

SCIENTIFIC COUNCIL MEETING –MAY 2025

**Canadian (Newfoundland And Labrador Region) Multi-Species Research Vessel Bottom Trawl Survey
Report for Surveys Conducted in 2024**

by

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RIDEOUT, R.M., WHEELAND, L., PERREAULT, A., REGULAR, P., SKANES, K., SIMMS, L., & MAKRIDES, J. 2025. Canadian (Newfoundland And Labrador Region) Multi-Species Research Vessel Bottom Trawl Survey Report for Surveys Conducted in 2024. *NAFO Scientific Council Research Document*, SCR Doc. 25/028: 1-68.

Abstract

We update basic vessel performance and document the timing and spatial coverage of the annual spring and autumn multispecies bottom trawl surveys conducted by Fisheries and Oceans Canada's Newfoundland and Labrador Region, including new data for surveys in 2024. The current survey designs cover an expansive spatial area, spanning six NAFO Divisions (2HJ3KLNO) and 515,000 km² in the autumn and four NAFO Divisions (3LNOP) and 324,000 km² in the spring. Coverage issues over the past decade or more were a result of aged vessels with frequent mechanical issues, impacts from the Covid-19 pandemic, and weather. New research vessels (CCGS John Cabot and CCGS Jacques Cartier) were introduced starting in 2021 and the extensive time and effort that went into comparative fishing trials between the new and old research vessels over 2021-2023 contributed to continued multispecies survey coverage issues in those years. Overall there have been systemic coverage issues for deep-water strata in the autumn survey, particularly those in Div. 2H and Div. 3L. Coverage of Division 3L has been problematic in the spring survey as well. In the 2024 autumn survey, 58% of intended fishing sets (i.e. those in the survey design) were successfully completed and 69% of intended strata were covered with at least 2 fishing sets (i.e. the minimum standard for inclusion in stratified analyses). There was highly reduced survey coverage of Div. 2H and deepwater strata were not covered in Divs. 2J and 3K (>750 m), or 3L (>732 m). In the spring 2024 survey, 71% of intended fishing sets (i.e. the number of sets in the fully allocated survey design) were successfully completed and 98% of intended strata were covered with at least 2 fishing sets. The 2024 survey results indicate that the introduction of the new research vessels has not immediately improved the capacity to cover the entire survey design, especially in the autumn survey. These surveys had reduced (70-80%) set allocations even before the start of the surveys. The persistent survey coverage issues, coupled with the lack of (or issues related to) conversion factors between new and old research vessels for some species have resulted in years being dropped from survey analyses, breaks in data time series, and major challenges and increased uncertainty in the provision of science advice regarding

fisheries resources. Here we attempt to navigate these issues in providing an up-to-date summary of RV survey data and survey abundance and biomass trends for a wide range of demersal fish stocks.

Introduction

The Canadian Department of Fisheries and Oceans (DFO), Newfoundland and Labrador Region, has undertaken stratified-random surveys in portions of NAFO subareas 2+3 since the early 1970's. A full description of the history of these surveys, including stratification, trawl gear, towing protocols, vessels employed, as well as details of spatial coverage have been detailed in previous documents (e.g. Brodie, 2005, Brodie and Stansbury, 2007, Healey and Brodie, 2009, Healey et al., 2012, and references therein). The current document, which is typically produced annually for the June meeting of NAFO Scientific Council (see Rideout et al., 2022 for the most recent full version), generally focusses on survey timing and coverage and also updates survey indices for NAFO-managed fish stocks. Over the last couple of years, while comparative fishing was ongoing and conversion factors between new and old vessels were being developed, the survey document focused primarily on the spatial coverage of comparative fishing (Wheeland et al. 2023) or the RV survey (Rideout et al. 2024) without exploring stock specific survey indices, etc. Here we again provide detailed summaries of survey timing and coverage, including surveys conducted in 2024. In addition, now that the work on conversion factors is generally considered to be complete (Wheeland et al. 2024), we also return to the previous practice of updating stock-specific RV survey data.

Methods

The Canadian (NL Region) research vessel (RV) multispecies bottom trawl surveys cover NAFO Divisions 2HJ3KLNO (515,000 km²) in the autumn and Divisions 3LNOP (324,000 km²) in the spring. The survey area is stratified by depth range, as depicted in Figure 1-Figure 7. Survey sets (i.e. standardized fishing hauls at a randomly selected sampling unit) for these stratified-random surveys are distributed using a proportional-allocation scheme, whereby the number of sets allocated for a given stratum is proportional to the stratum area, subject to the condition that each stratum must be allocated a minimum of two sets. Tow sites are randomly selected from sampling units within each stratum, with each sampling unit typically encompassing an area of approximately 3.5 square nautical miles (Doubleday, 1981). Within each stratum, alternate stations are also selected, and are occupied if a sample from one of the other units cannot be obtained (e.g. untrawlable bottom). A constraint is applied to the random sampling to permit selection of only one sampling unit within each consecutive group of 10 units (i.e maximum of one unit selected from units 1-10, 11-20, 21-30, etc.).

When computing the stratified estimators of abundance or biomass for any given species, individual strata must have a minimum of two successful survey sets to be considered useable and to enable calculation of stratum variance. Strata down to 1500 m are included in the current survey design for some NAFO Divisions in the autumn survey, whereas the spring survey does not cover strata deeper than 732 m.

There have been numerous vessel and trawl changes throughout the RV time series. Most recently, two new research vessels, the CCGS Jacques Cartier and CCGS John Cabot were introduced to replace the longstanding research vessels the CCGS Alfred Needler and the CCGS Teleost. The CCGS Alfred Needler previously conducted fishing sets at depths down to 732m, whereas the CCGS Teleost fished to depths of 1500 m. The two new research vessels are built to identical specifications and both have the capacity to fish down to the maximum survey depth of 1500 m. The CCGS Alfred Needler was decommissioned in 2023. Its sister ship, the CCGS Wilfred Templeman, which also previously participated in the surveys, was decommissioned in 2008.

The sampling gear previously used in the survey was the Campelen shrimp trawl (McCallum and Walsh 1996). With the introduction of the new research vessels, some minor modifications were made to the trawl, which has subsequently been referred to as the 'modified Campelen trawl' (Wheeland et al. 2024). Comparative fishing was completed from 2021-2023 to determine differences in catchability between the outgoing vessels fishing the Campelen trawl and the new vessels fishing the modified Campelen trawl. Unfortunately, the early

retirement of the CCGS Alfred Needler limited the amount of paired tow data collected, precluding the estimation of conversion factors for several species, particularly on the Grand Bank (Div. 3LNO) and in Subdiv. 3Ps. The comparative fishing program and the work to develop conversion factors have been extensively documented (DFO 2024, DFO in press, Silver et al. 2024, Trueman et al. in press a, Trueman et al. in press b, Wheeland et al. 2023a, Wheeland et al. 2023b, Wheeland et al. 2024, Wheeland and Trueman 2024) and the impact of the conversions/lack of conversions have been explored by Rideout et al. 2025. In some cases, the lack of conversion factors will result in the end of existing data time series and the beginning of a new time series for the modified Campelen trawl. Additionally, data collected during the comparative fishing program indicate that the catchability of the Teleost and Needler was not always equal, as previously assumed, though differences cannot be directly estimated. Gaps in conversion factors for the Needler/Templeman and/or Teleost series therefore also complicate the continuity of the historic series given the use of mixed vessels in past surveys.

Survey Design: Autumn Surveys

The current autumn survey design (Table 1) includes Divisions 2HJ3KLNO. Division 2G has not been surveyed since 1999 and is no longer included in survey planning. Likewise, Division 3M (the deep-water strata in the Flemish Pass and the western slopes of the Flemish Cap) was permanently excluded from survey planning starting in 2010. In the early-2000s, coverage of Division 2H was planned for every second year, but in 2011 the decision was made to cover Division 2H annually. The increased coverage of Div. 2H (84 planned sets annually) was deemed necessary for the assessment of key commercial species, primarily northern shrimp. However, since there was no increase in the amount of allotted vessel time for the survey, the increase in spatial coverage had to come at the expense of other areas that were previously part of the survey design. Starting in 2011, coverage of deep strata (>732 m) in Divs. 3NO was no longer included in the autumn survey design (a reduction of 48 planned sets). The decision to remove these strata was based on the fact that portions of these strata were unsuitable for trawling and often, a considerable amount of time was used to search for deployment sites near the intended locations. In addition, the inshore strata of Divs. 3K and 3L (19 and 34 planned sets respectively) were permanently removed from the survey design. These inshore strata were initially added to the survey design in the mid-1990s but have not been consistently covered since 2007. The limited survey coverage that has been attained in these inshore areas typically occurred at times when the survey vessels have had to leave the offshore area due to severe weather but were able to conduct fishing in the near shore areas. There have been no further substantive changes to the planned autumn survey coverage of Divs. 2HJ3KLNO in the years since 2011.

The autumn survey is generally conducted from mid-September to mid-December, although in some years (1995, 2002-2005, 2014) the survey has extended into January of the subsequent year (Table 2, Figure 8). The general plan has been for one vessel (previously the CCGS Alfred Needler) to start in the south, surveying Div. 3O, then Div. 3N and finally Div. 3L. A second vessel (previously the CCGS Teleost) starts in the north, surveying Div. 2H, then to Div. 2J, Div. 3K and finally Div. 3L deep strata (>732m). It is common for both vessels to share some of the survey work in Div. 3K once the Div. 3LNO portion has been covered (Table 4, Figure 10). In 2024, the CCGS John Cabot started in Div. 3O and CCGS Capt Jacques Cartier started in Div. 2H. Overall autumn survey timing was similar to previous years (Figure 8), and timing by division has generally returned to more typical timing after surveys in northern divisions were earlier than normal in 2023 (Figure 11). The earlier timing in 2023 is primarily attributed to the use of both the CCGS Teleost and CCGS John Cabot in the northern portion of the survey area.

Survey Design: Spring Surveys

The spring survey encompasses Divs. 3LNOPs, and is typically conducted from early-April through to late June (Table 3, Figure 8). The only major change in the spring survey design in recent years was the removal of inshore strata in Division 3L starting in 2011. These inshore strata were always considered of lower priority and were only infrequently surveyed. This change resulted in the planned number of sets decreasing from 512 to 478. The spring survey has typically used a single vessel, with the CCGS Alfred Needler being the primary vessel from 2009 until the switch to the current vessels, but mechanical issues with this vessel in some years

required the use of the CCGS Teleost to complete the survey (Table 5, Figure 9). The 2024 spring survey was performed by the CCGS John Cabot. Spring survey timing was slightly early in some divisions in the 2023 survey but in 2024 the survey timing was more consistent with the majority of the time series (Figure 11).

Survey Coverage

This document summarizes the intended and realized coverage of the Canadian spring and autumn multispecies bottom trawl surveys. This includes an examination of the total number and spatial coverage of fishing sets conducted in each division as well as by individual research vessels. Years and areas with poor/inadequate survey coverage are highlighted. Here we used “intended” coverage to indicate a complete survey at the full allocation specified within the survey design. In recent years, surveys have begun with a 70-80% allocation in response to known or expected delays. Reductions at the start of the survey aim to spread decreases in effort evenly across the stratified survey area to avoid large spatial gaps in coverage. Unfortunately, realized recent surveys are characterized by both overall reduced effort and incomplete strata and/or strata groups (e.g. deepwater).

Stock-Specific Survey Plots

The Canada-NL RV survey data are one of the primary inputs for the development of science advice regarding NAFO and Canadian ecosystem and stock assessments. Here we provide a series of plots and tables summarizing the RV survey data for each stock-survey combination. Some stocks have data for both the spring and autumn surveys, whereas others have data from only one of those surveys, depending on stock area. A standard format is maintained for all stocks and if the specific data for that plot is not collected or not available for that species/stock then the plot is simply left blank.

The objectives of the stock-specific plots in this report are to:

1. Provide a quick summary of survey data that can be useful to monitor stocks in years that do not have an assessment for a particular stock/species or even for stocks/species that are not formally assessed.
2. Provide a quick summary of biological data that can be used to potentially answer general biological questions about species/stocks. These data are not necessarily analyzed at the same resolution or with the same methodology used during more rigorous assessment processes.

It is important to note that the RV bottom trawl survey data presented here do not necessarily provide a complete picture of stock status. The stock assessment processes that provide science advice to resource managers may include data from other sources (e.g. data from commercial fisheries or other surveys) and may not mirror exactly the trends observed in this report. For details of stock status, readers are directed to the pertinent stock assessment documents available on the Northwest Atlantic Fisheries Organization website (<https://www.nafo.int/>) or the website for the Canadian Science Advisory Secretariat (<https://www.dfo-mpo.gc.ca/csas-sccs/index-eng.htm>).

Plots of Survey Indices - These plots represent stratified estimates of total biomass and abundance (± 1 SE). The intent here is for the RV survey indices to mirror those used in the most recent advisory processes. So if index strata (a subset of the available strata that are most reliably covered in the survey and represent the core distribution of the species/stock) are used in the provision of advice then those same index strata are used here.

Plots of survey indices are presented as one, two, or three panels depending on whether conversions exist for the Engel-Campelen and Campelen-Modified Campelen gear changes. For example, if the entire time series can be converted to Modified Campelen units then it is displayed as a single panel. If there is an Engel-Campelen conversion but no Campelen-Modified Campelen conversion then it is generally displayed as two separate panels due to a break in the time series. If there is no conversion factor for either of the trawl changes then the indices will be displayed as three separate panels/time series. Different panels are intentionally used for each

series, as opposed to plotting multiple series in the same panel, to minimize the potential for readers to overlook the gear change and instead interpret the data as continuous.

The inclusion/exclusion of survey years in the data series presented here reflects decisions made in previous stock assessments based on survey coverage and also recommendations made by Rideout et al. (2025). It should be noted that these are only recommendations based on the data available and the analyses performed. Subsequent assessments may decide on different ways to present survey data. If so, attempts will be made to adopt those changes in subsequent versions of this report.

Plots of Length Frequencies - Length frequency plots represent stratified estimates of abundance at length. Similar to the survey index plots, the intent here is to mirror the methods used in recent advisory processes to plot size information from RV survey data. That is, if there are index strata used in the advisory process then those same index strata are used here. For the sake of clarity in plotting we show only data from the last 15 years. This will constitute data collected by both the Campelen trawl and the Modified Campelen trawl. If there is a conversion for the two trawls for the species/stock in question then all the data will be presented in blue. If a conversion does not exist for the stock/species in question then data from the two trawls will be presented as different colours to indicate that they are not necessarily directly comparable. In such cases it is important to remember that the absolute values (e.g. the height of the curves) are not necessarily comparable between the series. Years that were excluded from the survey index time series (e.g. due to incomplete survey coverage) are also excluded from the length frequency plot.

Data Table - The data table represents a summary of RV survey sampling over the last three years. It summarizes the number of fish caught each year/survey as well as the number of individuals for which measurements (lengths, weights, etc.) were collected. There is also a count of the number of biological samples (otoliths, stomachs) collected. There are entries for both 'otoliths' and 'ages'. In some instances there will be a number in the otoliths section, reflecting that otoliths were collected, but '0' in the ages section, reflecting that the otoliths had not yet been aged at the time of report creation or that otoliths are not currently being aged for that species/stock.

Plots of Length-Weight - The length-weight data plotted represent all available data collected in the RV surveys (i.e. includes any potential data from incomplete strata, as well as any data from non-index strata). The plot includes data grouped from the most recent 10 years. The year range is indicated in the top left corner of the plot. Data points were identified as outliers and removed based on the linear regression of $\log(\text{length})$ - $\log(\text{weight})$ and the identification of values with Bonferroni p-values exceeding 0.05 using the outlierTest function in the R package 'car' (Fox & Weisberg 2019). In any instance where weight data are not collected/available a blank plot is presented that contains the text 'No Weight Data'.

Plots of Age-Length - The age-length data are presented as a box and whiskers plot. The plot includes data from the most recent 10 years. The year range is indicated in the top left corner of the plot. For each age, the plot demonstrates the median length and the first and third quartiles (the 25th and 75th percentiles). The whiskers extend from the hinges to the largest and smallest values no further than $1.5 * \text{IQR}$ from the hinges (where IQR is the inter-quartile range, or distance between the first and third quartiles). The plots also demonstrate any "outlying" points beyond the end of the whiskers. Data are only presented for ages represented by at least 10 fish. In any instance where age data are not collected/available a blank plot is presented that contains the text 'No Age Data'.

Plot of Proportion Mature at Length - The proportion mature at length was estimated for 1 cm intervals for both sexes for the most recent 10 years. The year range is indicated in the top left corner of the plot. The data in the plot are raw proportion data and there is no modeling of these data (e.g. no logistic regression). Data are only presented for lengths represented by at least 10 fish.

Plots of Distribution - Bubble plots are used to display spatial distribution in the last 3-4 years, depending on the species/stock. These plots display all available data collected in the RV surveys (i.e. includes any potential data from incomplete strata, as well as any data from non-index strata). Symbol area is proportional to the total weight of the species caught in each fishing set. Symbols are coloured based on total set weight divided by the total number of fish (i.e. an approximation of average fish weight). In years where surveys did not occur or

were considered incomplete, those plots are labelled accordingly. There were also a small number of instances where a survey was completed by a secondary vessel (i.e. not the vessel that performed the survey in that area in most years) and has subsequently been recommended to be excluded as part of the main Campelen trawl time series, as described by Rideout et al. (2025). For the purposes of the current document this only applies to the 2021 survey for some stocks in Subdiv. 3Ps, and those panels/plots have been labelled with 'Survey not part of time series' to bring attention to the fact those data exist but are excluded from the time series presented herein.

Results

The autumn survey design has remained the same since 2011 (Table 1), but substantial mechanical issues with the research vessels have become commonplace and have resulted in reduced coverage (reduced number of fishing sets per stratum or failure to complete some strata) or a complete lack of coverage of certain areas in some years.

An examination of the successful sets completed during the autumn survey in recent years (Table 6-Table 11; Figure 12) demonstrates the difficulties that have been encountered in completing this survey. The number of sets completed has declined. In 2022 there was no autumn survey as effort was redirected to comparative fishing between the new and old research vessels. In 2023, three research vessels (CCGS Teleost, CCGS John Cabot, CCGS Capt Jacques Cartier) were used to undertake the fall survey, with 77% of intended fishing sets successfully completed and 94% of intended strata met the minimum requirement of 2 successful sets. This survey marked the first time in a decade that the deep strata of Div. 3L were covered (Figure 13, Table 9). However, there was again no coverage of deep strata in Div. 2H, this time due to faulty trawl floats which limited the ability to fish deepwater sets for a portion of the survey season. In 2024, the autumn survey for the first time was conducted exclusively by the two new research vessels, the CCGS J. Cabot and the CCGS C.J. Cartier. In the 2024 autumn survey, only 58% of intended fishing sets were successfully completed and 69% of intended strata were covered with at least 2 fishing sets. In Div. 2H only a single successful fishing set could be achieved per stratum (Figure 13) and therefore stratified estimates will not be possible based on these data. It has now been more than a decade since these strata were successfully fully covered by the survey (Figure 13, Table 6). In addition to coverage issue in Div. 2H, the 2024 survey also failed to cover deep strata in Divs. 2J, 3K, and 3L.

In general, prior to 2014 (with the exception of 2006) the spring survey provided good coverage of the area in the survey design. However, coverage has been sporadic and generally reduced since that time (Figure 14). In particular there have been major coverage issues for Div. 3L in most recent years. There was no spring survey in 2020 and no coverage of Divs. 3LNO in 2021. In 2022, there were major coverage issues in Div. 3L, and in 2023 subdiv. 3Ps was not surveyed. In 2024, the CCGS J. Cabot was the only vessel involved in the spring survey. This survey successfully completed 71% of intended fishing sets and 98% of intended strata were covered with at least 2 fishing sets.

Another noteworthy issue arose related to trawl performance in the 2024 autumn survey. Prior to the start of the survey the starboard side warp on the CCGS J. Cabot was trimmed to remove a damaged portion, resulting in unequal warp lengths between the port and starboard trawl drums. Fishing master observations and trawl mensuration indicate that this resulted in skewed deployment of the trawl. Typically, CAN-NL survey sets maintain a <5m difference in warp deployed on port v. starboard (i.e. "warp differential"). However, during the first two trips in fall 2024 bridge notes indicate warp differential was consistently 5-10m for sets fished between 100-600m and reached up to 16m difference for one set at about 550m depth. Sets in these trips were located in Div. 3O and a portion of Div. 3N. Adjustments to calibration settings at-sea were able to compensate for the differential in some sets, but this was not consistent. Fishing was therefore limited to shallow (<200m) depths part way through the second trip, focusing on survey strata in depths where the difference was less pronounced until the vessel could return to port. Warps were then trimmed to equal lengths, resolving this issue for sets going forward.

It is likely that trawl efficiency/catchability was impacted by skewed geometry resulting from this warp differential. The magnitude of any effect is impossible to quantify without directed gear trials and is therefore

unknown here. However, a skewed trawl would generally be expected to result in an underestimation of survey indices (e.g. due to narrower trawl opening, increased escape, decreased herding) (NOAA 2002). Effects are likely to vary by taxa, with the highest impact expected to be on flatfish indices, and by depth (Weinberg and Somerton 2006). This gear issue has introduced an additional source of variability in the data from this survey, and may have introduced a directional bias. However, it is expected that the impact would fall within the normal range of survey variability and indices presented here are considered representative of stock trends.

The persistent survey coverage issues, coupled with the existence or lack of conversion factors between new and old research vessels, as well as the rejection of previous assumptions of equal catchability between the previous research vessels CCGS Alfred Needler/Wilfred Templeman and the CCGS Teleost for some species has made accurately summarizing research vessel survey data across a wide range of species/stocks a very tedious task. In Figure 15-Figure 46 we have attempted to summarize these data in agreement with decisions used in recent stock assessments (e.g. what years are dropped due to survey coverage issues; use of index strata when warranted) and with decisions made during comparative fishing work (application of conversion factors when available; breaking of data time series when conversions are not available).

For American plaice in Divs. 2J3K (Figure 15), survey indices increased over a 10 year period from the early 2000s to the mid 2010s and have been relatively stable since that time. The stock continues to be widely distributed over the shelf area. In general, there appears to have been an increasing trend in the size distribution over the last decade, and the size distribution in the last two years has been particularly wide relative to previous years.

For American plaice in Divs. 3LNO (Figure 16, Figure 17), survey indices had generally declined between 2014 and 2020. Surveys in 2021 and 2022 in Divs. 3LNO either did not take place or are considered incomplete for American plaice. Both spring and autumn survey indices increased between 2023 and 2024 but very little can be concluded with respect to recent survey trends for this stock since based on the short modified Campelen trawl series and since these data are not directly comparable to those in the previous Campelen trawl time series.

For American plaice in Subdiv. 3Ps (Figure 18), survey indices have remained at a low level since the early 1990s. Very little can be concluded with respect to survey trends for this stock in the last couple of years since the short modified Campelen trawl series is not directly comparable to the previous Campelen trawl time series. The stock appears to be distributed primarily in the eastern portion of 3Ps, ranging from south of Placentia Bay to the Halibut Channel and the banks surrounding it. The length composition of the 2024 survey suggested potential indication of a recruitment pulse at small sizes (~15-18 cm).

For yellowtail flounder in Divs. 3LNO (Figure 19, Figure 20), the availability of conversion factors allows the RV data to be expressed as a continuous time series for both the autumn and spring surveys going back to 1990 and 1984, respectively. For the autumn survey, indices were generally stable over about a 20 year period up to 2020. The 2023 and 2024 indices are only slightly lower than the values in those years. In the spring survey, there was a large drop in survey indices between 2014 and 2016. Indices have subsequently increased over 2022-2024. The length compositions of the surveys have been remarkable stable over the time series, with perhaps a slightly wider distribution in the spring survey in recent years.

For yellowtail flounder in Subdiv. 3Ps (Figure 21), the survey indices have been relatively stable over the last 20 years, with a noticeable high point in 2022. The stock is distributed primarily on the shallow portions of St. Pierre Bank.

For Atlantic cod in Divs. 2GH (Figure 22), survey indices have been higher in the last decade than in previous years, with a peak in the 2023 survey. Survey coverage was poor in the 2024 survey and not considered representative.

For Atlantic cod in Divs. 2J3KL (Figure 23), the survey indices increased between 2010 and 2015 and have been relatively stable since that time at levels far below those of the 1980s. The stock is generally widely distributed over the entire shelf area of Divs. 2J3K and the northern portion of Div. 3L but is generally caught in very low numbers on the northern portion of the Grand Bank.

For Atlantic cod in Divs. 3NO (Figure 24, Figure 25), survey indices were highest during the late 1980s-early 1990s and have been low since that time. The most recent survey indices are among the lowest in the time series. In the most recent surveys, catches of cod have primarily been on the southeast edge of the Grand Bank.

For Atlantic cod in Subdiv. 3Ps (Figure 26), recent survey indices are low relative to most of the time series, especially for biomass, and survey catches are made up primarily of fish less than 40 cm. In recent decades, survey catches of 3Ps cod were largest in the southern part of the stock area (e.g. Halibut Channel). More recently, however, survey catches in that area are small and the only moderately sized catches have come from the area in or near Fortune Bay.

Greenland halibut are assessed over a wide spatial area but survey indices are broken into those for Divs. 3LNO and Divs. 2J3K. In Divs. 2J3K, the existence of conversion factors allow RV data to be expressed as a single time series (Figure 27). These data indicate a sharp jump in biomass between 2023 and 2024 due to a small number of large survey sets. This increase in biomass was not accompanied by an increase in abundance. In fact, there has been a general declining trend in abundance over the last 20+ years. An examination of the length frequency plot suggests that the increase in biomass (but not abundance) was due to catches of larger fish in the survey in 2024. For Divs. 3LNO, the autumn survey indices in 2023 and 2024 were similar to those in previous years (Figure 28). For the spring survey (Figure 29), the 2024 indices were lower than in 2023 but it is difficult to interpret this one year change relative to the longer time series. Survey data are also summarized here for Greenland halibut in Subdiv. 3Ps (Figure 30), although fish in this area have never been assessed as a “stock” per se or included as a component of one of the neighbouring Greenland halibut stocks..

For Redfish in Divs. 2J3K (Figure 31), survey indices increased sharply between 2023 and 2024. The increase is a result of larger survey catches throughout the stock area (i.e. not localized) and appears to track from recruits observed in previous years. For Redfish in Divs. 3LN the most recent data from the autumn survey are not directly comparable to the historic time series (Figure 32). For the spring survey (Figure 33), however, some overlap of the Campelen and Modified Campelen trawl series indicate that survey indices were highest around 2010-2015 and have been lower in recent years. Although not directly comparable to the rest of the time series, the spring modified Campelen data indicate that indices in the most recent years are lower than in 2016.

Results are similar for beaked redfish in Div. 3O (Figure 34, Figure 35). Survey indices increased from 2005 to 2010 and remained high for three years before declining steeply thereafter. This decline is reflected in the modified Campelen data as well, indicating that current survey indices are quite low. Redfish in Subdiv. 3Ps (Figure 36) are considered part of a larger stock area that extends into the Gulf of St. Lawrence and not much can be concluded regarding survey trends for a portion of a stock and without conversion factors between the Campelen and Modified Campelen trawls.

For witch flounder in Divs. 2J3KL (Figure 37), the survey indices declined dramatically between the late 1970s-early 1980s and the mid-1990s. Indices have been increasing steadily since that time. For Witch flounder in Divs. 3NO (Figure 38, Figure 39), the lack of conversion factors for both research vessels in the surveys make current indices difficult to interpret relative to the rest of the time series. The same is true for witch founder in Subdiv. 3Ps (Figure 40).

For Thorny skate in Divs. 2J3K (Figure 41), survey indices have been increasing over the past two decades. The length composition of the survey catches is extremely broad with no dominant modes. For Thorny skate in Divs. 3LNOPs (Figure 42, Figure 43), survey indices have been stable or increasing over most of the survey time series but the lack of conversion factors makes it difficult to evaluate the most recent observations relative to previous years. In addition, spatial coverage issues for Divs. 3LNO or Subdiv. 3Ps in several consecutive years make it difficult to evaluate recent indices over the entire range of the stock.

Like Thorny skate, the distribution of White hake is considered to extend from the southern Grand Bank into Subdivision 3Ps so the stock area is considered to be Divs. 3NOPs. And also like thorny skate, the lack of conversion factors coupled with survey coverage issues are problematic for evaluating current status (Figure 44, Figure 45).

Roughhead grenadier is the species that is most impacted by the failure of the autumn survey to cover deep strata in Divs. 2J3K in recent years. Since the 2024 survey again failed to cover these deep strata the survey is considered incomplete with respect to this species and the indices are not used. Like some other fish species in 2J3K, however, the survey indices suggest a continuously growing stock since the mid-1990s (Figure 46).

Discussion

Substantive mechanical issues with the research vessels in recent years have made completion of the autumn multispecies bottom trawl survey very difficult. In some instances, when one of the two vessels used during the autumn survey has been inoperative it has been possible to extend the usage time of the second vessel. This is not always possible due to the fact that vessels and vessel time are shared across multiple monitoring programs and multiple regions within Fisheries and Oceans Canada. Over 2021-2023, extensive issues with survey coverage were primarily a result of the deployment of the new research vessels CCGS John Cabot and CCGS Jacques Cartier and the need to sometimes sacrifice survey coverage in order to focus on comparative fishing. The development of effective conversion factors based on comparative fishing was considered critical for the integrity of the existing survey time series. In 2024 the surveys depended entirely on the new research vessels and there was no comparative fishing. Unfortunately, the 2024 survey results indicate that the introduction of the new research vessels has not immediately improved the capacity to cover the entire survey design, especially in the autumn survey. It should be noted that in recent years the survey set allocation has typically been reduced to 70-80% of the allocation depicted in the survey design even before the start of the surveys.

In recent years the main coverage issues for the autumn survey have been for the deeper strata within Div. 2H and Div. 3L. These coverage issues (and more besides) continued in the 2024 autumn survey. The 2024 survey also had incomplete coverage of deep strata in Divs. 2J3K, in line with 2018, 2019, and 2021. With respect to Div. 2H, the inclusion of this area in the annual survey design was expected to be beneficial in monitoring resource trends for Northern shrimp (*Pandalus borealis*) within Shrimp Fishing Area 5, and perhaps to a lesser extent Greenland halibut (*Reinhardtius hippoglossoides*). However, given the recent inability to cover the deeper strata within Div 2H, the added value for the assessment of deep-water demersal fish such as Greenland halibut is questionable.

The issues with covering the deep strata in Div. 3L in the autumn survey are perhaps magnified by the fact that the spring survey coverage of Div. 3L has also been very poor in recent years. These coverage issues are likely to create a great deal of uncertainty in the assessment of fishery resources and ecosystem conditions on the Grand Bank. These coverage issues are occurring at an unfortunate time as ecosystem changes in total biomass and community structure appear to be occurring. Complete coverage of Div. 3L could help contribute to a better understanding of the changes that are occurring in this area and the implications for resource management.

Unfortunately, conversion factors could not be achieved for all vessel/taxa/area combinations. Much of this was due to the earlier than expected decommissioning of the CCGS Alfred Needler. Since this vessel was historically responsible for much of the survey coverage in Divs. 3LNO and Subdiv. 3Ps, stocks in those areas are less likely to have conversion factors. For many stocks in those areas the use of the new research vessels and the modified Campelen trawl marks the end of existing data series and the beginning of new ones.

The persistent survey coverage issues, coupled with the lack of (or issues related to) conversion factors between new and old research vessels for some species have resulted in years being dropped from survey analyses, breaks in data time series, and major challenges and increased uncertainty in the provision of science advice regarding fisheries resources. How to handle these broken data series will be a challenge for current and future assessments of these stocks.

Here we attempt to navigate these issues in providing an up-to-date summary of RV survey data and survey abundance and biomass trends for a range of fish stocks assessed by NAFO or Canada. Obviously survey trends and other indicators are quite variable across the range of stocks examined here but in general, with the exception perhaps of yellowtail flounder, fish stocks on the Grand Bank are generally remaining steady at a low level or decreasing, while some stocks in Divs. 2J3K are showing clear signs of long-term growth.

Acknowledgements

The Canadian multi-species survey dataset would not exist without extensive efforts on the part of the Fisheries and Oceans Canada scientific sampling teams as well as the crews of the CCGS Teleost, CCGS A. Needler, CCGS J. Cabot, and CCGS Capt. J. Cartier.

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Table 1. Number of survey sets planned per Division, for Canadian Autumn and Spring RV multispecies bottom trawl surveys.

Survey	Division	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Autumn	2H	84	84	84	84	84	84	84	84	84	84	84	84
Autumn	2J	117	117	117	117	117	117	117	117	117	117	117	117
Autumn	3K	156	156	156	156	156	156	156	156	156	156	156	156
Autumn	3L	172	172	172	172	172	172	172	172	172	172	172	172
Autumn	3M												
Autumn	3N	70	70	70	70	70	70	70	70	70	70	70	70
Autumn	3O	75	75	75	75	75	75	75	75	75	75	75	75
	Total	674	674	674	674	674	674	674	674	674	674	674	674
Spring	3L	142	142	142	142	142	142	142	142	142	142	142	142
Spring	3N	79	79	79	79	79	79	79	79	79	79	79	79
Spring	3O	79	79	79	79	79	79	79	79	79	79	79	79
Spring	3Ps	178	178	178	178	178	178	178	178	178	178	178	178
	Total	478	478	478	478	478	478	478	478	478	478	478	478

Table 2. Start and end dates (corresponding to the first and last fishing set) for the Canadian Autumn RV multispecies bottom trawl surveys in Divs. 2HJ3KLNO. Note that Divs. 2G and 3M have not been included in the survey design since 1999 and 2007, respectively, and have not been included here.

Year	Div 2H Start	Div 2H End	Div 2J Start	Div 2J End	Div 3K Start	Div 3K End	Div 3L Start	Div 3L End	Div 3N Start	Div 3N End	Div 3O Start	Div 3O End	All Divs Start	All Divs End	Total Days*
1977	NA	NA	1977-11-11	1977-12-01	1977-11-20	1977-12-02	NA	NA	NA	NA	NA	NA	1977-11-11	1977-12-02	21 days
1978	1978-09-16	1978-09-30	1978-08-03	1978-11-27	1978-07-30	1978-11-27	NA	NA	NA	NA	NA	NA	1978-07-30	1978-11-27	120 days
1979	1979-08-03	1979-08-19	1979-10-05	1979-11-30	1979-09-29	1979-12-04	NA	NA	NA	NA	NA	NA	1979-08-03	1979-12-04	123 days
1980	NA	NA	1980-10-09	1980-12-03	1980-10-04	1980-12-08	NA	NA	NA	NA	NA	NA	1980-10-04	1980-12-08	65 days
1981	1981-10-26	1981-11-08	1981-11-15	1981-11-27	1981-11-14	1981-12-13	1981-10-03	1981-11-18	NA	NA	NA	NA	1981-10-03	1981-12-13	94 days
1982	NA	NA	1982-10-31	1982-11-15	1982-10-30	1982-12-08	1982-10-30	1982-12-06	NA	NA	NA	NA	1982-10-30	1982-12-06	76 days
1983	NA	NA	1983-10-28	1983-12-04	1983-11-16	1983-12-07	1983-10-13	1983-11-14	NA	NA	NA	NA	1983-10-13	1983-12-07	72 days
1984	NA	NA	1984-10-28	1984-11-14	1984-10-27	1984-12-05	1984-07-26	1984-09-03	NA	NA	NA	NA	1984-07-26	1984-12-05	78 days
1985	NA	NA	1985-10-23	1985-11-07	1985-11-07	1985-12-02	1985-10-09	1985-11-18	NA	NA	NA	NA	1985-10-09	1985-12-02	80 days
1986	NA	NA	1986-11-03	1986-11-21	1986-11-21	1986-12-11	1986-11-13	1986-11-30	NA	NA	NA	NA	1986-11-03	1986-12-11	55 days
1987	1987-08-15	1987-08-26	1987-10-29	1987-11-15	1987-11-15	1987-12-08	1987-10-15	1987-11-01	NA	NA	NA	NA	1987-08-15	1987-12-08	132 days
1988	1988-08-18	1988-09-06	1988-11-04	1988-11-26	1988-11-27	1988-12-13	1988-10-26	1988-11-13	NA	NA	NA	NA	1988-08-18	1988-12-13	135 days
1989	NA	NA	1989-11-02	1989-11-20	1989-11-24	1989-12-19	1989-10-12	1989-10-29	NA	NA	NA	NA	1989-10-12	1989-12-19	64 days
1990	NA	NA	1990-11-03	1990-11-20	1990-11-24	1990-12-15	1990-10-18	1990-11-18	1990-12-02	1990-12-09	1990-11-22	1990-12-01	1990-10-18	1990-12-15	94 days
1991	1991-11-20	1991-11-29	1991-11-06	1991-11-23	1991-11-23	1991-12-17	1991-11-08	1991-12-02	1991-10-27	1991-11-10	1991-10-19	1991-11-04	1991-10-19	1991-12-17	94 days
1992	NA	NA	1992-10-29	1992-11-15	1992-11-13	1992-12-09	1992-11-05	1992-11-29	1992-10-26	1992-11-05	1992-10-29	1992-10-29	1992-10-20	1992-12-09	81 days
1993	NA	NA	1993-11-02	1993-11-14	1993-10-30	1993-12-06	1993-11-12	1993-12-04	1993-11-01	1993-11-12	1993-10-24	1993-11-01	1993-10-24	1993-12-06	78 days
1994	NA	NA	1994-11-09	1994-11-25	1994-11-25	1994-12-19	1994-11-08	1994-12-07	1994-10-29	1994-11-13	1994-10-25	1994-11-12	1994-10-25	1994-12-19	83 days
1995	NA	NA	1995-12-04	1996-01-22	1995-11-28	1996-01-25	1995-10-03	1996-01-25	1995-09-27	1995-10-26	1995-09-26	1995-10-20	1995-09-26	1996-01-25	136 days
1996	1996-09-18	1996-09-30	1996-10-22	1996-11-07	1996-11-07	1996-11-26	1996-10-09	1996-12-05	1996-11-25	1996-12-13	1996-11-24	1996-12-17	1996-09-18	1996-12-17	179 days
1997	1997-10-09	1997-10-19	1997-10-19	1997-11-04	1997-11-04	1997-12-19	1997-10-23	1997-12-20	1997-10-08	1997-11-05	1997-09-26	1997-10-19	1997-09-26	1997-12-20	164 days
1998	1998-10-07	1998-10-30	1998-10-20	1998-11-04	1998-11-04	1998-11-30	1998-11-02	1998-12-15	1998-10-16	1998-12-16	1998-10-10	1998-12-13	1998-10-01	1998-12-16	142 days
1999	1999-10-22	1999-11-09	1999-11-06	1999-11-25	1999-11-20	1999-12-11	1999-11-07	1999-12-12	1999-11-03	1999-11-22	1999-10-13	1999-11-13	1999-10-12	1999-12-12	121 days
2000	NA	NA	2000-11-01	2000-11-14	2000-11-14	2000-12-18	2000-10-24	2000-12-18	2000-10-17	2000-12-05	2000-10-11	2000-11-24	2000-10-11	2000-12-18	132 days
2001	2001-12-08	2001-12-15	2001-11-21	2001-12-08	2001-11-27	2001-12-18	2001-10-04	2001-12-06	2001-09-28	2001-10-29	2001-09-22	2001-10-14	2001-09-22	2001-12-18	179 days
2002	NA	NA	2002-12-07	2003-01-12	2002-12-01	2003-01-14	2002-10-23	2002-12-02	2002-10-13	2002-10-26	2002-10-05	2002-10-16	2002-10-05	2003-01-14	196 days
2003	NA	NA	2003-12-01	2003-12-17	2003-12-17	2004-01-31	2003-11-07	2004-01-20	2003-10-21	2003-11-07	2003-09-23	2003-10-21	2003-09-23	2004-01-31	227 days
2004	2004-10-08	2004-10-26	2004-10-27	2004-11-19	2004-11-13	2005-02-01	2004-11-24	2004-12-19	2004-11-11	2004-11-23	2004-10-31	2004-11-10	2004-10-08	2005-02-01	188 days
2005	NA	NA	2005-11-17	2005-12-16	2005-11-24	2006-01-28	2005-10-29	2006-01-29	2005-10-10	2005-11-19	2005-10-04	2005-10-17	2005-10-04	2006-01-29	239 days
2006	2006-10-05	2006-10-20	2006-10-20	2006-11-14	2006-11-06	2006-12-21	2006-10-21	2006-12-18	2006-10-12	2006-10-21	2006-09-30	2006-10-09	2006-09-30	2006-12-21	142 days
2007	NA	NA	2007-11-01	2007-11-30	2007-11-22	2007-12-16	2007-10-16	2007-12-20	2007-10-09	2007-11-14	2007-10-06	2007-10-31	2007-10-06	2007-12-20	138 days
2008	2008-10-04	2008-10-18	2008-11-07	2008-12-07	2008-11-11	2008-12-21	2008-11-01	2008-11-13	2008-10-24	2008-11-01	2008-10-03	2008-10-20	2008-10-03	2008-12-21	166 days
2009	NA	NA	2009-11-05	2009-11-23	2009-11-18	2009-12-13	2009-11-01	2009-12-20	2009-10-24	2009-11-12	2009-10-02	2009-10-25	2009-10-02	2009-12-20	139 days
2010	2010-10-07	2010-10-23	2010-10-21	2010-11-15	2010-11-15	2010-12-17	2010-10-29	2010-12-20	2010-10-12	2010-12-12	2010-09-30	2010-10-12	2010-09-30	2010-12-20	144 days
2011	2011-10-12	2011-10-27	2011-10-28	2011-11-26	2011-11-11	2011-12-19	2011-11-02	2011-12-18	2011-10-13	2011-11-20	2011-09-29	2011-10-17	2011-09-29	2011-12-19	134 days
2012	2012-10-07	2012-10-26	2012-10-14	2012-11-24	2012-11-12	2012-12-20	2012-10-27	2012-12-03	2012-10-11	2012-11-05	2012-09-30	2012-10-10	2012-09-30	2012-12-20	140 days
2013	2013-10-07	2013-10-25	2013-10-25	2013-11-18	2013-11-10	2013-12-18	2013-10-18	2013-11-25	2013-09-29	2013-10-18	2013-09-19	2013-09-29	2013-09-19	2013-12-18	147 days
2014	2014-10-06	2014-10-13	2014-10-18	2014-11-14	2014-11-08	2014-12-06	2014-12-06	2015-01-17	2015-01-17	2015-01-17	NA	NA	2014-10-06	2015-01-17	103 days
2015	2015-10-18	2015-10-24	2015-10-08	2015-11-14	2015-11-13	2015-12-13	2015-10-30	2015-12-14	2015-10-07	2015-10-30	2015-09-25	2015-10-16	2015-09-25	2015-12-14	134 days
2016	2016-10-07	2016-10-23	2016-10-28	2016-11-29	2016-11-15	2016-12-15	2016-10-28	2016-12-09	2016-09-29	2016-11-07	2016-09-16	2016-10-06	2016-09-16	2016-12-15	159 days
2017	2017-10-14	2017-10-29	2017-10-23	2017-12-02	2017-11-08	2017-12-09	2017-10-20	2017-12-15	2017-09-22	2017-10-22	2017-09-14	2017-09-24	2017-09-14	2017-12-15	148 days
2018	2018-10-14	2018-10-30	2018-10-26	2018-12-09	2018-11-02	2018-12-18	2018-10-05	2018-11-02	2018-09-24	2018-10-05	2018-09-14	2018-09-24	2018-09-14	2018-12-18	140 days
2019	2019-10-11	2019-10-26	2019-10-20	2019-12-07	2019-11-26	2019-12-22	2019-10-16	2019-11-26	2019-10-01	2019-10-16	2019-09-17	2019-10-01	2019-09-17	2019-12-22	156 days
2020	2020-10-23	2020-10-30	2020-10-15	2020-12-11	2020-10-19	2020-12-15	2020-09-26	2020-10-18	2020-09-11	2020-09-26	2020-08-29	2020-09-10	2020-08-29	2020-12-15	164 days
2021	2021-10-09	2021-10-28	2021-10-15	2021-11-13	2021-11-13	2021-12-15	NA	NA	NA	NA	2021-09-26	2021-09-27	2021-09-26	2021-12-15	68 days
2022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2023	2023-09-19	2023-09-26	2023-09-27	2023-10-13	2023-10-13	2023-12-02	2023-10-27	2023-11-25	2023-10-20	2023-10-27	2023-10-09	2023-10-20	2023-09-19	2023-12-02	191 days
2024	2024-10-10	2024-10-27	2024-10-27	2024-12-17	2024-11-17	2024-12-18	2024-11-07	2024-11-29	2024-10-19	2024-11-07	2024-10-04	2024-10-20	2024-10-04	2024-12-18	141 days

Table 3. Start and end dates (corresponding to the first and last fishing set) for the Canadian Spring RV multispecies bottom trawl surveys in Divs. 3LNOP.

Year	Div 3L Start	Div 3L End	Div 3N Start	Div 3N End	Div 3O Start	Div 3O End	Subdiv 3Pn Start	Subdiv 3Pn End	Subdiv 3Ps Start	Subdiv 3Ps End	All Divs Start	All Divs End	Total Days
1984	1984-05-17	1984-05-21	1984-04-30	1984-05-06	1984-04-28	1984-05-08	NA	NA	NA	NA	1984-04-28	1984-05-21	23 days
1985	1985-04-17	1985-05-26	1985-04-18	1985-05-05	1985-04-11	1985-04-22	NA	NA	NA	NA	1985-04-11	1985-05-26	54 days
1986	1986-05-07	1986-05-25	1986-04-23	1986-05-03	1986-04-18	1986-05-04	NA	NA	NA	NA	1986-04-18	1986-05-25	37 days
1987	1987-05-14	1987-06-01	1987-05-02	1987-05-14	1987-04-23	1987-05-02	NA	NA	NA	NA	1987-04-23	1987-06-01	39 days
1988	1988-05-05	1988-05-24	1988-04-28	1988-05-05	1988-04-21	1988-04-28	NA	NA	NA	NA	1988-04-21	1988-05-24	33 days
1989	1989-05-06	1989-05-28	1989-04-29	1989-05-06	1989-04-20	1989-05-02	NA	NA	NA	NA	1989-04-20	1989-05-28	38 days
1990	1990-05-18	1990-06-04	1990-05-07	1990-06-01	1990-04-22	1990-05-07	NA	NA	NA	NA	1990-04-22	1990-06-04	43 days
1991	1991-05-11	1991-05-29	1991-05-03	1991-05-11	1991-04-19	1991-05-03	NA	NA	NA	NA	1991-04-19	1991-05-29	40 days
1992	1992-05-13	1992-06-07	1992-05-02	1992-05-13	1992-04-22	1992-05-01	NA	NA	NA	NA	1992-04-22	1992-06-07	46 days
1993	1993-05-18	1993-06-10	1993-05-05	1993-05-18	1993-04-27	1993-05-05	NA	NA	1993-04-02	1993-04-20	1993-04-02	1993-06-10	69 days
1994	1994-05-22	1994-06-10	1994-05-14	1994-05-22	1994-04-27	1994-05-11	NA	NA	1994-04-06	1994-04-26	1994-04-06	1994-06-10	65 days
1995	1995-05-27	1995-06-14	1995-05-13	1995-05-27	1995-05-03	1995-05-13	NA	NA	1995-04-04	1995-04-28	1995-04-04	1995-06-14	71 days
1996	1996-05-30	1996-06-27	1996-05-22	1996-05-30	1996-05-07	1996-05-22	NA	NA	1996-04-10	1996-05-01	1996-04-10	1996-06-27	78 days
1997	1997-06-04	1997-06-26	1997-05-18	1997-06-04	1997-04-30	1997-05-17	NA	NA	1997-04-02	1997-04-23	1997-04-02	1997-06-26	85 days
1998	1998-06-06	1998-06-30	1998-05-24	1998-06-04	1998-05-12	1998-05-30	NA	NA	1998-04-10	1998-05-05	1998-04-10	1998-06-30	81 days
1999	1999-06-06	1999-06-29	1999-05-19	1999-06-07	1999-05-11	1999-05-28	NA	NA	1999-04-13	1999-05-06	1999-04-13	1999-06-29	77 days
2000	2000-06-03	2000-06-29	2000-05-23	2000-06-09	2000-05-11	2000-06-05	NA	NA	2000-04-08	2000-05-11	2000-04-08	2000-06-29	82 days
2001	2001-05-26	2001-06-24	2001-05-14	2001-06-06	2001-04-29	2001-05-13	NA	NA	2001-04-07	2001-04-29	2001-04-07	2001-06-24	78 days
2002	2002-05-29	2002-06-22	2002-05-13	2002-05-29	2002-04-27	2002-05-14	NA	NA	2002-04-05	2002-04-27	2002-04-05	2002-06-22	78 days
2003	2003-06-04	2003-06-26	2003-05-18	2003-06-04	2003-05-08	2003-05-15	NA	NA	2003-04-05	2003-05-02	2003-04-05	2003-06-26	82 days
2004	2004-06-04	2004-06-26	2004-05-24	2004-06-08	2004-05-12	2004-05-24	2004-05-01	2004-05-11	2004-04-11	2004-05-11	2004-04-11	2004-06-26	68 days
2005	2005-06-11	2005-06-29	2005-05-22	2005-06-19	2005-05-09	2005-05-22	2005-05-06	2005-05-08	2005-04-17	2005-05-09	2005-04-17	2005-06-29	74 days
2006	2006-06-10	2006-06-29	2006-06-27	2006-06-29	2006-06-25	2006-06-30	2006-04-20	2006-04-21	2006-04-13	2006-04-18	2006-04-13	2006-06-30	82 days
2007	2007-06-05	2007-07-12	2007-06-16	2007-06-29	2007-05-03	2007-06-19	2007-04-13	2007-04-15	2007-04-04	2007-05-02	2007-04-04	2007-07-12	103 days
2008	2008-06-04	2008-06-30	2008-06-01	2008-06-22	2008-05-23	2008-06-01	NA	NA	2008-04-10	2008-05-23	2008-04-10	2008-06-30	86 days
2009	2009-05-21	2009-06-23	2009-05-26	2009-06-11	2009-05-13	2009-05-26	2009-04-16	2009-04-18	2009-04-08	2009-05-13	2009-04-08	2009-06-23	86 days
2010	2010-06-07	2010-06-25	2010-05-24	2010-06-06	2010-05-08	2010-05-24	2010-04-18	2010-04-26	2010-04-08	2010-05-08	2010-04-08	2010-06-25	78 days
2011	2011-05-29	2011-06-22	2011-05-21	2011-05-30	2011-05-08	2011-05-20	2011-04-14	2011-04-16	2011-04-07	2011-05-08	2011-04-07	2011-06-22	76 days
2012	2012-05-31	2012-06-19	2012-05-21	2012-06-03	2012-04-27	2012-05-21	2012-04-09	2012-04-12	2012-03-31	2012-04-26	2012-03-31	2012-06-19	80 days
2013	2013-05-24	2013-06-20	2013-05-11	2013-05-24	2013-04-23	2013-05-10	2013-04-08	2013-04-10	2013-03-26	2013-04-23	2013-03-26	2013-06-20	86 days
2014	2014-06-07	2014-06-22	2014-06-05	2014-06-17	2014-05-29	2014-06-05	NA	NA	2014-04-05	2014-05-10	2014-04-05	2014-06-22	127 days
2015	2015-06-03	2015-06-17	2015-05-21	2015-06-03	2015-05-10	2015-05-21	NA	NA	2015-04-11	2015-05-10	2015-04-11	2015-06-17	67 days
2016	2016-05-09	2016-06-15	2016-05-05	2016-05-31	2016-04-29	2016-05-09	NA	NA	2016-04-02	2016-05-01	2016-04-02	2016-06-15	74 days
2017	2017-05-21	2017-06-17	2017-05-26	2017-06-14	2017-05-12	2017-05-28	NA	NA	2017-04-06	2017-05-08	2017-04-06	2017-06-17	72 days
2018	2018-06-03	2018-06-21	2018-06-02	2018-06-12	2018-05-24	2018-06-07	NA	NA	2018-04-28	2018-05-27	2018-04-28	2018-06-21	79 days
2019	2019-05-28	2019-06-16	2019-05-16	2019-06-08	2019-05-04	2019-05-16	NA	NA	2019-03-30	2019-05-04	2019-03-30	2019-06-16	78 days
2020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2021	NA	NA	NA	NA	NA	NA	NA	NA	2021-04-24	2021-05-17	2021-04-24	2021-05-17	23 days
2022	2022-06-19	2022-06-26	2022-06-06	2022-06-19	2022-04-15	2022-06-07	NA	NA	2022-04-08	2022-05-27	2022-04-08	2022-06-26	79 days
2023	2023-05-17	2023-06-07	2023-05-04	2023-05-20	2023-04-14	2023-05-07	NA	NA	NA	NA	2023-04-14	2023-06-07	86 days
2024	2024-05-31	2024-06-23	2024-05-18	2024-05-31	2024-05-07	2024-05-21	NA	NA	2024-04-14	2024-05-07	2024-04-14	2024-06-23	70 days

Table 4. Number of successful fishing sets per division and vessel (AN=*Alfred Needler*, Tel=*Teleost*, CAB=*John Cabot*, CAR=*Capt. Jacques Cartier*) as well as the depth ranges fished by each vessel in the most recent five years of the Canadian Autumn RV multispecies bottom trawl surveys.

Year	Div	AN sets	AN depth (m)	Tel sets	Tel depth (m)	CAB sets	CAB depth (m)	CAR sets	CAR depth (m)	Total sets
2019	2H	0	NA	58	107–1166	0	NA	0	NA	58
2019	2J	0	NA	76	107–648	0	NA	0	NA	76
2019	3K	40	153–634	38	138–746	0	NA	0	NA	78
2019	3L	129	64–620	0	NA	0	NA	0	NA	129
2019	3N	70	42–684	0	NA	0	NA	0	NA	70
2019	3O	75	62–650	0	NA	0	NA	0	NA	75
2020	2H	0	NA	39	107–634	0	NA	0	NA	39
2020	2J	0	NA	91	135–1415	0	NA	0	NA	91
2020	3K	69	139–949	56	181–1386	0	NA	0	NA	125
2020	3L	105	63–670	0	NA	0	NA	0	NA	105
2020	3N	52	46–609	0	NA	0	NA	0	NA	52
2020	3O	60	66–634	0	NA	0	NA	0	NA	60
2021	2H	0	NA	54	120–993	0	NA	0	NA	54
2021	2J	0	NA	74	114–875	0	NA	0	NA	74
2021	3K	0	NA	81	130–962	0	NA	0	NA	81
2021	3L	0	NA	0	NA	0	NA	0	NA	0
2021	3N	0	NA	0	NA	0	NA	0	NA	0
2021	3O	0	NA	0	NA	3	70–107	0	NA	3
2023	2H	0	NA	19	201–697	33	91–900	0	NA	52
2023	2J	0	NA	42	107–852	55	133–1401	0	NA	97
2023	3K	0	NA	89	154–1332	23	152–657	10	220–636	122
2023	3L	0	NA	10	748–1136	65	62–1404	62	64–670	137
2023	3N	0	NA	0	NA	19	48–305	34	50–695	53
2023	3O	0	NA	0	NA	0	NA	60	64–650	60
2024	2H	0	NA	0	NA	0	NA	23	112–587	23
2024	2J	0	NA	0	NA	0	NA	67	116–652	67
2024	3K	0	NA	0	NA	47	214–688	46	141–640	93
2024	3L	0	NA	0	NA	94	62–691	0	NA	94
2024	3N	0	NA	0	NA	51	44–680	0	NA	51
2024	3O	0	NA	0	NA	60	61–610	0	NA	60

Table 5. Number of successful fishing sets per division and vessel (AN=*Alfred Needler*, Tel=*Teleost*, CAB=*John Cabot*) as well as the depth ranges fished by each vessel in the most recent five years of the Canadian Spring RV multispecies bottom trawl surveys.

Year	Div	CAB sets	CAB depth (m)	Tel sets	Tel depth (m)	Total sets
2020	3L	0	NA	0	NA	0
2020	3N	0	NA	0	NA	0
2020	3O	0	NA	0	NA	0
2020	3Ps	0	NA	0	NA	0
2021	3L	0	NA	0	NA	0
2021	3N	0	NA	0	NA	0
2021	3O	0	NA	0	NA	0
2021	3Ps	0	NA	143	40-691	143
2022	3L	37	61-681	0	NA	37
2022	3N	43	43-717	0	NA	43
2022	3O	48	66-691	0	NA	48
2022	3Ps	129	41-638	0	NA	129
2023	3L	71	59-695	38	65-650	109
2023	3N	37	36-711	10	68-570	47
2023	3O	40	64-602	12	118-610	52
2023	3Ps	0	NA	0	NA	0
2024	3L	91	60-693	0	NA	91
2024	3N	57	39-721	0	NA	57
2024	3O	62	64-621	0	NA	62
2024	3Ps	127	39-609	0	NA	127

Table 6. Number of successful fishing sets per stratum in Div. 2H over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
930	<=200	3	4	5	5	3	5	4	5	5	5	2	2	0	2	1
954	<=200	3	4	5	5	5	5	4	5	5	5	2	2	0	2	1
956	<=200	3	5	6	6	6	6	6	6	6	6	3	2	0	3	1
957	<=200	5	6	7	6	7	4	7	7	7	7	2	2	0	3	1
931	201-300	2	2	2	2	2	2	2	2	2	0	1	2	0	2	1
943	201-300	2	2	2	2	2	2	2	2	2	0	2	3	0	2	1
950	201-300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
953	201-300	2	2	2	2	2	2	3	2	2	2	2	2	0	2	1
955	201-300	2	2	2	2	2	2	2	2	2	1	2	2	0	2	1
958	201-300	2	2	2	2	2	2	2	2	2	2	2	2	0	2	1
932	301-400	2	2	2	2	2	2	2	2	2	0	1	2	0	2	1
944	301-400	3	4	5	6	5	5	4	5	5	5	3	2	0	3	1
949	301-400	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
952	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	1
959	301-400	2	2	2	2	2	2	2	2	2	2	1	2	0	2	1
933	401-500	2	3	2	2	2	2	2	2	2	0	1	2	0	2	1
942	401-500	2	2	2	1	2	2	1	2	2	1	1	2	0	2	1
945	401-500	2	2	2	2	2	2	2	2	2	2	1	2	0	2	1
948	401-500	0	1	2	2	2	2	0	2	2	2	2	2	0	1	1
951	401-500	2	2	2	2	2	2	2	2	2	2	1	2	0	2	0
960	401-500	2	2	2	2	2	2	2	2	2	2	1	2	0	2	1
934	501-750	2	2	2	2	2	0	1	2	2	0	1	2	0	2	0
941	501-750	2	2	2	2	2	0	2	2	2	0	1	2	0	2	1
946	501-750	2	3	4	4	4	0	4	4	4	4	2	2	0	2	1
947	501-750	2	2	2	2	2	0	2	2	2	2	2	2	0	2	2
961	501-750	2	2	2	2	2	0	2	2	2	2	1	2	0	2	1
935	751-1000	2	2	2	2	0	0	2	0	2	0	0	1	0	0	0
940	751-1000	2	2	2	2	0	0	2	0	2	0	0	2	0	2	0
962	751-1000	2	2	2	2	0	0	2	0	2	2	0	2	0	0	0
936	1001-1250	2	1	2	2	0	0	2	0	1	0	0	0	0	0	0
939	1001-1250	2	2	2	2	0	0	1	0	2	0	0	0	0	0	0
963	1001-1250	2	2	2	2	0	0	2	0	2	2	0	0	0	0	0
937	1251-1500	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
938	1251-1500	2	2	2	2	0	0	2	0	2	0	0	0	0	0	0
964	1251-1500	2	2	2	2	0	0	2	0	2	0	0	0	0	0	0
all strata		70	79	84	83	66	53	77	68	83	58	39	54	0	52	23

Table 7. Number of successful fishing sets per stratum in Div. 2J over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
201	<=200	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
205	<=200	6	4	6	6	6	6	6	6	6	4	4	3	0	5	2
206	<=200	7	5	7	7	7	8	7	7	7	4	4	3	0	4	3
207	<=200	7	5	8	9	5	6	9	8	5	5	5	3	0	6	4
237	<=200	3	0	3	3	2	2	2	2	3	2	2	2	0	2	2
238	<=200	2	3	2	2	2	2	2	2	2	2	0	2	0	2	2
202	201-300	2	2	2	2	2	2	2	2	2	2	1	1	0	2	2
209	201-300	3	2	3	3	3	3	3	3	2	2	2	2	0	2	2
210	201-300	4	3	4	4	4	4	4	4	3	2	2	2	0	2	2
213	201-300	6	5	6	6	5	7	6	6	5	4	4	2	0	4	2
214	201-300	5	4	5	5	5	5	5	5	5	3	3	2	0	3	2
215	201-300	4	4	5	5	5	4	5	5	5	3	3	2	0	3	2
228	201-300	8	6	8	8	8	8	8	8	6	5	5	4	0	5	3
234	201-300	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
203	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
208	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
211	301-400	2	2	2	2	2	2	2	2	2	2	2	3	0	2	2
216	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
222	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
229	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
204	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	3	2
217	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
223	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
227	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
235	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
240	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
212	501-750	2	2	2	2	2	3	2	2	2	2	2	2	0	2	2
218	501-750	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
224	501-750	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
230	501-750	2	2	2	2	2	2	2	2	2	2	2	2	0	2	3
239	501-750	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
219	751-1000	2	2	2	2	2	2	2	2	2	0	2	3	0	2	0
231	751-1000	2	2	2	2	2	2	2	2	2	0	2	2	0	2	0
236	751-1000	2	2	2	2	2	2	2	2	2	0	2	2	0	2	0
220	1001-1250	2	2	2	2	2	2	2	2	3	0	2	0	0	2	0
225	1001-1250	2	2	2	2	2	2	2	2	2	0	2	0	0	2	0
232	1001-1250	2	2	2	2	2	2	2	2	1	0	2	0	0	2	0
221	1251-1500	2	2	2	2	2	2	2	2	2	0	2	0	0	2	0
226	1251-1500	2	2	2	2	2	2	2	2	2	0	2	0	0	2	0
233	1251-1500	2	2	2	2	2	2	2	2	1	0	2	0	0	2	0
all strata		113	99	115	116	110	114	115	114	106	76	91	74	0	97	67

Table 8. Number of successful fishing sets per stratum in Div. 3K over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys. NA denotes strata that have been removed from the survey design (note however that some small amount of opportunistic fishing of these strata may still have occurred when poor weather forced survey vessels to the inshore).

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
608	<=200	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
612	<=200	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
616	<=200	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
618	<=200	5	3	2	6	5	6	5	6	5	5	4	4	0	5	3
619	<=200	8	2	3	8	7	6	8	8	6	5	4	4	0	6	5
609	201-300	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
611	201-300	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
615	201-300	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
620	201-300	11	8	10	10	11	11	11	11	7	5	6	7	0	8	8
621	201-300	11	6	8	11	11	10	11	10	9	8	9	7	0	9	7
624	201-300	5	4	5	5	5	5	5	5	4	2	4	3	0	4	3
634	201-300	7	5	7	4	7	7	6	7	5	2	6	3	0	5	4
635	201-300	5	5	5	4	5	3	4	5	5	2	4	2	0	4	3
636	201-300	6	6	6	4	6	7	5	6	4	2	4	2	0	4	4
637	201-300	5	5	5	4	5	5	5	5	4	4	4	2	0	4	3
610	301-400	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
614	301-400	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
617	301-400	3	2	3	3	3	3	3	2	3	2	2	2	0	2	2
623	301-400	2	2	2	2	2	2	2	2	3	2	2	2	0	2	2
625	301-400	4	3	3	3	4	4	4	5	2	2	3	3	0	3	3
626	301-400	5	4	5	5	5	4	5	5	4	4	4	3	0	4	3
628	301-400	5	4	6	5	5	5	5	5	5	4	4	3	0	4	3
629	301-400	2	2	2	2	2	2	2	2	2	0	2	2	0	1	2
630	301-400	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
633	301-400	9	7	8	5	9	9	6	7	6	2	7	6	0	7	5
638	301-400	9	9	8	6	9	9	9	9	7	7	7	4	0	7	6
639	301-400	6	6	6	6	6	6	5	6	3	3	6	2	0	4	4
613	401-500	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
622	401-500	3	2	3	3	3	3	3	3	3	2	2	2	0	2	2
627	401-500	5	4	5	5	5	5	5	5	5	2	4	3	0	4	3
631	401-500	6	4	6	3	6	6	5	6	5	2	5	4	0	5	4
640	401-500	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
645	401-500	2	2	2	2	2	2	2	2	2	0	2	2	0	2	2
650	401-500	2	2	2	2	2	2	1	2	2	2	2	0	0	2	2
641	501-750	2	2	2	2	2	2	2	2	2	2	2	2	0	2	2
646	501-750	2	2	2	2	2	2	2	2	2	1	2	0	0	2	2
651	501-750	2	2	2	2	2	2	2	2	2	2	2	1	0	2	2
642	751-1000	2	2	2	2	2	2	2	2	0	0	2	0	0	2	0
647	751-1000	2	2	2	2	2	2	2	2	0	0	2	0	0	2	0
652	751-1000	2	2	2	2	2	2	2	2	0	0	2	2	0	2	0
643	1001-1250	3	2	3	3	3	3	2	3	0	0	2	0	0	2	0
648	1001-1250	2	2	2	2	2	2	2	2	0	0	2	0	0	0	0
653	1001-1250	2	2	2	2	2	2	2	2	0	0	2	0	0	2	0
644	1251-1500	2	2	2	2	2	2	2	2	0	0	2	0	0	2	0
649	1251-1500	2	2	2	2	2	2	2	2	0	0	2	0	0	0	0
654	1251-1500	2	2	2	2	2	2	0	2	0	0	2	0	0	2	0
all strata		173	125	141	137	154	151	143	153	111	78	125	81	0	122	93

Table 9. Number of successful fishing sets per stratum in Div. 3L over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys. NA denotes strata that have been removed from the survey design (note however that some small amount of opportunistic fishing of these strata may still have occurred when poor weather forced survey vessels to the inshore).

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
350	56-91	7	7	7	7	7	7	7	7	7	7	5	0	0	5	4
363	56-91	6	5	6	6	6	6	6	6	6	6	4	0	0	4	3
371	56-91	4	3	4	4	4	4	4	4	4	4	3	0	0	3	2
372	56-91	8	6	8	8	7	8	8	8	8	8	5	0	0	5	4
384	56-91	4	3	4	4	4	4	4	4	4	4	3	0	0	3	2
328	92-183	5	5	5	5	5	5	4	5	5	5	3	0	0	3	3
341	92-183	5	5	5	5	5	5	5	5	5	5	3	0	0	3	3
342	92-183	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
343	92-183	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
348	92-183	7	5	7	7	7	7	7	6	7	6	5	0	0	5	4
349	92-183	7	7	7	7	7	7	6	7	7	7	5	0	0	5	4
364	92-183	9	7	9	9	9	9	8	9	9	8	5	0	0	6	5
365	92-183	3	2	3	3	3	4	3	3	3	2	2	0	0	2	2
370	92-183	4	3	4	4	4	4	4	4	4	3	3	0	0	3	2
385	92-183	8	6	8	8	8	8	8	8	8	6	6	0	0	7	4
390	92-183	5	4	5	5	5	5	5	5	5	5	3	0	0	3	3
787	92-183	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
788	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
790	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
793	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
794	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
797	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
799	92-183	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
344	184-274	5	2	5	5	4	4	5	5	5	4	3	0	0	3	3
347	184-274	3	2	3	3	3	3	3	3	3	3	2	0	0	2	2
366	184-274	5	4	5	5	5	5	5	5	5	4	4	0	0	4	3
369	184-274	3	2	3	3	3	3	3	3	3	2	2	0	0	2	2
386	184-274	3	2	3	3	3	3	3	3	3	2	2	0	0	2	2
389	184-274	3	2	3	3	3	3	3	3	3	2	2	0	0	2	2
391	184-274	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
791	184-274	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
795	184-274	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
345	275-366	4	3	5	5	5	5	4	5	5	4	3	0	0	4	3
346	275-366	3	3	3	3	3	3	3	3	3	2	2	0	0	2	2
368	275-366	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
387	275-366	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
388	275-366	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
392	275-366	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
796	275-366	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
798	275-366	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
800	275-366	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
729	367-549	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
731	367-549	2	0	2	2	2	2	2	2	2	2	2	0	0	2	2
733	367-549	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
735	367-549	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
792	367-549	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
730	550-731	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
732	550-731	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
734	550-731	2	2	2	2	2	2	2	2	1	2	2	0	0	2	2
736	550-731	2	2	2	2	2	2	2	2	2	2	2	0	0	2	2
737	732-914	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
741	732-914	2	0	0	0	2	0	0	1	0	0	0	0	0	2	0
745	732-914	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
748	732-914	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
738	915-1097	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
742	915-1097	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
746	915-1097	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
749	915-1097	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
739	1098-1280	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
743	1098-1280	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
747	1098-1280	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
750	1098-1280	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
740	1281-1463	2	0	0	0	2	0	0	0	0	0	0	0	0	2	0
744	1281-1463	2	0	0	0	2	0	0	1	0	0	0	0	0	2	0
751	1281-1463	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0
all strata		196	116	142	142	170	142	138	143	141	129	105	0	0	137	94

Table 10. Number of successful fishing sets per stratum in Div. 3N over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys. NA denotes strata removed from survey design.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
375	<=55	4	4	4	4	0	4	4	4	4	4	2	0	0	2	2
376	<=55	4	4	4	4	0	4	4	4	4	4	2	0	0	2	2
360	56-91	8	8	8	8	0	8	8	8	8	8	4	0	0	4	4
361	56-91	5	5	5	5	0	4	5	5	5	5	3	0	0	3	3
362	56-91	7	7	7	7	0	7	7	7	7	7	4	0	0	4	4
373	56-91	7	7	7	7	0	7	7	7	7	7	4	0	0	4	2
374	56-91	3	3	3	3	0	3	3	3	3	3	2	0	0	2	2
383	56-91	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
359	92-183	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
377	92-183	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
382	92-183	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
358	184-274	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
378	184-274	1	2	2	2	0	2	2	2	2	2	2	0	0	2	2
381	184-274	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
357	275-366	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
379	275-366	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
380	275-366	2	2	2	2	1	2	2	2	2	2	2	0	0	2	2
723	367-549	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
725	367-549	1	2	2	2	0	2	2	2	2	2	2	0	0	2	2
727	367-549	2	2	2	2	1	2	2	2	2	2	2	0	0	2	2
724	550-731	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
726	550-731	2	2	2	2	0	2	2	2	2	2	1	0	0	2	2
728	550-731	2	2	2	2	1	2	2	2	2	2	2	0	0	2	2
752	732-914	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
753	915-1097	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
757	915-1097	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
754	1098-1280	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
758	1098-1280	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
all strata		72	70	70	70	3	69	70	70	70	70	52	0	0	53	51

Table 11. Number of successful fishing sets per stratum in Div. 30 over the last 15 years of the Canadian Autumn RV multispecies bottom trawl surveys. NA denotes strata removed from survey design.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
330	56-91	6	6	6	6	0	6	6	6	6	6	4	1	0	4	4
331	56-91	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
338	56-91	5	5	5	5	0	5	5	5	5	5	3	0	0	3	3
340	56-91	6	5	5	5	0	5	5	5	5	5	3	0	0	3	3
351	56-91	6	7	7	7	0	7	7	7	7	7	5	0	0	5	5
352	56-91	7	7	7	7	0	7	7	7	7	7	5	0	0	5	5
353	56-91	4	4	4	4	0	4	4	4	4	4	3	0	0	3	3
329	92-183	5	5	5	5	0	5	5	5	5	5	3	2	0	3	3
332	92-183	3	3	3	3	0	3	3	3	3	3	2	0	0	2	2
337	92-183	3	3	3	3	0	3	3	3	3	3	2	0	0	2	2
339	92-183	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
354	92-183	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
333	184-274	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
336	184-274	2	2	2	2	0	2	1	2	2	2	2	0	0	2	2
355	184-274	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
334	275-366	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
335	275-366	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
356	275-366	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
717	367-549	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
719	367-549	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
721	367-549	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
718	550-731	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
720	550-731	2	2	2	2	0	2	2	2	2	2	2	0	0	2	2
722	550-731	2	2	2	2	0	2	2	0	2	2	2	0	0	2	2
all strata		75	75	75	75	0	75	74	73	75	75	60	3	0	60	60

Table 12. Number of successful fishing sets per stratum in Div. 3L over the last 15 years of the Canadian Spring RV multispecies bottom trawl surveys. NA denotes strata that have been removed from the survey design (note however that some small amount of opportunistic fishing of these strata may still have occurred when poor weather forced survey vessels to the inshore).

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
350	56-91	7	7	7	7	6	0	7	7	7	7	0	0	1	10	5
363	56-91	6	6	6	6	6	0	6	6	5	6	0	0	2	5	4
371	56-91	4	4	4	3	4	0	4	4	3	4	0	0	1	3	3
372	56-91	8	8	8	7	8	0	8	8	6	8	0	0	2	5	5
384	56-91	4	4	4	3	4	3	4	4	3	4	0	0	2	3	0
328	92-183	5	5	6	6	4	0	5	0	5	4	0	0	0	5	3
341	92-183	5	5	5	5	4	0	5	3	5	5	0	0	0	5	3
342	92-183	2	2	2	2	2	2	2	0	2	2	0	0	0	2	2
343	92-183	1	2	2	2	2	2	2	0	2	2	0	0	0	2	2
348	92-183	5	7	5	6	7	4	7	0	4	7	0	0	1	4	2
349	92-183	6	7	7	5	7	0	7	0	6	7	0	0	0	6	4
364	92-183	9	7	9	9	9	3	9	0	6	9	0	0	1	4	6
365	92-183	3	3	2	3	3	2	3	0	2	3	0	0	0	2	2
370	92-183	4	4	4	5	4	4	4	0	3	4	0	0	0	2	2
385	92-183	7	8	8	7	8	6	9	0	7	7	0	0	2	5	2
390	92-183	5	5	5	4	5	4	4	0	4	4	0	0	2	3	3
786	92-183	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
787	92-183	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
344	184-274	2	5	5	3	3	2	4	0	5	3	0	0	0	0	2
347	184-274	3	3	2	3	3	2	3	0	1	2	0	0	0	2	2
366	184-274	4	5	0	5	5	2	5	0	0	3	0	0	0	3	2
369	184-274	3	3	3	3	3	2	3	0	2	3	0	0	0	2	2
386	184-274	3	3	3	3	3	0	3	0	2	3	0	0	0	3	2
389	184-274	3	3	3	3	3	0	3	0	2	3	0	0	2	2	2
391	184-274	2	2	2	2	2	2	2	0	2	2	0	0	2	2	2
345	275-366	3	5	3	5	4	2	4	0	3	4	0	0	0	2	3
346	275-366	3	3	3	3	2	2	3	0	0	3	0	0	0	2	2
368	275-366	2	2	2	2	2	2	2	0	2	2	0	0	2	2	2
387	275-366	2	2	2	2	2	0	2	0	2	2	0	0	2	2	2
388	275-366	2	2	2	2	2	0	2	0	2	2	0	0	2	2	2
392	275-366	2	2	2	2	2	2	2	0	2	2	0	0	2	2	2
729	367-549	1	2	2	2	2	2	2	0	2	2	0	0	0	2	2
731	367-549	2	2	2	2	2	0	2	0	2	2	0	0	2	2	2
733	367-549	2	2	2	2	2	0	2	0	2	2	0	0	2	2	2
735	367-549	2	2	2	2	2	2	2	0	2	2	0	0	2	3	2
730	550-731	2	2	2	2	2	2	2	0	2	2	0	0	0	2	2
732	550-731	2	1	2	2	2	0	2	0	2	2	0	0	2	2	2
734	550-731	2	3	2	2	2	0	2	0	2	2	0	0	1	2	2
736	550-731	2	2	2	2	2	2	2	0	2	2	0	0	2	2	2
all strata		130	140	132	134	135	56	140	32	111	133	0	0	37	109	91

Table 13. Number of successful fishing sets per stratum in Div. 3N over the last 15 years of the Canadian Spring RV multispecies bottom trawl surveys.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
375	<=55	5	5	5	5	3	5	5	4	5	5	0	0	2	2	3
376	<=55	5	5	5	5	3	4	5	3	5	4	0	0	2	2	3
360	56-91	10	10	10	10	6	9	10	8	10	8	0	0	2	2	6
361	56-91	6	6	6	6	4	5	6	5	6	5	0	0	2	2	3
362	56-91	8	9	9	9	5	7	9	8	9	7	0	0	2	4	5
373	56-91	9	9	9	9	5	7	8	8	9	7	0	0	2	4	5
374	56-91	3	3	3	3	2	3	3	2	3	3	0	0	2	2	2
383	56-91	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
359	92-183	2	2	2	2	2	2	2	2	2	2	0	0	3	2	2
377	92-183	2	2	2	2	2	2	2	2	2	2	0	0	2	2	1
382	92-183	2	2	2	2	2	2	2	2	2	2	0	0	2	2	1
358	184-274	2	2	2	2	2	2	2	2	2	2	0	0	2	1	2
378	184-274	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
381	184-274	2	2	2	2	2	2	2	2	2	2	0	0	3	2	2
357	275-366	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
379	275-366	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2
380	275-366	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
723	367-549	2	2	2	2	2	2	2	2	2	2	0	0	2	2	3
725	367-549	2	2	2	2	2	2	2	2	2	2	0	0	0	1	2
727	367-549	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
724	550-731	2	2	1	2	2	2	2	0	2	2	0	0	2	1	2
726	550-731	2	2	2	2	2	2	2	2	2	2	0	0	0	2	1
728	550-731	2	2	2	2	2	2	2	2	2	2	0	0	3	2	2
all strata		78	79	78	79	60	72	78	68	79	71	0	0	43	47	57

Table 14. Number of successful fishing sets per stratum in Div. 3O over the last 15 years of the Canadian Spring RV multispecies bottom trawl surveys.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
330	56-91	7	7	7	7	4	6	7	7	7	7	0	0	4	4	5
331	56-91	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
338	56-91	6	6	6	6	3	5	6	5	6	6	0	0	2	3	4
340	56-91	5	5	5	5	3	5	5	4	5	5	0	0	2	2	3
351	56-91	8	8	8	8	5	7	7	6	8	8	0	0	3	4	5
352	56-91	8	8	8	8	5	7	9	6	8	7	0	0	2	4	5
353	56-91	4	4	4	4	2	3	4	3	4	4	0	0	2	1	3
329	92-183	5	5	5	5	3	5	5	5	5	5	0	0	2	2	3
332	92-183	3	3	3	3	2	3	3	3	3	3	0	0	3	2	2
337	92-183	3	3	3	3	2	3	2	2	3	3	0	0	2	2	2
339	92-183	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
354	92-183	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
333	184-274	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
336	184-274	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
355	184-274	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
334	275-366	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
335	275-366	2	2	2	2	2	2	2	2	2	2	0	0	0	2	2
356	275-366	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
717	367-549	2	2	2	2	2	2	1	2	2	2	0	0	2	2	2
719	367-549	2	2	2	2	2	2	2	2	2	2	0	0	1	2	2
721	367-549	2	2	2	2	2	2	2	2	2	2	0	0	2	2	2
718	550-731	2	2	2	2	2	2	0	2	2	1	0	0	2	0	2
720	550-731	2	1	2	2	2	2	2	2	2	2	0	0	1	2	2
722	550-731	3	2	2	2	2	2	2	2	2	2	0	0	2	2	2
all strata		80	78	79	79	59	74	75	71	79	77	0	0	48	52	62

Table 15. Number of successful fishing sets per stratum in Div. 3Ps over the last 15 years of the Canadian Spring RV multispecies bottom trawl surveys.

stratum	depth range (m)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
314	<=55	7	8	8	8	7	8	6	8	8	6	0	5	4	0	5
320	<=55	11	11	10	11	8	11	9	11	11	10	0	10	7	0	7
293	56-91	2	2	2	2	2	2	2	2	2	2	0	1	2	0	2
308	56-91	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
312	56-91	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
315	56-91	7	7	7	7	6	7	6	7	7	7	0	7	4	0	4
321	56-91	10	10	10	10	8	10	8	10	10	10	0	9	7	0	6
325	56-91	8	8	8	8	7	8	7	8	8	8	0	7	6	0	5
326	56-91	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
783	56-91	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
294	92-183	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
297	92-183	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
307	92-183	3	3	3	3	2	3	3	3	3	3	0	2	2	0	2
311	92-183	3	3	3	3	2	3	3	3	3	3	0	2	2	0	2
317	92-183	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
319	92-183	8	8	8	8	7	8	7	8	8	8	0	5	5	0	5
322	92-183	13	12	13	14	12	13	11	13	13	11	0	9	8	0	8
323	92-183	6	5	6	6	5	5	5	6	6	6	0	5	4	0	4
324	92-183	4	4	4	4	4	4	3	4	4	3	0	3	2	0	3
781	92-183	4	4	4	4	4	4	4	4	4	4	0	3	2	0	2
782	92-183	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
295	184-274	2	0	2	2	2	2	2	2	2	2	0	2	2	0	2
298	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
300	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
306	184-274	3	3	3	3	2	3	3	3	3	3	0	2	2	0	2
309	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
310	184-274	2	2	2	2	2	2	2	3	2	2	0	2	2	0	2
313	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
316	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
318	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
779	184-274	4	4	4	4	4	4	3	4	4	4	0	3	3	0	3
780	184-274	3	3	3	3	3	3	3	3	2	3	0	2	2	0	2
296	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
299	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
705	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2	0	2
706	275-366	4	4	4	4	3	4	3	4	4	4	0	2	2	0	2
707	275-366	2	2	2	2	2	2	2	2	1	2	0	2	2	0	2
715	275-366	2	2	2	2	2	2	2	2	1	2	0	2	2	0	2
716	275-366	4	4	4	4	4	4	3	4	2	3	0	3	2	0	2
708	367-549	2	2	2	2	1	2	1	2	1	2	0	2	2	0	2
711	367-549	5	5	5	5	4	5	4	5	5	5	0	2	3	0	3
712	367-549	6	6	6	6	5	6	5	6	6	6	0	3	4	0	5
713	367-549	7	7	7	7	6	7	6	7	5	7	0	5	5	0	3
714	367-549	9	9	9	9	7	7	8	9	9	9	0	7	5	0	4
709	550-731	2	2	2	2	1	2	2	2	2	2	0	2	2	0	2
all strata		177	174	177	179	156	175	157	179	170	171	0	143	129	0	127

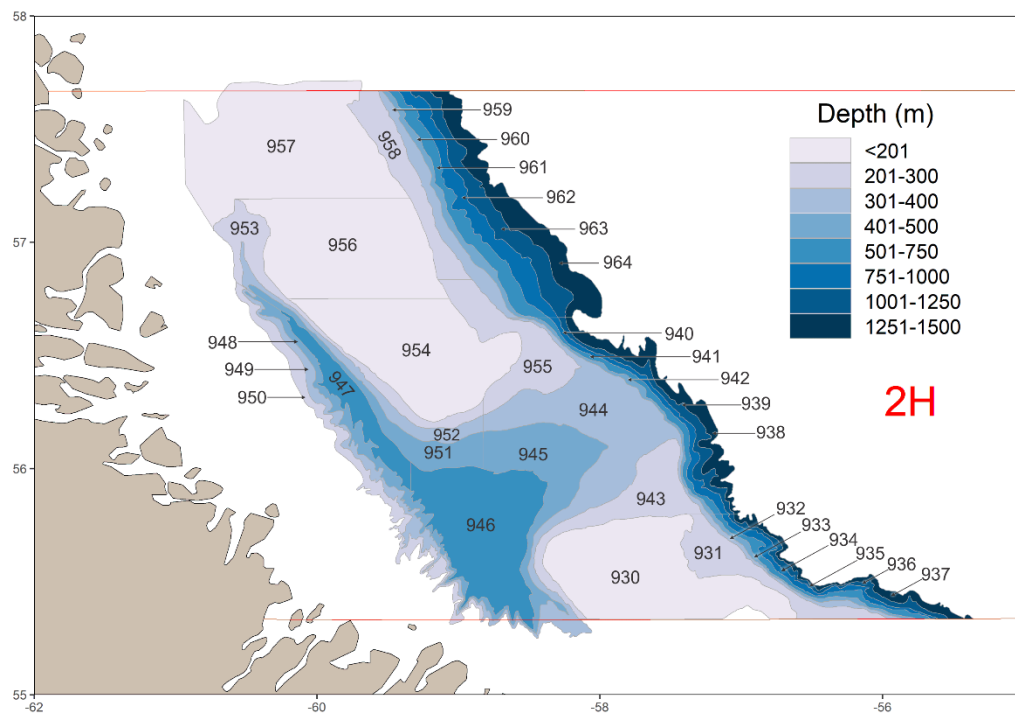


Figure 1. Stratification scheme for NAFO Division 2H.

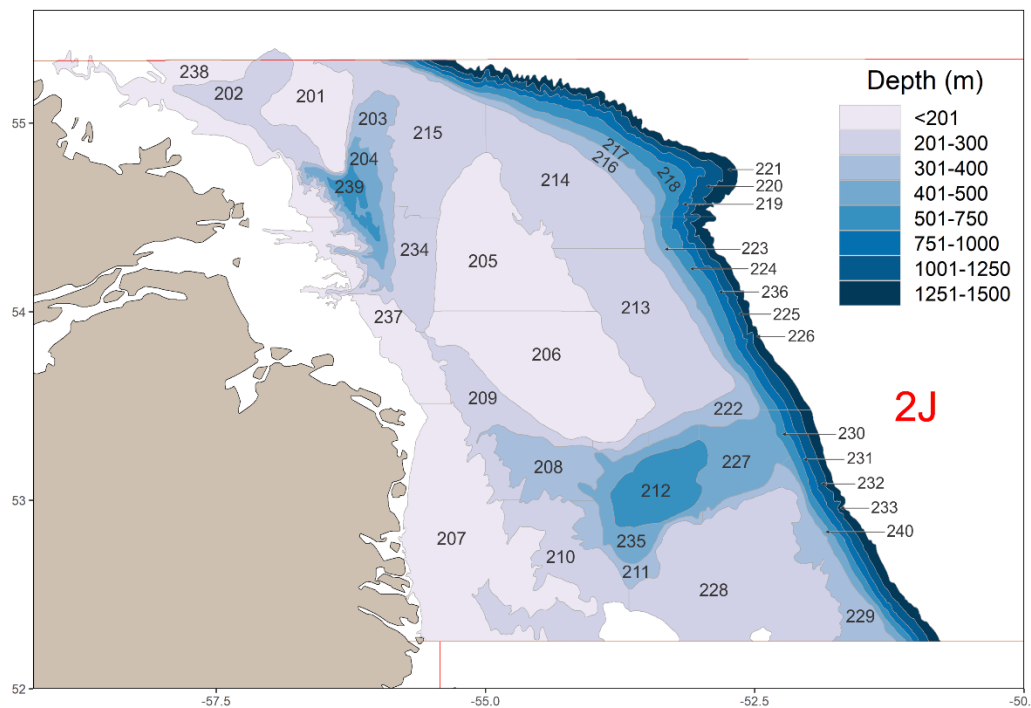


Figure 2. Stratification scheme for NAFO Division 2J.

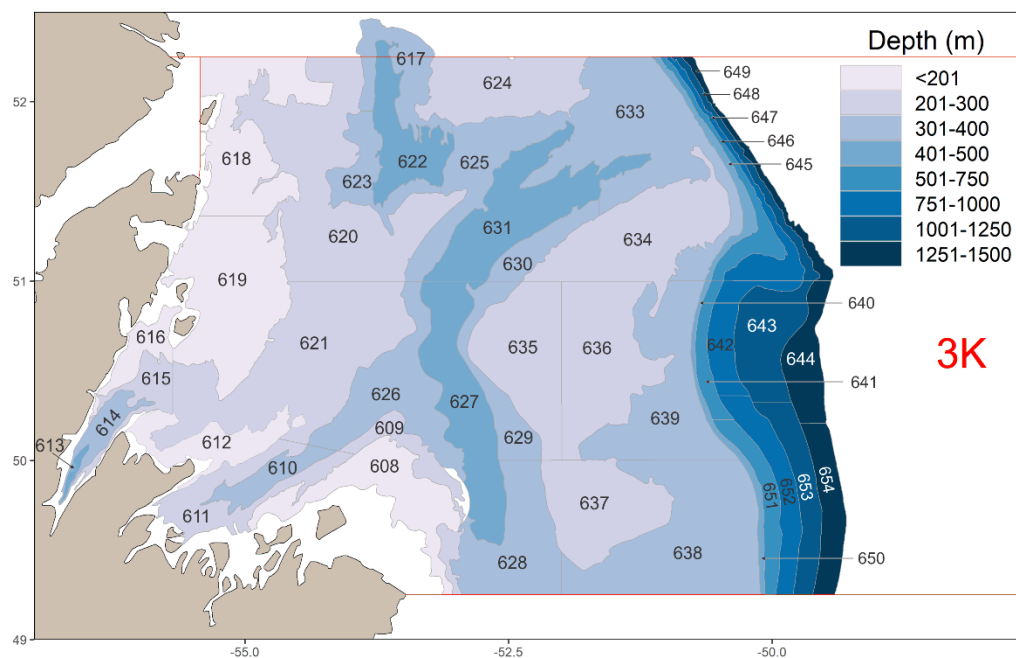


Figure 3. Stratification scheme for NAFO Division 3K.

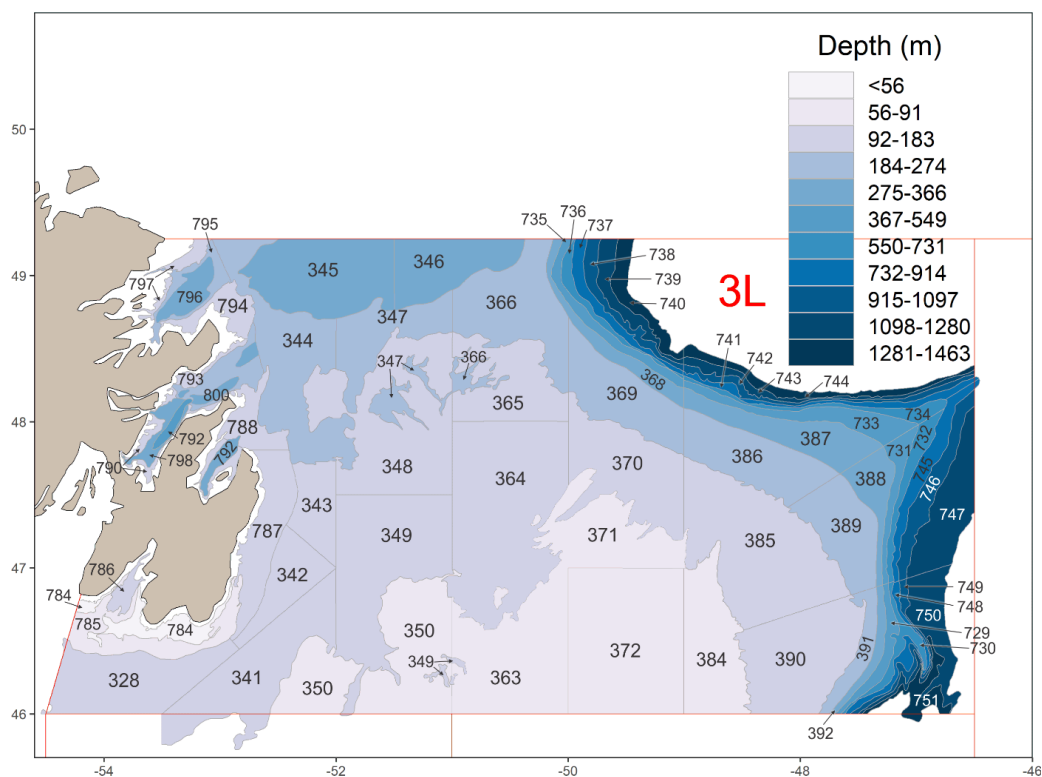


Figure 4. Stratification scheme for NAFO Division 3L.

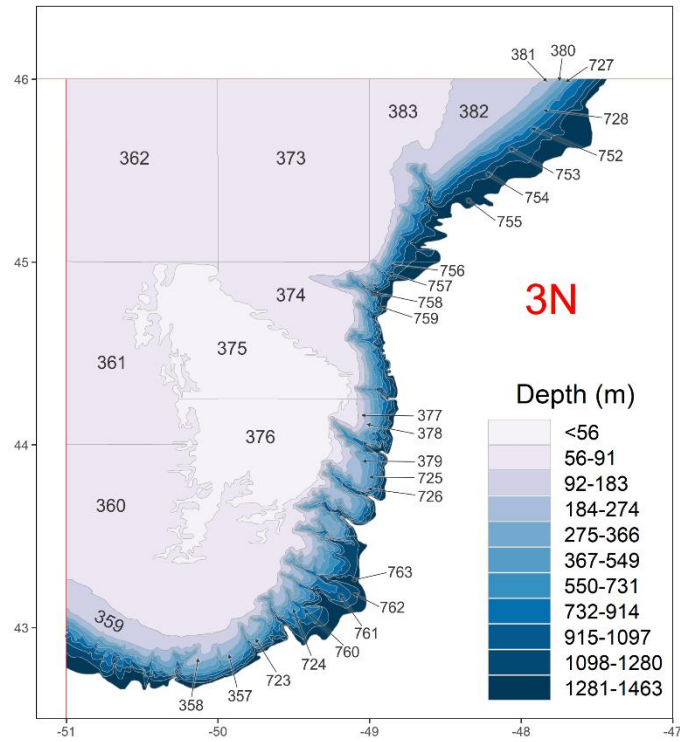


Figure 5. Stratification scheme for NAFO Division 3N.

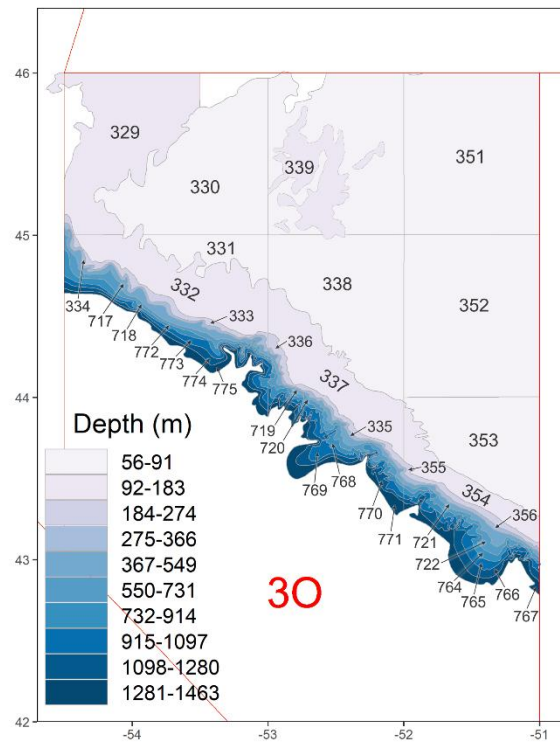


Figure 6. Stratification scheme for NAFO Division 3O.

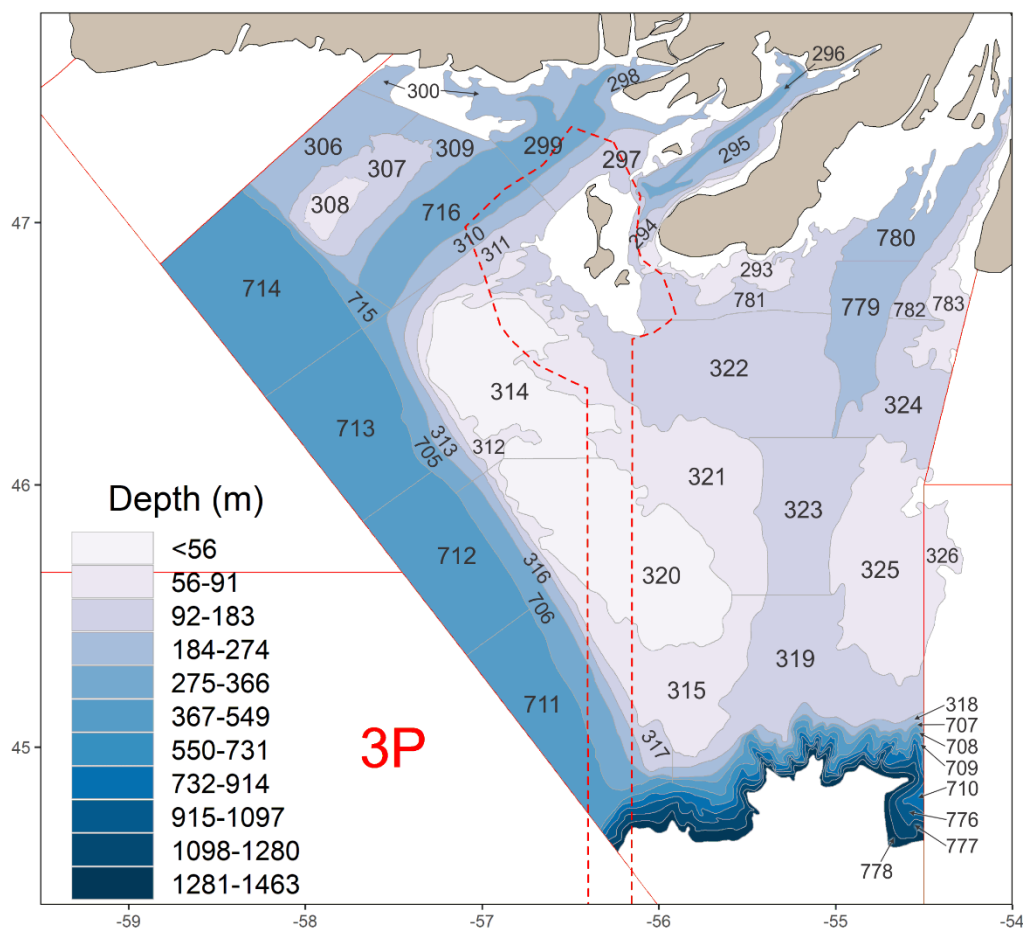


Figure 7. Stratification scheme for NAFO Subdivision 3Ps.

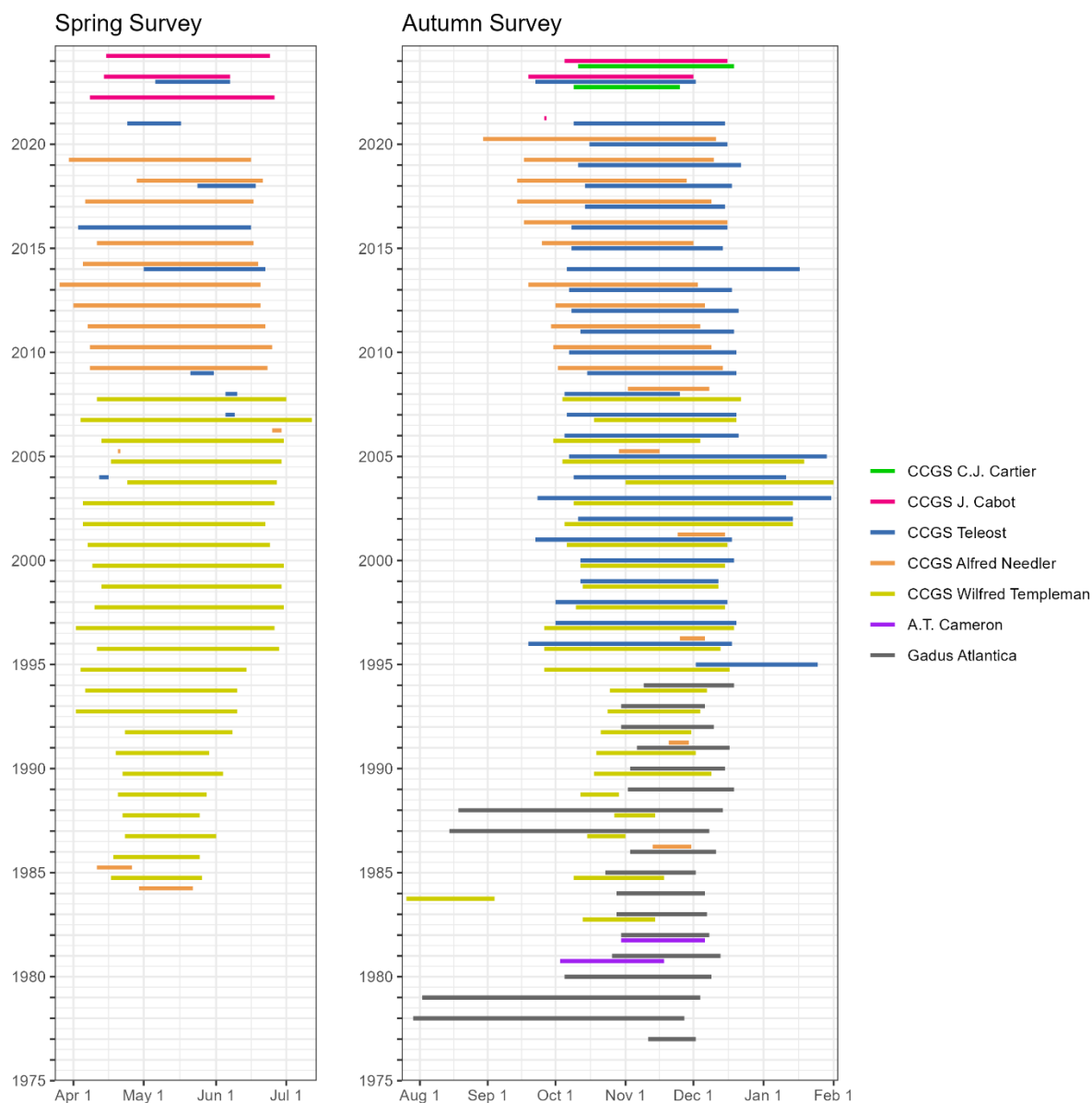


Figure 8. Timing of Canadian NL Spring (left) and Autumn (right) multispecies bottom trawl surveys. Horizontal bars simply represent the period between the first and last fishing set for each vessel. The different colours represent the primary research vessels in operation over the displayed time series. Note that there have also been multiple gear changes over this time series.

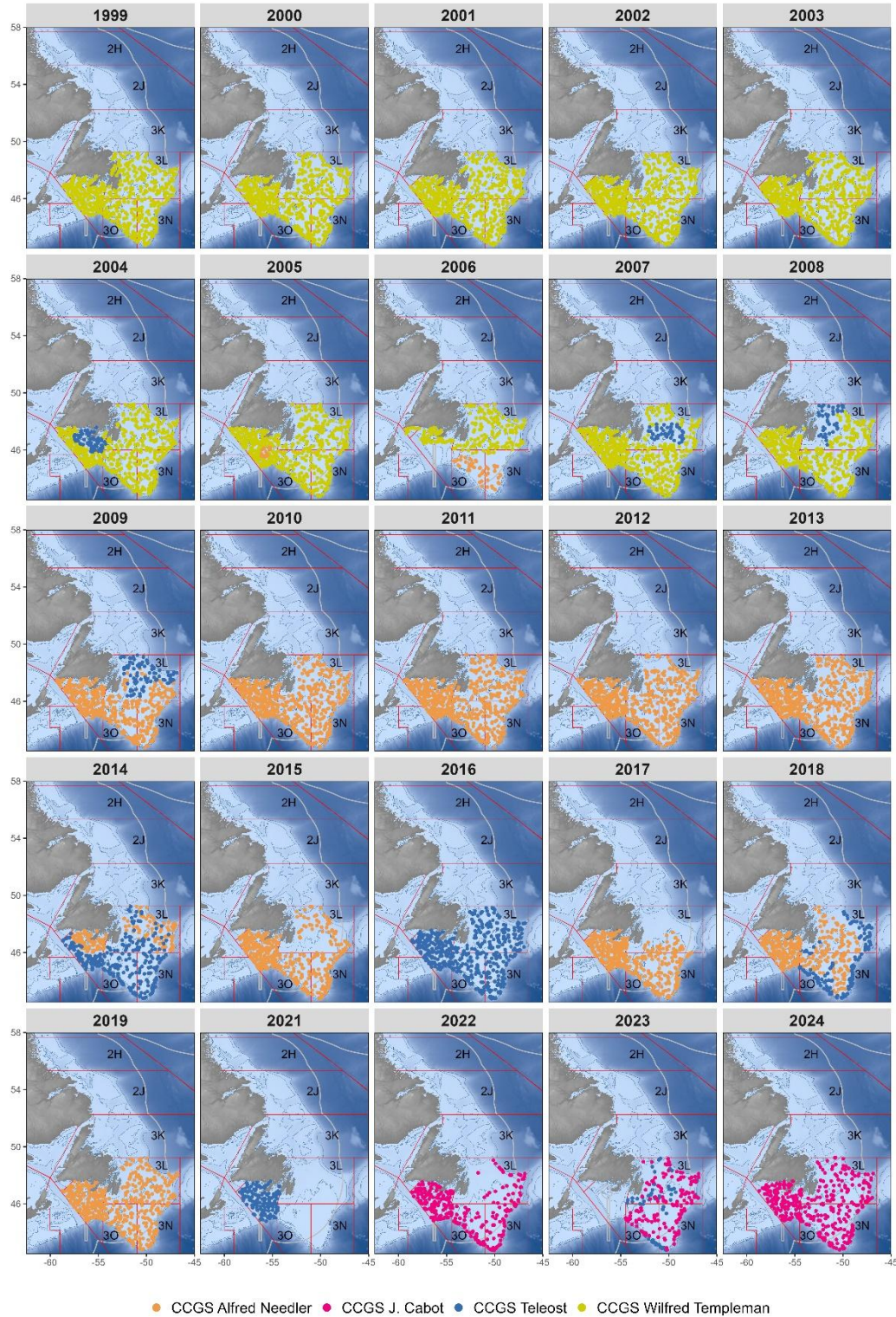


Figure 9. Fishing set locations colour-coded by research vessel for the Canadian NL Spring multispecies bottom trawl surveys.

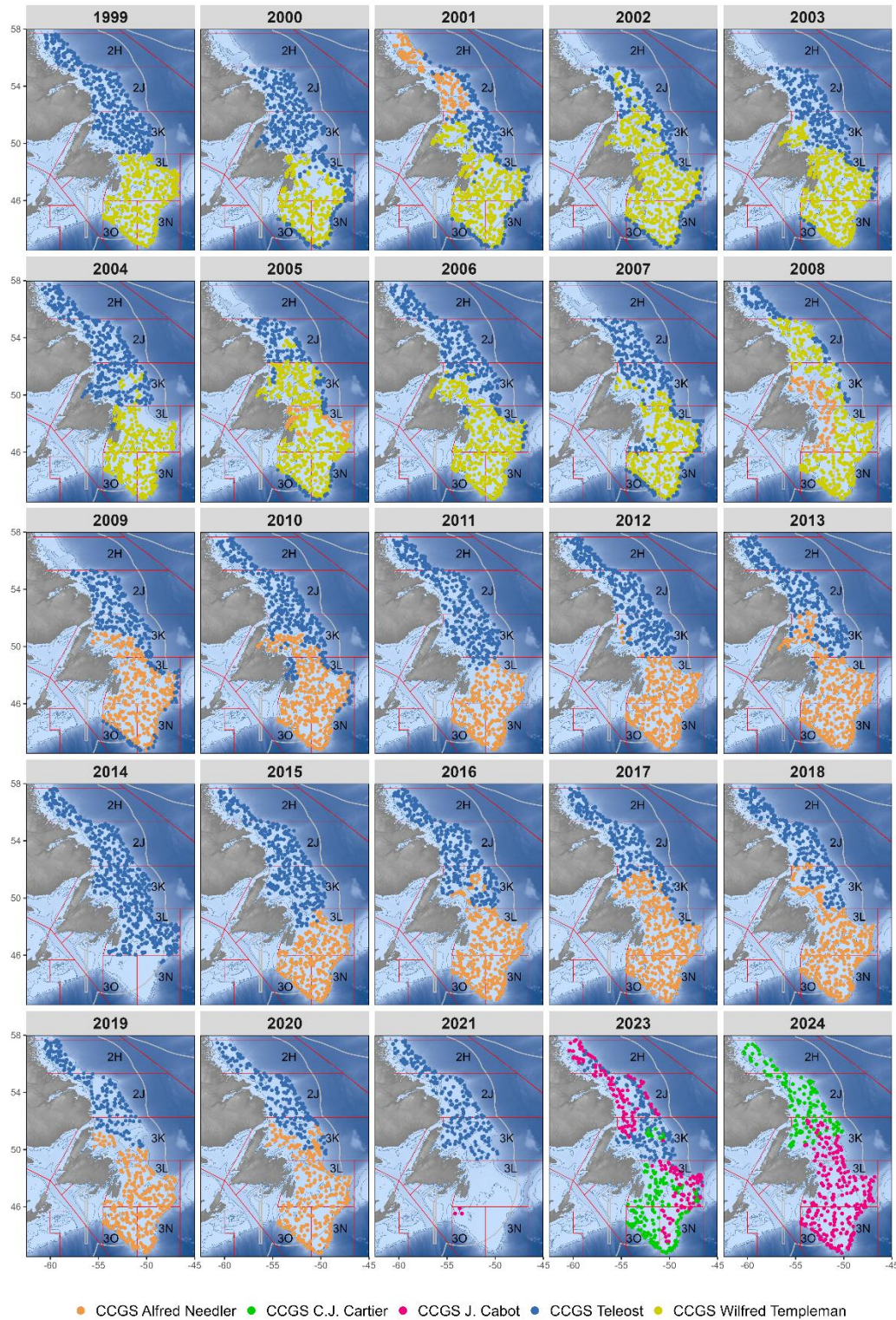


Figure 10. Fishing set locations colour-coded by research vessel for the Canadian NL Autumn multispecies bottom trawl surveys.



Figure 11. Timing of Canadian NL Autumn (top) and Spring (bottom) multispecies bottom trawl surveys by NAFO division. Horizontal bars represent the period between the first and last fishing set in each division.

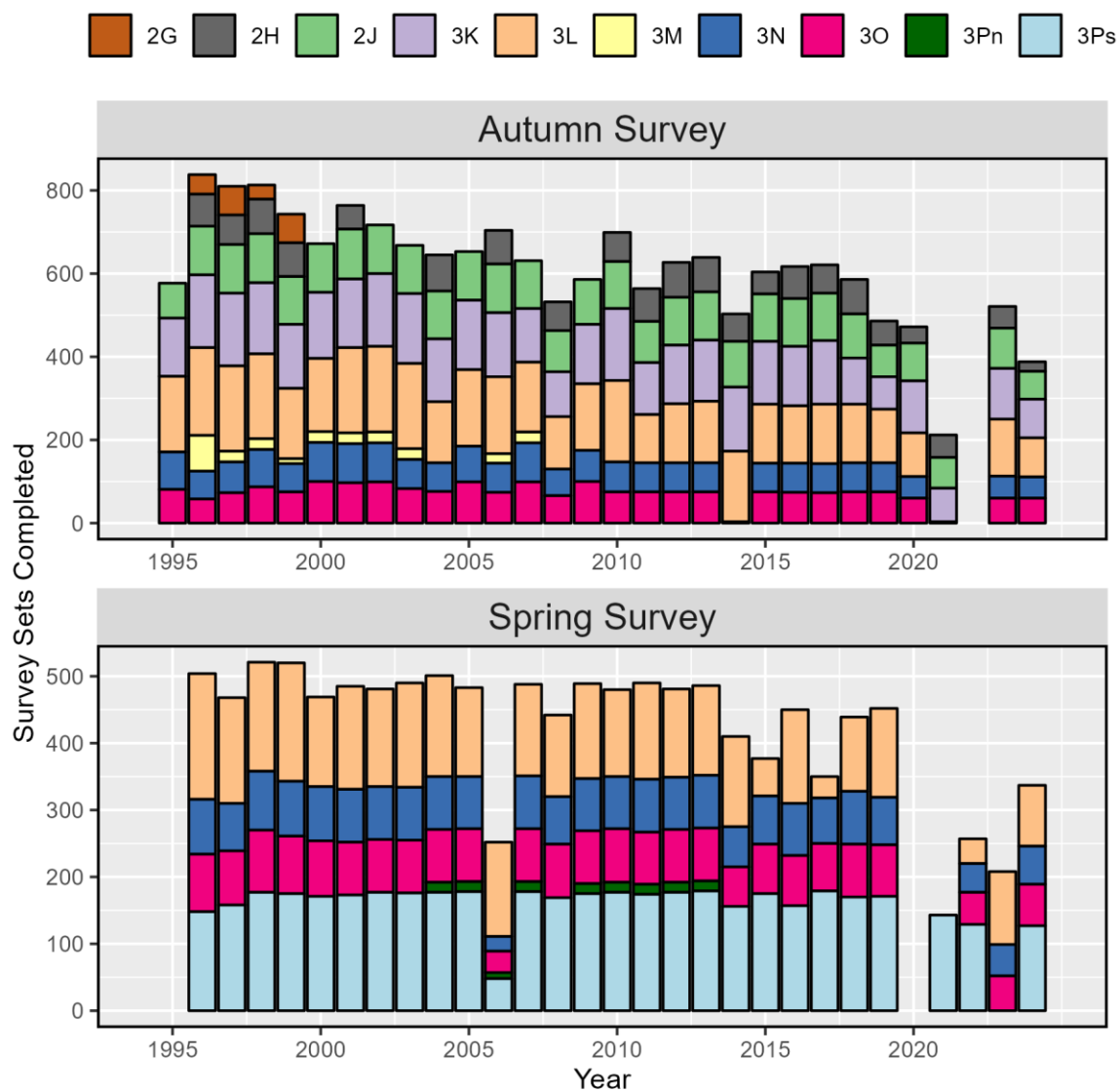


Figure 12. Total number of successful fishing sets in the Canadian Autumn (above) and Spring (below) multispecies bottom trawl surveys.

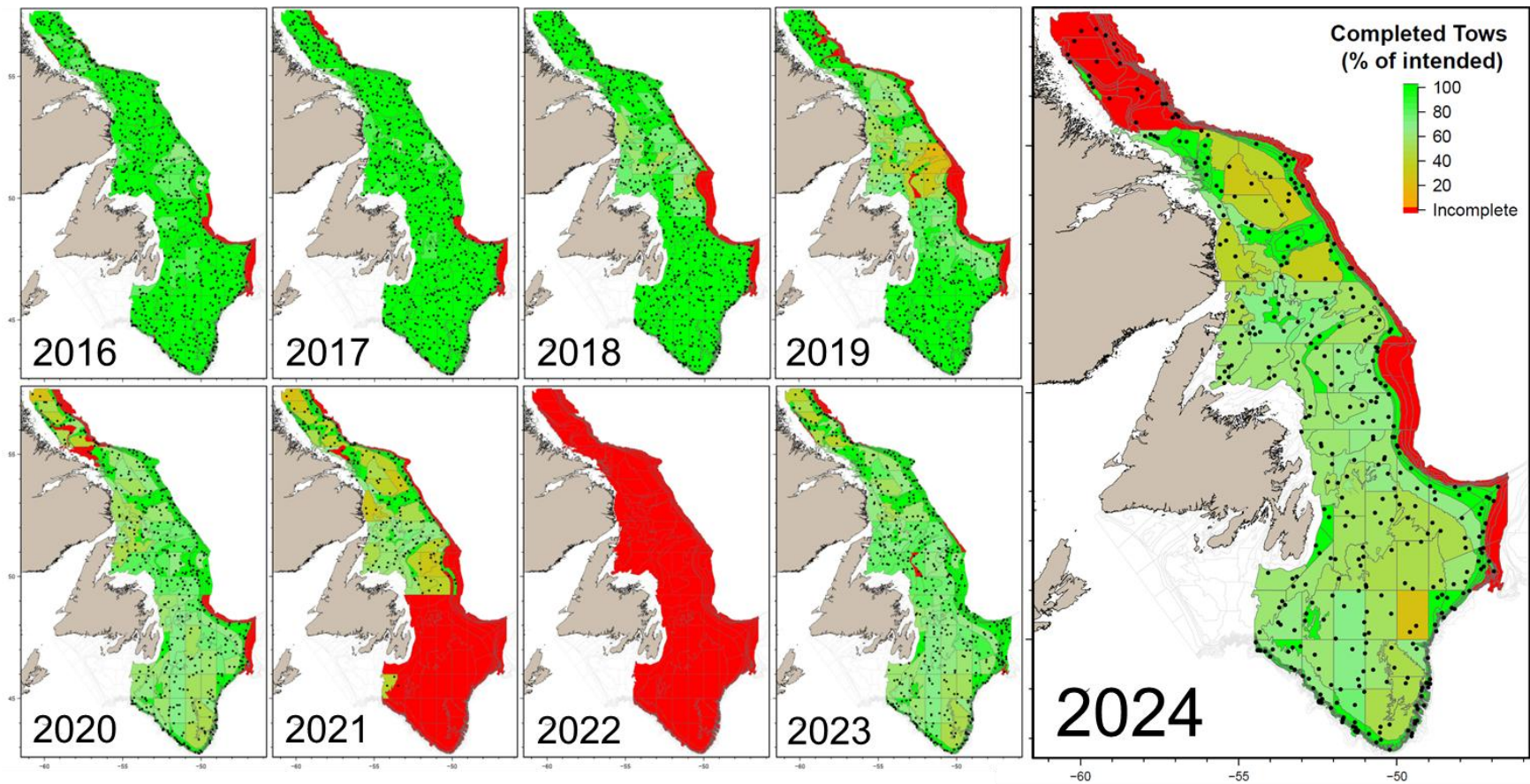


Figure 13. Summary of survey coverage in recent years for the Canadian Autumn multispecies bottom trawl surveys. Fishing set positions (circles) are overlaid on the survey stratification scheme. Strata with fewer than 2 successful sets are considered incomplete. Strata that are not coloured are not included in the current survey design.

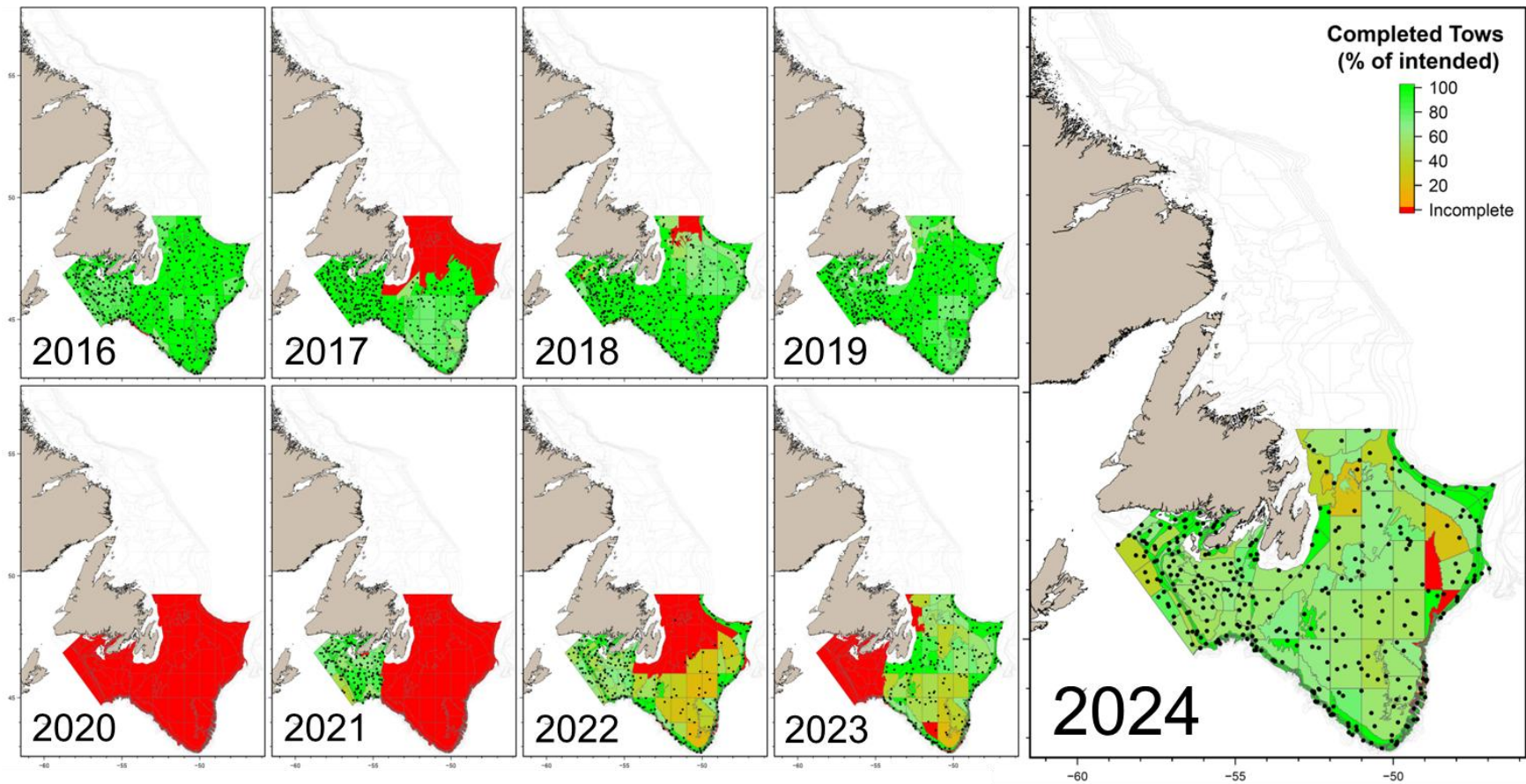


Figure 14. Summary of survey coverage in recent years for the Canadian spring multispecies bottom trawl surveys. Fishing set positions (circles) are overlaid on the survey stratification scheme. Strata with fewer than 2 successful sets are considered incomplete. Strata that are not coloured are not included in the current survey design.

American plaice (*Hippoglossoides platessoides*) in Divs. 2J3K Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	11,022	9,760	605	158	634	90	122	5,995	88	348
2024	3,729	3,729	522	0	577	93	91	3,665	90	320

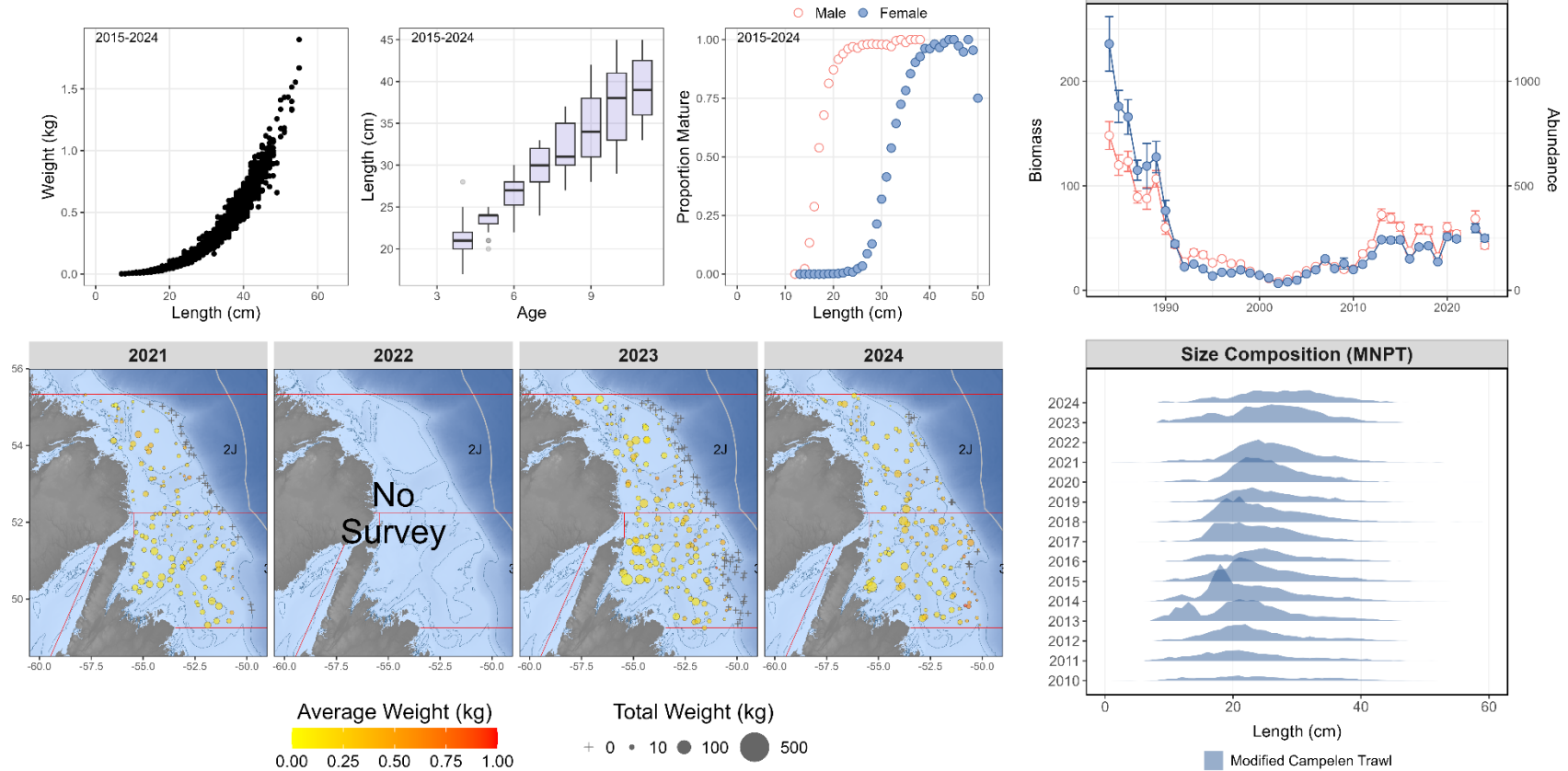


Figure 15. Summary of autumn RV survey data for American plaice in Divs. 2J3K.

American plaice (*Hippoglossoides platessoides*) in Divs. 3LNO Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	27,057	13,360	870	862	886	120	146	10,711	122	446
2024	34,141	12,131	1,014	0	1,083	161	162	10,179	161	489

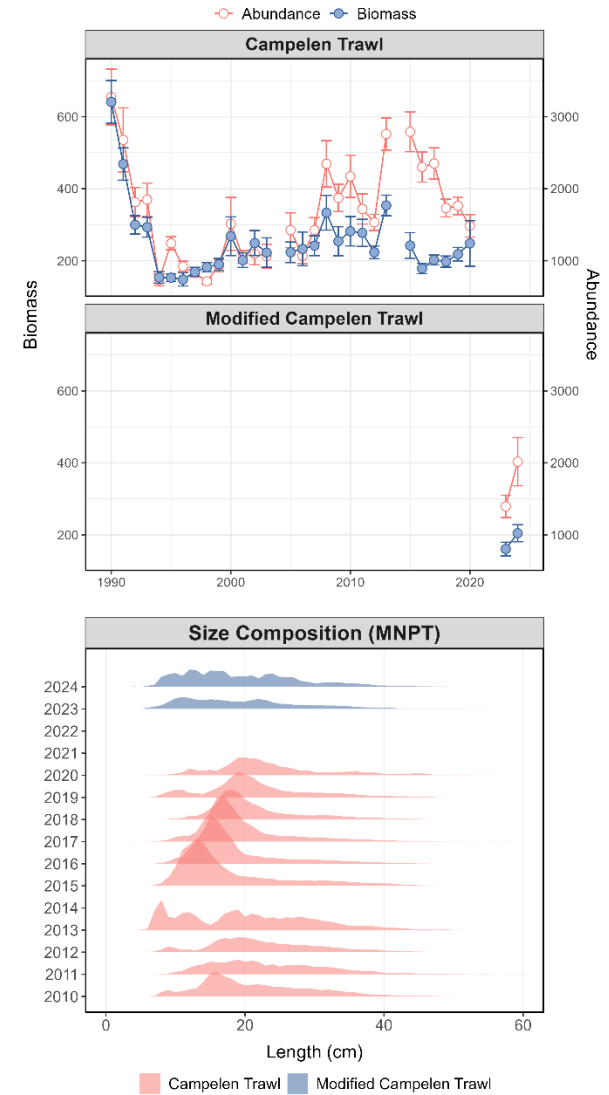
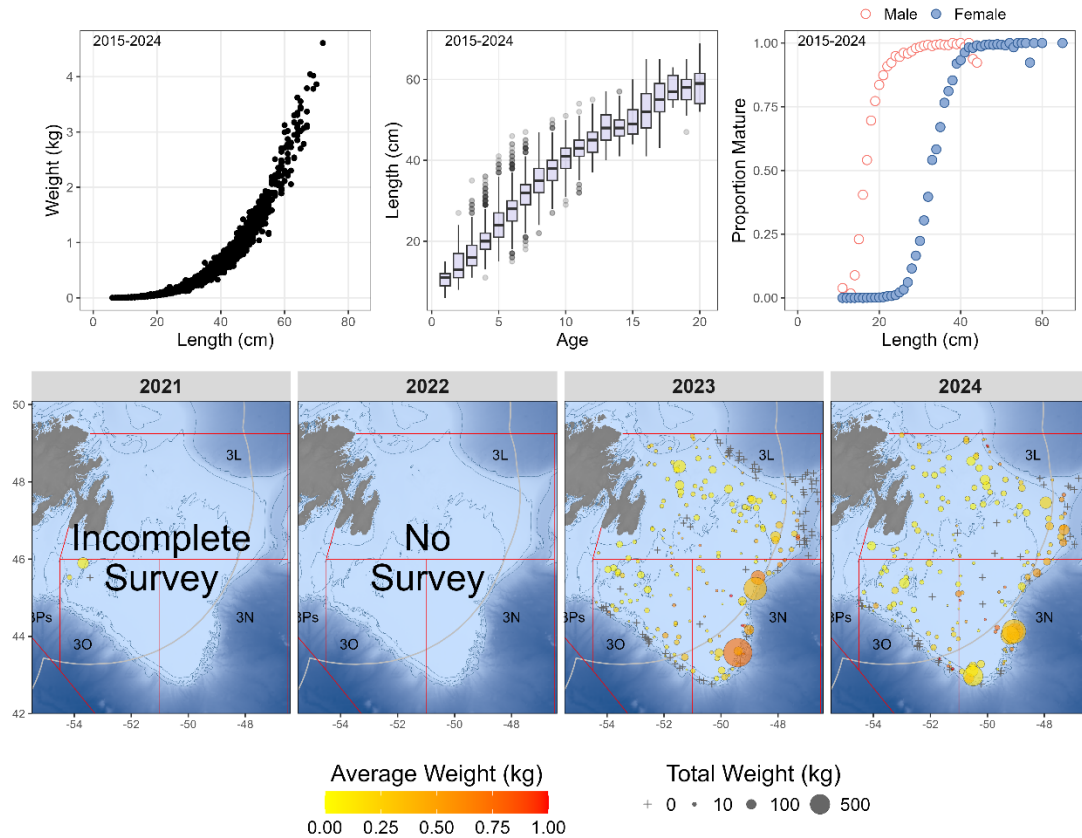


Figure 16. Summary of autumn RV survey data for American plaice in Divs. 3LNO.

American plaice (*Hippoglossoides platessoides*) in Divs. 3LNO Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	6,303	4,591	0	0	0	0	0	0	0	0
2023	15,048	10,570	846	839	871	134	130	6,386	129	479
2024	21,657	11,541	948	943	962	161	160	9,846	154	459

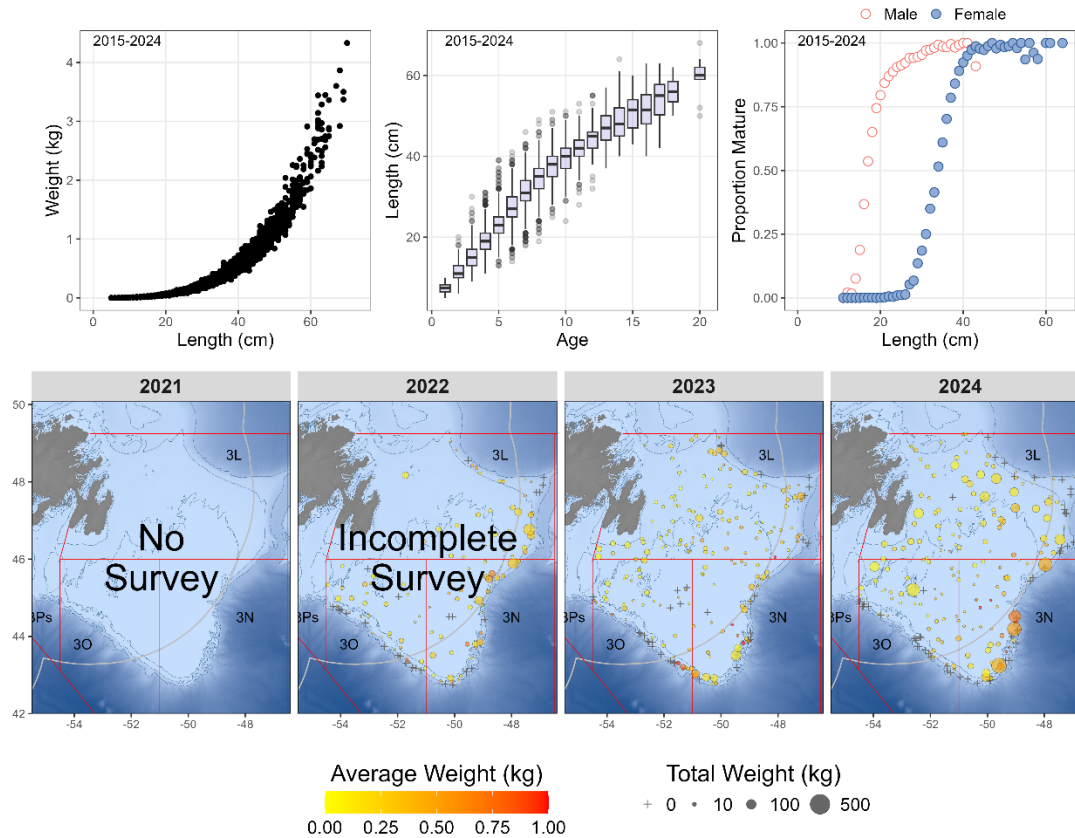
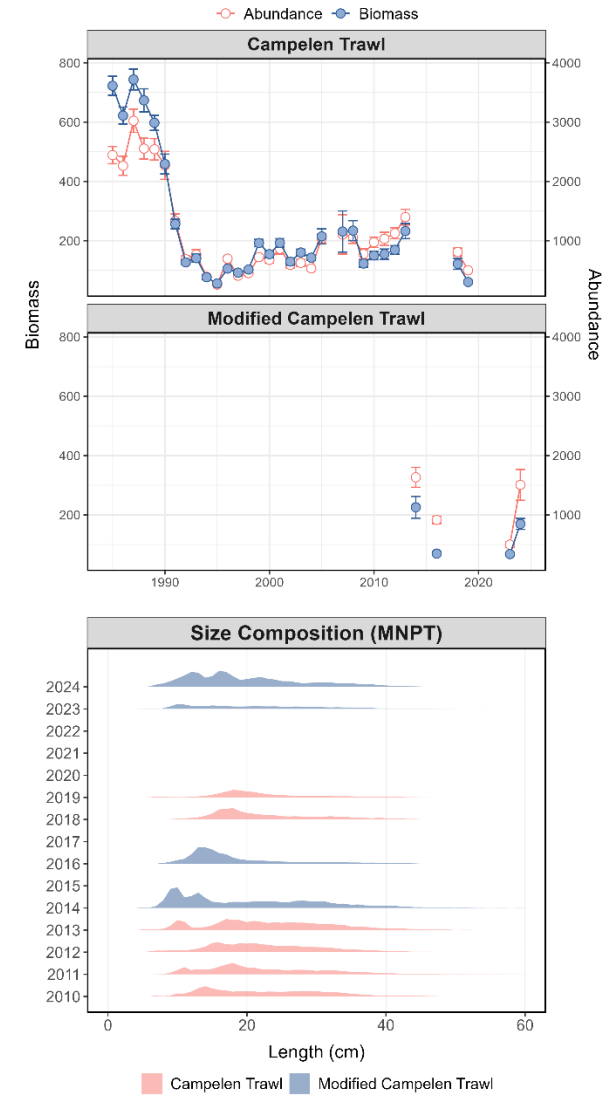


Figure 17. Summary of spring RV survey data for American plaice in Divs. 3LNO.



American plaice (*Hippoglossoides platessoides*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	10,230	5,067	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	11,137	7,124	435	194	449	50	50	5,412	50	222

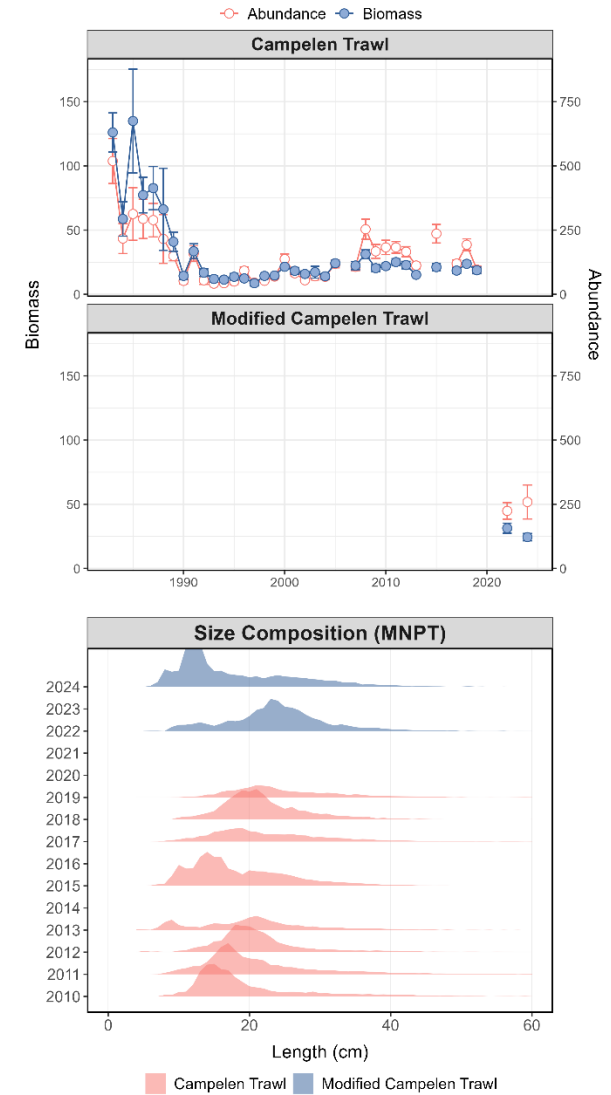
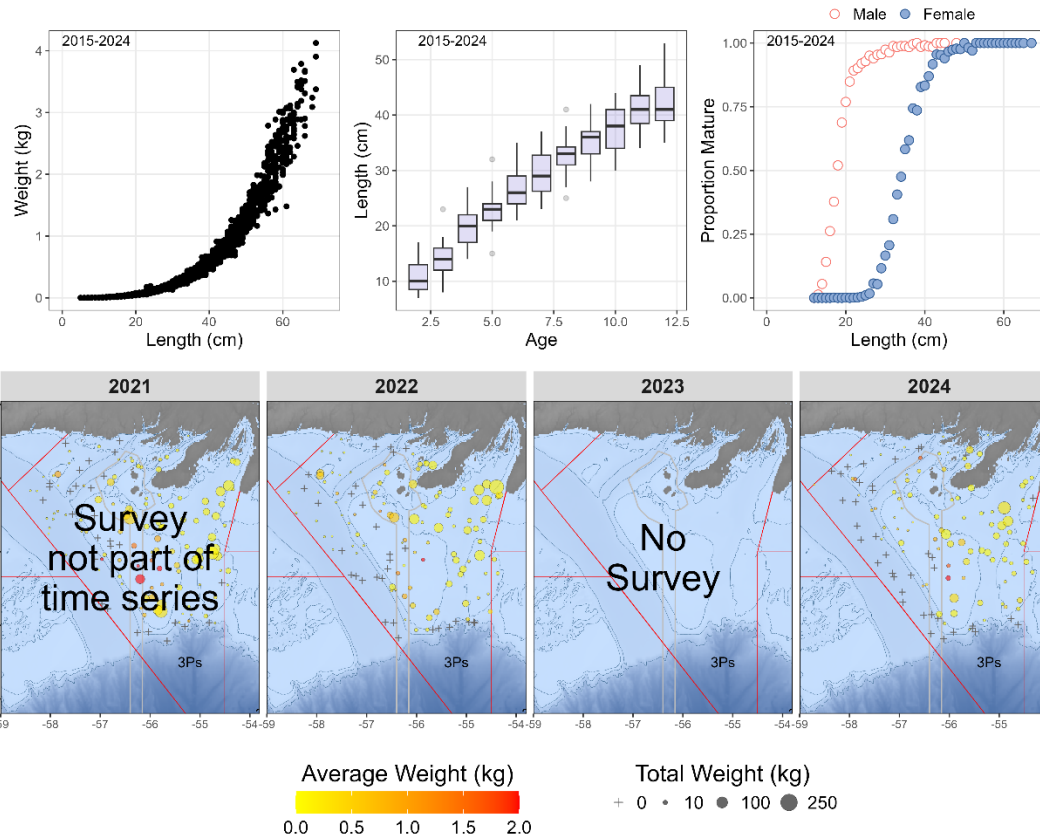


Figure 18. Summary of spring RV survey data for American plaice in Subdiv. 3Ps.

Yellowtail flounder (*Myxopsetta ferruginea*) in Divs. 3LNO Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	9,380	5,780	347	0	362	83	88	5,249	83	224
2024	9,690	4,692	2	0	310	109	109	4,174	108	260

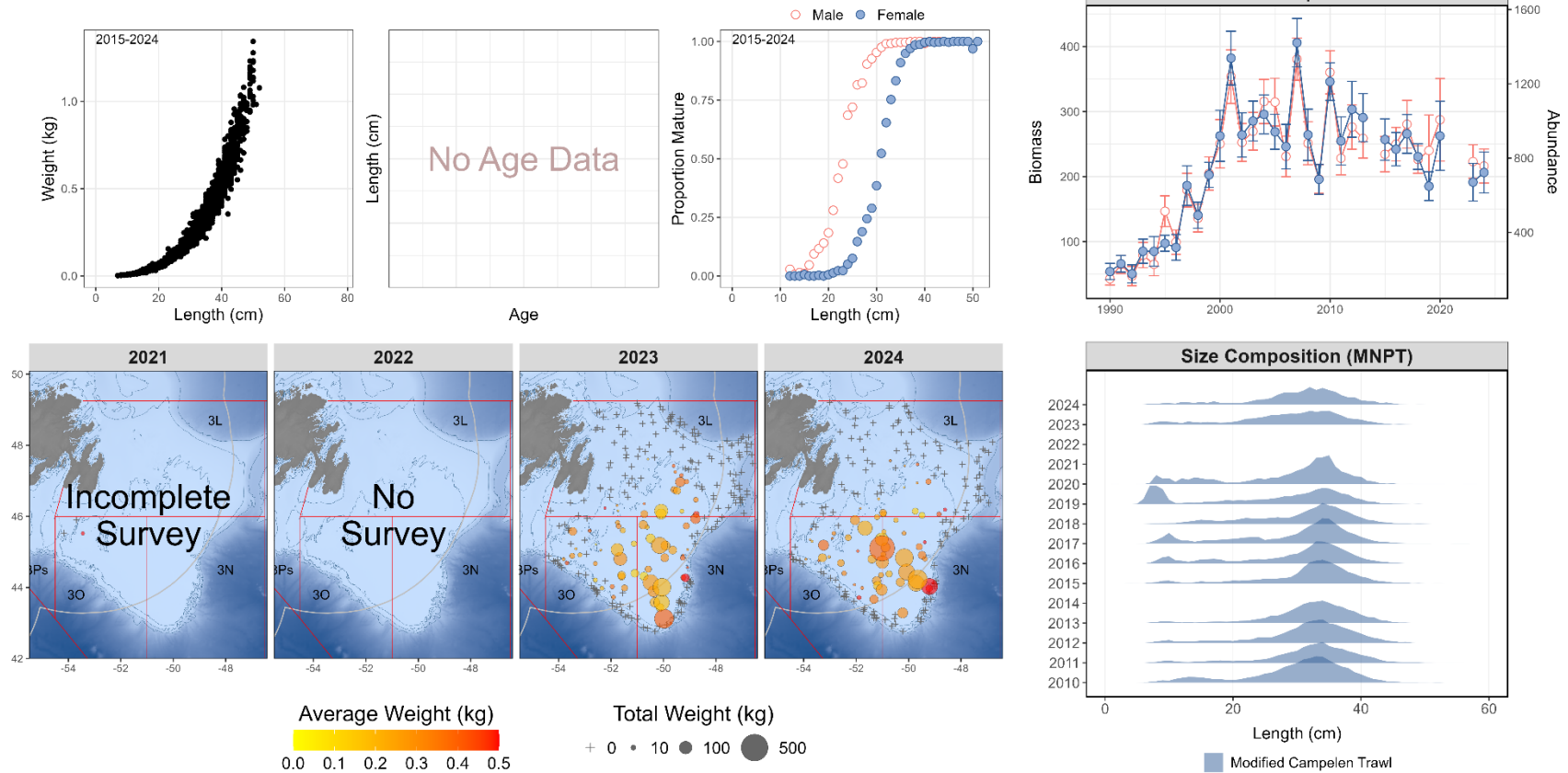


Figure 19. Summary of autumn RV survey data for Yellowtail flounder in Divs. 3LNO.

Yellowtail flounder (*Myxopsetta ferruginea*) in Divs. 3LNO Canada-NL Spring RV Bottom Trawl Survey

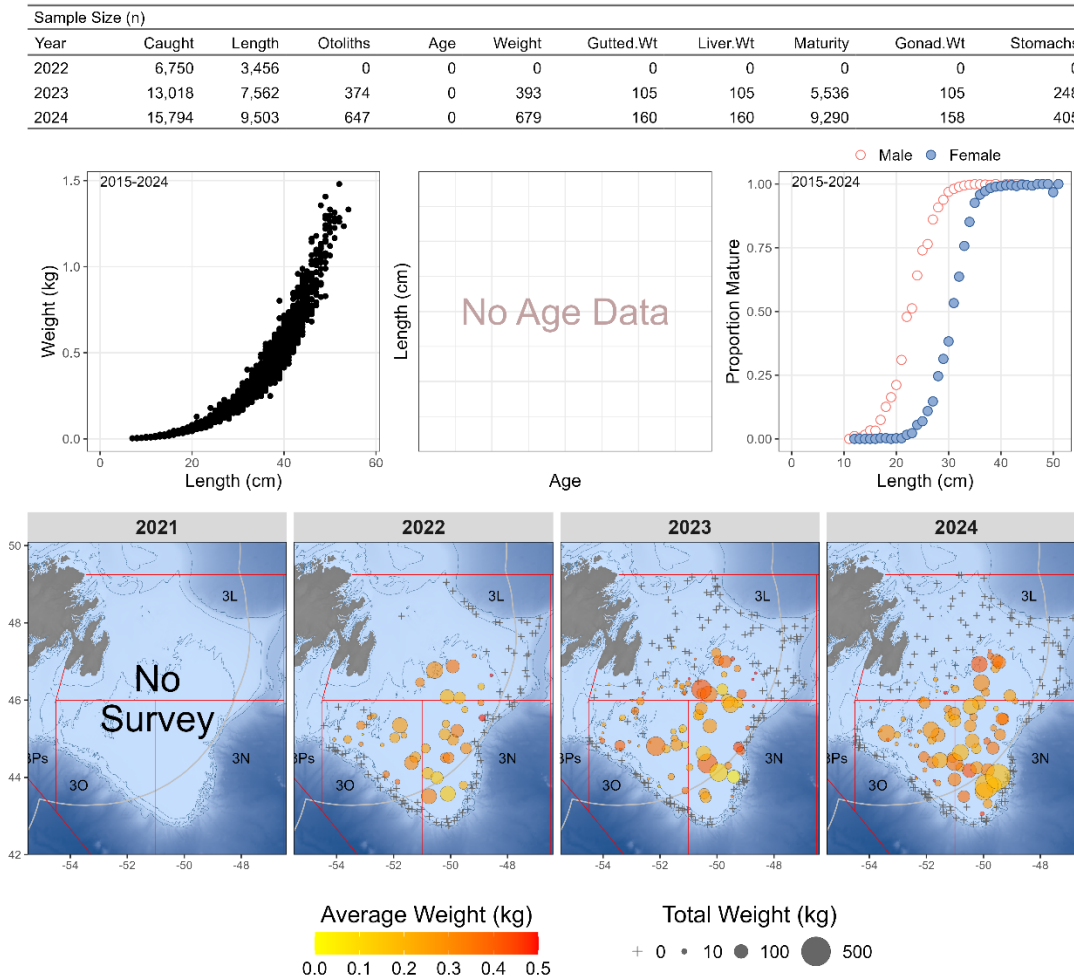


Figure 20. Summary of spring RV survey data for Yellowtail flounder in Divs. 3LNO.

Yellowtail flounder (*Myxopsetta ferruginea*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	1,883	694	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	1,464	1,216	38	0	90	7	8	1,205	8	86

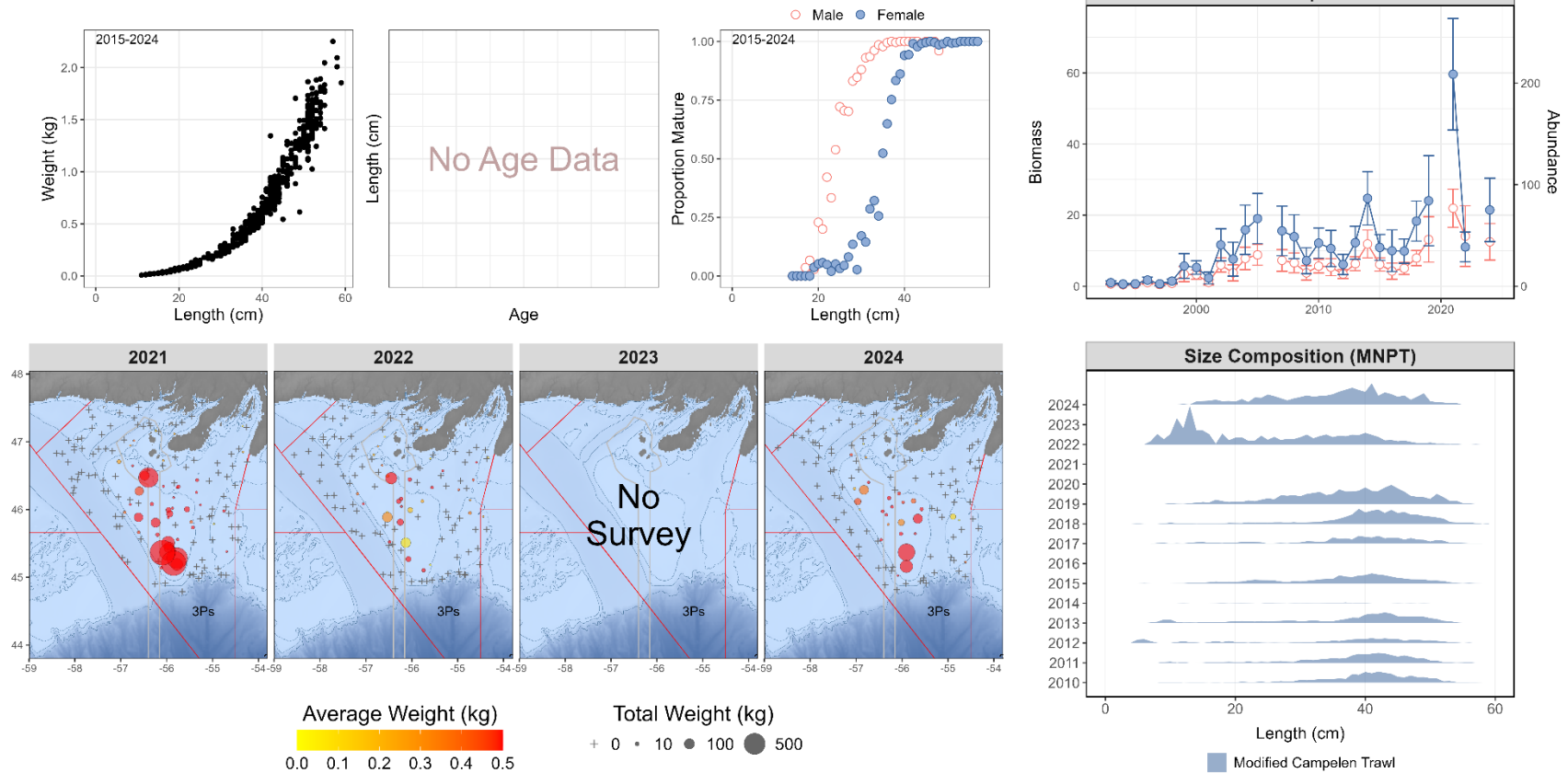


Figure 21. Summary of spring RV survey data for Yellowtail flounder in Subdiv. 3Ps.

Atlantic cod (*Gadus morhua*) in Divs. 2GH Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	937	937	184	183	187	139	148	648	148	82
2024	125	125	29	29	44	27	27	125	27	29

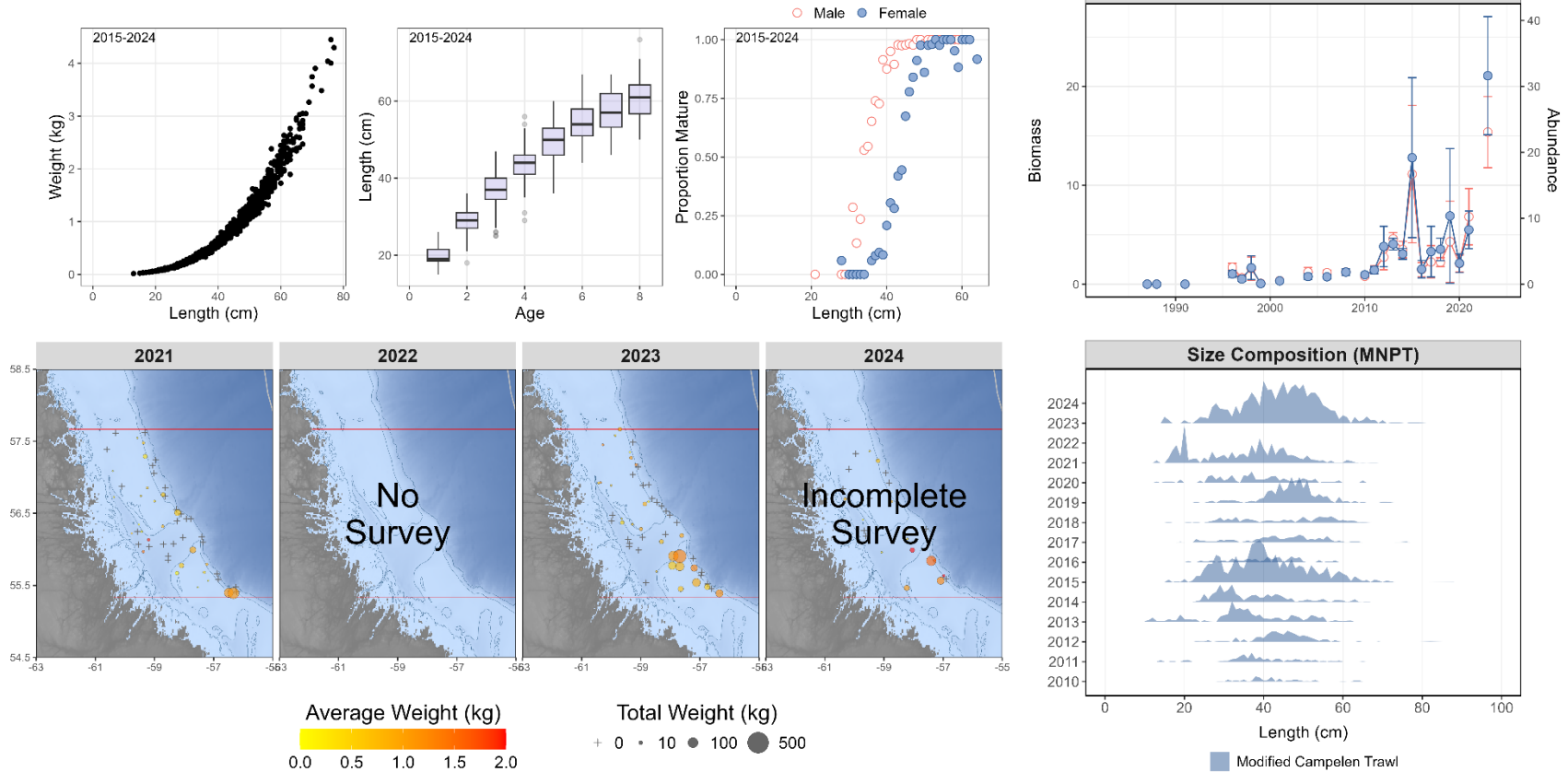


Figure 22. Summary of autumn RV survey data for Atlantic cod in Divs. 2GH.

Atlantic cod (*Gadus morhua*) in Divs. 2J3KL Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	10,674	10,089	1,734	1,732	1,724	1,601	1,631	7,096	1,623	748
2024	9,505	7,901	1,822	1,822	1,836	1,539	1,625	7,705	1,618	732

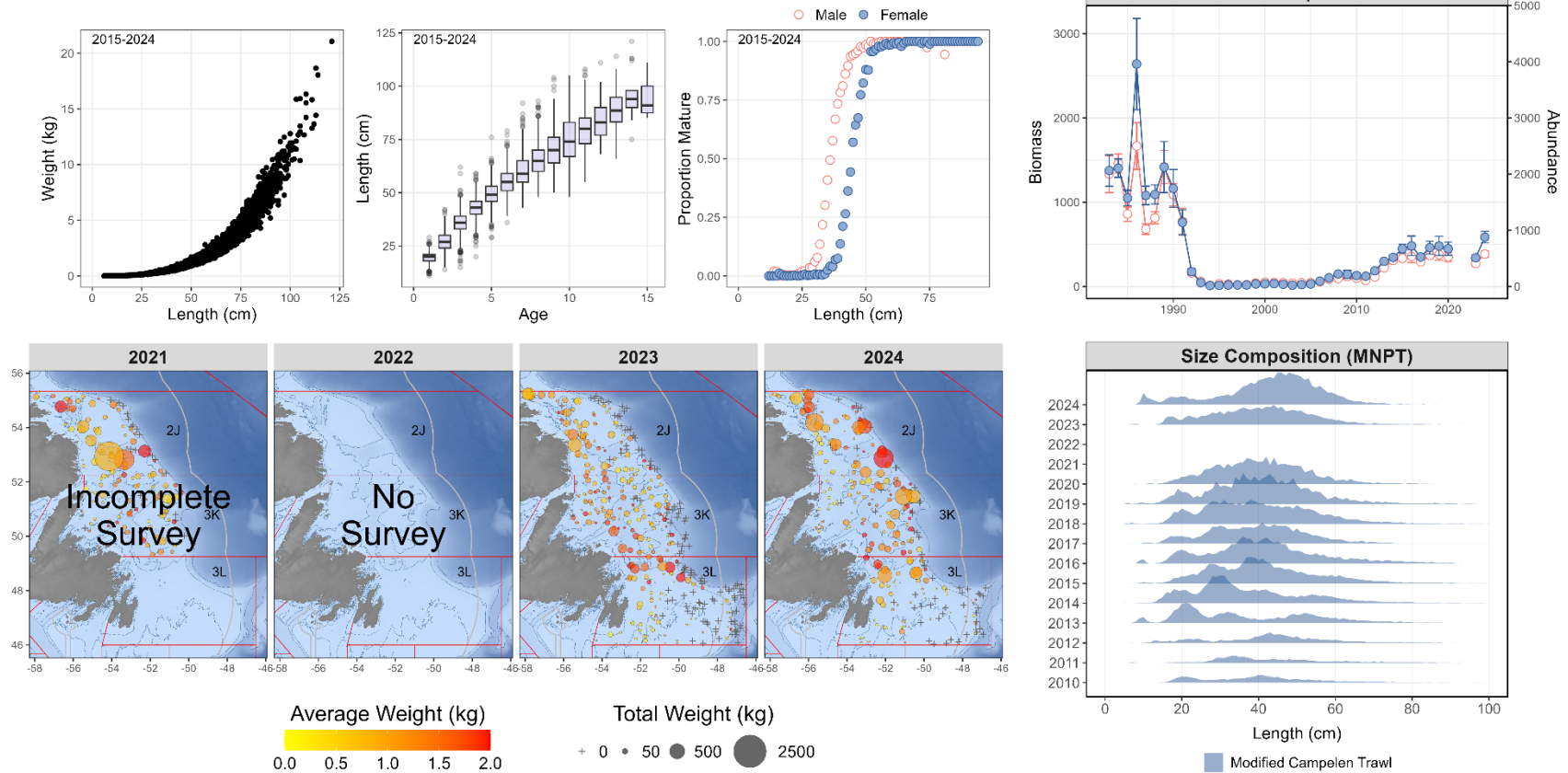


Figure 23. Summary of autumn RV survey data for Atlantic cod in Divs. 2J3KL.

Atlantic cod (*Gadus morhua*) in Divs. 3NO Canada-NL Autumn RV Bottom Trawl Survey

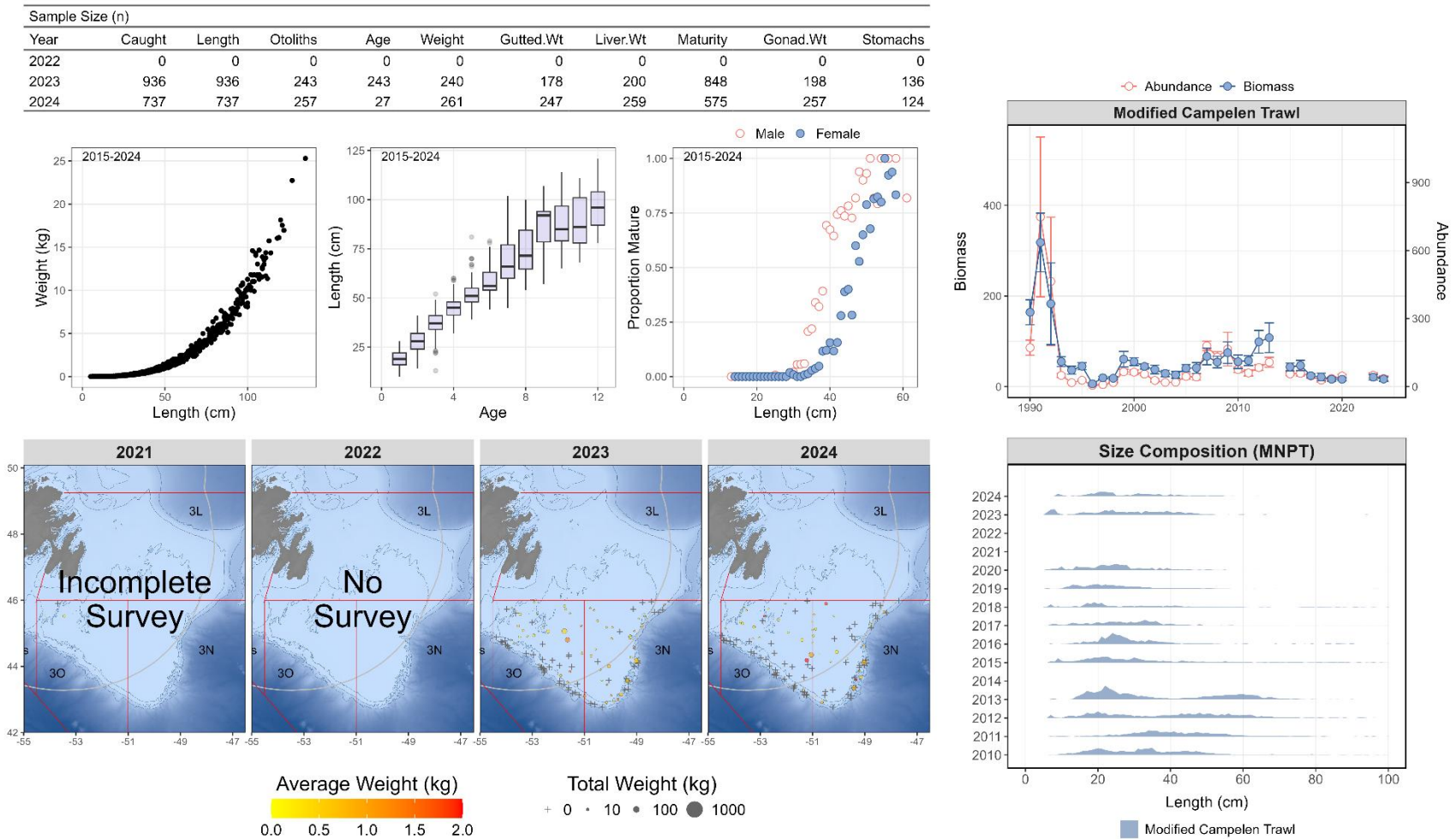


Figure 24. Summary of autumn RV survey data for Atlantic cod in Divs. 3NO.

Atlantic cod (*Gadus morhua*) in Divs. 3NO Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	2,442	1,590	0	0	0	0	0	0	0	0
2023	648	648	151	105	151	138	140	540	138	90
2024	1,307	1,307	355	353	354	316	322	1,242	321	127

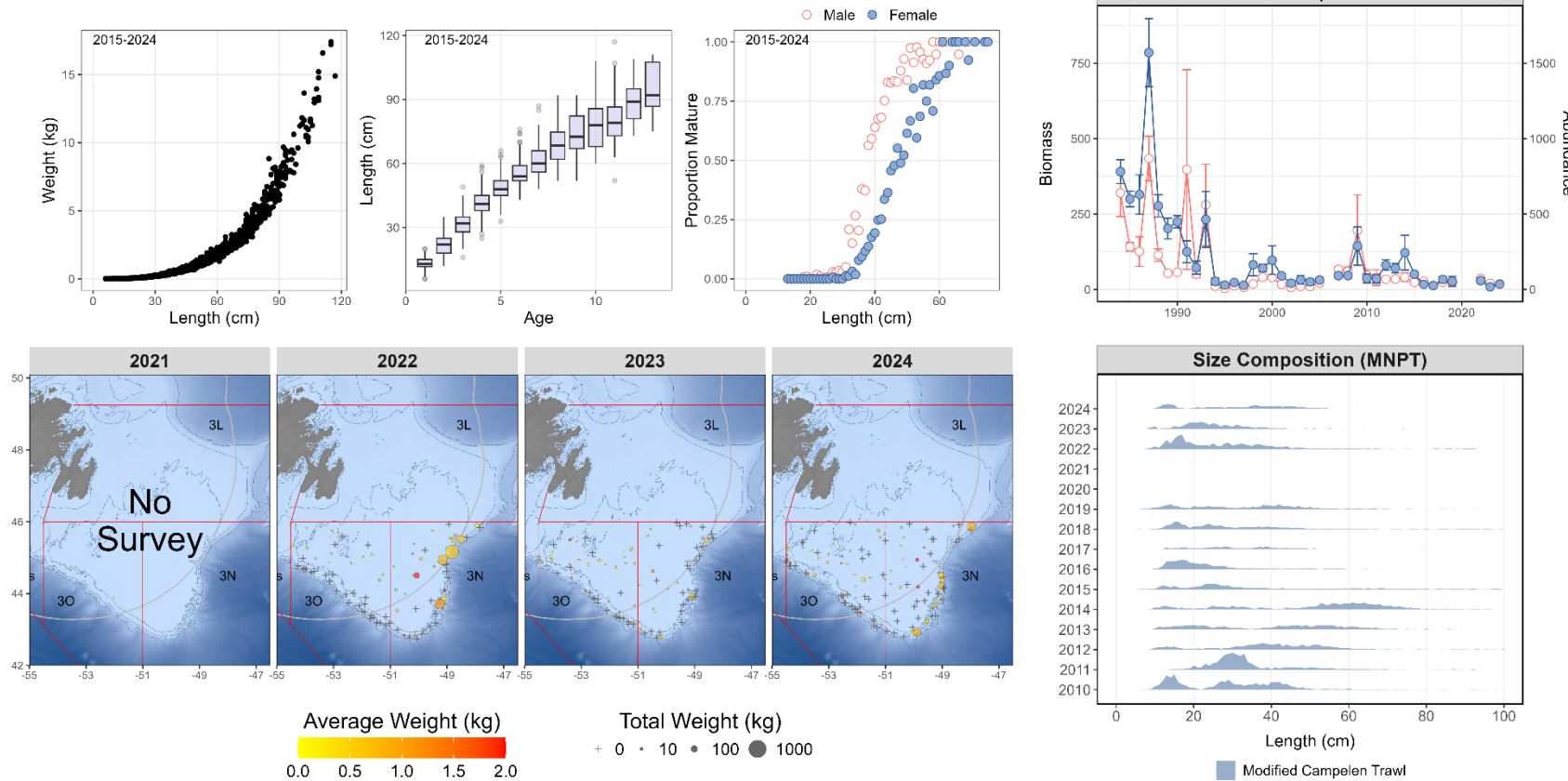


Figure 25. Summary of spring RV survey data for Atlantic cod in Divs. 3NO.

Atlantic cod (*Gadus morhua*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	4,487	3,081	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	3,959	2,986	571	570	576	535	565	2,944	561	256

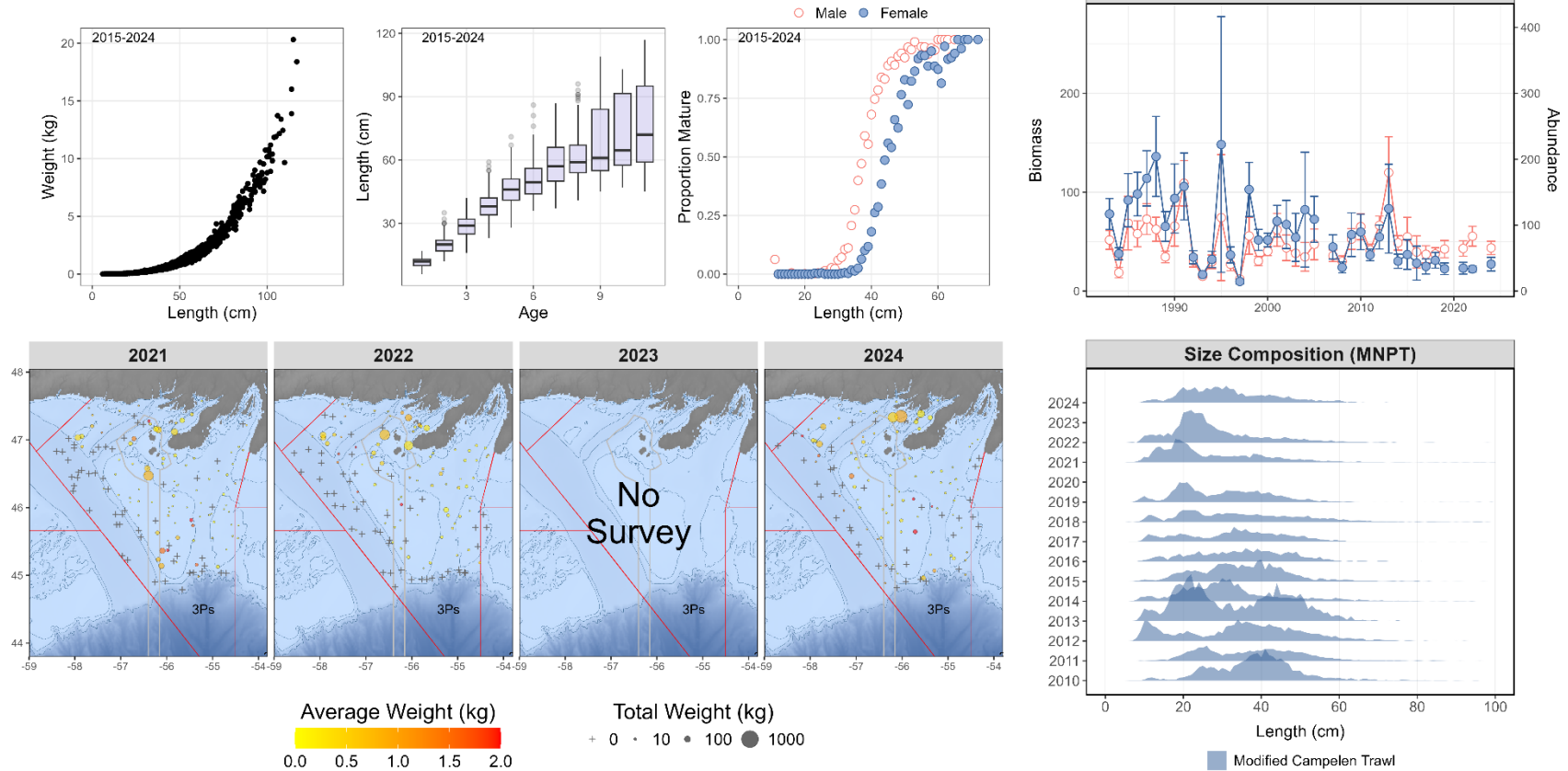


Figure 26. Summary of spring RV survey data for Atlantic cod in Subdiv. 3Ps.

Greenland halibut (*Reinhardtius hippoglossoides*) in Divs. 2J3K Canada-NL Autumn RV Bottom Trawl Survey

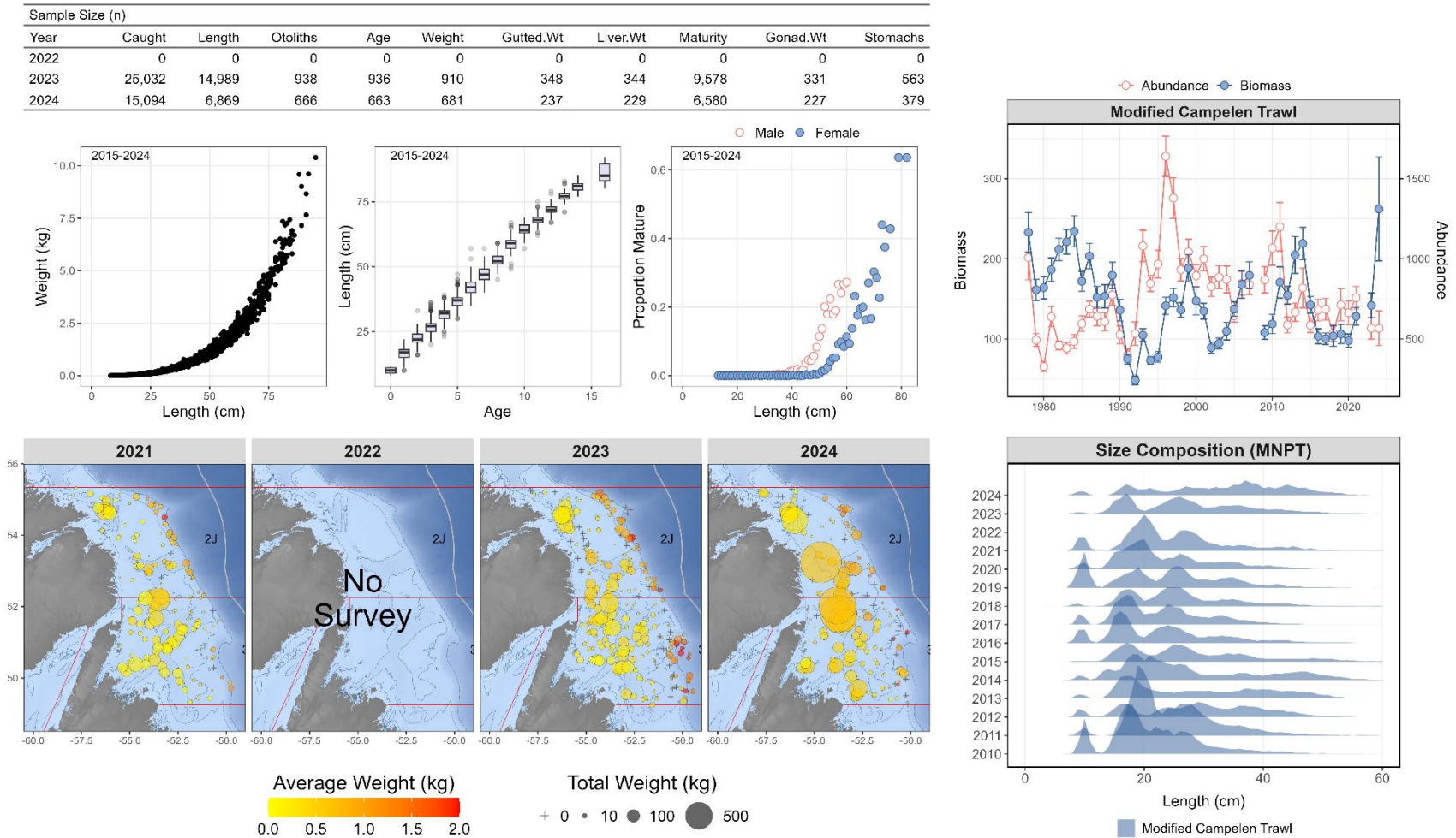


Figure 27. Summary of autumn RV survey data for Greenland halibut in Divs. 2J3K.

Greenland halibut (*Reinhardtius hippoglossoides*) in Divs. 3LNO Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	2,402	2,402	534	530	544	225	228	2,190	228	316
2024	1,430	1,406	345	343	355	67	67	1,346	67	187

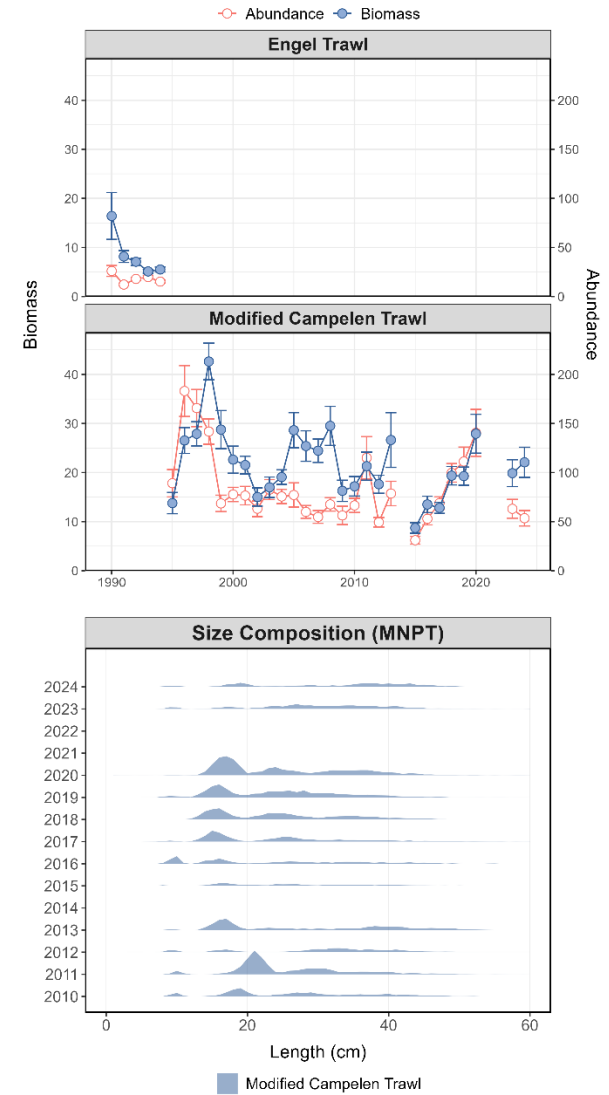
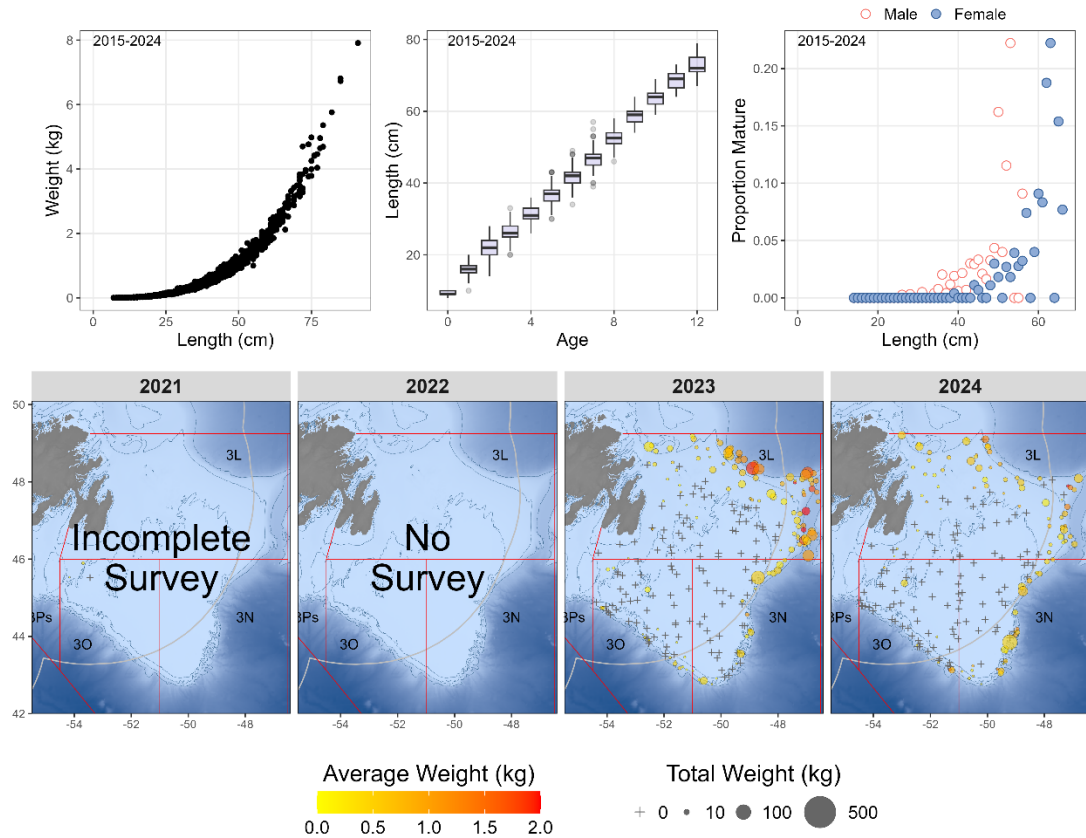


Figure 28. Summary of autumn RV survey data for Greenland halibut in Divs. 3LNO.

Greenland halibut (*Reinhardtius hippoglossoides*) in Divs. 3LNO Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	2,323	1,879	0	0	0	0	0	0	0	0
2023	3,799	3,351	354	354	364	45	46	2,931	46	213
2024	1,864	1,864	380	380	424	100	100	1,677	100	157

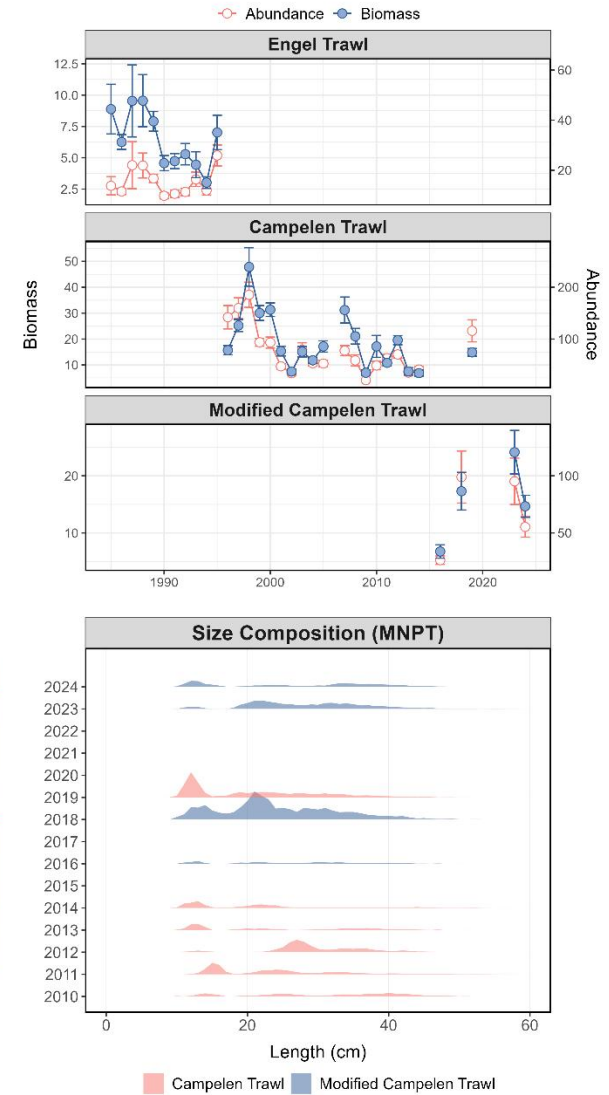
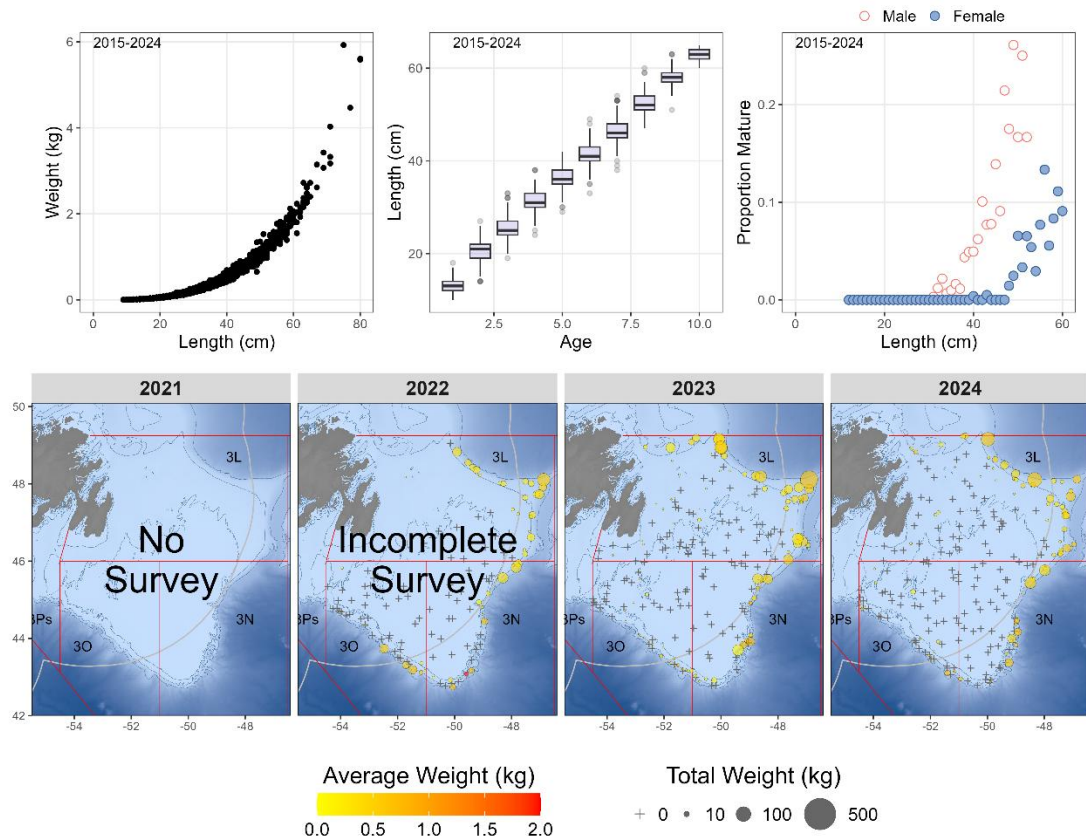


Figure 29. Summary of spring RV survey data for Greenland halibut in Divs. 3LNO.

Greenland halibut (*Reinhardtius hippoglossoides*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)											
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs	
2022	3,369	882	0	0	0	0	0	0	0	0	
2023	0	0	0	0	0	0	0	0	0	0	
2024	454	454	102	102	133	26	26	336	25	60	

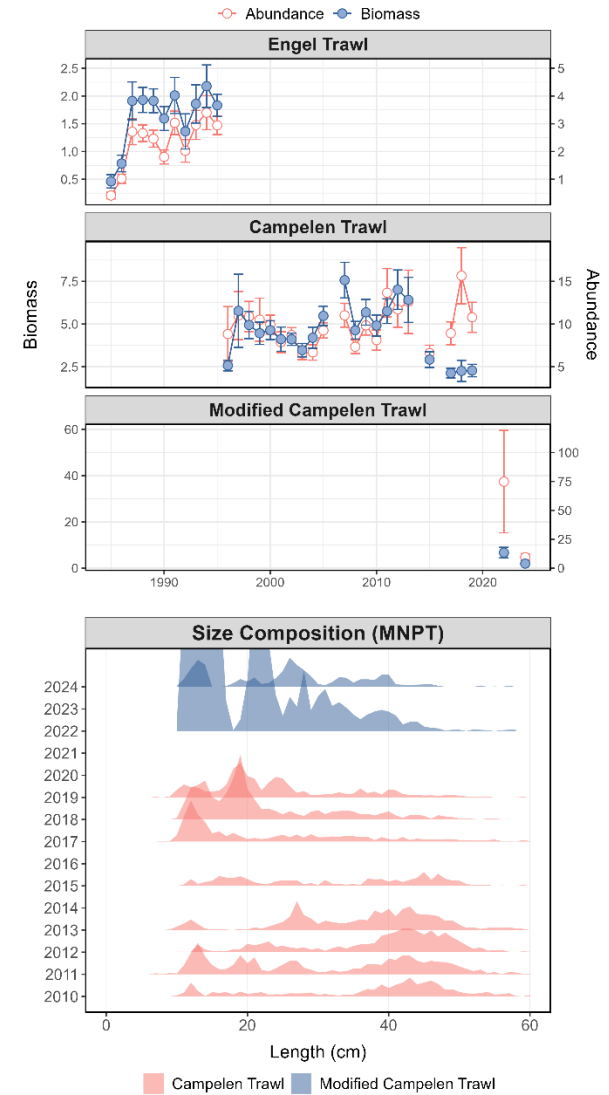
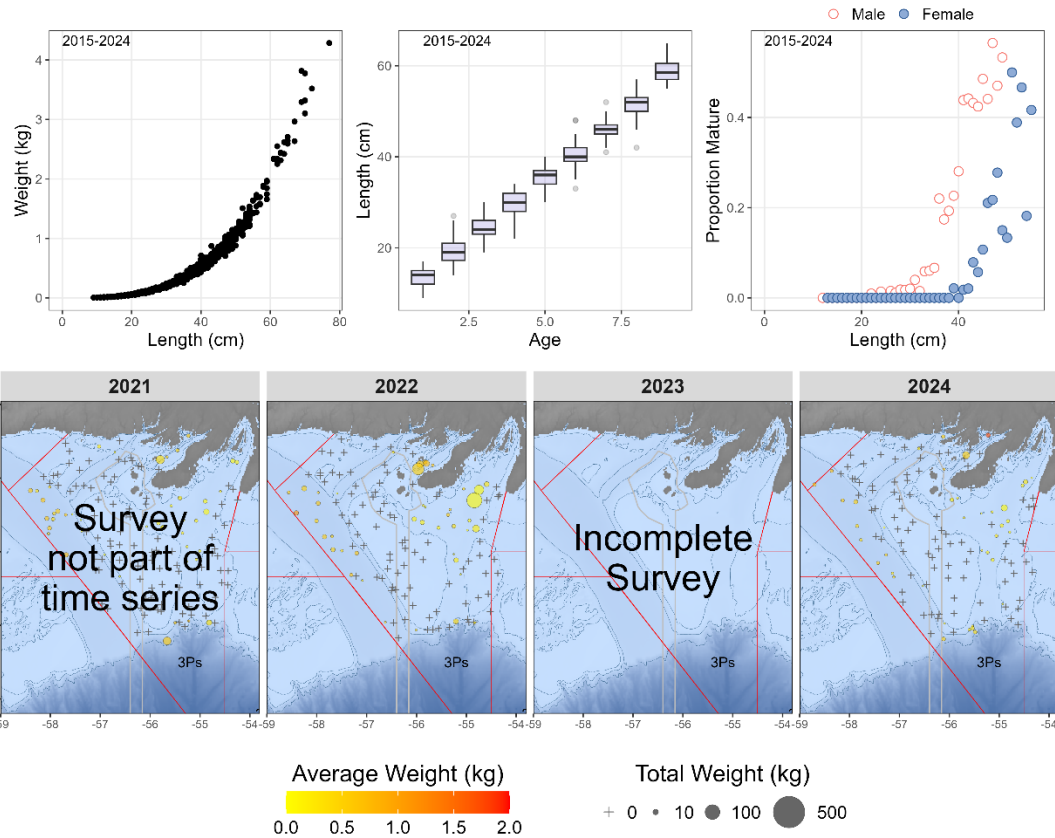


Figure 30. Summary of spring RV survey data for Greenland halibut in Subdiv. 3Ps.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Divs. 2J3K Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	90,037	36,946	184	0	211	0	4	16,630	0	63
2024	143,756	16,166	215	0	232	0	0	12,787	0	60

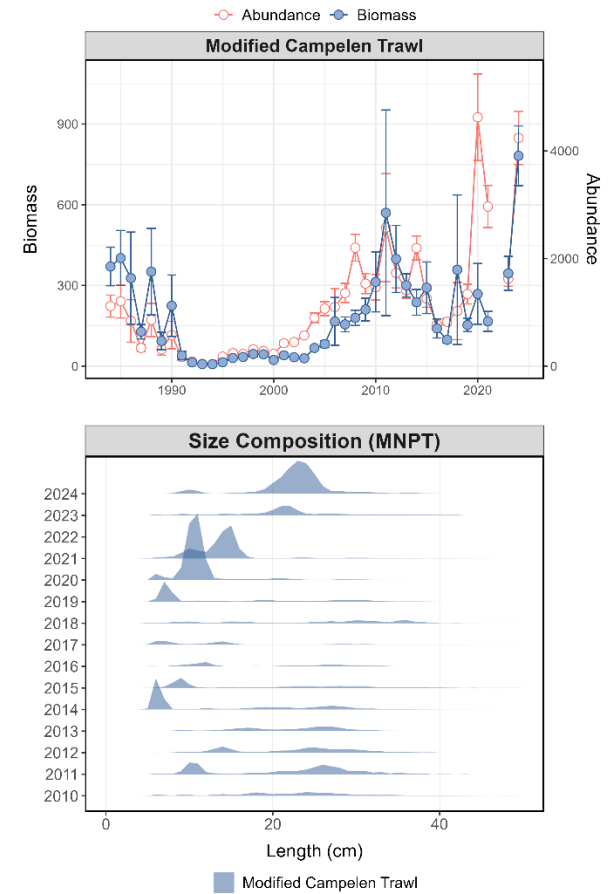
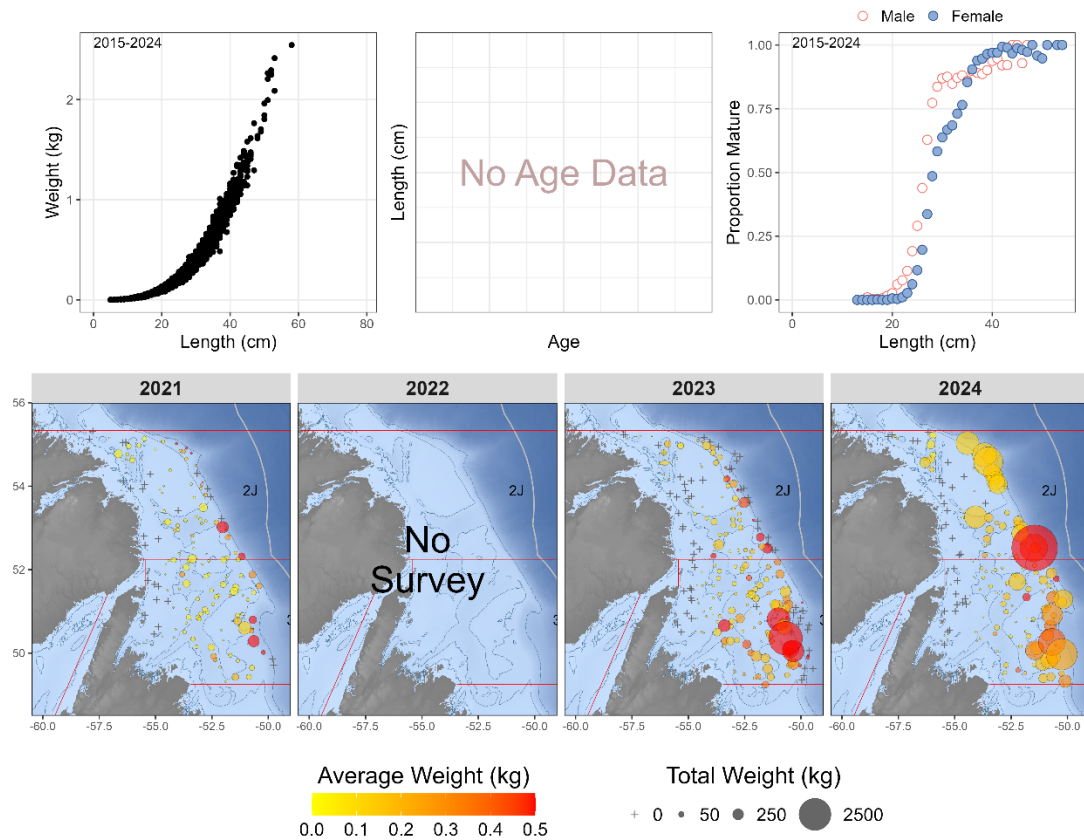


Figure 31. Summary of autumn RV survey data for Beaked redfish in Divs. 2J3K.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Divs. 3LN Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	52,768	8,769	251	0	260	0	0	7,947	0	82
2024	83,109	6,762	148	0	188	0	0	5,703	0	85

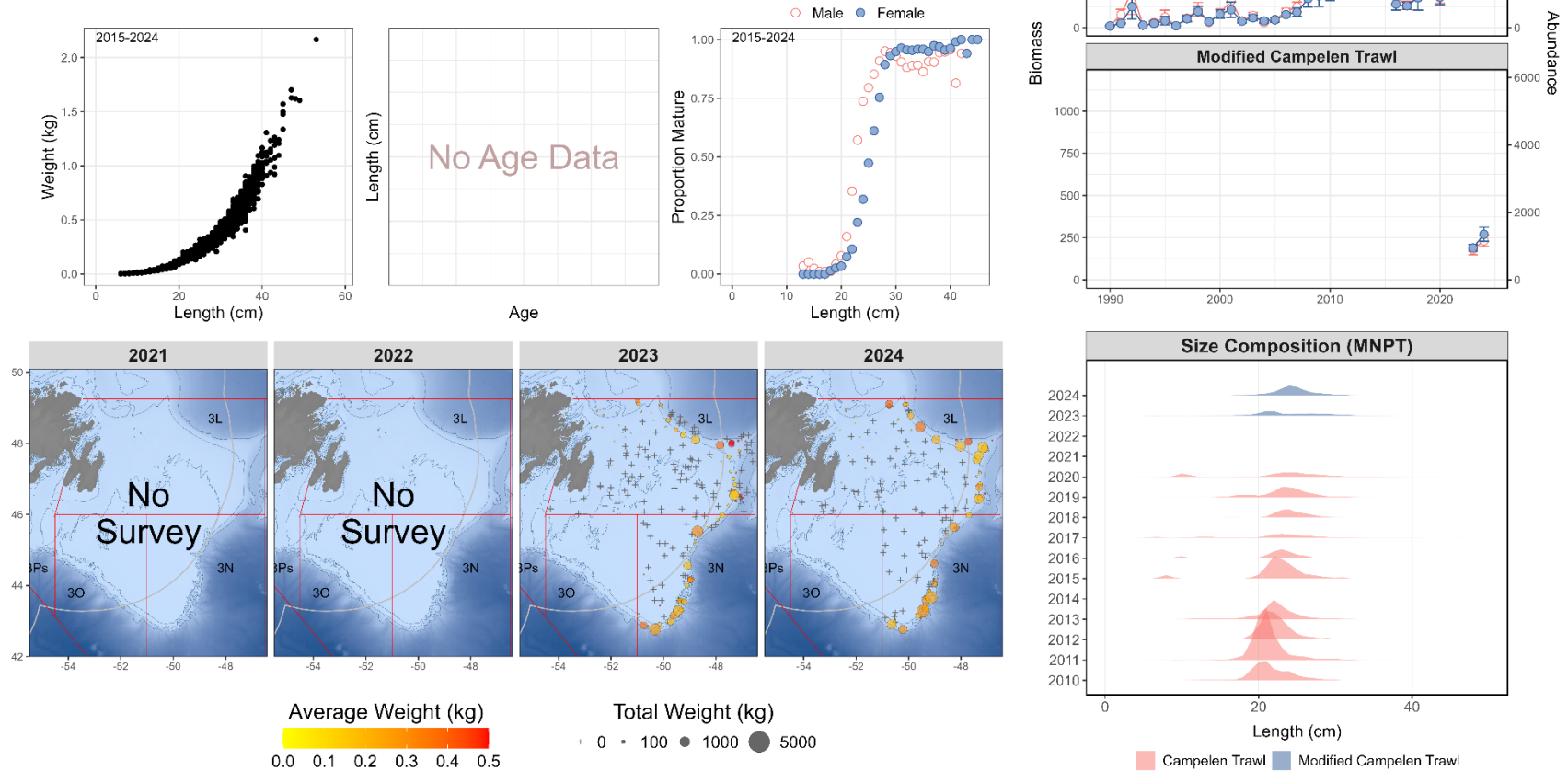


Figure 32. Summary of autumn RV survey data for Beaked redfish in Divs. 3LN.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Divs. 3LN Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	33,722	3,272	0	0	0	0	0	0	0	0
2023	37,947	6,633	156	0	167	8	8	4,334	8	17
2024	25,106	7,440	188	0	212	0	0	6,405	0	83

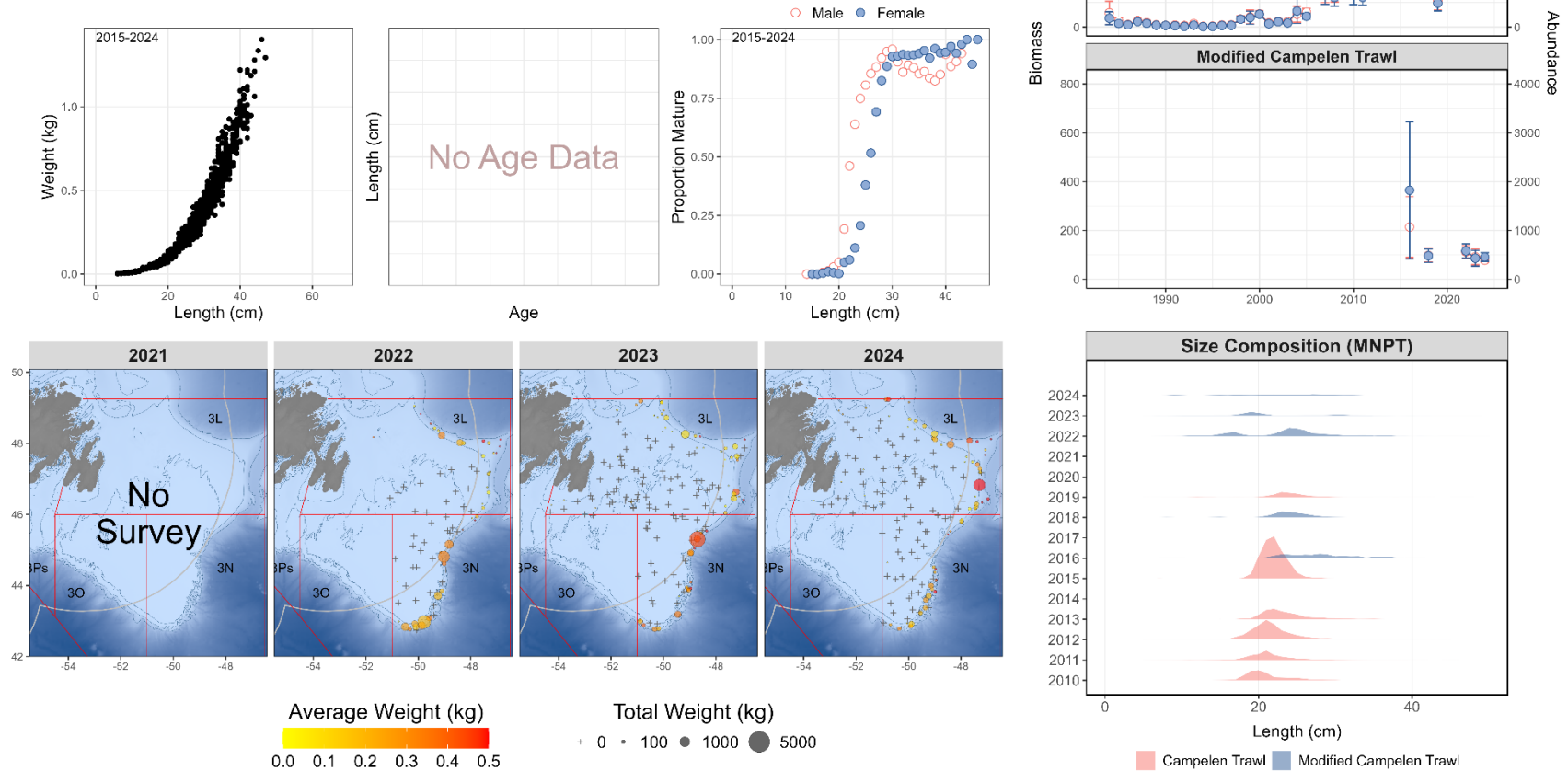


Figure 33. Summary of spring RV survey data for Beaked redfish in Divs. 3LN.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Div. 3O Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	27,091	4,518	52	0	51	0	0	4,081	0	4
2024	32,786	4,663	135	0	159	0	0	3,834	0	42

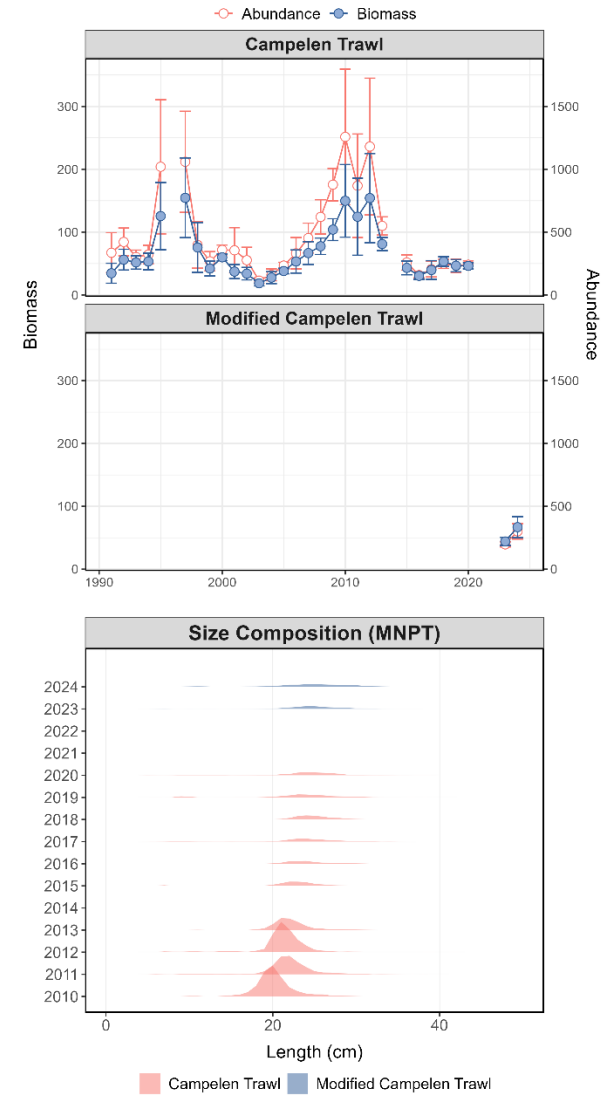
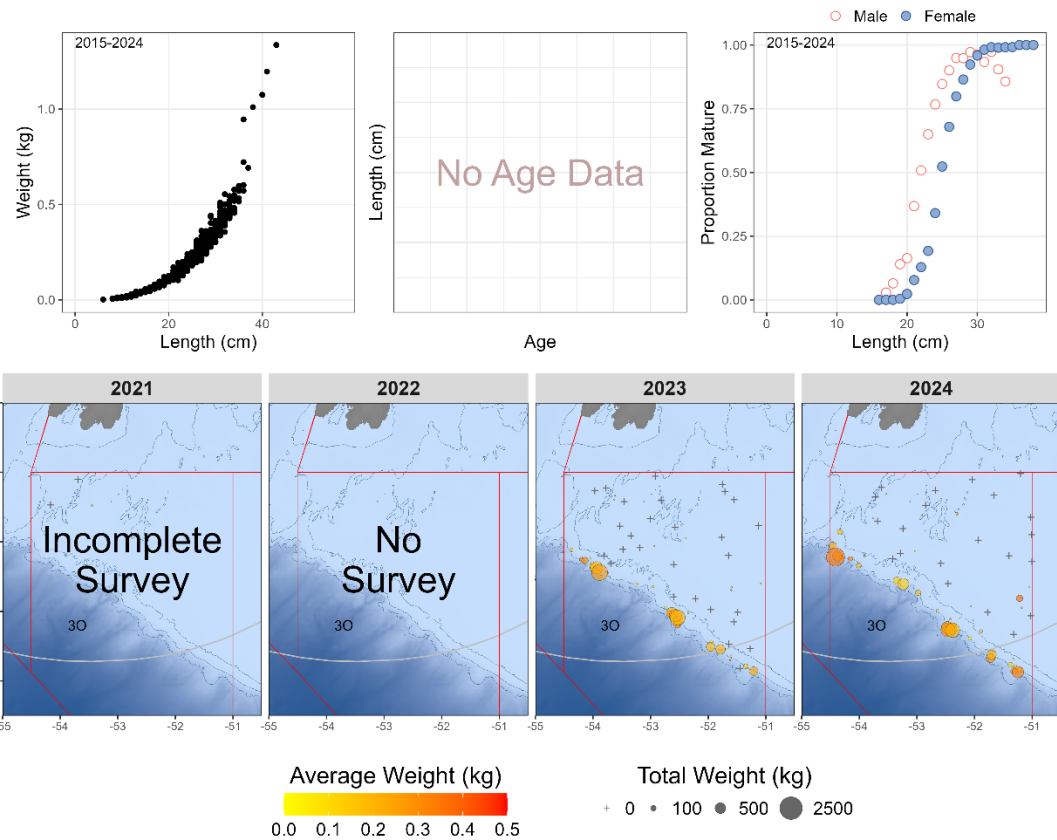


Figure 34. Summary of autumn RV survey data for Beaked redfish in Div. 3O.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Div. 3O Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	7,229	1,851	0	0	0	0	0	0	0	0
2023	12,031	4,904	69	0	69	0	0	2,563	0	12
2024	15,575	4,639	144	0	154	0	0	4,081	0	53

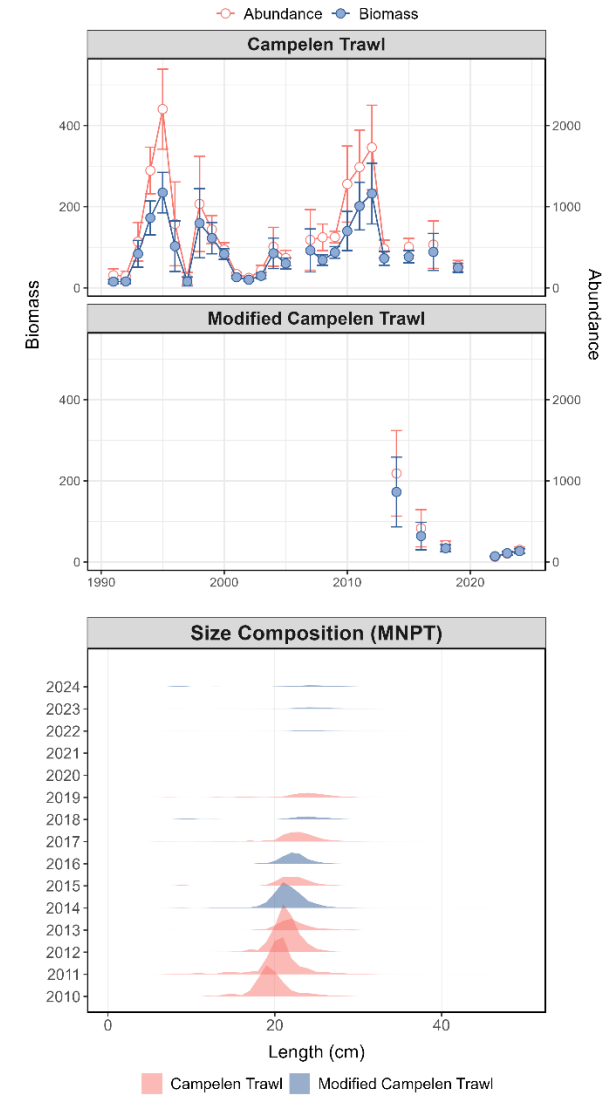
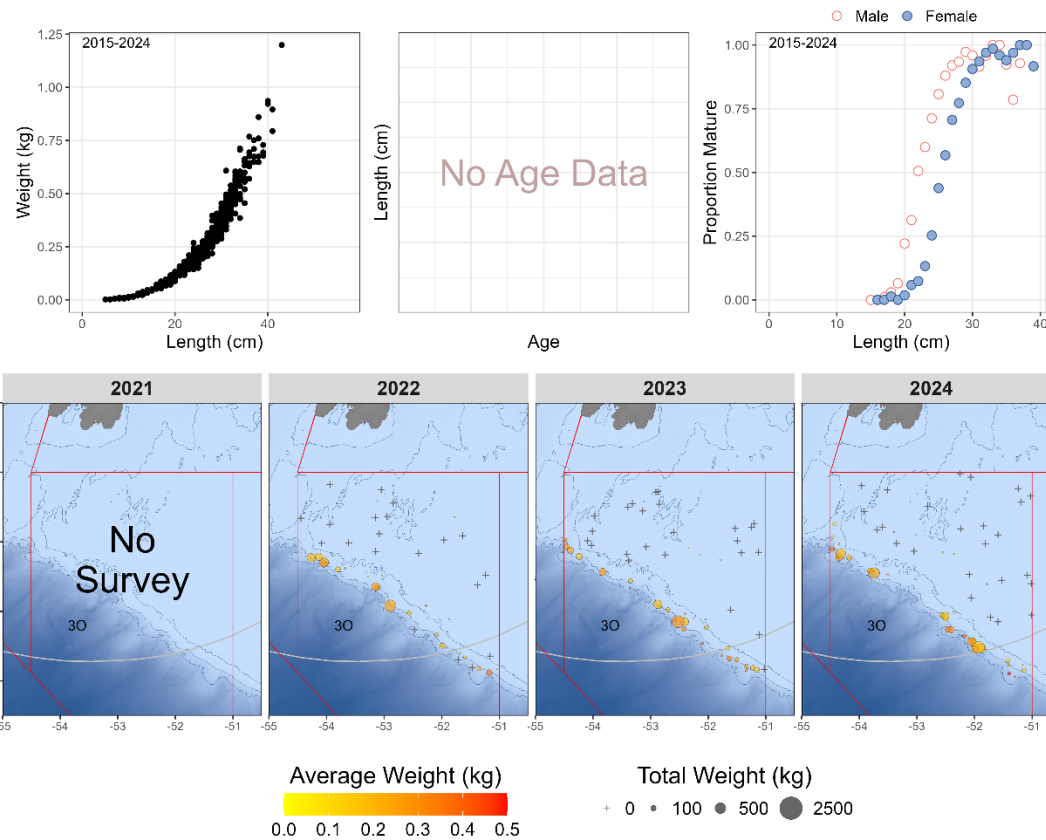


Figure 35. Summary of spring RV survey data for Beaked redfish in Div. 3O.

Beaked redfish (*Sebastes fasciatus*, *Sebastes mentella*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	46,563	7,283	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	29,049	9,582	225	0	230	0	0	9,215	0	81

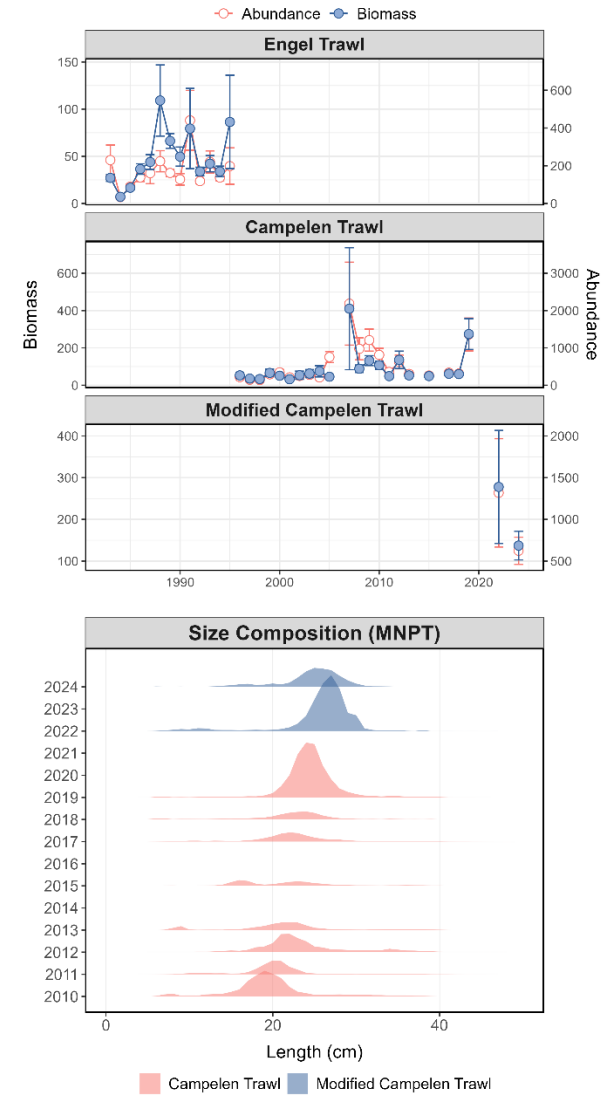
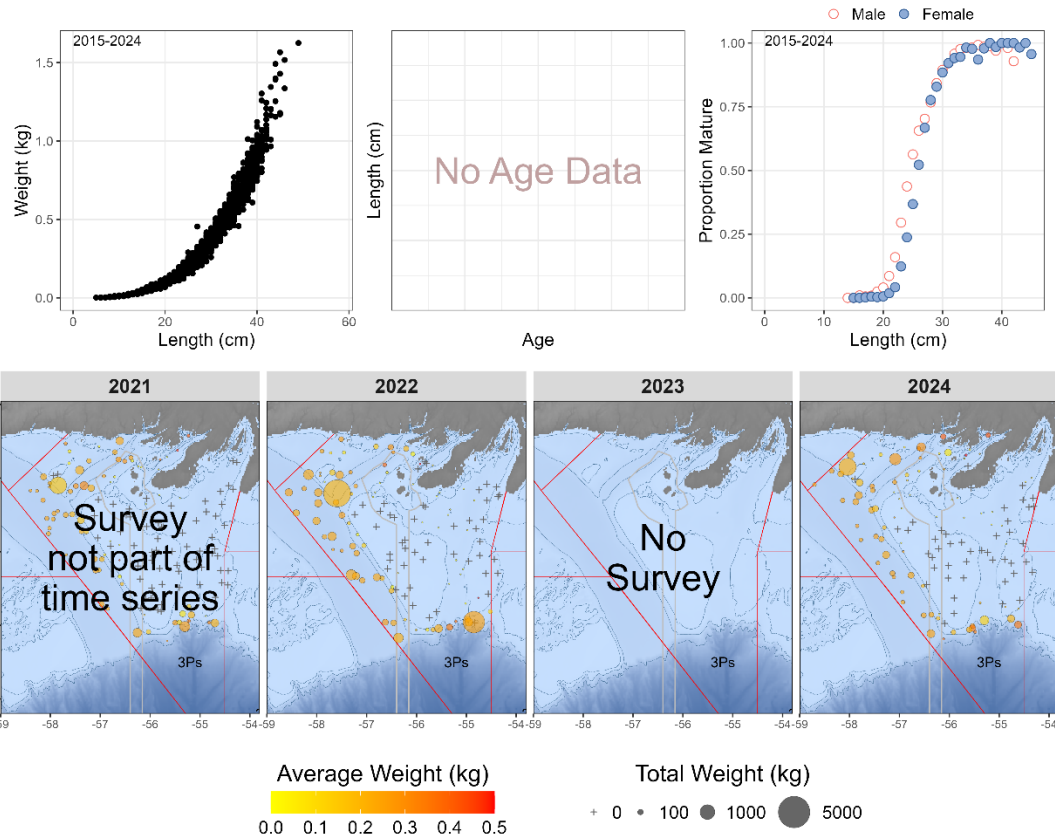


Figure 36. Summary of spring RV survey data for Beaked redfish in Subdiv. 3Ps.

Witch flounder (*Glyptocephalus cynoglossus*) in Divs. 2J3KL Canada-NL Autumn RV Bottom Trawl Survey

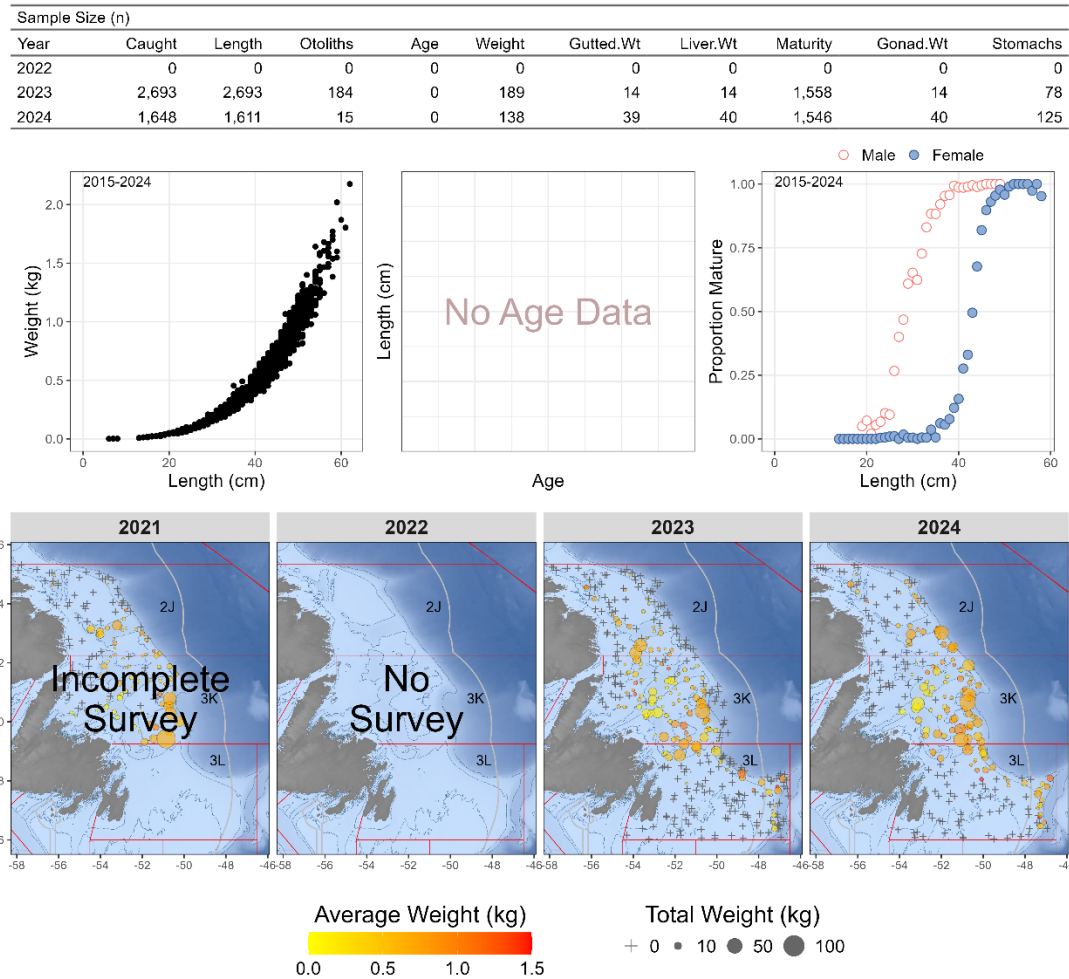


Figure 37. Summary of autumn RV survey data for Witch flounder in Divs. 2J3KL.

Witch flounder (*Glyptocephalus cynoglossus*) in Divs. 3NO Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	912	912	143	0	149	23	23	784	21	79
2024	781	781	2	0	101	45	45	562	45	72

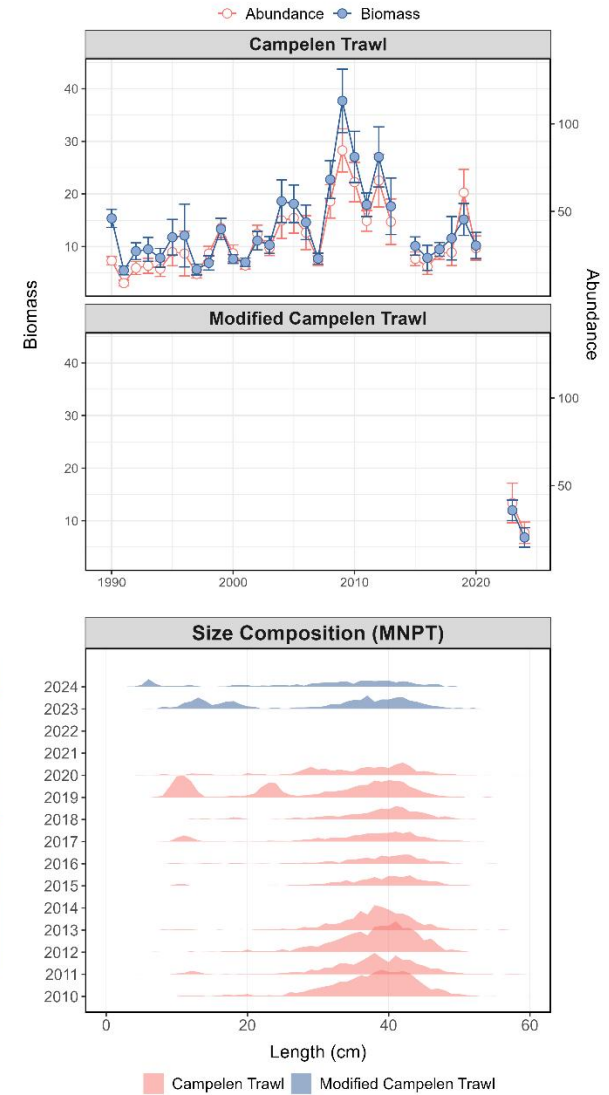
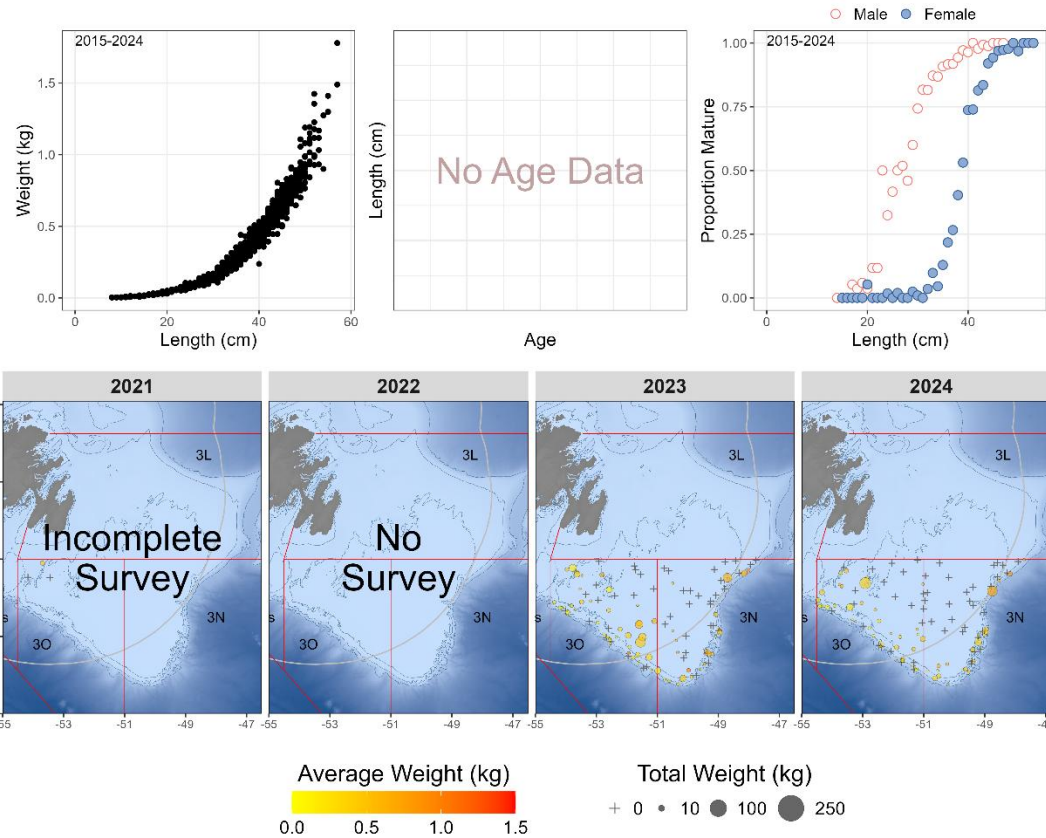


Figure 38. Summary of autumn RV data for Witch flounder in Divs. 3NO.

Witch flounder (*Glyptocephalus cynoglossus*) in Divs. 3NO Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)											
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs	
2022	478	423	0	0	0	0	0	0	0	0	
2023	970	970	38	0	44	4	6	675	6	27	
2024	398	398	74	0	78	6	6	369	6	49	

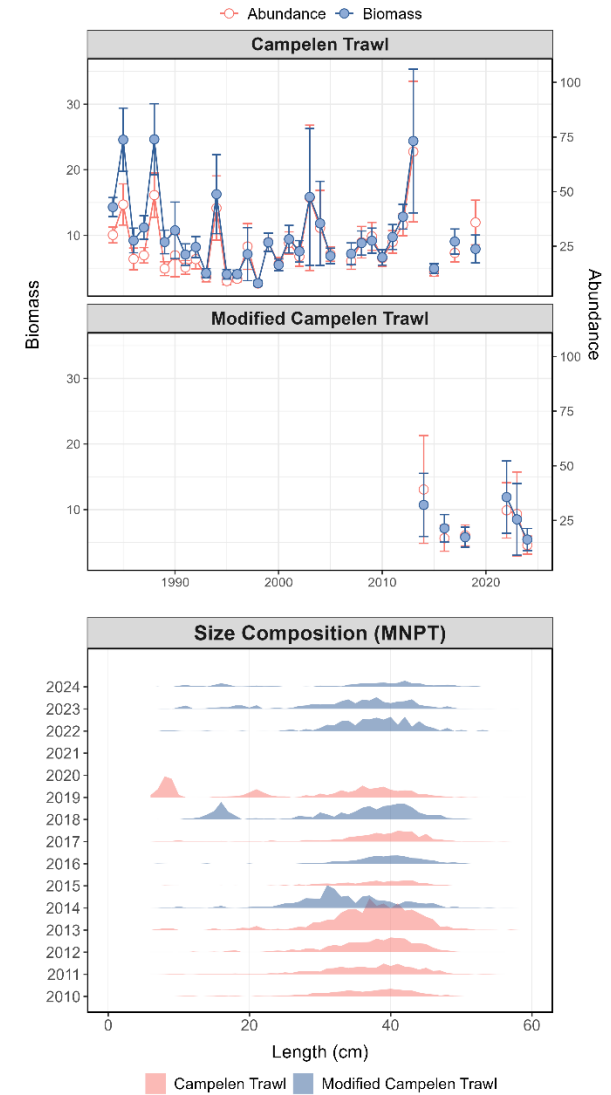
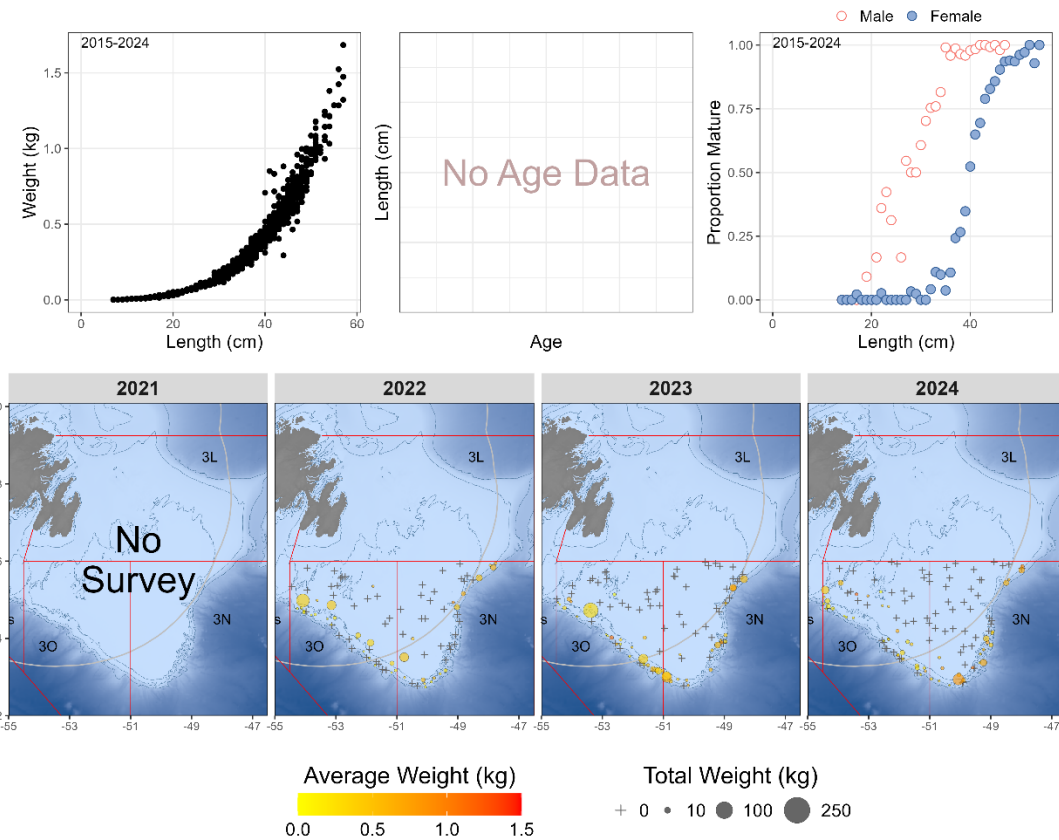


Figure 39. Summary of spring RV survey data for Witch flounder in Divs. 3NO.

Witch flounder (*Glyptocephalus cynoglossus*) in Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	4,838	4,064	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0
2024	2,289	2,289	93	0	108	11	11	2,215	11	54

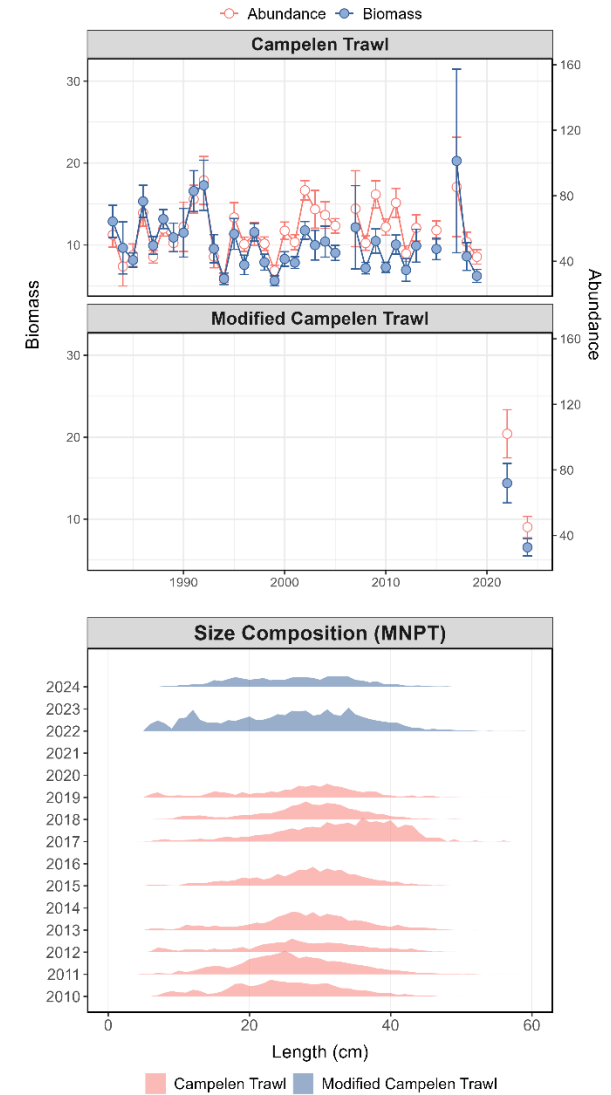
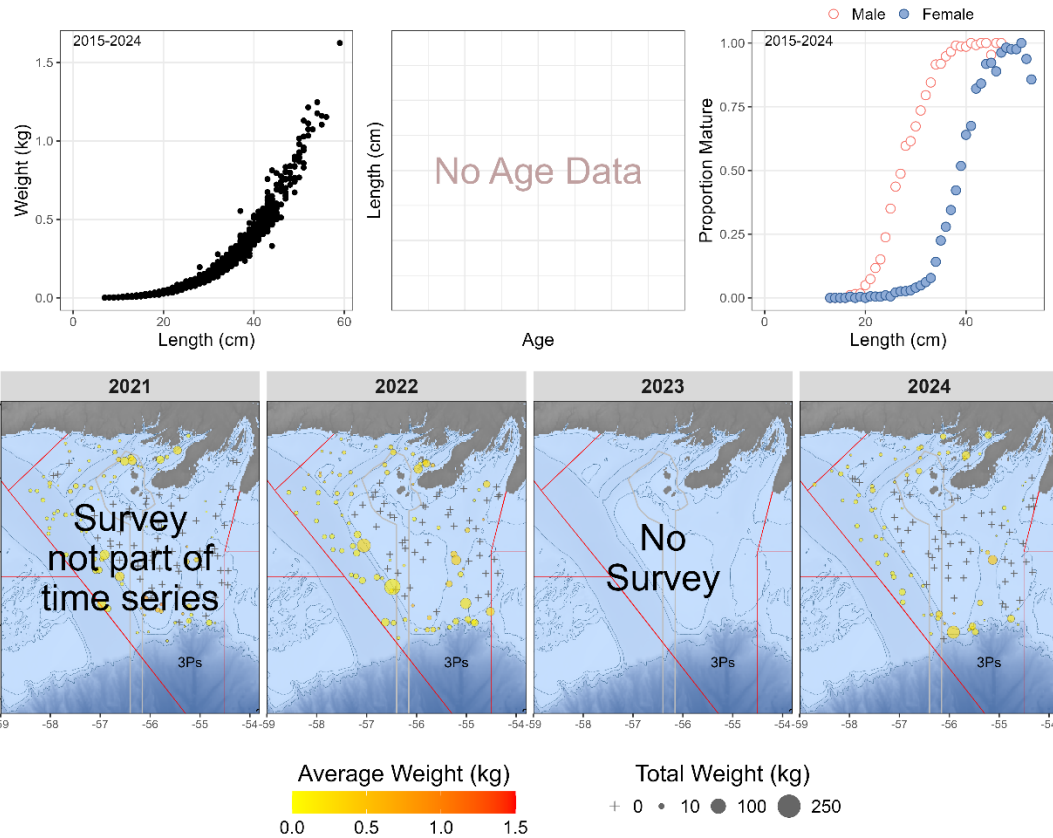


Figure 40. Summary of spring RV survey data for Witch flounder in Subdiv. 3Ps.

Thorny skate (*Amblyraja radiata*) in Divs. 2J3K Canada-NL Autumn RV Bottom Trawl Survey

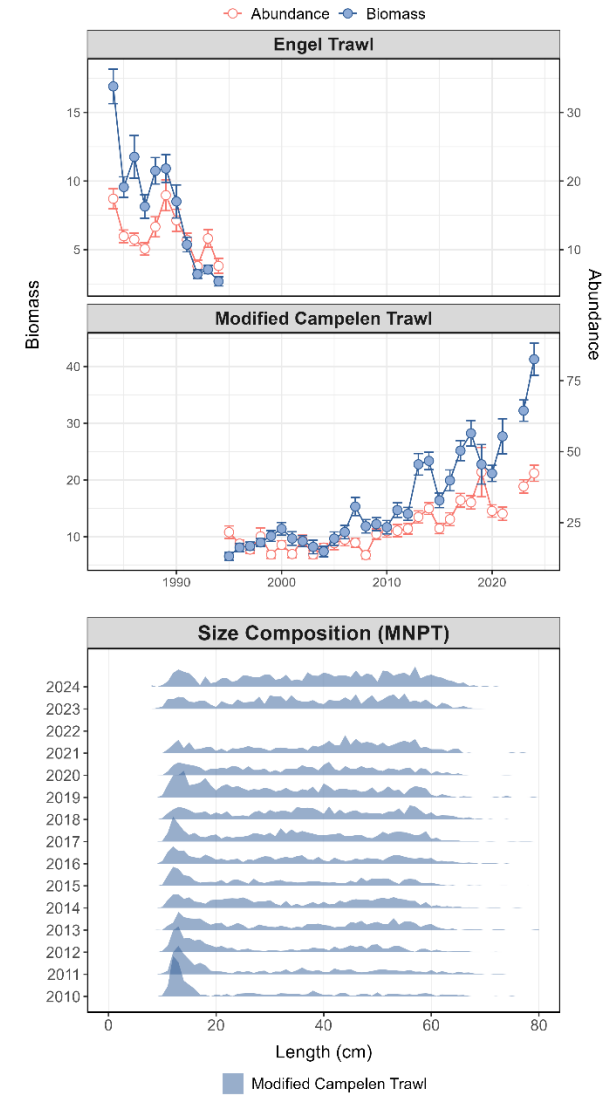
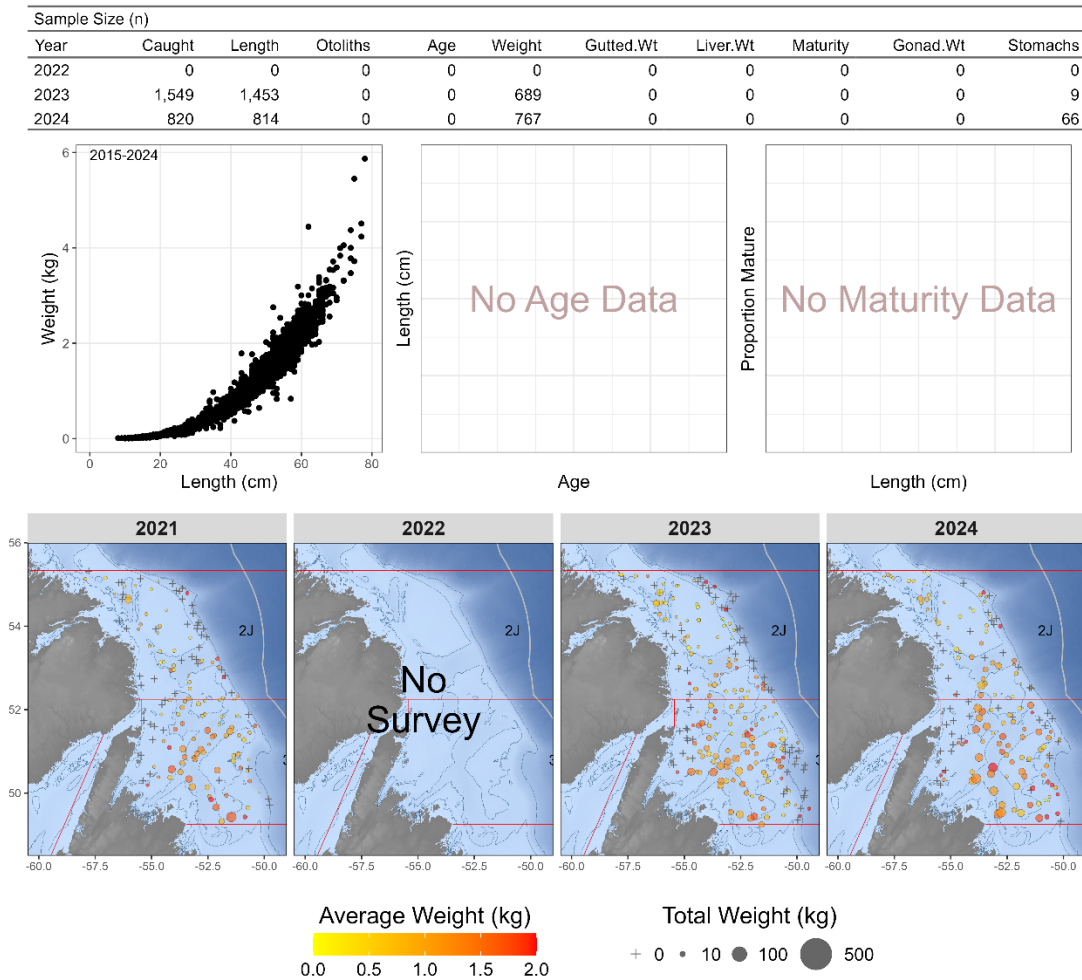


Figure 41. Summary of autumn RV survey data for Thorny skate in Divs. 23K.

Thorny skate (*Amblyraja radiata*) in Divs. 3LNO + Subdiv. 3Ps Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	4,770	1,674	0	0	1,601	0	0	0	0	6
2024	2,077	1,231	0	0	987	0	0	0	0	91

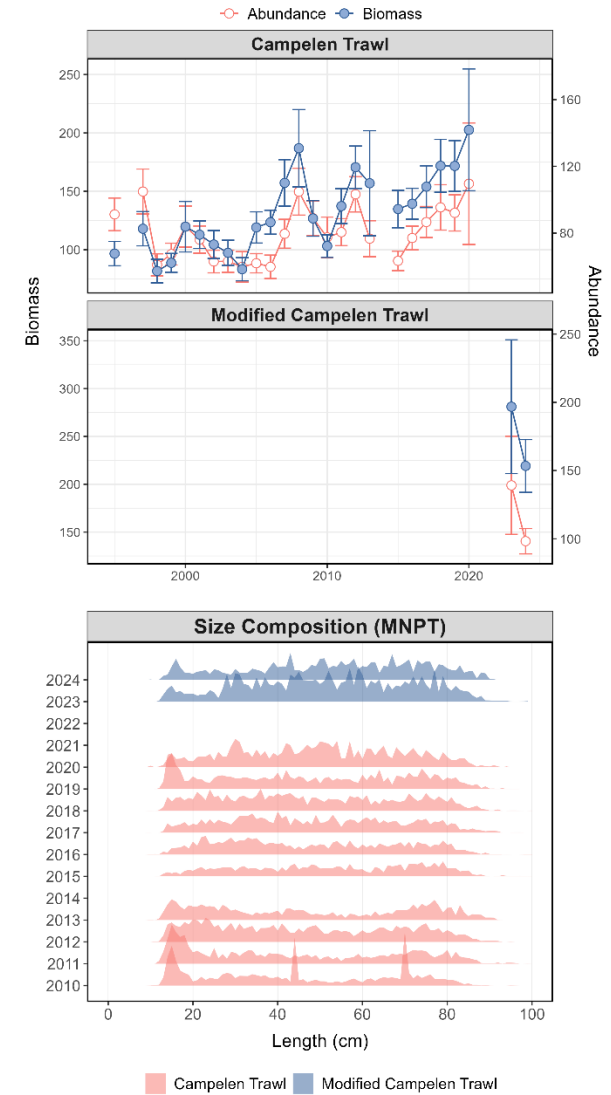
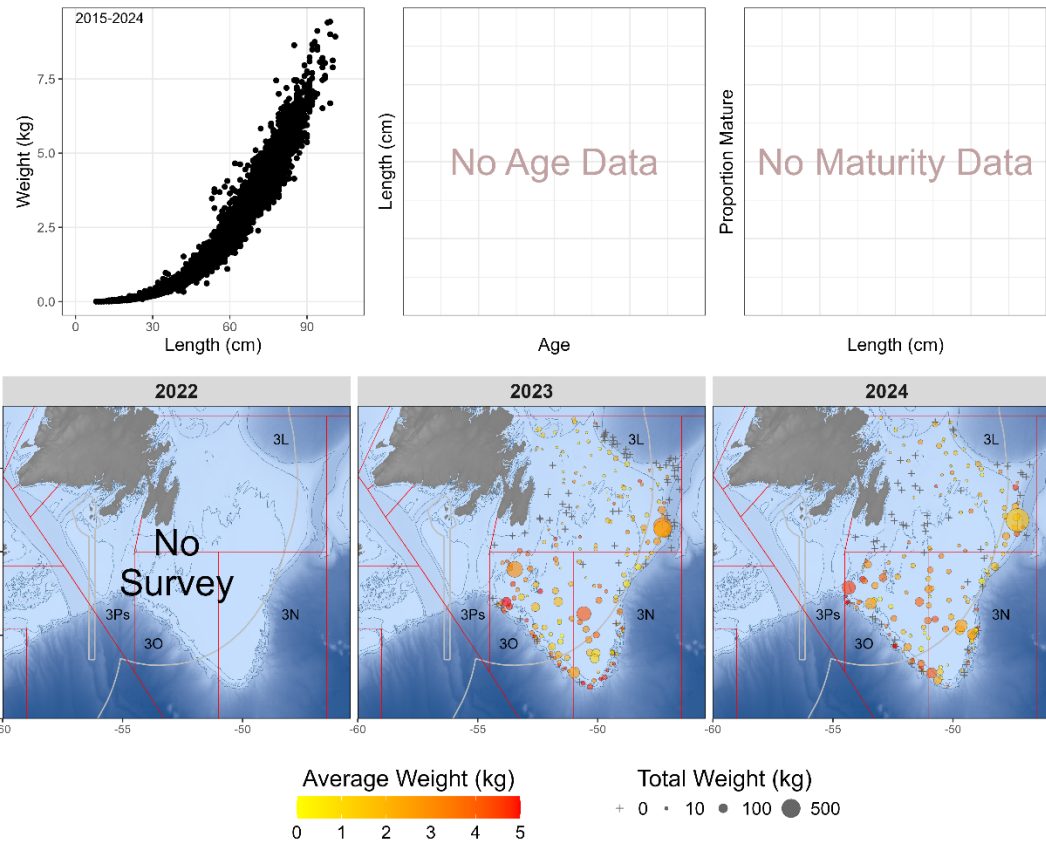


Figure 42. Summary of autumn RV survey data for Thorny Skate in Divs. 3LNO + Subdiv. 3Ps.

Thorny skate (*Amblyraja radiata*) in Divs. 3LNO + Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	2,640	2,006	0	0	0	0	0	0	0	0
2023	2,653	1,886	0	0	1,050	0	0	0	0	2
2024	2,692	2,481	0	0	2,126	0	0	0	0	33

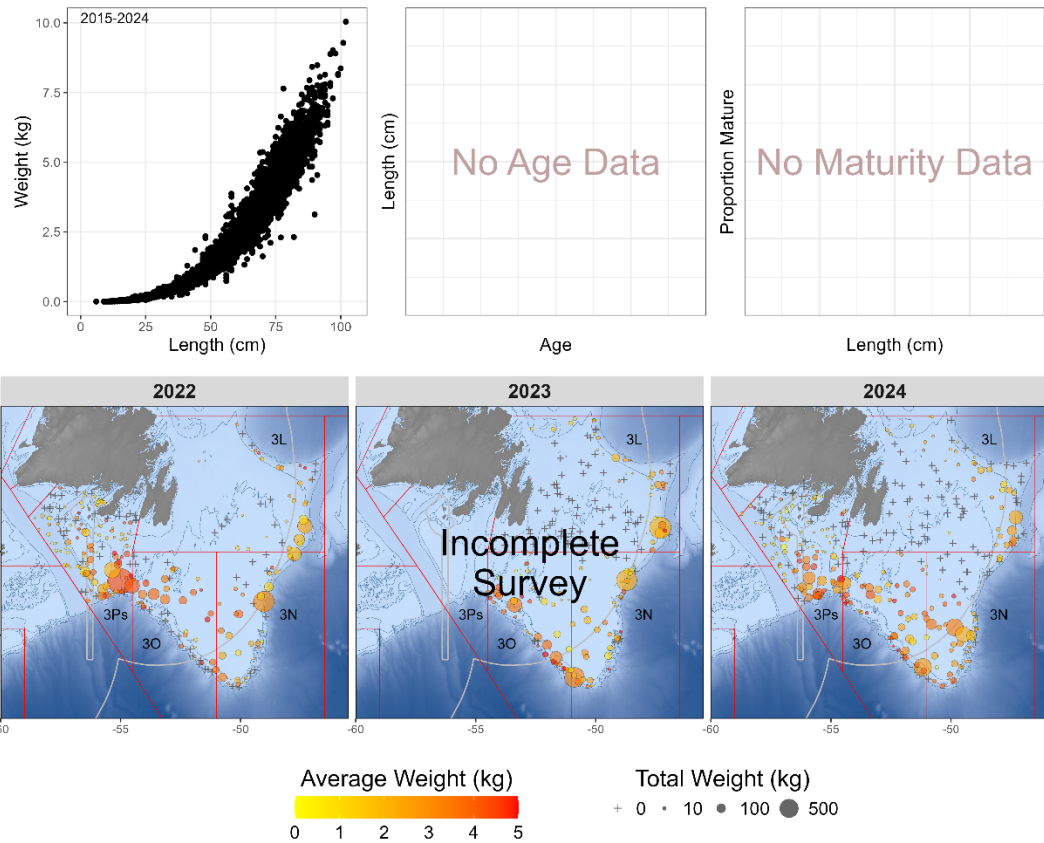
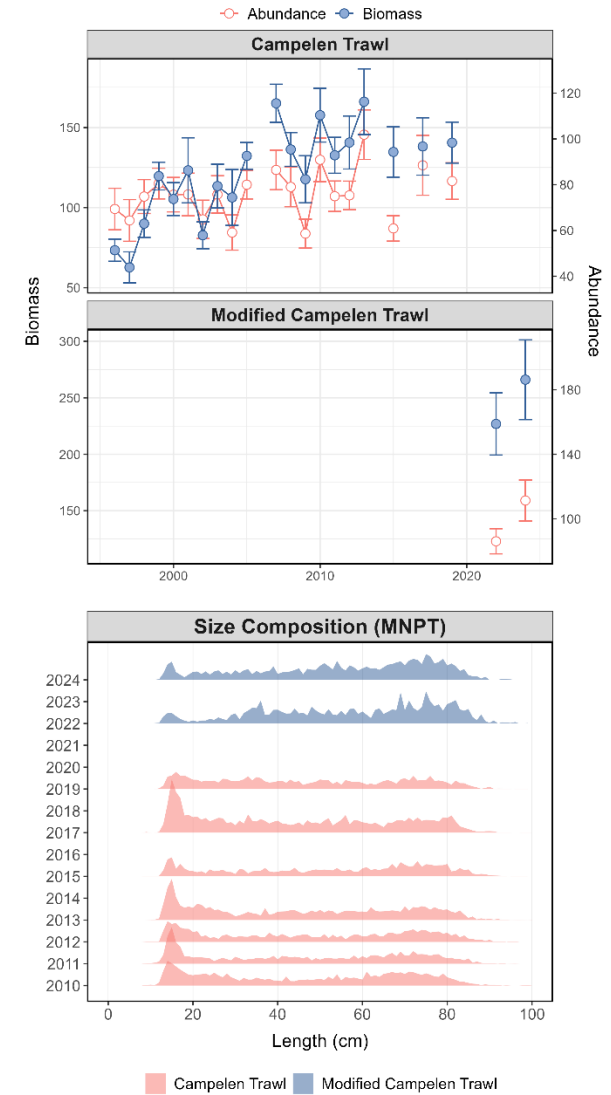


Figure 43. Summary of spring RV survey data for Thorny Skate in Divs. 3LNOPs.



White hake (*Urophycis tenuis*) in Divs. 3NO + Subdiv. 3Ps Canada-NL Autumn RV Bottom Trawl Survey

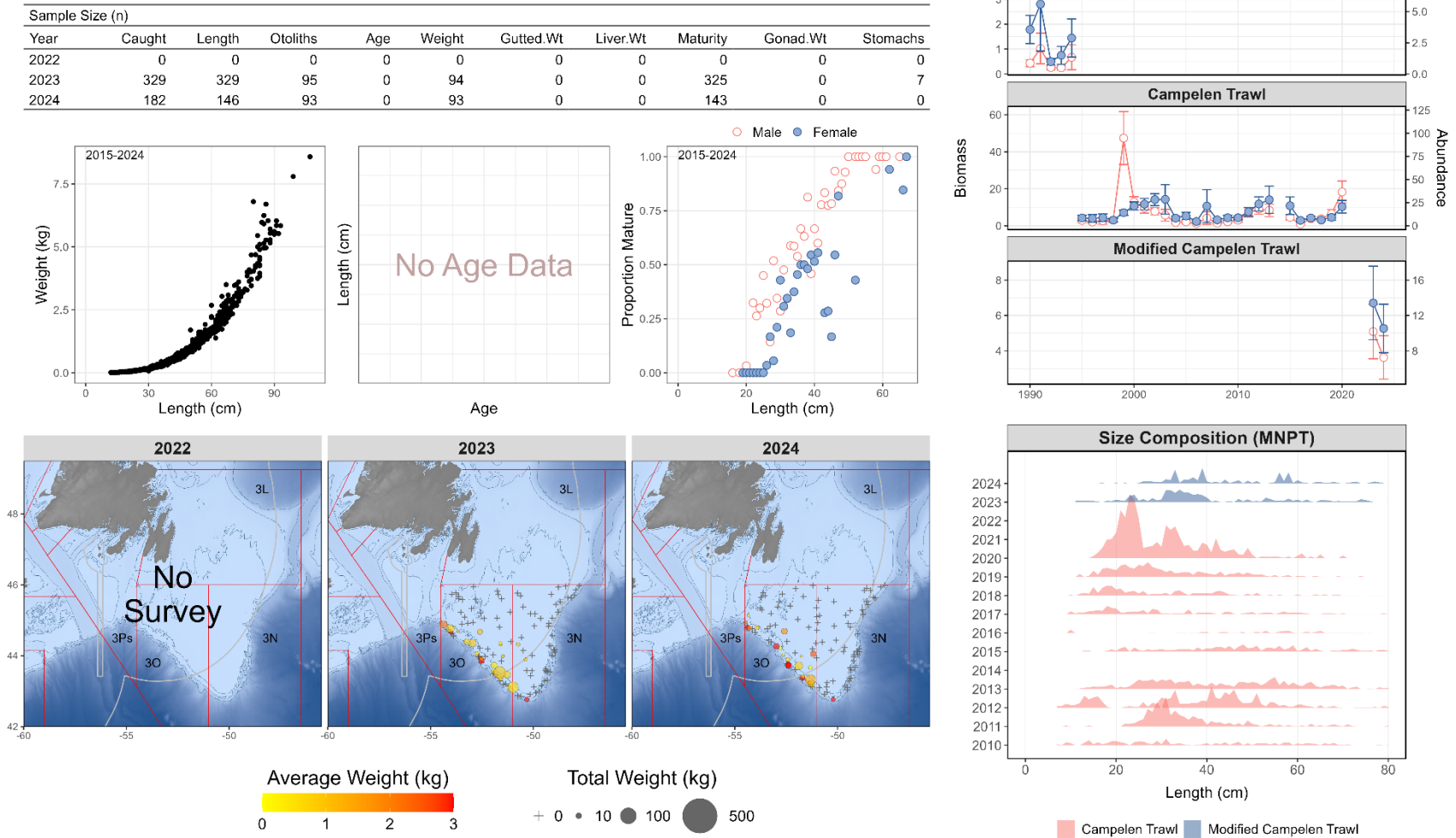


Figure 44. Summary of autumn RV survey data for White Hake in Divs. 3NOPs.

White hake (*Urophycis tenuis*) in Divs. 3NO + Subdiv. 3Ps Canada-NL Spring RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	696	696	0	0	0	0	0	0	0	0
2023	2,573	1,279	114	0	116	0	0	662	0	0
2024	937	853	285	0	285	15	6	849	6	4

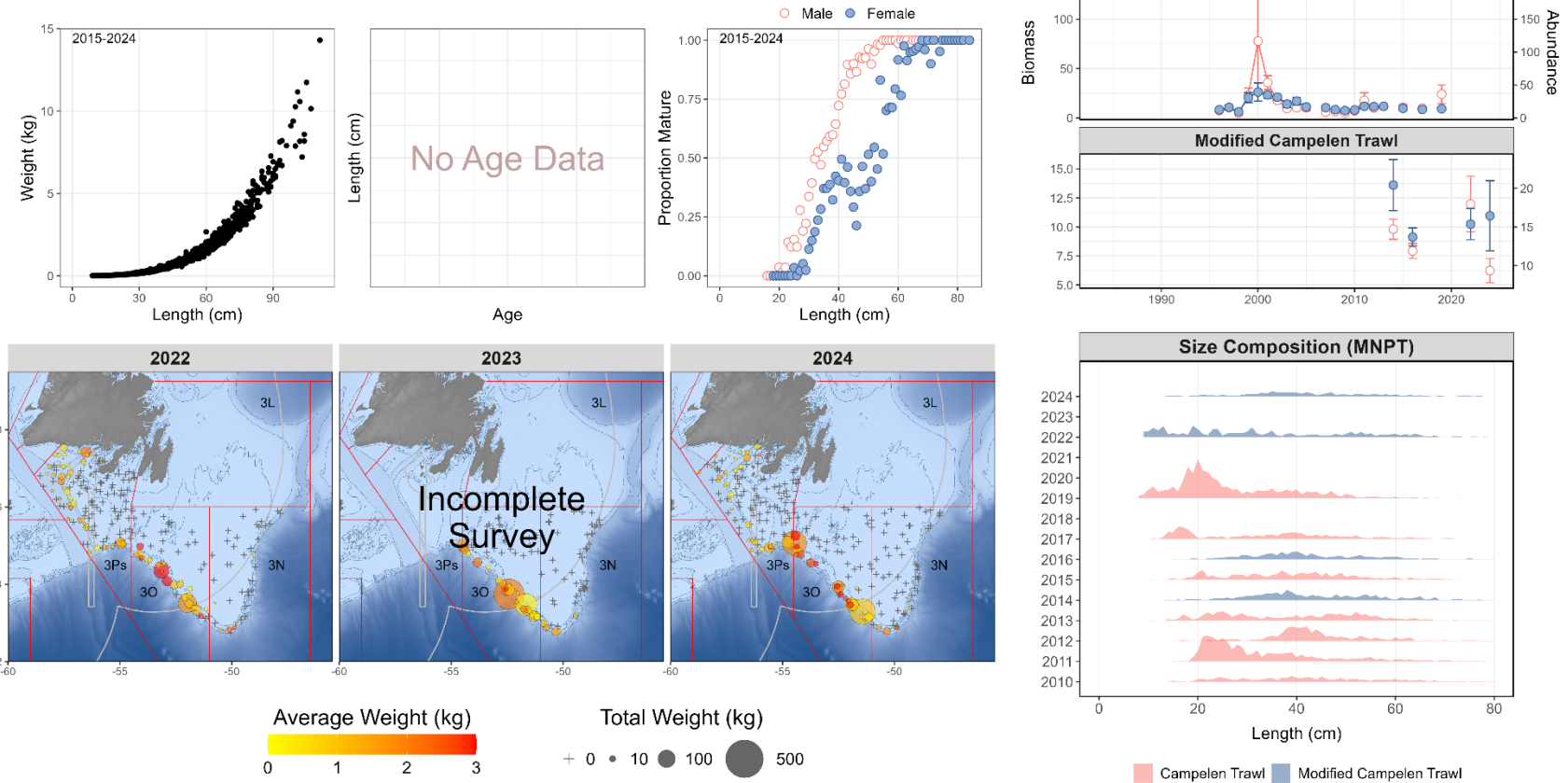


Figure 45. Summary of spring RV survey data for White Hake in Divs. 3NOPs.

Roughhead grenadier (*Macrourus berglax*) in Divs. 2J3K Canada-NL Autumn RV Bottom Trawl Survey

Sample Size (n)										
Year	Caught	Length	Otoliths	Age	Weight	Gutted.Wt	Liver.Wt	Maturity	Gonad.Wt	Stomachs
2022	0	0	0	0	0	0	0	0	0	0
2023	5,568	5,323	0	0	114	0	0	43	0	13
2024	1,234	1,204	0	0	230	0	0	4	0	26

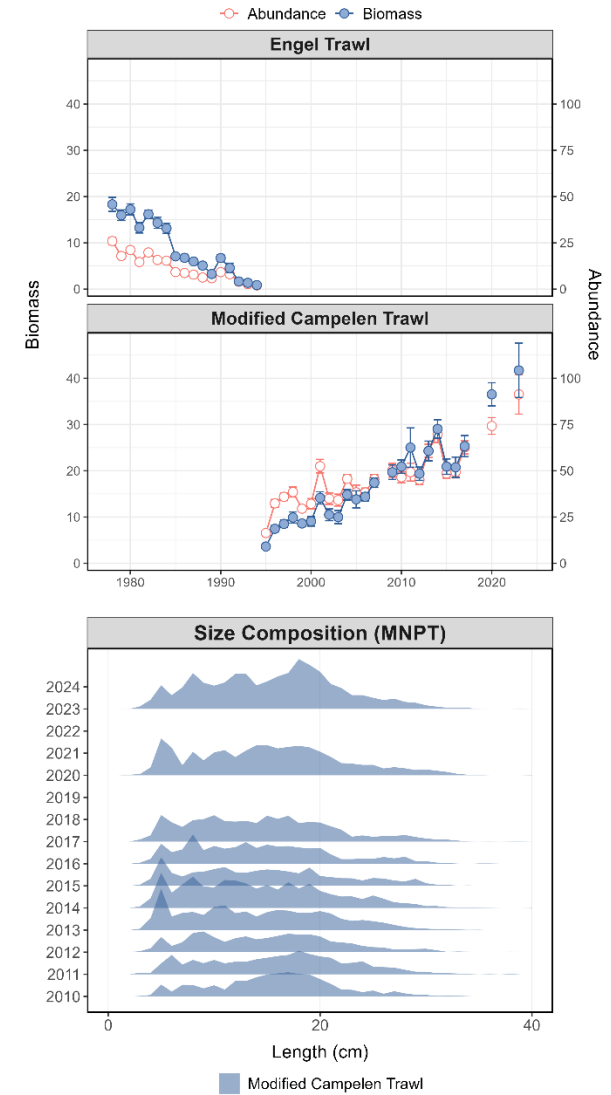
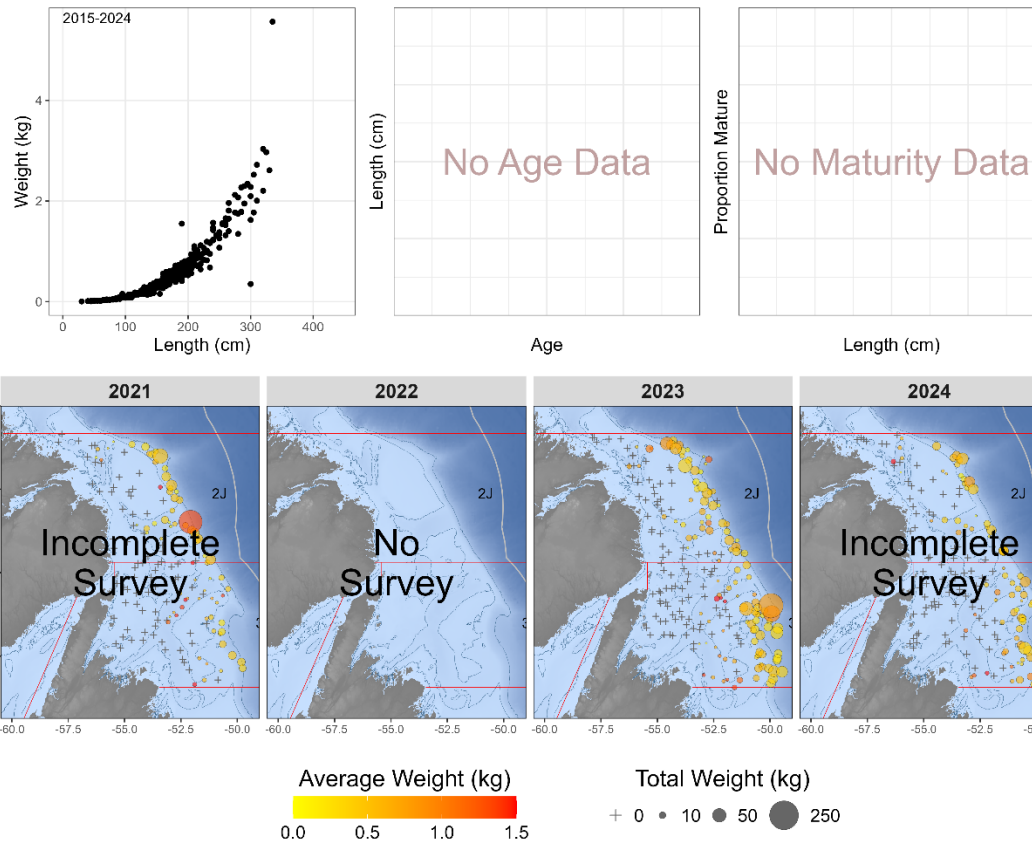


Figure 46. Summary of autumn RV survey data for Roughhead grenadier in Divs. 2J3K.