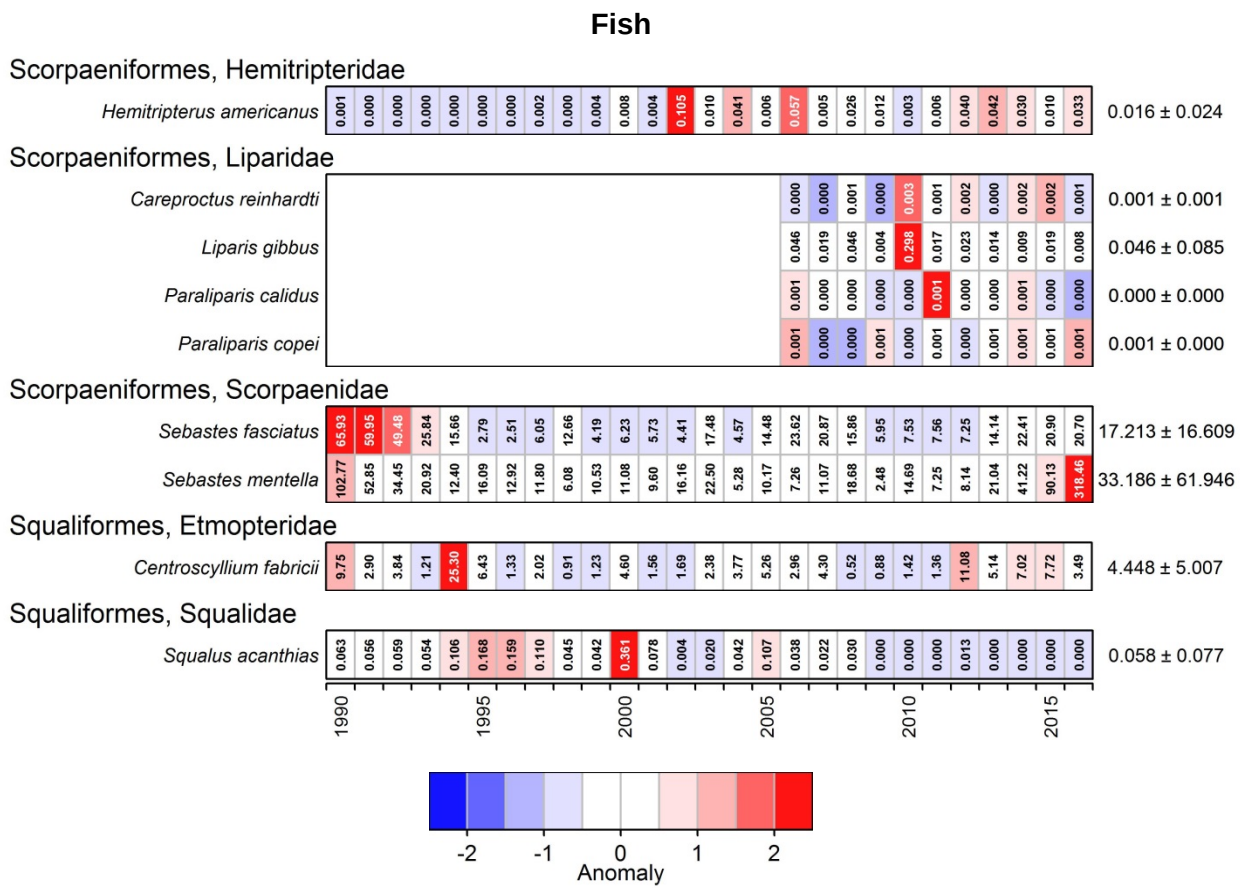



*Figure 61. Continued.*

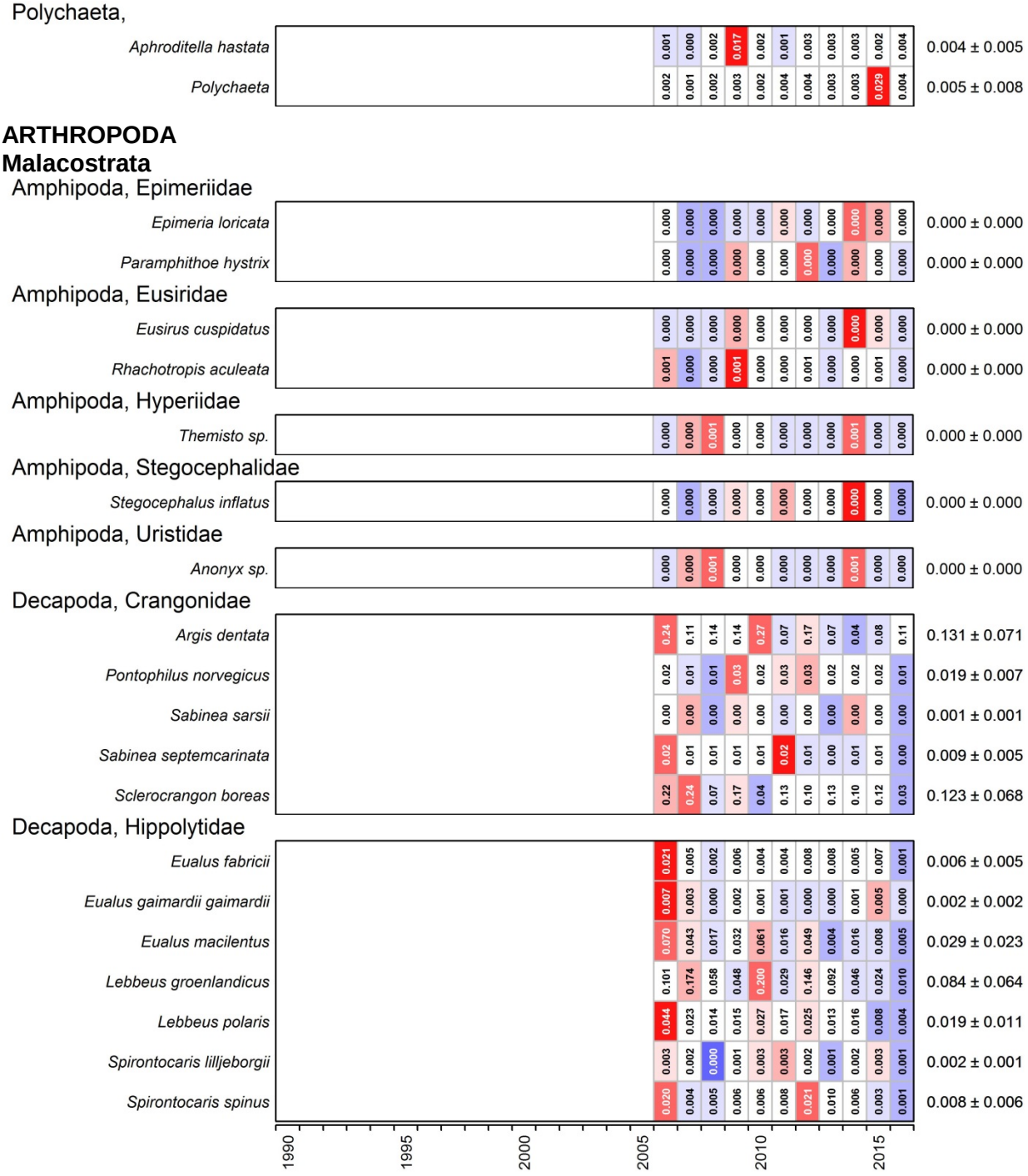



*Figure 62. Average weight per 15-minute tow during the invertebrates. The colour code represents the anomaly value of the difference between the CPUE in a given year and the average CPUE in the time series divided by the standard deviation of this average for each taxon.*

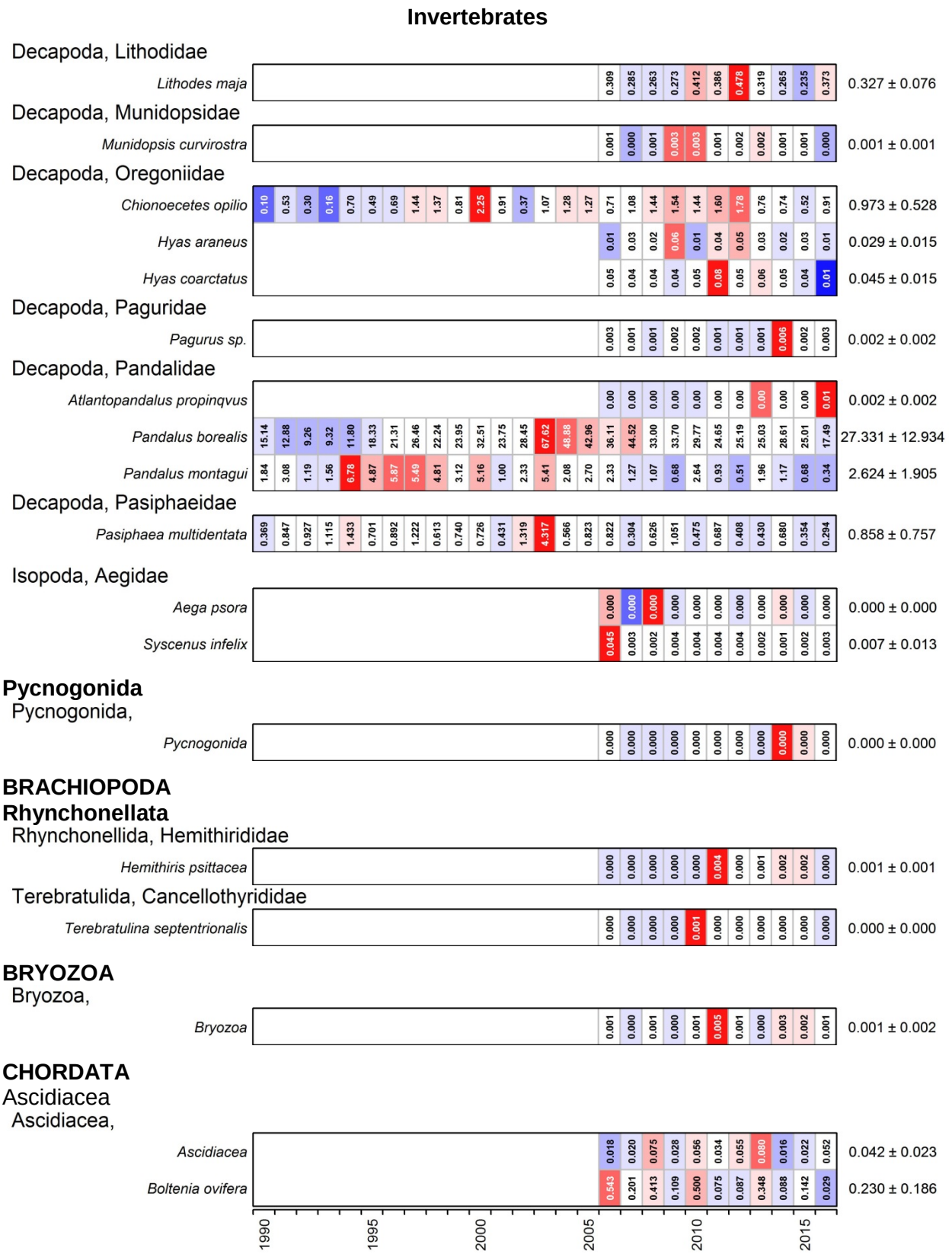



*Figure 62. Continued.*

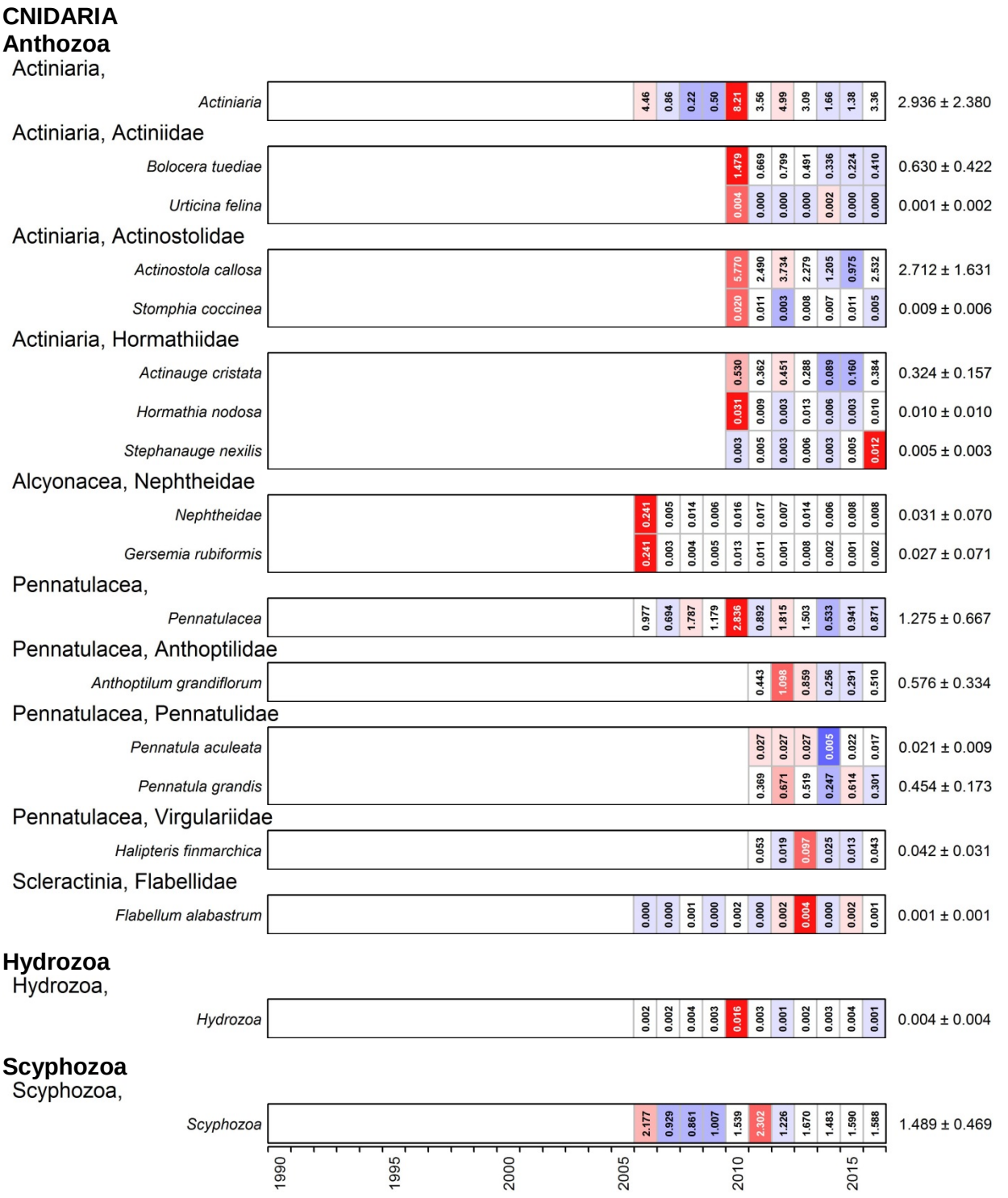



*Figure 62. Continued.*

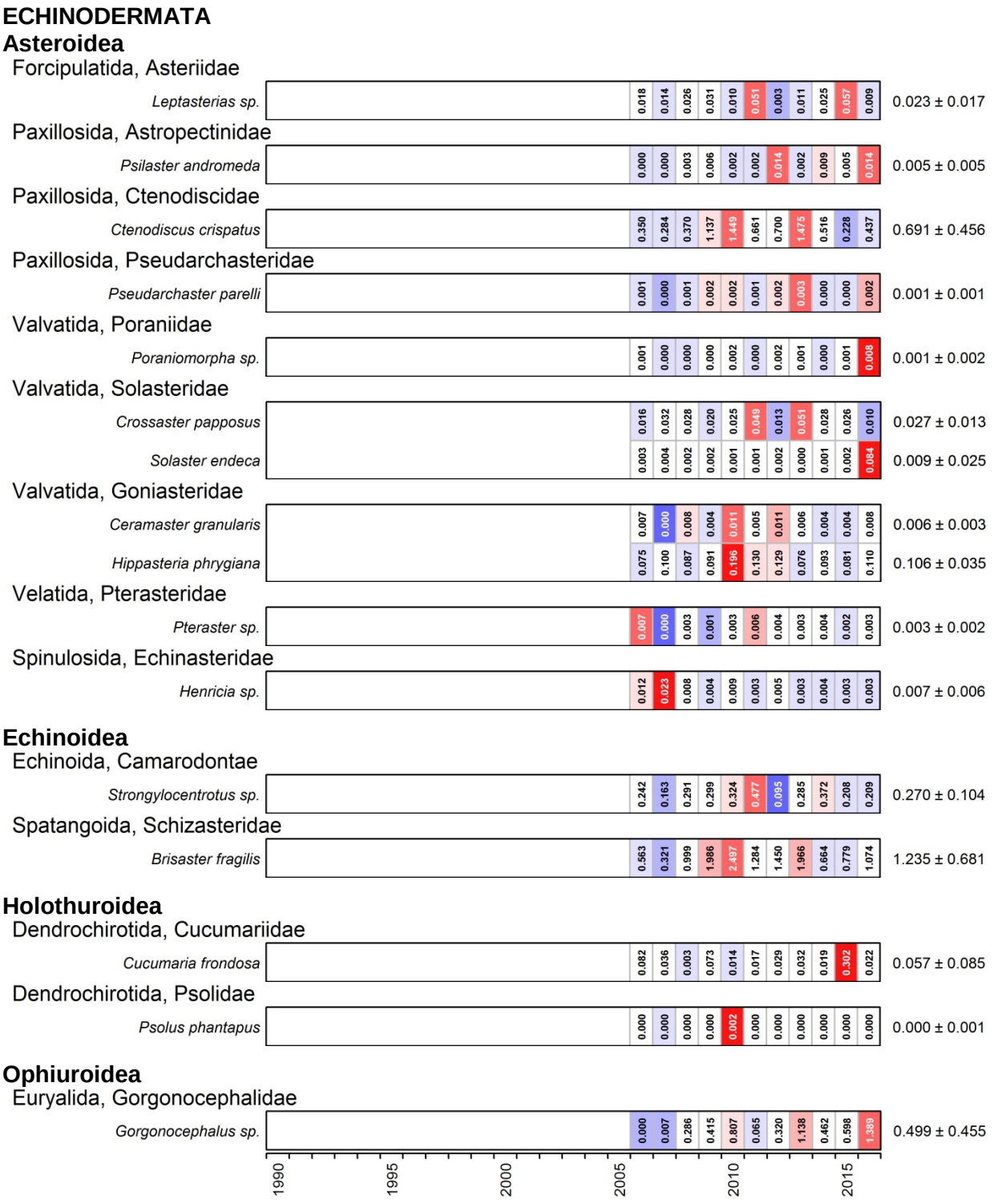



*Figure 62. Continued.*

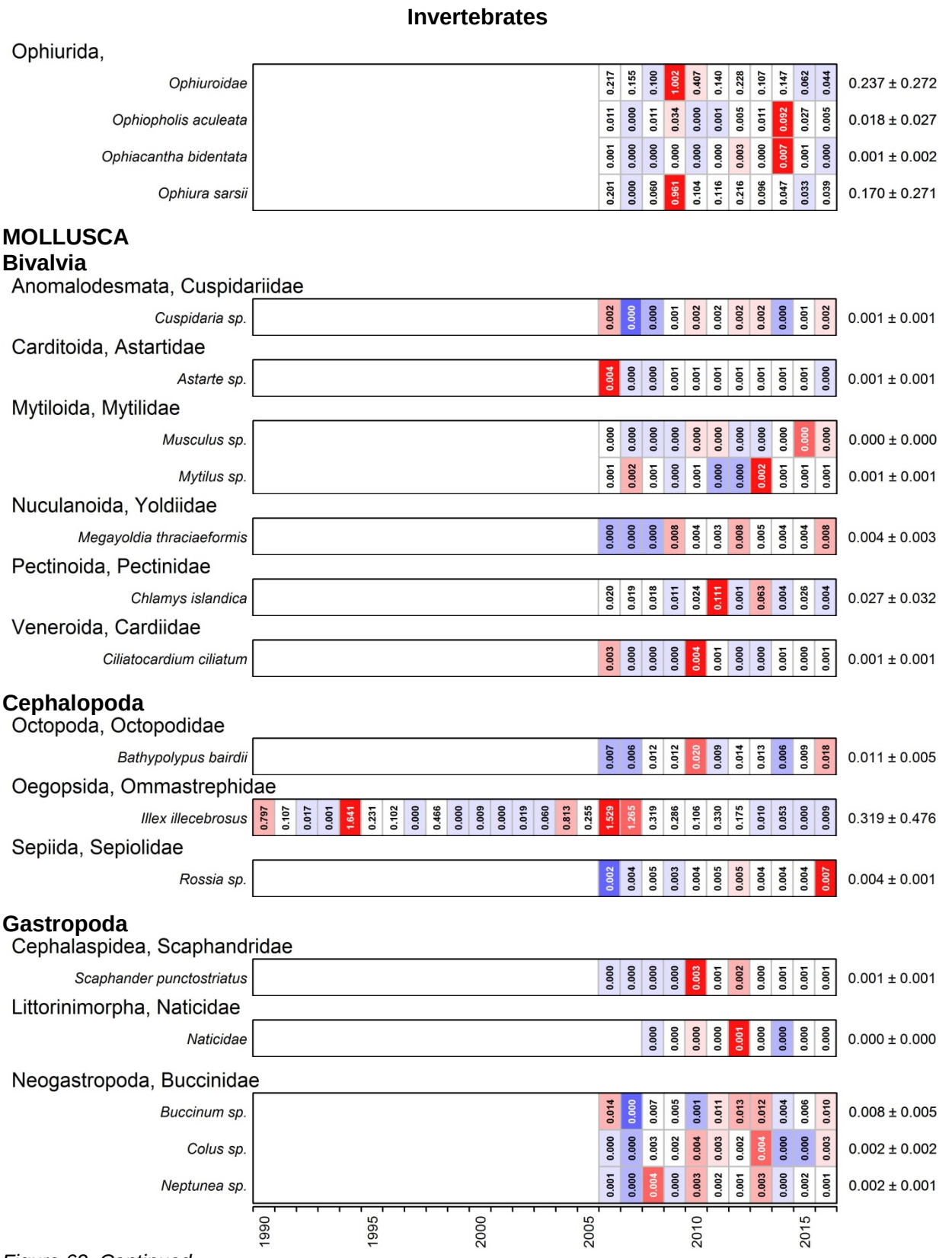



*Figure 62. Continued.*

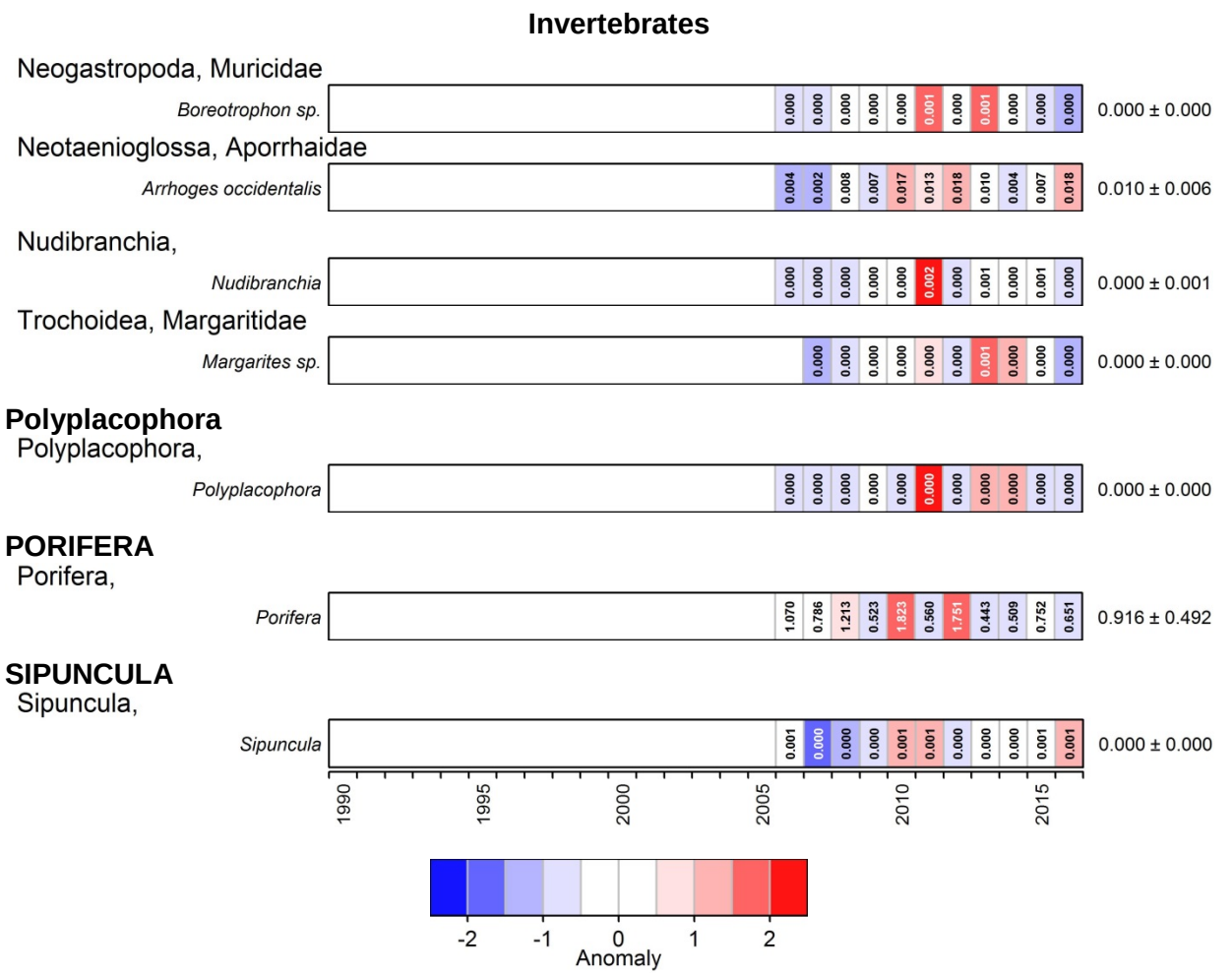



*Figure 62. Continued.*

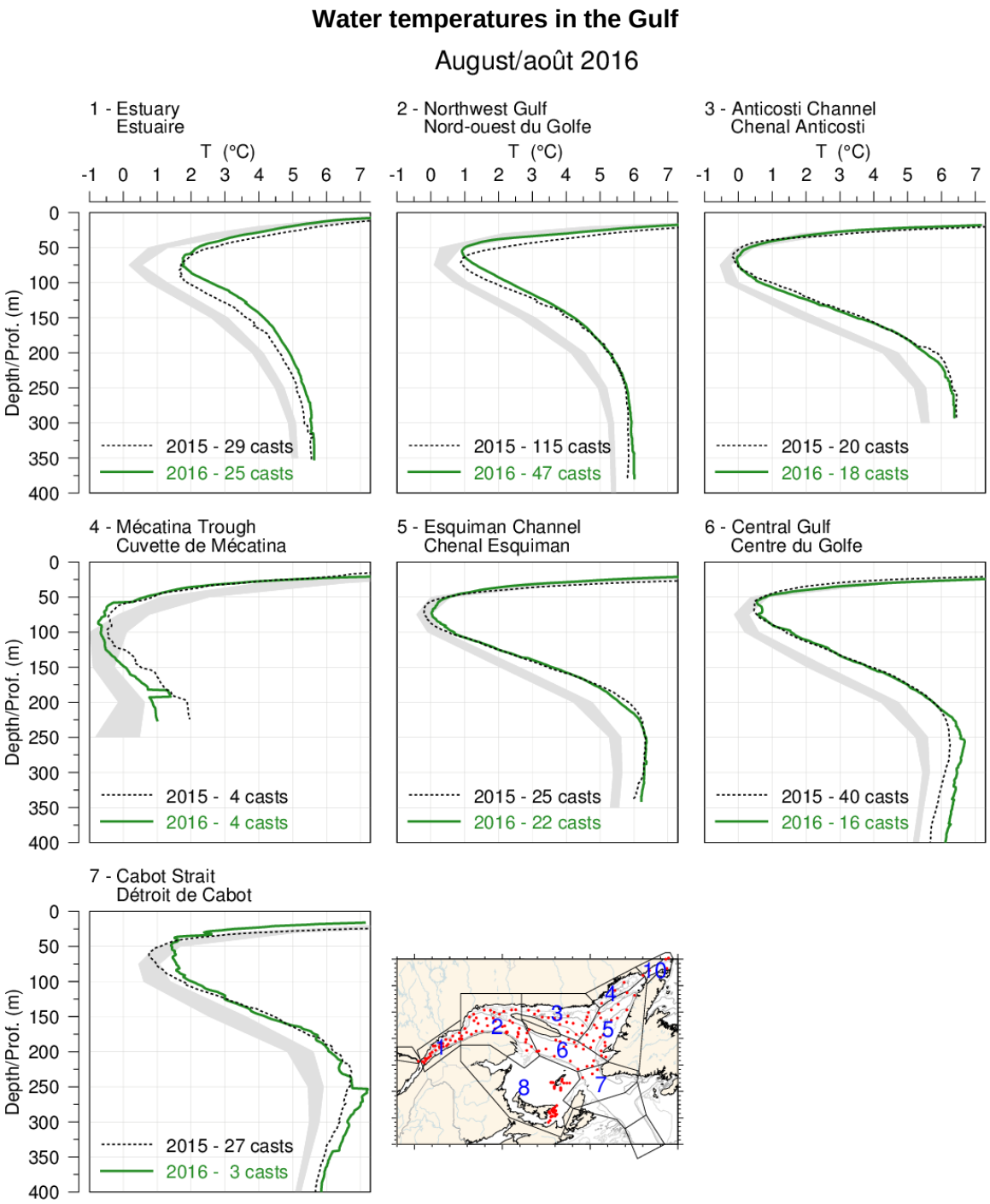



*Figure 63. Mean temperature profiles observed in each region of the Gulf during August 2016. The shaded area represents the 1981–2010 climatological monthly mean ± 0.5 SD for August. Mean profiles for 2015 are also shown for comparison.*

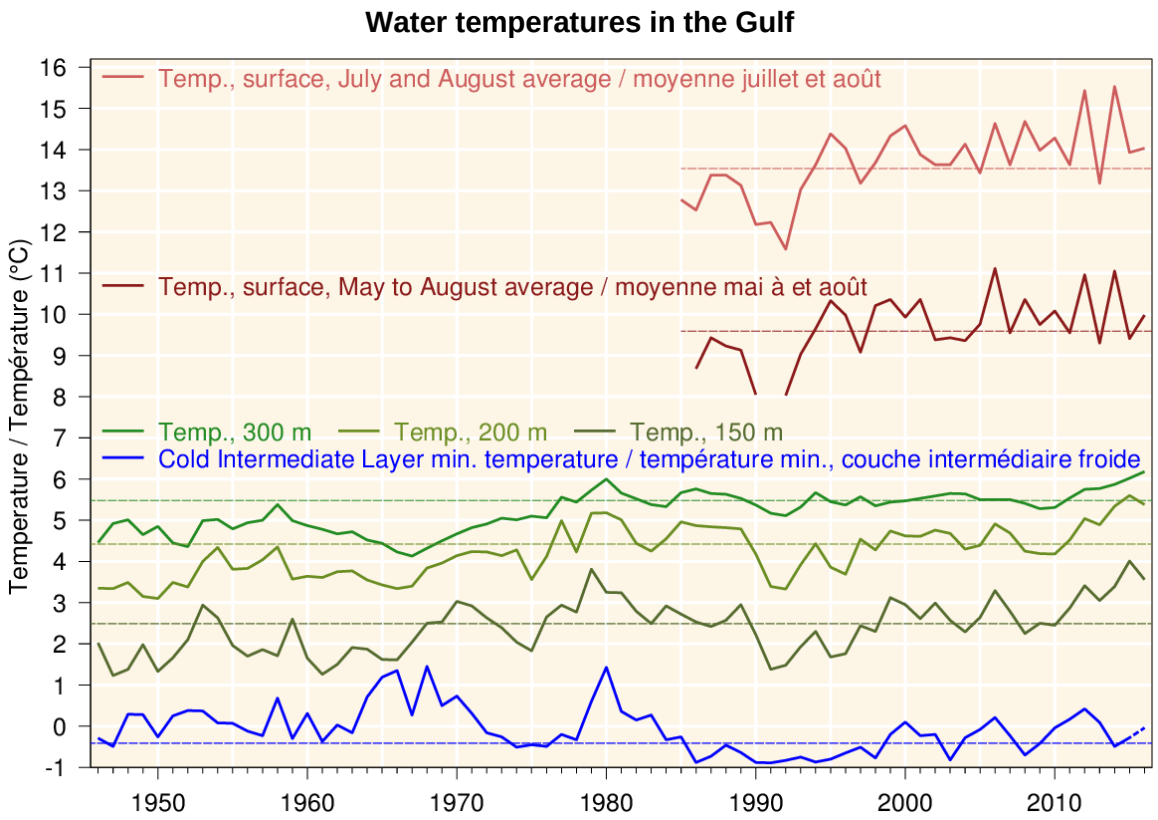



*Figure 64. Water temperatures in the Gulf. Sea-surface temperature averaged over the Estuary and the northern Gulf for July–August and May-August (1985–2016) (red lines). Layer-averaged temperature for the Gulf of St. Lawrence at 150, 200 and 300 m (green lines). Cold intermediate layer minimum temperature index in the Gulf of St. Lawrence, adjusted to July 15 with 2016 value estimated from August survey data (blue line).*

# APPENDICES

*Appendix 1. Number of successful stations per stratum for the DFO survey.*

| Strate | OPANO | Surface ($km^2$) | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 401 | 4T | 545 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 2 | 2 | 3 | 2 |
| 402 | 4T | 909 | 3 | 5 | 5 | 3 | 3 | 1 | 3 | 2 | 3 | 5 | 3 | 3 | 3 | 2 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| 403 | 4T | 1190 | 3 | 3 | 3 | 3 | 3 | 3 | 10 | 10 | 3 | 5 | 3 | 3 | 3 | 3 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 |
| 404 | 4T | 792 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 2 | 3 | 2 |
| 405 | 4T | 1478 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 |
| 406 | 4T | 2579 | 5 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 3 | 5 | 3 | 4 | 5 | 3 | 5 | 6 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 |
| 407 | 4T | 2336 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 5 | 3 | 5 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 2 | 4 | 4 | 2 |
| 408 | 4T | 2734 | 4 | 5 | 5 | 3 | 2 | 3 | 3 | 2 | 5 | 5 | 4 | 3 | 3 | 3 | 2 | 11 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 2 |
| 409 | 4T | 909 | 3 | 3 | 3 | 3 | 0 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 |
| 410 | 4T | 1818 | 2 | 3 | 3 | 3 | 4 | 6 | 10 | 6 | 5 | 4 | 4 | 4 | 5 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 411 | 4T | 1859 | 3 | 3 | 3 | 3 | 4 | 7 | 9 | 7 | 6 | 9 | 5 | 9 | 4 | 3 | 5 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 |
| 412 | 4T | 1283 | 3 | 3 | 3 | 3 | 4 | 5 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 2 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 413 | 4T | 731 | 3 | 4 | 3 | 3 | 0 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 1 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| 414 | 4T | 388 | 3 | 2 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 6 | 3 | 3 | 2 | 1 | 3 | 3 | 2 | 3 | 2 | 2 | 2 |
| 801 | 4R | 1214 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 5 | 5 | 5 | 2 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 |
| 802 | 4R | 1369 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 8 | 3 | 8 | 2 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 2 |
| 803 | 4S | 6976 | 14 | 3 | 2 | 4 | 3 | 3 | 3 | 3 | 4 | 5 | 3 | 4 | 6 | 2 | 1 | 14 | 6 | 8 | 8 | 7 | 3 | 6 | 7 | 3 | 10 | 8 | 5 |
| 804 | 4S | 2490 | 5 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 6 | 3 | 2 | 3 | 10 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| 805 | 4S | 5762 | 14 | 7 | 4 | 4 | 6 | 4 | 11 | 8 | 4 | 5 | 5 | 5 | 12 | 8 | 4 | 10 | 8 | 7 | 7 | 6 | 4 | 5 | 7 | 5 | 7 | 7 | 9 |
| 806 | 4S | 2127 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 807 | 4S | 2370 | 3 | 12 | 11 | 10 | 5 | 5 | 4 | 4 | 3 | 3 | 4 | 3 | 2 | 1 | 0 | 7 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 4 | 4 | 4 |
| 808 | 4S | 2428 | 4 | 7 | 6 | 4 | 5 | 4 | 3 | 3 | 2 | 4 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 4 | 4 | 4 |
| 809 | 4R | 1547 | 3 | 9 | 7 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 5 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 4 |
| 810 | 4R | 765 | 3 | 4 | 5 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 6 | 5 | 3 | 8 | 3 | 3 | 4 | 3 | 0 | 3 | 3 | 2 | 3 | 2 | 2 |
| 811 | 4R | 1506 | 3 | 4 | 4 | 4 | 5 | 3 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 3 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| 812 | 4R | 4648 | 7 | 9 | 8 | 11 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 3 | 5 | 3 | 8 | 7 | 6 |
| 813 | 4R | 3958 | 6 | 6 | 5 | 9 | 3 | 4 | 6 | 5 | 7 | 4 | 6 | 8 | 2 | 5 | 3 | 9 | 5 | 3 | 5 | 3 | 4 | 4 | 6 | 3 | 6 | 6 | 4 |
| 814 | 4S | 1029 | 3 | 4 | 4 | 4 | 3 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 815 | 4S | 4407 | 9 | 15 | 11 | 8 | 5 | 4 | 3 | 3 | 8 | 9 | 9 | 2 | 6 | 3 | 3 | 14 | 5 | 5 | 6 | 5 | 5 | 3 | 6 | 4 | 6 | 7 | 6 |
| 816 | 4S | 5032 | 9 | 11 | 9 | 9 | 6 | 6 | 17 | 17 | 20 | 21 | 21 | 1 | 6 | 4 | 4 | 11 | 7 | 7 | 7 | 6 | 4 | 4 | 3 | 6 | 6 | 8 | 7 |
| 817 | 4S | 3646 | 7 | 18 | 11 | 7 | 9 | 10 | 9 | 5 | 11 | 17 | 13 | 14 | 8 | 5 | 2 | 7 | 5 | 5 | 4 | 5 | 3 | 3 | 4 | 4 | 5 | 4 | 6 |
| 818 | 4S | 2774 | 4 | 7 | 5 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 7 | 5 | 1 | 6 | 4 | 4 | 2 | 4 | 3 | 4 | 3 | 3 | 4 | 5 | 4 |
| 819 | 4S | 1441 | 3 | 7 | 9 | 5 | 4 | 5 | 3 | 2 | 3 | 3 | 4 | 1 | 1 | 3 | 0 | 8 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 820 | 4R | 1358 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 5 | 6 | 5 | 5 | 3 | 2 | 3 | 3 | 14 | 3 | 3 | 3 | 3 | 0 | 2 | 3 | 3 | 3 | 3 | 2 |
| 821 | 4R | 1272 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 7 | 3 | 3 | 3 | 3 | 2 | 4 | 3 | 3 | 3 | 2 | 2 |
| 822 | 4R | 3245 | 6 | 4 | 3 | 2 | 3 | 3 | 6 | 4 | 10 | 8 | 10 | 9 | 3 | 3 | 3 | 8 | 4 | 4 | 4 | 3 | 4 | 2 | 4 | 2 | 5 | 3 | 4 |
| 823 | 4R | 556 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 5 | 2 | 10 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 |
| 824 | 4R | 837 | 3 | 1 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 6 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 |
| 827 | 4S | 3231 | 0 | 1 | 1 | 1 | 3 | 3 | 0 | 2 | 3 | 1 | 3 | 0 | 2 | 2 | 3 | 6 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 3 |
| 828 | 4S | 2435 | 4 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | 1 | 0 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 829 | 4S | 2692 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 2 | 0 | 2 | 1 | 0 | 8 | 4 | 4 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 4 | 3 |
| 830 | 4S | 1917 | 3 | 3 | 4 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 0 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 4 | 4 |
| 831 | 4S | 1204 | 3 | 0 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 4 | 3 | 3 | 1 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| 832 | 4S | 3962 | 4 | 12 | 11 | 7 | 7 | 9 | 8 | 5 | 3 | 3 | 3 | 3 | 2 | 3 | 4 | 8 | 4 | 5 | 5 | 3 | 4 | 3 | 6 | 4 | 4 | 4 | 3 |
| 833 | 4S | 559 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 3 | 3 | 2 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 2 | 2 | 2 |
| 835 | 4R | 2641 | 0 | 6 | 7 | 6 | 3 | 3 | 3 | 3 | 6 | 5 | 6 | 5 | 6 | 3 | 3 | 8 | 5 | 5 | 5 | 4 | 0 | 4 | 5 | 2 | 4 | 3 | 3 |
| 836 | 4R | 3149 | 0 | 7 | 8 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 4 | 10 | 5 | 3 | 5 | 4 | 3 | 4 | 4 | 3 | 5 | 5 | 2 |
| 837 | 4R | 2668 | 0 | 5 | 6 | 3 | 2 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 2 | 4 | 4 | 3 | 5 | 3 | 3 | 2 | 5 | 1 | 4 | 4 | 3 |
| 838 | 4R | 3378 | 0 | 9 | 8 | 7 | 5 | 5 | 0 | 0 | 0 | 2 | 0 | 4 | 4 | 0 | 3 | 10 | 6 | 3 | 6 | 0 | 0 | 3 | 5 | 0 | 6 | 4 | 5 |
| 839 | 4S | 4390 | 0 | 2 | 5 | 5 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 0 | 0 | 3 | 2 | 3 | 6 | 5 | 4 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 2 |
| 840 | 4R | 765 | 0 | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 5 | 3 | 0 | 3 | 0 | 0 | 1 | 3 | 0 | 2 | 3 | 2 |
| 841 | 4S | 816 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | 0 | 2 | 1 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 |
| Total | | 116115 | 191 | 250 | 239 | 214 | 175 | 182 | 217 | 185 | 204 | 224 | 209 | 183 | 171 | 163 | 133 | 354 | 192 | 183 | 189 | 164 | 132 | 156 | 178 | 141 | 177 | 182 | 159 |
| 851 | 4T | 456 | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| 852 | 4T | 427 | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 |
| 854 | 4T | 465 | | | | | | | | | | | | | | | | | | | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| 855 | 4T | 928 | | | | | | | | | | | | | | | | | | | 3 | 4 | 3 | 2 | 3 | 3 | 2 | 2 | 2 |

*Appendix 2. Occurrences and total catches, in weight and number, by taxon during the 2016 survey (167 successful tows).*

**Vertebrates**

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 90 | *Amblyraja radiata* | Raie épineuse | Thorny Skate | 138 | 928.1 | 1803 |
| 696 | *Ammodytes* sp. | Lançons | Sand Lances | 12 | 0.1 | 93 |
| 700 | *Anarhichas lupus* | Loup atlantique | Atlantic Wolffish | 28 | 67.6 | 185 |
| 701 | *Anarhichas minor* | Loup tacheté | Spotted Wolffish | 6 | 6.0 | 8 |
| 320 | *Arctozenus risso* | Lussion blanc | White Barracudina | 121 | 42.9 | 3494 |
| 193 | *Argentina silus* | Grande argentine | Atlantic Argentine | 15 | 2.1 | 36 |
| 811 | *Artediellus atlanticus* | Hameçon atlantique | Atlantic Hookear Sculpin | 32 | 0.9 | 108 |
| 810 | *Artediellus* sp. | Hameçons | Hookear Sculpins | 2 | < 0.1 | 10 |
| 812 | *Artediellus uncinatus* | Hameçon neigeux | Arctic Hookear Sculpin | 7 | 0.1 | 19 |
| 838 | *Aspidophoroides monopterygius* | Poisson-alligator atlantique | Alligatorfish | 31 | 0.2 | 63 |
| 837 | *Aspidophoroides olrikii* | Poisson-alligator arctique | Arctic Alligatorfish | 4 | < 0.1 | 16 |
| 102 | *Bathyraja spinicauda* | Raie à queue épineuse | Spinytail Skate | 2 | 11.7 | 2 |
| 451 | *Boreogadus saida* | Saïda franc | Arctic Cod | 9 | 0.8 | 43 |
| 865 | *Careproctus reinhardti* | Petite limace de mer | Sea Tadpole | 4 | 0.1 | 5 |
| 27 | *Centroscyllium fabricii* | Aiguillat noir | Black Dogfish | 20 | 495.7 | 691 |
| 150 | *Clupea harengus* | Hareng atlantique | Atlantic Herring | 111 | 1142.1 | 4119 |
| 829 | *Cottunculus microps* | Cotte polaire | Polar Sculpin | 3 | 0.1 | 4 |
| 721 | *Cryptacanthodes maculatus* | Terrassier tacheté | Wrymouth | 3 | 6.6 | 6 |
| 849 | *Cyclopterus lumpus* | Grosse poule de mer | Lumpfish | 51 | 49.3 | 83 |
| 208 | *Cyclothone microdon* | Cyclothone à petites dents | Small-Toothed Bristlemouth | 8 | < 0.1 | 16 |
| 461 | *Enchelyopus cimbrius* | Motelle à quatre barbillons | Fourbeard Rockling | 111 | 52.2 | 1371 |
| 618 | *Epigonus pandionis* | Cardinal | Big Eye | 1 | < 0.1 | 1 |
| 711 | *Eumesogrammus praecisus* | Quatre-lignes atlantique | Fourline Snakeblenny | 20 | 5.9 | 215 |
| 844 | *Eumicrotremus spinosus* | Petite poule de mer atlantique | Atlantic Spiny Lumpsucker | 25 | 3.5 | 192 |
| 845 | *Eumicrotremus spinosus variabilis* | Petite poule de mer atlantique | Atlantic Spiny Lumpsucker | 1 | < 0.1 | 1 |
| 438 | *Gadus morhua* | Morue franche | Atlantic Cod | 119 | 5522.3 | 8272 |
| 439 | *Gadus ogac* | Ogac, morue ogac | Greenland Cod | 5 | 1.7 | 6 |
| 426 | *Gasterosteus aculeatus aculeatus* | Épinoche à trois épines | Threespine Stickleback | 2 | < 0.1 | 3 |
| 890 | *Glyptocephalus cynoglossus* | Plie grise | Witch Flounder | 137 | 465.5 | 2559 |
| 205 | Gonostomatidae | Cyclothones | Bristlemouths | 1 | < 0.1 | 8 |
| 746 | *Gymnelus viridis* | Unernak caméléon | Fish Doctor | 2 | 0.1 | 8 |
| 823 | *Gymnocanthus tricuspis* | Tricorne arctique | Arctic Staghorn Sculpin | 20 | 4.5 | 101 |
| 809 | *Hemitripterus americanus* | Hémitriptère atlantique | Sea Sculpin | 8 | 5.5 | 12 |
| 889 | *Hippoglossoides platessoides* | Plie canadienne | American Plaice | 141 | 981.2 | 9862 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 893 | *Hippoglossus hippoglossus* | Flétan atlantique | Atlantic Halibut | 50 | 770.3 | 114 |
| 832 | *Icelus spatula* | Icèle spatulée | Spatulate Sculpin | 7 | 0.3 | 27 |
| 285 | *Lampadena speculigera* | Lanterne-miroir | Mirror Lanternfish | 1 | < 0.1 | 1 |
| 836 | *Leptagonus decagonus* | Agone atlantique | Atlantic Poacher | 17 | 5.6 | 200 |
| 717 | *Leptoclinus maculatus* | Lompénie tachetée | Daubed Shanny | 28 | 2.2 | 177 |
| 891 | *Limanda ferruginea* | Limande à queue jaune | Yellowtail Flounder | 4 | 8.2 | 37 |
| 862 | *Liparis gibbus* | Limace marbrée | Variegated Snailfish | 4 | 2.6 | 71 |
| 857 | *Liparis* sp. | Limaces | Snailfishes | 1 | < 0.1 | 1 |
| 966 | *Lophius americanus* | Baudroie d'Amérique | Monkfish, Goosefish | 8 | 25.8 | 8 |
| 716 | *Lumpenus lampretaeformis* | Lompénie-serpent | Snakeblenny | 24 | 6.2 | 174 |
| 750 | *Lycenchelys paxillus* | Lycode commune | Common Wolf Eel | 3 | 0.1 | 3 |
| 752 | *Lycenchelys verrillii* | Lycode à tête longue | Wolf Eelpout | 5 | < 0.1 | 5 |
| 727 | *Lycodes esmarkii* | Lycode d'Esmark | Esmark's Eelpout | 5 | 0.9 | 9 |
| 728 | *Lycodes lavalaei* | Lycode du Labrador | Newfoundland Eelpout | 11 | 7.5 | 68 |
| 733 | *Lycodes polaris* | Lycode polaire | Canadian Eelpout | 1 | < 0.1 | |
| 734 | *Lycodes terraenovae* | Lycode atlantique | Atlantic Eelpout | 2 | 0.4 | 2 |
| 730 | *Lycodes vahlii* | Lycode à carreaux | Vahl's Eelpout | 41 | 39.7 | 571 |
| 91 | *Malacoraja senta* | Raie lisse | Smooth Skate | 116 | 166.2 | 766 |
| 187 | *Mallotus villosus* | Capelan | Capelin | 94 | 37.9 | 3042 |
| 441 | *Melanogrammus aeglefinus* | Aiglefin | Haddock | 4 | 4.7 | 5 |
| 745 | *Melanostigma atlanticum* | Molasse atlantique | Atlantic Soft Pout | 47 | 1.0 | 305 |
| 449 | *Merluccius bilinearis* | Merlu argenté | Silver Hake | 32 | 15.9 | 56 |
| 272 | Myctophidae | Poissons-lanterne | Lanternfishes | 21 | 1.5 | 457 |
| 819 | *Myoxocephalus scorpius* | Chaboisseau à épines courtes | Shorthorn Sculpin | 27 | 154.8 | 304 |
| 817 | *Myoxocephalus* sp. | Chaboisseaux | Sculpins | 1 | < 0.1 | 2 |
| 12 | *Myxine glutinosa* | Myxine du nord | Northern Hagfish | 94 | 145.7 | 2826 |
| 368 | *Nemichthys scolopaceus* | Avocette ruban | Atlantic Snipe Eel | 1 | < 0.1 | 1 |
| 278 | *Neoscopelus macrolepidotus* | Lanterne à grandes écailles | Glowingfish | 1 | < 0.1 | 1 |
| 478 | *Nezumia bairdii* | Grenadier du grand Banc | Common Grenadier | 87 | 71.5 | 8505 |
| 275 | *Notoscopelus elongatus* | Lanterne-voilière nordique | Kroyer's Lanternfish | 3 | 0.2 | 9 |
| 856 | *Paraliparis copei copei* | Limace à museau noir | Blacksnout Seasnail | 4 | 0.1 | 10 |
| 444 | *Phycis chesteri* | Merluche à longues nageoires | Longfin Hake | 25 | 37.4 | 328 |
| 443 | *Pollachius virens* | Goberge | Pollock | 1 | 2.5 | 1 |
| 222 | *Polyipnus clarus* | Hache | Slope Hachetfish | 1 | < 0.1 | 1 |
| 892 | *Reinhardtius hippoglossoides* | Flétan du Groenland, turbot | Greeenland Halibut, Turbot | 122 | 4020.3 | 14558 |
| 572 | *Scomber scombrus* | Maquereau bleu | Atlantic Mackerel | 5 | 2.9 | 20 |
| 398 | *Scomberesox saurus saurus* | Balaou | Atlantic Saury | 6 | 0.5 | 6 |
| 796 | *Sebastes fasciatus* | Sébaste acadien | Acadian Redfish | 113 | 3249.8 | 36970 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 794 | *Sebastes mentella* | Sébaste atlantique | Deepwater Redfish | 135 | 50026.2 | 679625 |
| 793 | *Sebastes norvegicus* | Sébaste orangé | Golden Redfish | 1 | 31.6 | 18 |
| 814 | *Triglops murrayi* | Faux-trigle armé | Moustache Sculpin | 35 | 7.1 | 657 |
| 447 | *Urophycis tenuis* | Merluche blanche | White Hake | 82 | 386.4 | 781 |
| | **Total** | **Vertébrés** | **Vertebrates** | | 69 031 | 784 137 |

**Invertebrates**

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 1100 | | Invertébrés | Invertebrates | 1 | 0.1 | |
| 2182 | *Actinauge cristata* | Anémone de mer | Anemone | 50 | 76.4 | 6049 |
| 2165 | Actiniaria | Actinies et Anémones | Sea Anemones | 8 | 0.2 | 14 |
| 2162 | *Actinostola callosa* | Anémones de mer | Anemone | 61 | 567.9 | 5351 |
| 6771 | *Aega psora* | Isopode | Isopod | 12 | < 0.1 | 19 |
| 2675 | *Alcyonidium* sp. | Bryozoaire | Bryozoan | 1 | < 0.1 | 1 |
| 6996 | *Ampelisca* sp. | Gammaride | Amphipod | 1 | < 0.1 | 1 |
| 8593 | *Amphiura* sp. | Ophiures | Brittle Star | 9 | < 0.1 | 20 |
| 4219 | *Anomia* sp. | Anomies | Jingle Shells | 2 | < 0.1 | 5 |
| 7389 | *Anonyx* sp. | Gammarides | Gammarids | 6 | < 0.1 | 10 |
| 3977 | *Antalis* sp. | Scaphopode | Tuskshell | 1 | < 0.1 | 1 |
| 2218 | *Anthoptilum grandiflorum* | Plume de mer | Sea Pen | 55 | 59.6 | 4271 |
| 5002 | *Aphroditella hastata* | Souris de mer | Sea Mouse | 12 | 0.8 | 20 |
| 6594 | *Arcoscalpellum michelottianum* | Balane | Barnacle | 4 | < 0.1 | 4 |
| 8138 | *Argis dentata* | Crevette verte | Arctic Argid | 29 | 31.2 | 4777 |
| 3418 | *Arrhoges occidentalis* | Pied-de-pélican | American Pelicanfoot | 15 | 2.2 | 202 |
| 8680 | Ascidiacea | Ascidies, tuniqués sessiles | Ascidians, Sessile Tunicates | 88 | 8.2 | 1874 |
| 1120 | *Asconema foliatum* | Éponge | Sponge | 1 | 2.6 | |
| 4227 | *Astarte* sp. | Astartes | Astartes | 17 | 0.1 | 26 |
| 8396 | *Asterias rubens* | Astérie boréale commune | Purple Seastar | 1 | < 0.1 | 1 |
| 8390 | Asteroidea | Étoiles de mer | Sea Stars | 1 | < 0.1 | 1 |
| 8113 | *Atlantopandalus propinqvus* | Crevette | Shrimp | 14 | 0.8 | 163 |
| 2097 | *Atolla wyvillei* | Méduse | Jellyfish | 4 | 0.3 | 4 |
| 3583 | *Aulacofusus brevicauda* | Buccin | Whelk | 1 | < 0.1 | 1 |
| 2085 | *Aurelia aurita* | Méduse de lune | Moon Jelly | 8 | 0.6 | 9 |
| 6595 | Balanidae | Balanes | Barnacles | 7 | < 0.1 | 59 |
| 4102 | *Bathyarca* sp. | Bivalves | Bathyarks | 1 | < 0.1 | 1 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 4904 | *Bathypolypus bairdii* | Poulpe | North Atlantic Octopus | 44 | 3.3 | 71 |
| 3995 | Bivalvia | Bivalves | Bivalves | 1 | < 0.1 | 2 |
| 2158 | *Bolocera tuediae* | Anémone de mer | Anemone | 77 | 73.1 | 973 |
| 8793 | *Boltenia echinata* | Cactus de mer | Cactus Sea Squirt | 2 | < 0.1 | 5 |
| 8792 | *Boltenia ovifera* | Patate de mer | Sea Potato | 8 | 6.5 | 56 |
| 7933 | *Boreomysis* sp. | Mysidacés | Mysids | 1 | < 0.1 | 2 |
| 8798 | *Botrylloides* sp. | Ascidie | Tunicate | 2 | < 0.1 | 2 |
| 5755 | *Brada inhabilis* | Polychète | Flabelligerid Worm | 2 | < 0.1 | 2 |
| 8378 | *Brisaster fragilis* | Oursin coeur | Heart Urchin | 78 | 195.3 | 28859 |
| 2670 | Bryozoa | Bryozoaires | Bryozoans | 7 | < 0.1 | 16 |
| 3523 | *Buccinum scalariforme* | Buccin | Ladder Whelk | 9 | 0.4 | 22 |
| 3516 | *Buccinum* sp. | Buccins | Whelk | 25 | 2.2 | 169 |
| 3517 | *Buccinum undatum* | Buccin commun | Waved Whelk | 6 | 0.2 | 9 |
| 8173 | *Calocaris templemani* | Crevette fouisseuse | Lobster Shrimp | 1 | < 0.1 | 1 |
| 8206 | *Cancer irroratus* | Crabe commun | Common Rock Crab | 1 | < 0.1 | 1 |
| 7881 | Caprellidae | Caprellidés | Skeleton Shrimp | 1 | < 0.1 | 1 |
| 8429 | *Ceramaster granularis* | Étoile de mer | Sea Star | 28 | 1.2 | 51 |
| 8213 | *Chionoecetes opilio* | Crabe des neiges | Snow Crab | 78 | 379.2 | 1083 |
| 6593 | *Chirona hameri* | Balane turbané | Turban Barnacle | 5 | 0.6 | 39 |
| 4167 | *Chlamys islandica* | Pétoncle d' Islande | Iceland Scallop | 10 | 0.8 | 23 |
| 4351 | *Ciliatocardium ciliatum* | Coque d'Islande | Iceland Cockle | 8 | 0.7 | 27 |
| 1340 | Cnidaria | Cnidaires | Cnidarians | 2 | < 0.1 | 2 |
| 3908 | *Colga villosa* | Nudibranche | Nudibranch | 2 | < 0.1 | 2 |
| 3577 | *Colus pubescens* | Buccin | Hairy Whelk | 6 | 0.1 | 10 |
| 3575 | *Colus* sp. | Buccins | Whelks | 1 | < 0.1 | 1 |
| 3576 | *Colus stimpsoni* | Buccin | Whelk | 4 | 0.4 | 16 |
| 8447 | *Crossaster papposus* | Soleil de mer épineux | Spiny Sun Star | 23 | 1.6 | 54 |
| 8407 | *Ctenodiscus crispatus* | Étoile de mer | Mud Star | 103 | 87.2 | 22242 |
| 2250 | Ctenophora | Cténophores | Comb-Jellies | 1 | < 0.1 | 1 |
| 8312 | *Cucumaria frondosa* | Concombre de mer | Orange Footed Sea Cucumbe | 6 | 3.4 | 13 |
| 4525 | *Cuspidaria* sp. | Myes | Dipperclams | 16 | 0.2 | 23 |
| 2080 | *Cyanea capillata* | Crinière de lion | Lion's Mane | 85 | 76.5 | 200 |
| 3894 | *Dendronotus frondosus* | Nudibranche | Nudibranch | 2 | < 0.1 | 2 |
| 8408 | *Diplopteraster multipes* | Étoile de mer | Sea Star | 5 | 1.5 | 7 |
| 3965 | *Doridoxa ingolfiana* | Nudibranche | Nudibranch | 1 | < 0.1 | 1 |
| 2191 | *Drifa glomerata* | Corail mou | Soft Coral | 24 | 0.3 | 52 |
| 2183 | *Duva florida* | Corail mou | Sea Cauliflower | 14 | 0.6 | 29 |
| 8373 | *Echinarachnius parma* | Dollar de sable | Common Sand Dollar | 3 | 0.4 | 23 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 4010 | *Ennucula tenuis* | bivalve | Smooth Nutclam | 1 | < 0.1 | 1 |
| 7383 | *Epimeria loricata* | Gammaride | Gammarid | 3 | < 0.1 | 7 |
| 2157 | *Epizoanthus* sp. | Anémone de mer | Sea Anemone | 39 | 0.1 | 390 |
| 8075 | *Eualus fabricii* | Bouc Arctique | Arctic Eualid | 4 | 0,1 | 117 |
| 8081 | *Eualus gaimardii belcheri* | Bouc | Circumpolar Eualid | 2 | < 0.1 | 4 |
| 8080 | *Eualus gaimardii gaimardii* | Bouc | Circumpolar Eualid | 9 | 0.1 | 104 |
| 8077 | *Eualus macilentus* | Bouc du Groenland | Greenland Shrimp | 9 | 1.5 | 1486 |
| 8074 | *Eualus* sp. | Bouc | Eualid | 1 | < 0.1 | |
| 8778 | *Eudistoma vitreum* | Ascidie | Tunicate | 10 | 0.2 | 24 |
| 5461 | *Euphrosine borealis* | Polychète | Seaworm | 1 | < 0.1 | 1 |
| 8033 | *Eusergestes arcticus* | Crevette | Shrimp | 8 | 0.1 | 78 |
| 7195 | *Eusirus cuspidatus* | Gammaride | Gammarid | 3 | < 0.1 | 3 |
| 3437 | *Euspira pallida* | Lunatie du Groenland | Pale Moonsnail | 7 | 0.1 | 15 |
| 2295 | Fecampiidae | Vers flats | Flatworms | 3 | < 0.1 | 3 |
| 2224 | *Flabellum alabastrum* | Madrépore | Cup Coral | 5 | 0.2 | 22 |
| 3175 | Gastropoda | Gastéropodes | Gastropods | 1 | < 0.1 | 1 |
| 2184 | *Gersemia rubiformis* | Corail mou | Sea Strawberry | 17 | 0.2 | 43 |
| 5902 | *Golfingia margaritacea* | Sipunculide | Sipunculid | 5 | 0.1 | 15 |
| 8540 | *Gorgonocephalus* sp. | Gorgonocéphales | Basket Stars | 24 | 130.0 | 689 |
| 2217 | *Halipteris finmarchica* | Plume de mer | Sea Pen | 31 | 7.2 | 434 |
| 8797 | *Halocynthia pyriformis* | Pêche de mer | Sea Peach | 1 | < 0.1 | 2 |
| 5934 | *Hamingia arctica* | Échiure | Echiurid | 4 | 0.1 | 6 |
| 8263 | *Heliometra glacialis* | Lis de mer | Feather Star | 2 | < 0.1 | 20 |
| 3090 | *Hemithiris psittacea* | Brachiopode | Lamp Shell | 4 | < 0.1 | 11 |
| 8483 | *Henricia* sp. | Étoiles de mer | Sea Stars | 48 | 0.6 | 112 |
| 4437 | *Hiatella arctica* | Saxicave arctique | Arctic Saxicave | 3 | < 0.1 | 3 |
| 8431 | *Hippasteria phrygiana* | Étoile de mer | Sea Star | 38 | 19.4 | 66 |
| 8290 | Holothuroidea | Cocombres de mer | Sea Cucumbers | 2 | < 0.1 | 2 |
| 2167 | *Hormathia nodosa* | Anémone noduleuse | Rugose Anemone | 3 | 0.9 | 18 |
| 8217 | *Hyas araneus* | Crabe lyre | Atlantic Lyre Crab | 13 | 2.9 | 51 |
| 8218 | *Hyas coarctatus* | Crabe lyre | Arctic Lyre Crab | 29 | 2.6 | 138 |
| 1341 | Hydrozoa | Hydrozoaires | Hydrozoans | 32 | 0.1 | 199 |
| 6977 | *Hyperia galba* | Hypéride | Hyperiid | 2 | < 0.1 | 2 |
| 4753 | *Illex illecebrosus* | Encornet rouge nordique | Northern Shortfin Squid | 19 | 1.6 | 32 |
| 5003 | *Laetmonice filicornis* | Polychète | Seaworm | 15 | < 0.1 | 29 |
| 8092 | *Lebbeus groenlandicus* | Bouc | Spiny Lebbeid | 10 | 2.3 | 511 |
| 8095 | *Lebbeus microceros* | Bouc | Shrimp | 1 | < 0.1 | 1 |
| 8093 | *Lebbeus polaris* | Bouc | Polar Lebbeid | 36 | 0.6 | 385 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 8091 | *Lebbeus* sp. | Boucs | Lebbeids | 1 | < 0.1 | |
| 8511 | *Leptasterias polaris* | Étoile de mer polaire | Polar Sea Star | 5 | 1.2 | 11 |
| 8510 | *Leptasterias* sp. | Étoiles de mer | Sea Stars | 14 | < 0.1 | 23 |
| 8521 | *Leptychaster arcticus* | Stelléridé | Sea Star | 4 | < 0.1 | 8 |
| 2207 | *Liponema multicorne* | Anémone | Sea Anemone | 9 | 1.3 | 22 |
| 8196 | *Lithodes maja* | Crabe épineux du Nord | Norway King Crab | 60 | 60.3 | 155 |
| 4395 | *Macoma calcarea* | Bivalve | Chalky Macoma | 5 | < 0.1 | 26 |
| 3219 | *Margarites costalis* | Margarite rosé du Nord | Boreal Rosy Margarite | 2 | < 0.1 | 3 |
| 7994 | *Meganyctiphanes norvegica* | Euphauside | Horned Krill | 1 | < 0.1 | 2 |
| 4025 | *Megayoldia thraciaeformis* | Bivalve | Broad Yoldia | 29 | 1.6 | 336 |
| 2171 | *Metridium senile* | Anémone de mer | Clonal Plumose Anemone | 2 | 0.4 | 6 |
| 8322 | *Molpadia oolitica* | Holothurie | Sea Cucumber | 4 | 0.1 | 6 |
| 8164 | *Munidopsis curvirostra* | Munidopsis curvirostra | Squat Lobster | 15 | < 0.1 | 69 |
| 4127 | *Musculus niger* | Moule noire | Black Mussel | 1 | < 0.1 | 1 |
| 4126 | *Musculus* sp. | Moules | Mussels | 2 | < 0.1 | 2 |
| 4121 | *Mytilus* sp. | Moules | Mussels | 12 | 0.5 | 54 |
| 3000 | Nemertea | Némerte | Ribbon Worm | 5 | < 0.1 | 7 |
| 7483 | *Neohela monstrosa* | Gammaride | Gammarid | 3 | < 0.1 | 4 |
| 2219 | Nephtheidae | Coraux mous | Soft Corals | 6 | < 0.1 | 6 |
| 5113 | *Nephtys* sp. | Polychète errante | Red-Lined Worm | 2 | < 0.1 | 2 |
| 3566 | *Neptunea decemcostata* | Neptunée à dix côtes | Wrinkle Whelk | 3 | 0.1 | 3 |
| 3565 | *Neptunea* sp. | Buccins | Whelks | 4 | 0.2 | 5 |
| 8448 | *Novodinia americana* | Étoile de mer | Sea Star | 2 | 1.9 | 5 |
| 4019 | *Nuculana* sp. | Bivalves | Nutclams | 2 | < 0.1 | 2 |
| 5961 | *Nymphon* sp. | Araignées de mer | Sea Spiders | 19 | < 0.1 | 32 |
| 3455 | *Onchidiopsis* sp. | Gastéropode velutinidae | Snail | 1 | 0.1 | 1 |
| 8575 | *Ophiacantha bidentata* | Ophiure épineuse | Brittle Star | 15 | < 0.1 | 59 |
| 8583 | *Ophiopholis aculeata* | Ophiure paquerette | Daisy Brittle Star | 52 | 0.8 | 543 |
| 8585 | *Ophioscolex glacialis* | Ophiure | Brittle Star | 12 | < 0.1 | 26 |
| 8553 | *Ophiura sarsii* | Ophiure | Brittle Star | 55 | 16.2 | 9846 |
| 8530 | Ophiuroidea | Ophiures | Brittle Stars | 2 | < 0.1 | 2 |
| 8178 | *Pagurus* sp. | Bernard hermite droitier | Hermit Crab | 13 | 0.2 | 38 |
| 8111 | *Pandalus borealis* | Crevette nordique | Northern Shrimp | 143 | 3200.7 | 538724 |
| 8112 | *Pandalus montagui* | Crevette ésope | Striped Pink Shrimp | 79 | 71.3 | 22760 |
| 4438 | *Panomya norvegica* | Saxicave | Arctic Roughmya | 1 | < 0.1 | 1 |
| 7586 | *Paramphithoe hystrix* | Gammaride | Gammarid | 2 | < 0.1 | 2 |
| 7594 | *Pardalisca abyssi* | Gammaride | Gammarid | 2 | < 0.1 | 2 |
| 8057 | *Pasiphaea multidentata* | Sivade rose, Crevette blanche | Pink Glass Shrimp | 85 | 42.1 | 16708 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 8056 | *Pasiphaea tarda* | Sivade | Crimson Pasiphaeid | 2 | < 0.1 | 3 |
| 2203 | *Pennatula aculeata* | Plume de mer | Sea Pen | 91 | 3.0 | 1146 |
| 2210 | *Pennatula grandis* | Plume de mer | Sea Pen | 37 | 46.6 | 1374 |
| 2096 | *Periphylla periphylla* | Méduse à coronne | Crown Jellyfish | 80 | 160.5 | 182 |
| 5907 | *Phascolion strombus strombus* | Sipunculide | Hermit Sipunculid | 2 | < 0.1 | 12 |
| 2255 | *Pleurobrachia pileus* | Groseille de mer ronde | Sea Gooseberry | 28 | 0.2 | 126 |
| 3578 | *Plicifusus kroeyeri* | Colus | Arctic Whelk | 1 | < 0.1 | 2 |
| 4950 | Polychaeta | Polychètes | Polychaetes | 81 | 0.6 | 461 |
| 1109 | *Polymastia* sp. | Éponge | Sponge | 5 | 0.2 | 30 |
| 5007 | Polynoidae | Polychète errante | Fifteen-Scaled Worm | 2 | < 0.1 | 5 |
| 5264 | *Polyphysia crassa* | Polychète | Sea Worm | 4 | < 0.1 | 8 |
| 8135 | *Pontophilus norvegicus* | Crevette | Norwegian Shrimp | 54 | 1.5 | 716 |
| 8435 | *Poraniomorpha* sp. | Étoile de mer | Sea Star | 10 | 0.7 | 23 |
| 1101 | Porifera | Éponges | Sponges | 113 | 94.4 | |
| 8433 | *Pseudarchaster parelii* | Étoile de mer | Sea Star | 13 | 0.5 | 24 |
| 8520 | *Psilaster andromeda* | Étoile de mer | Sea Star | 11 | 1.8 | 185 |
| 8294 | *Psolus phantapus* | Holothurie | Sea Cucumber | 4 | < 0.1 | 4 |
| 8410 | *Pteraster militaris* | Étoile de mer | Sea Star | 10 | 0.3 | 23 |
| 8411 | *Pteraster pulvillus* | Étoile de mer | Sea Star | 6 | < 0.1 | 6 |
| 1353 | *Ptychogena lactea* | Méduse | Jellyfish | 65 | 0.9 | 193 |
| 5951 | Pycnogonida | Araignées de mer | Sea Spiders | 2 | < 0.1 | 3 |
| 1107 | *Radiella hemisphaerica* | Éponge | Sponge | 8 | 0.4 | 35 |
| 2681 | *Reteporella grimaldii* | Bryozoaires marins | Marine Bryozoans | 2 | < 0.1 | 2 |
| 7211 | *Rhachotropis aculeata* | Gammaride | Gammarid | 6 | < 0.1 | 28 |
| 4557 | *Rossia* sp. | Sépioles | Bobtails | 41 | 0.9 | 76 |
| 8129 | *Sabinea sarsii* | Crevette | Sars Shrimp | 7 | 0.1 | 39 |
| 8128 | *Sabinea septemcarinata* | Crevette | Sevenline Shrimp | 21 | 0.7 | 330 |
| 3491 | *Scabrotrophon fabricii* | Murex | Murex | 5 | < 0.1 | 7 |
| 3715 | *Scaphander punctostriatus* | Céphalaspide | Giant Canoe Bubble | 11 | 0.1 | 52 |
| 8119 | *Sclerocrangon boreas* | Crevette de roche | Scultured Shrimp | 12 | 5.7 | 598 |
| 2040 | Scyphozoa | Scyphozoaires | Scyphozoans | 19 | 1.8 | 24 |
| 2679 | *Securiflustra securifrons* | Bryozoaires marins | Marine Bryozoans | 8 | 0.1 | 77 |
| 8035 | *Sergia robusta* | Sergistidé écarlate | Scarlet Sergestid | 2 | < 0.1 | 2 |
| 4352 | *Serripes groenlandicus* | Coque du Groenland | Greenland Smoothcockle | 1 | < 0.1 | 1 |
| 5900 | Sipuncula | Sipunculides | Sipunculids | 6 | < 0.1 | 6 |
| 3225 | *Solariella* sp. | Gastéropes | Topsnail | 1 | < 0.1 | 1 |
| 3227 | *Solariella varicosa* | Gastéropode | Varicose Solarelle | 1 | < 0.1 | 1 |
| 8445 | *Solaster endeca* | Soleil de mer pourpre | Purple Sunstar | 6 | 5.1 | 17 |

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 8087 | *Spirontocaris liljeborgii* | Bouc épineux | Friendly Blade Shrimp | 21 | 0.1 | 64 |
| 8084 | *Spirontocaris* sp. | Bouc | Blade Shrimp | 3 | < 0.1 | 4 |
| 8085 | *Spirontocaris spinus* | Bouc perroquet | Parrot Shrimp | 17 | 0.3 | 174 |
| 1352 | *Staurostoma mertensii* | Méduse à croix blanche | Whitecross Jellyfish | 4 | < 0.1 | 5 |
| 7750 | *Stegocephalus inflatus* | Gammaride | Gammarid | 2 | < 0.1 | 2 |
| 8515 | *Stephanasterias albula* | Étoile de mer | Sea Star | 3 | < 0.1 | 5 |
| 2159 | *Stephanauge nexilis* | Anémone de mer | Sea Anemone | 25 | 1.8 | 150 |
| 2173 | *Stomphia coccinea* | Anémone marbrée | Anemone | 28 | 0.4 | 60 |
| 8363 | *Strongylocentrotus* sp. | Oursins | Sea Urchins | 48 | 30.1 | 1255 |
| 1112 | *Stylocordyla borealis* | Éponge | Sponge | 16 | 0.1 | 170 |
| 6791 | *Syscenus infelix* | Isopode | Isopod | 54 | 0.4 | 242 |
| 1108 | *Tentorium semisuberites* | Éponge | Sponge | 2 | < 0.1 | 12 |
| 3101 | *Terebratulina septentrionalis* | Térébratule du Nord | Northern Lamp Shell | 10 | < 0.1 | 13 |
| 4498 | *Teredo navalis* | Taret commun | Naval Shipworm | 2 | < 0.1 | 7 |
| 6972 | *Themisto libellula* | Hypéride | Hyperiid | 7 | < 0.1 | 13 |
| 1357 | *Thuiaria thuja* | Hydrozoaire | Bottlebrush Hydroid | 12 | < 0.1 | 22 |
| 8446 | *Tremaster mirabilis* | Étoile de mer | Sea Star | 1 | 0.1 | 1 |
| 4451 | *Xylophaga atlantica* | Bivalve | Atlantic Woodeater | 4 | < 0.1 | 24 |
| 9999 | | Inconnu | Unknown | 24 | 0.3 | 38 |
| | **Total** | **Invertebrés** | **Invertebrates** | | 5 516 | 679 586 |

**Others**

| Code STRAP* | Scientific Name | French Name | English Name | Occurrence | Weight (kg) | Number |
|---|---|---|---|---|---|---|
| 9995 | | Déchets | Trash | 165 | 83.5 | |
| 9970 | | Capsule de raies | Skates Egg | 54 | 2.8 | 197 |

** : Codes for vertebrates and invertebrates used by the Quebec Region of DFO (Miller and Chabot 2014).*

*Appendix 3. Number of measured and weighed specimens and descriptive statistics for the length in 2015.*

**Vertebrates**

| Code STRAP* | Scientific name | Sampled number | | Length (cm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Length | Weight | Min | P1** | Median | P99** | Max |
| 90 | *Amblyraja radiata* | 1521 | 1195 | 10.0 | 11.4 | 27.1 | 63.9 | 73.1 |
| 696 | *Ammodytes* sp. | 34 | 32 | 5.0 | 5.0 | 6.2 | 16.8 | 16.8 |
| 700 | *Anarhichas lupus* | 185 | 184 | 7.6 | 9.2 | 22.6 | 70.7 | 82.5 |
| 701 | *Anarhichas minor* | 8 | 8 | 9.3 | 9.3 | 39.5 | 63.1 | 63.1 |
| 320 | *Arctozenus risso* | 1953 | 916 | 12.5 | 17.2 | 22.0 | 27.0 | 29.6 |
| 193 | *Argentina silus* | 36 | 36 | 8.6 | 8.6 | 16.9 | 31.2 | 31.2 |
| 811 | *Artediellus atlanticus* | 108 | 103 | 3.1 | 4.0 | 7.6 | 13.9 | 14.1 |
| 810 | *Artediellus* sp. | 10 | 10 | 5.6 | 5.6 | 6.3 | 6.9 | 6.9 |
| 812 | *Artediellus uncinatus* | 19 | 19 | 5.5 | 5.5 | 7.1 | 8.8 | 8.8 |
| 838 | *Aspidophoroides monopterygius* | 63 | 61 | 8.8 | 8.8 | 12.9 | 15.1 | 15.1 |
| 837 | *Aspidophoroides olrikii* | 16 | 16 | 6.3 | 6.3 | 8.4 | 9.6 | 9.6 |
| 102 | *Bathyraja spinicauda* | 2 | 2 | 34.5 | 34.5 | 74.9 | 115.3 | 115.3 |
| 451 | *Boreogadus saida* | 43 | 43 | 4.8 | 4.8 | 10.5 | 27.8 | 27.8 |
| 865 | *Careproctus reinhardti* | 5 | 5 | 9.2 | 9.2 | 11.1 | 14.1 | 14.1 |
| 27 | *Centroscyllium fabricii* | 448 | 319 | 13.8 | 14.9 | 50.7 | 67.3 | 70.4 |
| 150 | *Clupea harengus* | 1591 | 1015 | 15.8 | 19.3 | 25.9 | 37.8 | 40.2 |
| 829 | *Cottunculus microps* | 4 | 4 | 5.9 | 5.9 | 9.3 | 12.4 | 12.4 |
| 721 | *Cryptacanthodes maculatus* | 6 | 6 | 50.9 | 50.9 | 79.0 | 85.0 | 85.0 |
| 849 | *Cyclopterus lumpus* | 82 | 82 | 7.8 | 7.8 | 13.3 | 43.7 | 43.7 |
| 208 | *Cyclothone microdon* | 3 | 3 | 5.2 | 5.2 | 6.4 | 7.0 | 7.0 |
| 461 | *Enchelyopus cimbrius* | 1113 | 667 | 5.1 | 6.1 | 20.4 | 29.0 | 31.7 |
| 618 | *Epigonus pandionis* | 1 | 1 | 15.5 | 15.5 | 15.5 | 15.5 | 15.5 |
| 711 | *Eumesogrammus praecisus* | 147 | 108 | 10.0 | 10.1 | 14.7 | 21.5 | 22.1 |
| 844 | *Eumicrotremus spinosus* | 171 | 153 | 2.9 | 3.0 | 5.6 | 12.5 | 13.0 |
| 845 | *Eumicrotremus spinosus variabilis* | 1 | 1 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 |
| 438 | *Gadus morhua* | 4338 | 2115 | 4.0 | 15.7 | 38.6 | 70.1 | 94.5 |
| 439 | *Gadus ogac* | 6 | 6 | 17.2 | 17.2 | 28.2 | 37.8 | 37.8 |
| 426 | *Gasterosteus aculeatus aculeatus* | 3 | 3 | 6.0 | 6.0 | 6.1 | 7.2 | 7.2 |
| 890 | *Glyptocephalus cynoglossus* | 2333 | 1779 | 6.2 | 9.3 | 30.2 | 43.8 | 51.6 |
| 746 | *Gymnelus viridis* | 8 | 8 | 12.5 | 12.5 | 14.9 | 17.2 | 17.2 |
| 823 | *Gymnocanthus tricuspis* | 101 | 86 | 6.7 | 8.0 | 14.8 | 22.7 | 24.0 |
| 809 | *Hemitripterus americanus* | 11 | 11 | 5.2 | 5.2 | 27.7 | 34.2 | 34.2 |
| 889 | *Hippoglossoides platessoides* | 5426 | 2412 | 3.3 | 8.3 | 21.5 | 41.6 | 54.0 |
| 893 | *Hippoglossus hippoglossus* | 113 | 111 | 23.0 | 25.8 | 56.5 | 147.0 | 158.0 |
| 832 | *Icelus spatula* | 27 | 27 | 4.6 | 4.6 | 9.1 | 14.0 | 14.0 |
| 285 | *Lampadena speculigera* | 1 | 1 | 15.2 | 15.2 | 15.2 | 15.2 | 15.2 |
| 836 | *Leptagonus decagonus* | 129 | 96 | 6.5 | 7.0 | 20.1 | 22.6 | 22.8 |
| 717 | *Leptoclinus maculatus* | 124 | 96 | 9.1 | 9.1 | 13.8 | 20.2 | 20.3 |
| 891 | *Limanda ferruginea* | 37 | 33 | 15.5 | 15.5 | 28.5 | 36.5 | 36.5 |
| 862 | *Liparis gibbus* | 40 | 25 | 6.5 | 6.5 | 9.6 | 23.0 | 23.0 |
| 857 | *Liparis* sp. | 1 | 1 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| 966 | *Lophius americanus* | 8 | 8 | 8.6 | 8.6 | 58.2 | 89.7 | 89.7 |
| 716 | *Lumpenus lampretaeformis* | 137 | 102 | 16.2 | 16.5 | 31.0 | 41.2 | 41.7 |
| 750 | *Lycenchelys paxillus* | 3 | 3 | 20.5 | 20.5 | 23.5 | 24.8 | 24.8 |
| 752 | *Lycenchelys verrillii* | 5 | 5 | 10.0 | 10.0 | 12.0 | 13.6 | 13.6 |
| 727 | *Lycodes esmarkii* | 9 | 9 | 11.5 | 11.5 | 23.0 | 45.6 | 45.6 |
| 728 | *Lycodes lavalaei* | 68 | 61 | 8.6 | 8.6 | 20.6 | 56.6 | 56.6 |
| 734 | *Lycodes terraenovae* | 2 | 2 | 27.7 | 27.7 | 33.4 | 39.1 | 39.1 |
| 730 | *Lycodes vahlii* | 372 | 273 | 7.2 | 9.4 | 27.0 | 37.5 | 49.4 |
| 91 | *Malacoraja senta* | 746 | 724 | 8.4 | 9.0 | 17.3 | 58.9 | 61.5 |
| 187 | *Mallotus villosus* | 1321 | 717 | 5.9 | 8.4 | 14.5 | 17.1 | 19.4 |
| 441 | *Melanogrammus aeglefinus* | 5 | 5 | 25.0 | 25.0 | 44.0 | 52.8 | 52.8 |
| 745 | *Melanostigma atlanticum* | 305 | 209 | 5.2 | 8.0 | 11.0 | 13.6 | 14.4 |
| 449 | *Merluccius bilinearis* | 55 | 56 | 12.2 | 12.2 | 32.3 | 39.2 | 39.2 |

| Code STRAP* | Scientific name | Sampled number | | Length (cm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Length | Weight | Min | P1** | Median | P99** | Max |
| 272 | Myctophidae | 6 | 6 | 4.9 | 4.9 | 6.4 | 7.6 | 7.6 |
| 819 | *Myoxocephalus scorpius* | 181 | 153 | 18.1 | 18.2 | 30.0 | 42.2 | 45.1 |
| 817 | *Myoxocephalus* sp. | 2 | 2 | 3.7 | 3.7 | 4.0 | 4.3 | 4.3 |
| 12 | *Myxine glutinosa* | 1643 | 822 | 20.9 | 22.6 | 36.0 | 48.0 | 54.2 |
| 368 | *Nemichthys scolopaceus* | 1 | 1 | 46.5 | 46.5 | 46.5 | 46.5 | 46.5 |
| 278 | *Neoscopelus macrolepidotus* | 1 | 1 | 12.3 | 12.3 | 12.3 | 12.3 | 12.3 |
| 478 | *Nezumia bairdii* | 1334 | 642 | 7.2 | 11.5 | 23.4 | 31.5 | 34.7 |
| 275 | *Notoscopelus elongatus* | 9 | 9 | 10.8 | 10.8 | 14.1 | 16.7 | 16.7 |
| 856 | *Paraliparis copei copei* | 10 | 10 | 7.9 | 7.9 | 10.9 | 13.0 | 13.0 |
| 444 | *Phycis chesteri* | 328 | 257 | 14.9 | 16.6 | 24.9 | 36.5 | 38.5 |
| 443 | *Pollachius virens* | 1 | 1 | 60.3 | 60.3 | 60.3 | 60.3 | 60.3 |
| 892 | *Reinhardtius hippoglossoides* | 7031 | 3437 | 5.8 | 14.4 | 29.2 | 55.3 | 75.6 |
| 572 | *Scomber scombrus* | 20 | 20 | 6.1 | 6.1 | 23.8 | 32.4 | 32.4 |
| 398 | *Scomberesox saurus saurus* | 5 | 5 | 27.1 | 27.1 | 34.7 | 37.5 | 37.5 |
| 793 | *Sebastes norvegicus* | 18 | 18 | 38.2 | 38.2 | 48.5 | 52.6 | 52.6 |
| 792 | *Sebastes* sp. | 15670 | 6444 | 4.5 | 9.4 | 18.6 | 41.4 | 47.6 |
| 814 | *Triglops murrayi* | 388 | 213 | 7.2 | 7.3 | 11.1 | 16.2 | 17.2 |
| 447 | *Urophycis tenuis* | 776 | 737 | 20.8 | 23.0 | 36.2 | 63.6 | 86.5 |

**Invertebrates**

| Code STRAP* | Scientific name | Sampled number | | Length (cm) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Length | Weight | Min | P1** | Median | P99** | Max |
| 8138 | *Argis dentata* | 439 | 0 | 0.78 | 1.11 | 1.81 | 2.43 | 2.49 |
| 8113 | *Atlantopandalus propinqvus* | 130 | 0 | 0.73 | 0.78 | 1.94 | 2.40 | 2.46 |
| 8206 | *Cancer irroratus* | 1 | 1 | 2.80 | 2.80 | 2.80 | 2.80 | 2.80 |
| 8213 | *Chionoecetes opilio* | 636 | 314 | 0.80 | 1.10 | 8.30 | 12.70 | 13.30 |
| 8075 | *Eualus fabricii* | 51 | 0 | 0.59 | 0.59 | 0.85 | 1.06 | 1.06 |
| 8081 | *Eualus gaimardii belcheri* | 3 | 0 | 1.27 | 1.27 | 1.48 | 1.52 | 1.52 |
| 8080 | *Eualus gaimardii gaimardii* | 16 | 0 | 0.82 | 0.82 | 0.97 | 1.44 | 1.44 |
| 8077 | *Eualus macilentus* | 109 | 0 | 0.53 | 0.67 | 1.05 | 1.34 | 1.35 |
| 8033 | *Eusergestes arcticus* | 42 | 0 | 0.64 | 0.64 | 1.27 | 1.92 | 1.92 |
| 8217 | *Hyas araneus* | 51 | 27 | 0.60 | 0.60 | 4.20 | 9.00 | 9.00 |
| 8218 | *Hyas coarctatus* | 138 | 65 | 0.50 | 0.50 | 2.50 | 6.60 | 6.90 |
| 4753 | *Illex illecebrosus* | 32 | 32 | 4.40 | 4.40 | 12.50 | 19.00 | 19.00 |
| 8092 | *Lebbeus groenlandicus* | 95 | 0 | 0.64 | 0.64 | 1.51 | 1.94 | 1.94 |
| 8095 | *Lebbeus microceros* | 1 | 0 | 1.21 | 1.21 | 1.21 | 1.21 | 1.21 |
| 8093 | *Lebbeus polaris* | 137 | 0 | 0.66 | 0.67 | 1.01 | 1.46 | 1.60 |
| 8196 | *Lithodes maja* | 155 | 127 | 1.60 | 1.90 | 8.30 | 11.70 | 11.80 |
| 8111 | *Pandalus borealis* | 19841 | 761 | 0.53 | 1.09 | 2.20 | 2.77 | 3.06 |
| 8112 | *Pandalus montagui* | 1753 | 0 | 0.57 | 0.83 | 1.52 | 2.49 | 2.93 |
| 8057 | *Pasiphaea multidentata* | 1755 | 0 | 1.05 | 1.41 | 2.39 | 2.99 | 3.42 |
| 8056 | *Pasiphaea tarda* | 3 | 0 | 3.36 | 3.36 | 3.64 | 3.99 | 3.99 |
| 8135 | *Pontophilus norvegicus* | 360 | 0 | 0.74 | 0.84 | 1.31 | 1.67 | 1.70 |
| 8129 | *Sabinea sarsii* | 31 | 0 | 0.85 | 0.85 | 1.08 | 1.53 | 1.53 |
| 8128 | *Sabinea septemcarinata* | 146 | 0 | 0.76 | 0.78 | 1.17 | 1.69 | 1.72 |
| 8119 | *Sclerocrangon boreas* | 268 | 0 | 0.98 | 1.11 | 1.81 | 2.80 | 2.83 |
| 8035 | *Sergia robusta* | 2 | 0 | 0.86 | 0.86 | 1.38 | 1.89 | 1.89 |
| 8087 | *Spirontocaris liljeborgii* | 27 | 0 | 0.78 | 0.78 | 1.12 | 1.57 | 1.57 |
| 8084 | *Spirontocaris sp.* | 2 | 0 | 0.81 | 0.81 | 0.94 | 1.07 | 1.07 |
| 8085 | *Spirontocaris spinus* | 54 | 0 | 0.55 | 0.55 | 1.05 | 1.54 | 1.54 |

** Codes for vertebrates and invertebrates used by the Quebec Region of DFO (Miller and Chabot 2014).*
*** P1 : 1st percentile P99 : 99th percentile*