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Data review for 3LN redfish in preparation for an updated management strategy evaluation

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INTRODUCTION

There are four species of redfish found across the Northwest Atlantic; deepwater redfish (*Sebastes mentella*), Acadian redfish (*Sebastes fasciatius*), golden redfish (*Sebastes norvegicus/Sebastes marinus*) and Norway redfish (*Sebastes viviparus*, **Cadigan et al., 2022**). In NAFO divisions 3LN, deepwater and Acadian redfish are the most common. Deepwater redfish are found in deeper waters (greater than 350m, **Ávila de Melo et al., 2020**), are slower growing (**Cadigan and Campana, 2017**), and reach maturity at an older age (approx. 9-10 years, **Gascon, 2003**), whereas Acadian redfish are typically found in waters less than 300m, are faster growing, and reach maturity at ages 7-9 years (**Gascon, 2003**). Since deepwater and Acadian redfish are difficult to distinguish visually, they are most often reported collectively as beaked redfish, both in the commercial and survey catches.

Redfish are a difficult stock to assess, not only because they are slow growing, long-lived, and late maturing, but recruitment is episodic and poorly understood (**Licandeo et al., 2020**). Additionally, redfish have both pelagic and demersal concentrations (**Ávila de Melo et al., 2020**), which makes the stock as a whole difficult to effectively sample in bottom trawl surveys. In 3LN, the lack of a routine age-reading program, whether in commercial or survey sampling, also limits the scope of stock assessment methods that can be implemented. As such, stock assessment approaches that are useful for other stocks (e.g., 3M redfish, **Ávila de Melo et al., 2019**), may fail or provide misleading advice when applied to 3LN redfish (**Cadigan and Campana, 2017**).

Redfish in 3LN are currently managed as a single stock, although are considered part of a larger Northwest Atlantic complex ranging from the Gulf of Maine to the south of Baffin Island (**Ávila de Melo et al., 2020**). The status of the stock was historically assessed via trends in survey and commercial indices and their size compositions (e.g., **Atkinson, 1985**; **Power, 1992**), until a surplus production model was implemented in 2008 (ASPIC, **Ávila de Melo et al., 2008**). The ASPIC model has undergone many revisions over time, including incorporating additional survey indices (e.g., **Ávila de Melo and Alpoim, 2010**), and fixing the MSY estimate (**Ávila de Melo et al., 2014**). In 2014, a management strategy evaluation (MSE) was developed for

3LN redfish, in order to provide guidance for implementing harvest control rules (HCR, **Dauphin et al., 2014**). A step-wise increasing HCR, with a seven year implementation period, has been in place since January 2015, with full assessments using the ASPIC model occurring every subsequent two years to monitor the performance of the HCR (e.g., **NAFO, 2021a**). The implementation period for the 2014 MSE is about to end, and as a result, the Commission has requested revisiting the MSE process (**NAFO, 2022**). This data review is a first step in an updated MSE for 3LN redfish, and provides a detailed discussion of the available commercial and survey data.

FISHERY-INDEPENDENT DATA

For clarity throughout the text, definitions and concepts related to stratified-random surveys, specifically as they apply to fisheries research vessel bottom-trawl surveys, are briefly described. Stratified random sampling results in substantial improvement in precision (over simple random sampling) when variation within the strata is less than variation among the strata (**Guy and Brown, 2007**). This is the case for fisheries surveys, where species often have depth and temperature preferences. The survey area is stratified based on depth, and the number of survey tows (sometimes referred to as fishing sets) are typically allocated for a given stratum proportional to the stratum area. Tow sites are randomly selected from sampling units within each stratum. The abundance (in numbers) and/or biomass (in weight) of a species of interest can then be estimated by summing the area-weighted mean number or weight per tow in each stratum.

A vital component of fisheries-independent surveys is the standardization of the survey protocols. The factors that can influence the catchability of a survey tow have been well-studied, and include the vessel (**de Robertis and Handegard, 2013**; **Handegard and Tjøstheim, 2005**), gear (**Engas, 1994**; **Winger et al., 2010**), time of day, and year (**Benoít and Swain, 2003**; **Hjellvik et al., 2002**). Standardization of all of these aspects helps increase confidence that the survey estimates are providing indications of population trends, and not fluctuation in catch due to other factors. The available survey data for 3LN redfish are from Spanish, Canadian and Russian research vessel surveys, described in detail below.

SPANISH RV SURVEYS

Temporal coverage

Stratified-random surveys have been conducted in Div. 3N since 1995 as part of the Div. 3NO survey (Fig. 2). Spanish surveys were initially conducted using the commercial vessel *Playa de Menduiña* with a *Pedreira* bottom trawl. In 2001, the research vessel *Vizconde de Eza* with a *Campelen* 1800 bottom trawl gear replaced the *Playa de Menduiña*. There was no survey in 2020 due to COVID restrictions; the survey resumed in 2021. Stratified-random surveys have been conducted in 3L in the summer for years 2003-2019 with the *Vizconde de Eza* vessel with a *Campelen* 1800 bottom trawl. The survey was not conducted in 2005 due to problems with the vessel winch (**Román et al., 2019**). There was no survey in 2020 and 2021 due to COVID restrictions.

The seasonal timing of the Spanish survey in 3N has remained relatively constant, ranging between early May to end of June. Similarly, the 3L survey has typically been conducted between late July and early August, except in 2003 when the survey occurred in early June (Tables 4 & 5).

Spatial coverage

The stratification of the 3LN Spanish surveys follows the stratification of **Doubleday** (**1981**), and covers the NAFO regulatory area (Fig. 1) outside the 200 nautical mile (nm) limit. For 3N, in 1995 and 1996, the survey did not cover the deepest strata (Fig. 2). From 1997-2015, the surveys aimed to perform 120 tows; however in 2010 only 95 successful tows were completed (Table 4). The number of planned tows was reduced to 115 after 2015, following a study that examined reducing the number of tows without losing precision in the survey estimates (González-Troncoso, per. communication). Since its inception, the 3L survey has aimed to perform 100 tows. Poor coverage in 3L was an issue in 2003 and 2004 (Table 5, Fig. 2).

Sampling summary

The number of sets is allocated proportionally to the area of a stratum, with a minimum of two tows per stratum (**Doubleday, 1981**). Thirty minute tows are performed, and as a rule, all tows less than 20 minutes result in an invalid tow. All catches in a tow are recorded, however in cases when the catch of a species is excessive (determined by the survey lead), the catch is randomly allocated to boxes, and a subsample of boxes is selected for processing (see, e.g. **Vázquez et al., 2014**, for details). The unselected boxes are discarded, and the total catches are calculated by extrapolation based on the number of discarded boxes. Redfish is the species for which this happens most often.

As a rule, all individuals in the catch are measured, except when the catch is especially abundant, as described above. Redfish are measured to the total length, to the centimeter below, with length sampling performed independently by sex (Fig. 8). The target sample size for biological sampling is 30-40 fish by centimeter (15-20 per sex). The goal of the sampling is to get at least 10 fish for each 1cm length interval (stratified by fish length and sex), and continues until the required number is obtained in each length class. Biological sampling includes round weight, sex, gonad collection, gutted weight and otolith collection.

Weight (W) at length (l) for each year is estimated via the allometric relationship, $W = \alpha(l + 0.5)^{\beta}$, with α and β parameters to estimate using the non-linear least squares approach in R. Separate parameters are estimated each year, independently of other years (Tables 13 & 14).

Comparative fishing

Comparative fishing experiments for the *Playa de Menduiña* with the *Pedreira* bottom trawl and the *Vizconde de Eza* with a *Campelen* bottom trawl were conducted in the spring of 2001, and a series of 92 paired tows were completed; although, redfish were only present in 44 of the 90 valid tows (**González-Troncoso et al., 2010**). Conversions coefficients (factor power correction, see **González-Troncoso et al., 2010**) were calculated in order to covert the mean catch and biomass estimates from the *Playa de Menduiña* to the *Vizconde de Eza* scale, and found that the *Playa de Menduiña* with the *Pedreira* bottom trawl was approximately five times more efficient than the *Vizconde de Eza* with a *Campelen* trawl (**González-Troncoso et al., 2010**). Length conversions were also calculated for redfish in 3N using a multiplicative model, with some concerns noted for conversions at the smallest (11cm) and largest sizes (>37 cm).

CANADIAN FALL AND SPRING RV SURVEYS

Temporal coverage

Transect fixed station surveys were conducted irregularly in the Newfoundland-Labrador region since 1958 using the *A.T. Cameron* commercial side trawler with a *Yankee 41.5* otter trawl (**McCallum and Walsh, 1996**). Stratified-random bottom trawl surveys began on the Grand Bank (3LNO) in 1971, however coverage was spotty in some strata until the introduction of the *Gadus Atlantica* vessel with an *Engel 164* otter trawl in 1977 (**Doubleday, 1981**). From 1979 onward, the *Engel 164* trawl was replaced with the smaller *Engel 145* otter trawl, to avoid delays caused by the deployment of the larger trawl (**McCallum and Walsh, 1996**). In 1983, the *Wilfred Templeman* vessel with an *Engel 145* trawl replaced the *A.T. Cameron*.

From 1991 onwards, consistent surveys have occurred in the fall (Sep-Oct 3N; Nov-Dec 3L) and spring (May-June) in Divs. 3LN. In the fall of 1995, the *Gadus Atlantica* vessel was replaced by the *Teleost*, and the change in vessel was accompanied by a change in survey gear from the *Engel 145* to the *Campelen 1800* shrimp trawl (**Warren, 1996**); the change occurred in the spring survey in 1996. The *Wilfred Templeman* was decomissioned in 2008, and replaced with the similar *Alfred Needler* research vessel with a *Campelen 1800* shrimp trawl, which had been conducting surveys occasionally in Divs. 3LN when there were issues with the other vessels (see, e.g. **Healey and Brodie, 2009**).

The seasonal timing of the fall survey in 3LN occurs typically between mid-September to mid-December (Tables 6 & 7), although in some years the survey has overlapped into January of the subsequent year (1995, 2003, 2005, and 2014, **Rideout et al., 2021**). Note that the survey in 3L in 1984 was recorded as occurring from July 26th-Sept 3rd. The timing of the 3LN spring survey has remained relatively constant, occurring between early-April and late June (Tables 8 & 9).

There was no fall survey conducted in 3N in 2014 due to mechanical issues, and 2020 in the spring due to COVID restrictions.

Spatial coverage

Strata down to 1500 m were historically included in the survey design for the autumn survey, while the spring survey did not cover strata deeper than 732 m (**Rideout et al., 2021**). In the mid-90's, inshore strata in 3L (strata 784-800, **Healey et al., 2012**) were added to the sampling design, however these were subsequently removed in 2011 due to inconsistencies in survey coverage from 2007 onward (Fig. 4). Additionally, deep strata (greater than 732m) in the fall 3N survey (**Rideout et al., 2021**) were removed from the survey design in 2011 due to issues with finding feasible deployment sites (Fig. 5).

Survey coverage in 3L for the fall survey for the shallower strata (depth < 367m) has been fairly consistent from 1985 onwards, with some coverage issues noted in 2000, and 2005 (Fig. 3). For deepter strata (≥367m), consistent coverage from 1991 onward has only occurred in strata 729-732 (Fig. 3). From 1985-2014, coverage of the spring 3L survey for the shallow strata has been relatively constant, with only a few years where one or two strata were missed (1991, 2008, 2010, 2012). However, survey coverage in 2015, 2017 and 2018 was reduced due to mechanical issues and/or bad weather. For deep strata in the spring in 3L, consistent coverage from 1991 onward has only occurred in strata 729-732, up until 2015, when survey coverage was reduced, again due to mechanical issues and/or bad weather (Fig. 4).

Survey coverage in 3N for the fall survey has been relatively consistent from 1993 onward, with the exception of the deep strata, although these were removed from the survey design from 2011 onward, as previously discussed (Fig. 5). Similarly, the spring survey coverage has been relatively consistent over time since 1991, with the exception of a few years that have no coverage in one stratum.

Sampling summary

The number of sets is allocated proportionally to the area of a stratum, with a minimum of two tows per stratum (**Doubleday, 1981**). As in the Spanish surveys, all catches in a tow are weighed, however in cases when the catch of redfish is excessive (determined by the survey lead), redfish are randomly allocated to baskets and a subsample of baskets is selected for processing. The weight of a large catch is then estimated from the ratio of the number of baskets weighed to the number of baskets caught (**Doubleday, 1981**).

As a rule, all individuals in the catch are measured, except when the catch is especially abundant, as described above. Redfish are measured to the fork length, to nearest cm by using a 0.5 cm offset on the board, with sexed length sampling performed (Figs. 9 & 10). Fish less than 15 cm are measured unsexed. Additional biological sampling includes length-based otolith collection by sex (with round and gutted weight), maturity with the length frequency (if time permits), and occasionally a specialty collection is obtained (e.g. gonads, genetics, **Doubleday, 1981**).

Mean numbers and mean weight per tow are calculated using the area-weighted method, whereby the mean number (or weight) per tow are standardized to a 15 minute tow (**Smith and Somerton, 1981**) by stratum. The standardized mean number (or weight) per tow are then multiplied by the stratum weight. The total abundance (mean number) or biomass (mean weight) in a year is the sum of the area-weighted mean number per tow across the entire sampling region.

Comparative fishing

A comparative fishing experiment was conducted in July-August 1983 in order to develop conversion factors from the *A.T. Cameron* with the *Yankee 41.5* otter trawl to the *Wilfred Templeman* vessel with the *Engel 145* trawl; however no analysis was possible for redfish since they occurred in so few sets (**Gavaris and Brodie, 1984**). In 1995, the *Gadus Atlantica* vessel was replaced by the *Teleost*, and the change in vessel was accompanied by a change in survey gear from the *Engel 145* to the *Campelen 1800* shrimp trawl (**Warren,**

1996). Paired-tow comparative fishing experiments were conducted, with 247 successful paired tows for redfish. Conversions of catches at lengths were developed, although issues with conversion factors for the smallest (<10cm) and largest sizes (>53 cm) were noted (**Warren, 1996**).

OTHER AVAILABLE SURVEYS

ADDITIONAL CANADIAN SURVEYS

Prior to the implementation of consistent fall and spring surveys in Div. 3L, surveys were also conducted in the summer and the winter (Fig. 6). Survey design and sampling followed **Doubleday** (**1981**), previously described for the fall and spring surveys, although spatial and temporal coverage was inconsistent. In 1978, the summer survey was conducted with the *Gadus Atlantica* side trawler with the *Engel 164* otter trawl. Subsequent summer surveys were conducted with the *Engel 145* otter trawl. Within-stratum coverage varied in the summer survey, e.g. stratum 366 had 11 successful tows in 1984, and only 2 in 1979 (**McKone, 1980**). Similarly, the winter surveys in 3L were conducted with the *Engel 145* otter trawl, only in years 1985, 1986 and 1990 (**NAFO, 1986b**).

RUSSIAN SURVEYS

Spatial and temporal coverage

Fixed-station surveys were conducted in 3LN by Russian stern trawlers from 1972-1982, typically in April, with the goal of measuring the abundance of all groundfish (**STACREC, 1990**). The vessels used were the stern trawlers *Persey III* from 1972-1978, the *Suloy* in 1979 and 1982, and the *Kononov* in 1980-1981. All vessels were similar, and towed the same trawl gear, although no comparative fishing experiments were conducted. Coverage for this survey was fairly consistent, with approximately 300 sets across Subarea 3.

In 1983, stratified-random surveys began from March-July in Divs. 3LN [Fig. 7], following the standard NAFO procedures (**Doubleday, 1981**). As in the fixed station surveys, stern trawlers were used to conduct the surveys until 1990, when they were replaced by large freezer trawlers that used the same trawls as in previous years (**Bulatova et al., 1997**). From 1983-1990, approximately 500 sets were sampled each year. Survey coverage and timing was an issue for years 1991-1994, with the number of successful tows completed ranging from 85-368 (Table 12). In 1992 and 1994, only Div. 3L was surveyed. (**Bulatova et al., 1997**). Additionally, in 1985, 1991, 1993 and 1994, smaller vessels were used to conduct the surveys (Table 12). In 1995, the Russian surveys were discontinued in 3LN.

The seasonal timing of the Russian survey in 3LN has been fairly consistent, typically occurring between March and August (Table 12). Note that in 1977, 1980, 1982, and 1993, the survey began in April, in 1991 spanned from August to January, and in 1992 occurred from October to December.

Sampling summary

From 1972-1982, the catch in each tow was sorted by species and all fish were measured and counted. In the case of large catches, a subsample of fish was selected for measurement, typically between 300 and 600 individuals (**STACREC, 1990**). Fish were measured from the tip of the snout to the end of the caudal fin, and the total weight of fish of each species in the catch was determined through multiplication of the average weight (from size frequency) by the number of fish caught. Relative abundance and biomass indices were taken as the average number and weight of fish in the catch per hour, derived for each area as the total number or weight caught in an area, divided by the number of tows, including those with zero catch.

For years 1983-1995, each stratum was typically allocated three sets; when time permitted, larger strata were allocated additional sets. The towing time was reduced from 1 hour to 30 minutes in 1984, to allow time for additional sets (**STACREC, 1990**). Note that tows in this time period that were shorter or longer than the acceptable time were not rejected, but extrapolations were made to calculate the catch which could have been taken per a tow time unit. From 1983-1985, the sampling methods were identical to the methods discussed for the previous years. From 1985 onward, samples were collected for aging and 15-20 individuals were selected from each size group to be aged. Relative abundance and biomass were estimated using the standard NAFO methods previously discussed.

FISHERY DEPENDENT DATA

Commercial fishery data have been collected for the NAFO area since the late 1950's, and have been published in statistical bulletins since 1951 (**https://www.nafo.int/Library/Science-Council/Statistical-Bulletin**); data were moved to digital format in the late 90's, and have been updated regularly when submitted to the Secretariat. The most recent STATLANT21B (catch and effort) data available are updated to the present day (**https://www.nafo.int/Data**). In the early 1980's, extreme discrepancies between the catch reported by some member countries and those estimated from surveillance data were noted, and catch estimates (STACFIS) from the Scientific Council started being used in addition to, or in place of, STATLANT 21 reported catches (**Brodie, 2013**). From the late 1980's to the early 2000's, there exists little documentation detailing decisions made in terms of catch estimation. In many cases the data were considered confidential and brought to meetings by scientists who may have had special arrangements with fishing fleets to keep such data confidential. However, although this process made many assumptions, Scientific Council considered the STACFIS estimates more reliable than those based on the STATLANT 21 reported catch (D. Power, per. communication).

After 2001, an ad hoc group was convened in order to reduce the discussion time surrounding catch estimates at the June Scientific Council meetings (**Brodie, 2013**). As in previous years, very little was documented due to confidentiality issues. In the early 2010s, no observer data were available, and as such, estimates other than STATLANT 21 data were unavailable. The lack of a consistent method to estimate catch initiated a review of the Scientific Council catch estimation procedure, and instigated a peer review expert panel composed of representatives of Scientific Council scientists and Fisheries Commission managers (**NAFO, 2013**). This working group has evolved over the years, from the Joint Commission-Scientific Council Catch Data Advisory Group (CDAG, e.g., **NAFO, 2017**) to the Catch Estimation Strategy Advisory Group (CESAG, e.g., **NAFO, 2021b**), and data submitted to NAFO has now greatly increased in scope (**MRAG, 2019**). As in 2001, the Working Group provides Scientific Council with catch estimates in advance of the annual assessment meetings in June.

Although the types of data available to estimate catch have varied over time, recent primary data types include port inspection reports (collected by inspectors at vessel landings sites), daily catch reports (transmitted electronically from vessels at sea), logbook tow-by-tow catch reports (physical logbooks that record the amount caught by species each time the gear is deployed), and observer reports (similar to tow-by-tow catch reports, but recorded by independent observers, **MRAG, 2019**). Most recent catch estimates are based on the CESAG method, which lists port inspection reports and daily catch reports as the most reliable data sources (**NAFO, 2017**). Equivalent live weights from port reports, plus discarded weights from daily catch reports are used to estimate catch when the data are available. Further guidance is given for trips where there are no available port inspection reports (**NAFO, 2017**).

REPORTED CATCH

Although statistical bulletins exist for redfish since the early 1950's, reported catch were not disaggregated by NAFO divisions until 1953. The data from years 1953-1958 are not included in the STATLANT 21 database; to the best of our knowledge, this decision does not appear to be based on the quality of the data, but based on the SC decision in 1990 to revisit 30 years of time series data (**NAFO, 1991**). In almost all cases, the STACFIS catch estimates for 3LN redfish are larger than the STATLANT 21 reported catches, most notably from the late 1980's to early 1990's (Fig. 22). Historical differences between STATLANT 21 and STACFIS estimates of note include years 1963-1965, where data that were previously listed as "division unknown" were portioned by division (**NAFO, 1986a**), and 1987-1994, which include estimates of unreported catches.

The earliest reported catches begin at 4362 t, and increase steadily to a peak in the early 60's at 45000t. From the early 60's to the mid-80's, catch estimates are relatively stable, ranging between 10000t and 35000t.

Catch estimates reach a time series high of 75000t in the late 1980's, subsequently falling to near zero, following the implementation of a moratorium (detailed below). Catches have been steadily rising since the early 2010's and are most recently approximately 10000t.

Total allowable catch (TAC) was first implemented in 1974 at 28 000t, and ranged between 16 000t and 25 000t until 1990. TAC reached a low of 11 000t in 1997, whereby a moratorium was declared from 1998-2010. The commercial fishery was reopened in 2009, with TAC set at 3 500t, and TAC has been steadily increasing since, with the final TAC set in 2021 at 18 100t.

For redfish in 3LN, the earliest reported STATLANT 21A catch statistics (Fig. 23) indicate that the catch was taken primarily from non-Canadian landings in the first years of available data, with the Canadian share larger in 3N than in 3L. From 1966-1974, redfish catches in both 3L and 3N were predominately taken by international fleets. In 1977, a 200 nm Canadian exclusive economic zone was declared, which reduced access of non-Canadian vessels to only the nose and tail of the Grand Bank. As such, catches in 3L were primarily from Canadian fleets from 1975-1992, although the 3N catch remained predominently taken by international fleets. Catches in both divisions peaked in the late 1990's, and fell abruptly from 1996 onward. The fishery re-opened for commercial fishing in 2009, with catches steadily increasing in both 3L and 3N since; catches in 3L were mostly from Canadian fleets, while catches in 3N were mostly from international fleets.

LENGTH COMPOSITION

Sampling of the commercial catch for length has been conducted for 3LN redfish by the Canadian, Estonian, Portuguese, Spanish and Russian fleets, with varying spatial and temporal coverage (Figs. 19 & 20). Note that in some cases available length data were recorded under species names (*S. marinus, S. mentella, S. fasciatus*), however for this document they have been grouped generally as beaked redfish, since the reliability of the species identification is unknown (3LN redfish group, per. communication).

Sampling of the commercial fleets for redfish in 3LN has been most consistent over time from the Portuguese fleets. Portuguese fleets were mainly composed of otter trawls, with some gillnets, although sampling for length composition has only been from trawl fleets. Historically, samples were collected at sea, before the discarding of undersized fish; more recent data were obtained at sea by scientific observers (e.g., **Vargas et al., 2021**). Available data from the trawl fishery begins in 1982 (**Lourdres and Godinho, 1983**), although data reporting is somewhat patchy until the early 90's. From 1990 onward, the sampled catch was divided by species (*S. marinus, S. mentella*), although in almost all years the catch was predominantly *S. mentella* (**Godinho et al., 1991**). There was no directed fishery for redfish in 3LN from 1998-2009, and the length composition data were derived from by-catch, most commonly in the Greenland halibut fishery (**Alpoim et al., 1998**). Note that the Greenland halibut fishery is a deep sea fishery, and more likely to target *S. mentella* than *S. marinus*; *S. marinus* were typically found in small portions of the catches in 3N. Length sampling from 2011 onward are from directed trawl fisheries for redfish.

Russian commercial length sampling data are available as far back as 1979, however the available data consist mainly of length frequencies from exploratory otter trawl catches, and may not be representative of the sizes retained by the fishery (**Konstantinov, 1980**). As such, the length composition data considered in this document begin in 1999, where the data are clearly labeled as from the commercial fleets. No information is given on whether the length composition data represent discarding before or after removal of undersized fish (e.g., **Rikhter and Sigaev, 2001**). From 1999-2003, the length composition data were mainly from bycatch in the Greenland halibut fishery, and were not divided by species (e.g., **Sigaev et al., 2000**). From 2004 until 2009, the data were again from bycatch, with sporadic division by species (*S. fasciatus, S. mentella*, **Skryabin and Pochtar, 2010**). Directed fishing for redfish in 3LN resumed in 2010 (**Konstantinov, 2011**).

Length composition data from the Canadian fleets are available from the early 1960's (**ICNAF, 1962**), although the data were somewhat spotty in 3L until 1975. Length composition data were collected from landed samples, and not divided by species, although whether the samples were collected before or after discarding of small fish has varied throughout the years (see, e.g., **ICNAF, 1962**, **1966**). After 1991, there are little data available from the Canadian fleets, and sample sizes are quite small, with trends in length compositions differing from other countries (Figs. 19 & 20).

Some shorter time series of length composition data are available, including historical US, and more recent data from Estonian and Spanish fleets. For all countries, length composition data were not divided by species; additionally, the Spanish data aggregate Divs. 3L and 3N (Fig. 21). The available US data were from otter trawl fleets, collected in the earliest years, most consistently in 3N, during a time period where the US was one of the more important fleets. For the US data, it was not specified whether the length composition data represent discarding before or after the removal of undersized fish (e.g., **ICNAF, 1961**). The available Estonian length data begins in 2008, and are sampled from trawl fleets (**Sirp and Saat, 2009**). Prior to 2010, the Estonian length composition data were from by-catch in the Greenland halibut and skate directed fisheries (**Sirp and Saat, 2009**). Subsequent samples were from directed fleets for redfish (e.g., **Sirp and Torra, 2013**). In all cases, there were no discussions on whether the samples represented the length distribution before or after the discarding of undersized fish. Similarly, the Spanish length composition data begin in the early 2000's, and were collected from trawl fleets. Samples prior to 2010 were primarily from bycatch in the Greenland halibut fishery (e.g., **González et al., 2007**), with later samples from the directed redfish fishery in 3LN (e.g., **González et al., 2016**). The samples were collected before discarding of small fish (F. González-Costas, personal communication).

EFFORT

Monthly catch and effort data from 1960-2018 commercial fleets are available from the STATLANT 21B database (**https://www.nafo.int/Data/Catch-Statistics-STATLANT-21B**). Effort data are recorded both as number of hours fished, and total days fished. As has been the standard practice (e.g., **Power, 1997**), the data considered are from catches where redfish comprised > 50% of the catch. For brevity plots of hours fished are shown below. The fishery for 3LN redfish was closed to directed fishing from 1998-2009, and as such, there are no available data in those years. The historic (1960-1995) and recent (1996-2018) data are presented separately.

In the earliest years of the available data, effort in hours fished, in both Divisions 3L and 3N, was mostly due to bottom otter trawls, although the type of trawl (stern or side) was typically not specified (Fig. 24). From the mid-1970's onward, midwater stern trawls also contributed to a larger share of the total effort in each year. Midwater trawls provided little contribution to fishing effort in recent years (Fig. 25), with most of the effort due to non-specified bottom trawls. In some years, all reported effort in a month (e.g., 3L July 2016; 3N April 2016) were from chartered bottom otter trawls.

In the historic period, the vessels tonnage class has varied more in 3L than in 3N (Fig. 26). In the earliest years of available data, the effort in 3N was due mostly to vessels of 150-499.9 tonnage class. From the early 1970's onward, vessels greater than 2000 tonnage class contributed the largest share of the effort in most months and years, although there were some exceptions in the early 90's in the winter months (e.g. Nov, Dec 1991). In 3L, there has been no predominant tonnage class over time, although the largest share of the effort was from vessels of greater than 500 tonnage class. For both Divs. 3L and 3N in recent years, the majority of the effort by month and year was due to vessels with greater than 1000 tonnage class, although there were some exceptions, mostly notably in April 2018 in 3L (Fig. 27).

CPUE

Estimates of catch per unit effort (CPUE), measured in days or hours, have often been used in 3LN redfish assessments, as a potential indicator of historic trends in the stock (e.g., **Ávila de Melo et al., 2020**). Prior to the moratorium, fleet specific catch and effort data were fit to a multiplicative model (i.e. generalized linear model, **Gavaris, 1980**), standardized by NAFO division, month, country-gear-tonnage indicator, and the proportion of bycatch associated with each observation, treated as a factor (**Power, 1997**). The analysis removed any catch or effort data less than 10 units, and any NAFO division, month, country-gear-tonnage, and bycatch proportion groups that contained fewer than five samples. When analysing days fished, catch less than 10 tons or effort less than 5 days were eliminated. The analysis was run separately for Divs. 3L and 3N.

Overall, it was concluded that results from the multiplicative model could not be considered reflective of changes in year to year population abundance (Fig. 28), but could be indicative of long terms trends (**Power, 1997**, and references therein). Note that effort is shown in hours fished, but data are also available for days fished. The multiplicative model has not been updated since the closure of the fishery, and although directed fishing has since resumed for redfish in 3LN, there may have been changes in technology and fleet composition since the reopening. As such, extending the time series may not be appropriate (3LN redfish group, per. communication), although treating the recent data as a new time series could be a feasible future approach.

OTHER COMMERCIAL DATA

Note that additional data sources were discovered throughout the data review, although raw data and/or reporting were not available. These include: mention of Portuguese otoliths in the 1980's (e.g., **Lourdres and Godinho, 1983**), a Russian aging program (e.g., **Konstantinov, 1980**), and some Spanish data prior to 2007, although the reporting was inconsistent (e.g., **Junquera et al., 2001**).

DATA EXPLORATION

ALL SURVEY COVERAGE

We consider both the across-survey coverage (i.e. were surveys covering the same strata over space and time), and where redfish were commonly caught, in order to better understand the spatiotemporal overlap of all surveys (Canadian fall, spring, summer, winter, Spanish and Russian). In general, all available surveys in 3L appeared to catch redfish in similar strata over space and time (Figs. 29 & 30), and in most cases areas where there was a lack of across-survey coverage (e.g. summer and winter surveys strata 391,395), the catch of redfish was typically minimal. Additionally, redfish were rarely caught in the deep water strata (≥ 367m) that were poorly sampled in the fall and spring surveys (Fig. 30). Similarly, in 3N, most surveys appeared to catch redfish in the same general strata, and in most cases lack of across-survey coverage occurred in strata where redfish were not typically caught (Fig. 31).An exception occurred in the early years of the Spanish survey, where there were some redfish catches in the deeper strata.

LENGTH COMPOSITIONS

Standardized proportion at length and year (SPLY) plots are also considered, in order to better understand the length composition of 3LN redfish caught from the survey and the commercial catches. SPLY plots are useful for visualizing cohorts tracking through the catch. Unlike standard age-based (SPAY) plots, a cohort tracking through a SPLY plot will reach an asymptotic length, and trends in SPLY plots will more closely resemble a von Bertanlaffy growth curve than a linear line.

For the commercial data in 3L, there were some suggestions of cohorts tracking through in the recent years (2010-2020) for Russia, Portugal and Estonia (Figs. 32 & 33), with lengths plateauing at approximately 30-35cm. A similar trend was seen for the recent fall and spring surveys in 3L (Fig. 34). Overall, in 3N, the recent cohorts tracking through the commercial SPLY plots appeared to reach an asymptotic length that was smaller than in 3L, with the Russian and Estonian lengths reaching a plateau at around 25 cm (Figs. 35 & 36). A similar trend was seen in the fall and spring survey SPLY plots in the most recent years, again with maximum length appearing at approximately 25cm (Fig. 37). Similarly, for the Spanish survey SPLY plots, the most recent cohort tracking through in 3N appeared to plateau at approx. 25cm, versus closer to 30 cm in 3L (Fig. 39).

FINAL COMMENTS

This data review provided an updated look at the available commercial and survey data for 3LN redfish, as a first step in revisiting a management strategy evaluation for the stock. An overview of the available data are summarized in Table 1, with detailed summary tables for the survey coverage and catch estimates given in Tables 2 & 3.

The preliminary data exploration gave an overview of the spatiotemporal coverage of the available survey data. Overall, lack of across-survey coverage occurred most often in areas where redfish were not regularly caught. However, within survey coverage has been an issue for many of the surveys, and how to handle incomplete strata needs careful consideration if a spatially-aggregated index is expected to be used in future work (e.g., **Rideout and Wheeland, 2019**). Additionally, the initial data exploration provided some evidence that commercial and survey catches in 3L were targeting redfish of a different size than in 3N. This is an important consideration, and one that cannot currently be accounted for in the ASPIC framework approach (e.g., **Ávila de Melo et al., 2020**), since surplus production models cannot incorporate any information on the size-structure of the stock.

ACKNOWLEDGEMENTS

This work would not be possible without the effort of all involved in collecting, organizing and processing of all available data, both historically and currently. Additionally, many thanks to Don Power, whose wealth of knowledge and input provided invaluable guidance for this document.

FIGURES

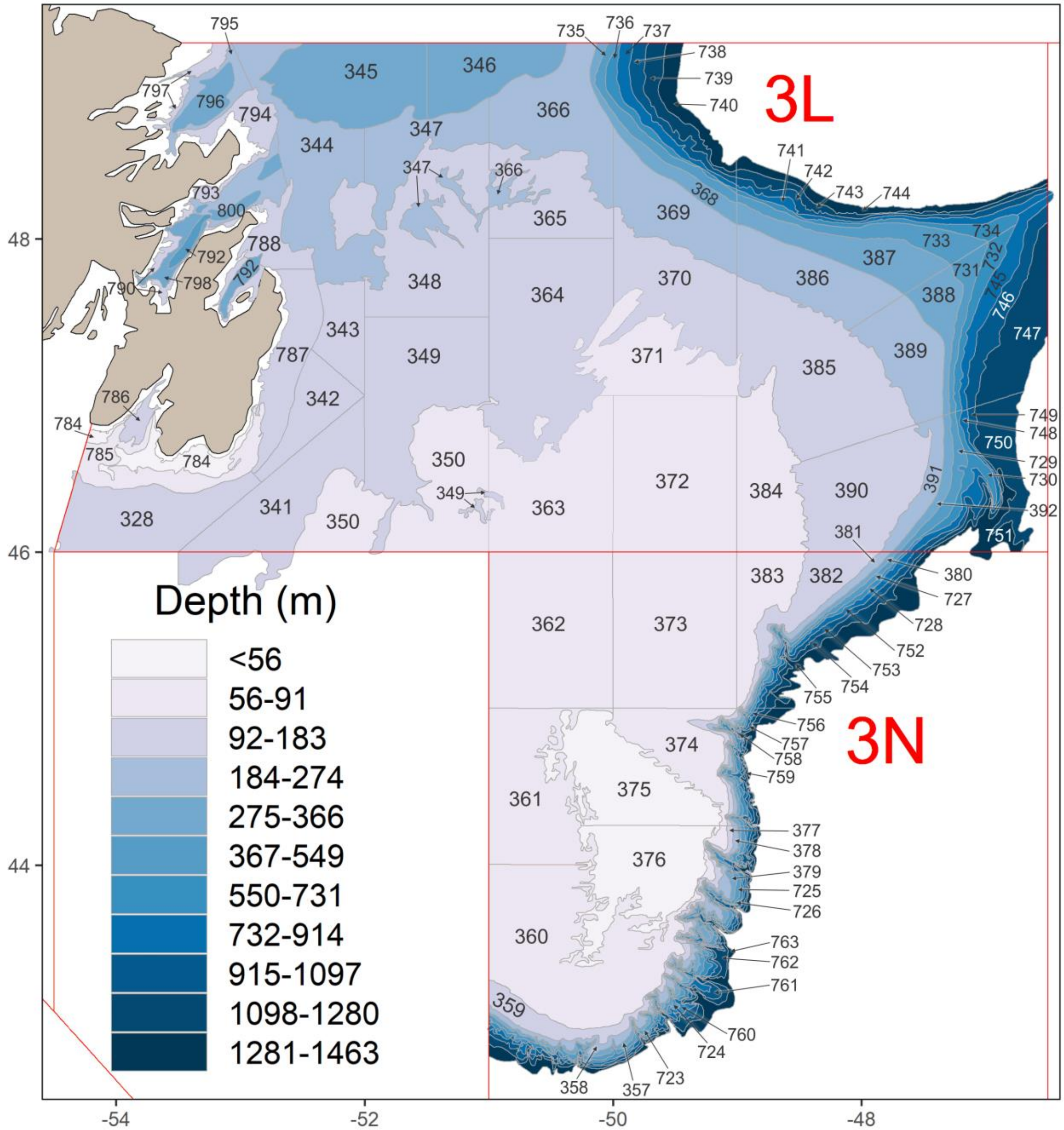

Figure 1. Stratitification of 3LN.

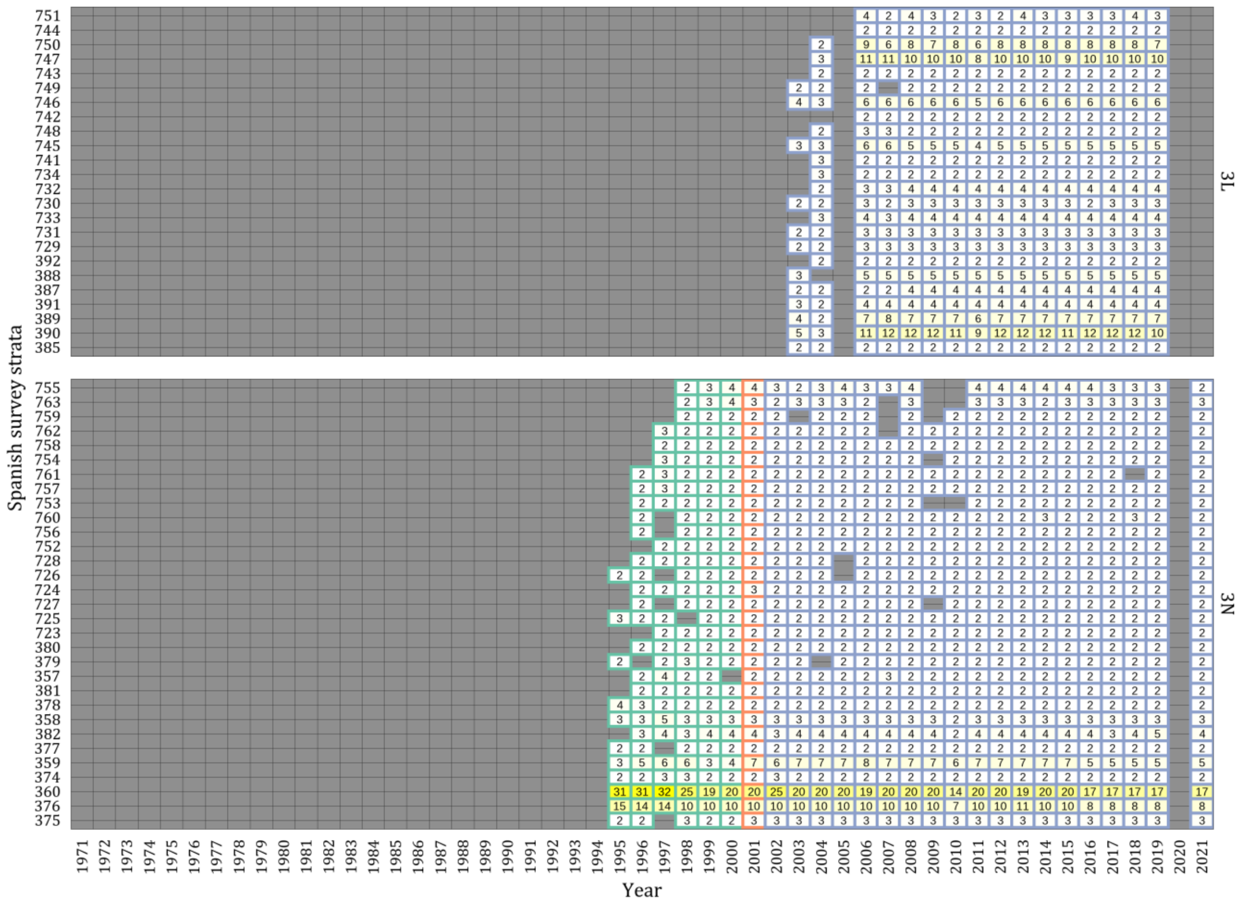

Figure 2. Number of successful tows in each stratum for the Spanish RV surveys in Divs. 3L (top) and 3N (bottom). The yellow shaded regions represent strata and year with a large number of tows. Grey boxes represent year/strata that were not sampled. The color of the box represents the Pedreira (green), Campelen (blue) or both (orange) survey gear.

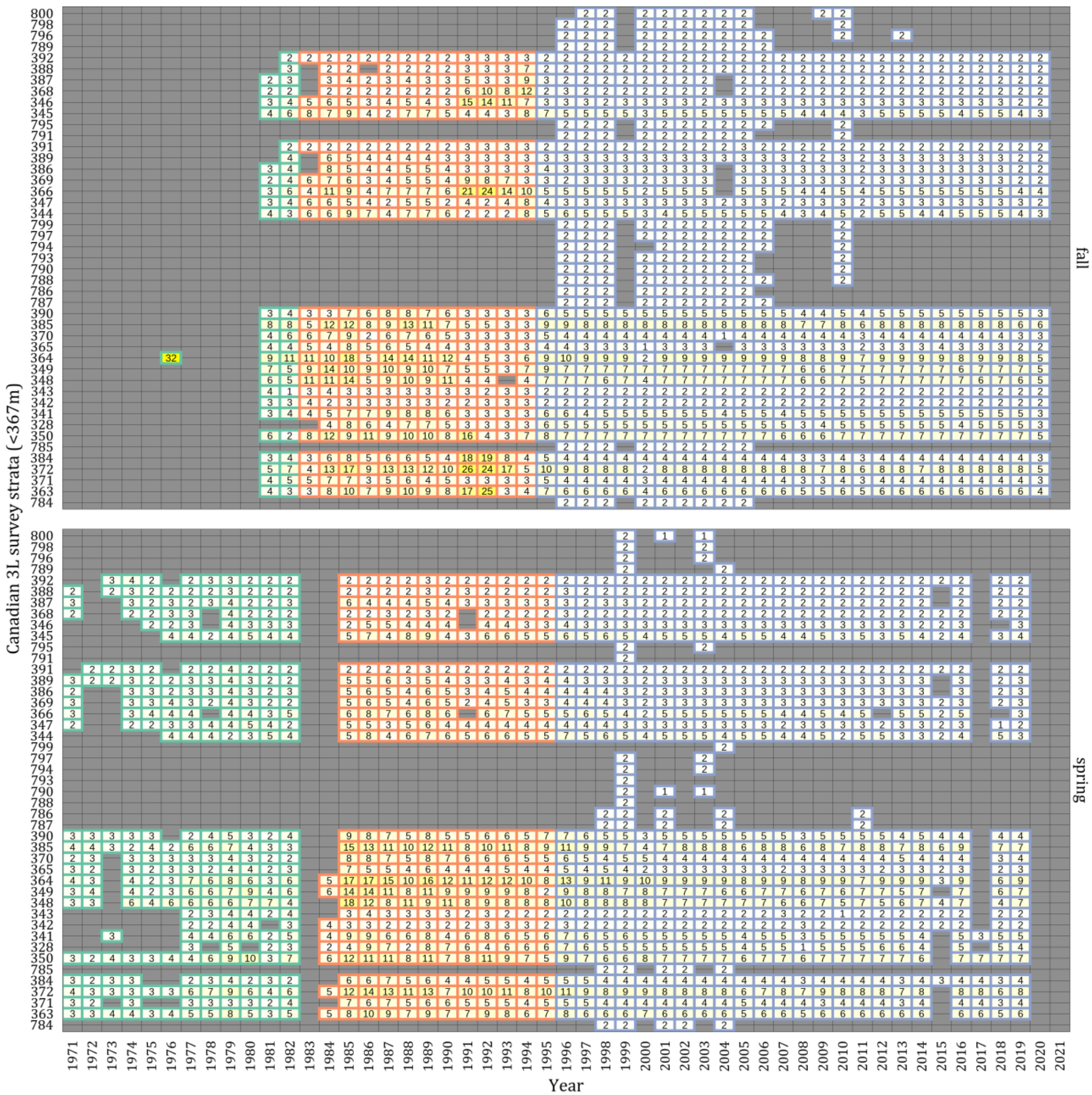

Figure 3. Number of successful tows in each stratum for the Canadian fall (top) and spring (bottom) surveys in Div. 3L shallow strata (<367m). The yellow shaded regions represent strata and year with a large number of tows. Grey boxes represent year/strata that were not sampled. The color of the box represents the Yankee (green), Engel (orange) or Campelen (blue) survey gear.

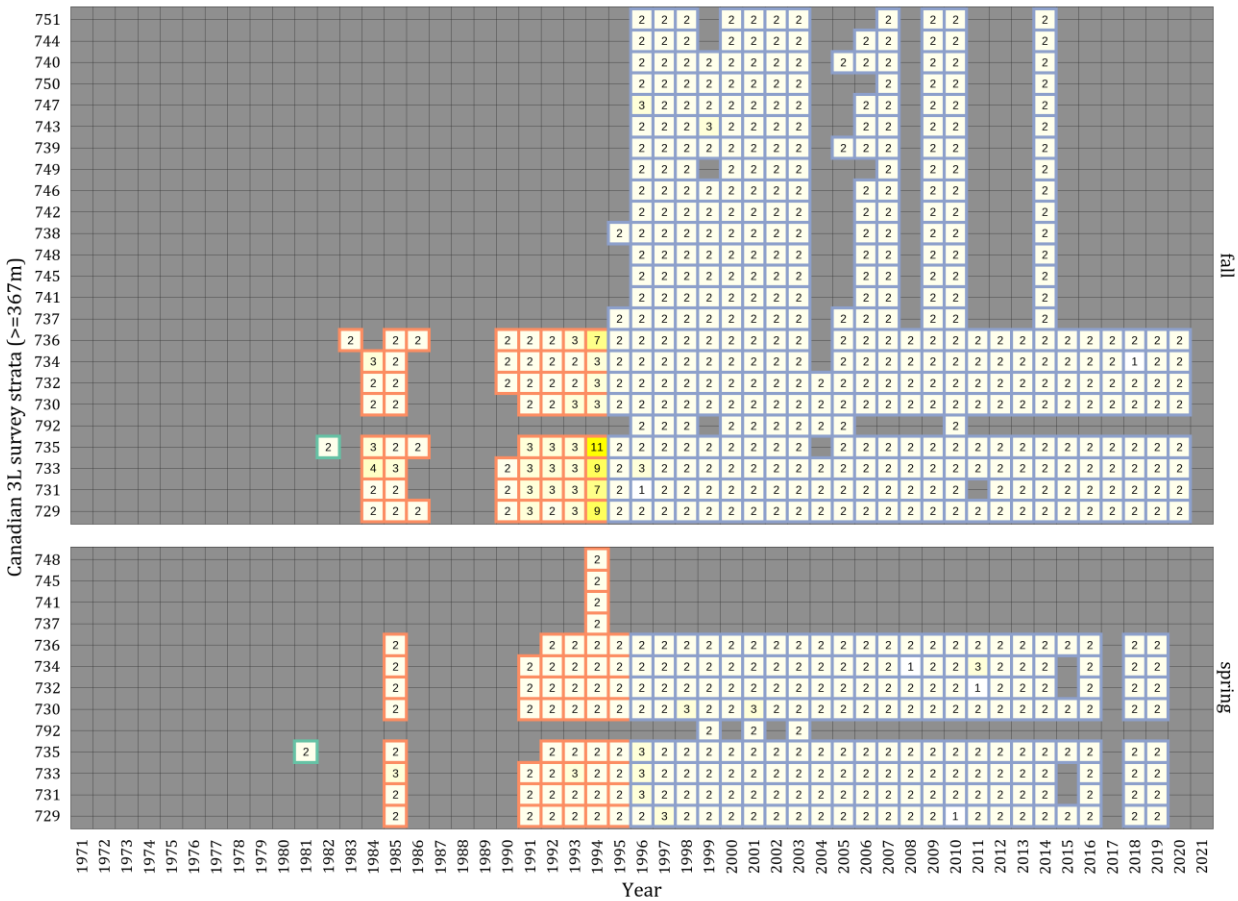

Figure 4. Number of successful tows in each stratum for the Canadian fall (top) and spring (bottom) surveys in Div. 3L deep strata (>=366m). The yellow shaded regions represent strata and year with a large number of tows. Grey boxes represent year/strata that were not sampled. The color of the box represents the Yankee (purple), Engel (orange) or Campelen (green) survey gear.

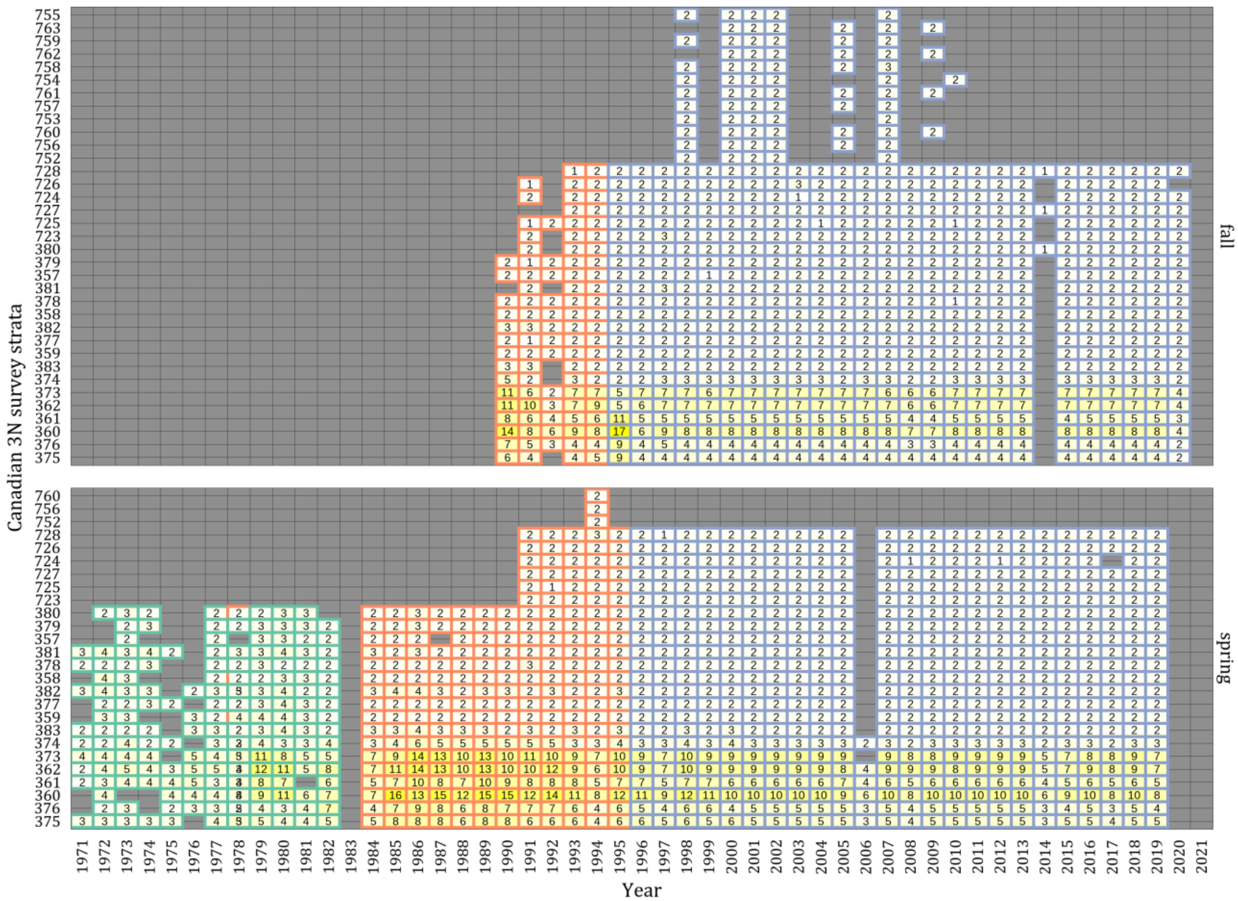

Figure 5. Number of successful tows in each stratum for the Canadian fall (top) and spring (bottom) surveys in Div. 3N. The yellow shaded regions represent strata and year with a large number of tows. Grey boxes represent year/strata that were not sampled. The color of the box represents the Yankee (green), Engel (orange) or Campelen (blue) survey gear.

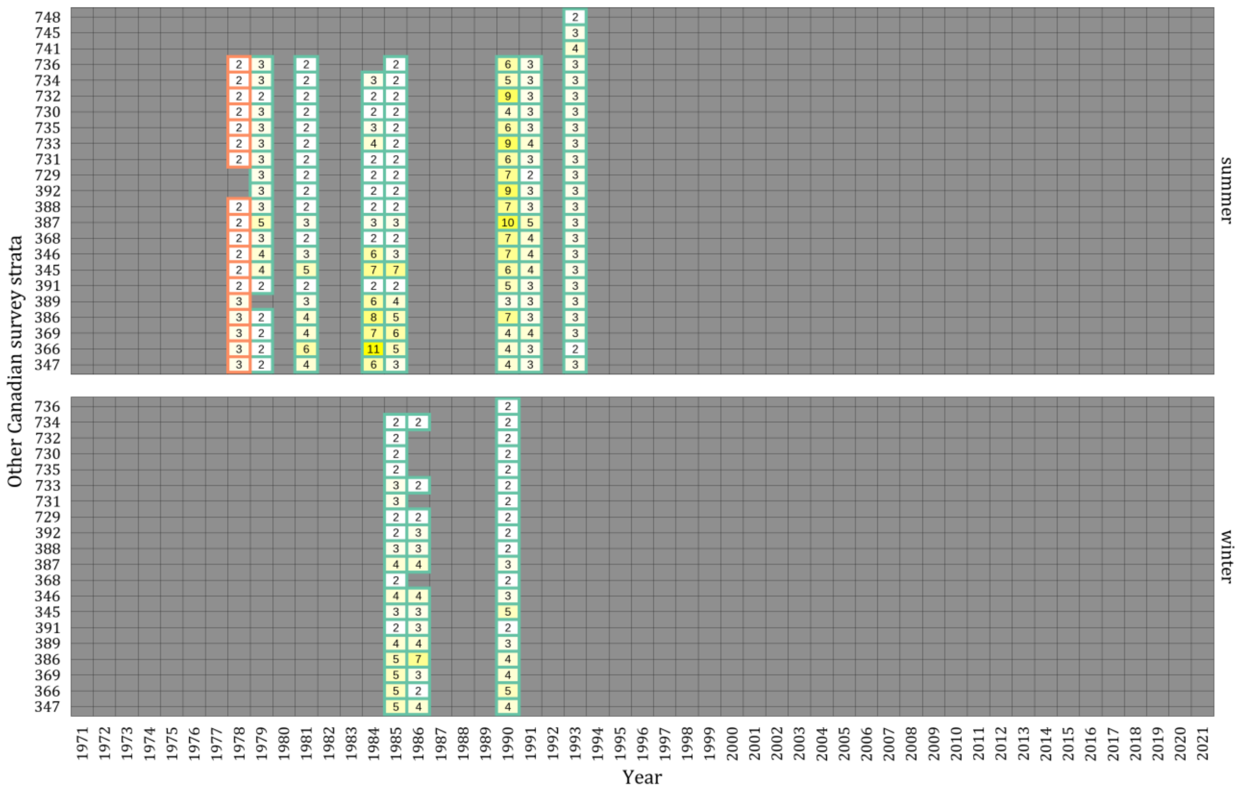

Figure 6. Number of successful tows in each stratum for the Canadian summer (top) and winter (bottom) surveys in Div. 3L. The yellow shaded regions represent strata and year with a large number of tows. Grey boxes represent year/strata that were not sampled. The color of the box represents the Yankee (orange) or Engel (green) survey gear.

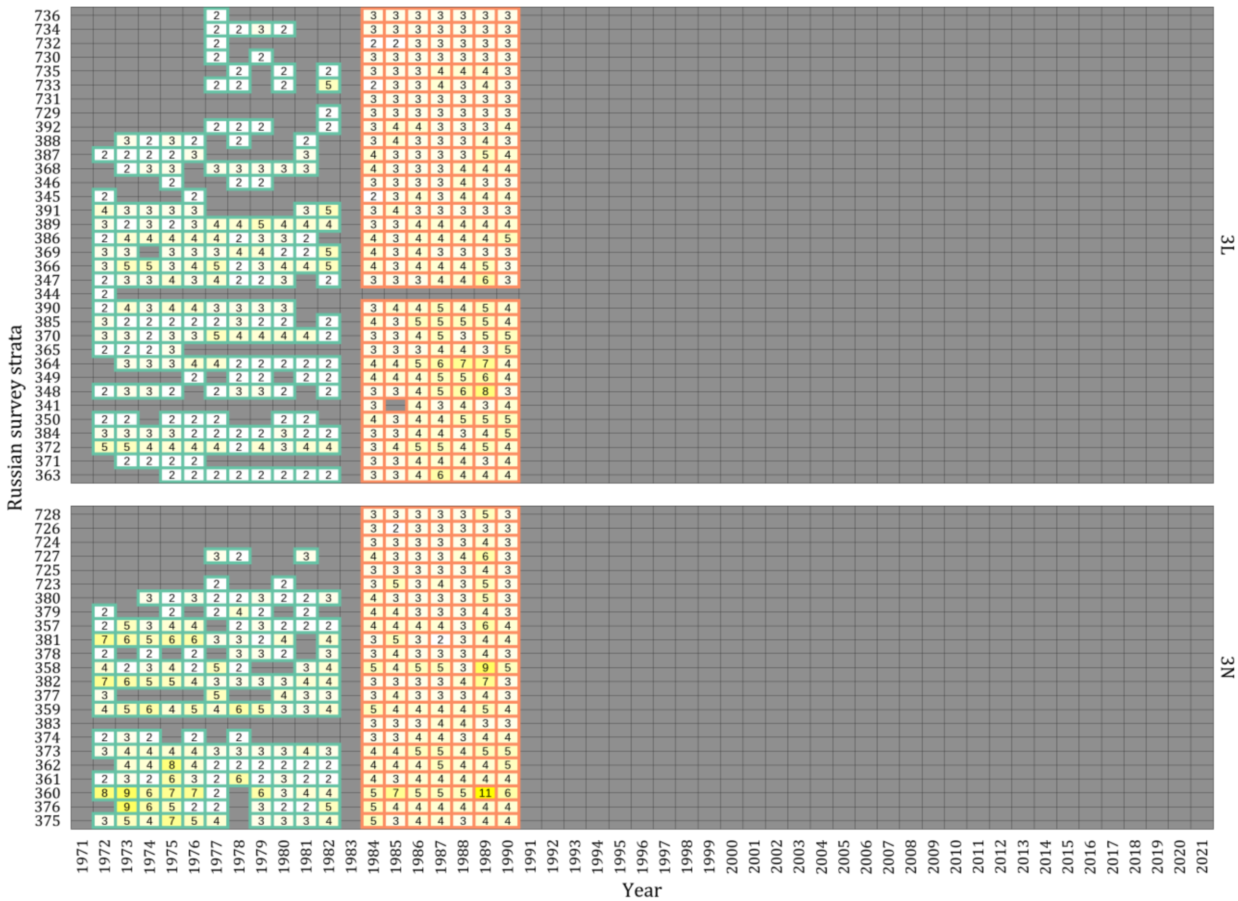

Figure 7. Number of successful tows in each stratum for the Russian surveys in Divs. 3LN. The yellow shaded regions represent strata and year with a large number of tows and -1 indicates that the stratum was sampled, but the total number of tows in that year/stratum was not available. Grey boxes represent year/strata that were not sampled. The color of the box represents the fixed station (green) or stratified random (orange) surveys.

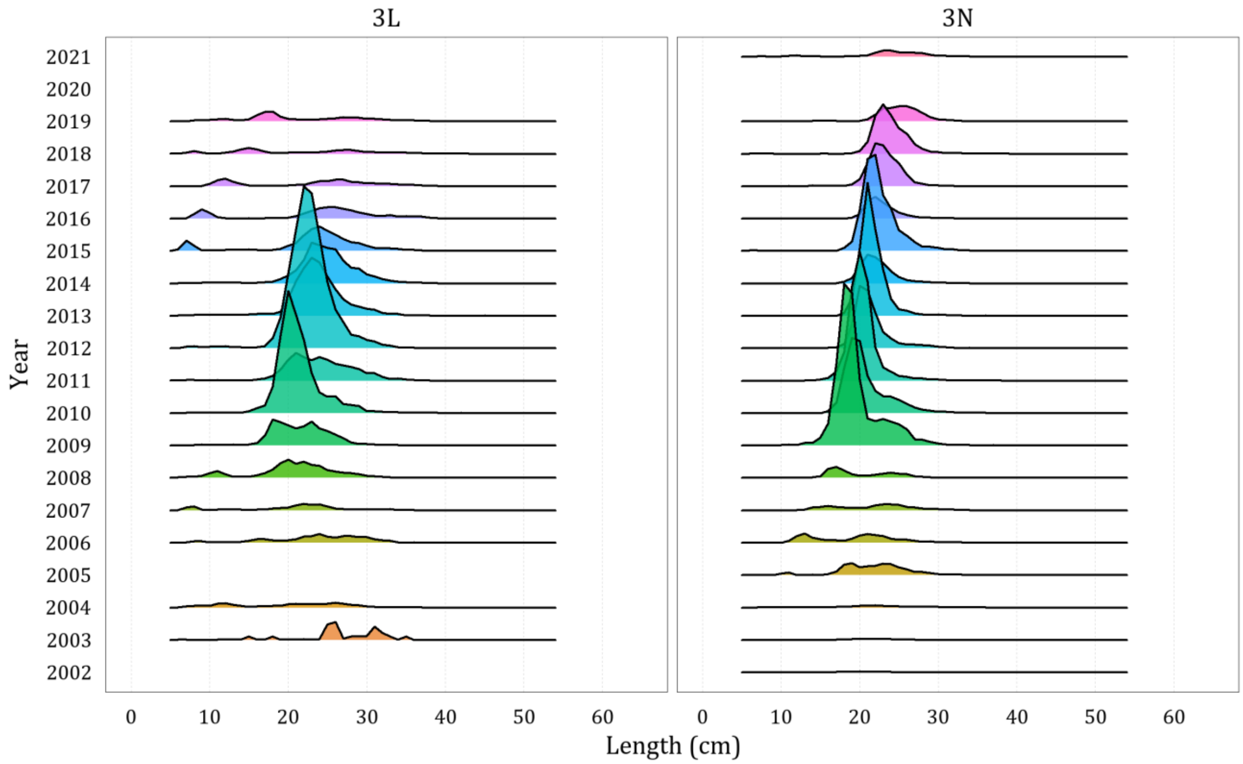

Figure 8. Survey length frequencies from Spanish Campelen research vessel surveys for Divs. 3L (left) and 3N (right) redfish. Note data are aggregated by sex.

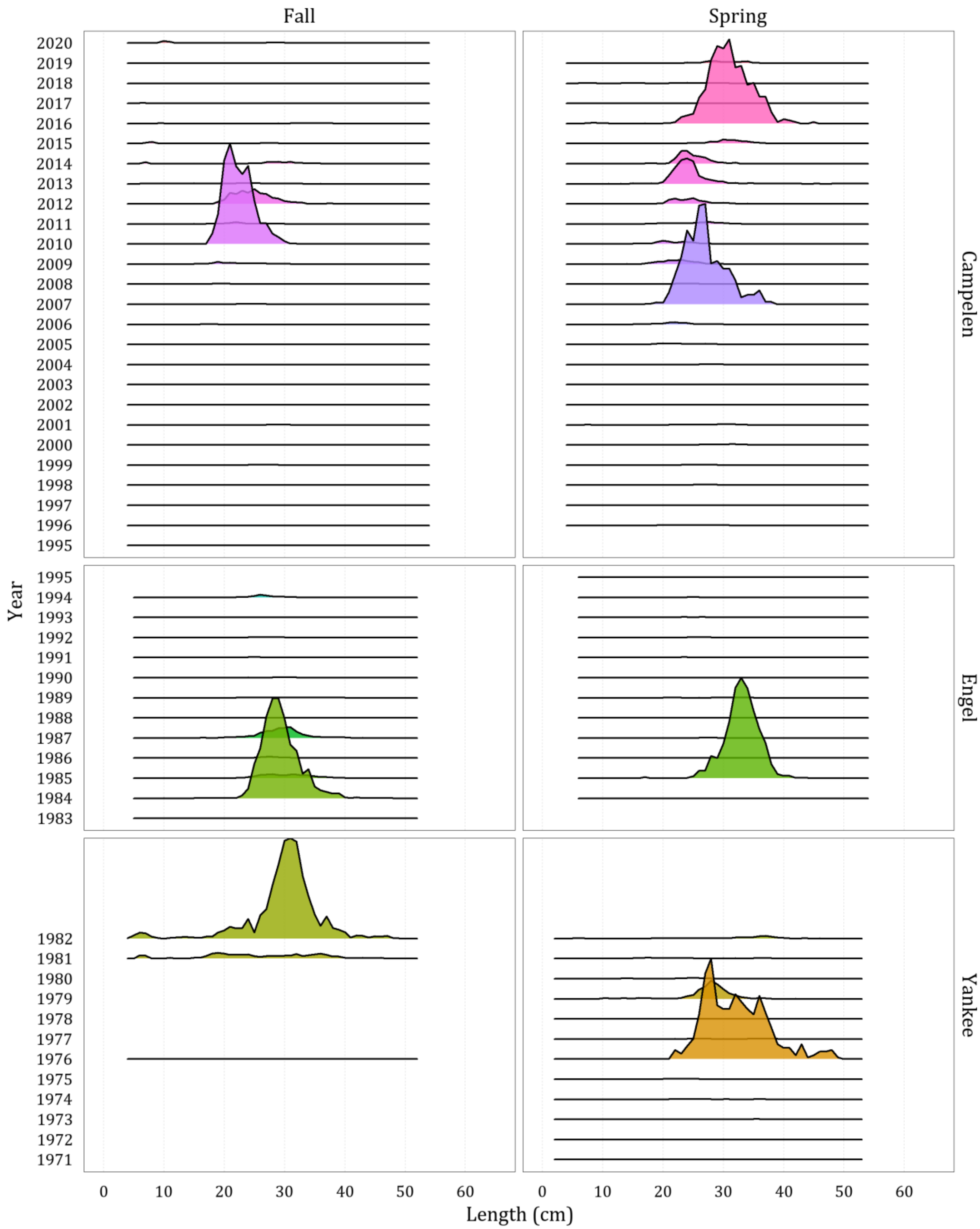

Figure 9. Survey length frequencies from the Canadian fall (left) and spring (right) research vessel surveys for the Yankee (bottom), Engel (middle) and Campelen (top) survey gear, for redfish in Div. 3L. Note that comparisons should not be made across the survey protocols since all data are unconverted.

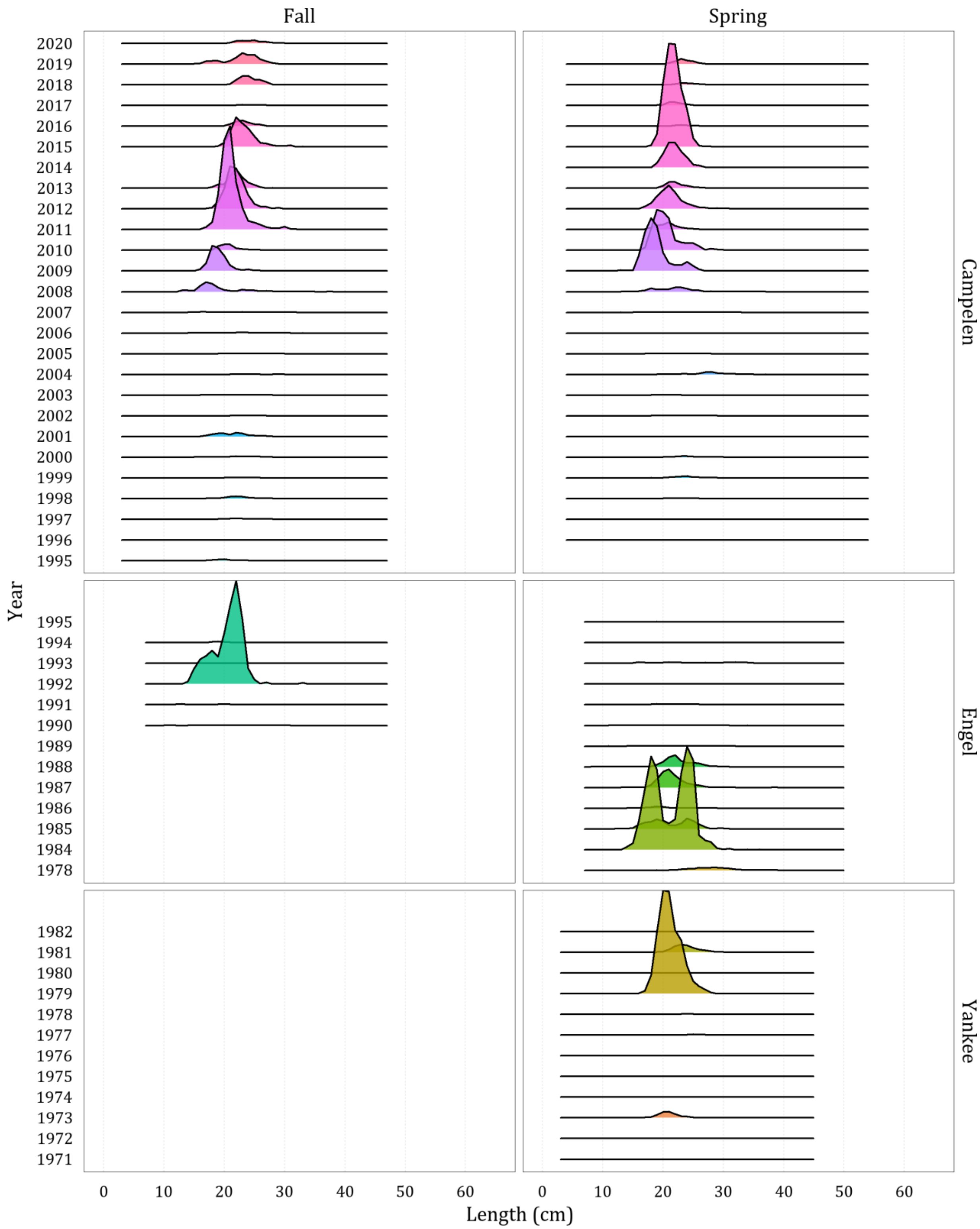

Figure 10. Survey length frequencies from the Canadian fall (left) and spring (right) research vessel surveys for the Yankee (bottom), Engel (middle) and Campelen (top) survey gear, for redfish in Div. 3N. Note that comparisons should not be made across the survey protocols since all data are unconverted.

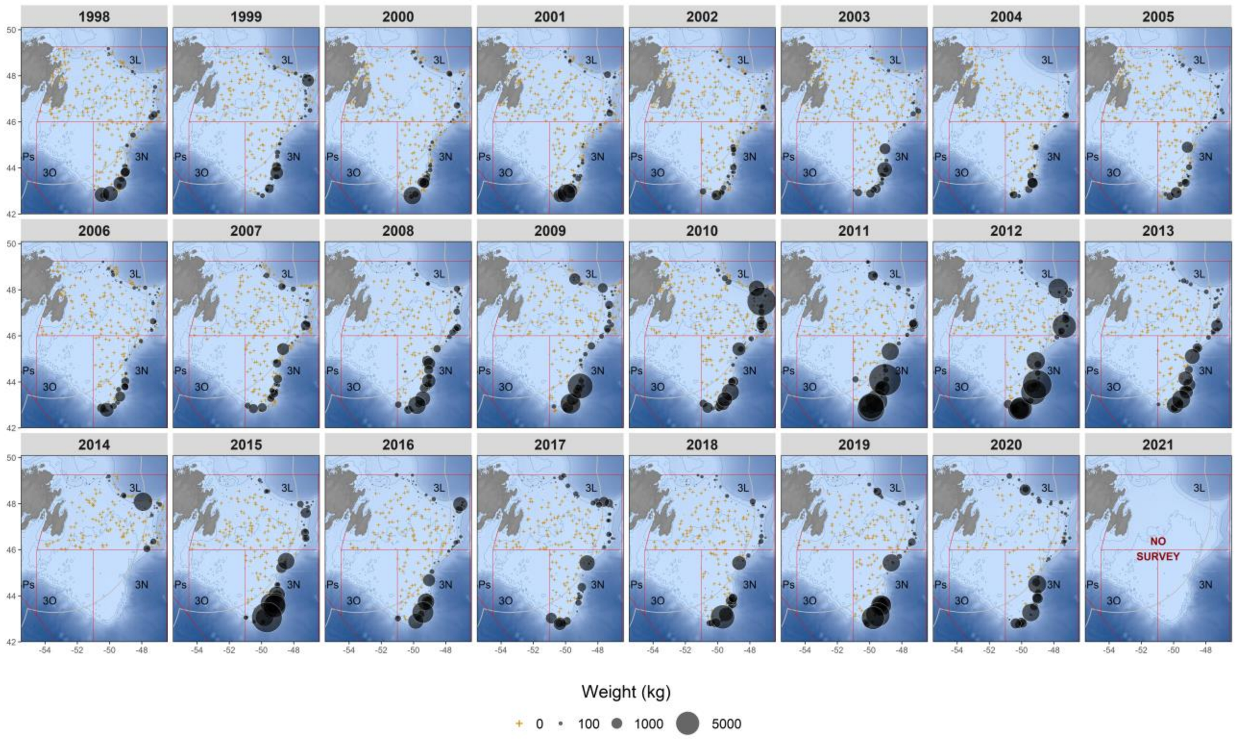

Figure 11. Distribution (kg per tow) of redfish from Canadian fall surveys in Divs. 3LN.

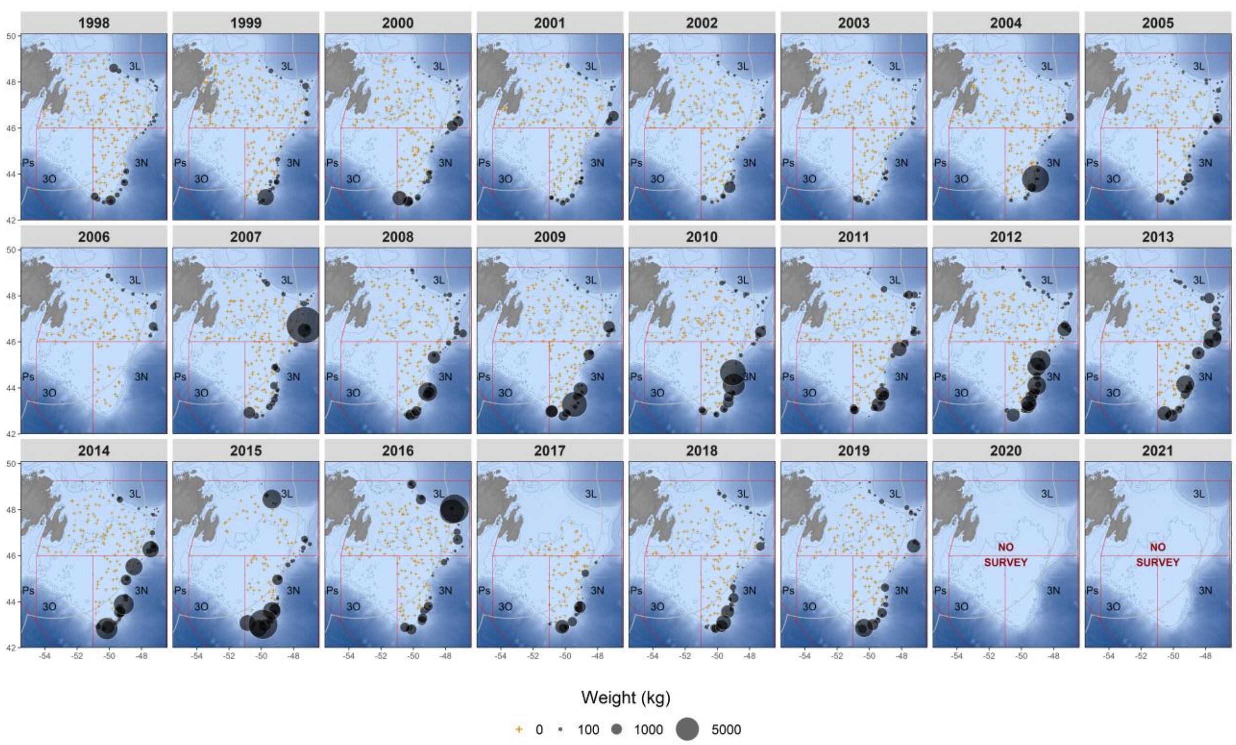

Figure 12. Distribution (kg per tow) of redfish from Canadian spring surveys in Divs. 3LN.

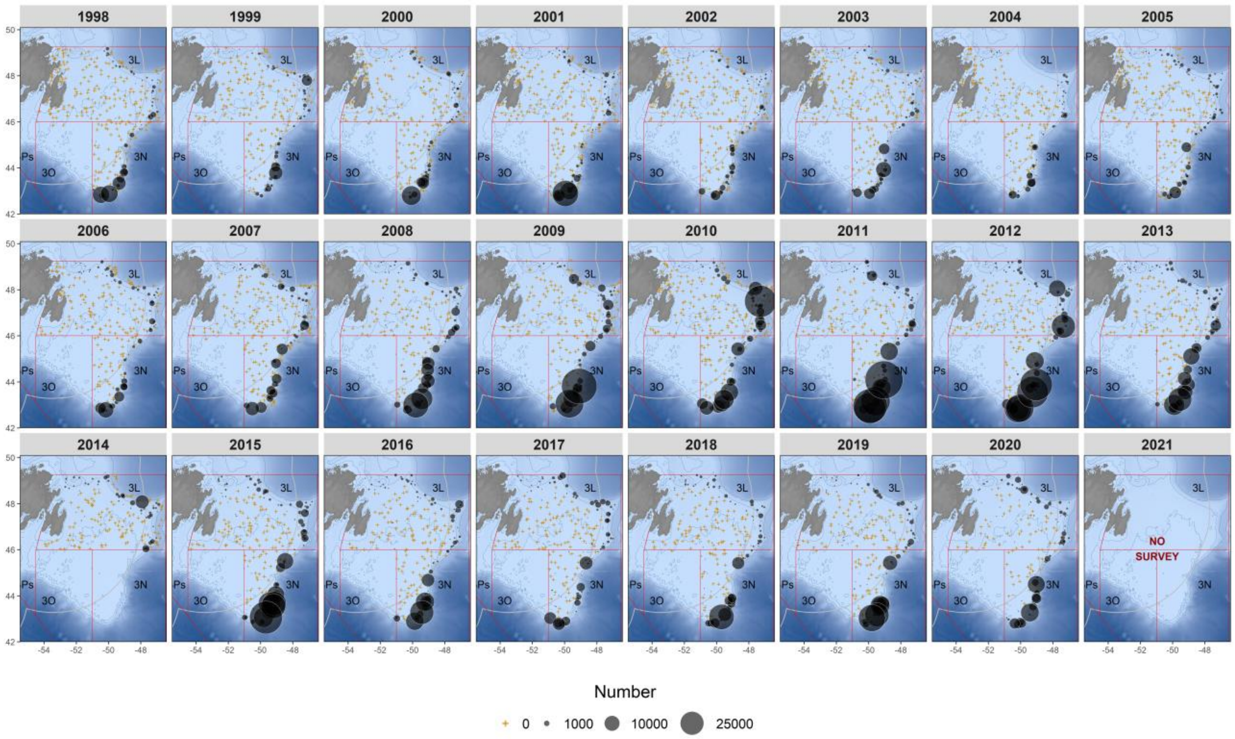

Figure 13. Distribution (num per tow) of redfish from Canadian fall surveys in Divs. 3LN.

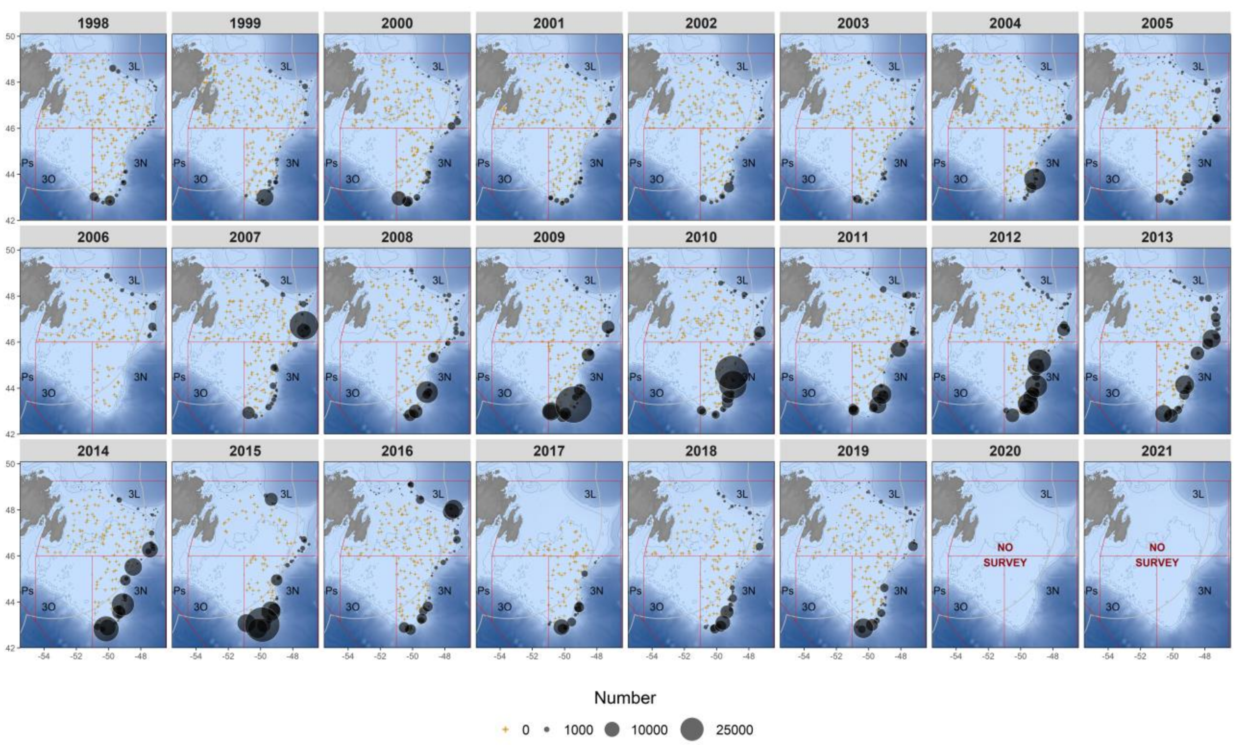

Figure 14. Distribution (num per tow) of redfish from Canadian spring surveys in Divs. 3LN.

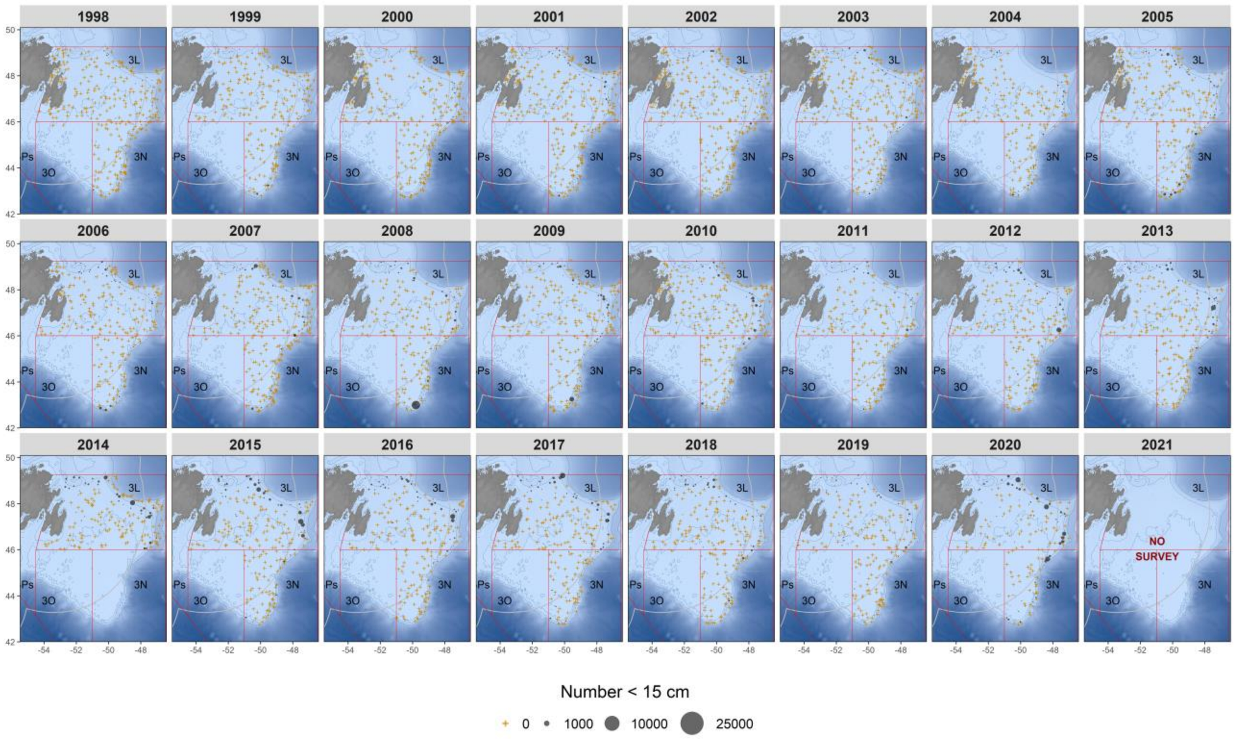

Figure 15. Distribution (num per tow) of redfish <15cm from Canadian fall surveys in Divs. 3LN.

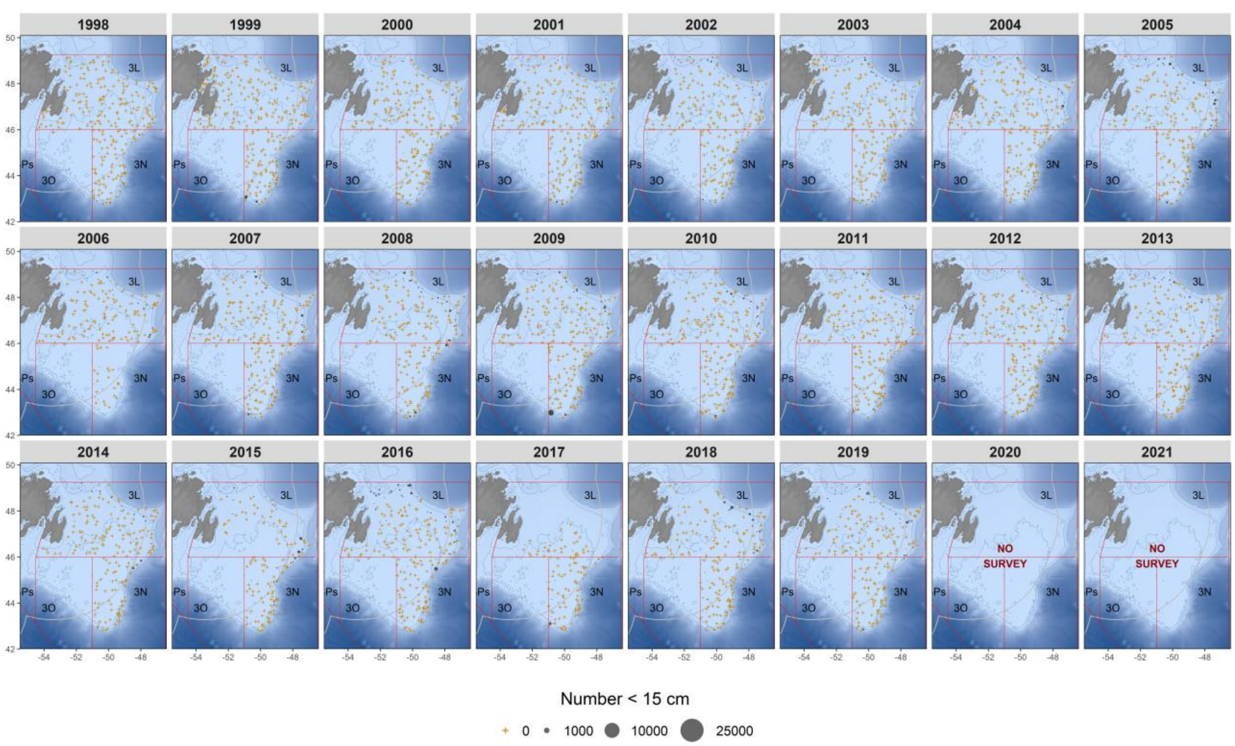

Figure 16. Distribution (num per tow) of redfish <15cm from Canadian spring surveys in Divs. 3LN.

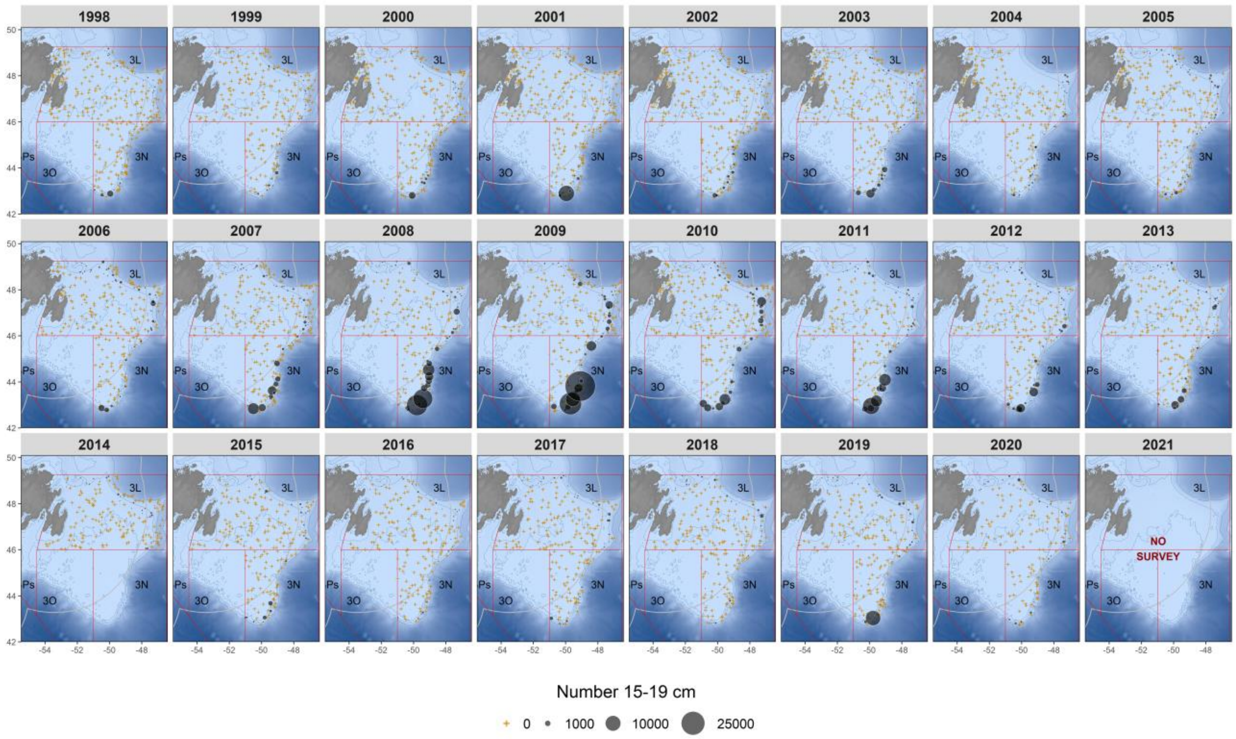

Figure 17. Distribution (num per tow) of redfish of 15-19 cm from Canadian fall surveys in Divs. 3LN.

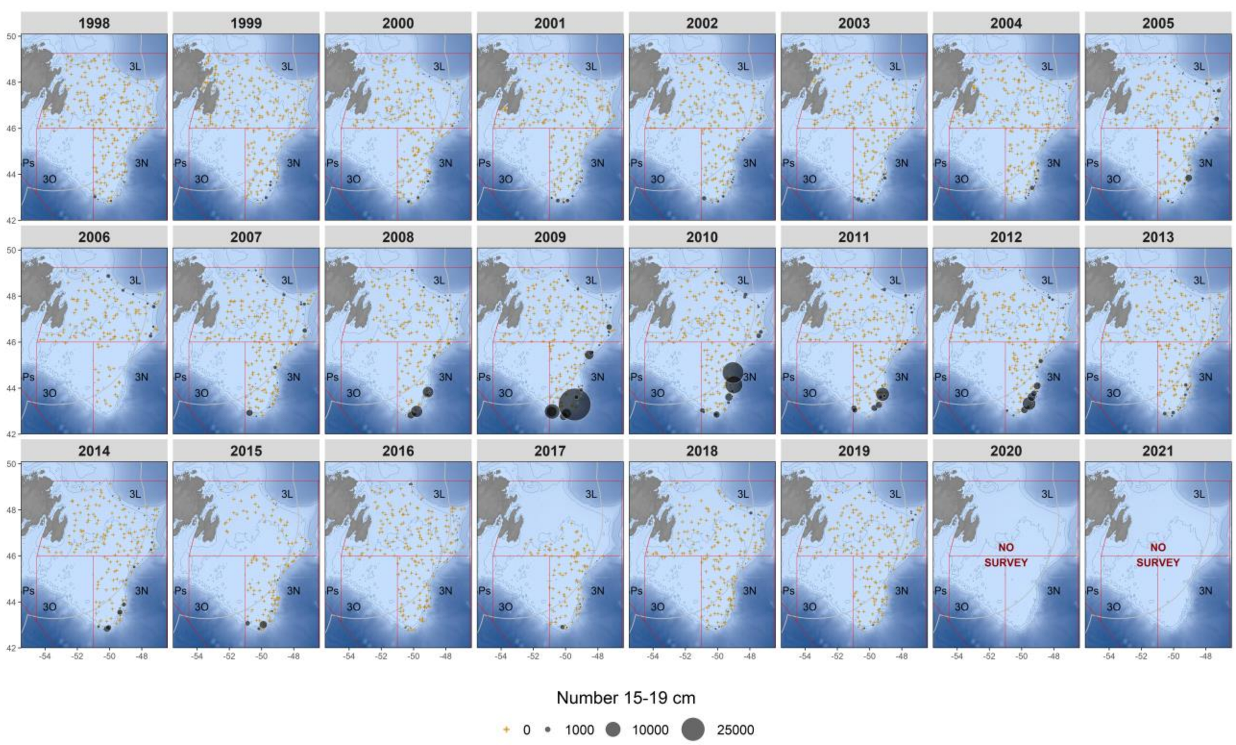

Figure 18. Distribution (num per tow) of redfish of 15-19 cm from Canadian spring surveys in Divs. 3LN.

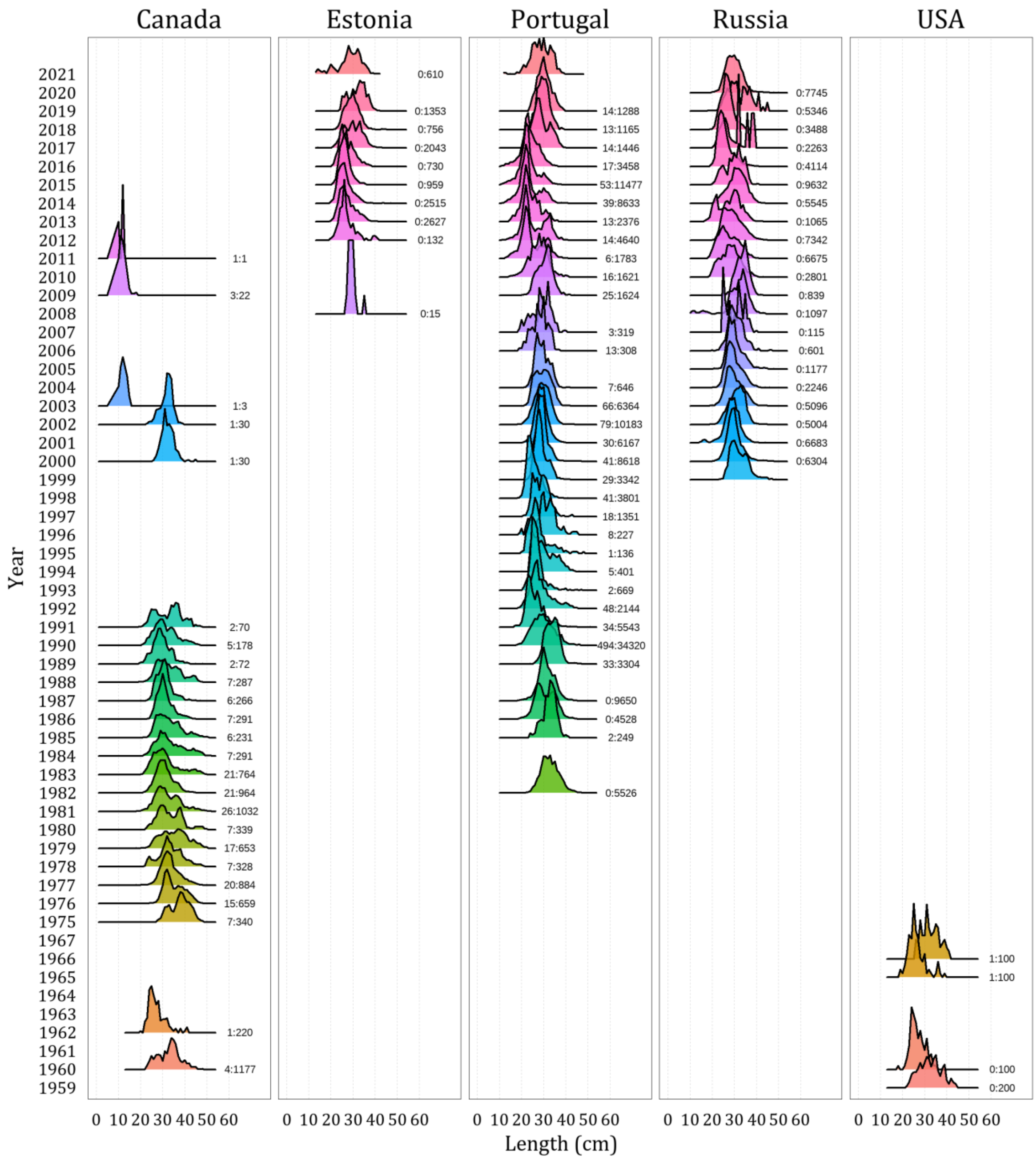

Figure 19. Length frequencies from commercial fishery sampling by country and year for redfish in Div. 3L. The numbers before the colon represent the number of samples collected, and the number after is the number of fish sampled in that year (e.g., 2:586 represents two samples with 586 fish measured for length). When there is no colon or a 0, no sample size information was available. Note that lengths are pooled by species.

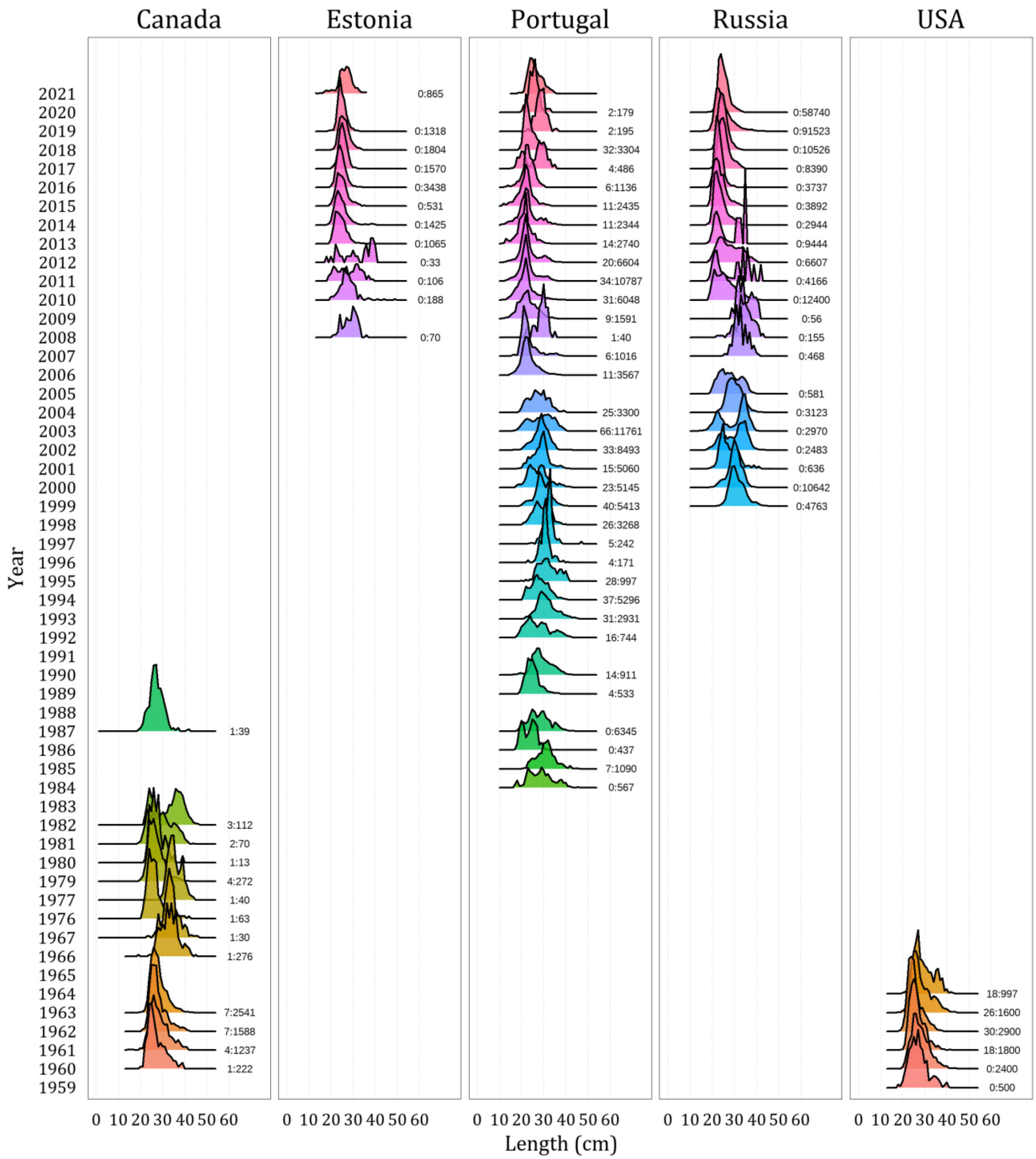

Figure 20. Length frequencies from commercial fishery sampling by country and year for redfish in Div. 3N. The numbers before the colon represent the number of samples collected, and the number after is the number of fish sampled in that year (e.g., 2:586 represents two samples with 586 fish measured for length). When there is no colon or a 0, no sample size information was available. Note that lengths are pooled by species.

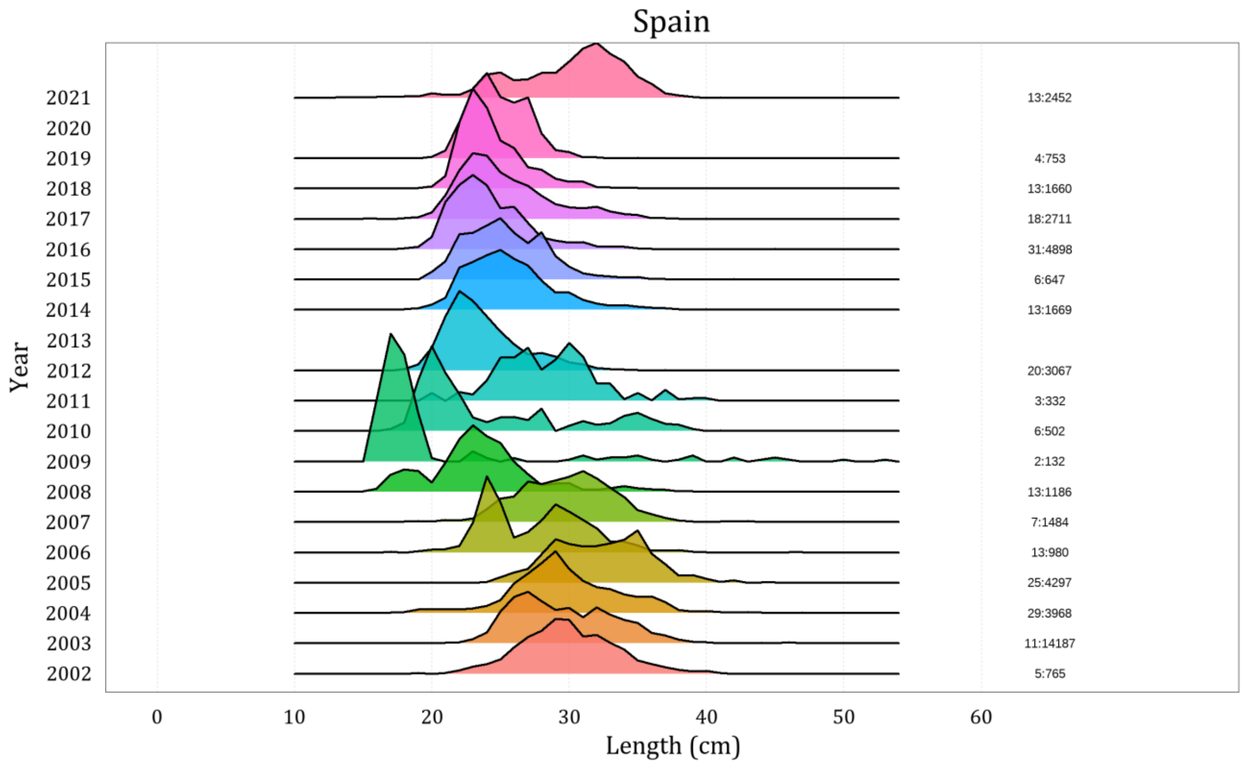

Figure 21. Length frequencies from Spanish commercial fishery sampling for redfish in Div. 3LN. The numbers before the colon represent the number of samples collected, and the number after is the number of fish sampled in that year (e.g., 2:586 represents two samples with 586 fish measured for length). Note that lengths are pooled by species.

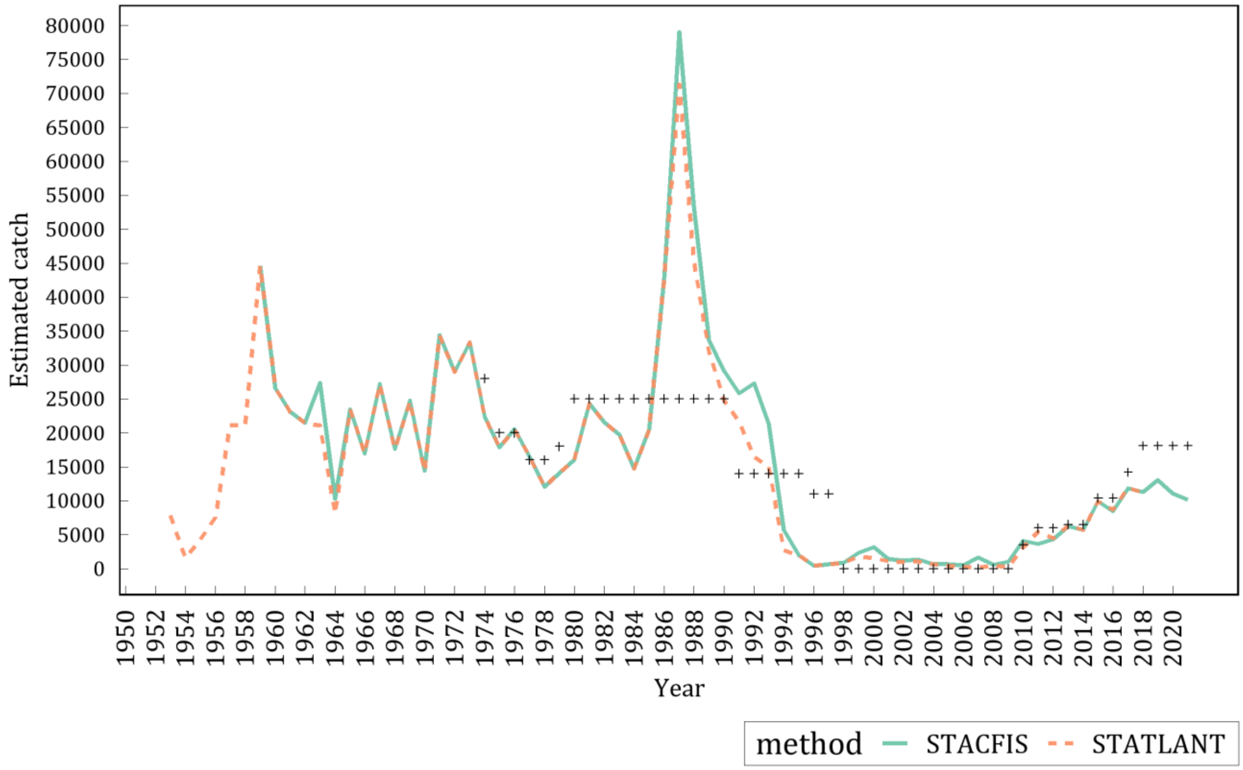

Figure 22. STATLANT 21 reported catch (pink) and STACFIS estimated catches (blue) for 3LN redfish. The crosses are total allowable catch in that year (TAC). See Table 3 for notes on differences in the STATLANT 21 statistics and STACFIS estimates.

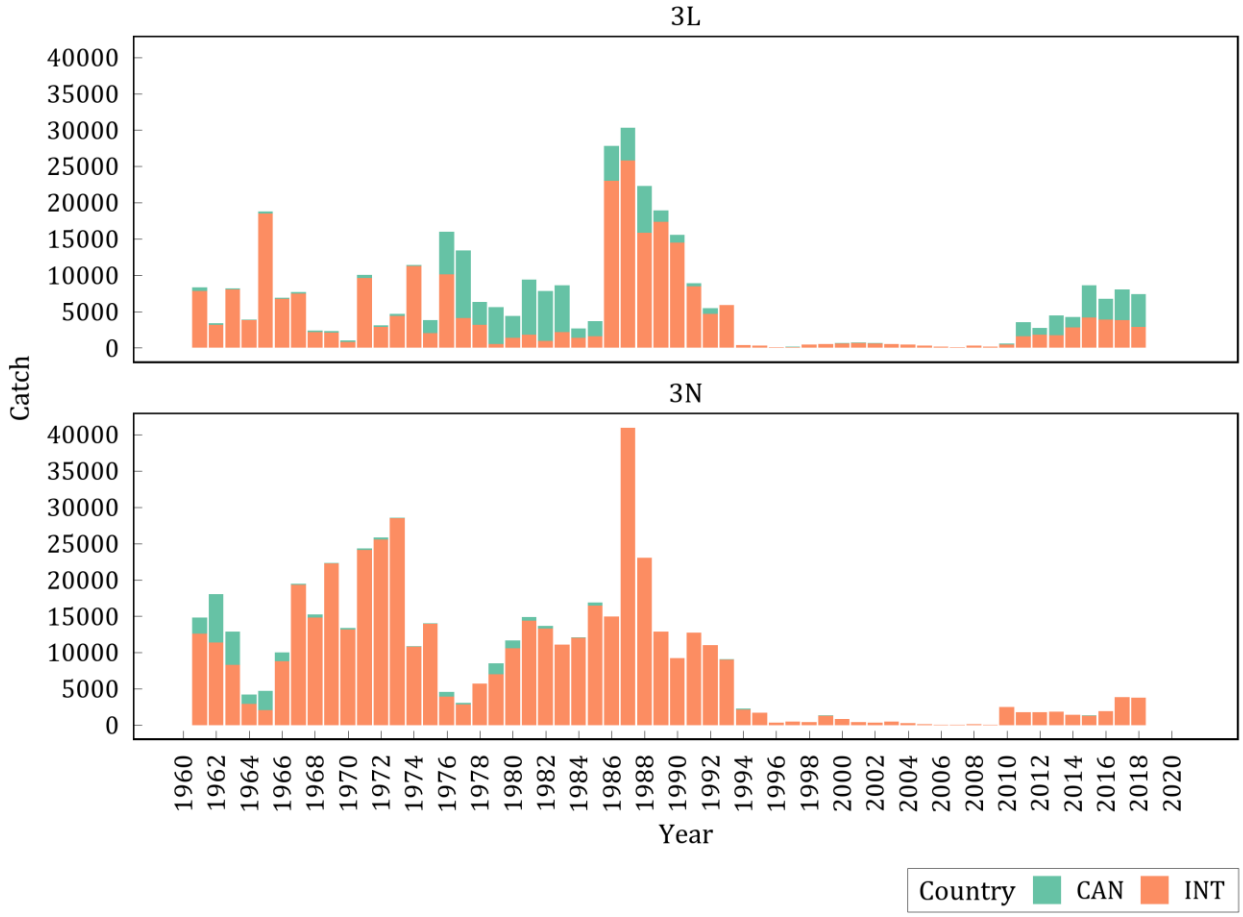

Figure 23. STATLANT 21 catch statistics for Divs. 3L and 3N by country; Canadian (blue), all international, (orange).

Figure 24. Historic STATLANT 21B effort in hours fished by division (3L, 3N), month and gear type; Bottom otter trawl (BOT) charters (BOT Charters), side or stern not specified (BOT NS), side (BOT Side), midwater trawl (MWT), side or stern not specified (MWT NS), side (MWT Side), stern (MWT stern), and bottom pair trawl (BPT). Note the difference in scales on the y axes.

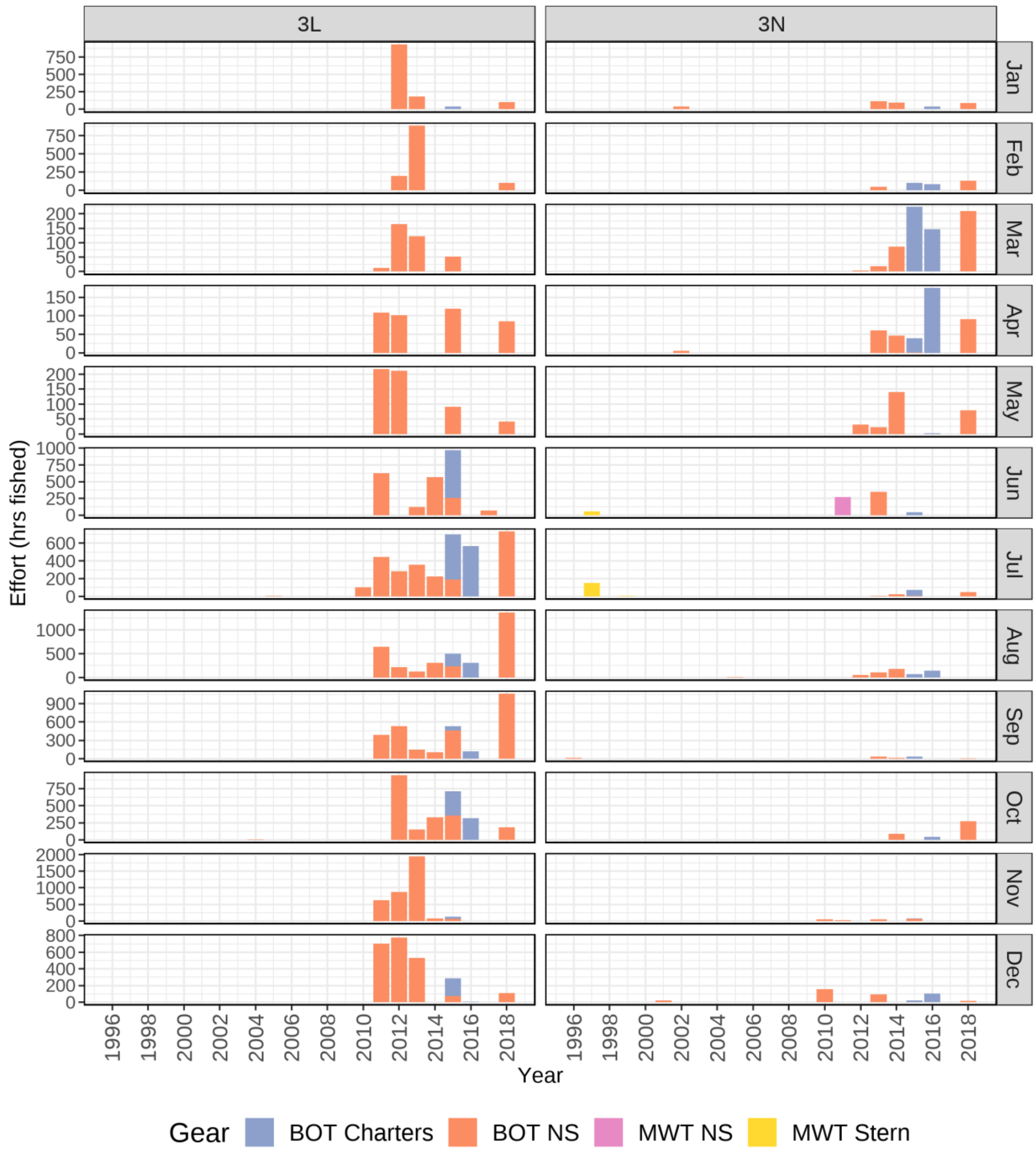

Figure 25. Recent STATLANT 21B effort in hours fished by division (3L, 3N), month and gear type; Bottom otter trawl (BOT) charters (BOT Charters), side or stern not specified (BOT NS), side (BOT Side), midwater trawl (MWT), side or stern not specified (MWT NS), side (MWT Side), stern (MWT stern), and bottom pair trawl (BPT). Note the difference in scales on the y axes.

Figure 26. Historic STATLANT 21B effort in hours fished by division (3L, 3N), month and tonnage. Note the difference in scales on the y axes.

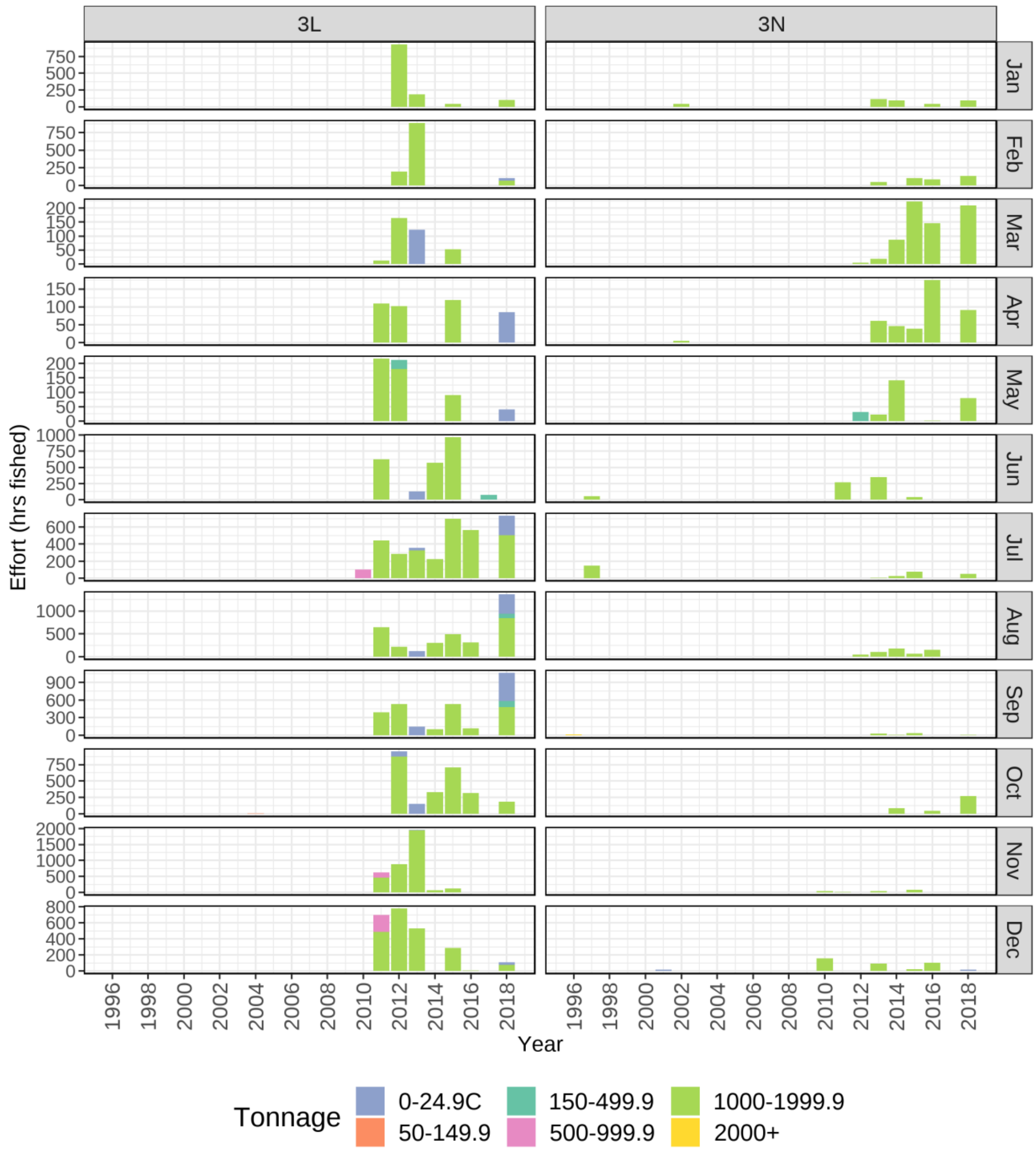

Figure 27. Recent STATLANT 21B effort in days fished by division (3L, 3N), month and tonnage. Note the difference in scales on the y axes.

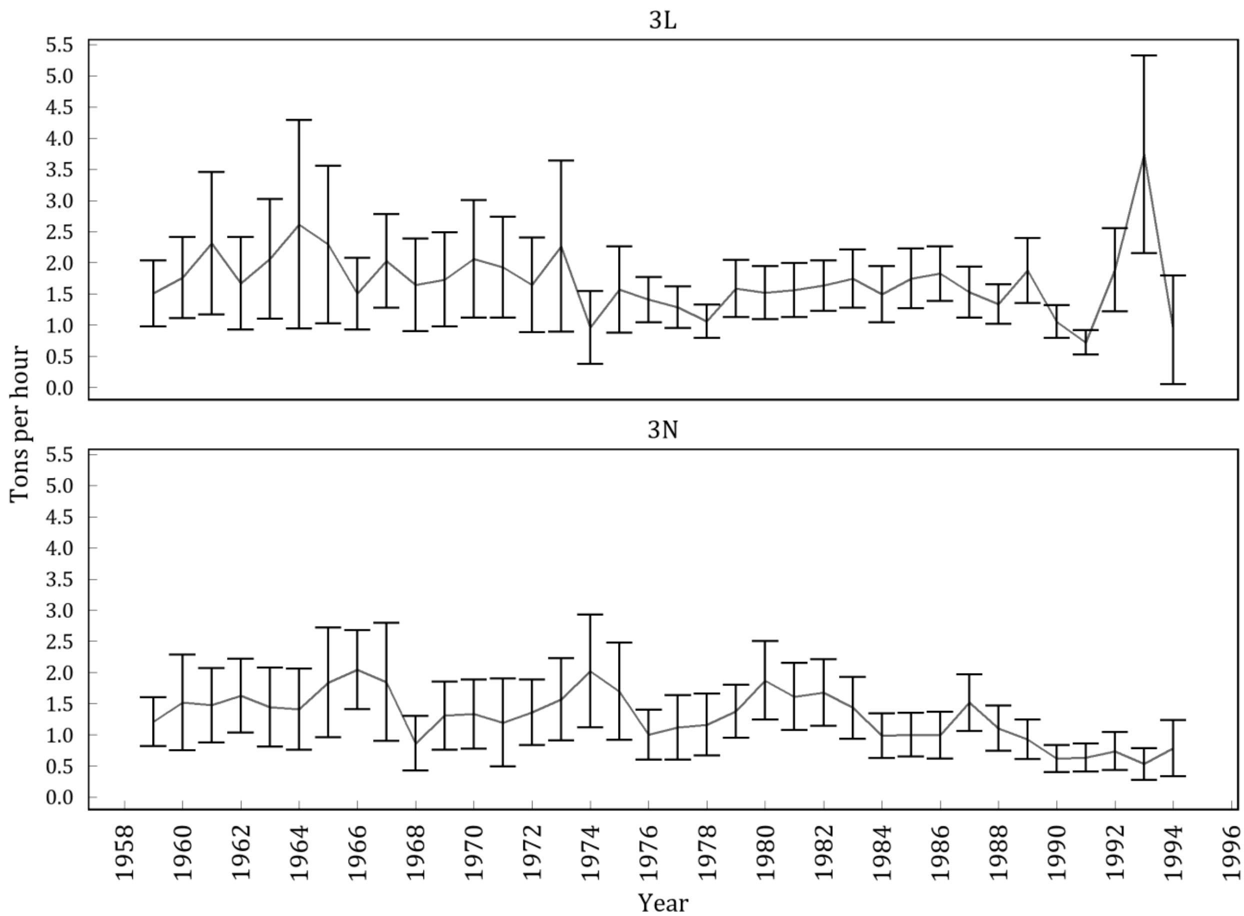

Figure 28. Standardized CPUE (tons/hour) with approximate 95% confidence intervals for Divs. 3LN redfish estimated from multiplicative model (Power, 1997).

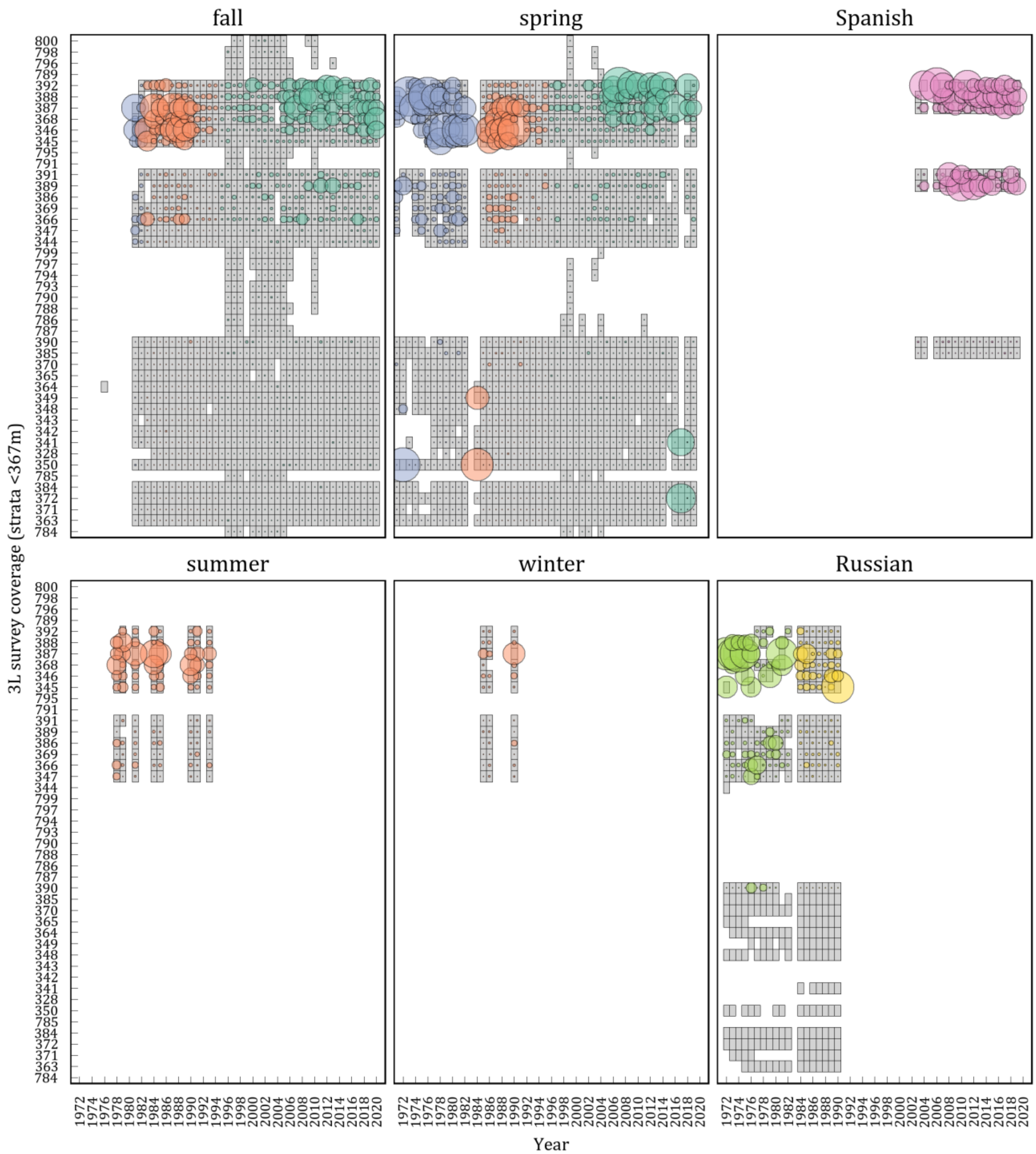

Figure 29. Comparison of bubble plots of proportion of total catch in shallow strata (<367m) in 3L in each stratum by year for the available surveys. The size of the bubble is proportional to the size of the catch within the year, and the color of the bubble represents various gear types; either Yankee (purple), Engel (orange), Campelen (green), Spanish Campelen (pink), or Russian fixed (light green) and stratified (yellow) survey design.The grey shaded boxes represent a year strata combination with a successful tow.

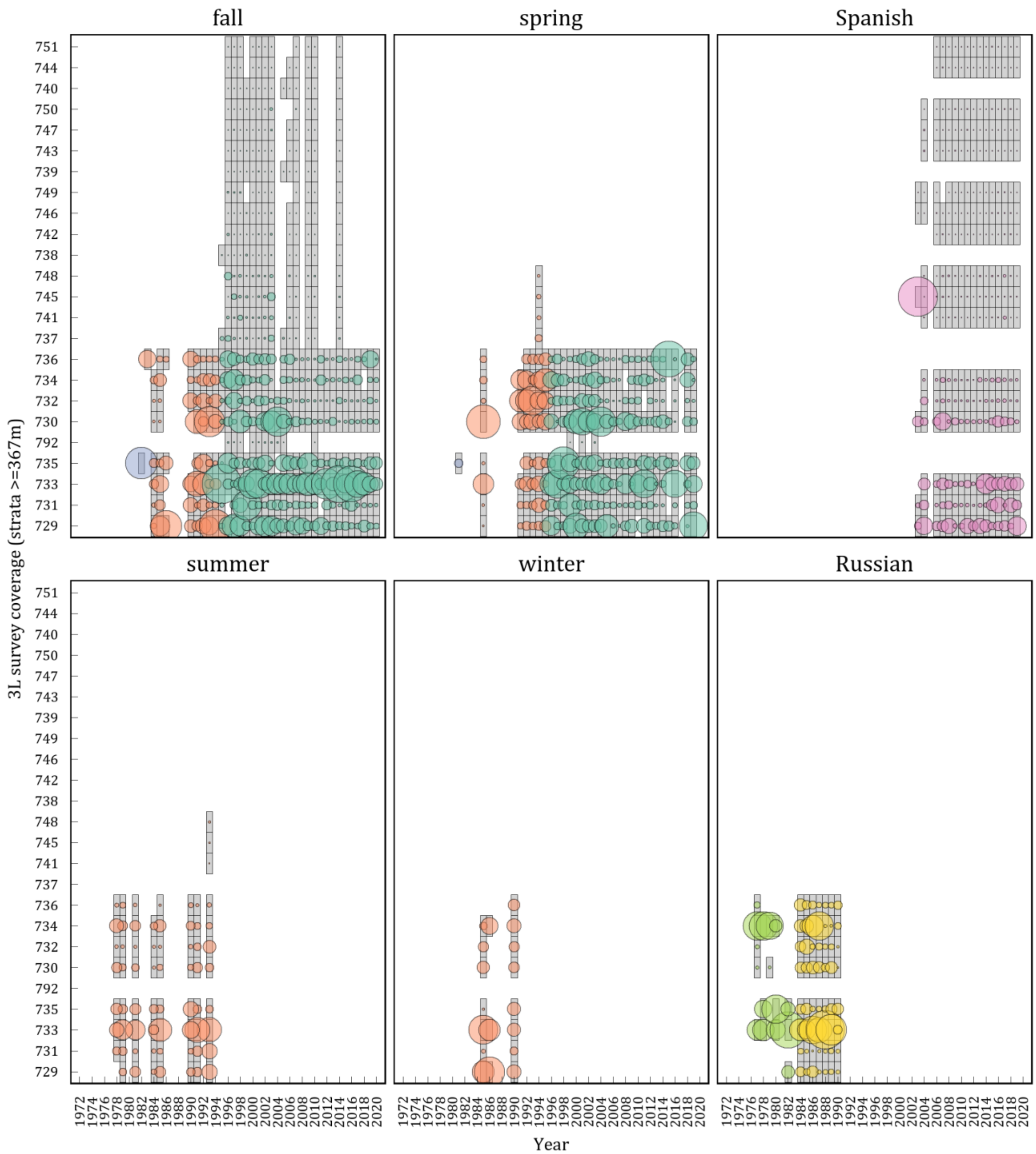

Figure 30. Comparison of bubble plots of proportion of total catch in deep strata (<367m) in 3L in each stratum by year for the available surveys. The size of the bubble is proportional to the size of the catch within the year, and the color of the bubble represents various gear types; either Yankee (purple), Engel (orange), Campelen (green), Spanish Campelen (pink), or Russian fixed (light green) and stratified (yellow) survey design. The grey shaded boxes represent a year strata combination with a successful tow.

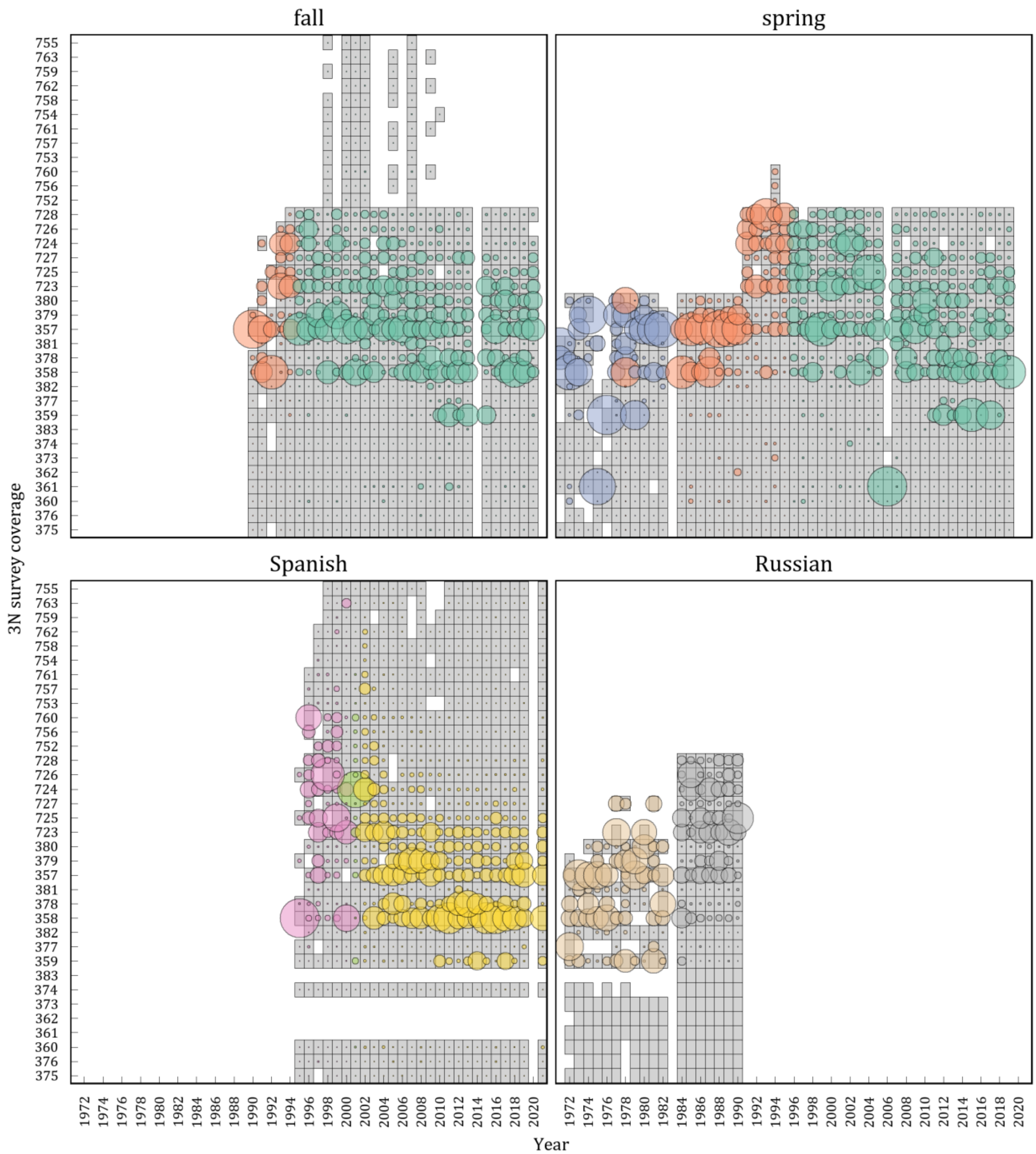

Figure 31. Comparison of bubble plots of proportion of total catch in 3N in each stratum by year for the available surveys. The size of the bubble is proportional to the size of the catch within the year, and the color of the bubble represents evarious gear types; either Yankee (purple), Engel (orange), Campelen (green), Spanish Campelen (pink), or Russian fixed (light green) and stratified (yellow) survey design. The grey shaded boxes represent a year strata combination with a successful tow.

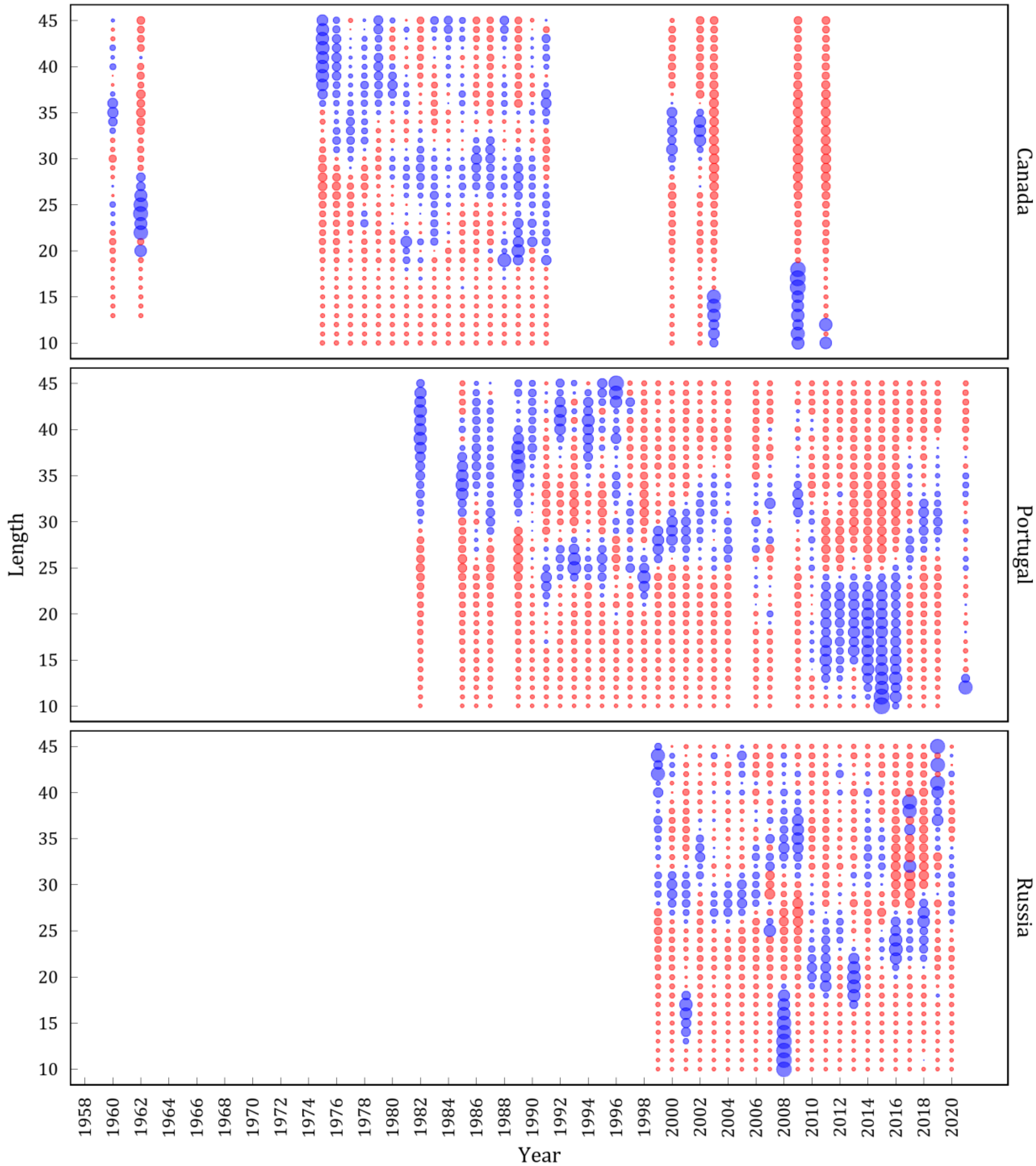

Figure 32. Standardized proportion at length (SPLY) plots from the commercial length samples for redfish in 3L for various countries. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

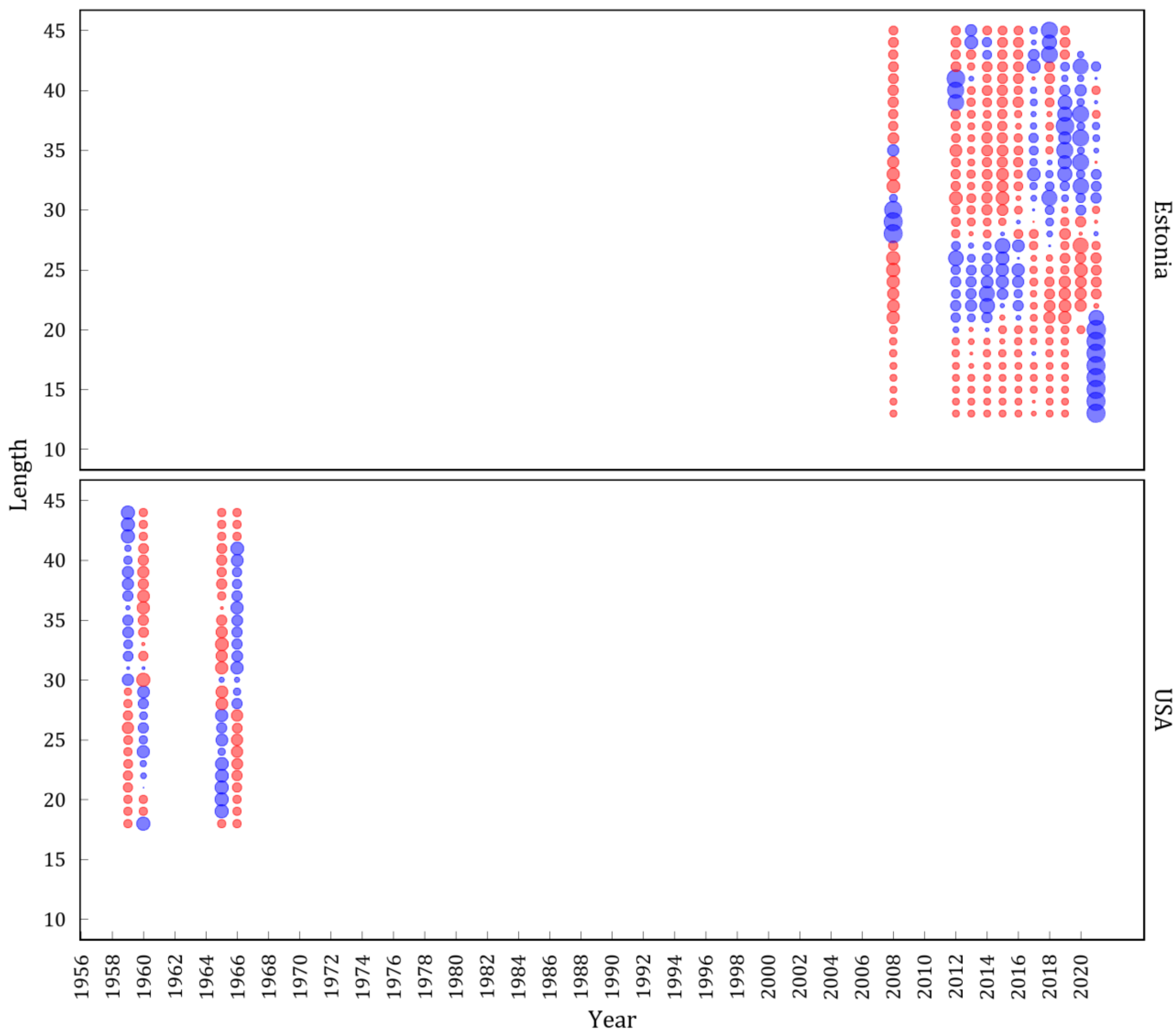

Figure 33. Standardized proportion at length (SPLY) plots from the commercial length samples for redfish in 3L for various countries. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

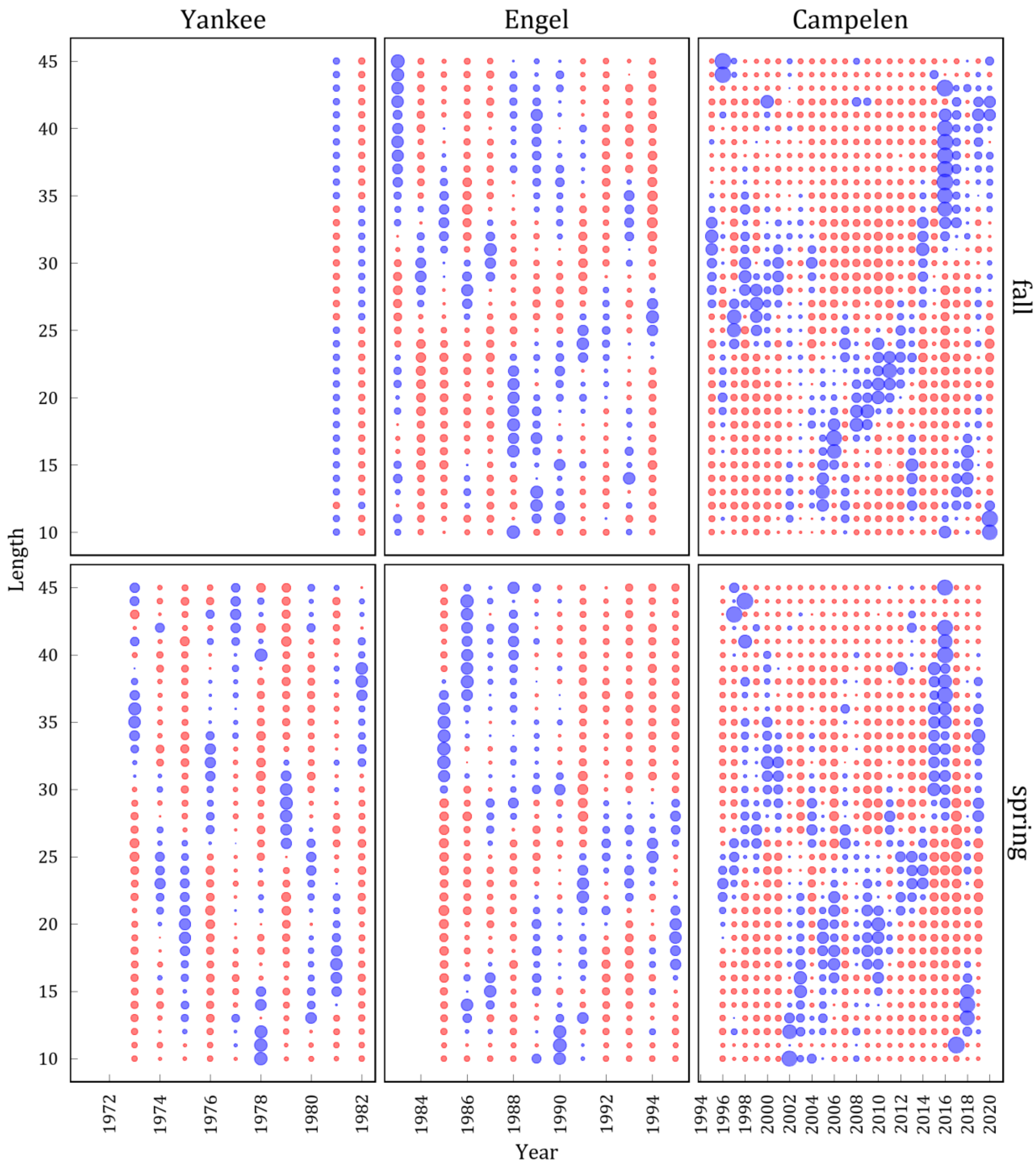

Figure 34. Standardized proportion at length (SPLY) plots from various research vessel samples for redfish in 3L. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive. Note data are unconverted and should not be compared across gear type.

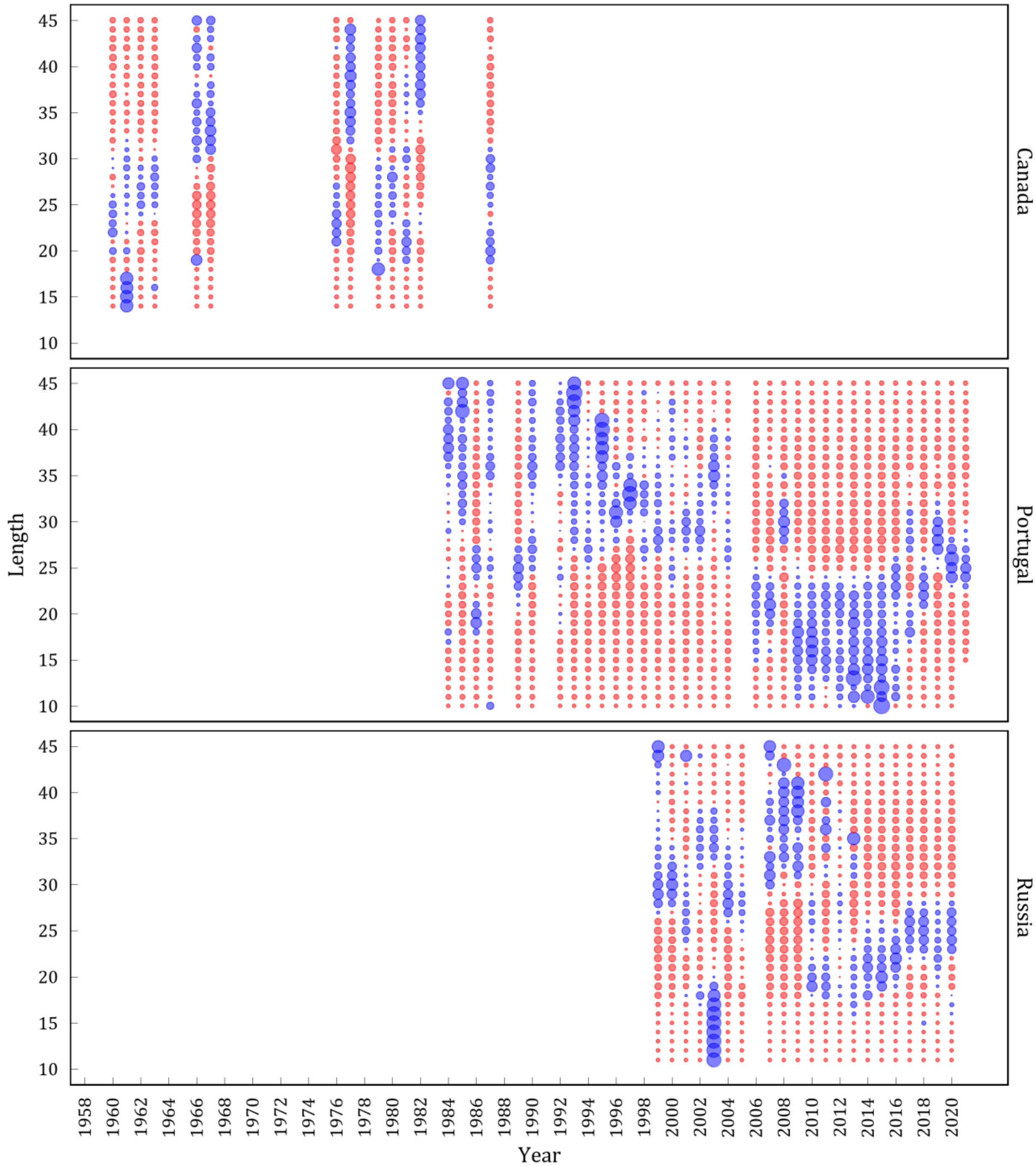

Figure 35. Standardized proportion at length (SPLY) plots from the commercial length samples for redfish in 3N for various countries. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

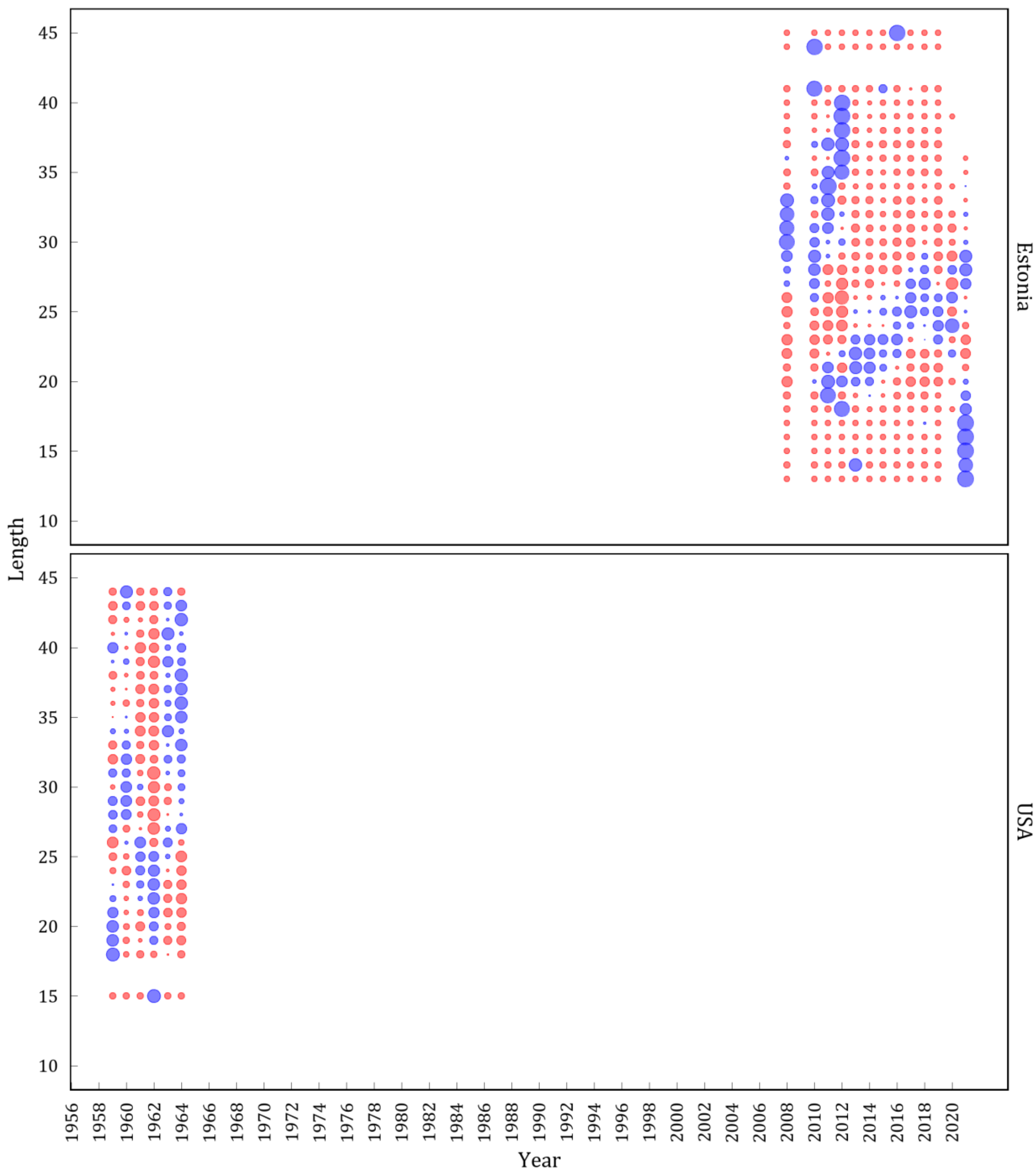

Figure 36. Standardized proportion at length (SPLY) plots from the commercial length samples for redfish in 3N for various countries. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

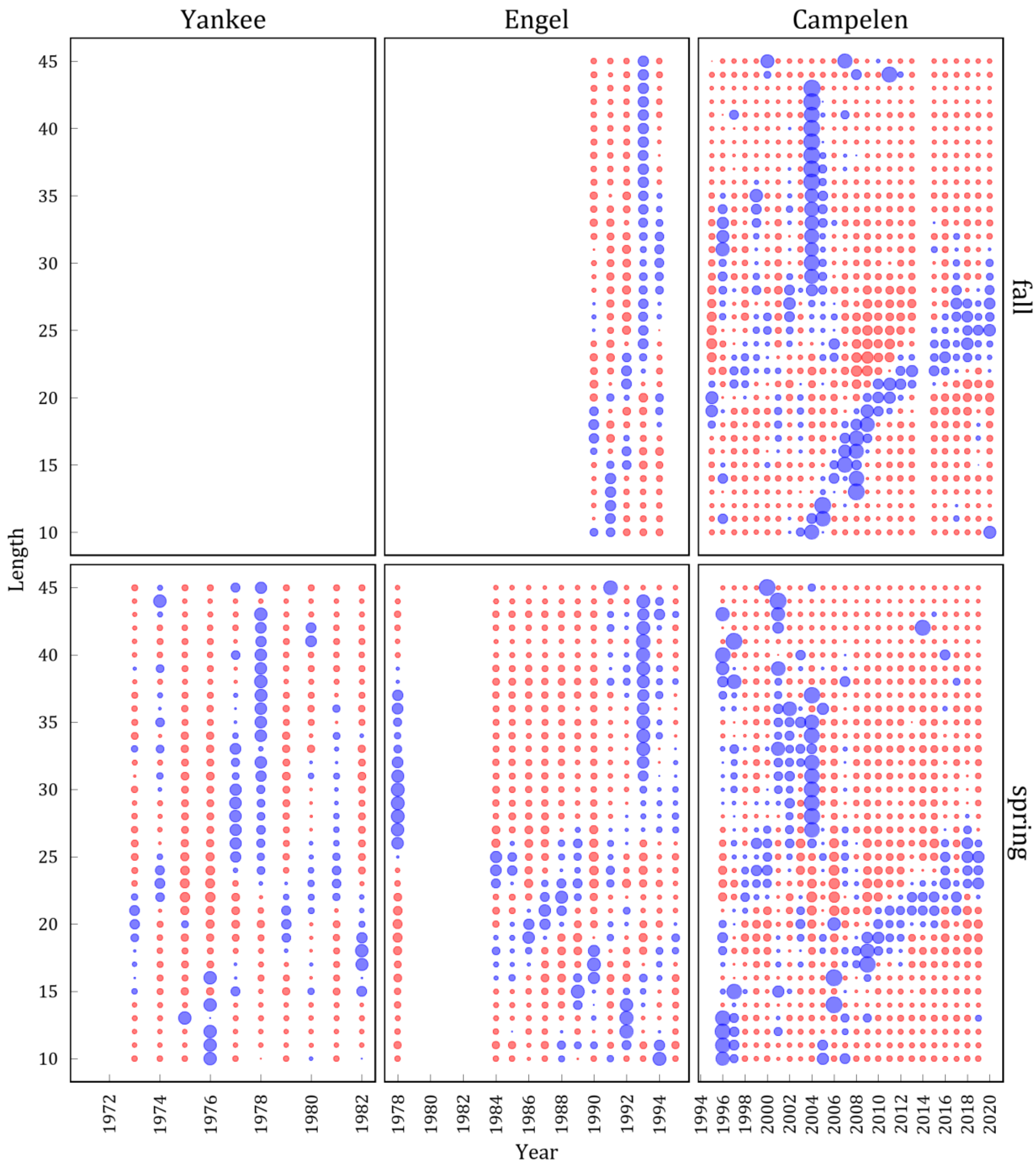

Figure 37. Standardized proportion at length (SPLY) plots from various research vessel samples for redfish in 3N. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive. Note data are unconverted and should not be compared across gear type.

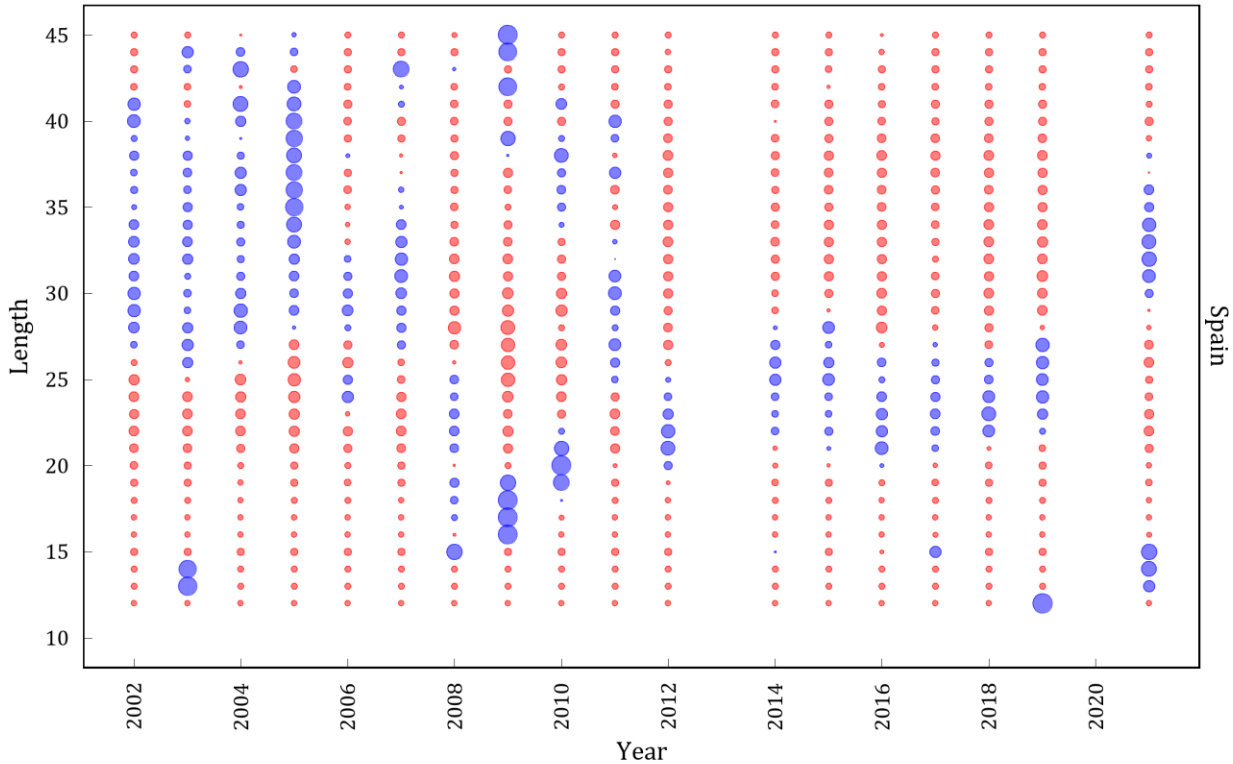

Figure 38. Standardized proportion at length (SPLY) plots from the Spanish commercial length samples for redfish in 3LN. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

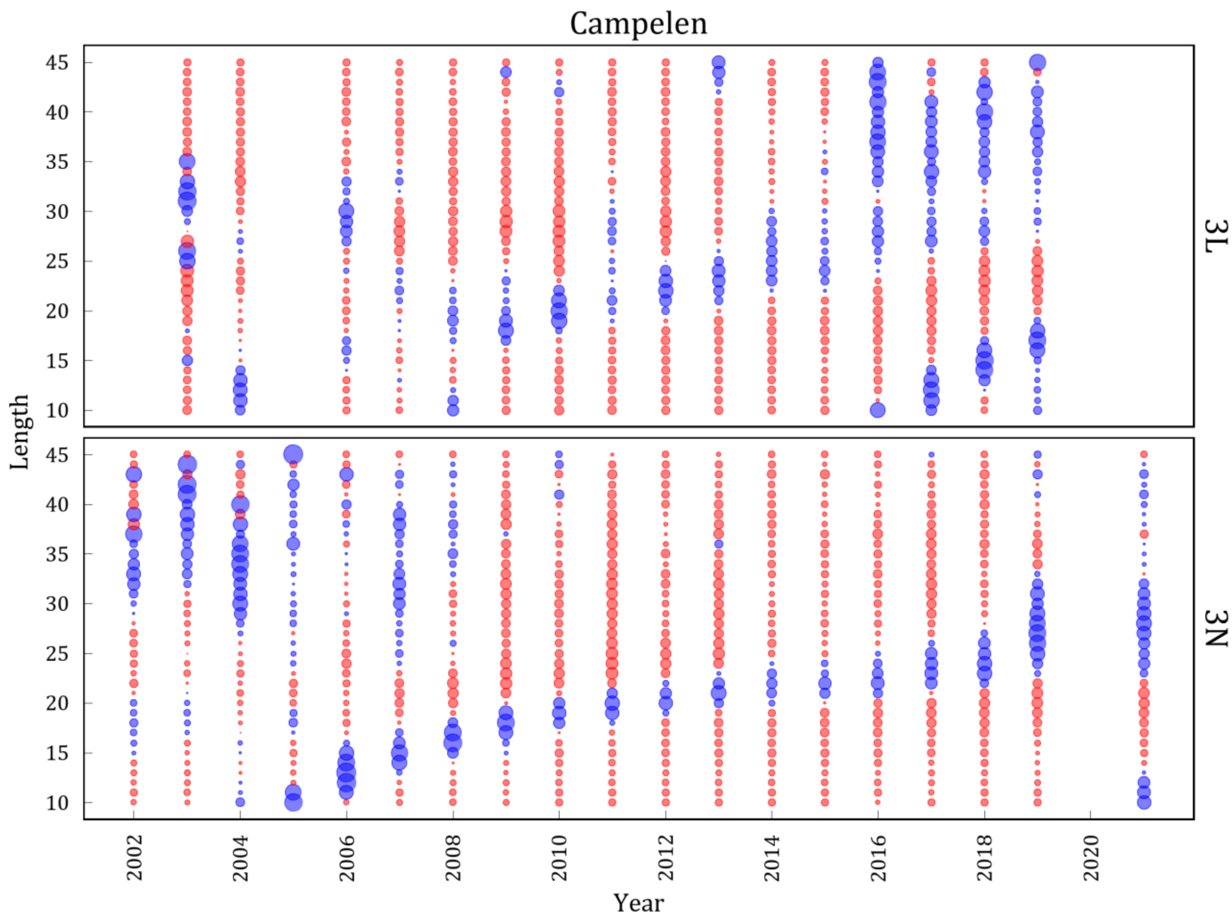

Figure 39. Standardized proportion at length (SPLY) plots from the Spanish research vessel surveys in NAFO divisions 3LN. The area of a bubble is proportional to the absolute value of the standardized proportion. Red is negative and blue is positive.

TABLES

Table 1. Overview of available fishery independent (FI) and dependent (FD) data for 3LN beaked redfish. NS is not specified.

Data	Type	Name	Years	Summary
FI	RV survey	EU-Spain Groundfish	1995-2021	Yearly stratified random survey targeting groundfish outside the 200nm limit. Fairly consistent spatial sampling after 2005. One major gear change in 3N.
FI	RV survey	Canadian Fall Groundfish	1976-2021	Yearly stratified random survey targeting groundfish. Two major gear changes. One strata sampled in 1976. Except for deep strata and inshore strata, fairly consistent spatial sampling after 1985 in 3L and 1993 in 3N.
FI	RV survey	Canadian Spring Groundfish	1971-2021	Yearly stratified random survey targeting groundfish. Two major gear changes. Fairly consistent spatial sampling after 1985 in 3L and 1991 in 3N, although some issues in recent years in 3L.
FI	RV survey	Canadian Summer	1978-1979, 1981, 1984-1985, 1990-1991, 1993	Sporatic stratified random survey. Within-stratum coverage inconsistent. Engel 164 trawl in 1978, Engel 145 all other years.
FI	RV survey	Canadian Winter	1985-1986, 1990	Sporatic stratified random survey. Within-stratum coverage inconsistent. Only three years sampled.
FI	RV survey	Russian Groundfish	1972-1982	Fixed station surveys. Spatial coverage spotty over time. No notes on whether a change in area covered occurred after the establishment of the 200nm limit.
FI	RV survey	Russian Groundfish	1984-1994	Yearly stratified random survey. Targeting 3 sets per stratum, regardless of stratum area. In 1985, 1991-1994, a smaller vessel was used. Coverage issues from 1991 onward.
FI	RV length sampling	Canadian Fall/Spring Groundfish	1971-2021	All lengths sampled unless catch is excessive. Measured to the fork length, to the nearest cm, using a 0.5cm offset on the board, independently by sex if length >15cm.
FI	RV length sampling	EU-Spain Groundfish	2003-2021	All lengths sampled unless catch is excessive. Total length measured, to the cm below, independently by sex.
FI	RV biological sampling	Canadian Fall/Spring Groundfish	1971-2021	Stratified by fish length and sex. Data collected include otolith with round weight, gutted weight, maturity with length frequency (if time permits)
FI	RV biological sampling	EU-Spain Groundfish	1995-2021	Stratified by fish length and sex (15-20 per sex by cm). Data collected include round weight, sex, gonad, gutted weight and otoliths.
FD	Catch	Commercial catch	1953-2021	Combination of catch statistics (STATLANT) and estimates (STACFIS) over time. No directed fishing from 1996-2009.
FD	Effort	Commercial effort	1960-2018	Monthly commercial catch and effort statistics recorded in hours and total days fished. Note that catch will not agree with commercial catches described above, since these do not include STACFIS revisions.
FD	CPUE	CPUE	1959-1994	Estimtates of CPUE (in tons/hrs or tons/days) derived from a multiplicative model, standardized by NAFO

Data	Type	Name	Years	Summary
				division, month, country-gear-tonnage indicator, and the poportion of bycatch associated with each observation.
FD	Commercial length sampling	Portuguese	1982-2021	Length samples from pre-discarding of undersized fish. 1996-2009 are from bycatch in the Greenland halibut fishery.
FD	Commercial length sampling	Canadian	1960-1991, 2000-2009, 2011	Source of length sampling (pre/post discarding of undersized fish) varies over time. 2000-2009 are from bycatch in the Greenland halibut fishery.
FD	Commercial length sampling	Russian	1999-2021	Not specified if length samples pre/post discarding of undersized fish. 1999-2009 are from bycatch in the Greenland halibut fishery.
FD	Commercial length sampling	Estonian	2008-2021	Not specified if length samples pre/post discarding of undersized fish. 2008-2009 are from bycatch in the Greenland halibut and skate fisheries.
FD	Commercial length sampling	Spanish	2002-2022	Length samples from pre-discarding of undersized fish. 2002-2009 are from bycatch in the Greenland halibut fishery.
FD	Commercial length sampling	USA	1959-1966	Not specified if length samples pre/post discarding of undersized fish.

Table 2. Detailed summary of survey coverage for 3LN beaked redfish. SR is stratified random, FX is fixed station.

Series	Location	Season	Years	Type of survey	Vessels	Gear	Depth	Temporal gaps	Spatial gaps	Uncertainties
EU-Spain Groundfish	3N	May	1995-2001	SR	Playa de Menduina	Pedreira	40m-1500m	-	1995-1997	Area outside of 200nm limit.
EU-Spain Groundfish	3N	May-Jun	2001-2021	SR	Vizconde de Eza	Campelen 1800	36m-1666m	2020	2005, 2007, 2009, 2010	Area outside of 200nm limit.
EU-Spain Groundfish	3L	Jul-Aug	2003-2021	SR	Vizconde de Eza	Campelen 1800	104m-1478m	2005, 2020, 2021	2003 2004	Area outside of 200nm limit.
Canadian Fall Groundfish	3L	Oct-Dec	1976 1981 1982	SR	Cameron	Yankee 41.5	93m-474m	1977-1980	all years	1976 only one strata sampled , 1982 only one deep water strata sampled
Canadian Fall Groundfish	3L	Oct-Nov	1983-1994	SR	Templeman, Needler	Engel 145	62m-715m	-	1983	Inshore strata added in mid-90'3, 1984 sampled July-Sep
Canadian Fall Groundfish	3L	Oct-Dec	1995-2021	SR	Templeman, Teleost, Needler	Campelen 1800	32m-1457m	2021	1999,2004, 2005	Inshore strata removed in 2011
Canadian Fall Groundfish	3N	Oct-Nov	1990-1994	SR	Templeman	Engel 145	40m-670m	-	1990-1992	1990 sampled in December, spotty spatial coverage until 1993
Canadian Fall Groundfish	3N	Sep-Nov	1995-2021	SR	Templeman, Teleost, Needler	Campelen 1800	37m-1447m	2014, 2021		Deep strata removed in 2011
Canadian Spring Groundfish	3L	Apr-Jun	1971-1982	SR	Cameron	Yankee 41.5	60m-450m	-	all years	One deep strata covered 1981, inconsistent spatial coverage
Canadian Spring Groundfish	3L	May-Jun	1984-1995	SR	Templeman*	Engel 145	61m-911m	-	1984, 1991	*1984 with Needler vessel, inconsistent sampling in deep strata
Canadian Spring Groundfish	3L	May-Jun	1996-2021	SR	Templeman, Teleost, Needler	Campelen 1800	34m-723m	2020 , 2021	2015, 2017, 2018	Reduction in survey coverage recent years
Canadian Spring Groundfish	3N	May-Jun	1971-1982	SR	Cameron	Yankee 41.5	40m-365m	-	1971-1978	Spotty spatial coverage in most years

Series	Location	Season	Years	Type of survey	Vessels	Gear	Depth	Temporal gaps	Spatial gaps	Uncertainties
Canadian Spring Groundfish	3N	Apr-May	1984-1995	SR	Templeman, Needler	Engel 145	39m-895m	-		Deeper strata not covered until 1991
Canadian Spring Groundfish	3N	May-Jun	1996-2021	SR	Templeman, Teleost, Needler	Campelen 1800	35m-725m	2020, 2021	2006	
Canadian Summer Survey	3L	Aug-Sep	1978 , 1979, 1981	SR	Atlantica	Engel 164/Engel 145	184m-731m	1980	1978, 1979	Within-stratum coverage inconsistent, only 3 years, Engel 164 trawl in 1978, Engel 145 all other years
Canadian Summer Survey	3L	Jul-Aug	1984, 1985, 1990, 1991, 1993	SR	Templeman, Alantica	Engel 145	184m-731m	1986-1989, 1992	1986-1989,1992	Within-stratum coverage inconsistent
Canadian Winter Survey	3L	Jan-Feb	1985, 1986, 1990	SR	Templeman	Engel 145	184-731m	1987-1989	1986	Within-stratum coverage inconsistent, only 3 years
Russian Groundfish	3LN	May-Aug	1971-1982	FX	Persey III, Suloy, Kononov	NS, same all surveys	-	-	all years	No notes on whether a change in area covered occurred after the establishment of the 200nm limit.
Russian Groundfish	3LN	Mar-aug	1983-1994	SR	Persey III, Suloy, Kononov, Genichesk, Vilnyus	NS, same all surveys	-	-	1992-1994	In 1985, 1991-1994, a smaller vessel was used. Coverage issues from 1991.Targeting 3 sets per stratum, regardless of stratum area.

Table 3. Detailed summary of commercial catch for 3LN beaked redfish. The comments mainly refer to where the data were extracted; STATLANT21A is STATLANT21A catch data, STACFIS are SC catch estimates, CDAG is the CDAG method, and CESAG is the CESAG method.

Years	Type	Comments
1952-1959	Directed	Extracted from Statistical Bulletins
1960-1961	Directed	STATLANT21A
1962-1964	Directed	STACFIS, includes catch that could not be identified by division
1965-1967	Directed	STATLANT21A
1968-1971	Directed	STACFIS, includes catch that could not be identified by division
1972-1975	Directed	STATLANT21A
1976	Directed	STATLANT21A and STACFIS differ by 1, might be a typo
1977-1986	Directed	Implementation of EEZ 200nm zone. STATLANT21A
1987-1992	Directed	STACFIS, includes estimates of unreported catch
1993-1994	Directed	STACFIS, includes estimates of unreported catch, average of the range of the different catch estimates
1995-1998	Directed	STATLANT21A
1999	Bycatch	STACFIS, includes estimates of unreported catch
2000	Bycatch	STACFIS, includes estimates of unreported catch, average of the range of the different catch estimates
2001-2002	Bycatch	STACFIS, includes estimates of unreported catch
2003-2009	Bycatch	STACFIS, details unspecified
2010-2013	Directed	STACFIS, details unspecified
2014-2015	Directed	STATLANT21A
2017	Directed	CDAG
2018-2021	Directed	CESAG

Table 4. Summary of Spanish 3N survey timing and details

Year	Vessel	Valid Tows	Depth (m)	Dates
1995	Playa de Menduiña	77	42-684	May 18-May 29
1996	Playa de Menduiña	112	41-1135	May 07-May 24
1997	Playa de Menduiña	128	42-1263	April 26-May 18
1998	Playa de Menduiña	124	42-1390	May 06-May 26
1999	Playa de Menduiña	114	41-1381	May 07-May 26
2000	Playa de Menduiña	118	42-1401	Mat 07-May 28
2001*	Vizconde de Eza	83	36-1156	May 03-May 24
2001*	Playa de Menduiña	121	40-1500	May 05-May 23
2002	Vizconde de Eza	125	38-1540	April 29-May 19
2003	Vizconde de Eza	118	38-1666	May 11-June 02
2004	Vizconde de Eza	120	43-1539	June 06-June 24
2005	Vizconde de Eza	119	47-1485	June 10-June 29
2006	Vizconde de Eza	120	45-1480	June 07-June 27
2007	Vizconde de Eza	110	45-1374	May 29-June 19
2008	Vizconde de Eza	122	45-1374	May 27-June 16
2009	Vizconde de Eza	109	45-1374	May 31-June 18
2010	Vizconde de Eza	95	44-1450	May 30-June 18
2011	Vizconde de Eza	122	44-1450	June 05-June 24
2012	Vizconde de Eza	122	44-1450	June 03-June 21
2013	Vizconde de Eza	122	44-1450	June 01-June 21
2014	Vizconde de Eza	122	44-1450	June 02-June 21
2015	Vizconde de Eza	122	44-1450	May 31-June 19
2016	Vizconde de Eza	115	44-1450	May 30-June 18
2017	Vizconde de Eza	113	44-1450	May 23-June 11
2018	Vizconde de Eza	114	44-1450	June 02-June 21
2019	Vizconde de Eza	115	44-1450	June 08-June 24

Table 5. Summary of Spanish 3L survey timing and details

Year	Vessel	Valid Tows	Depth (m)	Dates
2003	Vizconde de Eza	39	118-1100	Jun 07-Jun 06, Jun 29
2004	Vizconde de Eza	50	141-1452	Aug 07-Aug 15
2006	Vizconde de Eza	100	116-1449	July 31-Aug 18
2007	Vizconde de Eza	94	119-1449	July 23-Aug 11
2008	Vizconde de Eza	100	105-1455	July 24-Aug 11
2009	Vizconde de Eza	98	111-1458	July 25-Aug 12
2010	Vizconde de Eza	97	119-1462	July 25 -Aug 14
2011	Vizconde de Eza	89	115-1419	Aug 10-Aug 24
2012	Vizconde de Eza	98	112-1478	July 30-Aug 18
2013	Vizconde de Eza	100	117-1420	July 30-Aug 19
2014	Vizconde de Eza	102	104-1411	July 30-Aug 19
2015	Vizconde de Eza	97	112-1458	July 28-Aug 17
2016	Vizconde de Eza	98	126-1447	July 28-Aug 17
2017	Vizconde de Eza	99	106-1433	July 21-Aug 08
2018	Vizconde de Eza	100	116-1442	July 31-Aug 19
2019	Vizconde de Eza	96	120-1359	Aug 03-Aug 23

Table 6. Summary of Canadian Fall 3L survey timing and details

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1976	Cameron	32	32	93-141	Oct 7-Oct 13
1981	Cameron	99	99	64-349	Oct 3-Nov 18
1982	Cameron	120	120	64-474	Oct 30-Dec 6
1983	Templeman	125	125	67-678	Oct 13-Nov 14
1984	Templeman	208	208	62-677	Jul 26-Sep 3
1985	Templeman	232	232	63-710	Oct 9-Nov 18
1986	Needler	141	141	65-715	Nov 13-Nov 30
1987	Templeman	165	165	62-346	Oct 15-Nov 1
1988	Templeman	189	189	62-338	Oct 26-Nov 13
1989	Templeman	174	174	64-354	Oct 12-Oct 29
1990	Templeman	159	159	65-695	Oct 18-Nov 18
1991	Templeman	219	219	63-680	Nov 8-Dec 2
1992	Templeman	215	215	63-693	Nov 5-Nov 29
1993	Templeman	153	153	64-670	Nov 12-Dec 4
1994	Templeman	200	200	65-715	Nov 8-Dec 7
1995	Templeman	161	165	63-640	Oct 3-Nov 23
1995	Teleost	4	165	733-992	Jan 25-Jan 25
1996	Templeman	179	210	51-671	Oct 9-Nov 11
1996	Teleost	31	210	805-1433	Nov 26-Dec 5
1997	Templeman	134	205	35-714	Oct 23-Dec 15
1997	Teleost	71	205	161-1436	Nov 29-Dec 20
1998	Templeman	172	204	34-675	Nov 2-Dec 11
1998	Teleost	32	204	691-1437	Nov 28-Dec 15

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1999	Temple man	167	167	63-1407	Nov 7-Dec 12
2000	Temple man	101	174	42-447	Nov 15-Dec 14
2000	Teleost	73	174	158-1430	Oct 24-Dec 18
2001	Temple man	169	205	38-702	Oct 29-Dec 6
2001	Needler	2	205	187-203	Nov 24-Nov 24
2001	Teleost	34	205	146-1457	Oct 4-Nov 20
2002	Temple man	176	206	35-670	Oct 26-Dec 1
2002	Teleost	30	206	763-1431	Oct 23-Dec 2
2003	Temple man	175	205	32-702	Nov 7-Dec 17
2003	Teleost	30	205	753-1446	Jan 10-Jan 20
2004	Temple man	142	146	44-653	Nov 24-Dec 19
2004	Teleost	4	146	151-522	Dec 7-Dec 7
2005	Temple man	120	183	50-706	Oct 29-Dec 8
2005	Needler	57	183	121-667	Oct 29-Nov 16
2005	Teleost	6	183	803-1351	Jan 29-Jan 29
2006	Temple man	150	182	61-641	Oct 21-Nov 19
2006	Teleost	32	182	111-1401	Nov 19-Dec 18
2007	Temple man	120	168	61-694	Nov 15-Dec 20
2007	Teleost	48	168	81-1424	Oct 16-Dec 20
2008	Temple man	83	126	62-664	Nov 1-Nov 13
2008	Needler	43	126	71-332	Nov 1-Nov 11
2009	Needler	129	159	62-682	Nov 6-Dec 14
2009	Teleost	30	159	784-1385	Nov 1-Dec 20
2010	Needler	141	195	58-657	Oct 29-Nov 25

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
2010	Teleost	54	195	100-1448	Dec 6-Dec 20
2011	Needler	104	116	61-663	Nov 2-Dec 4
2011	Teleost	12	116	201-529	Dec 10-Dec 18
2012	Needler	142	142	65-725	Oct 27-Dec 3
2013	Needler	142	144	57-657	Oct 18-Nov 15
2013	Teleost	2	144	284-304	Nov 24-Nov 25
2014	Teleost	170	170	62-1388	Jan 7-Dec 20
2015	Needler	123	142	61-703	Oct 30-Dec 1
2015	Teleost	19	142	165-335	Dec 9-Dec 14
2016	Needler	138	138	60-673	Oct 28-Dec 9
2017	Needler	141	141	62-712	Oct 20-Nov 14
2018	Needler	140	140	64-668	Oct 5-Nov 2
2019	Needler	129	129	64-620	Oct 16-Nov 26
2020	Needler	105	105	63-670	Sep 26-Oct 18

Table 7. Summary of Canadian Fall 3N survey timing and details

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1990	Templeman	80	80	47-310	Dec 2-Dec 9
1991	Templeman	63	63	42-638	Oct 27-Nov 10
1992	Templeman	34	34	40-437	Oct 26-Nov 5
1993	Templeman	69	69	44-670	Nov 1-Nov 12
1994	Templeman	73	73	42-641	Oct 29-Nov 13
1995	Templeman	90	90	40-650	Sep 27-Oct 26
1996	Needler	54	66	37-309	Nov 25-Dec 5
1996	Teleost	12	66	390-695	Dec 11-Dec 13
1997	Templeman	74	74	41-769	Oct 8-Nov 5
1998	Templeman	78	90	42-1079	Oct 16-Dec 15
1998	Teleost	12	90	834-1447	Dec 15-Dec 16
1999	Templeman	67	67	39-664	Nov 3-Nov 22
2000	Templeman	70	94	46-642	Oct 26-Dec 5
2000	Teleost	24	94	747-1419	Oct 17-Oct 24
2001	Templeman	70	94	45-660	Oct 14-Oct 29
2001	Teleost	24	94	739-1410	Sep 28-Oct 3
2002	Templeman	70	94	44-675	Oct 13-Oct 26
2002	Teleost	24	94	811-1429	Oct 15-Oct 23
2003	Templeman	69	69	43-727	Oct 21-Nov 7
2004	Templeman	68	68	40-659	Nov 11-Nov 23
2005	Templeman	69	85	42-633	Oct 10-Nov 19
2005	Teleost	16	85	776-1445	Oct 11-Oct 22
2006	Templeman	70	70	46-650	Oct 12-Oct 21
2007	Templeman	69	94	48-652	Oct 31-Nov 14
2007	Teleost	25	94	775-1419	Oct 9-Oct 15
2008	Templeman	64	64	38-643	Oct 24-Nov 1
2009	Needler	64	72	42-708	Oct 25-Nov 12
2009	Teleost	8	72	798-1387	Oct 24-Oct 26
2010	Needler	66	68	40-614	Oct 12-Oct 28
2010	Teleost	2	68	1214-1219	Dec 12-Dec 12
2011	Needler	70	70	43-673	Oct 13-Nov 20
2012	Needler	70	70	39-641	Oct 11-Nov 5
2013	Needler	70	70	42-681	Sep 29-Oct 18
2015	Needler	69	69	39-721	Oct 7-Oct 30
2016	Needler	70	70	36-668	Sep 29-Nov 7
2017	Needler	70	70	42-652	Sep 22-Oct 22
2018	Needler	70	70	40-634	Sep 24-Oct 5
2019	Needler	70	70	42-684	Oct 1-Oct 16
2020	Needler	51	51	46-609	Sep 11-Sep 26

Table 8. Summary of Canadian spring 3L survey timing and details

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1971	Cameron	58	58	64-558	Jun 3-Jun 18
1972	Cameron	38	38	73-219	May 12-May 18
1973	Cameron	32	32	68-362	Apr 7-May 6
1974	Cameron	70	70	68-455	May 7-May 21
1975	Cameron	55	55	60-349	May 9-May 25
1976	Cameron	64	64	64-364	Apr 23-May 3
1977	Cameron	102	102	60-360	May 4-May 18
1978	Cameron	94	94	62-347	May 6-May 17
1979	Cameron	141	141	62-354	May 17-Jun 4
1980	Cameron	115	115	66-357	May 10-Jun 2
1981	Cameron	81	81	66-450	Apr 6-May 7
1982	Cameron	103	103	66-353	May 6-May 17
1984	Needler	37	37	67-185	May 17-May 21
1985	Templeman	221	221	63-705	Apr 17-May 26
1986	Templeman	211	211	64-339	May 7-May 25
1987	Templeman	181	181	61-356	May 14-Jun 1
1988	Templeman	154	154	65-340	May 5-May 24
1989	Templeman	205	205	64-350	May 6-May 28
1990	Templeman	156	156	63-346	May 18-Jun 4
1991	Templeman	143	143	66-685	May 11-May 29
1992	Templeman	178	178	64-710	May 13-Jun 7
1993	Templeman	181	181	64-680	May 18-Jun 10
1994	Templeman	160	160	64-911	May 22-Jun 10
1995	Templeman	151	151	65-646	May 27-Jun 14
1996	Templeman	188	188	66-664	May 30-Jun 27

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1997	Templeman	158	158	60-681	Jun 4-Jun 26
1998	Templeman	163	163	53-721	Jun 6-Jun 30
1999	Templeman	177	177	41-692	Jun 6-Jun 29
2000	Templeman	134	134	61-681	Jun 3-Jun 29
2001	Templeman	152	152	34-695	May 26-Jun 24
2002	Templeman	146	146	42-710	May 29-Jun 22
2003	Templeman	154	154	62-698	Jun 4-Jun 26
2004	Templeman	151	151	47-710	Jun 4-Jun 26
2005	Templeman	133	133	64-672	Jun 11-Jun 29
2006	Templeman	141	141	60-701	Jun 10-Jun 29
2007	Templeman	97	137	61-702	Jun 29-Jul 12
2007	Teleost	40	137	66-171	Jun 5-Jun 9
2008	Templeman	77	120	60-684	Jun 18-Jun 30
2008	Teleost	43	120	97-641	Jun 4-Jun 9
2009	Needler	61	142	63-676	Jun 3-Jun 23
2009	Teleost	81	142	61-694	May 21-May 31
2010	Needler	128	128	59-715	Jun 8-Jun 25
2011	Needler	143	143	57-723	May 29-Jun 22
2012	Needler	132	132	60-723	May 31-Jun 19
2013	Needler	134	134	62-632	May 24-Jun 20
2014	Needler	72	135	65-702	Jun 7-Jun 19
2014	Teleost	63	135	64-321	Jun 9-Jun 22
2015	Needler	56	56	65-685	Jun 3-Jun 17
2016	Teleost	140	140	61-694	May 9-Jun 15
2017	Needler	32	32	60-158	May 21-Jun 17
2018	Needler	64	110	61-340	Jun 10-Jun 21
2018	Teleost	46	110	96-665	Jun 3-Jun 18
2019	Needler	133	133	62-694	May 28-Jun 16

Table 9. Summary of Canadian spring 3N survey timing and details

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
1971	Cameron	23	23	53-263	Jun 9-Jun 13
1972	Cameron	45	45	49-318	May 4-May 12
1973	Cameron	48	48	48-344	Apr 9-May 4
1974	Cameron	37	37	46-353	May 8-May 13
1975	Cameron	22	22	49-249	May 15-May 24
1976	Cameron	30	30	49-143	Apr 8-Apr 13
1977	Cameron	48	48	44-329	May 26-Jun 2
1978	Cameron	41	41	40-355	May 14-Jun 7
1979	Cameron	82	82	42-333	Apr 2-May 5
1980	Cameron	81	81	42-360	May 1-May 11
1981	Cameron	54	54	45-365	May 4-May 21
1982	Cameron	60	60	42-314	Apr 17-Apr 26
1978	Cameron	44	44	33-293	Jun 17-Jun 24
1984	Needler	61	61	39-360	Apr 30-May 6
1985	Templeman	36	85	52-310	May 2-May 5
1985	Needler	49	85	46-320	Apr 18-Apr 26
1986	Templeman	101	101	41-354	Apr 23-May 3
1987	Templeman	90	90	46-344	May 2-May 14
1988	Templeman	77	77	41-330	Apr 28-May 5
1989	Templeman	94	94	45-352	Apr 29-May 6
1990	Templeman	85	85	42-320	May 7-Jun 1
1991	Templeman	93	93	40-645	May 3-May 11
1992	Templeman	93	93	44-625	May 2-May 13
1993	Templeman	85	85	40-695	May 5-May 18
1994	Templeman	76	76	44-895	May 14-May 22
1995	Templeman	89	89	42-668	May 13-May 27
1996	Templeman	82	82	42-665	May 22-May 30
1997	Templeman	70	70	35-689	May 18-Jun 4
1998	Templeman	88	88	38-682	May 24-Jun 4
1999	Templeman	82	82	40-659	May 19-Jun 7

Year	Vessel	Valid Tows	Total Tows	Depth (m)	Dates
2000	Templeman	81	81	45-664	May 23-Jun 9
2001	Templeman	79	79	40-650	May 14-Jun 6
2002	Templeman	79	79	40-641	May 13-May 29
2003	Templeman	79	79	39-681	May 18-Jun 4
2004	Templeman	79	79	44-675	May 24-Jun 8
2005	Templeman	78	78	45-691	May 22-Jun 19
2006	Templeman	4	22	68-77	Jun 29-Jun 29
2006	Needler	18	22	46-68	Jun 27-Jun 29
2007	Templeman	79	79	44-636	Jun 16-Jun 29
2008	Templeman	70	70	40-623	Jun 1-Jun 22
2009	Needler	78	78	44-668	May 26-Jun 11
2010	Needler	78	78	39-714	May 24-Jun 6
2011	Needler	79	79	40-673	May 21-May 30
2012	Needler	77	77	38-666	May 21-Jun 3
2013	Needler	79	79	40-684	May 11-May 24
2014	Teleost	60	60	47-662	Jun 5-Jun 17
2015	Needler	72	72	39-674	May 21-Jun 3
2016	Teleost	78	78	44-624	May 5-May 31
2017	Needler	68	68	44-658	May 26-Jun 14
2018	Needler	43	79	41-80	Jun 2-Jun 10
2018	Teleost	36	79	42-725	Jun 8-Jun 12
2019	Needler	71	71	39-685	May 16-Jun 8

Table 10. Summary of Canadian Winter 3L survey timing and details

Year	Vessel	Valid Tows	Depth (m)	Dates
1985	Templeman	60	184-731	Jan 10 - Feb 11
1986	Templeman	46	184-731	Jan 22 - Feb 27
1990	Templeman	55	184-731	Jan 17 - Jan 25

Table 11. Summary of Canadian Summer 3L survey timing and details

Year	Vessel	Valid Tows	Depth (m)	Dates
1978	Atlantica	41	184-731	Aug 16 - Aug 29
1979	Atlantica	55	184-731	Sep 4 - Sep 10
1981	Atlantica	56	184-731	Sep 18 - Sep 26
1984	Atlantica	80	184-731	Jul 26 - Sep 3
1985	Templeman	60	184-731	Jul 7 - Aug 25
1990	Templeman	125	184-731	Aug 7 -Aug 19
1991	Templeman	66	184-731	Aug 4 - Aug 11
1993	Atlantica	68	184-731	Aug 5 - Aug 15

Table 12. Summary of Russian 3LN survey timing and details. *Indicates that only division 3L was sampled.

Year	Vessel	Valid Tows	Depth (m)	Dates	SD
1971	Persey III	240		May-Aug	Fixed
1972	Persey III	241		Apr-Jul	Fixed
1973	Persey III	291		Jun-Aug	Fixed
1974	Persey III	266		Jun-Aug	Fixed
1975	Persey III	295		June-Sep	Fixed
1976	Persey III	294		Mar-Jun	Fixed
1977	Persey III	227		Apr-Jul	Fixed
1978	Persey III	262		May-Jul	Fixed
1979	Suloy	309		Mar-Jun	Fixed
1980	Kononov	334		Apr-Jul	Fixed
1981	Kononov	232		Jun-Jul	Fixed
1982	Suloy	324		Apr-Jul	Fixed
1983	Suloy	464		May-Jul	Strat
1984	Suloy	514		Mar-Jul	Strat
1985	Genichesk	447		Mar-Jul	Strat
1986	Nickolay Kononov	540		Apr-Jul	Strat
1987	Persey III	530		Mar-Jul	Strat
1988	Persey III	524		Mar-Jul	Strat
1989	Persey III	589		Mar-Aug	Strat
1990	Persey III	512		Mar-Aug	Strat
1991	Vilnyus	368		Mar-Jul	Strat
1991-1992*	Shaitanov	285		Aug-Jan	Strat
1992*	Shaitanov	147		Oct-Dec	Strat
1993	Vilnyus	300		Apr-Jul	Strat
1994*	Vilnyus	85		Jun-Jul	Strat

Table 13. Length-weight relationship parameter estimates for redfish in Divs. 3L. N is the number of individuals in the sample, r2 is R squared, and - indicates that a stratum was not sampled in that year.

Div	Year	alpha ind	beta ind	R2 ind	N ind	alpha male	beta male	R2 male	N male	alpha female	beta female	R2 female	N female	alpha total	beta total	R2 total
3L	2003	3	0	0	1	0.0108	3.0497	0.9793	95	0.0063	3.2213	0.9925	90	0.0038	3.3731	0.9901
3L	2004	0.0217	2.6246	0.5272	22	0.0128	3.0063	0.9863	54	0.0118	3.0346	0.9815	62	0.0059	3.2348	0.983
3L	2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3L	2006	0.0083	3.2033	0.9989	5	0.01	3.0871	0.9843	444	0.0091	3.1221	0.9811	471	0.0096	3.1033	0.9835
3L	2007	0.0023	3.6727	0.7121	57	0.0141	2.9836	0.9858	432	0.0133	3.0115	0.9868	392	0.008	3.1588	0.9842
3L	2008	0.0306	2.4092	0.6901	21	0.0269	2.7751	0.9343	338	0.0249	2.8052	0.9413	340	0.01	3.0719	0.969
3L	2009	0.0029	3.5361	0.967	75	0.0135	2.9882	0.9738	354	0.0174	2.9204	0.9763	389	0.0083	3.1392	0.9854
3L	2010	0.0095	3.0801	0.939	39	0.0153	2.9565	0.9754	372	0.0161	2.9484	0.9706	397	0.011	3.0593	0.9859
3L	2011	0.0305	2.5758	0.7716	130	0.0129	3.0158	0.9836	529	0.0109	3.0768	0.9855	559	0.0106	3.0803	0.9882
3L	2012	0.006	3.2597	0.8506	11	0.0135	2.9979	0.9856	476	0.0157	2.9616	0.9806	491	0.0126	3.0228	0.9847
3L	2013	0.01	3.022	0.8879	111	0.013	3.0249	0.9803	497	0.0133	3.0237	0.9822	522	0.008	3.1741	0.99
3L	2014	0.0052	3.3365	0.959	44	0.0162	2.9557	0.981	424	0.0117	3.0629	0.9833	457	0.0092	3.1256	0.9892
3L	2015	0.0234	2.5578	0.5715	34	0.0122	3.0436	0.9893	500	0.0121	3.0519	0.9898	554	0.0088	3.1436	0.9909
3L	2016	0.0083	3.1342	0.8883	122	0.0179	2.9154	0.9771	377	0.0136	3.0075	0.9808	409	0.0088	3.1297	0.9925
3L	2017	0.0068	3.2124	0.9499	200	0.0109	3.0552	0.9858	441	0.0094	3.0946	0.9858	380	0.0083	3.1317	0.9924
3L	2018	0.0045	3.3915	0.9352	79	0.0127	3.0136	0.9893	369	0.0122	3.0349	0.9897	388	0.0094	3.1089	0.9912
3L	2019	0.0076	3.1828	0.9366	120	0.0112	3.0574	0.9848	326	0.0106	3.0851	0.9853	354	0.0085	3.1462	0.9924
3L	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3L	2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 14. Length-weight relationship parameter estimates for redfish in Divs. 3N. N is the number of individuals in the sample, r2 is R squared, and - indicates that a stratum was not sampled in that year.

Div	Year	alpha ind	beta ind	R2 ind	N ind	alpha male	beta male	R2 male	N male	alpha female	beta female	R2 female	N female	alpha total	beta total	R2 total
3N	1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3N	1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3N	1997	0	0	0	0	0.0101	3.0427	0.9495	19	0.0053	3.2533	0.8446	21	0.0095	3.0689	0.9044
3N	1998	0	0	0	0	0.0508	2.5922	0.997	3	9e-04	3.7968	1	2	0.0164	2.9201	0.9711
3N	1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3N	2000	0	0	0	0	0.0062	3.2312	0.9803	26	0.0072	3.1824	0.9892	24	0.0068	3.1999	0.9867
3N	2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3N	2002	2	0	0	3	0.0144	2.947	0.9787	105	0.0114	3.0284	0.9688	81	0.0071	3.1693	0.9715
3N	2003	0.0096	3.1073	0.9019	26	0.0137	2.9655	0.9784	333	0.0101	3.0623	0.9829	299	0.0114	3.0237	0.9868
3N	2004	0.0061	3.1657	0.9985	5	0.0084	3.1206	0.978	152	0.0125	3.0166	0.9594	190	0.008	3.142	0.9751
3N	2005	0.0389	2.292	0.7095	18	0.0093	3.0931	0.9824	218	0.0072	3.1796	0.9847	235	0.0061	3.2233	0.9832
3N	2006	0.0132	2.9671	0.9231	58	0.0217	2.8391	0.9693	272	0.0241	2.8152	0.9554	224	0.0149	2.9531	0.9799
3N	2007	0	0	0	0	0.0177	2.9082	0.9822	473	0.0172	2.9282	0.9763	495	0.0173	2.9213	0.9789
3N	2008	0.0024	3.5696	0.8562	12	0.013	2.989	0.9812	275	0.0098	3.0904	0.9754	284	0.0068	3.1904	0.9834
3N	2009	0	5.3484	1	2	0.0125	2.9931	0.9901	215	0.0148	2.9472	0.9853	194	0.0118	3.0121	0.9856
3N	2010	0.2158	1.3228	0.4281	5	0.0123	3.0195	0.9919	244	0.0133	3.0099	0.9864	248	0.0109	3.063	0.9904
3N	2011	6e-04	4.1467	0.9315	122	0.0131	3.0037	0.9892	396	0.0112	3.0554	0.9799	434	0.0053	3.2793	0.9798
3N	2012	0	0	0	0	0.0143	2.9794	0.9649	252	0.0144	2.9825	0.9707	324	0.014	2.9883	0.9698
3N	2013	0.0157	2.7811	0.4811	47	0.0164	2.9156	0.9758	370	0.0144	2.9606	0.9755	361	0.0092	3.0857	0.9884
3N	2014	0.0312	2.5202	0.9291	10	0.0184	2.8996	0.9903	245	0.017	2.9281	0.9815	250	0.015	2.963	0.9903
3N	2015	0.028	2.5095	0.5782	76	0.0129	3.0074	0.9873	417	0.012	3.03	0.9858	352	0.0085	3.1294	0.9934
3N	2016	0.0019	3.6765	0.9112	20	0.0141	2.9649	0.9813	267	0.014	2.9788	0.977	282	0.0053	3.2617	0.9871
3N	2017	0.0076	3.1487	0.9212	81	0.0123	2.998	0.989	194	0.0106	3.0536	0.9864	122	0.0083	3.1175	0.9932
3N	2018	0.0151	2.8385	0.9031	33	0.0081	3.133	0.9892	429	0.0094	3.0881	0.9899	350	0.0087	3.111	0.9907
3N	2019	0.0033	3.4489	0.789	21	0.0159	2.9404	0.9787	378	0.0169	2.9267	0.9729	353	0.0076	3.1588	0.9826
3N	2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3N	2021	0.0177	2.7795	0.8565	46	0.0118	3.0341	0.9664	538	0.0142	2.9863	0.9599	438	0.0095	3.1017	0.9829

Table 15. Abundance at length (in 0000's) from 3L Spanish survey with Campelen trawl.

length	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5	7.2	2.3	-	0.6	2.4	9.6	0.6	2.5	11.0	1.2	4.9	21.1	9.8	0.6	10.3	8.0	7.4	-	-
6	111.5	27.5	-	7.0	158.8	173.0	15.9	47.8	14.6	73.3	101.0	132.0	541.5	21.8	22.6	106.5	21.2	-	-
7	158.2	323.9	-	147.1	798.4	312.7	61.5	109.8	274.2	573.2	186.9	133.1	3,153.7	184.5	24.1	350.1	71.6	-	-
8	28.4	485.3	-	438.6	1,218.4	369.8	140.5	151.2	273.1	634.0	265.5	154.2	1,538.4	1,352.6	33.1	886.9	305.8	-	-
9	36.9	522.3	-	382.0	313.5	658.9	275.0	118.0	90.6	305.5	265.7	223.9	194.3	2,700.9	124.0	454.4	393.1	-	-
10	42.0	482.4	-	141.7	106.0	1,474.1	200.9	98.8	122.9	555.1	324.5	310.2	165.4	1,715.2	707.9	114.8	549.1	-	-
11	55.7	1,165.5	-	132.9	197.1	2,011.2	163.9	129.2	171.1	556.0	306.9	264.8	245.8	537.9	1,819.4	113.5	634.8	-	-
12	77.9	1,322.0	-	194.0	222.9	1,106.6	233.1	116.9	138.1	670.0	292.4	212.4	343.6	156.0	2,215.8	333.4	727.3	-	-
13	67.9	916.2	-	137.0	263.5	294.3	297.6	101.4	150.9	311.9	279.7	256.6	319.7	80.4	1,367.7	703.8	455.5	-	-
14	87.7	511.5	-	335.1	192.2	343.8	220.1	107.9	159.5	330.1	351.1	197.3	358.5	51.5	673.4	1,246.5	368.9	-	-
15	1,115.4	279.6	-	685.4	100.3	370.4	360.6	605.8	156.7	145.9	434.9	120.6	516.3	97.0	226.4	1,811.1	698.7	-	-
16	92.7	354.5	-	1,010.6	202.9	807.1	829.9	1,492.0	450.5	314.3	531.7	271.5	382.6	71.8	108.1	1,374.8	1,844.7	-	-
17	77.0	408.1	-	1,085.1	334.1	1,464.7	2,925.5	2,289.2	635.0	671.0	536.8	413.5	286.6	121.0	96.2	728.2	2,766.7	-	-
18	1,006.7	526.6	-	782.4	603.1	2,446.7	7,620.6	7,724.8	1,409.0	2,972.1	531.5	584.2	401.0	133.8	101.8	299.9	2,996.3	-	-
19	169.3	604.8	-	677.0	748.2	4,282.3	6,950.1	22,686.8	3,331.0	8,990.1	1,224.1	1,290.8	669.4	187.1	163.0	256.4	1,483.4	-	-
20	192.7	1,020.0	-	739.1	794.9	5,360.6	6,031.6	35,825.9	6,170.8	22,088.5	5,183.2	2,448.7	1,623.4	341.7	249.6	333.3	784.9	-	-
21	183.7	1,147.7	-	1,057.6	1,440.4	4,184.5	5,117.5	28,789.5	8,132.4	34,965.0	10,299.8	3,914.1	2,280.9	795.0	362.0	355.1	573.6	-	-
22	218.7	978.0	-	1,795.1	1,971.9	4,759.3	5,703.1	21,540.2	6,899.7	47,584.0	14,108.7	6,988.7	4,573.9	1,503.7	446.4	387.6	560.9	-	-
23	191.6	965.0	-	1,985.5	1,616.2	3,866.2	7,090.5	11,748.4	5,978.6	45,645.7	17,057.9	12,040.9	6,455.8	2,380.6	983.4	356.5	535.5	-	-
24	289.4	1,040.7	-	2,547.1	1,729.0	3,558.6	5,049.1	6,120.1	7,016.4	32,860.5	15,804.7	11,332.7	7,233.6	3,064.2	1,574.9	564.1	700.4	-	-
25	4,499.5	1,222.6	-	1,824.9	1,107.0	2,339.8	4,296.8	4,915.9	6,247.9	19,545.5	11,616.8	10,426.7	6,002.2	3,310.3	1,482.8	678.7	809.1	-	-
26	5,302.2	1,471.5	-	1,573.2	567.9	1,950.7	3,162.8	5,044.6	5,020.4	11,333.1	7,831.2	10,112.3	4,795.2	3,346.9	1,891.2	947.2	996.1	-	-
27	368.8	1,136.0	-	1,930.4	438.5	1,532.5	2,135.3	2,666.2	4,490.2	7,754.5	4,889.3	6,626.7	3,522.8	2,860.4	1,973.3	1,194.9	1,232.6	-	-
28	1,098.7	866.3	-	2,009.9	321.4	1,450.0	913.9	2,390.2	4,077.3	3,984.6	3,317.1	4,717.6	2,714.9	2,515.5	1,410.3	1,223.4	1,125.5	-	-
29	1,054.4	640.2	-	1,748.6	293.7	1,110.4	523.1	2,119.3	3,387.7	3,529.4	2,711.7	4,331.5	2,277.9	1,909.4	1,202.7	911.9	1,130.9	-	-
30	1,135.8	348.1	-	1,706.8	270.5	658.4	480.1	601.2	2,291.1	2,505.8	2,180.1	2,647.0	1,632.5	1,424.5	861.7	578.8	851.6	-	-

length	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
31	3,918.2	221.4	-	1,069.7	264.2	529.3	251.0	575.4	2,269.4	1,974.5	1,797.9	2,057.4	992.0	858.1	877.6	471.5	754.5	-	-
32	2,111.8	133.7	-	760.2	332.5	316.4	223.5	462.8	1,119.7	1,043.3	891.5	1,392.0	860.5	710.6	753.1	323.5	575.8	-	-
33	1,075.1	33.5	-	679.0	364.6	187.0	151.8	327.3	542.3	797.0	575.8	873.2	782.1	1,070.8	680.0	354.6	475.0	-	-
34	84.4	27.7	-	190.4	179.5	108.2	141.3	226.6	632.1	314.3	579.0	595.1	654.4	671.4	598.9	377.3	366.5	-	-
35	1,061.0	11.5	-	40.4	116.3	127.1	90.9	161.1	364.3	238.5	224.5	389.4	384.7	787.3	401.9	424.3	330.9	-	-
36	18.8	23.1	-	111.1	39.3	42.1	78.4	112.6	238.1	165.0	165.4	222.5	322.9	626.4	401.3	209.1	289.7	-	-
37	11.9	11.2	-	6.1	23.6	27.7	34.8	74.7	102.4	51.9	161.2	232.8	176.6	630.8	224.3	169.9	200.1	-	-
38	2.2	6.5	-	57.6	7.9	13.6	6.1	66.3	42.2	46.8	80.4	172.6	133.3	346.3	146.4	97.2	232.0	-	-
39	1.0	2.3	-	0.5	2.1	6.9	4.0	52.7	5.2	109.5	40.5	47.4	31.8	120.6	66.9	69.3	60.6	-	-
40	1.2	0.0	-	1.8	1.8	7.9	19.5	24.8	1.3	23.9	7.4	20.6	4.0	65.3	37.9	60.3	31.6	-	-
41	0.0	0.0	-	0.0	1.2	0.0	17.8	27.0	2.0	5.0	5.6	7.4	2.7	73.1	31.7	10.5	19.2	-	-
42	0.0	0.0	-	0.0	1.4	4.5	1.5	70.2	0.0	0.7	26.0	6.4	0.5	20.4	3.2	17.1	15.3	-	-
43	0.0	0.0	-	0.5	0.7	2.8	0.5	24.8	0.9	0.0	26.5	0.0	0.0	28.0	0.0	7.4	3.4	-	-
44	0.0	0.0	-	0.0	0.0	0.0	16.2	4.8	0.0	0.0	33.3	0.0	0.0	18.0	4.7	0.0	0.0	-	-
45	0.0	0.0	-	0.0	0.6	0.0	0.5	0.6	0.0	0.5	75.1	4.5	2.7	18.0	0.0	0.0	27.8	-	-
46	0.0	0.0	-	1.4	0.0	2.3	0.0	2.5	1.4	6.7	0.0	0.0	0.0	0.0	0.0	0.6	3.5	-	-
47	0.0	0.0	-	0.0	0.0	6.1	0.0	0.0	1.4	1.7	0.0	0.0	0.0	19.3	0.0	0.0	41.7	-	-
48	0.0	0.0	-	0.7	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.7	0.0	0.0	3.3	0.0	0.0	-	-
49	0.0	0.0	-	0.0	0.0	0.0	16.2	0.0	0.0	0.0	0.0	0.0	0.0	21.0	0.0	0.0	13.9	-	-
50	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.7	0.0	2.6	0.0	13.9	-	-
51	0.0	0.0	-	0.0	0.7	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	13.9	-	-
52	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	1.9	1.7	0.0	0.0	0.9	0.0	0.0	0.0	0.0	-	-
53	0.0	0.0	-	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2	0.5	0.7	0.0	3.4	0.0	0.0	-	-
54	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	2.6	0.0	0.0	-	-
55	0.0	0.0	-	0.0	0.0	0.0	0.0	1.7	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.5	0.0	-	-
56	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	-	-
57	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
58	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	3.3	0.0	0.0	-	-
59	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	-	-
60	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	-	-
61	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	-	-
62	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	1.1	0.6	-	-
63	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
64	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
65	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
66	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	-	-
67	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
68	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
69	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
70	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-

Table 16. Abundance at length (in 0000's) from 3N Spanish survey with Campelen trawl.

length	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
5	2.9	4.2	0.0	0.0	0.0	0.0	4.8	3.1	10.6	0.0	0.0	0.0	1.7	14.6	4.4	44.4	2.1	7.7	-	0.0
6	27.7	19.6	19.6	8.3	12.4	6.1	30.8	7.3	7.7	4.3	0.0	14.1	0.6	413.1	0.6	27.7	16.0	5.0	-	54.6
7	44.9	23.2	45.7	52.4	37.3	16.8	23.8	4.2	1.2	11.1	0.0	14.6	0.6	353.4	5.3	92.5	51.6	6.0	-	447.0
8	9.7	7.5	225.3	47.4	38.3	7.8	10.8	0.6	0.0	6.5	0.5	4.9	0.0	61.9	2.0	3.1	55.6	7.7	-	218.7
9	3.4	5.6	214.3	154.0	40.3	29.1	10.3	56.0	1.2	5.0	1.0	0.0	0.4	0.6	0.6	31.1	23.2	5.7	-	62.8
10	3.8	7.9	84.0	1,455.5	63.3	22.4	7.6	299.6	0.0	5.9	0.0	0.0	0.0	3.3	96.3	3.9	5.4	5.5	-	348.5
11	2.4	5.6	75.3	2,124.4	1,386.9	6.7	36.2	994.4	1.2	7.4	0.5	1.6	1.3	8.5	0.0	264.0	4.7	2.6	-	592.2
12	7.3	6.4	112.9	262.3	4,909.8	187.5	21.3	599.0	1.2	7.2	0.0	0.0	0.9	3.0	0.0	88.1	9.4	19.4	-	1,074.3
13	5.1	6.0	100.8	166.4	6,938.3	680.1	131.4	2,087.4	0.6	149.3	3.8	0.0	0.4	3.3	196.1	1.4	7.6	251.8	-	345.3
14	12.4	29.1	104.1	323.5	3,868.8	2,094.9	368.3	2,118.2	4.4	360.4	18.0	0.0	0.0	1.2	1.4	522.8	9.0	371.2	-	129.5
15	61.0	48.3	154.3	137.4	2,888.2	2,595.4	1,450.6	5,744.2	10.6	819.1	128.8	1.6	0.0	1.8	0.0	174.9	100.5	601.3	-	81.6
16	156.6	50.9	370.8	783.5	2,042.2	3,209.2	6,740.4	16,330.7	1,641.5	2,267.1	316.7	34.4	44.6	1.2	2.1	176.2	16.8	595.1	-	40.2
17	259.4	268.7	469.4	2,919.0	1,743.5	2,706.8	8,322.7	60,800.5	7,747.5	6,766.6	817.6	138.6	337.0	11.4	2.7	178.5	13.1	361.2	-	39.9
18	485.6	512.2	684.8	7,912.9	1,492.0	2,212.8	5,624.2	120,742.5	33,636.2	21,437.0	3,163.5	2,226.8	1,328.6	2,669.8	200.2	195.2	135.1	238.1	-	162.4
19	559.7	756.8	947.8	8,911.1	2,943.2	1,706.0	3,008.0	113,718.3	56,174.2	70,354.4	17,683.0	13,300.0	4,197.2	7,295.9	680.7	1,329.6	462.4	278.9	-	253.1
20	713.6	897.6	1,241.6	5,858.0	5,451.7	1,895.0	1,797.0	49,461.4	53,777.1	95,995.0	46,688.4	50,546.3	12,970.7	30,844.2	3,456.6	5,518.2	2,051.7	298.9	-	504.5
21	632.8	908.3	1,435.9	6,789.8	6,711.7	2,400.1	1,833.4	20,040.8	28,014.8	74,030.5	43,276.3	99,300.1	21,718.1	68,648.1	13,735.9	17,406.3	9,039.1	1,547.5	-	914.1
22	434.0	872.2	1,709.8	6,930.9	5,996.1	3,709.1	2,394.0	18,341.7	16,576.4	24,904.2	26,580.3	64,257.1	19,812.1	71,967.5	16,361.7	32,270.3	28,317.9	5,331.6	-	2,923.0
23	503.0	633.1	1,254.2	8,619.8	5,064.6	4,455.8	3,321.2	19,742.6	12,729.1	9,866.8	11,928.9	34,581.9	15,515.1	41,482.0	12,181.6	30,439.0	36,893.6	9,971.8	-	4,609.8
24	339.9	528.1	1,100.4	8,175.7	3,194.8	4,454.2	3,947.1	17,699.4	12,304.8	6,817.0	7,298.3	12,673.6	9,200.5	31,935.9	8,061.0	22,572.5	29,023.5	10,224.5	-	4,716.2
25	240.7	446.1	884.3	5,797.3	2,438.5	4,000.8	3,111.0	15,861.3	9,944.5	3,606.1	4,075.7	4,941.4	4,940.4	15,572.2	4,795.3	17,325.6	19,324.8	11,165.5	-	3,357.8
26	147.5	274.3	668.9	4,261.7	2,210.1	2,613.0	2,824.4	12,154.2	6,947.8	2,991.7	2,825.2	3,710.5	2,597.5	11,497.7	2,757.4	8,433.6	14,832.3	11,227.6	-	2,917.1
27	89.1	181.8	576.9	2,464.3	1,597.0	2,355.7	1,321.0	4,888.2	4,288.7	1,627.9	2,842.2	2,027.2	1,794.3	6,864.3	1,730.3	2,948.6	7,135.1	9,560.9	-	3,017.8
28	114.1	115.0	538.4	2,584.7	828.1	1,375.9	871.8	4,171.2	2,809.8	1,848.2	2,571.6	1,344.9	1,445.4	3,358.8	880.9	1,916.0	3,608.0	6,280.2	-	2,500.0
29	84.6	78.9	506.5	1,650.9	1,101.8	1,072.5	638.3	2,829.6	1,760.2	962.8	2,016.6	853.5	956.5	3,316.4	763.7	771.8	1,876.0	3,371.9	-	1,318.7
30	65.0	47.6	435.2	1,065.4	518.3	1,029.2	322.2	1,774.8	1,254.4	806.6	1,294.4	1,057.4	810.2	2,577.6	428.2	516.9	1,245.9	1,582.6	-	781.8

length	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
31	62.0	45.8	264.4	684.2	463.9	698.9	231.0	854.9	1,048.7	428.4	950.2	882.5	634.2	1,506.7	327.0	241.6	786.8	1,434.7	-	492.2
32	60.2	50.5	181.6	436.2	321.4	567.0	223.7	353.3	682.4	295.6	425.2	338.1	434.6	1,215.9	241.8	142.6	516.4	730.3	-	286.3
33	52.1	47.4	167.2	347.3	217.6	355.1	212.0	289.9	410.0	97.0	239.3	232.1	220.9	619.4	94.3	88.6	431.7	335.6	-	114.1
34	31.4	33.3	164.5	230.8	172.6	191.2	178.2	254.1	355.8	123.4	337.0	175.9	113.3	384.7	82.5	68.7	172.1	22.3	-	92.5
35	11.9	21.6	76.2	113.4	81.4	77.2	117.4	169.8	257.1	51.9	45.6	126.4	62.9	141.4	26.7	27.1	81.7	21.6	-	44.8
36	7.3	10.8	47.8	187.2	45.7	66.1	51.2	150.1	153.7	49.4	138.9	420.3	64.7	124.4	36.2	26.9	40.0	17.9	-	31.2
37	11.5	10.0	14.0	59.4	44.8	49.3	47.7	338.6	74.2	49.2	102.0	35.2	31.4	90.0	7.1	15.5	50.6	24.9	-	8.6
38	0.0	5.3	12.5	37.3	27.2	33.3	25.4	24.9	68.3	23.9	50.1	32.0	16.2	76.2	12.1	22.8	24.5	18.8	-	11.2
39	3.2	4.3	0.3	22.4	5.8	23.0	13.1	12.3	47.8	12.1	28.5	18.9	7.9	51.6	6.5	9.0	16.2	12.1	-	6.8
40	0.0	2.3	11.2	20.1	20.7	10.4	11.9	6.6	26.5	11.2	10.5	7.2	6.9	27.2	9.6	6.9	2.2	11.2	-	7.2
41	0.0	3.9	0.6	12.2	5.6	4.5	4.1	3.3	52.1	0.7	5.3	10.0	2.7	22.6	4.5	5.5	2.7	10.7	-	6.0
42	0.0	3.6	0.0	19.2	0.0	6.7	4.2	4.8	17.3	2.8	0.6	7.8	2.1	11.2	1.0	4.5	0.3	5.2	-	3.3
43	0.6	0.0	0.0	3.2	5.6	2.2	2.1	7.2	2.0	0.3	0.7	3.7	0.4	0.3	1.4	1.0	0.0	4.0	-	1.7
44	0.0	1.6	0.9	0.0	0.0	1.1	1.6	3.7	15.3	0.0	0.0	0.0	0.0	4.5	0.0	0.3	0.0	0.7	-	0.9
45	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	1.1	0.6	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.4	-	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	-	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	-	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	-	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	-	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.3
68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
69	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.4

Table 17. Abundance at length (in 0000's) from 3L Canadian fall survey with Yankee trawl. Note data are unconverted.

length	1976	1981	1982
4	0	0.0	5.5
5	0	8.0	80.5
6	0	87.1	154.5
7	0	75.0	129.6
8	0	5.3	55.4
9	0	5.4	20.3
10	0	5.9	3.9
11	0	26.1	15.6
12	0	2.7	26.9
13	0	6.2	40.4
14	0	5.4	36.4
15	0	29.0	30.5
16	0	30.6	22.3
17	0	65.2	51.6
18	0	132.7	54.0
19	0	145.0	155.5
20	0	133.2	204.7
21	0	97.2	299.0
22	0	94.1	260.2
23	0	95.1	269.5
24	0	109.5	489.1
25	0	66.5	155.2
26	0	42.2	572.6
27	0	67.0	732.4
28	0	62.4	1,331.2
29	0	64.6	1,833.7
30	0	74.7	2,432.4
31	0	79.8	2,496.9
32	0	114.7	2,416.5
33	0	69.3	1,556.8
34	0	83.9	1,062.8
35	0	110.0	609.9
36	0	131.3	320.3
37	0	97.6	549.8
38	0	59.2	267.4
39	0	52.5	227.8
40	0	23.5	159.3
41	0	13.0	28.3
42	0	10.8	79.0
43	0	23.7	71.4

length	1976	1981	1982
44	0	17.9	27.5
45	0	16.0	57.3
46	0	21.1	46.7
47	0	4.3	67.2
48	0	9.2	18.6
49	0	4.3	9.0
50	0	0.0	1.8
51	0	2.7	1.6
52	0	2.7	0.0

Table 18. Abundance at length (in 0000's) from 3L Canadian fall survey with Engel trawl. Note data are unconverted

length	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
7	2.6	1.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0
8	16.4	5.0	1.2	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
9	9.7	12.7	1.2	0.0	0.0	1.3	0.0	5.9	0.0	0.0	0.0	0.0
10	1.3	22.2	8.5	0.5	1.8	3.3	0.0	0.0	0.0	0.0	0.6	0.2
11	5.4	12.4	17.3	0.0	0.0	1.5	5.8	10.8	1.8	2.5	0.0	0.2
12	1.3	4.6	7.1	6.7	0.0	0.0	6.1	5.6	0.9	0.5	1.3	0.0
13	6.5	8.7	12.0	24.8	1.5	1.4	18.2	12.5	1.7	0.3	1.9	0.2
14	13.0	17.8	11.2	22.8	16.8	0.0	4.7	9.6	3.3	1.7	10.5	1.7
15	8.4	33.2	11.1	14.6	86.4	5.4	5.6	17.9	8.6	3.7	3.6	0.4
16	5.2	74.0	13.5	12.2	127.7	18.7	12.2	7.9	6.2	5.4	7.6	2.9
17	7.8	33.2	21.2	15.5	117.2	23.1	29.5	20.9	8.0	7.3	6.2	7.4
18	14.3	36.6	33.0	10.9	80.9	46.5	27.6	19.3	15.5	12.4	11.3	20.1
19	32.8	167.1	101.4	25.2	165.1	45.1	39.4	31.2	29.4	16.1	15.9	34.4
20	32.0	58.4	84.4	27.8	623.7	60.4	37.6	62.3	50.5	33.2	11.7	41.8
21	75.7	87.0	166.4	88.4	667.9	97.7	36.6	103.0	59.8	63.1	17.3	44.3
22	110.2	124.9	326.4	80.8	961.0	126.9	73.9	206.9	72.6	86.0	33.3	117.6
23	116.6	2,771.3	481.6	114.7	903.3	101.4	117.7	202.1	206.4	138.6	48.0	381.7
24	89.6	9,048.7	1,078.4	270.4	1,975.4	81.7	139.8	242.0	371.0	216.7	73.4	587.2
25	91.5	32,414.5	1,942.0	418.2	2,385.2	78.6	153.8	161.4	463.4	330.7	73.7	1,555.5
26	81.1	46,647.4	3,144.4	926.3	4,828.1	112.8	137.8	188.0	387.0	373.7	103.4	2,553.7
27	123.4	76,164.5	3,610.9	1,196.4	6,472.3	167.8	140.3	205.3	222.5	356.4	89.4	1,781.5
28	117.7	93,208.4	3,654.7	1,422.2	7,003.1	178.2	169.1	246.8	179.0	344.4	121.3	1,149.1
29	113.4	93,692.6	3,225.5	968.7	9,246.2	142.1	163.8	219.2	128.8	230.7	109.1	583.3
30	129.1	74,629.4	2,818.2	666.8	9,600.7	105.4	140.6	214.2	102.6	142.6	122.1	501.7
31	146.4	50,238.7	3,317.1	350.5	10,460.8	106.0	146.9	223.0	85.7	126.0	88.5	310.1
32	129.8	44,390.5	3,292.4	178.7	6,047.4	83.2	91.4	217.0	67.1	93.3	115.6	151.9
33	136.1	22,988.9	2,724.8	135.2	3,440.6	66.1	86.4	184.6	72.7	88.2	89.5	63.2
34	121.7	27,315.7	2,516.7	58.8	2,338.1	71.3	105.9	176.0	64.9	69.1	84.3	59.3
35	109.2	11,199.9	1,863.4	53.2	1,053.7	53.1	86.3	130.0	60.9	36.1	76.6	8.7
36	110.0	7,415.5	1,286.5	53.4	1,149.9	43.2	86.2	139.4	71.0	27.3	37.4	56.3
37	111.9	5,951.0	966.8	77.9	798.3	60.9	80.4	117.9	64.1	16.3	11.1	34.1
38	124.5	4,360.1	788.0	64.7	812.9	46.9	85.2	80.6	70.7	17.3	14.4	0.2
39	105.7	4,971.8	496.2	48.2	529.3	37.5	71.4	52.9	47.1	8.6	3.3	50.1
40	57.1	859.2	333.1	36.2	566.9	23.8	49.1	30.5	41.4	4.9	2.1	0.2
41	27.4	381.6	116.9	9.7	175.2	16.2	33.7	19.4	11.8	7.1	2.5	0.5
42	33.3	911.7	89.4	12.0	8.7	13.4	17.6	13.4	7.6	5.3	1.3	1.0
43	28.1	204.4	58.5	6.2	127.1	11.3	12.0	19.2	4.7	1.4	0.0	0.6
44	29.2	315.0	54.1	4.0	4.9	10.8	8.5	21.6	5.5	3.2	3.9	0.0
45	39.2	86.1	54.5	0.7	42.2	5.4	9.6	9.9	2.4	0.9	2.2	0.7

length	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
46	49.2	80.2	33.5	5.1	15.7	7.3	11.1	4.6	0.6	2.7	0.0	0.0
47	24.3	29.1	24.7	5.5	8.5	2.8	6.4	2.8	1.2	0.9	0.4	0.0
48	22.6	37.7	6.5	2.4	53.4	5.2	1.6	3.6	0.0	0.0	0.0	0.0
49	9.3	18.7	7.4	4.9	8.6	1.3	3.2	0.0	0.0	0.7	0.0	0.0
50	3.9	10.0	2.6	0.0	3.2	1.3	0.0	0.0	0.4	0.0	0.0	0.0
51	2.6	2.6	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	1.6	0.0	3.2	0.0	0.0	0.0	0.0	0.0

Table 19. Abundance at length (in 0000's) from 3L Canadian fall survey with Campelen trawl for years 1995-2008. Note data are unconverted

length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	25.3	5.9	6.2	1.0	0.0	12.5	25.3	25.0	108.7	49.8	0.0	16.2	38.4	3.4
6	24.2	41.9	59.1	0.0	29.1	497.7	92.1	64.5	241.8	8.7	4.8	357.4	156.8	66.1
7	13.1	17.6	1.8	1.3	5.2	58.8	79.6	56.7	212.1	3.8	10.7	414.1	229.4	252.8
8	3.3	3.8	16.6	3.4	0.0	35.8	208.3	153.0	263.6	70.6	146.0	88.0	416.9	731.5
9	4.6	18.5	430.7	24.6	28.1	53.6	309.1	106.2	205.8	142.5	347.2	117.5	7,308.4	995.4
10	11.9	32.8	161.6	14.5	14.1	40.2	433.6	84.2	245.4	136.9	196.4	229.8	6,007.4	1,014.2
11	10.1	40.5	100.0	5.7	33.1	21.9	286.5	255.6	182.3	90.4	286.7	258.0	8,140.6	1,272.6
12	10.2	8.9	23.5	23.4	72.4	6.0	108.2	208.6	111.0	116.4	778.9	358.7	7,170.5	701.1
13	6.1	12.2	50.3	47.3	49.5	23.0	87.5	196.6	105.1	124.8	1,161.2	338.7	6,533.9	1,804.5
14	20.2	8.4	58.1	66.5	45.9	45.2	48.0	235.7	123.3	66.1	903.7	502.2	6,954.4	644.8
15	15.9	11.2	24.1	79.3	11.0	62.9	23.2	155.6	92.2	34.8	744.4	1,671.5	924.6	1,113.0
16	14.2	35.2	8.8	40.7	25.6	73.6	37.0	82.9	219.5	44.4	583.6	4,063.5	2,436.1	1,701.5
17	227.5	33.1	24.9	70.7	98.4	107.2	43.9	81.3	293.0	94.6	611.8	6,117.0	1,688.2	8,474.2
18	350.6	75.3	47.2	114.7	249.4	133.3	100.1	106.1	349.6	334.3	552.6	4,475.1	2,085.9	25,878.4
19	621.5	154.1	123.5	109.8	305.8	182.2	107.4	193.3	327.6	440.7	646.6	3,274.8	3,714.8	31,286.1
20	758.3	196.5	326.7	142.0	291.6	165.4	293.5	196.3	443.1	305.1	825.1	2,421.9	6,771.3	21,728.6
21	872.4	176.4	643.2	281.9	443.7	424.7	505.1	333.9	702.7	311.3	1,063.6	2,425.0	9,228.8	23,187.0
22	1651.2	202.7	492.0	396.5	1,308.2	704.1	804.2	342.2	826.5	248.5	1,104.4	2,446.3	13,053.0	16,445.8
23	2792.4	151.4	1,058.2	680.2	2,855.0	712.7	768.4	443.8	875.4	211.5	797.0	2,562.0	22,092.4	15,718.5
24	2104.8	150.7	2,827.1	775.4	7,413.8	1,191.7	827.9	557.9	744.6	140.7	760.8	2,325.9	25,745.1	14,142.7
25	4244.4	114.8	5,819.5	681.2	16,483.5	1,415.9	1,170.3	568.8	908.2	173.9	623.1	2,026.0	22,977.8	10,678.1
26	3416.9	102.4	6,247.5	1,734.7	20,161.6	1,659.5	1,383.2	536.6	993.2	211.9	506.5	1,784.0	17,873.1	8,317.0
27	8701.7	64.6	3,490.4	3,092.4	21,754.6	1,643.5	2,346.7	464.8	936.2	264.5	597.0	1,245.5	11,231.4	6,006.5
28	9543.6	85.8	1,706.1	4,460.0	18,416.2	1,553.2	3,329.5	341.7	723.5	552.4	689.7	1,130.4	7,184.2	6,804.5
29	8399.8	89.5	789.0	4,529.9	8,746.9	1,425.6	3,328.8	316.6	681.8	640.6	724.9	789.7	5,702.8	3,618.8
30	6647.7	94.2	488.7	3,024.0	4,277.3	952.7	2,449.1	208.4	374.2	654.1	323.9	482.7	2,112.8	3,060.6
31	9426.9	74.4	92.9	2,134.3	1,171.8	673.1	1,964.7	291.1	322.9	445.1	272.7	633.1	1,779.4	2,540.8
32	6451.0	64.3	83.1	1,404.8	742.3	539.5	688.7	246.5	360.7	177.8	139.2	440.1	489.1	1,149.1

length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
33	4621.9	41.1	99.2	782.6	937.2	325.0	707.2	178.1	388.4	97.8	91.8	227.6	925.6	1,268.8
34	2306.8	16.6	119.9	1,470.8	430.6	387.1	225.7	107.3	297.4	73.2	53.5	177.1	406.6	995.9
35	1321.6	11.9	32.0	793.0	116.7	121.1	174.5	76.6	182.4	15.0	45.3	59.6	126.0	455.2
36	660.7	10.7	74.2	383.8	365.5	97.8	33.6	28.4	77.3	26.0	24.1	25.6	39.7	155.9
37	164.2	5.7	21.9	208.9	25.9	37.5	3.3	13.2	30.6	4.2	28.5	13.5	373.2	100.7
38	170.1	1.6	5.6	86.4	12.5	47.9	37.2	9.3	8.9	0.0	2.1	13.5	9.6	5.9
39	328.5	1.3	8.2	39.5	272.7	30.8	37.8	9.3	26.8	0.0	7.3	0.0	0.0	0.0
40	0.0	2.1	5.6	3.9	6.4	27.1	0.0	12.2	0.0	0.0	0.0	6.1	1.4	60.4
41	0.0	2.1	1.2	0.0	6.2	14.8	0.0	0.0	0.0	0.0	1.3	2.1	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	14.8	0.0	1.1	0.0	0.0	0.0	0.0	0.0	110.4
43	2.6	0.0	0.0	1.4	4.7	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	4.7	8.6	1.5	4.7	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
45	1.4	2.8	5.8	1.8	4.4	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	54.7
46	0.0	1.2	1.2	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 20. Abundance at length (in 0000's) from 3L Canadian fall survey with Campelen trawl for years 2009-2021. Note data are unconverted

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4	0.0	0.0	0.0	0.0	0.0	61.4	0.0	16.0	0.0	0.0	0.0	0.0	-
5	16.8	488.8	7.8	36.4	74.9	167.3	143.0	58.8	1,380.4	65.1	0.0	1.3	-
6	580.4	264.1	50.4	183.0	2,648.7	16,988.6	1,669.0	158.7	14,321.5	76.0	18.3	17.8	-
7	28.7	535.6	88.1	130.0	1,254.9	77,983.7	34,084.5	2,267.0	15,447.1	938.5	76.6	601.4	-
8	99.5	1,051.3	135.2	468.0	2,395.9	4,374.7	79,631.0	1,633.7	1,165.0	1,009.2	90.4	3,198.2	-
9	445.0	834.7	292.6	1,794.1	3,343.7	240.7	23,991.9	6,384.0	414.5	1,086.9	202.0	20,559.6	-
10	1678.2	1,100.3	234.9	2,985.6	4,138.4	803.7	2,000.6	21,980.5	923.9	926.5	410.6	100,311.6	-
11	690.0	1,349.7	345.7	2,934.9	6,629.2	1,200.4	1,566.1	4,460.3	3,226.8	337.6	326.1	55,555.8	-
12	617.1	1,601.1	512.2	1,985.3	11,902.1	233.2	262.5	3,483.1	6,580.2	770.6	366.7	16,558.7	-
13	4234.3	1,872.7	1,637.0	1,089.1	11,361.7	389.4	258.1	771.0	8,258.5	1,299.8	479.5	1,291.3	-
14	6332.3	2,084.0	1,189.1	1,196.3	17,196.6	533.5	400.0	81.8	8,666.5	1,869.6	677.8	952.7	-
15	11293.4	1,230.7	4,696.1	1,058.8	20,142.1	386.7	482.5	109.1	4,581.4	1,688.3	707.5	227.7	-
16	7764.4	2,646.1	2,758.1	533.6	10,646.2	529.7	517.1	205.7	3,565.7	2,225.1	768.9	3,049.2	-
17	18773.1	5,890.6	5,461.2	562.8	13,544.8	567.4	829.5	165.7	2,652.1	1,647.5	1,223.6	3,267.0	-
18	50009.6	458,004.9	4,442.4	954.1	6,992.6	347.0	1,096.0	296.9	790.2	1,070.0	2,612.0	4,773.3	-
19	100543.7	1,303,717.0	20,678.8	85,320.4	2,909.9	728.1	1,248.0	174.1	1,677.4	309.6	3,213.6	5,709.5	-
20	59145.7	3,638,077.2	32,168.8	188,913.3	8,666.5	867.1	2,004.7	95.6	2,040.8	369.2	3,298.2	5,602.9	-
21	67798.9	4,375,092.5	57,961.7	494,963.0	14,636.4	1,415.1	6,699.8	81.2	3,847.4	438.8	1,620.8	5,545.1	-
22	46711.6	3,383,374.7	86,781.5	436,090.0	26,049.8	7,619.2	6,111.4	216.0	3,953.8	894.4	1,026.9	5,163.1	-
23	27304.6	3,054,351.2	53,522.8	571,084.4	33,781.1	3,962.4	11,901.0	816.4	5,152.1	853.3	2,872.8	6,901.4	-
24	30622.1	3,407,589.5	20,318.1	480,073.6	24,470.8	12,766.5	15,945.8	1,729.9	8,935.8	1,088.7	4,035.4	5,271.3	-
25	28455.3	1,890,728.0	18,353.0	657,264.7	29,772.4	19,291.8	14,535.9	1,245.7	10,279.5	1,122.5	3,728.6	5,975.0	-
26	31854.6	930,301.5	11,887.4	467,604.4	27,012.5	21,379.3	16,077.1	1,204.9	8,885.4	1,350.5	4,744.8	15,060.9	-
27	35616.3	897,321.1	9,408.8	443,257.7	13,562.1	71,674.5	19,656.6	2,149.8	6,753.4	1,218.8	5,222.3	20,464.9	-
28	20151.9	463,026.7	9,832.4	265,326.6	8,458.7	64,372.4	20,442.9	1,182.2	7,055.8	1,186.3	4,768.6	30,364.6	-
29	18968.6	309,718.0	6,190.5	230,296.4	6,432.4	82,411.3	16,935.5	6,343.8	6,237.8	1,186.7	2,554.0	33,805.6	-
30	8988.6	125,081.5	7,263.1	132,699.0	8,517.3	51,990.4	8,469.7	5,204.3	5,399.3	924.2	2,020.5	22,783.4	-
31	7738.2	27,871.1	4,125.7	99,127.0	5,545.9	89,002.6	4,704.9	7,855.2	6,946.6	950.3	902.1	11,411.2	-

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
32	5005.5	28,623.4	2,764.4	71,937.4	2,142.1	42,379.4	3,559.4	8,661.3	4,801.8	1,054.4	1,014.8	10,194.9	-
33	4309.9	11,898.1	1,841.9	56,893.9	2,040.4	39,963.1	1,237.6	9,762.0	10,187.3	645.8	586.4	8,543.8	-
34	1619.5	8,843.7	660.5	8,284.8	762.4	16,581.8	1,216.7	16,065.0	7,830.9	689.6	527.1	12,350.2	-
35	762.5	260.7	770.6	872.3	331.6	14,160.8	820.8	14,295.6	5,209.5	448.1	623.2	9,054.8	-
36	732.0	2,935.2	441.7	460.6	1,195.5	9,445.2	403.6	17,389.2	4,019.9	196.9	928.1	9,616.8	-
37	939.2	910.3	189.5	15,121.8	52.3	84.0	49.9	6,956.6	3,224.5	167.0	585.8	4,543.2	-
38	13.5	2,821.8	16.6	15,299.5	35.5	13.9	56.9	6,788.5	2,727.1	55.0	654.6	4,986.0	-
39	2.3	40.4	27.1	470.8	6.4	7.5	136.8	4,110.5	1,518.7	30.2	502.1	1,042.3	-
40	0.0	87.0	0.0	215.6	24.5	0.0	207.2	1,815.1	593.4	60.1	246.0	796.4	-
41	0.0	5.7	0.0	398.9	0.0	0.0	4.5	464.2	321.7	7.9	151.1	1,148.9	-
42	231.4	25.6	0.0	168.0	0.0	9.1	10.5	5.3	95.0	3.5	30.5	344.8	-
43	0.0	0.0	4.9	168.0	0.0	0.0	0.0	474.9	92.9	22.3	23.7	189.5	-
44	0.0	0.0	0.0	148.8	0.0	0.0	200.8	21.2	18.8	0.0	15.4	0.0	-
45	0.0	0.0	0.0	105.0	0.0	0.0	0.0	8.0	2.3	3.5	1.1	181.9	-
46	0.0	0.0	0.0	63.0	0.0	0.0	0.0	30.4	196.3	7.9	0.0	1.3	-
47	0.0	0.0	0.0	105.0	0.0	0.0	0.0	0.0	5.3	1.9	0.0	0.0	-
48	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	4.0	15.9	3.5	-
49	0.0	0.0	0.0	21.0	0.0	0.0	0.0	5.3	91.9	3.5	0.0	0.0	-
50	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.9	-
52	0.0	2,794.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	-
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	-
54	0.0	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	-

Table 21. Abundance at length (in 0000's) from 3L Canadian spring survey with Yankee trawl. Note data are unconverted

length	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
2	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.8	0.0	0.0	18.3	0.0	0.0	131.6
6	0.0	0.0	0.0	15.1	2.4	0.0	4.3	2.6	2.5	190.2
7	0.0	0.0	2.3	5.9	18.8	1.8	5.3	27.3	25.8	89.2
8	0.0	0.0	7.8	8.0	20.4	3.6	0.9	16.2	15.0	27.7
9	0.0	0.0	0.0	12.8	34.2	23.2	14.3	12.6	35.5	5.7
10	0.0	5.2	11.7	11.8	18.4	27.8	225.6	9.1	18.5	2.1
11	0.0	0.0	13.1	6.8	33.9	25.4	273.6	14.0	3.6	6.7
12	0.0	6.5	27.9	10.2	29.5	18.7	117.7	34.6	13.3	26.4
13	0.7	5.2	35.5	2.5	52.8	3.6	272.3	135.4	28.8	33.0
14	0.4	1.3	65.0	8.8	24.5	20.6	246.5	146.7	126.9	29.5
15	1.1	1.6	28.3	13.5	8.9	13.2	55.8	109.6	276.8	11.1
16	1.5	16.2	55.7	38.0	8.5	4.4	548.2	103.8	371.3	19.3
17	1.1	7.4	67.5	24.7	19.3	5.6	236.0	107.3	497.0	26.5
18	1.1	12.4	90.1	40.8	25.8	1.1	235.3	108.8	383.9	78.8
19	7.9	12.0	93.7	36.3	36.9	2.2	89.3	81.0	251.5	81.6
20	12.6	18.4	110.2	52.6	51.9	7.5	220.0	79.4	250.3	157.0
21	21.5	29.0	106.3	77.0	61.6	10.0	68.5	107.0	244.7	96.6
22	15.0	39.2	111.2	4,314.6	72.6	14.0	100.0	177.9	341.0	139.8
23	10.2	76.1	154.2	2,579.4	56.5	6.8	430.2	253.9	265.1	130.7
24	18.4	56.9	130.6	6,012.4	100.0	17.2	1,261.9	331.0	261.7	199.2
25	0.0	60.3	111.4	9,371.5	88.3	5.3	1,733.2	333.3	233.2	209.0
26	6.9	40.6	103.6	20,337.8	112.1	8.5	4,342.5	303.1	177.2	183.0
27	18.0	53.8	68.5	38,971.6	113.1	2.8	5,610.9	219.7	90.4	177.1
28	5.4	37.6	40.9	45,747.6	75.1	8.2	8,364.8	171.8	133.7	203.7
29	13.5	16.0	19.3	24,568.8	60.6	3.6	6,728.7	96.1	184.4	119.2
30	30.2	36.5	20.9	22,870.3	70.0	3.2	4,429.2	74.1	305.8	246.9
31	30.2	21.8	29.6	22,870.4	53.9	0.0	2,491.5	36.0	166.6	246.9
32	37.9	8.7	9.0	29,650.8	52.3	0.0	1,653.2	60.2	255.3	523.4
33	49.9	6.1	9.7	26,256.4	53.1	4.3	841.7	63.3	180.3	537.0
34	75.9	16.5	9.5	22,884.3	97.8	0.0	522.9	58.4	163.8	501.4
35	171.8	20.0	29.1	20,352.7	138.9	2.2	193.3	56.2	249.1	801.1
36	270.1	27.3	38.3	28,822.3	151.8	7.2	545.9	40.3	228.4	1,106.1
37	125.7	26.4	33.9	21,250.0	155.6	3.6	371.7	47.2	249.5	1,367.8
38	53.2	17.1	22.7	14,468.0	92.9	4.7	39.0	41.4	261.6	989.2
39	19.0	3.6	8.7	6,850.1	67.6	5.4	20.3	21.6	164.7	569.0
40	6.8	1.8	2.7	5,135.1	39.2	21.6	20.5	14.0	71.4	289.7
41	17.6	5.6	3.1	5,101.2	35.4	3.7	19.6	27.4	43.3	147.6

length	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
42	5.8	8.8	6.8	1,696.5	31.3	0.0	33.0	42.5	19.4	57.7
43	0.0	5.8	8.7	6,783.9	51.4	3.6	21.2	39.8	22.1	109.6
44	16.6	3.1	2.7	867.7	37.6	3.6	16.3	32.3	14.2	96.6
45	16.3	3.6	6.4	1,707.6	32.6	0.0	18.3	39.8	61.6	68.1
46	0.4	1.8	3.7	3,393.8	25.2	0.0	19.4	10.8	2.2	117.2
47	5.4	0.0	1.4	3,405.5	20.2	9.0	8.3	15.6	20.0	43.3
48	0.0	2.2	0.0	4,236.9	12.9	7.2	1.8	13.2	20.8	20.8
49	0.0	0.0	0.0	846.8	4.0	10.7	2.7	0.0	8.7	31.9
50	0.0	0.0	0.0	3.2	2.7	10.7	0.0	0.0	0.0	2.8
51	0.0	0.0	0.0	5.5	0.0	0.0	1.6	4.3	0.0	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0

Table 22. Abundance at length (in 0000's) from 3L Canadian spring survey with Engel trawl. Note data are unconverted.

length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
6	-	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0
7	-	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0
8	-	3.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	-	5.6	0.0	0.0	1.4	0.0	2.6	0.0	0.0	0.0	0.0	0.0
10	-	6.5	0.0	0.0	0.0	5.2	9.1	3.6	0.0	0.0	0.0	0.0
11	-	10.8	1.3	1.5	0.0	1.2	18.4	4.6	0.0	0.0	0.0	0.0
12	-	7.1	1.3	2.5	0.0	1.2	6.5	0.8	0.0	0.0	1.3	0.0
13	-	5.7	5.4	0.0	0.0	1.2	6.5	16.6	0.0	2.8	1.0	0.7
14	-	2.8	12.4	11.9	1.3	2.4	5.4	1.8	0.0	0.0	1.0	1.3
15	-	7.5	3.8	23.3	2.3	9.3	1.1	4.9	0.0	1.3	4.3	2.9
16	-	7.0	10.0	26.1	4.9	15.2	9.3	18.9	1.5	1.7	2.0	7.7
17	-	735.1	6.9	16.5	1.6	14.6	12.5	36.5	0.0	4.9	9.0	21.9
18	-	7.8	6.7	13.6	14.0	30.1	15.0	47.3	6.7	3.2	13.4	30.3
19	-	17.7	10.3	21.2	6.5	26.7	27.8	50.9	21.1	3.3	4.8	46.7
20	-	43.7	13.0	13.0	15.6	38.5	25.3	39.9	36.5	26.3	11.8	43.2
21	-	29.0	9.7	16.1	16.9	34.5	37.4	77.8	73.3	55.4	15.2	39.5
22	-	82.2	8.9	27.5	19.6	37.4	27.6	198.5	42.9	169.3	10.2	31.8
23	-	121.1	9.0	26.5	18.3	38.6	55.1	302.6	72.9	337.2	41.1	29.0
24	-	271.3	18.1	40.6	21.4	25.6	64.3	257.9	126.2	338.8	56.8	41.9
25	-	1,363.1	20.3	63.9	27.6	18.8	53.1	144.8	156.9	182.1	86.8	35.4
26	-	4,756.4	38.1	102.4	37.4	35.3	46.2	58.3	177.7	213.1	81.1	69.8
27	-	5,062.7	33.3	119.4	60.4	31.2	51.1	50.4	136.0	263.3	46.4	79.5
28	-	14,348.9	28.9	98.1	71.0	48.6	67.6	50.0	102.4	168.4	37.0	70.7
29	-	12,984.0	33.5	86.6	74.1	37.9	42.3	50.9	84.2	128.4	28.4	49.6
30	-	22,182.1	22.4	48.8	47.4	50.6	72.3	24.9	55.8	76.4	22.2	22.7
31	-	36,079.3	38.2	58.0	42.4	45.4	60.7	23.8	57.9	57.0	12.3	19.9
32	-	57,814.9	34.9	51.3	58.6	43.7	38.1	20.5	47.4	63.4	9.4	23.1
33	-	64,043.8	22.6	35.6	62.8	45.7	30.3	19.0	48.8	50.4	6.7	9.6
34	-	57,490.9	37.1	49.6	36.4	44.9	35.0	20.0	33.0	33.4	3.1	4.3
35	-	42,841.2	26.9	38.2	37.9	35.5	43.2	14.7	33.5	30.6	3.3	3.8
36	-	31,492.3	32.5	38.9	42.0	21.2	27.7	9.1	20.4	26.6	5.6	4.3
37	-	22,459.2	56.9	33.2	36.6	19.0	26.0	11.6	9.9	15.1	4.5	6.3
38	-	8,913.0	51.0	33.1	29.7	16.1	13.5	3.3	10.5	23.9	2.6	3.3
39	-	2,546.9	31.3	21.0	24.2	10.2	17.2	4.3	13.5	17.6	0.0	2.8
40	-	1,685.8	29.7	20.9	29.5	8.3	8.7	4.2	10.8	11.6	2.6	3.4
41	-	1,671.4	16.6	14.9	22.3	10.1	3.8	2.9	4.1	2.0	0.0	0.6
42	-	266.7	14.3	14.3	15.2	4.7	3.8	3.7	4.3	5.6	0.0	2.3
43	-	300.6	14.7	5.9	11.1	5.0	3.0	2.5	4.0	0.0	1.8	0.9
44	-	200.8	17.5	10.2	5.3	3.2	6.3	2.6	4.3	3.1	0.6	1.5
45	-	75.1	3.8	3.9	9.2	4.8	1.6	1.8	3.5	0.0	0.0	0.0

length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
46	-	97.5	5.7	6.8	6.8	1.2	5.8	0.0	2.5	1.8	0.0	0.0
47	-	15.2	9.5	14.5	4.6	2.3	0.0	0.0	0.0	0.0	0.0	0.7
48	-	9.7	4.1	8.7	4.9	0.0	0.0	1.0	1.8	2.6	0.0	0.0
49	-	13.2	2.6	0.0	0.0	1.6	0.0	0.0	1.8	0.0	0.0	0.0
50	-	2.1	3.9	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	-	0.0	0.0	1.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	-	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	-	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 23. Abundance at length (in 0000's) from 3L Canadian spring survey with Campelen trawl for years 1996-2008. Note data are unconverted

length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	17.5	0.0	3.8	0.0	0.0	0.0	17.2
6	15.9	0.0	0.0	0.0	19.2	7.3	38.3	28.7	74.5	11.4	0.0	15.5	487.8
7	4.7	0.0	0.0	0.0	79.0	1,159.0	42.0	200.2	223.2	69.5	31.6	518.9	336.2
8	3.3	64.2	0.0	14.0	36.4	804.4	92.6	169.2	122.7	129.4	60.4	1,357.7	822.6
9	8.9	30.5	0.0	5.5	5.6	45.2	152.2	153.9	213.9	279.8	49.1	301.6	444.6
10	0.0	13.3	3.4	17.2	15.2	23.1	246.3	115.0	411.7	506.9	67.5	61.3	518.8
11	1.5	52.4	8.2	16.7	35.2	11.0	111.1	39.1	284.5	834.4	393.0	168.6	1,369.6
12	0.0	40.1	51.5	4.0	9.2	14.6	160.3	146.5	159.4	990.7	138.7	199.8	651.6
13	5.6	17.5	44.8	2.3	12.7	9.9	81.1	115.5	121.4	1,263.2	432.3	140.1	85.9
14	9.8	9.0	8.5	10.9	31.5	23.3	35.1	150.7	53.0	1,185.0	537.7	259.0	380.1
15	29.4	6.4	31.8	14.6	42.3	20.6	18.9	354.9	108.9	1,474.0	1,371.5	513.7	169.8
16	35.0	2.7	20.2	53.8	161.5	46.9	32.6	379.0	134.5	1,401.2	3,090.3	1,225.9	117.6
17	43.8	19.3	14.0	23.3	315.4	68.1	67.5	272.1	177.0	2,347.7	4,574.5	5,348.9	609.0
18	120.1	57.8	20.1	21.9	331.5	81.5	99.7	353.7	100.0	4,527.1	6,798.2	10,548.0	1,521.7
19	381.8	56.6	214.9	26.4	715.4	277.3	158.2	549.6	239.2	10,290.9	7,564.6	19,401.8	2,614.5
20	651.3	83.5	438.7	72.5	570.4	420.3	238.7	688.9	194.0	12,437.6	11,480.8	18,233.1	2,842.5
21	1221.2	148.6	878.0	278.6	1,484.1	755.1	290.0	1,004.4	286.3	8,734.9	19,411.1	121,159.1	3,163.8
22	2081.1	351.7	849.0	677.1	1,560.9	1,125.4	370.3	1,127.9	336.6	7,462.4	23,066.0	301,817.0	4,289.8
23	2813.0	557.5	1,453.4	1,333.1	1,716.6	1,413.8	445.4	900.6	533.8	7,819.9	16,365.6	485,692.5	4,757.6
24	2247.2	803.2	2,997.0	2,210.7	2,314.3	2,038.3	445.4	925.0	762.7	6,991.5	14,014.0	754,309.5	5,942.8
25	1427.7	723.1	3,800.7	1,834.4	2,152.5	1,722.3	433.2	782.2	1,345.1	4,829.5	6,941.1	648,188.3	5,895.0
26	924.1	612.4	5,138.6	2,511.7	3,094.8	2,476.0	331.9	733.2	2,627.5	5,442.9	2,584.9	1,007,191.3	5,336.0
27	763.0	318.0	5,422.3	2,805.0	3,907.0	4,638.0	310.0	438.1	3,463.0	8,809.5	4,324.6	1,022,557.5	4,029.1
28	682.1	208.9	4,471.6	1,919.3	4,287.6	4,094.6	270.4	287.0	2,390.6	6,842.9	1,341.5	415,641.3	2,879.2
29	510.2	133.4	3,680.3	1,260.4	5,748.7	4,802.3	262.1	219.3	2,532.5	5,281.2	1,529.6	441,679.9	2,484.9
30	302.6	112.1	3,365.5	628.7	6,519.7	5,247.7	191.0	146.9	1,571.9	2,947.4	851.4	363,997.4	1,517.9
31	237.9	76.6	2,104.4	790.2	8,155.9	6,010.6	156.5	75.9	1,220.6	1,890.5	602.3	364,961.9	1,512.2
32	122.5	64.2	2,249.8	741.2	10,025.1	6,398.9	87.3	44.4	776.1	822.1	633.4	242,952.0	1,464.0

length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
33	63.4	41.5	2,007.2	598.2	4,178.8	2,891.1	101.5	49.4	912.2	468.8	488.5	73,121.5	1,676.1
34	35.5	37.6	2,131.1	324.7	4,300.3	2,027.8	41.6	34.0	761.9	344.0	79.8	97,328.0	1,075.6
35	11.8	11.6	1,327.1	114.5	2,841.1	330.2	18.9	13.2	207.5	135.7	25.6	97,107.2	553.8
36	7.2	5.9	234.3	71.0	659.5	64.5	7.9	6.4	140.2	39.1	14.9	145,363.9	315.4
37	4.6	1.0	377.1	30.8	441.1	155.7	9.1	3.5	0.0	33.5	2.3	24,235.1	229.7
38	0.0	6.9	365.5	4.3	318.6	31.6	3.6	1.6	1.3	18.1	4.4	24,220.9	177.5
39	2.4	0.0	4.8	1.2	113.3	33.1	3.0	0.0	1.4	4.2	0.0	2.1	34.0
40	0.0	2.9	3.2	1.2	112.2	1.7	0.0	1.6	1.2	0.0	0.0	0.0	66.5
41	1.4	0.0	185.3	1.6	0.0	0.0	1.0	0.0	0.0	1.4	3.9	1.6	0.0
42	0.0	1.3	1.2	9.5	1.2	0.0	1.7	0.0	1.1	0.0	2.3	0.0	0.0
43	0.9	4.6	0.0	0.0	1.6	0.0	0.0	1.0	1.4	0.0	4.4	0.0	0.0
44	0.0	1.3	184.9	1.6	2.8	0.0	0.0	0.0	0.0	1.4	0.0	1.8	0.0
45	0.9	4.6	0.0	0.0	1.6	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.9	2.8	1.2	5.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 24. Abundance at length (in 0000's) from 3L Canadian spring survey with Campelen trawl for years 2009-2021. Note data are unconverted

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	-	-
5	4.4	380.6	0.0	0.0	5.1	4.5	0.0	21.7	0.0	0.0	3.4	-	-
6	139.6	13.4	56.2	4.0	61.6	98.1	152.5	459.9	0.0	944.1	10.6	-	-
7	117.6	65.3	72.6	121.7	190.8	66.7	2,000.5	1,785.1	0.0	1,108.2	95.1	-	-
8	103.8	113.0	92.0	106.6	156.4	91.7	1,451.1	8,645.3	7.2	973.1	187.2	-	-
9	45.3	139.0	107.9	173.7	190.6	107.2	130.1	9,411.8	0.0	727.3	464.4	-	-
10	96.9	317.2	133.7	191.7	206.2	153.5	74.0	1,750.9	0.0	110.3	399.9	-	-
11	187.4	421.4	247.2	261.1	309.6	174.7	194.4	1,814.8	4.2	191.6	779.5	-	-
12	373.4	483.1	169.5	302.8	217.0	126.0	257.3	408.5	0.0	551.2	1,123.0	-	-
13	477.4	269.0	200.0	322.3	290.4	110.0	122.0	112.8	0.0	1,069.1	418.6	-	-
14	1749.8	982.3	252.0	339.2	212.5	176.2	69.3	92.8	0.0	1,602.7	629.9	-	-
15	372.2	3,468.0	414.6	536.6	4,577.3	125.7	59.6	805.2	0.0	1,665.7	594.7	-	-
16	269.6	5,912.9	432.6	885.1	719.6	167.3	9.2	401.6	0.0	762.4	917.8	-	-
17	8336.1	5,689.7	1,364.7	1,142.2	896.2	2,664.4	36.7	1,321.0	0.0	586.0	1,196.0	-	-
18	16349.1	6,661.4	4,094.5	2,220.7	5,347.0	2,682.0	13.4	736.8	0.0	185.2	714.8	-	-
19	24370.9	22,322.9	6,649.8	3,421.5	3,099.4	2,950.9	77.5	919.9	0.0	144.3	375.9	-	-
20	22963.1	35,845.7	7,475.2	7,015.8	17,124.2	795.5	249.3	1,750.0	0.0	289.0	203.2	-	-
21	43770.1	25,576.2	8,145.2	40,754.4	86,666.4	8,786.8	1,354.2	1,487.2	0.0	879.7	261.0	-	-
22	38821.0	14,102.1	8,878.2	54,663.2	167,015.3	55,572.6	1,707.2	17,630.8	0.0	1,537.5	240.2	-	-
23	46406.2	21,632.3	7,985.8	37,541.8	243,647.4	128,967.3	2,420.7	65,997.9	0.0	3,387.5	438.9	-	-
24	33429.9	21,223.1	8,191.8	47,054.4	257,348.3	131,792.7	4,354.5	82,724.3	0.0	5,221.8	6,871.4	-	-
25	26693.7	17,763.8	11,174.4	57,743.7	230,308.2	82,198.9	5,317.3	99,970.5	0.0	4,240.3	3,736.4	-	-
26	18768.4	10,954.8	15,465.4	35,727.9	83,370.9	77,733.4	7,403.5	266,456.6	0.0	3,537.1	3,191.3	-	-
27	7244.2	6,586.1	20,194.8	25,114.3	51,935.0	61,776.8	9,716.6	349,926.1	0.0	2,054.2	18,945.4	-	-
28	5825.4	4,872.6	20,532.4	13,852.4	40,819.0	34,959.5	21,368.1	648,009.3	0.0	2,438.3	24,754.1	-	-
29	1885.4	2,054.5	13,331.0	7,447.7	26,812.5	18,745.0	19,848.5	790,630.8	0.0	1,183.0	22,309.1	-	-
30	1745.2	1,769.1	10,670.8	14,740.1	24,498.1	11,329.6	45,616.0	766,951.8	0.0	992.5	13,504.9	-	-
31	345.2	219.4	5,489.3	6,959.2	7,095.1	6,092.9	34,418.5	859,262.0	0.0	927.5	13,101.7	-	-
32	362.0	962.0	5,091.0	3,711.4	11,007.4	10,823.4	34,257.7	571,688.4	0.0	473.7	11,422.2	-	-
33	223.4	558.6	1,965.8	417.8	4,435.3	925.3	28,349.0	590,482.6	0.0	550.8	18,702.4	-	-

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
34	191.5	277.7	654.2	3,218.9	4,835.8	884.6	23,295.4	394,827.7	0.0	241.1	20,913.0	-	-
35	116.9	91.3	279.4	129.4	5,689.6	889.5	14,202.9	417,460.5	0.0	178.9	5,609.7	-	-
36	49.7	53.9	208.8	69.2	3,558.4	827.4	10,062.9	275,816.9	0.0	102.4	4,734.2	-	-
37	38.2	24.5	109.4	91.3	2,305.8	302.1	4,056.9	274,650.6	0.0	85.3	1,394.7	-	-
38	18.8	13.3	390.8	15.9	1,092.6	170.3	3,016.0	117,690.5	0.0	115.9	1,392.6	-	-
39	9.2	1.4	7.4	1,559.9	904.7	25.1	1,008.0	16,289.6	0.0	11.8	83.3	-	-
40	0.0	3.4	0.0	9.5	884.3	28.9	0.0	46,348.0	0.0	13.5	125.0	-	-
41	0.0	0.0	0.0	7.9	591.4	0.0	7.1	31,118.7	0.0	8.8	7.6	-	-
42	4.0	0.0	0.0	0.0	1,179.1	0.0	0.0	15,449.9	0.0	1.2	5.2	-	-
43	0.0	13.4	0.0	4.0	300.0	0.0	0.0	109.8	0.0	1.2	0.0	-	-
44	0.0	0.0	0.0	4.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	-	-
45	0.0	0.0	29.6	0.0	296.7	0.0	0.0	15,808.9	0.0	0.0	0.0	-	-
46	0.0	0.0	0.0	0.0	294.8	0.0	0.0	0.0	0.0	0.0	1.1	-	-
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	-	-
48	1.5	0.0	0.0	0.0	294.8	0.0	0.0	0.0	0.0	0.0	0.0	-	-
53	0.0	0.0	0.0	0.0	294.8	0.0	0.0	0.0	0.0	0.0	0.0	-	-
54	0.0	0.0	0.0	0.0	294.8	0.0	0.0	0.0	0.0	0.0	0.0	-	-
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	-	-
57	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	-	-

Table 25. Abundance at length (in 0000's) from 3N Canadian fall survey with Engel trawl. Note data are unconverted

length	1990	1991	1992	1993	1994
7	0.4	0.7	0.0	0.0	0.0
8	0.0	84.4	0.0	0.0	0.0
9	2.5	84.4	0.0	0.0	0.0
10	12.3	506.7	0.0	0.0	0.0
11	7.9	1,476.2	0.0	0.4	0.0
12	7.4	4,049.9	0.0	1.3	0.0
13	6.5	7,357.1	46.2	1.2	2.1
14	7.4	1,953.4	17,073.7	1.7	3.3
15	10.4	1,014.4	94,204.8	17.3	201.6
16	40.9	716.2	153,265.8	60.8	240.1
17	94.9	713.0	172,911.9	252.7	1,544.3
18	258.3	1,951.1	206,611.5	680.5	6,314.8
19	248.1	4,809.3	166,475.6	623.1	8,876.8
20	66.5	4,789.6	308,768.7	414.4	5,622.7
21	39.8	3,088.1	474,232.0	635.5	2,942.2
22	23.3	1,526.2	630,725.3	904.5	1,895.3
23	23.5	632.0	398,318.5	982.7	2,103.0
24	29.5	686.2	98,142.1	698.0	1,480.6
25	32.9	758.2	28,580.7	491.0	1,303.0
26	27.7	450.3	3,470.4	386.8	1,205.3
27	25.9	226.4	12,069.3	470.6	1,139.8
28	17.2	248.3	1,413.8	359.5	1,760.8
29	17.2	120.5	639.9	354.6	1,969.0
30	9.8	138.1	485.5	210.0	1,629.3
31	12.7	160.3	601.4	156.6	1,174.2
32	2.5	39.8	367.4	122.5	748.2
33	0.0	9.3	8,590.2	94.3	365.1
34	0.5	8.7	143.8	68.9	197.1
35	0.4	80.4	51.2	50.6	145.3
36	0.0	7.9	55.6	57.5	30.9
37	0.0	3.7	31.5	46.9	11.8
38	0.0	7.9	41.4	31.9	41.2
39	0.0	7.4	29.6	30.9	23.9
40	0.0	2.7	0.0	24.3	19.7
41	0.0	2.2	0.0	13.1	0.0
42	0.0	1.6	0.0	11.0	0.0
43	0.0	0.5	0.0	4.2	2.9
44	0.0	2.2	0.0	4.0	0.0
45	0.0	0.0	0.0	2.1	0.0
46	0.0	0.5	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.8

Table 26. Abundance at length (in 0000's) from 3N Canadian fall survey with Campelen trawl for years 1995-2008. Note data are unconverted

length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	11.8	0.0	0.7	0.0	0.0	0.0	298.8	10.8	0.0	0.0	5.1	0.0	5.1	0.0
6	4.5	0.6	3.9	0.0	0.0	4.6	10.1	44.6	9.9	0.0	35.0	35.4	26.0	2.2
7	1.4	0.6	1.6	2.3	10.6	10.1	2.0	33.8	11.2	2.5	20.2	15.0	254.4	1.1
8	13.4	4.5	5.9	1.3	4.8	9.9	3.6	13.9	15.1	13.7	28.1	14.3	196.1	1.1
9	36.0	2.1	6.6	5.0	19.3	0.0	32.5	50.2	18.4	101.6	52.2	0.7	119.2	1.1
10	28.5	1.2	7.0	6.2	7.9	3.8	0.0	57.4	1,008.9	355.0	86.9	0.0	22.0	2.2
11	11.8	42.3	11.5	16.5	9.8	1.3	1.5	94.9	1.3	271.3	1,325.4	0.0	16.9	0.0
12	23.4	3.5	39.2	3.9	11.4	13.6	298.8	21.4	6.7	16.7	3,864.2	127.0	1,007.3	4.5
13	34.9	22.9	21.0	12.4	43.9	10.4	298.0	11.3	1,020.5	93.3	883.8	1,370.5	1,012.8	267,945.9
14	63.3	249.1	45.7	27.6	246.2	13.6	0.7	85.3	190.0	183.7	1,234.5	12,967.5	4,711.7	312,990.9
15	125.9	150.9	185.2	4,914.1	169.6	12,918.1	298.8	160.7	2,200.8	93.5	1,000.1	16,561.6	52,760.8	239,137.2
16	316.7	179.3	588.0	4,916.6	174.8	16,132.4	90,164.1	603.0	14,322.8	266.5	750.4	17,274.5	96,275.6	1,261,939.4
17	18928.9	118.9	775.4	33,773.1	24.5	20,202.8	269,024.1	2,144.0	30,640.5	405.1	178.3	15,478.5	105,743.4	2,093,320.3
18	118521.6	451.7	911.4	63,004.8	575.1	21,060.5	502,048.8	3,994.0	52,363.1	982.6	3,325.5	12,216.8	79,705.5	1,684,698.8
19	267242.3	1,273.6	19,823.0	48,393.4	6,374.6	35,909.4	631,461.9	5,911.1	85,601.7	1,954.5	8,091.0	25,185.7	56,150.0	898,300.0
20	325861.9	1,454.2	54,808.0	216,916.8	13,242.0	92,167.6	640,074.1	5,063.5	94,488.5	3,995.5	13,291.8	33,772.8	70,441.1	368,867.6
21	176675.3	1,522.7	128,118.1	399,066.9	22,053.1	134,014.2	430,661.5	8,522.7	90,291.2	6,175.4	29,609.6	57,416.5	80,212.6	263,505.6
22	103478.0	1,426.6	137,384.5	489,884.3	34,338.5	203,405.7	853,647.5	16,494.8	81,484.3	7,114.1	25,665.3	97,857.2	71,161.5	170,072.6
23	63196.7	2,048.7	109,759.2	446,182.1	37,144.2	173,145.8	699,889.2	18,074.0	93,445.6	10,318.3	44,166.4	171,596.7	94,702.8	501,378.6
24	20565.8	1,305.1	68,375.5	277,938.6	26,643.5	142,699.0	356,347.9	19,387.0	74,267.5	10,205.4	27,791.2	171,744.6	86,723.3	333,616.4
25	15711.5	1,219.6	45,406.6	145,299.4	21,384.2	138,293.2	249,186.0	15,061.5	43,103.3	8,637.2	20,731.1	62,509.7	42,679.0	282,571.8
26	2987.1	1,289.3	28,232.2	49,111.0	13,455.7	101,123.1	132,461.1	16,496.8	28,920.1	6,430.6	15,992.8	60,036.6	22,845.5	160,993.4
27	5594.2	804.8	20,215.7	33,575.9	6,725.1	29,615.6	101,230.4	14,554.2	24,707.9	5,399.8	10,350.8	29,196.9	14,742.0	218,695.8
28	537.9	662.9	15,388.1	22,264.3	9,431.0	14,152.9	21,370.5	7,518.5	19,577.7	6,319.1	10,276.8	6,641.0	8,353.9	153,614.8
29	606.5	575.4	2,790.2	12,828.7	4,630.4	9,398.0	6,135.3	3,151.7	6,562.6	7,078.2	7,462.3	9,462.3	5,265.4	55,447.0
30	546.8	365.9	3,789.0	5,319.7	2,306.7	4,479.1	2,905.3	1,144.5	3,679.2	6,587.1	5,020.7	5,169.2	4,843.6	24,115.7
31	484.2	802.2	1,848.4	1,377.2	1,865.4	5,371.3	1,191.5	1,231.5	971.3	4,778.5	3,122.5	3,019.4	5,291.6	12,881.8
32	232.9	491.8	1,638.4	1,267.8	1,915.1	2,414.2	891.3	677.9	794.5	3,916.0	2,238.0	2,508.4	2,675.8	5,904.3
33	124.2	249.8	608.8	5,186.0	2,038.5	3,168.1	564.9	629.3	1,661.5	2,068.5	2,347.1	4,306.2	595.4	3,452.4
34	21.5	100.9	247.8	903.9	1,520.0	622.1	633.6	519.4	283.7	1,352.3	1,528.9	222.8	170.9	2,433.6

length	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
35	4.3	31.5	141.7	482.6	1,582.4	134.7	393.8	223.6	106.1	843.5	1,131.0	210.7	65.3	1,113.5
36	48.3	1.9	131.5	98.9	189.1	199.6	166.6	94.1	17.6	799.1	455.2	69.1	17.7	138.2
37	16.2	0.8	196.0	103.5	18.5	139.5	290.3	65.2	10.8	503.7	375.1	95.5	470.7	358.3
38	17.8	0.0	75.0	7.4	11.6	46.2	80.6	5.3	50.8	278.4	119.3	5.3	218.3	1,558.5
39	23.8	0.8	67.0	29.9	6.3	42.8	24.3	0.0	3.4	514.5	59.0	22.2	7.2	12.7
40	11.7	0.7	65.3	3.3	0.0	0.0	100.5	19.3	0.0	221.9	18.0	41.3	0.0	340.7
41	4.3	0.8	139.8	8.8	2.9	0.0	24.0	0.0	0.0	55.5	18.7	4.3	165.0	6.4
42	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.4	18.0	0.0	0.0	0.0
43	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.4	0.0	83.9	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4
45	4.3	0.0	0.0	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	0.0	41.5	1.1
46	1.1	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	13.2
47	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
97	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.9	0.0	0.0	0.0	0.0

Table 27. Abundance at length (in 0000's) from 3N Canadian fall survey with Campelen trawl for years 2009-2021. Note data are unconverted

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
3	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	2.9	-
4	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	20.6	0.0	0.0	0.0	-
5	1.1	4.5	1.1	189.8	0.0	-	269.2	1.1	180.4	1.3	0.0	77.2	-
6	2.2	18.9	0.0	30.6	0.0	-	3.8	7.2	136.2	3.8	10.4	79.0	-
7	3.3	19.7	0.0	0.0	0.0	-	40.0	3.3	332.1	50.6	12.2	292.4	-
8	9.7	12.6	0.0	5.1	0.0	-	30.0	2.2	0.0	137.9	8.9	2,462.3	-
9	3.3	15.1	0.0	1.3	0.0	-	43.7	18.0	5.1	227.8	30.9	6,154.6	-
10	11.1	10.2	2.2	1.3	23.7	-	143.4	32.5	7.0	24.6	12.2	9,976.7	-
11	24.2	1,513.3	2.2	0.0	0.0	-	112.8	7.8	1,010.2	18.9	18.0	878.9	-
12	62.3	1,524.8	3.3	0.0	75.3	-	15.0	602.7	848.7	172.4	13.5	1,339.4	-
13	8154.0	3,022.7	2.2	1.3	970.7	-	33.7	1.1	16.4	159.9	19.6	23.4	-
14	51004.2	5,990.0	497.8	0.0	37.6	-	80.8	9.2	25.5	156.0	24.3	42.1	-
15	62963.6	4,523.6	1,206.5	1,292.2	0.0	-	107.4	2.8	1,050.7	80.0	81,910.3	1,312.0	-
16	365147.5	22,240.6	116,842.8	0.0	37.6	-	64.6	3.9	2,547.0	386.1	163,848.2	36.2	-
17	1642568.5	44,374.3	580,756.8	86,649.8	58,541.3	-	160.2	7.5	4,535.7	143.6	614,173.8	1,823.7	-
18	5468470.0	172,775.4	1,586,901.3	277,167.4	281,448.5	-	1,349.1	9.2	2,907.0	736.7	737,214.2	16,269.4	-
19	4978307.3	914,413.5	7,417,150.4	1,539,432.5	867,680.2	-	221,658.6	10,605.4	5,791.8	906.7	778,175.7	5,006.4	-
20	3298280.9	1,241,706.4	19,105,779.3	4,408,599.1	900,690.9	-	924,098.2	106,773.1	21,530.0	53,655.8	385,483.7	21,708.2	-
21	1293652.0	1,259,159.0	22,081,153.6	9,112,021.6	2,620,356.5	-	3,186,844.8	492,228.4	64,870.6	220,665.7	771,035.7	204,350.1	-
22	445031.6	470,570.3	10,086,464.3	8,667,272.0	4,077,544.9	-	6,373,741.4	1,017,494.7	134,618.0	1,105,391.8	1,447,568.7	568,599.1	-
23	255474.0	344,552.6	4,702,527.3	6,173,294.0	2,364,631.6	-	5,064,280.4	1,296,051.4	168,634.5	1,850,602.1	2,400,884.9	643,751.3	-
24	394684.3	247,082.8	1,902,739.8	3,048,753.8	1,268,820.0	-	4,039,885.9	869,724.7	130,108.0	1,975,778.8	2,000,924.3	541,916.5	-
25	169029.1	129,035.5	1,583,860.4	1,118,830.3	730,053.6	-	2,354,404.6	473,820.9	80,741.9	1,194,367.5	2,039,724.7	702,834.8	-
26	103828.4	122,058.5	1,124,823.2	573,535.5	269,338.8	-	890,535.6	351,998.6	91,357.7	1,059,347.2	1,086,857.3	379,373.8	-
27	11441.7	67,212.7	540,503.7	515,747.3	69,857.5	-	707,160.0	94,815.7	86,060.0	623,800.5	660,986.6	356,039.6	-
28	29162.5	46,945.8	310,683.6	132,295.3	91,216.9	-	391,503.9	43,610.3	44,435.8	152,551.8	328,982.7	181,877.8	-
29	49124.7	19,423.0	311,674.5	298,811.4	35,216.5	-	189,901.2	13,257.3	20,389.3	24,842.4	85,588.0	96,659.0	-
30	9086.7	19,085.4	620,416.9	46,806.1	43,493.9	-	196,209.4	3,799.8	16,057.3	13,164.4	67,422.4	83,646.0	-
31	1080.0	5,584.3	239,499.0	20,474.4	13,315.6	-	366,592.7	579.4	8,361.0	12,091.8	62,757.7	34,075.2	-
32	1323.4	5,413.6	116,117.9	68,287.3	12,254.7	-	3,695.1	278.9	9,563.2	4,702.9	40,157.0	2,402.4	-
33	1068.4	7,082.6	1,732.8	53,800.0	8,574.7	-	90,830.6	102.9	1,472.3	1,785.7	13,514.7	1,146.9	-
34	485.1	1,004.7	264.1	3,725.7	326.7	-	6,828.6	344.9	27.0	123.4	5,614.1	313.6	-
35	432.7	578.3	214.6	3,296.8	1,725.0	-	585.2	45.9	199.5	83.8	28.9	346.9	-

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
36	468.3	345.2	361.4	243.3	297.6	-	2,269.9	20.0	6.0	24.4	29.5	62.2	-
37	266.3	63.2	254.4	215.5	100.8	-	19.0	2.6	2.4	113.6	35.8	9.8	-
38	283.5	44.8	124.8	126.2	34.5	-	9.4	7.2	1.3	12.4	22.3	12.0	-
39	127.4	52.3	107.1	124.0	30.8	-	9.5	1.9	1.0	6.6	32.3	8.7	-
40	125.7	49.4	137.6	70.9	167.6	-	1.7	0.0	0.0	15.8	2.0	2.8	-
41	75.1	67.9	86.7	64.7	0.0	-	1.7	0.0	0.0	0.9	7.2	4.5	-
42	353.3	33.9	147.8	16.5	0.0	-	0.0	0.0	0.0	5.1	1.3	0.0	-
43	49.5	0.0	112.2	0.0	0.0	-	0.0	0.0	1.0	0.0	0.9	0.0	-
44	0.0	0.0	112.2	10.2	0.0	-	0.0	0.0	0.0	0.0	0.9	0.0	-
45	24.8	31.0	66.3	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-
46	0.0	0.0	25.5	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-
47	0.0	0.0	5.1	0.0	0.0	-	0.0	0.0	1.0	0.0	0.0	0.0	-
57	0.0	0.0	0.0	0.0	0.0	-	0.0	0.8	0.0	0.0	0.0	0.0	-
59	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	1.0	0.0	0.0	0.0	-
97	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-

Table 28. Abundance at length (in 0000's) from 3N Canadian spring survey with Yankee trawl. Note data are unconverted

length	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
3	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.3	0.5	0.0
6	0.0	0.0	0.0	1.1	19.4	11.8	0.0	0.3	0.9	5.0
7	2.3	0.0	0.0	4.2	80.9	32.0	9.8	1.3	30.0	3.4
8	3.9	0.0	0.0	4.2	42.7	40.6	20.6	1.1	0.0	0.0
9	7.9	0.0	0.0	4.2	10.4	38.6	9.8	1.5	0.0	1.5
10	2.3	0.0	0.0	2.1	4.5	28.1	4.5	3.1	3.5	6.7
11	3.4	0.0	0.0	19.0	8.4	22.4	11.2	4.2	0.0	5.1
12	31.3	0.0	0.0	15.8	9.6	15.9	0.9	1.3	0.0	2.5
13	1.1	0.0	3.5	6.3	7.2	6.4	20.9	1.8	0.0	2.9
14	7.3	0.0	0.0	4.2	13.1	2.1	82.9	0.3	0.0	4.8
15	166.0	0.3	0.0	0.0	48.7	8.2	12.1	1.9	21.7	8.9
16	538.4	0.3	0.0	4.2	98.2	7.3	723.9	4.3	51.8	15.5
17	727.2	1.0	0.0	0.0	96.2	25.4	5,647.7	6.1	137.5	67.6
18	1471.9	1.3	0.0	0.0	57.6	53.4	33,814.9	10.7	93.0	233.6
19	5498.6	8.4	0.0	0.0	46.2	109.3	109,965.8	20.1	913.9	233.5
20	10844.4	19.3	0.6	0.0	89.9	95.2	185,241.7	37.0	1,841.1	185.1
21	11524.3	33.8	0.0	0.0	116.7	318.3	183,330.7	67.0	5,761.9	163.0
22	6939.7	77.3	0.0	0.0	295.0	553.8	114,027.5	66.7	11,695.8	170.1
23	3197.1	97.6	0.0	0.0	586.2	690.3	95,856.5	74.8	14,137.8	113.0
24	2349.2	75.6	0.0	0.0	926.4	903.8	50,101.4	57.2	12,692.6	55.8
25	864.9	38.5	0.0	0.0	1,454.4	690.6	22,834.6	37.5	8,215.6	23.9
26	440.8	17.3	0.0	0.0	1,381.9	614.5	13,539.5	27.9	5,136.6	13.0
27	296.8	8.5	0.0	0.0	1,071.6	522.9	7,408.1	14.7	4,085.2	3.9
28	337.7	5.6	0.0	0.0	671.5	262.6	2,142.4	8.7	2,352.8	0.0
29	291.2	2.1	0.0	0.0	385.7	149.4	634.4	4.5	1,028.6	4.3
30	36.8	3.7	0.0	0.0	246.3	103.8	140.8	3.1	676.1	0.0
31	176.7	2.7	0.0	0.0	56.0	63.9	34.7	2.7	437.4	0.0
32	35.3	0.3	0.0	0.0	32.8	39.1	3.3	0.8	124.7	0.0
33	178.9	1.9	0.0	0.0	56.8	16.7	0.5	0.0	188.5	0.0
34	6.9	0.5	0.0	0.0	18.9	32.2	102.8	0.6	196.7	2.5
35	0.0	1.3	0.0	0.0	9.7	29.3	0.0	0.0	65.1	0.0
36	7.5	0.3	0.0	0.0	6.1	21.1	0.0	0.0	128.4	0.0
37	0.3	1.1	0.0	0.0	18.0	52.8	1.6	0.0	70.7	0.0
38	7.2	0.0	0.0	0.0	3.3	36.4	33.1	0.0	0.0	0.0
39	14.1	0.3	0.0	0.0	1.6	7.3	32.7	0.0	0.0	0.0
40	7.2	0.0	0.0	0.0	13.8	16.3	0.0	0.0	0.0	0.0
41	7.4	0.0	0.0	0.0	2.1	9.5	0.0	0.8	0.0	0.0
42	7.2	0.0	0.0	0.0	0.0	8.2	1.4	0.6	0.0	0.0
43	6.9	0.3	0.0	0.0	0.0	19.4	0.0	0.0	0.0	0.0
44	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.3	0.0	0.0	13.8	14.6	0.0	0.0	0.0	0.0

Table 29. Abundance at length (in 0000's) from 3N Canadian spring survey with Engel trawl. Note data are unconverted

length	1978	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
7	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	32.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.5	0.0	5.3	21.8	0.8	0.0	5.9	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	1.5	0.0	29.1	0.8	0.0	4.2	0.0	0.0	3.4	0.0
11	0.0	0.0	0.8	2.1	0.0	46.6	2.3	0.7	0.8	2.6	0.8	2.1	0.0
12	0.0	0.0	84.4	0.8	0.0	64.2	0.4	0.8	3.0	20.5	17.3	2.1	0.0
13	0.0	0.4	64.2	1.1	5.7	18.6	0.0	3.9	3.0	54.6	25.3	2.1	0.0
14	0.0	675.6	65.4	11.7	16.5	5.1	24.1	2.5	0.5	35.8	69.4	2.3	0.6
15	0.0	1,692.0	282.8	14.2	32.8	8.7	102.9	6.9	2.5	29.5	204.9	8.3	0.0
16	0.0	7,470.1	1,117.9	44.7	38.3	9.0	58.5	26.8	13.6	4.2	369.0	20.9	6.4
17	0.0	16,045.7	1,659.8	136.1	78.6	12.5	12.8	72.7	40.9	7.8	306.0	45.4	32.5
18	0.0	24,569.3	1,968.0	235.1	668.0	140.0	13.0	58.4	124.4	22.1	111.5	58.8	81.1
19	30.1	21,136.4	2,558.8	509.2	2,214.7	562.1	19.0	24.5	256.2	56.4	120.7	37.3	113.6
20	0.0	7,656.0	2,068.8	406.0	4,159.9	1,411.6	31.0	9.6	202.0	65.9	223.2	21.3	64.0
21	75.3	6,957.3	1,039.3	191.1	4,845.0	2,612.3	54.4	11.6	130.6	89.4	379.2	28.5	46.3
22	105.5	7,975.4	888.0	69.3	3,252.2	3,154.7	101.4	5.3	107.9	48.0	282.6	28.1	41.2
23	331.4	20,243.4	1,496.3	62.2	1,912.4	1,613.4	97.8	7.0	181.5	21.3	215.9	21.3	40.3
24	361.6	27,250.7	2,824.6	70.4	1,146.9	1,060.6	76.7	4.7	209.7	34.9	147.8	27.8	36.6
25	391.7	23,461.4	2,131.9	75.0	771.2	1,120.7	75.6	4.6	136.9	31.7	176.2	24.0	28.3
26	723.1	3,784.0	1,209.1	50.3	592.9	983.3	73.1	4.8	124.2	36.2	168.3	22.7	33.1
27	632.7	2,432.2	511.0	28.5	278.0	478.5	39.9	2.8	73.7	27.5	230.1	23.0	35.3
28	677.9	2,049.5	104.5	12.1	112.8	173.1	14.0	1.6	34.6	18.5	200.7	14.4	29.9
29	768.3	340.9	130.5	10.8	84.5	141.5	11.3	0.8	32.4	15.1	206.4	17.6	23.8
30	632.7	109.6	126.8	4.2	26.8	112.2	9.7	1.9	21.6	8.3	235.0	12.2	23.4
31	467.0	302.6	32.6	2.2	7.2	56.5	4.7	0.8	15.3	6.3	309.4	7.2	11.6
32	316.4	0.4	4.0	1.4	7.2	1.1	5.0	0.0	11.4	4.8	329.4	5.4	11.7
33	135.6	1.2	0.0	3.2	0.4	1.9	0.9	0.0	8.1	4.3	294.3	3.6	5.9
34	90.4	62.3	0.5	4.8	0.0	2.3	0.9	0.4	7.7	3.2	243.3	7.3	4.4
35	90.4	0.9	0.6	1.4	1.7	1.1	0.0	0.0	5.1	2.0	164.5	3.9	1.7
36	75.3	61.6	0.6	0.3	1.3	1.0	1.8	0.0	3.8	1.4	81.2	1.3	1.9
37	60.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.4	65.0	2.8	1.5
38	15.1	0.4	0.0	0.0	6.4	0.0	0.4	0.0	7.6	2.7	48.6	1.7	2.2
39	15.1	0.4	1.6	0.0	6.8	0.0	0.4	0.0	4.1	3.0	65.9	1.8	0.5
40	0.0	0.4	0.0	0.0	0.4	0.0	0.0	0.0	2.9	1.0	43.9	0.0	0.0
41	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.5	0.0	0.0
42	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.5	19.6	0.4	0.0
43	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.7	0.5	11.5	0.9	0.6
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.3	0.6	0.0
45	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.8	0.0	0.0
50	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 30. Abundance at length (in 0000's) from 3N Canadian spring survey with Campelen trawl for years 1996-2008. Note data are unconverted

length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0
6	43.4	0.0	1.9	1.5	0.0	3.1	0.0	0.0	6.2	0.0	0.0	0.0	83.1
7	18.2	0.0	3.8	65.5	0.8	42.1	5.7	6.8	16.1	0.0	0.0	4.1	54.4
8	11.8	3.9	1.0	312.8	0.8	3.5	16.0	3.2	6.2	0.8	0.0	145.1	15.4
9	21.8	8.4	1.0	580.1	2.8	3.7	4.3	3.1	6.3	33.5	0.0	0.0	9.9
10	29.6	11.3	3.7	117.4	1.4	9.2	4.8	17.2	4.6	785.0	0.0	632.5	10.0
11	46.2	20.7	2.6	17.4	4.6	5.1	1.8	3.6	7.0	804.6	0.0	0.0	10.0
12	80.5	32.2	0.8	38.2	9.9	112.0	3.8	6.4	11.0	135.0	0.0	650.5	2.5
13	89.4	36.9	29.1	50.0	501.7	56.9	3.6	21.2	11.6	140.2	0.0	1,270.8	1,742.5
14	30.1	184.7	359.0	26.3	52.7	315.6	189.6	11.8	11.4	95.6	6.4	17.4	8,889.8
15	44.2	196.3	1,016.9	3.9	1,240.6	536.5	614.4	43.2	296.6	66.4	0.0	1,065.7	8,937.0
16	61.0	126.2	2,027.0	33.7	584.2	404.4	567.0	210.8	42.4	86.3	6.4	1,659.2	58,559.9
17	205.8	121.5	2,626.0	77.3	618.1	957.8	1,060.5	2,780.5	720.0	2,448.0	0.0	9,872.9	168,428.9
18	776.3	153.9	1,955.6	11,131.3	1,968.4	1,542.7	4,498.8	3,938.0	2,718.0	18,462.2	0.0	22,923.2	395,477.0
19	1276.7	396.0	1,745.6	5,750.5	4,900.5	2,264.5	4,485.3	9,627.1	8,697.2	31,114.5	0.0	13,628.2	238,669.1
20	1176.7	664.9	9,059.7	19,386.7	12,296.1	2,244.2	6,277.9	16,870.2	18,747.3	23,819.5	6.4	10,785.7	263,245.8
21	819.2	889.5	31,834.6	71,491.1	27,712.2	3,433.8	8,269.5	17,063.7	24,958.0	32,074.3	0.0	13,375.1	269,554.2
22	389.7	635.6	44,366.9	134,642.6	83,225.6	3,539.5	8,753.0	11,601.7	20,282.8	29,862.3	0.0	35,016.0	486,486.9
23	396.8	477.2	34,229.5	156,686.3	112,030.1	2,995.1	10,702.5	7,458.6	48,328.3	27,390.4	0.0	40,895.8	455,462.5
24	215.3	572.4	29,268.9	183,927.0	119,063.8	2,419.8	11,514.2	2,623.8	51,428.3	27,194.3	0.0	36,105.8	340,747.0
25	204.5	469.0	13,811.3	60,705.1	65,798.7	1,160.8	8,699.6	1,567.4	41,541.9	23,908.1	0.0	26,720.3	160,836.4
26	160.2	395.8	7,097.5	90,884.1	49,128.2	811.0	9,353.4	360.7	124,632.4	12,398.1	0.0	16,239.4	149,843.4
27	111.7	207.4	3,728.1	30,883.2	33,305.6	588.4	7,652.8	687.3	233,750.7	8,688.3	0.0	13,043.4	34,014.5
28	113.9	152.6	2,595.3	11,941.3	11,174.3	563.3	6,218.6	243.6	288,815.3	5,066.0	0.0	4,380.8	48,622.3
29	108.2	119.6	2,294.5	14,823.1	10,814.8	573.4	5,304.6	189.9	147,433.6	1,996.0	0.0	3,611.0	12,445.2
30	90.0	142.9	562.5	662.2	5,896.0	751.3	2,581.4	570.5	116,668.0	398.5	0.0	3,438.6	7,528.5

length	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
31	70.3	115.3	920.0	482.6	3,454.0	734.7	3,094.1	263.2	85,995.1	559.9	0.0	1,929.6	6,614.5
32	42.8	75.2	707.1	324.9	1,288.0	541.3	1,841.5	1,315.6	61,437.3	455.9	0.0	1,742.3	2,885.3
33	25.5	46.6	590.6	206.2	1,907.0	394.5	652.4	599.4	12,335.8	68.9	0.0	929.1	3,595.1
34	5.9	13.1	335.9	156.4	782.9	167.6	899.3	125.4	30,715.9	124.5	0.0	278.5	988.9
35	4.2	7.4	110.2	84.8	45.0	112.6	430.6	415.8	12,314.0	31.8	0.0	145.5	182.9
36	2.8	2.9	41.3	50.2	29.3	29.9	215.4	30.6	26.9	349.9	0.0	71.4	239.9
37	8.3	4.4	6.4	17.2	15.4	30.9	1.5	10.8	6,149.4	19.2	0.0	39.5	131.2
38	3.0	5.0	7.1	8.2	16.3	6.9	1.1	3.1	6.2	1.9	0.0	112.8	0.6
39	2.6	0.4	8.6	6.5	6.0	12.7	2.6	6.4	2.8	16.6	0.0	17.9	93.3
40	2.9	0.0	0.0	9.2	8.9	1.1	0.0	16.0	0.9	1.7	0.0	11.3	0.6
41	0.0	4.6	0.0	5.5	1.4	0.0	0.0	0.0	0.6	0.0	0.0	4.2	0.0
42	0.4	0.0	3.1	3.8	1.9	15.8	0.0	0.0	0.0	0.6	0.0	2.7	15.2
43	2.1	0.0	0.0	0.0	1.4	8.5	0.0	0.0	0.0	0.0	0.0	0.7	0.0
44	0.0	0.0	1.1	1.1	0.0	9.2	0.0	0.0	0.0	0.0	0.0	0.6	17.8
45	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 31. Abundance at length (in 0000's) from 3N Canadian spring survey with Campelen trawl for years 2009-2021. Note data are unconverted

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
4	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	-	-
5	0.0	0.0	0.0	0.0	14.5	13.8	0.0	60.1	0.0	0.0	0.0	-	-
6	0.0	0.0	0.0	0.0	33.8	45.1	143.9	360.5	12.1	1.3	0.0	-	-
7	3.0	0.0	5.6	0.0	31.9	30.0	2,761.7	360.5	72.8	14.9	0.0	-	-
8	1.1	3.8	1.1	1.1	10.3	7.5	85.6	742.0	241.6	333.7	1.8	-	-
9	3.3	2.2	0.0	0.0	0.0	3.8	21.1	586.4	192.4	8.5	5.5	-	-
10	6.7	257.6	1.1	0.0	1.3	5.4	1.1	21.8	74.9	4.2	2.2	-	-
11	1.1	260.1	0.0	0.0	4.6	2.5	18.9	20.0	16.4	8.1	0.0	-	-
12	1074.3	0.0	0.8	1.1	4.9	1,720.6	17.8	6.4	8.9	10.6	4.3	-	-
13	113340.4	516.4	1,086.6	1.1	48.4	1,887.8	0.0	60.1	4.4	3.9	7,001.2	-	-
14	80501.7	1,034.0	2,122.8	870.2	0.0	168.7	0.0	0.0	0.8	3.9	7.1	-	-
15	67875.0	1,092.5	2,830.7	10,376.9	8,015.2	182.3	0.0	1.3	298.8	14.3	3.9	-	-
16	1667042.3	28,418.2	20,408.6	6,490.1	1.3	12.4	7,305.1	2.0	4,266.5	70.4	970.3	-	-
17	4205241.0	280,736.1	45,608.3	304,594.7	1,605.6	8,593.7	0.0	1,040.3	32.6	612.4	9.7	-	-
18	5670706.3	2,374,758.0	253,843.0	630,516.0	18,027.8	32,837.0	214,306.6	134.3	4,405.9	915.2	2,898.3	-	-
19	4820216.7	4,371,237.1	461,242.4	1,409,521.8	48,642.3	488,237.3	1,410,731.3	1,192.7	60,667.7	1,163.6	7,001.9	-	-
20	1965350.0	4,138,056.8	566,357.2	2,012,449.3	303,917.3	1,510,243.2	6,933,065.6	11,791.1	115,514.4	8,745.3	29,196.5	-	-
21	862416.8	3,421,358.2	835,586.2	2,536,365.8	676,270.1	2,737,260.4	11,077,062.5	36,221.3	351,798.8	32,701.8	159,571.8	-	-
22	648625.1	1,091,257.5	402,554.6	1,791,676.8	692,220.8	2,688,756.7	10,993,821.8	96,842.5	378,186.8	88,647.4	320,382.4	-	-
23	642492.7	874,266.7	240,367.8	902,420.4	360,386.2	1,756,374.4	6,269,093.9	150,657.1	229,893.2	185,027.7	571,967.1	-	-
24	989802.6	753,295.1	169,325.5	610,177.4	271,623.5	1,125,256.7	4,022,482.9	110,180.2	127,621.7	180,932.8	420,661.9	-	-
25	568083.4	781,846.1	98,263.7	364,866.1	150,017.7	306,454.3	961,360.8	78,728.3	65,114.2	144,658.0	339,948.8	-	-
26	205351.6	451,786.0	79,087.1	218,668.1	86,161.4	223,129.9	169,447.8	45,674.9	31,787.5	103,784.9	154,295.0	-	-
27	27050.9	79,324.2	37,606.3	147,771.4	43,130.3	44,612.5	67,584.6	18,542.8	19,599.7	59,489.6	57,899.1	-	-
28	18462.1	205,042.5	24,151.2	76,007.7	37,164.5	23,587.0	40,606.8	10,165.4	17,345.9	28,139.4	27,195.1	-	-
29	19200.0	96,176.5	26,470.6	109,274.8	16,729.5	7,894.6	12,882.5	4,343.6	10,471.4	12,282.1	8,258.9	-	-
30	8363.4	56,137.9	6,932.7	59,491.4	6,573.1	7,355.1	8,352.1	2,618.1	10,167.5	8,600.6	3,499.0	-	-

length	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
31	6685.3	1,702.3	2,520.7	45,101.2	2,064.1	9,791.2	1,298.4	2,765.1	3,933.0	6,827.5	2,350.3	-	-
32	2407.5	892.9	1,022.6	39,192.8	446.8	480.9	3,474.9	2,801.9	922.3	3,841.3	1,335.9	-	-
33	1273.1	527.5	2,293.7	990.2	3,614.5	369.7	665.4	682.4	860.8	1,012.6	868.3	-	-
34	289.6	268.4	432.1	5,609.0	364.0	236.9	3,529.7	992.5	902.6	405.3	523.4	-	-
35	641.3	188.3	169.3	249.1	3,242.7	458.9	317.2	406.5	367.9	200.4	296.1	-	-
36	447.7	222.6	127.5	283.4	17.1	146.1	294.6	260.9	52.7	12.4	66.6	-	-
37	31.0	19.5	86.6	214.8	13.1	26.8	84.7	39.7	13.6	8.5	43.8	-	-
38	31.0	9.0	66.0	184.2	5.9	36.2	71.3	10.7	346.7	5.7	64.0	-	-
39	12.2	1.4	40.2	60.7	1.6	9.7	84.1	11.2	5.1	4.0	39.2	-	-
40	13.3	2.5	16.3	30.5	7.6	5.1	94.6	121.1	1.1	3.3	32.6	-	-
41	11.0	0.0	27.1	0.0	3.1	1.1	1.0	3.7	1.3	0.0	19.8	-	-
42	0.6	0.0	0.0	1.6	0.0	12,157.9	11.4	1.6	0.7	1.1	12.1	-	-
43	0.0	0.0	0.0	0.8	0.0	0.0	2,435.8	0.6	0.0	0.0	0.0	-	-
44	0.0	0.0	0.0	28.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	-	-
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	-
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	-	-
52	0.0	0.0	0.0	0.0	12.8	0.0	0.0	0.0	0.0	0.0	0.0	-	-
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	79.2	0.0	0.0	-	-

Table 32. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3L for years 1982-1996

length	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
8	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	-	-	0.0	0.0	0.0	-	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	-	-	0.0	0.0	0.0	-	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	-	-	0.0	0.0	0.0	-	0.0	0.6	0.0	0.5	0.0	0.0	0.0	0.0
17	0.0	-	-	0.0	0.9	0.1	-	0.0	1.0	5.0	0.1	0.0	0.0	0.0	0.0
18	0.0	-	-	0.0	0.7	0.4	-	0.0	2.5	4.6	1.4	0.0	0.0	0.0	0.0
19	0.2	-	-	0.0	2.4	2.0	-	0.0	4.6	4.8	4.3	0.0	0.0	0.0	5.0
20	0.3	-	-	0.0	4.4	3.1	-	0.0	6.5	13.2	8.7	0.0	0.0	4.1	17.7
21	0.2	-	-	0.0	6.2	4.2	-	0.0	14.2	39.1	19.8	8.7	0.0	8.2	0.0
22	1.2	-	-	0.0	8.8	4.2	-	0.0	26.1	89.1	29.2	22.5	0.0	53.3	25.0
23	2.3	-	-	0.0	12.8	8.6	-	0.0	37.2	140.8	38.8	38.2	0.0	73.8	43.7
24	5.4	-	-	12.0	21.2	9.0	-	0.9	47.5	130.1	67.4	92.5	67.2	94.3	38.7
25	14.3	-	-	8.0	42.2	15.6	-	0.4	58.1	95.0	89.9	194.7	104.7	106.6	38.7
26	22.4	-	-	12.0	66.5	32.0	-	4.5	71.1	72.7	118.0	182.0	91.1	147.5	21.6
27	38.0	-	-	40.2	94.3	46.2	-	10.0	69.7	96.2	128.5	164.2	90.7	131.1	38.1
28	47.6	-	-	44.2	95.0	76.2	-	20.4	83.2	77.1	75.6	106.7	77.8	98.4	45.9
29	72.2	-	-	48.2	84.6	114.0	-	38.3	80.5	42.5	78.7	66.8	83.1	49.2	103.2
30	97.5	-	-	44.2	64.0	141.8	-	83.1	83.8	55.7	54.9	27.8	71.4	45.1	113.8
31	96.5	-	-	112.5	58.3	114.6	-	96.9	67.8	28.6	52.8	24.0	57.5	20.5	63.9
32	90.3	-	-	108.4	58.1	89.2	-	107.3	66.0	27.6	35.4	11.2	44.2	24.6	77.2
33	100.1	-	-	152.6	66.3	81.1	-	103.7	55.2	16.3	33.1	16.7	34.7	20.5	97.4
34	75.8	-	-	144.6	72.4	66.4	-	109.7	50.1	13.1	24.6	13.1	48.7	20.5	81.7
35	84.4	-	-	124.5	72.0	68.1	-	123.8	42.4	14.3	26.7	5.6	44.4	24.6	69.4
36	60.3	-	-	72.3	58.3	47.2	-	115.6	27.1	12.1	18.3	5.7	38.7	16.4	24.0
37	52.9	-	-	44.2	39.3	26.8	-	84.5	27.6	5.6	15.6	1.3	44.8	12.3	16.3

length	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
38	42.4	-	-	16.1	28.7	17.7	-	52.0	28.6	3.2	12.1	2.6	29.7	16.4	13.5
39	32.9	-	-	4.0	14.4	11.1	-	24.0	13.2	2.0	13.3	2.6	25.1	4.1	23.4
40	19.4	-	-	8.0	8.8	7.2	-	10.6	9.6	3.4	16.3	5.7	15.6	8.2	8.7
41	11.7	-	-	4.0	6.6	4.9	-	3.2	5.9	1.6	12.9	0.0	14.0	4.1	4.3
42	9.0	-	-	0.0	4.0	3.3	-	2.3	4.3	2.1	8.6	2.6	5.4	0.0	2.7
43	7.6	-	-	0.0	4.6	2.8	-	2.0	4.2	1.4	6.9	0.0	6.4	4.1	8.7
44	6.5	-	-	0.0	2.7	0.8	-	3.1	3.5	1.3	2.8	1.3	2.7	4.1	8.7
45	2.8	-	-	0.0	1.3	0.9	-	2.4	2.0	0.6	3.1	1.8	0.6	4.1	8.7
46	1.9	-	-	0.0	0.2	0.1	-	0.7	3.9	0.1	0.8	0.0	1.1	0.0	0.0
47	1.8	-	-	0.0	0.0	0.1	-	0.6	0.4	0.0	0.5	1.8	0.0	0.0	0.0
48	0.3	-	-	0.0	0.0	0.0	-	0.0	0.3	0.0	0.4	0.0	0.0	4.1	0.0
49	0.7	-	-	0.0	0.0	0.0	-	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0
50	0.7	-	-	0.0	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
52	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	-	-	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	-	-	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 33. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3L for years 1997-2009

length	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
13	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-	0.0	0.0	-	0.0
14	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	-	0.0	0.0	-	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
16	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	-	0.0	0.0	-	0.0
17	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	-	1.1	0.0	-	0.0
18	0.0	0.6	0.0	0.0	0.3	0.4	0.0	0.0	-	0.0	0.0	-	0.0
19	0.1	1.3	0.0	0.0	0.4	0.4	0.0	0.0	-	7.5	10.1	-	0.0

length	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
20	0.0	7.3	0.0	0.2	0.3	1.9	0.0	0.0	-	6.4	33.6	-	1.5
21	3.2	31.2	1.1	0.3	2.2	5.9	1.2	0.2	-	25.1	17.9	-	2.5
22	4.8	89.0	0.5	1.9	5.1	11.7	3.0	1.8	-	20.9	34.8	-	2.1
23	18.7	163.9	3.8	5.4	11.6	17.7	10.5	7.1	-	57.6	49.5	-	5.9
24	47.8	165.9	13.5	11.5	16.8	36.9	38.7	25.0	-	54.5	38.9	-	14.8
25	115.9	129.3	58.5	36.5	44.9	49.5	78.2	41.2	-	62.4	49.6	-	43.8
26	91.7	96.9	110.7	68.9	88.9	74.2	87.4	107.2	-	49.6	46.0	-	61.8
27	102.9	83.7	169.5	106.9	116.9	85.7	93.9	145.0	-	124.5	27.5	-	66.1
28	69.7	64.1	185.5	177.0	152.4	105.5	84.9	118.0	-	98.7	118.6	-	77.7
29	107.7	59.0	148.9	171.4	141.8	110.6	84.6	110.1	-	87.7	95.5	-	78.2
30	109.7	37.4	72.8	173.4	148.2	104.7	96.3	124.5	-	144.1	81.7	-	92.1
31	101.7	21.0	52.9	95.6	96.1	103.3	94.9	66.4	-	57.0	73.4	-	115.3
32	83.1	14.9	49.7	46.9	66.2	98.1	91.3	77.6	-	74.0	134.5	-	135.6
33	59.6	13.1	53.1	39.7	44.7	78.6	79.4	61.3	-	63.7	70.2	-	123.5
34	29.4	10.4	36.9	32.4	25.0	53.8	63.3	64.9	-	53.5	56.4	-	76.2
35	24.0	4.2	22.2	15.9	14.4	30.4	48.6	29.4	-	5.6	26.8	-	43.1
36	11.6	3.8	5.1	4.8	8.9	15.9	21.8	12.9	-	3.0	24.5	-	24.9
37	4.9	0.9	6.2	3.4	5.6	7.0	12.5	3.5	-	3.4	0.0	-	14.9
38	1.1	0.2	1.8	1.7	3.8	4.0	3.9	2.4	-	0.0	0.0	-	4.6
39	3.0	1.0	2.4	2.3	2.5	0.8	0.7	0.0	-	0.0	5.1	-	8.3
40	0.0	0.0	1.3	0.7	1.3	0.5	0.9	0.3	-	0.0	5.1	-	1.2
41	0.2	0.9	1.2	0.4	0.6	0.2	1.2	0.4	-	0.0	0.0	-	3.0
42	2.8	0.0	1.3	0.9	0.2	1.0	1.0	0.9	-	0.0	0.0	-	2.0
43	5.6	0.0	0.3	1.1	0.0	0.8	0.5	0.0	-	0.0	0.0	-	0.2
44	0.0	0.0	0.4	0.1	0.0	0.4	0.6	0.0	-	0.0	0.0	-	0.8
45	0.2	0.0	0.0	0.5	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
46	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
47	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
48	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	-	0.0	0.0	-	0.0

Table 34. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3L for years 2010-2021

length	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
10	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.0	0.0	-	0.0
11	0.0	0.0	0.3	0.3	0.4	2.8	1.6	0.0	0.0	0.0	-	0.0
12	0.0	0.7	0.3	0.3	2.0	5.3	3.1	0.0	0.0	0.0	-	5.5
13	0.0	3.4	2.0	0.3	4.9	7.5	7.6	0.0	0.0	0.0	-	3.6
14	1.2	6.3	3.7	0.7	9.6	10.4	6.8	0.0	0.0	0.0	-	0.0
15	3.0	13.3	6.2	6.3	11.3	11.3	11.0	0.0	0.0	0.0	-	1.2
16	4.1	16.6	7.8	17.2	18.7	16.4	12.9	0.0	0.0	0.0	-	0.8
17	5.3	19.8	14.2	15.3	21.4	16.9	15.9	0.0	0.0	0.0	-	1.9
18	7.1	19.8	14.2	31.2	31.9	34.8	23.9	0.0	0.0	0.0	-	5.6
19	11.4	37.8	31.5	36.3	47.0	44.6	28.3	0.0	0.0	0.0	-	4.0
20	14.7	63.3	56.2	63.1	89.7	77.9	52.8	0.0	0.0	0.0	-	13.9
21	24.9	97.6	101.2	104.4	116.3	108.9	79.3	0.0	0.0	0.0	-	25.7
22	38.8	139.0	146.4	150.1	156.1	163.8	128.2	5.3	0.0	0.0	-	19.1
23	55.2	122.7	105.9	122.1	133.9	155.2	142.3	16.9	1.2	0.0	-	31.6
24	44.0	71.7	50.0	77.9	64.9	81.9	96.6	54.1	8.2	14.7	-	42.7
25	84.7	35.1	36.8	57.6	36.7	56.6	84.4	75.7	41.6	38.7	-	80.0
26	76.6	30.3	24.0	70.9	25.4	36.6	67.5	103.5	48.6	54.2	-	85.4
27	86.4	22.1	31.1	50.1	23.3	22.8	58.7	130.9	109.0	91.4	-	71.5
28	115.5	32.9	30.3	56.8	33.6	26.2	58.8	131.2	118.2	98.6	-	94.1
29	83.5	31.1	27.9	20.0	27.8	21.3	38.2	95.5	141.2	125.7	-	63.1
30	104.8	31.8	49.4	22.5	40.6	32.4	31.2	66.5	132.6	144.0	-	97.4
31	80.8	48.6	52.2	32.2	32.1	23.6	18.0	43.4	134.3	110.7	-	64.0
32	59.3	55.3	58.3	22.2	29.9	15.8	14.0	48.7	112.3	91.4	-	52.5
33	35.4	47.2	72.0	22.9	19.8	11.8	9.8	68.6	62.9	76.4	-	76.8
34	14.5	18.4	33.4	9.1	9.3	4.6	4.2	54.8	39.9	47.7	-	64.4
35	16.2	14.8	20.0	3.0	5.6	3.8	3.1	44.4	25.2	46.8	-	55.9
36	10.1	6.9	8.7	5.4	2.0	2.1	1.5	32.9	15.8	27.0	-	14.4
37	5.4	3.5	4.6	0.7	0.9	1.2	0.1	15.7	1.3	16.5	-	14.9
38	7.8	4.5	7.4	0.9	2.0	1.3	0.1	8.3	5.1	10.3	-	5.9
39	2.1	1.8	1.2	0.0	0.6	0.2	0.0	1.8	2.5	5.8	-	3.7
40	4.9	1.5	2.0	0.0	1.2	0.7	0.0	1.8	0.0	0.0	-	0.0
41	2.9	1.0	0.7	0.0	1.0	0.6	0.0	0.0	0.0	0.0	-	0.0
42	0.0	0.5	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	-	0.0
43	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0

length	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.4
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0

Table 35. Commercial length composition (000's) from Russian sampling for redfish in Div. 3L for years 1999-2021

length	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	-
12	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-
13	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
14	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
15	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-
16	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-
17	0.0	0.0	8.4	0.0	0.2	0.0	0.0	0.0	0.0	7.3	0.0	0.0	0.3	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-
18	0.0	0.0	4.2	0.0	0.2	0.0	0.0	0.0	0.0	6.4	0.0	0.0	2.0	0.0	7.6	0.2	0.0	0.2	0.0	0.0	1.3	0.3	-
19	0.0	0.0	1.3	0.2	1.2	0.0	0.0	0.0	0.0	2.7	0.0	3.4	9.3	0.1	13.4	0.0	0.3	0.7	0.0	0.6	1.2	0.3	-
20	0.0	1.1	5.1	0.6	2.9	1.3	0.0	1.7	0.0	0.0	0.0	22.4	28.1	0.9	47.7	0.4	2.4	8.5	1.6	2.4	1.2	1.7	-
21	0.6	1.4	8.7	0.4	2.0	0.9	2.5	0.0	0.0	0.0	0.0	41.0	45.8	2.0	65.5	3.4	9.5	24.8	8.2	11.2	1.2	3.9	-
22	0.0	4.1	11.8	2.6	7.5	1.8	0.8	1.7	0.0	1.8	0.0	48.3	62.5	12.2	78.2	10.8	24.5	88.7	26.6	38.4	1.8	5.5	-
23	1.2	7.0	13.2	7.8	11.4	7.1	2.5	3.3	0.0	2.7	0.0	54.6	69.3	29.6	34.9	16.6	43.1	145.8	52.0	69.7	7.6	9.1	-
24	3.0	16.8	21.5	19.8	23.7	16.5	4.2	15.0	0.0	1.8	0.0	50.6	85.5	61.4	35.4	26.0	50.7	161.6	64.4	91.4	18.1	27.2	-

length	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
25	4.3	33.2	41.7	32.0	42.8	49.4	19.5	23.3	186.6	1.8	1.2	64.2	95.5	91.8	37.9	30.3	56.3	150.5	77.1	107.4	38.2	50.6	-
26	27.4	52.5	70.0	39.6	71.2	70.8	56.1	31.6	90.9	7.3	1.2	59.1	81.4	93.1	56.3	39.7	42.2	116.9	86.8	161.4	48.0	72.8	-
27	40.2	87.4	93.7	55.2	109.3	117.5	97.7	68.2	50.3	28.3	9.5	92.4	74.0	85.3	59.8	44.5	29.1	79.2	67.3	156.9	66.5	99.0	-
28	93.2	127.1	129.0	71.1	115.4	134.0	151.2	116.5	90.9	63.8	11.9	93.0	60.4	85.4	51.3	60.8	76.7	52.0	32.6	136.5	55.1	107.5	-
29	110.3	149.6	123.4	75.3	109.1	126.0	130.0	131.4	14.4	63.8	47.7	88.0	57.5	89.9	72.8	66.5	68.0	36.7	22.6	88.4	85.9	102.8	-
30	113.3	153.9	129.7	95.3	94.8	111.3	142.7	113.1	50.3	73.8	67.9	91.4	62.7	80.2	92.2	103.2	90.8	40.1	18.4	48.1	79.3	108.2	-
31	97.5	107.2	96.4	102.5	71.8	71.7	86.7	98.2	33.7	69.3	89.4	69.6	56.2	73.1	90.0	98.8	79.2	24.6	14.2	25.7	86.8	96.1	-
32	79.8	74.4	88.7	103.5	70.6	65.9	67.1	94.8	146.4	98.5	113.2	58.0	53.6	59.1	74.6	100.5	119.2	23.1	211.7	23.4	51.9	93.8	-
33	73.1	46.6	46.7	112.7	61.6	55.2	50.1	91.5	91.3	99.4	106.1	51.8	43.1	53.7	38.8	94.5	81.8	14.3	6.6	17.7	20.7	70.8	-
34	67.6	43.6	33.2	96.9	56.9	50.3	46.7	78.2	38.5	129.4	126.3	35.5	36.1	45.7	48.7	83.1	66.6	8.5	4.2	13.9	71.2	58.3	-
35	75.6	30.5	21.2	89.1	44.7	42.3	44.2	38.3	110.6	103.9	158.5	27.6	28.7	39.6	28.7	72.7	81.2	7.5	3.3	4.8	67.0	34.4	-
36	69.5	20.8	14.1	40.6	37.9	31.2	31.4	28.3	38.5	74.7	116.8	13.7	18.0	30.6	25.7	57.2	48.8	5.1	101.3	1.1	47.8	20.6	-
37	50.0	12.1	9.7	28.4	27.9	20.0	22.9	26.6	38.5	46.5	73.9	12.7	11.5	21.4	16.8	32.5	18.2	4.1	1.1	0.5	71.3	11.5	-
38	24.4	7.8	5.2	13.8	17.1	10.2	14.4	21.6	14.4	34.6	42.9	13.3	9.6	17.4	10.0	28.7	3.5	3.2	100.0	0.0	45.1	6.9	-
39	15.8	7.1	3.0	4.4	8.6	7.6	5.1	5.0	0.0	16.4	22.6	5.5	4.2	10.1	4.4	15.0	2.1	2.2	100.0	0.0	27.8	3.5	-
40	11.0	4.3	1.5	3.0	4.7	5.3	5.9	1.7	4.8	7.3	6.0	2.8	2.1	6.1	1.2	8.3	2.4	0.5	0.0	0.0	14.4	3.0	-
41	7.9	2.2	1.5	1.4	1.4	1.8	5.1	6.7	0.0	5.5	1.2	0.4	1.0	4.6	1.9	3.4	2.9	0.5	0.0	0.0	51.4	2.5	-
42	7.9	2.2	0.6	1.2	1.2	0.4	2.5	0.0	0.0	1.8	2.4	0.2	0.4	3.2	1.2	2.0	0.2	0.2	0.0	0.0	0.6	2.3	-
43	6.1	3.0	0.4	1.2	0.8	0.0	3.4	0.0	0.0	2.7	1.2	0.4	0.7	2.3	1.2	0.7	0.0	0.2	0.0	0.0	13.3	1.8	-
44	6.7	1.6	0.9	0.6	2.0	0.9	3.4	0.0	0.0	1.8	0.0	0.0	0.4	0.8	0.0	0.4	0.2	0.0	0.0	0.0	0.1	1.1	-
45	6.7	1.6	0.3	0.8	0.8	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.8	-
46	1.2	0.5	0.1	0.0	0.0	0.4	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7	-
47	4.3	0.3	0.0	0.0	0.4	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	-
48	0.0	0.2	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-
49	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	-
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	-
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	-
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-

length	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	-
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	-
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-

Table 36. Commercial length composition (000's) from Estonian sampling for redfish in Div. 3L for years 2008-2021

length	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
13	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	8.2
14	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	19.7
15	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
16	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2
17	0.0	-	-	-	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
18	0.0	-	-	-	0.0	0.4	0.0	0.0	0.0	0.5	0.0	0.0	0.0	3.3
19	0.0	-	-	-	0.0	0.8	0.4	1.0	0.0	0.5	0.0	0.0	0.0	19.7
20	0.0	-	-	-	7.6	3.8	6.0	0.0	0.0	1.0	0.0	0.0	0.5	36.1
21	0.0	-	-	-	15.2	13.7	16.7	8.3	11.0	7.3	1.3	0.0	0.0	24.6
22	0.0	-	-	-	37.9	40.7	55.3	22.9	37.0	14.6	2.6	0.0	0.9	18.0
23	0.0	-	-	-	60.6	68.1	110.5	71.9	58.9	26.4	10.6	0.7	0.5	8.2
24	0.0	-	-	-	113.6	116.1	132.0	135.6	123.3	43.0	27.8	6.7	12.6	24.6
25	0.0	-	-	-	121.2	126.0	142.7	157.5	153.4	61.5	63.5	55.4	7.7	39.3
26	0.0	-	-	-	219.7	130.6	147.1	185.6	100.0	83.0	82.0	51.0	45.0	45.9
27	66.7	-	-	-	113.6	98.2	108.2	157.5	131.5	70.8	91.3	71.7	18.0	72.1
28	266.7	-	-	-	68.2	92.1	71.2	103.2	64.4	63.0	111.1	41.4	94.1	104.9
29	266.7	-	-	-	45.5	54.8	57.3	59.4	90.4	85.0	115.1	50.3	32.0	82.0
30	266.7	-	-	-	60.6	60.5	41.0	37.5	65.8	98.6	136.2	79.8	146.4	72.1
31	66.7	-	-	-	22.7	40.4	34.6	21.9	52.1	61.5	103.2	63.6	72.1	75.4
32	0.0	-	-	-	30.3	42.3	26.2	15.6	32.9	79.1	88.6	89.4	157.7	93.4
33	0.0	-	-	-	22.7	28.5	19.9	6.3	26.0	97.7	62.2	112.3	67.6	73.8
34	0.0	-	-	-	15.2	27.4	12.3	6.3	13.7	58.6	48.9	102.0	134.7	41.0
35	66.7	-	-	-	0.0	21.7	5.6	6.3	16.4	52.7	22.5	105.0	45.9	39.3
36	0.0	-	-	-	7.6	15.2	3.2	2.1	9.6	39.1	14.6	52.5	77.5	31.1
37	0.0	-	-	-	0.0	6.5	1.2	1.0	8.2	17.6	4.0	62.1	20.7	19.7
38	0.0	-	-	-	0.0	3.0	3.2	0.0	4.1	12.2	6.6	31.8	39.6	3.3
39	0.0	-	-	-	15.2	1.9	1.6	0.0	0.0	6.3	1.3	12.6	6.8	4.9
40	0.0	-	-	-	15.2	1.9	0.4	0.0	1.4	5.4	1.3	8.1	9.0	1.6
41	0.0	-	-	-	7.6	1.9	0.4	0.0	0.0	1.5	0.0	2.2	2.3	1.6
42	0.0	-	-	-	0.0	0.4	0.0	0.0	0.0	2.4	0.0	1.5	3.2	1.6
43	0.0	-	-	-	0.0	0.0	1.2	0.0	0.0	1.5	2.6	0.0	0.9	0.0

length	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
44	0.0	-	-	-	0.0	1.1	0.8	0.0	0.0	0.5	1.3	0.0	0.0	0.0
45	0.0	-	-	-	0.0	0.8	0.0	0.0	0.0	0.5	1.3	0.0	0.0	0.0
46	0.0	-	-	-	0.0	0.4	0.0	0.0	0.0	0.5	0.0	0.0	1.8	0.0
47	0.0	-	-	-	0.0	0.0	0.8	0.0	0.0	1.0	0.0	0.0	0.0	0.0
48	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.9	0.0
49	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
50	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.5	0.0
51	0.0	-	-	-	0.0	0.0	0.4	0.0	0.0	1.0	0.0	0.0	0.0	0.0
52	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
53	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
54	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0
56	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	0.0	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 37. Commercial length composition (000's) from USA sampling for redfish in Div. 3L for years 2008-2021

length	1959	1960	1961	1962	1963	1964	1965	1966	1967
13	0.0	0.0	-	-	-	-	0.0	0.0	-
14	0.0	0.0	-	-	-	-	0.0	0.0	-
15	0.0	0.0	-	-	-	-	0.0	0.0	-
16	0.0	0.0	-	-	-	-	0.0	0.0	-
17	0.0	0.0	-	-	-	-	0.0	0.0	-
18	0.0	10.0	-	-	-	-	0.0	0.0	-
19	0.0	0.0	-	-	-	-	20.0	0.0	-
20	0.0	0.0	-	-	-	-	10.0	0.0	-
21	0.0	10.0	-	-	-	-	30.0	0.0	-
22	5.0	30.0	-	-	-	-	60.0	0.0	-
23	15.0	60.0	-	-	-	-	110.0	0.0	-
24	35.0	160.0	-	-	-	-	100.0	0.0	-
25	40.0	140.0	-	-	-	-	190.0	0.0	-
26	40.0	120.0	-	-	-	-	120.0	50.0	-
27	50.0	80.0	-	-	-	-	100.0	40.0	-
28	65.0	100.0	-	-	-	-	50.0	100.0	-
29	50.0	70.0	-	-	-	-	40.0	60.0	-
30	65.0	50.0	-	-	-	-	60.0	60.0	-
31	80.0	80.0	-	-	-	-	10.0	140.0	-
32	75.0	30.0	-	-	-	-	20.0	80.0	-
33	55.0	40.0	-	-	-	-	10.0	60.0	-
34	75.0	10.0	-	-	-	-	0.0	70.0	-
35	85.0	10.0	-	-	-	-	10.0	90.0	-
36	45.0	0.0	-	-	-	-	40.0	80.0	-
37	30.0	0.0	-	-	-	-	10.0	30.0	-
38	50.0	0.0	-	-	-	-	0.0	40.0	-
39	60.0	0.0	-	-	-	-	10.0	50.0	-
40	20.0	0.0	-	-	-	-	0.0	30.0	-
41	10.0	0.0	-	-	-	-	0.0	20.0	-
42	25.0	0.0	-	-	-	-	0.0	0.0	-
43	15.0	0.0	-	-	-	-	0.0	0.0	-
44	10.0	0.0	-	-	-	-	0.0	0.0	-
45	0.0	0.0	-	-	-	-	0.0	0.0	-
46	0.0	0.0	-	-	-	-	0.0	0.0	-
47	0.0	0.0	-	-	-	-	0.0	0.0	-
48	0.0	0.0	-	-	-	-	0.0	0.0	-
49	0.0	0.0	-	-	-	-	0.0	0.0	-
50	0.0	0.0	-	-	-	-	0.0	0.0	-
51	0.0	0.0	-	-	-	-	0.0	0.0	-
52	0.0	0.0	-	-	-	-	0.0	0.0	-

length	1959	1960	1961	1962	1963	1964	1965	1966	1967
53	0.0	0.0	-	-	-	-	0.0	0.0	-
54	0.0	0.0	-	-	-	-	0.0	0.0	-
55	0.0	0.0	-	-	-	-	0.0	0.0	-
56	0.0	0.0	-	-	-	-	0.0	0.0	-
57	0.0	0.0	-	-	-	-	0.0	0.0	-
58	0.0	0.0	-	-	-	-	0.0	0.0	-
59	0.0	0.0	-	-	-	-	0.0	0.0	-
60	0.0	0.0	-	-	-	-	0.0	0.0	-
61	0.0	0.0	-	-	-	-	0.0	0.0	-
62	0.0	0.0	-	-	-	-	0.0	0.0	-
63	0.0	0.0	-	-	-	-	0.0	0.0	-
64	0.0	0.0	-	-	-	-	0.0	0.0	-
65	0.0	0.0	-	-	-	-	0.0	0.0	-
66	0.0	0.0	-	-	-	-	0.0	0.0	-
67	0.0	0.0	-	-	-	-	0.0	0.0	-

Table 38. Commercial length composition (000's) from Canadian sampling for redfish in Div. 3L for years 1960-1979

length	1960	1961	1962	1963	1964	1965	1966	1975	1976	1977	1978	1979
1	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.4	0.0	0.4
19	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.1	0.0	0.0
20	0.0	0.0	5.0	-	-	-	-	0.0	0.0	0.6	0.0	0.5
21	0.0	0.0	0.0	-	-	-	-	0.0	0.0	1.3	0.4	0.8
22	1.3	0.0	36.9	-	-	-	-	0.0	0.4	0.6	3.4	0.6
23	14.3	0.0	49.9	-	-	-	-	0.0	0.7	1.7	23.2	4.4
24	29.0	0.0	145.7	-	-	-	-	0.0	1.5	3.8	35.4	7.7
25	46.6	0.0	158.7	-	-	-	-	0.0	1.1	7.0	23.1	18.1
26	35.3	0.0	126.7	-	-	-	-	0.2	2.8	11.0	22.2	31.9
27	49.9	0.0	94.8	-	-	-	-	1.1	5.4	25.1	20.9	40.9
28	50.2	0.0	108.8	-	-	-	-	8.8	16.6	46.3	27.8	44.5
29	47.6	0.0	40.9	-	-	-	-	12.7	37.9	64.5	37.1	44.1
30	28.6	0.0	44.9	-	-	-	-	30.5	61.9	86.6	59.4	48.6
31	61.9	0.0	44.9	-	-	-	-	51.5	105.2	103.3	79.7	58.5
32	53.6	0.0	49.9	-	-	-	-	51.7	116.7	115.8	104.5	56.8
33	83.9	0.0	23.0	-	-	-	-	58.4	96.0	109.7	86.7	48.3
34	107.2	0.0	14.0	-	-	-	-	39.2	70.6	101.0	79.6	53.9
35	101.5	0.0	5.0	-	-	-	-	34.5	49.7	61.7	53.0	51.7
36	85.9	0.0	14.0	-	-	-	-	55.6	51.4	53.3	56.0	56.8
37	45.6	0.0	0.0	-	-	-	-	84.2	60.7	44.3	56.1	65.3

length	1960	1961	1962	1963	1964	1965	1966	1975	1976	1977	1978	1979
38	28.6	0.0	14.0	-	-	-	-	102.5	55.5	39.4	60.0	62.4
39	24.0	0.0	0.0	-	-	-	-	98.6	55.8	30.8	36.6	59.0
40	32.3	0.0	5.0	-	-	-	-	81.0	46.2	21.5	28.0	52.0
41	20.6	0.0	18.0	-	-	-	-	67.4	46.8	19.7	22.9	41.5
42	22.0	0.0	0.0	-	-	-	-	67.7	36.8	14.4	22.1	26.2
43	8.7	0.0	0.0	-	-	-	-	56.3	31.6	12.8	18.9	23.8
44	8.3	0.0	0.0	-	-	-	-	46.0	22.4	10.4	10.5	29.9
45	10.0	0.0	0.0	-	-	-	-	27.7	14.7	6.3	9.7	22.3
46	1.0	0.0	0.0	-	-	-	-	12.4	6.5	3.8	7.5	17.1
47	0.7	0.0	0.0	-	-	-	-	7.3	2.7	1.1	8.9	16.0
48	1.7	0.0	0.0	-	-	-	-	4.3	1.7	1.4	4.8	8.1
49	0.0	0.0	0.0	-	-	-	-	0.2	0.4	0.0	1.3	3.7
50	0.0	0.0	0.0	-	-	-	-	0.3	0.0	0.4	0.0	3.6
51	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.3
52	0.0	0.0	0.0	-	-	-	-	0.0	0.1	0.0	0.4	0.1
53	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
67	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0
68	0.0	0.0	0.0	-	-	-	-	0.0	0.0	0.0	0.0	0.0

Table 39. Commercial length composition (000's) from Canadian sampling for redfish in Div. 3L for years 1980-2011

length	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000	2002	2003	2009	2011
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	126.0	125.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.3	203.1	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166.7	183.9	250.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.3	135.4	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	80.1	0.0
15	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	25.2	0.0
16	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0
17	0.0	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0
18	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0
19	0.0	0.7	0.5	0.0	0.0	0.0	0.1	0.0	2.2	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0
20	0.4	2.1	0.8	0.8	0.0	0.0	0.0	1.3	1.6	5.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0
21	0.4	5.7	2.6	3.3	1.3	0.9	0.6	0.2	2.7	5.6	4.8	3.8	0.0	0.0	0.0	0.0	0.0
22	2.1	8.1	4.5	12.7	5.6	0.7	0.7	0.0	5.6	15.8	8.9	11.7	0.0	0.0	0.0	0.0	0.0
23	10.7	8.7	9.0	22.7	9.4	2.0	1.8	3.3	7.9	35.2	26.3	18.0	0.0	3.3	0.0	0.0	0.0
24	19.5	22.5	20.8	42.5	17.9	8.1	3.9	7.0	13.5	35.6	28.0	41.3	0.0	9.9	0.0	0.0	0.0
25	19.1	26.6	29.5	53.4	36.0	21.7	18.1	18.6	22.7	39.6	48.0	61.4	0.0	9.9	0.0	0.0	0.0
26	36.0	48.1	51.0	75.7	47.3	48.1	39.4	60.2	44.4	73.3	52.1	59.3	3.4	19.7	0.0	0.0	0.0
27	46.3	66.9	71.8	73.3	50.8	78.2	82.0	89.8	71.0	93.6	72.9	59.2	20.2	49.3	0.0	0.0	0.0
28	70.0	82.5	99.2	80.1	60.6	76.7	96.2	88.6	77.8	120.4	81.5	42.5	43.8	52.6	0.0	0.0	0.0
29	82.0	85.9	111.7	83.0	87.1	81.3	119.7	106.4	72.8	120.4	90.5	39.6	77.4	55.9	0.0	0.0	0.0
30	84.8	79.7	111.2	88.7	76.2	75.8	154.3	132.6	76.1	98.6	89.3	38.4	107.7	75.7	0.0	0.0	0.0
31	78.4	78.6	112.7	81.3	80.3	74.3	123.8	142.8	76.2	90.6	72.5	41.6	178.5	102.0	0.0	0.0	0.0
32	55.6	60.0	83.5	67.3	63.0	68.4	90.6	118.9	63.0	60.8	49.0	29.9	121.2	174.3	0.0	0.0	0.0
33	59.2	49.3	70.8	50.7	52.9	65.8	60.2	67.6	61.5	44.7	57.5	47.0	127.9	171.1	0.0	0.0	0.0

length	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	2000	2002	2003	2009	2011
34	45.9	41.8	50.0	33.5	48.8	55.3	45.6	50.1	48.3	53.6	62.1	74.5	114.5	154.6	0.0	0.0	0.0
35	40.9	49.5	39.4	24.8	35.2	48.9	47.4	23.6	51.1	47.9	57.2	69.0	97.6	65.8	0.0	0.0	0.0
36	45.7	56.0	36.6	22.8	39.8	53.3	29.0	21.5	55.6	12.5	41.4	83.6	40.4	39.5	0.0	0.0	0.0
37	71.0	50.9	33.8	22.5	32.6	56.0	16.1	19.4	47.5	12.1	24.0	79.0	33.7	6.6	0.0	0.0	0.0
38	76.9	41.2	22.2	16.3	36.1	34.8	17.2	17.2	44.2	8.1	24.3	40.4	13.5	6.6	0.0	0.0	0.0
39	49.2	25.1	12.2	16.6	31.2	28.6	13.2	13.7	26.8	9.6	15.9	22.5	6.7	3.3	0.0	0.0	0.0
40	29.1	13.9	7.7	14.3	26.8	17.8	12.1	3.9	14.3	4.1	19.8	27.1	0.0	0.0	0.0	0.0	0.0
41	7.6	15.4	5.1	17.3	21.6	12.2	11.1	2.0	17.5	5.3	18.8	30.8	3.4	0.0	0.0	0.0	0.0
42	7.1	10.1	4.4	11.7	19.6	15.0	8.2	5.1	16.2	2.7	15.5	25.4	3.4	0.0	0.0	0.0	0.0
43	5.3	12.9	3.0	15.3	20.6	20.1	4.3	2.2	20.1	0.0	13.9	29.1	0.0	0.0	0.0	0.0	0.0
44	5.5	15.7	2.7	16.8	26.8	15.1	2.0	0.6	24.1	0.0	10.4	2.9	0.0	0.0	0.0	0.0	0.0
45	12.2	8.5	1.5	18.1	18.7	13.7	1.9	2.4	20.7	1.3	6.9	9.2	6.7	0.0	0.0	0.0	0.0
46	10.5	9.5	1.1	12.0	17.9	9.3	0.4	0.0	7.4	0.0	4.6	3.8	0.0	0.0	0.0	0.0	0.0
47	10.2	6.7	0.3	11.7	14.9	5.2	0.3	0.7	4.0	0.0	2.2	3.8	0.0	0.0	0.0	0.0	0.0
48	11.6	4.4	0.1	7.2	12.3	5.0	0.0	0.0	2.0	1.3	0.3	1.7	0.0	0.0	0.0	0.0	0.0
49	3.1	3.4	0.1	1.9	3.1	2.7	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
50	2.6	3.1	0.0	1.0	2.5	4.2	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
51	0.1	1.8	0.0	0.3	1.3	0.6	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
52	0.4	0.6	0.0	0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 40. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3N for years 1984-1996

length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
8	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.3	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.2	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.3	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.2	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.2	-	0.0	0.7	-	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.5	-	0.0	1.8	-	0.0	0.0	0.0	0.0	0.0
17	14.0	0.0	4.6	0.8	-	0.0	3.3	-	0.6	0.0	0.0	0.6	0.0
18	30.0	0.0	29.7	3.5	-	0.0	4.4	-	8.2	0.0	0.4	0.8	0.0
19	7.0	0.0	96.1	13.2	-	6.6	7.7	-	25.8	0.2	0.5	1.0	0.0
20	9.0	1.7	123.6	28.2	-	31.7	7.3	-	47.2	0.0	1.3	3.7	0.0
21	12.0	3.5	105.3	38.9	-	70.1	5.7	-	54.6	1.4	24.2	1.0	0.0
22	48.0	3.5	52.6	32.2	-	94.0	6.4	-	64.8	7.7	57.6	8.5	0.0
23	83.0	27.8	68.6	44.1	-	151.1	16.0	-	76.9	10.3	50.1	3.1	10.7
24	67.0	35.5	93.8	71.6	-	140.1	42.9	-	90.4	16.9	50.3	9.6	0.0
25	62.0	43.9	130.4	92.2	-	144.7	84.5	-	68.8	29.1	65.1	7.2	0.0
26	51.0	41.6	116.7	80.1	-	116.1	95.3	-	60.5	36.1	96.6	54.8	10.7
27	55.0	50.3	100.7	59.1	-	94.2	112.8	-	44.0	65.7	105.7	75.9	38.4
28	64.0	64.5	22.9	67.0	-	39.4	111.2	-	55.2	102.2	88.8	73.9	93.9
29	86.0	64.9	32.0	84.2	-	30.9	78.5	-	66.2	116.8	88.6	73.5	77.5
30	72.0	108.5	13.7	84.2	-	30.7	70.0	-	60.6	106.7	75.3	89.7	227.5
31	51.0	110.5	2.3	59.4	-	19.8	61.1	-	57.2	97.5	68.9	96.7	265.2
32	58.0	121.3	2.3	51.7	-	8.8	54.1	-	31.9	83.0	73.4	94.4	117.3
33	41.0	94.2	0.0	44.6	-	8.8	46.4	-	15.1	77.0	45.3	68.5	65.7
34	27.0	58.3	2.3	13.9	-	6.6	43.8	-	23.2	49.4	37.5	56.3	18.0
35	23.0	49.6	0.0	38.8	-	2.2	39.5	-	23.1	37.6	24.4	53.2	28.7
36	19.0	25.5	2.3	31.8	-	2.2	33.9	-	32.9	32.1	11.6	30.6	26.1
37	30.0	20.7	0.0	21.6	-	2.2	23.9	-	27.1	29.8	10.2	48.9	5.6
38	35.0	22.9	0.0	12.5	-	0.0	17.4	-	22.8	30.2	9.1	51.6	3.4
39	19.0	16.9	0.0	8.5	-	0.0	12.6	-	18.2	17.4	6.9	31.6	8.4
40	21.0	9.2	0.0	6.6	-	0.0	6.7	-	10.1	15.1	3.7	44.9	0.0
41	5.0	3.7	0.0	3.3	-	0.0	4.7	-	6.5	12.9	2.2	19.4	2.8
42	5.0	13.1	0.0	2.5	-	0.0	2.5	-	5.4	10.0	1.2	0.2	0.0
43	2.0	3.1	0.0	1.6	-	0.0	1.8	-	1.4	5.5	0.4	0.0	0.0
44	0.0	1.8	0.0	1.3	-	0.0	1.1	-	0.6	5.9	0.2	0.0	0.0
45	2.0	2.3	0.0	0.6	-	0.0	0.7	-	0.3	2.6	0.0	0.0	0.0
46	2.0	0.6	0.0	0.5	-	0.0	0.3	-	0.3	0.4	0.1	0.0	0.0
47	0.0	0.0	0.0	0.2	-	0.0	0.2	-	0.0	0.2	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.0	0.2	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.0	0.0	0.2	0.0	0.0

length	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
52	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	-	0.0	0.2	-	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Table 41. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3N for years 1997-2009

length	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.8
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	2.4
13	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-	0.0	0.0	0.0	5.5
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	7.8
15	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	-	4.7	0.0	0.0	12.2
16	0.0	0.0	0.0	0.0	0.0	0.1	1.6	0.0	-	11.1	6.8	0.0	22.9
17	0.0	0.0	0.1	1.6	0.0	0.5	4.1	0.0	-	15.8	6.9	0.0	29.4
18	0.0	0.0	0.0	11.7	0.6	0.2	8.5	0.8	-	30.4	4.0	0.0	68.7
19	0.0	0.3	2.2	14.1	0.6	0.9	17.2	6.0	-	45.4	51.3	0.0	68.5
20	0.0	2.0	6.1	13.0	5.3	4.5	29.7	22.0	-	84.3	113.6	0.0	81.2
21	0.0	9.7	15.7	22.6	22.6	12.9	41.4	46.2	-	138.4	212.1	0.0	101.6
22	0.0	14.3	23.2	43.7	23.0	25.5	51.6	58.9	-	160.9	177.6	25.0	112.7
23	0.6	26.1	23.0	82.8	49.8	29.8	51.0	60.0	-	155.1	139.0	50.0	120.3
24	2.4	44.3	26.9	97.1	43.8	33.6	48.1	53.5	-	93.8	65.0	0.0	70.0
25	4.2	54.0	24.1	81.4	55.4	41.5	40.1	67.7	-	63.5	37.6	50.0	62.4
26	0.0	80.9	48.8	76.6	62.4	67.2	44.4	94.0	-	47.4	38.7	50.0	59.1
27	21.9	101.8	91.4	58.1	82.3	80.7	55.5	88.0	-	36.9	30.5	25.0	44.0
28	25.8	84.2	146.6	88.0	92.6	125.1	57.3	79.6	-	33.5	17.1	125.0	43.8
29	58.5	71.6	129.1	94.0	136.3	154.6	54.1	73.4	-	22.5	11.8	150.0	31.0
30	83.2	71.0	101.1	89.9	157.5	115.3	67.6	94.1	-	18.4	14.4	225.0	20.2
31	88.7	111.5	78.3	50.6	105.8	95.7	67.6	53.3	-	12.5	5.7	125.0	11.8
32	208.2	110.3	100.3	40.6	57.7	83.3	71.5	62.5	-	8.2	8.5	125.0	7.7
33	314.9	103.6	73.1	23.9	23.8	58.1	66.4	60.4	-	4.7	12.4	25.0	6.0
34	109.7	57.4	38.5	25.7	17.3	34.2	53.3	25.4	-	4.5	9.4	0.0	6.5
35	29.0	14.7	27.0	19.4	14.9	24.0	59.7	19.7	-	4.4	11.0	25.0	1.2
36	15.6	14.1	15.1	11.7	11.4	6.6	42.5	12.6	-	2.1	12.2	0.0	2.3
37	21.7	11.3	10.9	18.3	11.9	2.5	23.7	4.3	-	0.8	5.3	0.0	0.0
38	4.7	9.0	7.7	12.1	12.3	1.5	19.9	4.0	-	0.5	5.1	0.0	0.0
39	0.0	2.1	4.3	10.4	7.0	0.7	13.2	9.0	-	0.0	2.4	0.0	0.0
40	0.0	3.9	2.7	5.6	3.9	0.4	6.8	3.5	-	0.1	1.2	0.0	0.0
41	0.0	1.2	2.3	3.0	1.3	0.1	1.1	0.5	-	0.0	0.0	0.0	0.0
42	0.0	0.1	1.4	3.3	0.8	0.1	1.4	0.3	-	0.0	0.6	0.0	0.0
43	0.0	0.1	0.4	1.3	0.2	0.1	0.2	0.0	-	0.0	0.0	0.0	0.0
44	0.0	0.7	0.4	0.1	0.0	0.0	0.1	0.0	-	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
47	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0

length	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0

Table 42. Commercial length composition (000's) from Portuguese sampling for redfish in Div. 3N for years 2010-2021

length	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
8	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.1	0.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
11	0.8	0.3	0.8	2.2	3.1	1.8	1.3	0.0	0.0	0.0	0.0	0.0
12	1.9	0.6	2.8	2.0	2.5	11.5	2.6	0.0	0.0	0.0	0.0	0.0
13	3.1	4.8	4.5	22.6	8.0	6.5	3.6	0.0	0.0	0.0	0.0	0.0
14	9.5	7.8	7.3	14.9	14.1	14.5	8.8	0.0	0.0	0.0	0.0	0.0
15	16.4	13.6	10.1	10.4	16.0	17.3	3.6	1.8	0.0	0.0	0.0	0.9
16	31.1	17.2	12.2	22.2	18.0	18.3	10.1	1.8	0.0	0.0	0.0	0.3
17	46.8	21.1	14.0	32.8	29.7	36.3	13.9	11.4	0.8	0.0	0.0	0.0
18	56.5	34.0	26.2	40.9	31.3	47.8	25.4	49.3	0.0	0.0	0.0	1.6
19	77.5	51.9	46.6	101.5	56.4	59.9	27.6	45.2	6.0	0.0	0.0	5.9
20	90.5	89.7	95.4	115.5	100.2	91.6	52.8	75.3	33.2	0.0	6.2	4.4
21	126.3	141.8	151.6	128.5	120.6	119.0	81.2	71.1	136.7	0.0	31.2	11.0
22	175.7	196.5	204.1	214.1	156.2	176.5	178.7	37.8	234.6	0.0	28.0	58.5
23	119.5	132.7	124.5	84.9	147.6	152.0	178.3	12.0	178.2	12.8	77.9	104.9
24	58.3	68.2	63.7	66.0	67.1	85.7	124.0	8.5	121.7	0.0	174.4	151.3
25	37.0	39.1	37.9	39.4	40.7	44.9	116.8	30.5	79.8	62.1	152.6	146.8
26	33.7	25.2	26.0	43.9	25.4	35.5	81.1	38.3	67.7	64.2	224.3	108.1
27	22.9	21.0	19.1	14.2	19.6	24.8	38.4	88.0	47.1	135.0	134.0	92.3
28	21.4	23.2	19.8	17.9	25.9	10.7	24.4	118.4	37.4	175.1	90.3	74.4
29	19.9	20.0	19.5	11.9	30.0	11.2	14.2	101.7	23.1	170.9	24.9	72.4
30	13.6	19.1	27.2	6.3	19.8	11.6	9.6	113.0	18.7	180.9	6.2	61.8
31	9.0	20.0	28.0	4.3	28.0	8.5	2.7	92.4	10.3	78.0	18.7	32.3
32	7.6	21.1	20.9	1.7	10.4	5.5	0.9	35.8	2.2	70.8	15.6	27.2
33	6.8	13.0	17.5	0.9	13.1	4.8	0.0	39.3	2.0	30.0	15.6	20.9
34	4.4	7.3	8.3	0.6	4.8	1.7	0.0	8.3	0.0	0.0	0.0	14.9
35	3.9	4.3	4.5	0.1	7.5	0.4	0.0	17.7	0.4	10.0	0.0	4.8
36	2.7	2.8	2.6	0.3	2.8	0.4	0.0	0.0	0.0	10.0	0.0	0.3
37	1.6	1.4	1.6	0.0	0.7	0.0	0.0	2.5	0.0	0.0	0.0	2.0
38	0.7	1.6	2.4	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5
39	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
40	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
41	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
43	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
44	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

length	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

Table 43. Commercial length composition (000's) from Russian sampling for redfish in Div. 3N for years 1999-2021

length	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
11	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
12	0.0	0.0	0.0	0.0	1.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
13	0.0	0.0	0.0	0.0	0.7	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
14	0.0	0.0	0.0	0.0	1.7	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
15	0.0	0.0	0.0	0.0	2.4	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	-
16	0.0	0.1	0.0	0.0	2.7	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	-
17	0.0	0.1	0.0	0.4	4.4	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.2	0.1	0.6	-
18	0.0	0.4	1.6	3.6	7.1	0.0	0.0	-	0.0	0.0	0.0	1.5	3.4	1.8	2.5	4.4	1.0	0.5	0.0	0.5	0.8	1.5	-
19	0.2	1.6	3.1	8.9	17.8	0.0	2.0	-	0.0	0.0	0.0	24.5	18.4	8.5	11.1	10.1	21.1	8.6	0.8	1.5	7.9	2.0	-
20	0.6	1.8	6.3	11.7	26.9	0.0	23.0	-	0.0	0.0	0.0	71.1	65.2	25.7	45.2	62.9	110.7	44.4	5.5	5.5	32.4	4.5	-
21	1.0	3.8	9.4	20.1	45.8	0.6	45.0	-	0.0	0.0	0.0	102.3	97.1	45.5	96.2	172.1	153.1	163.8	29.3	24.9	91.4	15.3	-
22	1.9	10.1	25.2	36.2	67.0	2.1	53.1	-	0.0	6.5	0.0	82.6	103.3	64.4	108.4	179.9	161.1	238.7	72.7	79.4	143.9	56.4	-
23	2.5	18.2	77.0	50.7	63.0	8.9	71.1	-	0.0	6.5	0.0	80.0	58.3	83.2	88.2	145.7	148.0	215.7	140.4	155.5	142.8	178.2	-
24	6.3	24.1	114.8	55.6	44.8	12.5	78.6	-	0.0	6.5	0.0	83.1	33.1	85.7	58.8	123.3	103.3	151.2	164.4	192.3	120.9	196.5	-
25	11.8	28.1	150.9	39.5	36.4	29.5	83.1	-	3.4	6.5	0.0	91.9	29.5	81.3	34.0	90.5	106.1	93.7	170.2	185.4	97.5	161.4	-
26	23.3	29.4	89.6	47.9	22.6	62.5	64.6	-	9.0	0.0	0.0	84.3	22.0	64.8	17.9	63.3	66.3	39.9	142.9	146.4	79.7	132.8	-
27	54.8	45.1	84.9	37.5	22.6	99.4	70.6	-	6.7	12.9	0.0	66.4	15.8	56.8	10.4	39.9	40.1	19.5	93.6	90.5	65.5	105.7	-
28	86.7	74.3	64.5	43.9	12.8	111.0	67.7	-	39.7	12.9	0.0	62.8	10.3	57.4	6.9	30.5	25.2	10.4	56.9	53.8	51.4	58.9	-
29	130.6	123.4	62.9	43.1	15.2	116.0	71.3	-	34.1	38.7	35.7	51.5	11.2	57.6	5.4	26.9	17.0	5.9	35.4	28.8	36.7	28.6	-
30	134.8	160.9	61.3	39.5	19.5	110.7	54.3	-	112.4	45.2	17.9	46.2	10.0	49.6	4.3	20.4	17.2	5.6	27.1	19.0	31.0	20.3	-
31	113.2	139.9	67.6	52.4	24.9	93.7	46.8	-	172.0	19.4	107.1	34.5	63.4	46.4	86.9	13.8	11.8	2.1	24.6	7.7	21.9	14.7	-
32	89.0	116.5	59.7	84.2	51.2	92.5	46.8	-	105.3	71.0	142.9	27.5	62.3	49.1	85.4	9.9	8.7	0.0	19.1	5.2	17.7	10.5	-
33	81.5	73.2	37.7	90.6	90.6	81.5	55.9	-	164.9	141.9	89.3	21.1	4.0	47.7	84.8	4.9	5.7	0.0	9.7	2.1	13.1	6.1	-
34	76.2	66.4	22.0	92.6	122.9	61.3	55.9	-	38.2	109.7	142.9	20.4	113.5	51.8	0.6	0.8	2.1	0.0	5.2	0.9	9.9	2.7	-
35	59.6	44.4	6.3	97.5	123.6	49.1	46.8	-	106.4	116.1	53.6	18.4	0.7	36.1	250.3	0.6	0.8	0.0	1.9	0.1	8.2	0.9	-
36	38.0	19.5	11.0	63.2	77.1	27.7	36.3	-	43.8	96.8	53.6	11.3	111.6	30.2	0.3	0.0	0.8	0.0	0.4	0.0	6.6	0.6	-
37	25.2	9.4	9.4	42.7	46.8	17.3	13.6	-	80.6	83.9	71.4	4.8	55.9	18.3	0.4	0.0	0.0	0.0	0.0	0.0	5.6	0.5	-

length	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
38	14.9	3.5	4.7	21.3	31.6	8.9	7.6	-	25.8	58.1	89.3	7.1	0.0	18.0	0.2	0.0	0.0	0.0	0.1	0.0	6.1	0.4	-
39	13.2	2.6	12.6	8.1	12.8	7.7	4.5	-	36.3	58.1	71.4	3.8	55.6	11.3	0.2	0.0	0.0	0.0	0.0	0.0	3.8	0.2	-
40	13.6	2.0	3.1	5.2	1.3	4.2	1.5	-	12.4	51.6	71.4	1.6	0.0	6.8	0.1	0.0	0.0	0.0	0.0	0.0	1.9	0.1	-
41	9.2	0.6	7.9	2.0	1.3	1.2	0.0	-	5.6	38.7	53.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.1	-
42	5.2	0.6	3.1	0.8	0.7	0.9	0.0	-	0.0	6.5	0.0	0.4	55.6	2.3	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.1	-
43	3.1	0.2	0.0	0.4	0.0	0.9	0.0	-	1.1	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-
44	1.7	0.1	1.6	0.4	0.0	0.0	0.0	-	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-
45	1.3	0.0	0.0	0.0	0.0	0.0	0.0	-	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
46	0.0	0.0	1.6	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
47	0.4	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-

Table 44. Commercial length composition (000's) from Estonian sampling for redfish in Div. 3N for years 2008-2021

length	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
13	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	3.5
14	0.0	-	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	-	1.2
15	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	3.5
16	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	2.3
17	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	-	10.4
18	0.0	-	0.0	30.3	0.0	1.4	0.0	0.0	0.6	0.0	0.0	-	18.5
19	0.0	-	28.3	0.0	2.8	4.9	3.8	0.6	0.6	0.0	2.3	-	13.9
20	0.0	-	37.7	30.3	24.4	23.2	13.2	7.6	2.5	1.7	4.6	-	17.3
21	14.3	-	75.5	0.0	89.2	81.4	49.0	30.5	15.3	6.7	6.1	-	18.5
22	14.3	-	66.0	90.9	161.5	139.6	101.7	106.7	31.8	28.3	44.0	-	16.2
23	28.6	-	47.2	60.6	157.7	172.6	167.6	183.8	91.1	102.5	155.5	-	40.5
24	114.3	-	47.2	30.3	145.5	150.9	154.4	209.7	196.8	159.6	270.1	-	113.3
25	42.9	-	66.0	30.3	129.6	125.6	150.7	177.4	229.9	169.6	188.9	-	124.9
26	57.1	-	47.2	0.0	111.7	107.4	129.9	121.9	186.6	155.8	157.8	-	115.6
27	100.0	-	75.5	30.3	65.7	60.4	84.7	75.9	129.9	145.8	85.7	-	137.6
28	85.7	-	28.3	30.3	54.5	42.1	43.3	37.8	74.5	94.8	46.3	-	130.6
29	85.7	-	47.2	30.3	23.5	28.8	28.2	20.7	22.9	54.3	19.0	-	94.8
30	157.1	-	47.2	60.6	16.0	16.1	20.7	10.2	7.0	34.4	14.4	-	49.7
31	128.6	-	84.9	30.3	3.8	12.6	20.7	7.0	5.7	20.5	2.3	-	27.7
32	100.0	-	84.9	30.3	4.7	4.9	13.2	3.5	1.3	10.5	2.3	-	27.7
33	57.1	-	56.6	0.0	3.8	2.8	9.4	1.7	0.6	10.0	0.8	-	12.7
34	0.0	-	56.6	0.0	2.8	0.7	1.9	2.0	0.6	3.3	0.0	-	6.9
35	0.0	-	47.2	60.6	1.9	2.8	5.6	1.5	0.0	0.0	0.0	-	6.9
36	14.3	-	9.4	90.9	0.0	4.2	0.0	0.3	0.6	1.1	0.0	-	5.8
37	0.0	-	28.3	30.3	0.0	2.1	0.0	0.0	0.0	0.0	0.0	-	0.0
38	0.0	-	9.4	121.2	0.0	5.6	0.0	0.3	0.0	0.0	0.0	-	0.0
39	0.0	-	9.4	121.2	0.0	5.6	0.0	0.0	0.6	0.0	0.0	-	0.0
40	0.0	-	0.0	90.9	0.0	4.2	0.0	0.0	0.0	0.0	0.0	-	0.0
41	0.0	-	0.0	0.0	0.0	0.0	1.9	0.0	0.6	0.0	0.0	-	0.0
42	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
43	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
44	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
45	0.0	-	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	-	0.0
46	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
47	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
48	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
49	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
50	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
51	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
52	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
53	0.0	-	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	-	0.0

length	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
54	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
55	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
56	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
57	0.0	-	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	-	0.0
58	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
59	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
60	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
61	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
62	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
63	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
64	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
65	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
66	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
67	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0

Table 45. Commercial length composition (000's) from USA sampling for redfish in Div. 3N for years 1959-1964

length	1959	1960	1961	1962	1963	1964	1965	1966	1967
13	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
14	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
15	0.0	0.0	0.0	0.2	0.0	0.0	-	-	-
16	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
17	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
18	6.7	0.7	0.0	0.4	1.5	0.0	-	-	-
19	3.3	0.7	1.1	2.2	0.2	0.0	-	-	-
20	13.3	4.0	1.1	10.1	3.9	2.0	-	-	-
21	33.3	14.8	12.3	33.6	7.1	4.0	-	-	-
22	53.3	36.2	49.0	90.2	20.0	7.0	-	-	-
23	78.3	56.7	103.5	151.7	44.5	31.2	-	-	-
24	88.3	71.4	136.5	157.3	100.8	64.4	-	-	-
25	106.7	115.6	149.1	150.1	128.6	88.3	-	-	-
26	90.0	115.7	137.9	101.2	129.7	108.3	-	-	-
27	121.7	94.4	105.4	70.2	112.7	134.3	-	-	-
28	86.7	90.3	68.5	47.2	73.0	74.2	-	-	-
29	78.3	83.7	54.8	50.0	57.9	69.0	-	-	-
30	51.7	67.8	56.6	38.5	48.5	59.2	-	-	-
31	56.7	56.9	46.0	30.8	50.5	54.2	-	-	-
32	15.0	55.1	17.1	21.9	44.1	45.2	-	-	-
33	18.3	35.2	20.5	15.6	27.7	45.0	-	-	-
34	25.0	24.2	13.2	13.6	35.2	25.0	-	-	-
35	23.3	23.9	6.5	5.8	32.0	49.0	-	-	-
36	18.3	13.9	10.3	3.7	27.2	53.0	-	-	-
37	11.7	12.9	4.5	2.7	18.5	29.0	-	-	-
38	1.7	8.2	2.0	1.8	11.9	33.0	-	-	-
39	5.0	5.8	2.3	0.0	8.7	7.0	-	-	-
40	11.7	5.4	0.0	1.0	7.5	10.0	-	-	-
41	1.7	1.9	0.9	0.0	4.4	2.0	-	-	-
42	0.0	0.8	0.9	0.0	1.2	4.0	-	-	-
43	0.0	1.3	0.0	0.0	1.2	2.0	-	-	-
44	0.0	2.2	0.0	0.0	1.2	0.0	-	-	-
45	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
46	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
47	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
48	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
49	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
50	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
51	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
52	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-

length	1959	1960	1961	1962	1963	1964	1965	1966	1967
53	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
54	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
55	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
56	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
57	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
58	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
59	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
60	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
61	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
62	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
63	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
64	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
65	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
66	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-
67	0.0	0.0	0.0	0.0	0.0	0.0	-	-	-

Table 46. Commercial length composition (000's) from Canadian sampling for redfish in Div. 3N for years 1960-1979

length	1960	1961	1962	1963	1964	1965	1966	1967	1976	1977	1979	1980	1981	1982	1987
1	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.8	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	1.8	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	1.0	0.0	0.3	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.8	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.3	-	-	4.0	0.0	0.0	0.0	0.9	0.0	2.1	0.0	2.5
20	5.0	4.5	0.0	1.7	-	-	0.0	0.0	1.6	0.0	5.2	0.0	6.3	0.0	7.6
21	5.0	3.8	4.5	1.3	-	-	0.0	0.0	20.6	0.0	11.4	0.0	23.0	0.0	17.8
22	58.7	25.5	7.5	7.7	-	-	0.0	0.0	54.0	0.0	32.8	7.6	41.8	20.9	43.1
23	76.6	44.2	32.4	27.0	-	-	0.0	3.3	103.2	0.0	72.2	45.8	77.5	48.7	50.8
24	143.3	87.0	97.8	81.0	-	-	4.0	3.3	157.1	0.0	138.6	129.8	70.3	82.5	55.8
25	148.3	100.0	149.1	125.7	-	-	4.0	0.0	128.6	0.0	128.5	114.5	58.0	63.8	111.7
26	116.4	123.5	148.6	146.7	-	-	11.0	6.6	134.9	0.0	141.0	167.9	71.7	52.5	147.2
27	80.6	98.0	147.6	133.3	-	-	50.9	16.5	127.0	0.0	113.1	114.5	58.8	33.2	149.7
28	49.8	91.0	88.3	124.0	-	-	64.9	52.8	54.0	0.0	90.8	152.7	54.4	20.7	96.4
29	58.7	78.2	72.8	81.7	-	-	57.9	26.4	44.4	7.5	75.2	68.7	65.8	22.5	96.4
30	49.8	62.5	43.4	59.3	-	-	71.9	39.6	31.7	15.0	52.3	30.5	71.4	29.7	78.7
31	49.8	56.5	48.9	51.0	-	-	60.9	85.8	19.0	47.4	46.4	61.1	63.7	25.3	58.4
32	35.8	58.0	42.4	48.3	-	-	119.8	122.1	12.7	92.3	24.1	45.8	51.2	28.9	38.1
33	31.8	32.0	26.4	30.7	-	-	86.8	155.1	17.5	124.7	16.5	22.9	41.2	45.9	15.2
34	26.9	30.0	16.5	23.3	-	-	119.8	132.0	20.6	144.6	11.8	7.6	37.1	44.4	5.1
35	17.9	24.5	18.5	16.3	-	-	72.9	115.5	17.5	144.6	8.9	15.3	46.6	59.4	7.6

length	1960	1961	1962	1963	1964	1965	1966	1967	1976	1977	1979	1980	1981	1982	1987
36	17.9	17.0	14.0	11.7	-	-	101.8	52.8	20.6	89.8	10.3	0.0	44.5	81.4	2.5
37	5.0	23.0	11.5	9.3	-	-	42.9	49.5	7.9	57.4	7.8	0.0	37.1	75.4	7.6
38	9.0	14.2	7.5	8.0	-	-	28.9	46.2	6.3	69.8	5.9	0.0	29.5	73.8	0.0
39	13.9	7.8	9.5	4.3	-	-	18.0	19.8	6.3	97.3	2.6	15.3	26.2	65.9	0.0
40	0.0	7.0	7.5	2.3	-	-	28.9	29.7	6.3	44.9	1.3	0.0	12.1	46.4	0.0
41	0.0	6.8	3.5	2.0	-	-	22.0	23.1	1.6	32.4	0.9	0.0	7.6	30.9	2.5
42	0.0	0.0	2.0	2.0	-	-	18.0	3.3	6.3	15.0	0.9	0.0	1.1	19.5	5.1
43	0.0	0.8	0.0	0.3	-	-	7.0	6.6	0.0	10.0	0.0	0.0	0.0	13.8	0.0
44	0.0	0.0	0.0	0.3	-	-	0.0	3.3	0.0	7.5	0.0	0.0	1.1	5.9	0.0
45	0.0	0.0	0.0	0.0	-	-	4.0	3.3	0.0	0.0	0.4	0.0	0.0	4.3	0.0
46	0.0	0.0	0.0	0.0	-	-	0.0	3.3	0.0	0.0	0.0	0.0	0.0	2.9	0.0
47	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
48	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
49	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
50	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
51	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 47. Commercial length composition (000's) from Spanish sampling for redfish in Div. 3LN for years 2002-2021

length	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.7	-	0.0
13	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.2
14	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.5
15	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	-	0.2	0.0	0.2	0.7	0.0	0.0	-	1.2
16	0.0	0.2	0.0	0.0	0.0	0.0	7.1	147.7	0.0	0.0	0.0	-	0.0	0.0	0.0	0.7	0.0	0.0	-	1.8
17	0.0	0.0	1.1	0.0	2.4	0.0	41.3	303.6	5.3	0.0	0.0	-	0.8	0.0	0.0	0.0	0.0	0.0	-	2.5
18	0.0	0.0	2.1	0.0	0.0	1.6	53.7	254.4	20.3	0.0	3.9	-	1.5	0.0	2.9	1.5	0.0	0.0	-	3.3
19	2.2	0.0	8.2	0.0	3.1	2.3	49.9	114.9	121.1	0.0	14.7	-	4.7	0.0	6.4	4.5	1.5	0.0	-	3.1
20	0.0	0.8	8.6	1.1	7.2	1.6	22.1	8.2	202.2	18.6	54.8	-	12.8	19.1	30.0	16.0	5.7	3.5	-	11.0
21	2.4	1.1	8.8	0.0	8.6	4.7	69.2	0.0	139.4	0.7	128.2	-	29.5	42.8	112.4	55.8	30.2	18.5	-	6.3
22	7.6	2.5	8.5	0.1	15.0	4.1	124.1	0.0	88.3	21.2	189.0	-	100.7	107.4	152.9	115.3	157.1	86.3	-	6.6
23	16.7	10.6	11.4	0.1	71.3	9.1	157.4	24.6	32.3	14.5	165.7	-	114.7	111.2	176.8	155.8	237.7	165.0	-	20.8
24	23.5	26.4	16.7	2.8	180.9	31.2	131.6	8.2	21.9	49.2	128.3	-	129.8	128.7	152.2	150.1	192.1	202.8	-	55.2
25	34.6	75.2	30.4	13.1	119.6	56.0	116.3	0.0	32.2	102.4	91.9	-	142.8	145.4	97.1	110.7	114.3	145.5	-	59.7
26	61.8	110.1	70.9	24.3	35.6	60.5	71.7	8.2	33.3	102.8	62.6	-	120.9	111.7	100.8	92.4	96.6	131.6	-	41.4
27	87.4	123.1	93.5	33.5	48.2	97.0	41.6	0.0	25.9	125.7	37.8	-	105.1	86.2	63.3	78.4	51.4	144.9	-	43.8
28	101.3	100.3	118.5	68.1	76.4	90.7	15.7	0.0	53.7	74.6	41.7	-	69.2	112.2	27.9	55.7	45.0	59.8	-	59.2
29	130.7	78.9	147.3	103.0	114.6	98.7	20.3	0.0	0.9	97.5	32.8	-	41.3	56.0	20.4	35.7	24.4	19.5	-	58.7
30	127.4	84.3	105.5	92.6	97.4	108.2	20.4	5.0	13.1	137.3	19.5	-	41.8	30.6	15.6	28.3	16.2	15.1	-	85.7
31	88.8	62.1	76.2	86.3	76.7	121.0	5.0	15.0	24.5	105.0	14.7	-	24.3	14.9	16.8	25.5	16.5	3.1	-	116.2
32	92.2	84.9	61.9	87.1	57.4	103.4	5.3	5.0	15.3	42.3	6.5	-	14.9	10.2	7.4	28.6	4.1	2.8	-	129.9
33	73.5	68.0	57.1	93.1	26.1	81.3	9.1	10.0	19.6	40.5	3.3	-	10.7	7.0	6.2	17.6	3.3	0.0	-	104.0
34	56.9	55.4	44.2	102.0	25.0	59.2	14.0	10.0	36.3	3.4	2.6	-	11.8	5.6	5.6	12.2	1.9	0.0	-	86.5
35	31.4	48.8	37.7	124.8	16.7	29.3	9.1	15.0	44.4	19.1	0.6	-	7.5	6.1	2.4	9.4	1.6	1.0	-	50.6
36	22.9	24.7	39.8	68.8	4.8	19.2	5.6	5.0	28.7	1.4	0.4	-	5.7	1.6	0.9	2.1	0.5	0.0	-	33.0
37	15.0	18.9	26.2	43.9	4.7	10.0	4.6	0.0	18.1	26.5	0.6	-	4.1	1.3	0.3	1.7	0.0	0.0	-	10.2

length	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
38	9.2	9.1	7.1	17.1	5.5	4.4	1.6	5.0	15.4	4.1	0.1	-	1.5	0.8	0.1	0.6	0.0	0.0	-	5.9
39	5.5	4.6	3.8	18.1	1.4	1.3	1.2	15.0	5.5	6.6	0.0	-	1.1	0.3	0.1	0.0	0.0	0.0	-	2.3
40	6.9	2.7	4.9	9.8	0.2	0.0	0.1	0.0	0.0	6.6	0.0	-	1.8	0.1	0.2	0.6	0.0	0.0	-	0.0
41	2.2	0.2	3.0	2.6	0.0	1.0	0.1	0.0	1.8	0.0	0.0	-	0.1	0.0	0.2	0.0	0.0	0.0	-	0.3
42	0.0	0.0	0.9	5.3	0.0	1.3	0.0	10.0	0.2	0.0	0.0	-	0.0	0.8	0.0	0.0	0.0	0.0	-	0.0
43	0.0	0.8	2.7	0.0	0.0	2.9	0.5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
44	0.0	2.2	1.5	1.2	0.0	0.0	0.0	5.0	0.0	0.0	0.3	-	0.0	0.0	0.2	0.0	0.0	0.0	-	0.0
45	0.0	0.0	0.6	1.0	0.0	0.0	0.2	10.0	0.0	0.0	0.0	-	0.0	0.0	0.6	0.0	0.0	0.0	-	0.0
46	0.0	2.3	0.2	0.0	0.8	0.0	0.0	5.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
47	0.0	0.0	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
49	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	-	0.5	0.0	0.2	0.0	0.0	0.0	-	0.0
51	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	0.0	0.0	-	0.0
53	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
57	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0
59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	
61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	
62	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	
63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	-	

Table 48. Catch statistics (STATLANT) and estimates (STATLANT) for 3LN beaked redfish.

Year	Method	3L	3N	Total	Method	3L	3N
1953	STACFIS	NA	NA	NA	STATLANT	1776.3	7815.1
1954	STACFIS	NA	NA	NA	STATLANT	397	1560
1955	STACFIS	NA	NA	NA	STATLANT	117	4362
1956	STACFIS	NA	NA	NA	STATLANT	16	7507
1957	STACFIS	NA	NA	NA	STATLANT	17328	21083
1958	STACFIS	NA	NA	NA	STATLANT	13328	21069
1959	STACFIS	34107	10478	44585	STATLANT	34107	44585
1960	STACFIS	10015	16547	26562	STATLANT	10015	26562
1961	STACFIS	8349	14826	23175	STATLANT	8349	23175
1962	STACFIS	3425	18009	21439	STATLANT	3425	21434
1963	STACFIS	8191	12906	27362	STATLANT	8191	21097
1964	STACFIS	3898	4206	10261	STATLANT	3898	8104
1965	STACFIS	18772	4694	23466	STATLANT	18772	23466
1966	STACFIS	6927	10047	16974	STATLANT	6927	16974
1967	STACFIS	7684	19504	27188	STATLANT	7684	27188
1968	STACFIS	2378	15265	17660	STATLANT	2378	17643
1969	STACFIS	2344	22356	24750	STATLANT	2344	24700
1970	STACFIS	1029	13359	14419	STATLANT	1029	14388
1971	STACFIS	10043	24310	34370	STATLANT	10043	34353
1972	STACFIS	3095	25838	28933	STATLANT	3095	28933
1973	STACFIS	4709	28588	33297	STATLANT	4709	33297
1974	STACFIS	11419	10867	22286	STATLANT	11419	22286
1975	STACFIS	3838	14033	17871	STATLANT	3838	17871
1976	STACFIS	15971	4541	20513	STATLANT	15971	20512
1977	STACFIS	13452	3064	16516	STATLANT	13452	16516
1978	STACFIS	6318	5725	12043	STATLANT	6318	12043
1979	STACFIS	5584	8483	14067	STATLANT	5584	14067
1980	STACFIS	4367	11663	16030	STATLANT	4367	16030
1981	STACFIS	9407	14873	24280	STATLANT	9407	24280
1982	STACFIS	7870	13677	21547	STATLANT	7870	21547
1983	STACFIS	8657	11090	19747	STATLANT	8657	19747
1984	STACFIS	2696	12065	14761	STATLANT	2696	14761
1985	STACFIS	3677	16880	20557	STATLANT	3677	20557
1986	STACFIS	27833	14972	42805	STATLANT	27833	42805
1987	STACFIS	30342	40949	79031	STATLANT	30342	71291
1988	STACFIS	22317	23049	53266	STATLANT	22317	45366
1989	STACFIS	18947	12902	33649	STATLANT	18946	31848
1990	STACFIS	15538	9217	29105	STATLANT	15538	24755
1991	STACFIS	8892	12723	25815	STATLANT	8892	21615
1992	STACFIS	4630	10153	27283	STATLANT	5448	16502
1993	STACFIS	5897	9077	21308	STATLANT	5897	14974

Year	Method	3L	3N	Total	Method	3L	3N
1994	STACFIS	379	2274	5741	STATLANT	408	2682
1995	STACFIS	292	1697	1989	STATLANT	292	1989
1996	STACFIS	112	339	451	STATLANT	112	451
1997	STACFIS	151	479	630	STATLANT	151	630
1998	STACFIS	494	405	899	STATLANT	494	899
1999	STACFIS	518	1318	2318	STATLANT	518	1836
2000	STACFIS	657	819	3141	STATLANT	657	1476
2001	STACFIS	653	245	1442	STATLANT	727	1132
2002	STACFIS	651	327	1216	STATLANT	651	978
2003	STACFIS	584	751	1334	STATLANT	521	1025
2004	STACFIS	401	236	637	STATLANT	428	680
2005	STACFIS	581	78	659	STATLANT	290	424
2006	STACFIS	53	444	496	STATLANT	166	214
2007	STACFIS	118	1546	1664	STATLANT	132	197
2008	STACFIS	220	377	597	STATLANT	303	430
2009	STACFIS	57	994	1051	STATLANT	201	253
2010	STACFIS	260	3688	4120	STATLANT	586	3070
2011	STACFIS	2418	1254	3672	STATLANT	3548	5367
2012	STACFIS	2781	1535	4316	STATLANT	2741	4503
2013	STACFIS	4446	1786	6232	STATLANT	4446	6328
2014	STACFIS	4245	1450	5695	STATLANT	4245	5695
2015	STACFIS	8620	1320	9940	STATLANT	8620	9940
2016	STACFIS	6652	1805	8457	STATLANT	6741	8686
2017	STACFIS	7790	4026	11816	STATLANT	8018	11868
2018	STACFIS	7300	3979	11279	STATLANT	7395	11185
2019	STACFIS	6357	6693	13050	STATLANT	NA	NA
2020	STACFIS	4806	6285	11091	STATLANT	NA	NA
2021	STACFIS	4228	5944	10172	STATLANT	NA	NA

Table 49. Standardized catch rate series and associated standard errors for Divs. 3L and 3N redfish from a multiplicative model (Power, 1997), utilizing hours fished as a measure of effort.

year	3L Catch	3L Effort	3L SE	3L CPUE	3N Catch	3N Effort	3N SE	3N CPUE
1959	34107.000	22604.000	0.269	1.509	10478.000	8659.000	0.198	1.2
1960	10015.000	5690.000	0.332	1.760	16547.000	10892.000	0.393	1.5
1961	8349.000	3610.000	0.582	2.313	14826.000	10049.000	0.305	1.5
1962	3425.000	2049.000	0.379	1.672	18009.000	11090.000	0.302	1.6
1963	8191.000	3973.000	0.490	2.062	12906.000	8958.000	0.324	1.4
1964	3898.000	1491.000	0.854	2.614	4206.000	2981.000	0.331	1.4
1965	18772.000	8190.000	0.643	2.292	4694.000	2551.000	0.449	1.8
1966	6927.000	4615.000	0.293	1.501	10047.000	4915.000	0.323	2.0
1967	7684.000	3793.000	0.383	2.026	19504.000	10569.000	0.483	1.8
1968	2378.000	1446.000	0.379	1.645	15265.000	17684.000	0.225	0.9
1969	2344.000	1354.000	0.386	1.731	22356.000	17109.000	0.278	1.3
1970	1029.000	499.000	0.480	2.062	13359.000	10026.000	0.284	1.3
1971	10043.000	5207.000	0.412	1.929	24310.000	20320.000	0.360	1.2
1972	3095.000	1877.000	0.387	1.649	25838.000	18982.000	0.269	1.4
1973	4709.000	2078.000	0.701	2.266	28588.000	18186.000	0.336	1.6
1974	11419.000	11907.000	0.298	0.959	10867.000	5374.000	0.463	2.0
1975	3838.000	2443.000	0.354	1.571	14033.000	8265.000	0.399	1.7
1976	15971.000	11335.000	0.186	1.409	4541.000	4537.000	0.206	1.0
1977	13452.000	10461.000	0.169	1.286	3064.000	2738.000	0.264	1.1
1978	6318.000	5961.000	0.137	1.060	5725.000	4925.000	0.253	1.2
1979	5584.000	3517.000	0.234	1.588	8483.000	6176.000	0.217	1.4
1980	4367.000	2873.000	0.219	1.520	11663.000	6229.000	0.321	1.9
1981	9407.000	6020.000	0.223	1.563	14873.000	9216.000	0.275	1.6
1982	7870.000	4812.000	0.206	1.635	13677.000	8160.000	0.273	1.7
1983	8657.000	4960.000	0.237	1.745	11090.000	7734.000	0.253	1.4
1984	2696.000	1804.000	0.229	1.494	12065.000	12263.000	0.183	1.0
1985	3677.000	2104.000	0.245	1.748	16880.000	16858.000	0.180	1.0
1986	27833.000	15247.000	0.222	1.825	14972.000	15057.000	0.193	1.0
1987	34212.000	22369.000	0.208	1.529	44819.000	29517.000	0.232	1.5
1988	26267.000	19629.000	0.163	1.338	26999.000	24453.000	0.185	1.1
1989	19847.000	10567.000	0.266	1.878	13802.000	14884.000	0.162	0.9
1990	17713.000	16774.000	0.133	1.056	11392.000	18513.000	0.110	0.6
1991	8892.000	12329.000	0.100	0.721	12723.000	20052.000	0.117	0.6
1992	4630.000	2452.000	0.342	1.888	10153.000	13755.000	0.154	0.7
1993	5897.000	1576.000	0.808	3.742	9077.000	17116.000	0.130	0.5
1994	379.000	410.000	0.444	0.924	2274.000	2900.000	0.230	0.8

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