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Greenland halibut (*Reinhardtius hippoglossoides*) in NAFO Subarea 2 and Divisions 3KLMNO: Stock Trends based on annual Canadian Research Vessel survey results during 1978-2009.

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Abstract

Greenland halibut are widely distributed throughout the waters adjacent to Labrador and eastern Newfoundland. During the late 1970's and most of the 1980's they were found in relatively high abundance along the deep slopes of the continental shelf, particularly in Division 2G. They were likewise plentiful in the deep channels running between the fishing banks especially in Divisions 2H, 2J and 3K. By 1991 distribution in the northern areas was greatly reduced and most of the resource was located in Division 3K. In Divisions 2J and 3K where most of the Greenland halibut resource presently resides, the stock biomass was relatively stable until the mid 1980's after which it declined substantially to reach an all time low in the early 1990's largely precipitated by the disappearance of older fish from the population. From about 1995 the stock began to increase and continued to improve to 1999 based upon several strong, successive year-classes particularly those of 1993-95. Recruitment following the strong 1993-95 year-classes appeared weaker at younger ages. In contrast to these results, many of the cohorts of the late 1990s and early 2000s have been measured as being average or even above average at older (commercially selected) ages in Divisions 2J and 3K, leading to increases in survey estimates of stock biomass. These increases have not continued; and Canadian survey results in 2009 were generally more pessimistic. In Divisions 3LNO, estimates of biomass and abundance from the 2009 spring survey are the lowest of the time-series. Although estimates of spawning stock biomass are largely unknown, the annual biomass estimates of Greenland halibut > 70 cm in Divisions 2J3K have been near zero for more than a decade. This paper updates the Canadian research vessel survey results using data collected in 2009, and compares these results to prior observations. Most of the key indicators from 2009 surveys indicate declines compared to previous results. Most estimates of recent recruitment suggest poor stock rebuilding prospects in the near future. However, the information on age 1's from the 2009 survey in Divisions 2J and 3K is positive.

Introduction

Abundance and biomass estimates for Greenland halibut in NAFO Subarea 2 and Divisions 3KLMNO from random-stratified spring and autumn multi-species trawl surveys conducted by Canada are updated for 2009. Stratified mean number and weight per tow are updated for each division, as are age-disaggregated survey indices. Distribution maps of spring and fall survey catches are provided, including maps of the survey catches-at-age. The history and recent performance of these Canadian research vessel (RV) surveys are reviewed by both Healey and Brodie (2009) and Brodie and Stansbury (2007). These authors provide an overview of the Canadian spring and autumn RV multi-species surveys, with details on coverage and timing over 1995-2008. Healey and Brodie (2009) also provide illustrations of the current survey stratification scheme used in Canadian surveys.

Mechanical difficulties with the survey vessels have often lead to deficiencies in survey coverage in recent years. A description of these deficiencies is provided, with brief discussion on how these impact interpretation of the survey data.

Methods

Canadian Research Vessel Surveys

The current survey design is random-stratified, with the survey area divided into strata of similar depth in each NAFO division. The number of survey sets allocated to each stratum is proportional to the surface area of that stratum, with at least two sets in each survey stratum. A Campelen 1800 shrimp-trawl with a 44 mm codend mesh size and 12.7mm liner is deployed, towed for 15 minutes at a speed of 3.0 knots after bottom-contact is established. The gear geometry is monitored constantly with net-mounted sensors.

The survey stratification has been refined several times over the history of the survey, most recently in 1996, when in addition to slight refinements of existing strata, several strata landward of the previous design were added to the survey in Divisions 3K and 3L. (Stratum areas v1 and v4 in the tables of survey biomass and abundance refer to the stratum areas used at the beginning of the survey (v1) compared with those currently in use (v4)). These new strata are hereafter referred to as the “inshore strata”.

Subarea 2(2G, 2H, & 2J) and Division 3K

Dwyer and Healey (2005) document the sampling design and sampling frequency in Subarea 2 and Division 3K over 1978-2004. Division 2G is no longer covered by Canadian surveys. Division 2H is scheduled for survey coverage in every second year, and was included in the 2008 fall survey. During the 2009 survey, all strata in Division 2J were completed. In Division 3K, the only strata not completed in 2009 were the inshore strata (strata 608-616).

Divisions 3L, 3M, 3N and 3O

Surveys have been conducted by Canada in Divisions 3LMNO since the 1970s; however, prior to 1996 the maximum depth usually did not exceed 400 meters. Therefore, data collected on Greenland halibut were considered inadequate to describe distribution and abundance for this stock and were not used for assessment purposes. Divisions 3LNO are surveyed annually in the spring and again in the autumn. In 1996, the survey design was extended to depths of at least 730 meters, and where possible, to 1500 meters during fall surveys. Beginning in 1996, the inshore strata (strata 784-800, inclusive) have been surveyed during autumn in most years with coverage deficiencies in 1999 (no coverage), 2006 (limited coverage) and 2007 - 2009 (no coverage). In addition to the inshore strata, the remainder of the fall surveys of Division 3L were not fully completed during the 2004, 2005 or 2008 surveys. The most extensive coverage of Division 3M was achieved in 1996; since then, only the deep-water strata in the western and northern areas of Division 3M have been included in the survey design. The persistent coverage deficiencies in the deep-water (>732 m) strata of Divisions 3NO since 1995 render this time-series largely uninformative for assessing stock status.

Comparative Fishing Exercises

The Canadian autumn survey series has employed various survey vessels and gear types over time (described in Dwyer and Healey, 2005). Data analysis and results of comparative fishing exercises conducted to allow comparisons through the time-series are presented in Warren (1996) and Warren *et. al.* (1997). Based upon the length-based conversion factors presented by Warren (1996) and Warren *et al.* (1997), all data presented in this paper are in *Campelen 1800* trawl catch equivalents.

Data conversions for the *Engel 145'* trawl used in surveys in Divisions 3LMNO prior to 1995 have not been conducted due to poor coverage of depths where most Greenland halibut are encountered.

Survey Coverage and Timing

Healey (2009) provides survey coverage details by NAFO division and depth zone for the *Campelen 1800* surveys (spring and fall) from 1996-2008. Multiple coverage deficiencies are of particular significance in assessing the status of this stock: sporadic coverage of Divisions 2GH during fall surveys, an incomplete survey of Division 3L in the fall of

2004 (see Healey and Dwyer 2005), incomplete coverage of Divisions 3NO during the spring 2006 survey, no survey of Division 3M during either of the 2004, 2005 or 2008 fall surveys and irregular coverage of the deep-water strata of Divisions 3NO. Further, the 2008 fall survey completed the fewest number of sets during the Campelen time-series, with extremely limited coverage of deep-water strata. The impact of these deficiencies on the assessment, with particular focus upon the situation in the fall of 2008 is discussed by Healey and Mahé (2009). These gaps in survey coverage increase the uncertainty in results and introduce biases to the survey estimates.

A summary of the 2009 spring and fall surveys by division, depth class and RV is available in Table 1 and Table 2. The 2009 fall survey was not fully completed: the “inshore strata” in Divs. 3KL were not completed, 8 of the 12 deep-water (>732 m) strata in Div. 3N were not surveyed, and Div. 3M excluded from the survey design as a result of vessel problems. Finally, Division 2H is covered every second year in the current survey design (and was included in 2008), but was not included in the 2009 survey design. Despite these shortfalls, the timing of the fall survey was generally consistent with that of recent years. The 2009 spring survey was fully completed within the typical survey timeframe.

Due to mechanical problems with the survey vessels, the duration of the survey period has lengthened in several of the recent years, with several autumn surveys extending into winter of the following year. This likely affects the survey estimates of Greenland halibut stock size, as it has been shown that commercial catch rates have seasonal trends and that these are highest in the early winter period (see Power, 2004). Healey and Dwyer (2005) note that “*Variable survey timing adds another layer of uncertainty in assessing this stock.*” An additional complicating factor is that vessel breakdowns have led to annual variations in the survey coverage by each vessel (e.g. ***Teleost*** surveying areas typically covered by the ***Wilfred Templeman***). No adjustments for such timing changes or vessel differences have been made. These sources of survey variation are discussed in greater detail in both Healey and Brodie (2009) and Brodie and Stansbury (2007).

Trends in Stock Size

Survey estimates of abundance and biomass and mean numbers and weights per tow are computed using standard stratified estimators. Approximate confidence intervals (95%) are provided for the stratified mean number and weight per tow; computational details can be found in Smith and Somerton (1981). Note that there are several instances when the lower confidence bound of these indices is negative. This is incorrect (obviously, the lower bound should always be greater than or equal to zero) and is a consequence of violating the distributional assumptions used to produce these confidence intervals. This result commonly arises when a limited number of large catches are taken by the survey.

Age-length keys for Division 2J3KL combined, Division 3MNO combined were applied to the respective individual divisions (sample sizes presented in Table 3), in order to obtain survey estimates at age. For the age-disaggregated results in Divisions 2J3K combined, otoliths from Divisions 2J and 3K only were applied. The reduced number of otoliths from the spring 2009 survey is reflective of a decrease in the number of fish captured. To produce divisional survey results at-age from spring surveys, an age-length key from all samples in Divisions 3LNO were used (refer to Table 4 for sample sizes). The maps of survey distributions at age from spring and fall surveys were produced by applying age-length keys from Divisions 3LNO combined and Divisions 2J3KL, respectively, to the length frequency measurements for each survey set. The computed catch-per-set at age was then standardized to the total survey catch (if less than 100% of the catch was sampled) and also standardized to a tow duration of 15 minutes.

Estimates of mean biomass at length per tow are computed by converting mean numbers at length per tow and transforming to biomass using annual length-weight equations (sexes combined) from 1990-2009. These relationships were calculated using the model $W=aL^b$; resultant estimates are shown in Table 5. For the years 1978-89, the 1990 estimates were applied. The R^2 value was high for each relationship (Table 5), but in most years tended to underestimate weight for the longer fish in the population, indicating that the biomass is underestimated slightly for longest fish sampled from the population. It is emphasized that this underestimation is problematic only for the biomass-at-length results.

Results and Discussion

Geographic Distribution

Figure 1 shows the area covered by Canadian surveys and includes place names referred to in the text. Figure 2 contains distribution plots for the most recent two fall surveys, 2008 and 2009. Stock distribution in 2009 was similar to that observed in 2008 (though noting that the deepwater shelf edge in Divisions 2J3KL was not completed during the 2008 survey). Catches in the Funk Island Deep were generally higher in the 2008 results. Survey biomass within the Flemish Pass remains relatively low, despite the concentration of fishing effort in this area. In 2008, large catches were measured within the Hopedale Channel in Division 2H.

Distribution maps for the 2008 and 2009 spring surveys of Divisions 3LNO (Figure 3) indicate that the vast majority of catches are on the edge of the Grand Bank. Distribution maps of spring surveys have not been included in previous research documents of Canadian survey results; hence a series of maps with spring survey catches from 1996-2009 are presented as Appendix I. One interesting result from the 2009 spring survey is the four survey sets with zero catch near the “nose” of the Grand Bank (Figure 3). In all previous surveys of this area using the Campelen trawl (see Appendix I), Greenland Halibut have always been part of the survey catch, with relatively large catches in most years.

Distribution maps of survey catches at age from the 2009 spring and fall surveys give some indication of the differing spatial range of various age groups (Figure 4 - Figure 8). Maps of numbers caught are provided for ages 1-12 in the fall survey of Divisions 2J3KL, and for ages 1-8 from the spring survey of Divisions 3LNO. In the fall survey, ages 1 through 4 are widely dispersed across Divisions 2J3KL, with the largest catches in the deep-water holes of Division 2J and within the Funk Island Deep in Division 3K. A relatively large number of age 1's were found – there are many survey sets having in excess of 200 fish. The distribution of ages 5-8 is continuous along the slope edge, however, over this age range, a change in spatial distribution is apparent. The majority of age 5's are found in the deep-water holes (with limited catches on top of the shelf), but progressively by age 8, most fish are captured along the slope edge. Catches of the older (age 9-12) fish are almost exclusively on the slope edge, with decreased frequency of capture as age increases. In the fall 2009 survey, age 12 Greenland Halibut were encountered in only 8 sets. In the spring surveys, there are very few catches on top of the Grand Bank. Catches of age 1 fish are relatively few; only two sets caught more than 10 individuals. Catches of ages 4 through 7 are widely dispersed on the slope waters of the Grand Bank.

Trends in Stock Size

Biomass and abundance indices by stratum for each NAFO division in Canadian fall surveys are presented in Table 6 - Table 19. Similar results for Canadian spring surveys are in Table 20 - Table 25. The tables are organized by depth class, and sub-totals indicate the total index within each class. Survey coverage may also be inferred from these tables by examining the number of strata which do not contain any estimates. Table entries with “.” indicate that the stratum was not completed, that is, was not covered by at least two successful fishing sets. Values of 0 in the tables indicate the stratum was surveyed with no Greenland Halibut captured.

Mean weights and numbers per tow (MWPT and MNPT, respectively) by division are presented in Table 28-Table 34, respectively, and the mean weights per tow by Division with approximate 95% confidence intervals are illustrated in Figure 9, Figure 10 and Figure 12. Recent survey values affected by substantial coverage deficiencies described previously are indicated by different plotting symbols. The mean weights per tow show similar trends to the annual swept area biomass series for all Divisions.

Within Divisions 2GH, the temporal coverage of the survey has been irregular. Division 2G has not been surveyed since 1999; the historical biomass and abundance results can be found in Healey (2009). In Division 2H, the biomass index (Table 6; Figure 9) declined from 1978 through the late-1980's (excluding 1979 which was considered to be an anomaly). Index values have generally increased since then. The 2008 survey biomass is an under-estimate, as six strata were not completed during the fall of 2008. Some of these strata contributed significantly to the total biomass index in previous years. The Division 2H biomass index is relatively large in magnitude compared to other Divisions further south. The time-series of abundance estimates for Division 2H (Table 7) are not consistent with the trends in biomass, particularly for the earliest data. The 2008 abundance estimate of Division 2H is also biased low (survey incomplete).

The annual survey series is continuous over 1978-2009 for both Divisions 2J and 3K. In Division 2J the biomass index was generally stable from 1978-84 (Table 8). It then declined to reach a minimum in 1992, increased marginally until 1995 after which time it began to increase more rapidly due to improved recruitment. Over 1998-2009, the biomass index has generally been stable. The 2006 index value was the largest in the Campelen time-series, predominantly as a result of substantial increases in just two strata in the Hawke Channel (strata 208 and 227). Although the 2008 biomass index is biased low, a comparison of results over 1996-2008 for only those strata covered in 2008 indicates that the 2008 result was 30% lower than any year previous. The 2009 estimate of biomass is comparable to the 2000-2005 and 2007 estimates. An unusually high proportion of the Division 2J biomass index was measured in stratum 212 (depth class of 501-750 m); relatively large catches of Greenland Halibut were taken in both survey sets in this stratum. Estimates of abundance were variable throughout the late 1970's and 1980's (Table 9). This index increased considerably through to the mid-1990's, and the estimated abundance has again been variable at a relatively high level in the past decade. The 2009 Division 2J abundance index is more than 20% larger than the 2007 value (the 2008 index is biased low).

In Division 3K, the biomass index was variable over 1978-89 at a relatively high level (Table 10). By 1992, it had declined by over 50%, and remained low until 1995. After this time, the biomass index increased until 1999, the highest value in the time series. The index decreased rapidly over 1999 to 2002, but has subsequently increased, with a substantial change from 2006 – 2007. The 2008 survey of Division 3K is incomplete; however, in contrast to the Division 2J results, the aggregate biomass from the Division 3K strata covered during the 2008 survey is amongst the largest in the 1995-2009 period. The 2009 index value is much lower than the 2007 value and is comparable to the levels observed in 2005 and 2006. The Division 3K abundance index (Table 11) indicated an increasing trend over most of the 1980's through to the mid-1990's. After 1996, the abundance index decreased, and the 2005 and 2006 values are approximately half of the survey estimated abundance over 1998-2001. The trend in recent years (2006-2009) is less clear, with significant inter-annual variation in the abundance index. The MWPT index in Divisions 2J3K in 2009 combined has declined by more than 30% from the 2007 level (Table 34). The MNPT results from Divisions 2J and 3K (Table 36) have been generally consistent over time. In the previous decade, however, the Division 2J MNPT index remained relatively constant while the Division 3K index declined steadily.

The fall survey biomass indices for each of Divisions 3L, 3M, 3N and 3O are given in Table 12, Table 14, Table 16, and Table 18, respectively; see also Figure 10 and Figure 12. The biomass index in Division 3L has declined from the relatively large values from the late 1990's and recent values indicate relative stability. Recent estimates of abundance (Table 13) have also been relatively stable. Survey coverage has varied from year to year in Divisions 3MNO (Table 14, Table 16, and Table 18, respectively), particularly so in the deeper waters of Divisions 3NO (>732m) where higher concentrations of Greenland Halibut are typically found. Recent estimates of survey abundance indices for Divisions 3M, 3N and 3O (Table 15, Table 17, Table 19, respectively) are relatively low. The overall combined biomass estimate for Divisions 3LNO is low in proportion to the Subarea 2 + Division 3 total (17% for 2009; refer to Table 26). The Division 3M index includes only those strata which are part of the current survey design, located along the western slope of the Flemish Cap (strata 528-536). The MWPT index for Division 3M (Table 33 and Figure 12) has generally been declining since 1998, and the 2006 (most recent survey completed) MWPT and MNPT results are amongst the lowest values in the time-series.

Stock size estimates for the Divisions 3L, 3N and 3O spring survey series are shown in Table 20 - Table 25 and also Figure 10, respectively. Each of the estimated biomass indices is lower than late-1990 levels. After some indications of modest improvement from the mid-2000s up to 2007, the index values have declined, with the greatest decrease in Division 3L. Abundance estimates from Divisions 3L, 3N, and 3O spring surveys have been generally declining since the late-1990's, with a large reduction over the 2007-2009 period.

Estimates of MWPT from Divisions 3LNO combined over 1996-2008 (Figure 11) show an increasing trend from 2002-2007 (excluding 2006, not surveyed). However, there has been a substantial decline in this index over 2007-2009 period, and the 2009 value is the lowest in the time-series.

Trends in Mean Biomass and Abundance Per Tow by Size Category

Most of the stock biomass resides in Divisions 2J and 3K combined (Table 27) and these divisions comprise the longest time series of annual survey data throughout the stock area. Figure 15 shows trends in mean biomass per tow and also mean numbers per tow for Greenland halibut <30 cm, between 31-69 cm and >=70 cm over 1978-2009. The value of 30 cm was chosen as it is approximately equal to the mean length at age 4 for Greenland halibut surveyed in Divisions 2J

and 3K; it represents the recruitment to the fishery in the following year. The value of 70 cm was chosen because it is considered to be an approximation of the length at 50% maturity in female Greenland halibut.

In general, the recent recruitment signal (< 30cm class) from these indices is pessimistic with recent MNPT and MWPT values amongst the lowest in the Campelen time-series. However, the 2009 value is much improved over levels observed from 2005-2007. (The 1978-1994 values for the <30cm are likely ‘under-converted’ during the multiplicative length based conversions of the Engels data to Campelen trawl equivalents, most particularly at the smallest size classes). The relatively strong 1993-1995 cohorts can be seen in the improved biomass and abundance trends in the <30 cm class from 1995-1998, which translated to a substantial increase in the 30 cm-70 cm length class in the latter half of the 1990’s. This increase was not sustained, and by 2002 the 30-70 cm class had returned to the levels of the early 1990’s. It was anticipated that as the recruits from 1993-1995 year classes added growth, the contributions to the stock biomass should shift back to the more usual size compositions assuming normal recruitment patterns. However, this is clearly not the case, suggesting that either the strong recruitment was overestimated, overexploited or both before contributing growth to the stock as older, larger fish.

This figure also characterizes an unusual situation arising in recent fall surveys to 2007: a significant increase in the 30-70 cm class which was not precipitated by any evidence of recruitment in the <30 cm length class. These increases are consistent with indications of improvement in the commercial CPUE from various fleets throughout the stock area (Brodie et al. (2009), González-Costas and González-Troncoso (2009), and Vargas et al. (2009)). Again, we note that the estimators of mean biomass and abundance for 2008 are biased. The 2009 estimates for biomass and abundance in the 30-70cm class have each declined by more than 30% relative to 2007 levels.

Based upon mean lengths-at-age, the 1993-1995 year-classes would be expected to produce an increase in the 70+cm values in the most recent two surveys. However, the 2009 MWPT value for the 70+cm class (0.11 kgs per tow) is well below the 1977-2009 average. During the late 1970s and early 1980s Greenland halibut greater than 70 cm contributed about 20% to the estimated trawlable stock biomass. However, after 1982 this size category declined to the point that by 1991 virtually no Greenland halibut in this size range contributed to the estimates of stock biomass. Since 1991, this value continues to be at or near zero. It is noteworthy that although the magnitude of both indices for the greater than 70 cm class remain quite low, the abundance and biomass indices of 2009 are approximately double the Campelen time-series average (1995-2009).

Age Composition

It should be noted that ageing of this species is problematic and it is thought that current methods underage older fish, though it is not known at what age this bias begins (Treble and Dwyer, 2006). Research on the validation of age reading techniques is ongoing.

Annual stratified mean number per tow at age compositions from the Divisions 2J and 3K combined time series from 1978-2009 are presented in Table 42 and Figure 16. Although Greenland halibut were caught as old as 19 years, very few were ever caught older than 12 years with the age structure fairly consistent from about 1978-88 (Table 42). Since then the older ages began to disappear from the survey catches entirely and by 1995 none were caught older than 11 years. After 1995 some older fish again began to appear, though infrequently, in the surveys at least up to 14 years old which continued to 2009 (Table 42). Survey catches are typically dominated by fish aged 1 to 6 years old. The age 1 index for 2009 is the second largest in the entire time-series. Each of the mean numbers per tow values for 2009 at ages 2 through 4 are amongst the lowest in the Campelen portion of the time series (1995-2009). The indices for ages 5-7 are near the 1995-2009 average, whereas the MNPT for ages 8-10 are amongst the highest in the Campelen time-series. For comparison, the increase in the data at ages 5+ is compared to index data for ages 6-9, the age groups which represent over 85% of landed catch weight in recent years (Figure 16). The increasing trend in the age 6-9 index over 2002-2007 is consistent with the estimated trends in several commercial CPUE series. However, the 2009 age 6-9 index is considerably lower than the 2007 value. The mean number per tow estimate from the fall surveys of Division 2J3KL (Table 43) are generally consistent with the Division 2J3K index.

Age compositions (mean numbers per tow) of Greenland halibut by division from Campelen surveys during 2009 are shown in Table 44. In most years, the mean numbers from Divisions 2J3K (and Division 2H when surveyed) tend to be much greater than that from other Divisions. One exception is the results from Division 3M during the late 1990’s, which

were usually only slightly lower than the results from Divisions 2HJ3K. Note that the relatively large age 1 MNPT index of 2009 is present in both Divisions 2J and 3K, but is not apparent in Divisions 3LNO.

Age compositions for the Div 3LNO combined spring series (Table 45) demonstrate that in most years, younger age groups (ages 1-6) are typically most abundant in this survey. In the previous assessment, the 2008 age 8 estimate was noted for unexpectedly being the largest MNPT value at age 8 over 1996-2008 (Healey, 2009). The age 9 MNPT results for 2009 indicate that this year-class is, at best, average. Survey estimates for ages 1 through 6 are either the lowest value or near the lowest value of each age-specific time-series.

Mean Length and Weight at Age

Survey estimates of mean length and weight at age within Divisions 2J3K over time are given in Table 46 and Table 47 and Figure 17. Weight at age was calculated by applying the length/weight relationship for each year to the average length. Length at age seems stable over time; however, weight at age appears to be gradually declining at the oldest ages. After declines in the early part of the time series, many of the data for ages 5-7 demonstrate periods of stability. At the youngest ages (<5), mean length at age and mean weight at age have improved over the past decade.

Canadian surveys during 2005 - 2009

Over 2005 – 2007, significant increases in Greenland Halibut biomass were measured in the Canadian fall surveys. These increases are most notable within Divisions 2J3K, and were unusual in that increases in the biomass index was not preceded by increased recruitment. Immigration from deeper waters, immigration from stocks in adjacent management areas, survey timing, distributional shifts and aging errors were considered as potential explanations for this phenomenon (e.g. see Healey (2007) and Healey *et al.* (2006)), with no evidence to suggest any of these factors are strongly impacting the recent survey estimates. Survey results for the Canadian fall survey of 2008 are difficult to interpret due to the substantial coverage deficiencies in most Divisions (see Healey (2009) and Healey and Mahé (2009) for further discussion). The increases noted above have not continued in the 2009 survey results.

As described in Healey (2008), survey indices for several other species within Divisions 2J and 3K have also increased in the recent period (e.g American Plaice, Atlantic Cod, Redfish, Roughhead Grenadier (biomass increase only), and Witch Flounder). In addition, several other non-commercial species such as eelpouts, wolffishes and snake blenny are showing large increases in biomass since about 2002.

Conclusions

Survey estimates of stock biomass in Divisions 2J and 3K, the area which provides the largest contribution to Canadian surveys, steadily increased over 2002-2007. The biomass estimate for 2009 is approximately 30% lower than the 2007 level. In Divisions 3LNO, estimates of biomass and abundance from the 2009 spring survey are the lowest in the time-series. Stock size estimates from 2009 among Divisions and surveys are somewhat variable, but they generally remained relatively low. Recent recruitment results generally suggest poor prospects for stock rebuilding in the future.

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Table 1. Summary of successful sets in fall surveys in Sub-Areas 2+3 in 2009. Depth range is given in meters, number of sets appear in parentheses.

Division	Ship		Total
	Teleost	A. Needler	
2G	Not surveyed in 2008		
2H	Not surveyed in 2008		
2J	111-1323 (108)		108
3K	135-1412 (92)	150-469 (51)	143
3L	784-1385 (30)	62-682 (130)	160
3M	Not surveyed in 2008		
3N	798-1409 (11)	42-708 (64)	75
3O	768-1397 (24)	60-696 (76)	100
			586

Table 2. Summary of successful sets in spring surveys in Divs. 3LN0 in 2009. Depth range is given in meters, number of sets appear in parentheses.

Division	Ship		Total
	Teleost	A. Needler	
3L	61-694 (81)	63-676 (61)	142
3N		44-668 (78)	78
3O		64-674 (79)	79
			299

Table 3. Number of age samples available per division, used to develop fall age-length keys. Age-length keys for Div. 2GH combined, Div 2J3KL combined and Div 3MNO combined were applied to the respective individual divisions.

Year	Div. 2GH			Div. 2J3KL			Div. 3MNO			Total	
	2G	2H	Total	2J	3K	3L	Total	3M	3N	3O	
1978	1220	1134	2354	766	1616	-	2382	-	-	-	-
1979	756	841	1597	1192	1367	-	2559	-	-	-	-
1980	-	-	-	1561	1065	-	2626	-	-	-	-
1981	756	758	1514	1619	1356	-	2975	-	-	-	-
1982	-	-	-	1699	1349	-	3048	-	-	-	-
1983	-	-	-	1325	1240	-	2565	-	-	-	-
1984	-	-	-	1159	1341	-	2500	-	-	-	-
1985	-	-	-	1298	1457	-	2755	-	-	-	-
1986	-	-	-	1218	1114	-	2332	-	-	-	-
1987	783	1227	2010	1211	1192	-	2403	-	-	-	-
1988	680	1268	1948	1058	1053	-	2111	-	-	-	-
1989	-	-	-	667	533	-	1200	-	-	-	-
1990	-	-	-	575	513	-	1088	-	-	-	-
1991	65	377	442	514	564	-	1078	-	-	-	-
1992	-	-	-	505	498	-	1003	-	-	-	-
1993	-	-	-	476	505	-	981	-	-	-	-
1994	-	-	-	643	449	-	1092	-	-	-	-
1995	-	-	-	562	578	-	1140	-	-	-	-
1996	370	628	998	737	813	661	2211	354	315	134	803
1997	664	721	1385	850	950	897	2697	211	233	160	604
1998	311	635	946	970	870	743	2583	229	465	411	1105
1999	488	671	1159	797	802	516	2115	99	153	91	343
2000	NO SURVEY	-	608	716	673	1997	204	413	210	-	827
2001	NO SURVEY	579	579	759	991	797	2547	292	395	287	974
2002	NO SURVEY	-	1101	972	693	2766	107	339	268	714	
2003	NO SURVEY	-	757	622	538	1917	154	150	223	527	
2004	NO SURVEY	848	848	777	614	311	1702	NO SURVEY	168	73	241
2005	NO SURVEY	-	785	846	477	2108	NO SURVEY	260	226	486	
2006	NO SURVEY	794	794	828	947	487	2262	136	126	50	312
2007	NO SURVEY	-	825	785	517	2127	106	322	217	645	
2008	NO SURVEY	777	777	541	555	352	1448	NO SURVEY	118	86	204
2009	NO SURVEY	-	701	819	475	1995	NO SURVEY	260	269	529	

Table 4. Number of age samples available per division, used to develop spring age-length keys. Age-length keys for Div. 3LNO combined were applied to the respective individual divisions.

Year	Div. 3LNO			Total
	3L	3N	3O	
1996	724	377	475	1576
1997	637	369	375	1381
1998	668	306	334	1308
1999	413	334	172	919
2000	358	230	75	663
2001	730	328	126	1184
2002	320	140	49	509
2003	321	180	65	566
2004	322	141	70	533
2005	316	83	118	517
2006	269	0*	0*	269
2007	375	170	61	606
2008	303	138	86	527
2009	219	110	40	369

*Survey not completed.

Table 5. Length-weight relationships for Greenland Halibut, for Div. 2J3K, 1990-2009. Model fitted is $W=a^*L^b$, where W=round weight in kgs and L=total length in cm. From 1978-1989, the annual 1990 length-weight relationships were applied.

Year	Sex	Length-Weight Equations	N	r^2
1990	All	$W = 5.765 * 10^{-6} L^{3.118}$	1067	0.978
1991	All	$W = 1.088 * 10^{-5} L^{2.934}$	1073	0.985
1992	All	$W = 9.204 * 10^{-6} L^{2.975}$	933	0.979
1993	All	$W = 6.359 * 10^{-6} L^{3.077}$	975	0.987
1994	All	$W = 1.238 * 10^{-5} L^{2.894}$	1088	0.981
1995	All	$W = 8.677 * 10^{-6} L^{2.979}$	1068	0.983
1996	All	$W = 3.968 * 10^{-6} L^{3.193}$	1421	0.989
1997	All	$W = 5.390 * 10^{-6} L^{3.111}$	1755	0.989
1998	All	$W = 5.518 * 10^{-6} L^{3.105}$	1796	0.988
1999	All	$W = 5.004 * 10^{-6} L^{3.130}$	1535	0.990
2000	All	$W = 4.260 * 10^{-6} L^{3.178}$	1283	0.988
2001	All	$W = 5.062 * 10^{-6} L^{3.127}$	1714	0.983
2002	All	$W = 5.545 * 10^{-6} L^{3.104}$	1916	0.990
2003	All	$W = 5.485 * 10^{-6} L^{3.105}$	1351	0.989
2004	All	$W = 5.526 * 10^{-6} L^{3.111}$	1374	0.991
2005	All	$W = 4.609 * 10^{-6} L^{3.163}$	1601	0.989
2006	All	$W = 4.788 * 10^{-6} L^{3.157}$	1744	0.990
2007	All	$W = 4.465 * 10^{-6} L^{3.173}$	1574	0.990
2008 *	All	$W = 4.897 * 10^{-6} L^{3.145}$	1084	0.991
2009 *	All	$W = 5.157 * 10^{-6} L^{3.127}$	1486	0.992

* Survey Incomplete.

Table 6. Biomass estimates (tons) of Greenland Halibut by depth stratum from various Canadian surveys in Division 2H during the period 1978-2008 (Not surveyed in those years excluded from table). Estimates are expressed in Campelen units or Campelen equivalents.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1981	1987	1988	1991	1996	1997	1998	1999	2001	2004	2006	2008
<=200	1028	1028	930	315	263	707	50	96	343	152	.	97	168	1	798	24	257
	971	971	954	583	804	265	103	348	6	91	.	34	127	42	361	92	6
	1051	1051	956	1020	332	562	135	457	57	12	.	102	48	17	600	20	51
	1371	1371	957	3183	693	1274	374	578	86	15	.	29	43	22	151	158	89
	Sub-Total			5100	2092	2808	662	1480	492	270	0	261	387	83	1910	294	403
201 - 300	276	276	931	560	68	1113	94	107	200	180	71	171	150	.	211	207	162
	354	354	943	822	18	1371	242	626	19	338	212	442	234	.	452	504	1161
	261	261	950	.	.	.	.	.	.	283	1402	211	465	4065	781	.	.
	291	291	953	11257	940	2984	1115	530	1347	179	659	594	258	224	473	1021	3637
	389	389	955	630	1062	311	243	387	47	1475	363	363	271	127	462	768	.
	294	294	958	.	487	158	63	253	103	178	391	270	277	202	612	289	178
	Sub-Total			13268	2575	5938	1757	1903	1716	2633	3098	1840	1401	1019	6274	3569	5138
301 - 400	55	55	932	.	.	28	39	35	131	166	97	105	.	100	251	130	.
	860	860	944	4747	5420	8446	761	995	242	500	5918	2276	3205	.	1825	1368	974
	206	206	949	.	.	.	.	.	.	3985	839	.	783	2653	.	.	.
	177	177	952	.	4345	1697	875	3187	171	337	1227	2596	3017	2045	1568	1655	.
	178	178	959	.	1817	948	298	747	84	151	684	664	175	543	345	323	571
	Sub-Total			4747	11583	11091	1962	4967	532	5104	8834	5633	6501	3371	6491	3597	1676
401 - 500	50	50	933	.	.	25	17	105	310	104	84	.	55	129	229	.	
	55	55	942	.	1562	1002	61	47	36	61	135	104	85	187	120	196	87
	461	461	945	.	14164	6684	2583	5095	1265	1302	2019	1310	2892	7920	4498	2281	2646
	246	246	948	.	.	.	.	.	3234	3605	10034	.	4112	.	10078	6229	.
	234	234	951	2027	8478	2253	1999	1692	865	1629	2571	1396	2449	1462	1951	4874	1280
	107	107	960	.	4767	569	506	119	23	97	332	375	184	232	221	185	334
	Sub-Total			2027	28972	10508	5150	6978	2207	6427	8970	13323	5695	13913	6846	17743	10805
501 - 750	78	78	934	.	5019	.	504	102	.	303	191	166	272	.	149	309	213
	89	89	941	.	.	379	713	.	81	507	178	356	666	443	314	.	.
	721	721	946	31158	57014	13063	18281	11105	.	4680	7045	7813	6231	9549	16806	24496	.
	227	227	947	.	16477	2539	6266	6206	.	2002	2770	3999	2255	4532	3372	8619	4537
	211	211	961	.	6300	1888	666	880	285	223	270	275	1321	474	872	625	
	Sub-Total			31158	84809	17490	26095	19005	0	7350	10736	12426	9388	16066	21246	34610	5375
751 - 1000	96	96	935	.	.	457	481	.	.	478	519	713	.	597	193	365	.
	97	97	940	.	.	400	360	.	268	658	492	644	.	586	925	509	.
	242	242	962	.	.	1243	1812	.	884	922	1119	1852	.	993	1392	2092	.
	Sub-Total			0	0	0	2100	2652	0	1151	2057	2131	3209	0	2175	2511	2966
1001 - 1250	78	78	936	.	.	85	1810	.	.	486	883	.	1383	320	390	542	.
	130	130	939	.	.	284	651	.	832	603	.	692	.	497	.	407	.
	265	265	963	.	.	1443	2248	.	1023	1909	541	1258	.	1122	739	3560	.
	Sub-Total			0	0	0	1812	4709	0	1855	2998	1424	1950	1383	1939	1130	4509
1251 - 1500	94	94	937	.	.	.	.	.	.	389	195	.	677	292	270	409	.
	191	191	938	.	.	.	.	.	447	731	624	837	1170	582	658	407	.
	342	342	964	.	.	.	.	.	826	815	1131	1362	.	466	1467	623	.
	Sub-Total			0	0	0	0	0	0	1273	1936	1950	2199	1847	1340	2394	1439
Total Biomass (t)				56300	130030	47835	39539	41694	4946	26062	38628	38988	30730	37682	48222	65849	32311

Table 7. Abundance estimates (000s) of Greenland Halibut by depth stratum from various Canadian surveys in Division 2H during the period 1978-2008 (Not surveyed in those years excluded from table). Estimates are expressed in Campelen units or Campelen equivalents.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1981	1987	1988	1991	1996	1997	1998	1999	2001	2004	2006	2008
<=200	1028	1028	930	7813	4949	2811	3708	1966	3300	5374	.	368	672	47	13683	519	5468
	971	971	954	11300	19528	846	12361	39684	2137	1985	.	267	4308	445	4702	1403	267
	1051	1051	956	18988	16795	4735	10771	18014	1157	723	.	1475	1121	713	9030	2566	1398
	1371	1371	957	35154	17225	9304	6361	25231	3018	566	.	219	1590	571	2402	1468	722
	Sub-Total			73255	58497	17696	33201	84895	9611	8647	0	2329	7690	1776	29816	5956	7855
201 - 300	276	276	931	3113	456	937	3389	2493	1822	6341	683	1029	1177	.	2525	1652	1215
	354	354	943	2654	1339	3725	8534	9959	536	5235	2237	1777	2292	.	12724	5332	14341
	261	261	950	.	.	.	.	.	2082	9856	.	1167	2844	36645	6791	.	.
	291	291	953	100676	4310	13410	74723	17613	6345	1301	12727	2962	1521	3009	4824	11789	21096
	389	389	955	1231	25043	178	7478	7759	1391	49950	5048	1357	1686	1403	7950	9124	.
	294	294	958	.	8999	61	5514	7806	5986	2002	8345	3155	4894	6006	8811	1840	942
	Sub-Total			107674	40146	18311	99638	45629	16080	66911	38896	10280	12737	13262	73479	36528	37594
301 - 400	55	55	932	.	.	49	102	238	2474	1313	804	688	.	348	2171	375	.
	860	860	944	13151	25369	5744	13628	9050	2514	6656	53118	10151	24991	.	16372	6332	6507
	206	206	949	.	.	.	.	.	29457	7391	.	4846	23175	.	.	.	.
	177	177	952	.	17519	3555	8352	46002	2642	6014	6708	14938	17708	14098	12515	11164	.
	178	178	959	.	1730	392	547	1739	502	1146	3783	2204	673	5539	1301	1383	1576
	Sub-Total			13151	44618	9691	22576	56893	5896	45747	72313	28097	44061	24483	53712	21050	8457
401 - 500	50	50	933	.	.	.	45	65	898	2253	474	259	.	138	451	614	.
	55	55	942	.	810	367	103	64	95	250	885	431	269	602	356	661	197
	461	461	945	.	36739	19617	22348	55983	6817	10051	19595	5454	17312	56925	21434	9449	17408
	246	246	948	.	.	.	.	25826	23100	56810	.	27958	.	57122	39233	.	.
	234	234	951	6712	27506	3702	5569	11991	3718	11105	20202	7033	12008	6364	7806	38627	6180
	107	107	960	.	2569	199	594	152	110	206	1253	1188	515	1348	597	692	729
	Sub-Total			6712	67623	23884	28614	68235	10805	48335	67288	71391	30363	93196	30331	107001	64360
501 - 750	78	78	934	.	1540	.	628	111	.	783	789	569	714	.	274	724	290
	89	89	941	.	.	441	643	.	269	1181	465	1096	2007	1075	924	.	.
	721	721	946	32110	117728	17768	118795	83445	.	30614	35062	32182	26459	39331	64865	79907	.
	227	227	947	.	33053	5574	14957	27870	.	10492	13622	15379	8447	19229	20313	24560	18954
	211	211	961	.	3261	677	697	1180	.	653	839	755	726	6815	1095	2162	958
	Sub-Total			32110	155581	24019	135517	113249	0	42812	51493	49350	37441	67382	87621	108278	20202
751 - 1000	96	96	935	.	.	390	178	.	767	1281	1181	.	983	264	489	.	.
	97	97	940	.	.	434	314	.	427	1334	1061	941	.	827	2015	677	.
	242	242	962	.	.	877	1565	.	1548	2367	1598	2264	.	1282	1981	2780	.
	Sub-Total			0	0	0	1700	2056	0	1975	4468	3940	4386	0	3092	4260	3945
1001 - 1250	78	78	936	.	.	97	724	.	542	939	.	1813	256	324	435	.	.
	130	130	939	.	.	215	206	.	742	519	.	787	.	514	352	.	.
	265	265	963	.	.	638	1276	.	1167	2098	635	1258	.	1042	703	3755	.
	Sub-Total			0	0	0	949	2206	0	1909	3159	1573	2045	1813	1812	1027	4541
1251 - 1500	94	94	937	.	.	.	.	.	.	401	149	.	606	267	190	372	.
	191	191	938	.	.	.	.	.	263	488	355	749	1337	452	598	388	.
	342	342	964	.	.	.	.	.	428	565	1186	941	.	343	1223	428	.
	Sub-Total			0	0	0	0	0	0	691	1453	1689	1690	1943	1062	2011	1188
Abundance (000s)				232902	366466	93601	322194	373163	42392	217026	239069	168649	140410	203855	280924	286110	148141

Table 8. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 2J over 1993-2009. Estimates are expressed in Campelen units or Campelen equivalents. Refer to Healey (2009) for 1978-1992 estimates.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
101 - 200	1427	633	201	6	27	.	82	26	91	0	65	27	133	11	135	50	27	491	33	79	
	1823	1594	205	6	14	.	514	35	502	532	281	863	754	706	1055	990	245	1769	530	469	
	2582	1870	206	28	132	399	1120	404	349	403	357	1367	1586	890	813	1079	404	617	835	384	
	2246	2264	207	0	33	1	56	51	74	192	16	208	35	192	118	30	15	160	51	5	
	.	733	237	0	0	0	1	4	19	320	0	5	42	3	0	37	0	280	17	0	
	.	778	238	.	7	.	15	0	79	0	53	27	6	54	81	18	8	696	43	8	
	Sub-Total			40	213	400	1789	519	1115	1447	771	2498	2556	1856	2202	2205	697	4012	1508	946	
	201 - 300			440	621	202	8	307	95	89	157	593	1685	574	2215	491	871	2260	898	797	
	1608			680	209	384	123	360	1059	424	282	2204	694	291	1061	1475	811	379	2560	1775	250
	774			1035	210	589	121	2708	3904	893	1047	613	661	1140	3314	1861	626	285	828	981	443
301 - 400	1725	1583	213	302	422	236	1338	1146	1962	1426	893	2332	1336	1950	1163	1325	3620	2343	2776	952	
	1171	1341	214	1064	507	327	4057	1258	1502	1883	1204	1930	485	1337	2500	2520	3241	2087	1904	1631	
	1270	1302	215	1349	855	1370	1247	1448	1889	1986	1139	1967	3499	1360	1592	3091	1633	1920	909	2691	
	1428	2196	228	967	2749	2219	5478	3666	4356	2566	2870	2803	1850	1175	2858	3626	3389	3339	891	2473	
	508	530	234	895	129	.	163	753	352	311	122	349	75	1237	54	1367	327	671	337	304	
	Sub-Total			5557	5214	7315	17335	9744	11982	12675	8157	13026	12111	11267	11864	13491	16394	14017	8387	10816	
	480			487	203	1856	1404	387	946	2233	3303	2553	2200	4090	1134	2846	6523	1792	2581	2064	1548
	448			588	208	1025	4820	4799	3707	12593	6479	11101	9423	5230	7812	2894	8453	5500	20207	3983	2086
	330			251	211	1628	871	1400	1343	1875	870	3541	640	2964	2336	2016	2414	5397	3626	1353	615
	384			360	216	331	392	64	506	1090	1631	881	1103	1076	397	957	697	641	1457	348	1274
401 - 500	441	450	222	170	535	122	1672	930	382	751	995	1151	1086	322	371	164	593	289	637	404	
	Sub-Total			567	536	229	246	1202	1799	3900	1940	2514	1206	1639	1591	1123	2336	439	728	3408	625
	5255			9223	8571	12074	20660	15179	20032	16001	16101	13888	11371	18897	14222	31873	8662	7766	13516		
	354			288	204	2512	3442	1437	3823	7941	6171	3707	4652	5240	1762	7283	8250	8979	5950	2949	4064
	268			241	217	270	226	131	932	676	621	704	628	1983	458	395	433	1027	444	190	234
	180			158	223	130	168	162	438	425	598	505	346	419	179	699	424	475	224	161	116
	686			598	227	1648	2009	909	5850	9244	1793	13071	3628	4226	1316	6852	1325	6381	31416	4173	1936
	420			414	235	810	1042	3895	4373	8365	3256	4183	3929	4170	4733	5739	1990	2852	3286	3384	477
	133			240	85	118	632	537	501	251	643	204	413	552	178	194	186	629	190	136	334
501 - 750	Sub-Total			5455	7004	7167	15953	27152	12692	22813	13041	16379	9240	20626	12891	19849	42200	11110	7008	8305	
	664			557	212	5048	1485	5499	4940	10735	4375	14447	4366	3802	7126	4898	3595	4086	4733	6766	6429
	420			362	218	248	136	693	1783	1207	1319	1019	690	1413	732	456	844	661	731	237	100
	270			228	224	85	309	214	702	625	401	293	701	360	130	205	356	538	372	190	248
	237			185	230	135	379	652	1350	1589	547	2230	786	569	560	383	356	242	629	502	442
	120			239	1917	1411	1676	2586	2725	4867	4064	1959	1945	867	3470	3389	1776	3456	2219	2746	2165
	Sub-Total			7434	3720	8734	11360	16880	11508	22052	8501	8088	9415	9413	8540	7302	9922	9914	9965	17989	
751 - 1000	213			283	219	639	1579	2021	405	1727	2249	1402	1731	1297	621	1248	1156	374	761	1083	1703
	182			186	231	613	604	376	1013	651	1635	1744	2828	2820	1603	432	720	612	1561	1865	1384
	122			193	236	886	230	1007	698	381	725	1107	592	937	881	533	344	468	642	925	749
	Sub-Total			2138	2413	3405	2116	2758	4609	4252	5151	5054	3105	2213	2220	1454	2963	3873	1384	3737	
	1001 - 1250			324	303	220	.	1296	503	1196	.	568	786	749	1480	1116	871	472	3420	.	353
	177			195	225	.	.	835	693	655	478	175	1219	65	171	112	481	186	408	319	563
	236			228	232	.	.	717	935	627	1787	1063	1146	626	56	714	502	300	1001	666	1276
	Sub-Total			0	0	0	2848	2132	2478	2265	1805	3151	1440	1706	1942	1854	958	4829	984	2192	
1251 - 1500	286			330	221	.	.	131	1246	692	567	401	268	654	124	166	249	17	469	.	488
	180			201	226	.	.	277	407	1313	626	400	368	243	756	217	217	334	185	.	326
	180			237	233	.	.	889	596	542	418	628	844	938	438	195	233	566	662	442	273
	Sub-Total			0	0	0	1298	2249	2548	1611	1430	1480	1835	1317	578	699	916	1316	442	1087	
Total Biomass (t)				25880	27786	35591	64772	82095	62111	87147	54858	65777	53590	59769	59135	61078	105925	57733	37444	58589	

Table 9. Abundance estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 2J over 1993-2009. Estimates are expressed in Campelen units or Campelen equivalents. Refer to Healey (2009) for 1978-1992 estimates.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
101 - 200	1427	633	201	87	131	.	2235	218	740	0	958	305	392	218	1350	522	1219	6418	653	2581	
	1823	1594	205	157	146	.	16190	767	4105	4276	1759	10624	16205	9622	7528	13595	3712	20319	7236	5876	
	2582	1870	206	161	2315	22586	42257	5071	4336	5549	15413	29015	37704	16515	9801	22306	3197	7187	11557	9475	
	2246	2264	207	0	208	78	1142	519	727	857	381	1077	379	1458	1285	346	173	1048	583	584	
	.	733	237	0	0	0	101	34	202	2790	0	50	192	38	0	336	0	1770	451	0	
	.	778	238	.	2569	.	321	0	603	0	759	71	245	107	617	212	71	4120	238	321	
	Sub-Total			404	5368	22664	62246	6609	10713	13472	19270	41142	55117	27958	20581	37318	8372	40862	20718	18838	
	201 - 300	440	621	202	214	4328	732	1068	2772	4046	22296	3930	22424	5894	14711	28105	10977	10550	12216	8483	1751
		1608	680	209	2557	6501	3555	17149	4116	1666	41034	8419	1608	13277	17060	5238	2650	28339	10704	1471	9588
		774	1035	210	5944	641	17946	49120	5232	9966	9682	3915	8839	55598	21550	9824	1886	8614	8934	3755	27146
		1725	1583	213	8347	10090	4609	33785	17703	16223	18872	15316	31344	19448	25177	11469	11982	57851	21957	24979	8493
		1171	1341	214	21657	17678	17525	102676	13946	9703	22210	18927	18652	3616	12913	23465	25088	22837	15726	31757	31618
		1270	1302	215	13146	7988	18080	14129	22364	13051	13433	10961	33998	40295	15536	13110	35248	16836	25110	11975	32776
		1428	2196	228	10909	51858	42618	112816	40114	34324	20882	3305	35242	21339	12472	21977	17181	20013	18842	4765	25979
		508	530	234	8640	802	.	2625	5209	1786	1005	620	1094	401	8603	365	9806	1750	3572	2041	2082
		Sub-Total			71413	99886	105065	333368	111456	90766	149413	95392	153200	159868	128022	113552	114819	166790	117063	89226	139433
301 - 400	480	487	203	13633	11690	3153	5862	19093	27969	19320	13164	37956	8953	37650	82434	10216	24548	17887	13726	49787	
	448	588	208	10111	40470	43881	75750	122273	32031	67095	50294	45512	43569	25277	50149	39917	95445	22378	11643	18321	
	330	251	211	17540	8908	12534	16642	16470	3930	22424	4713	18264	22157	17592	11688	18611	17437	6014	4926	8563	
	384	360	216	1510	1808	300	2284	4209	5401	3032	6983	4581	1560	4266	2625	1808	3169	1089	3720	2399	
	441	450	222	867	18777	1238	11620	5076	1802	2259	5571	4640	9237	3064	3621	1238	1764	1021	1843	663	
	567	536	229	1180	14157	24774	14857	6890	13972	3281	7189	5510	12498	17843	1512	2359	12682	922	7078	2028	
	Sub-Total			44841	95810	85880	127014	174011	85105	117411	87914	116463	97974	105692	152028	74149	155046	49311	42936	81761	
	401 - 500	354	288	204	24682	28327	21397	26841	62076	51107	20444	50711	43690	11073	95691	67614	68221	51206	25335	27042	65230
		268	241	217	1061	751	583	3599	2254	1936	2105	2188	8789	1828	1250	928	2967	1127	309	580	1641
		180	158	223	283	942	1695	1883	1043	1720	1272	.	815	1363	685	1511	716	989	348	263	163
		686	598	227	6773	11039	3743	34184	35002	7486	46025	16946	16740	6299	36401	4748	18056	96369	14437	5228	1933
		420	414	235	5999	6378	19335	25337	41431	13753	17414	14260	19161	24375	36961	7774	11378	10479	7802	1493	6293
		.	133	240	320	427	3061	1601	1336	672	1491	448	1088	1976	924	357	311	1162	249	277	434
		Sub-Total			39117	47865	49815	93444	143142	76673	88751	84553	90283	46914	171912	82931	101649	161332	48481	34885	75694
		664	557	212	22412	5670	20151	25042	44440	11915	49344	13485	13366	30988	20228	12681	9118	10932	14186	11136	23868
		420	362	218	573	373	3818	5951	3205	3231	2238	1369	2589	1942	1455	1818	1195	1145	398	203	2685
		270	228	224	188	1077	889	2023	1286	934	608	1506	800	641	502	627	690	706	125	372	1100
501 - 750	237	185	230	305	1120	2799	3084	3932	1400	4428	1552	1377	2065	865	611	356	865	585	560	1896	
	.	120	239	22953	10367	11193	18970	21936	36305	34310	8955	15341	4284	30415	33980	5175	23440	12752	7597	5750	
	Sub-Total			46431	18607	38850	55069	74799	53785	90928	26868	33473	39930	53465	49717	16534	37088	28047	19867	35299	
	213	283	219	915	2063	5586	547	2180	3523	2219	2745	1995	1505	1875	1732	553	940	1129	.	1830	
	182	186	231	832	1254	760	1663	1151	3425	2815	4618	3915	2738	572	996	806	1804	1950	1343	1399	
	122	193	236	1208	195	3270	850	504	1043	1513	982	1412	1128	916	491	531	717	996	.	889	
	Sub-Total			2954	3512	9616	3060	3836	7991	6547	8345	7322	5371	3363	3220	1890	3461	4074	1343	4118	
	1001 - 1250	324	303	220	.	.	1751	646	1005	.	688	634	1227	1646	1096	959	333	3485	.	389	
		177	195	225	.	.	845	563	590	644	228	419	104	151	161	438	161	322	335	482	
		236	228	232	.	.	643	737	748	2371	1349	1354	688	128	725	643	282	952	439	1391	
		Sub-Total			0	0	0	3239	1946	2343	3015	2264	3407	2019	1925	1981	2040	777	4759	774	2262
		1251 - 1500	286	330	221	.	.	78	931	402	318	363	141	636	136	182	129	26	268	.	431
		180	201	226	.	.	140	221	1078	512	415	401	269	1009	290	240	332	180	.	318	
		180	237	233	.	.	359	342	560	538	717	880	994	391	261	228	505	592	326	201	
		Sub-Total			0	0	0	576	1494	2040	1367	1495	1423	1898	1537	733	597	863	1040	326	950
		Total No. (000s)	205162	271047	311890	678016	517293	329415	470904	326102	446712	409091	493875	424743	348995	533728	293637	210076	358356	.	

Table 10. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3K over 1993-2009. Estimates are expressed in Campelen units or Campelen equivalents. Refer to Healey (2009) for 1978-1992 estimates.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
101 - 200		798	608	.	.	.	.	0	44	37	.	0	8	4	0	5	14	0	.	.	
		445	612	.	.	.	.	0	135	0	.	1	0	38	0	0	2	0	.	.	
		250	616	.	.	.	0	4	23	.	0	0	0	0	0	0	0	0	.	.	
		1455	1347	618	0	8	286	19	11	15	1	59	0	49	109	55	2	3	39	0	
		1588	1753	619	0	0	18	29	57	0	0	13	0	30	109	62	1	2	1	0	
	Sub-Total			0	8	304	48	250	74	2	72	8	122	218	122	19	4	39	0	.	
201 - 300		342	609	.	.	.	117	386	202	.	177	8	8	86	96	43	68	.	.	4	
		573	611	.	.	.	113	265	162	.	41	43	164	465	144	34	372	.	.	.	
		251	615	.	.	.	39	67	176	.	23	20	0	37	1	34	22	.	.	.	
		2709	2545	620	53	1113	790	4213	1275	1171	1367	3389	992	1280	594	1012	794	905	673	61	224
		2859	2537	621	972	1021	1068	3967	1320	2524	858	1495	113	1149	1870	1856	185	639	1221	565	136
		668	1105	624	1017	754	508	2516	1610	1752	1805	1186	2358	1027	258	1950	2825	723	1112	420	45
		447		632																	
		1618	1555	634	990	962	727	2370	2144	1321	1933	1197	2195	1493	455	497	1930	3313	2820	1813	180
		1274	1274	635	99	41	128	1344	1545	1266	971	491	215	125	167	0	1052	1008	334	43	43
		1455	1455	636	829	398	1393	2336	1171	1054	1002	1015	641	699	303	747	1138	1948	2052	5157	48
		1132	1132	637	435	119	179	1722	869	2008	1145	526	393	403	1095	983	1138	734	472	144	144
	Sub-Total			4395	4407	4794	18736	10651	11636	9082	9013	7111	6339	4637	7398	9017	9127	9620	8822	826	.
301 - 400		256	610	.	.	.	344	630	1638	.	1000	1924	183	796	483	521	241	.	.	.	.
		263	614	.	.	.	154	399	184	.	164	16	12	120	683	274	303	.	.	.	.
		593	617	5604	2993	3844	2464	4941	3865	2919	2227	7873	1476	3044	3603	2680	6949	12226	3141	119	.
		1027	494	623	1672	1931	308	3588	1938	6167	3346	4322	5040	3698	1732	4159	1152	591	2533	2215	249
		850	888	625	3229	2385	1437	4381	3075	3944	6783	3649	6294	917	649	673	3701	1394	3747	1935	247
		919	1113	626	3469	4263	1962	5453	10283	9604	18305	3890	2111	3683	4768	6046	2328	5332	28371	15373	664
		1085	1085	628	1438	1372	529	1799	2685	3116	10764	5142	2763	719	1366	2837	4019	4444	5761	7311	89
		499	495	629	1324	1337	2682	6569	2179	6214	5900	4291	1429	622	354	518	3839	7928	5502	1846	226
		544	332	630	1274	1331	858	4800	3261	1561	5114	3821	4474	1429	1226	1100	3012	2633	2286	2900	314
		2179	2067	633	4511	2868	4649	3487	6739	4178	7634	3474	6544	3178	3528	2288	6802	7941	8104	3911	234
		2059	2059	638	2804	1908	1750	3952	7031	8115	2400	4792	2535	1686	2512	3399	5441	2775	9432	4395	433
		1463	1463	639	1718	872	1520	1381	1556	1266	1183	2362	2114	1330	1120	1667	937	862	1830	5228	117
	Sub-Total			27042	21258	19538	38372	44717	49851	64348	39135	43117	18932	21215	33506	34705	41393	79791	50144	2655	.
401 - 500		30	613	.	.	.	51	192	92	.	64	6	6	47	511	43	72	.	.	.	.
		632	691	622	6993	3921	2638	6896	11901	10364	13165	10064	11830	4285	5965	12425	7972	5578	12750	21597	679
		1184	1255	627	31882	7308	18946	15576	22176	25568	45497	42775	11732	11721	12754	18257	22914	21080	36798	22020	2320
		1202	1321	631	9779	9453	10094	25499	14500	13683	18514	23958	20494	15856	13580	8550	17899	15925	20469	14880	1730
		198	69	640	77	111	179	105	59	37	39	144	103	44	96	39	25	165	56	54	3
		204	216	645	110	108	357	192	162	75	114	446	253	242	140	180	186	387	123	80	15
		134	134	650	193	338	252	147	242	224	39	.	18	109	162	20	193	188	64	167	4
	Sub-Total			49034	21238	32466	48465	49232	50042	77367	77451	44436	32263	32743	39982	49232	43395	70261	58789	47533	.
501 - 750		584	230	641	411	109	227	394	197	369	1020	.	558	62	602	192	151	1382	329	280	99
		333	325	646	105	463	327	564	1180	158	84	436	811	205	323	239	122	291	717	130	13
		359	651	704	894	1222	321	1361	1016	734	.	2603	899	754	199	508	1104	1595	407	78	.
	Sub-Total			1219	1467	1777	1278	2739	1543	1838	436	3973	1166	1679	630	781	2777	2641	817	191	.
751 - 1000		931	418	642	1541	2336	1741	760	2036	2513	3081	2134	2677	892	1074	942	4877	1962	1991	1268	353
		409	360	647	2413	1829	1087	749	2025	2961	2191	2465	3228	1301	1503	1819	4436	1835	1434	202	.
		516	652	2242	1445	2366	3585	2575	4843	3246	2591	6162	1366	2990	2034	3554	1247	2807	1169	234	.
	Sub-Total			6196	5610	5193	5094	6636	10317	8518	7190	12067	3560	5567	3794	12868	5044	6232	2438	790	.
1001 - 1250		1266	733	643	.	1487	2121	6830	5453	3480	1537	4660	2815	890	1865	2469	5074	3120	.	193	.
		232	228	648	.	1641	1118	1687	1552	624	2891	763	475	376	186	422	1274	162	.	162	.
		531	653	1718	1583	2306	1643	3660	3927	3045	2514	477	933	668	542	1344	1787	937	330	.	
	Sub-Total			1718	0	3071	6068	9590	10800	8959	5207	10064	4055	2298	2910	3197	6839	6181	937	687	.
1251 - 1500		954	474	644	.	688	870	2036	2845	1480	1917	2084	137	998	760	1082	735	2436	20	.	.
		263	212	649	.	387	1083	282	681	622	908	174	1125	427	437	87	172	73	225	.	.
		479	654	.	1376	1016	3612	4808	3358	2287	4953	252	973	981	1241	773	1722	722	225	.	.
	Sub-Total			0	0	2063	2274	6732	7934	5519	4825	7944	563	3098	2168	2761	1595	4331	0	496	.
Total biomass (t)		89603	53988	68206	120336	130547	142196	175632	143329	128721	67000	71453	90509	112580	110175	179096	121995	104033	.	.	

Table 11. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3K over 1993-2009. Estimates are expressed in Campelen units or Campelen equivalents. Refer to Healey (2009) for 1978-1992 estimates.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
101 - 200	798 445 250 1455 1588	608 612 616 618 619	. . . . .	. . . . .	0 0 0 93 448	293 857 34 120 0	110 0 17 0 0	. . . . .	0 31 0 0 0	63 92 0 0 0	37 0 0 0 0	0 35 0 0 0	37 63 0 0 0	63 0 0 0 0	0 0 0 0 0	. . . . .	. . . . .	. . . . .
Sub-Total	1347 1753	619	0 0	53 4171	3330 4171	226 651	93 1725	139 369	124 244	62 204	0 97	803 1139	1805 2965	834 1413	226 414	112 173	762 831	0 34	334 450
201 - 300	342 573 251 2709 2859	609 611 615 620 621	. . . . .	. . . . .	839 465 236	1506 1340 432	602 586 784	. . . . .	349 90 138	47 109 200	47 0 0	528 104	753 17	107 104	256 259	. . . . .	. . . . .	. . . . .	165
Sub-Total	14551 14571	624	233 12044	7702 17351	8286 40571	50340 14182	10662 14778	8370 3966	8816 10239	36955 2169	7433 9935	15989 16293	9484 19500	10722 2334	4119 6539	6754 15250	7416 2844	908 16697	23348 5065
301 - 400	1105 14717 52167	620 624 67969	233 12044 52167	7702 17351 72648	8286 40571 211612	50340 14182 95956	10662 14778 82884	8370 3966 55353	8816 10239 75920	36955 2169 83008	7433 9935 64155	15989 16293 42178	9484 19500 61781	10722 2334 42178	4119 6539 61781	6754 15250 5047	7416 2844 5545	908 16697	23348 5065
Sub-Total	1132 1132	637	3737 8743	3512 11087	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	11087 6167	
401 - 500	256 263 593 1027 850 919 1085 499 544 2179 2059 1463	610 614 617 623 625 626 628 629 630 633 638 639	. . . . .	. . . . .	2195 1369	4560 3021	7343 923	. . . . .	9191 1318	11171 326	1461 247	6061 724	4349 2098	3504 1194	1080 2476	. . . . .	. . . . .	. . . . .	. . . . .
Sub-Total	17173 294251	639	16628 260640	22428 241869	9276 416524	9224 412110	9224 286972	9224 295143	238971 289283	202068 202068	230454 230454	225291 225291	130776 130776	154383 154383	289344 289344	163492 163492	166932 166932	. . . . .	. . . . .
501 - 750	30 632 691 1184 1202 198 204 134	613 622 622 627 627 640 645 650	. . . . .	. . . . .	448 1577	549 586	. . . . .	586 66	49 279	2795 273	. . . . .	686 686	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
Sub-Total	103337 520310	641	111802 284088	128176 398519	162295 413500	96509 410237	56419 289224	5304 312491	3929 307155	12631 224231	6950 203282	11860 181250	5624 149632	2837 140657	1174 222871	1197 157505	4115 314993	3440 2995	851 2995
751 - 1000	584 333 359	230 325 641	1371 343 343	475 1371 1371	886 1185 1185	1076 1321 1321	348 2347 2347	902 335	1951 201	1076 700	198 1140	1535 492	316 827	323 536	1962 103	413 425	337 792	1614 143	89
Sub-Total	516	652	2799	4309	5778	840	2609	2692	1449	4628	1834	2321	321	771	1728	2234	370	1292	
1001 - 1250	931 409 516	418 642 652	3872 2806 6246	6383 2649 4277	3364 1411 4969	1179 1411 6637	3179 3417 4969	4284 5497 10470	3092 3615 4933	3524 3336 8239	1294 1810 810	1827 5324 522	1779 2910 2910	1827 5324 4401	1827 1333 4401	1179 2910 1100	2358 5769 2839	2243 2030 1560	1150 2427
Sub-Total	12924	14456	10982	9227	11565	20251	13321	9322	16146	5035	9825	5447	17243	5721	6713	2250	10326	
1251 - 1500	1266 232 531	733 648 653	2252 1437	2252 0	1786 4516	1555 6887	2368 12794	4403 16901	1888 12631	5411 6950	4045 11860	1255 5624	2837 3148	1837 4612	3798 6602	5042 5971	3197 730	1576 2478	
Sub-Total	232 479	228 649 654	1437	0	565	587	1891	2706	1695	2013	2237	163	1369	685	1108	652	2252	
Total No. (000s)		885602	633361	742239	1.1E+06	956834	709549	698691	644371	649233	484453	478268	512769	351981	372466	598731	394570	589271	

Table 12. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3L over 1995-2009. Estimates are expressed in Campelen units or Campelen equivalents.

Depth Range (m)	V1 Area	V4 Area	Stratum	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
30 - 56	.	268	784	.	0	0	0	.	0	0	0	0	0	0	.	.	.		
57 - 92	2071	2071	350	1	0	0	0	0	0	0	0	1	0	0	2	0	0		
	1780	1780	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1121	1121	371	0	3	0	0	0	24	0	0	0	0	0	0	0	0		
	2460	2460	372	0	0	0	0	0	0	0	0	0	0	0	1	0	3		
	1120	1120	384	0	0	0	0	0	0	0	0	0	0	0	1	0	0		
	.	465	785	.	0	0	0	.	0	0	0	0	0	0	.	.	.		
93 - 183	1519	1519	328	0	1	6	1	11	18	0	1	0	0	2	0	0	2		
	1574	1574	341	0	2	249	184	0	6	0	13	0	22	0	20	0	2		
	585	585	342	0	1	85	16	0	6	0	0	0	4	28	0	0	0		
	525	525	343	0	0	34	45	0	1	0	0	0	43	0	17	0	0		
	2120	2120	348	0	2	129	177	216	22	2	23	0	162	427	336	3	77		
	2114	2114	349	4	2	60	252	416	0	0	0	2	47	182	21	0	4		
	2817	2817	364	1	0	103	414	30	0	1	6	0	56	64	0	2	82		
	1041	1041	365	17	0	169	140	55	.	0	0	0	.	444	258	2	41		
	1320	1320	370	0	14	48	871	555	19	1	55	23	.	0	277	0	141		
	2356	2356	385	73	64	502	334	253	29	47	190	69	348	273	233	554	565		
	1481	1481	390	43	67	200	625	310	69	497	222	13	193	332	119	350	127		
	.	84	786	.	67	2	4	.	0	0	0	0	0	1	.	.	.		
	613	787	.	1	86	0	.	0	0	0	0	0	59	0	1	.	.		
	.	261	788	.	0	45	31	.	0	0	0	0	0	4	10	.	.		
	89	790	.	0	6	6	.	25	0	0	0	0	29	14	.	.	.		
	.	72	793	.	0	4	4	.	0	0	5	0	0	53	.	.	.		
	.	216	794	.	0	15	4	.	0	0	0	0	32	0	.	.	.		
	.	98	797	.	0	3	14	.	0	0	0	0	23	0	0	.	.		
	.	72	799	.	0	4	.	0	0	0	0	0	6	0	.	.	.		
Sub-Total (30 - 183 m)				139	222	1746	3125	1870	193	549	516	109	986	1863	1296	911	1037	92	
184 - 274	1494	1582	344	16	11	96	885	181	42	0	7	17	918	761	797	661	1783	65	
	983	983	347	2	0	37	1021	297	160	88	28	0	476	338	1123	281	1903	23	
	1394	1394	366	204	338	878	2172	2108	62	265	689	119	.	2545	2185	2261	2365	496	
	961	961	369	72	108	888	2347	719	85	296	55	278	.	3319	1720	829	2690	195	
	983	983	386	126	447	1010	1683	1129	473	337	998	453	.	3491	1741	652	758	1076	
	821	821	389	71	900	875	474	673	727	1143	531	563	706	244	644	416	601	662	
	282	282	391	177	344	892	257	135	379	89	135	448	144	192	262	68	170	137	
	.	164	795	.	5	35	6	.	11	8	0	0	664	58	65	.	.	.	
	.	72	789	.	0	14	10	.	12	1	0	1	67	18	2	.	.	.	
	.	227	791	.	66	193	151	.	201	2	10	12	81	182	.	.	.	.
Sub-Total				76	108	152	226	19	50	38	806	1096	.	.	.	.	.	125
275 - 366	670	2295	5026	9158	5242	2378	2247	2504	1930	3862	12243	8540	5168	10269	2653	.	.	.	
	865	865	346	2237	5483	2378	2062	1312	1021	1224	1045	4602	3555	3908	2960	2027	3288	1998	
	334	334	368	385	690	338	2272	860	857	871	1829	1059	.	1106	581	968	2950	982	
	718	718	387	1546	1765	1614	1609	5284	4897	4503	661	1147	.	586	2336	3862	1246	613	
	361	361	388	310	711	814	380	270	704	993	309	554	431	317	582	1047	388	542	
	145	145	392	69	500	618	215	170	234	116	53	266	165	137	77	93	61	107	
	.	175	796	.	37	355	289	.	154	96	41	2	318	385	380	.	.	.	
	.	81	800	.	313	517	.	233	191	215	52	636	725	.	.	.	.	125
	Sub-Total				5484	12933	8203	11703	9560	10756	9243	6496	9734	9103	9447	9404	10994	13486	6570
	186	186	729	215	648	496	242	239	1002	438	100	218	139	13	103	149	81	52	
367 - 549	216	216	731	242	713	305	1795	891	407	318	306	262	151	227	145	55	170		
	468	468	733	501	706	752	2535	1511	1321	906	312	949	364	1215	2248	488	172	317	
	272	272	735	526	1111	938	2093	2465	728	1504	1177	412	.	808	1457	1368	1125	1615	
	.	50	792	.	186	349	608	316	316	69	31	200	1021	602	.	.	.	.
	Sub-Total				1483	2651	3247	5783	6011	4258	3324	1938	2085	1785	2789	4035	2149	1433	2153
	170	170	730	140	37	330	44	224	125	627	200	183	74	32	196	294	30	151	
	231	231	732	83	463	590	705	519	858	319	152	430	130	226	123	377	152	244	
	228	228	734	280	642	604	515	184	554	671	214	124	.	34	136	131	205	928	
	175	175	736	271	1117	951	1285	498	4028	1038	910	214	.	195	445	1862	864	721	
	Sub-Total				773	2259	2476	2549	1425	5566	2655	1476	951	204	486	900	2664	1251	2044
732 - 914	.	227	737	1244	2198	1981	4765	1472	1522	1689	1433	1041	.	2097	1463	542	.	1125	
	.	223	741	.	867	3224	5059	961	444	1653	1337	661	.	2061	478	.	825	.	
	.	348	745	.	1075	1722	1299	358	364	680	267	971	.	282	440	.	432	.	
	.	159	748	.	429	287	166	255	390	458	26	74	.	26	140	.	341	.	
	Sub-Total				1244	4568	7214	11288	3047	2720	4481	3063	2746	0	2097	3833	1600	0	2722
	.	221	738	1490	1906	1439	769	548	903	857	571	750	.	527	156	.	1252	.	
	.	206	742	.	567	901	918	628	451	579	982	2183	.	639	886	.	382	.	
	.	392	746	.	783	992	531	1231	363	1126	132	39	.	601	142	.	648	.	
	.	126	749	.	125	377	135	.	185	17	50	6	.	.	129	.	94	.	
	Sub-Total				1490	3382	3710	2353	2408	1902	2579	1735	2979	0	0	1767	1313	0	2375
915 - 1097	.	254	739	.	1227	2248	1784	245	515	329	227	918	.	459	569	168	.	541	
	.	211	743	.	931	2820	472	2427	861	671	1527	358	.	336	505	.	882	.	
	.	724	747	.	438	1446	570	284	622	37	204	110	.	288	311	.	1229	.	
	.	556	750	.	586	3947	1750	1100	1872	348	581	119	.	.	462	.	362	.	
	Sub-Total				0	3182	10460	4575	4055	3870	1385	2539	1505	0	459	1192	1447	0	3013
	1098 - 1280	.	264	740	.	981	2604	1013	337	1109	1068	946	456	.	738	332	343	.	1014
	.	280	744	.	2961	1101	1746	.	698	1295	957	3571	.	.	1153	547	.	1586	.
	.	229	751	.															

Table 13. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3L over 1995-2009. Estimates are expressed in Campelen units or Campelen equivalents.

Depth Range (m)	V1 Area	V4 Area	Stratum	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
30 - 56	.	268	784	.	0	0	0	.	0	0	0	0	0	0	.	0	0	
57 - 92	2071	2071	350	71	0	0	0	0	0	0	41	0	0	41	0	0	0	
1780	1780	363	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	
1121	1121	371	0	39	0	0	0	39	0	0	0	0	0	0	0	0	0	
2460	2460	372	0	0	42	0	0	0	0	0	0	0	0	97	0	42	0	
1120	1120	384	31	0	0	0	0	0	0	0	0	0	39	116	0	0	0	
465	785	.	0	0	0	.	0	0	0	0	0	0	0	0	.	0	0	
93 - 183	1519	1519	328	0	42	42	42	125	84	0	42	0	48	48	0	0	70	0
1574	1574	341	0	72	595	650	43	173	0	38	0	62	0	87	0	0	77	
585	585	342	0	40	201	80	0	201	0	0	0	40	64	0	0	0	0	
525	525	343	0	0	96	132	0	36	0	0	0	72	0	36	0	0	0	
2120	2120	348	0	83	458	622	311	73	83	79	0	357	708	595	83	194	0	
2114	2114	349	144	125	208	686	914	0	0	0	42	184	337	125	0	0	92	
2817	2817	364	86	0	517	1287	43	0	172	43	0	129	178	0	86	201	97	
1041	1041	365	179	0	668	382	143	0	95	0	48	.	716	1193	90	525	0	
1320	1320	370	73	227	227	2623	986	171	227	136	52	.	0	499	0	272	0	
2356	2356	385	1577	540	3110	1058	770	36	203	648	243	1273	486	1094	1575	4248	340	
1481	1481	390	272	204	815	1892	693	149	1580	1100	81	477	774	303	761	306	192	
.	84	786	.	331	12	12	.	0	0	0	6	0	6	.	.	.	.
.	613	787	.	42	295	0	.	0	0	0	0	126	0	42	.	.	.	
.	261	788	.	0	180	90	.	0	0	0	0	0	24	36	.	.	.	
.	89	790	.	0	6	18	.	37	0	0	0	41	12	.	.	.	.
.	72	793	.	0	5	10	.	0	5	10	0	0	74	.	.	.	.
.	216	794	.	0	40	15	.	0	0	0	0	49	0	.	.	.	.
.	98	797	.	0	13	34	.	0	0	0	31	0	0	.	.	.	.
.	72	799	.	0	0	9	.	0	0	0	0	0	10	0	.	.	.	
Sub-Total (30 - 183 m)				2432	1745	7531	9642	4066	961	2366	2096	512	2882	3524	4263	2596	5859	797
184 - 274	1494	1582	344	73	69	696	3096	392	64	0	44	87	2497	1312	1237	979	4328	435
983	983	347	120	0	180	3200	541	456	45	90	45	1871	631	1923	676	4823	437	
1394	1394	366	2246	2732	6673	7278	4913	192	2923	6286	682	.	5787	5331	5830	6999	1425	
961	961	369	338	1124	4451	7193	1880	595	2071	813	1807	.	13969	4465	3241	6572	3604	
983	983	386	1758	2524	7437	5980	4958	1037	1017	6641	3316	.	12613	4297	2144	2529	8294	
821	821	389	753	8019	7680	2146	3338	2485	7943	3179	3802	4480	652	1778	941	2654	2560	
282	282	391	886	3369	6459	969	601	3491	369	1410	2289	834	1060	1254	655	1293	927	
.	164	795	.	21	104	23	.	20	34	0	15	1523	103	105	.	.	.	
.	72	789	.	0	50	25	.	35	15	5	15	144	38	5	.	.	.	
.	227	791	.	127	487	375	.	283	28	21	16	250	331	.	.	.	.
.	100	798	.	261	281	468	.	309	55	78	99	1842	1731	.	.	.	.
Sub-Total				6174	18245	34499	30752	16623	8967	14500	18565	12172	13440	38228	20396	14466	29199	17680
275 - 366	1432	1432	345	4671	18723	12712	22231	6457	24864	7192	10703	10046	20558	6624	7582	9718	12301	8490
865	865	346	23203	40360	16064	7913	3490	5421	9162	7972	25821	16698	9963	7175	4270	5826	7333	
334	334	368	3630	8664	1815	7305	1940	1447	3045	4411	4847	.	2924	1358	1580	3763	2450	
718	718	387	16297	13169	8214	5004	10310	11803	12922	1778	8758	.	1462	3731	6859	2030	2634	
361	361	388	1639	2657	6605	894	472	1788	4569	1018	2226	1539	670	957	2913	574	4657	
145	145	392	537	4317	4149	568	459	559	436	239	1116	973	559	168	233	115	211	
.	175	796	.	72	1071	975	.	1061	542	235	36	746	903	867	.	.	.	
Sub-Total				49977	87962	52468	46712	23128	46943	38804	26941	52995	42303	24782	21838	25574	24609	26621
367 - 549	186	186	729	587	1797	1241	461	486	1689	819	273	537	316	32	193	225	112	
216	216	731	604	2333	517	2791	1501	728	700	782	458	198	272	145	66	226		
468	468	733	1610	2694	3058	5991	2414	2437	2015	601	2439	554	2110	3358	876	172	422	
272	272	735	2301	3511	3592	4808	4457	1154	3031	2611	1310	.	1219	2927	1530	1250	2395	
.	50	792	.	1494	1510	1861	517	277	137	957	2486	1247	.	.	.	.	.
Sub-Total				5102	9496	11733	13637	10148	7297	6869	4321	6025	3815	4806	6751	2777	1601	3155
550 - 731	170	170	730	342	84	503	52	366	164	1050	412	322	104	43	266	401	52	147
231	231	732	374	607	1414	1176	763	1128	632	234	1198	226	254	170	524	238	225	
228	228	734	668	1854	1812	929	298	795	1129	394	248	.	48	181	232	339	1416	
175	175	736	706	2848	2696	3045	867	6644	2195	1626	535	.	277	722	2070	781	1018	
Sub-Total				2090	5393	6425	5202	2294	8731	5006	2666	2303	330	622	1339	3227	1410	2806
732 - 914	.	227	737	3170	4965	4216	9306	2014	1936	2264	2123	2077	.	3138	1733	741	.	1671
.	223	741	.	1917	8083	10239	1363	506	1810	2163	1210	.	2976	521	.	936	.	
.	348	745	.	1891	3064	1987	404	438	814	407	1963	.	335	533	.	622	.	
.	159	748	.	853	711	264	400	427	667	25	55	.	33	33	175	.	372	
Sub-Total				3170	5479	7396	3240	2363	2034	2954	2438	4415	0	0	1853	1556	0	2317
915 - 1097	.	221	738	2919	3283	2003	1176	725	1094	1125	775	1094	.	623	195	.	1318	
.	206	742	.	808	2706	1204	867	468	652	1474	3245	.	609	1053	.	387	.	
.	392	746	.	1267	1845	674	770	351	1159	129	67	.	620	162	.	551	.	
.	126	749	.	121	841	186	121	19	61	9	.	.	147	.	61	.	.	
Sub-Total				2919	5479	7396	3240	2363	2034	2954	2438	4415	0	0	1853	1556	0	2317
1098 - 1280	.	254	739	.	1655	3127	2568	349	472	360	332	1136	.	472	507	175	.	507
.	211	743	.	1205	2245	493	3316	1055	697	1901	566	.	305	377	.	856	.	
.	724	747	.	498	1029	498	299	697	50	199	199	.	238	360	.	1138	.	
.	556	750	.	841	4245	1874	814	2027	153	497	191	.	.	578	.	382	.	
Sub-Total				0	4199	10647	5433	4778	4251	1259	2929	2092	0	472	1049	1490	0	2884
1281 - 1463	.	264	740	.	1543	2978	1217	436	1180	908	946	617	.	817	345	233	.	744
.	280	744	.	2773	1213	2140	.	757	1266	770	4452	.	790	494	.	1299	.	
.	229	751	.	1040	2991	3103	.	929	971	221	5							

Table 14. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3M over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2006	2007
128 - 146	342	342	501	0	.	.	.	.	.	.	.	.	.
147 - 184	838	838	502	0	.	.	.	.	.	.	.	.	.
185 - 256	628	628	503	91	.	.	.	.	.	.	.	.	.
	348	348	504	0	.	.	.	.	.	.	.	.	.
	703	703	505	12	.	.	.	.	.	.	.	.	.
	496	496	506	33	.	.	.	.	.	.	.	.	.
257 - 366	822	822	507	380	.	.	.	.	.	.	.	.	.
	646	646	508	230	.	.	.	.	.	.	.	.	.
	314	314	509	56	.	.	.	.	.	.	.	.	.
	951	951	510	271	.	.	.	.	.	.	.	.	.
	806	806	511	316	.	.	.	.	.	.	.	.	.
367 - 549	670	670	512	261	.	.	.	.	.	.	.	.	.
	249	249	513	64	.	.	.	.	.	.	.	.	.
	602	602	514	171	.	.	.	.	.	.	.	.	.
	666	666	515	434	.	.	.	.	.	.	.	.	.
	102	102	537	.	.	.	.	.	.	.	.	.	.
550 - 731	634	634	516	342	.	.	.	.	.	.	.	.	.
	216	216	517	77	.	.	.	.	.	.	.	.	.
	210	210	518	143	.	.	.	.	.	.	.	.	.
	414	414	519	581	.	.	.	.	.	.	.	.	.
	194	194	538	.	.	.	.	.	.	.	.	.	.
Sub-Total (128 - 731 m)				3460	0	0	0	0	0	0	0	0	0
732 - 914	525	525	.	.	.	.	.	.	.	.	.	.	.
	253	253	.	.	.	.	.	.	.	.	.	.	.
	530	528	279	1580	2297	.	950	1142	922	639	410	387	.
	98	533	59	270	77	.	119	78	56	185	130	152	.
	133	539	.	.	.	.	.	.	.	.	.	.	.
Sub-Total				338	1850	2374	0	1069	1220	978	824	540	539
915 - 1097	517	521	.	.	.	.	.	.	.	.	.	.	.
	226	525	.	.	.	.	.	.	.	.	.	.	.
	488	529	72	218	667	562	508	1233	602	821	255	639	.
	238	532	938	466	524	398	124	278	114	256	476	439	.
	486	534	814	2026	1466	.	1437	1020	471	576	796	514	.
Sub-Total				1824	2710	2658	960	2069	2531	1186	1653	1528	1592
1098 - 1280	533	522	.	.	.	.	.	.	.	.	.	.	.
	177	526	.	.	.	.	.	.	.	.	.	.	.
	1134	530	3769	1587	1506	1111	1285	958	162	1127	810	803	.
	92	535	235	218	434	.	720	30	165	119	25	94	.
Sub-Total				4005	1805	1940	1111	2005	988	327	1246	835	898
1281 - 1463	284	523	.	.	.	.	.	.	.	.	.	.	.
	171	527	.	.	.	.	.	.	.	.	.	.	.
	203	531	346	216	508	337	149	302	0	381	347	169	.
	112	536	202	385	296	.	219	218	34	202	.	179	.
Sub-Total				548	601	804	337	367	520	34	583	347	348
Total Biomass (t)				10175	6966	7776	2408	5511	5260	2525	4306	3249	3376

Table 15. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3M over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2006	2007
128 - 146	342	342	501	0	.	.	.	.	.	.	.	.	.
147 - 184	838	838	502	0	.	.	.	.	.	.	.	.	.
185 - 256	628	628	503	199	.	.	.	.	.	.	.	.	.
	348	348	504	0	.	.	.	.	.	.	.	.	.
	703	703	505	58	.	.	.	.	.	.	.	.	.
	496	496	506	184	.	.	.	.	.	.	.	.	.
257 - 366	822	822	507	1427	.	.	.	.	.	.	.	.	.
	646	646	508	1595	.	.	.	.	.	.	.	.	.
	314	314	509	65	.	.	.	.	.	.	.	.	.
	951	951	510	884	.	.	.	.	.	.	.	.	.
	806	806	511	1360	.	.	.	.	.	.	.	.	.
367 - 549	670	670	512	315	.	.	.	.	.	.	.	.	.
	249	249	513	84	.	.	.	.	.	.	.	.	.
	602	602	514	180	.	.	.	.	.	.	.	.	.
	666	666	515	489	.	.	.	.	.	.	.	.	.
	102	102	537	.	.	.	.	.	.	.	.	.	.
550 - 731	634	634	516	358	.	.	.	.	.	.	.	.	.
	216	216	517	131	.	.	.	.	.	.	.	.	.
	210	210	518	176	.	.	.	.	.	.	.	.	.
	414	414	519	658	.	.	.	.	.	.	.	.	.
	194	194	538	.	.	.	.	.	.	.	.	.	.
Sub-Total (128 - 731 m)				8162	0	0	0	0	0	0	0	0	0
732 - 914	525	525	.	.	.	.	.	.	.	.	.	.	.
	253	253	.	.	.	.	.	.	.	.	.	.	.
	530	528	292	1977	3297	.	1094	1361	923	778	405	413	.
	98	98	94	351	120	.	173	74	61	94	128	155	.
	133	133	539	.	.	.	.	.	.	.	.	.	.
Sub-Total				386	2327	3417	0	1267	1435	984	872	533	568
915 - 1097	517	521	.	.	.	.	.	.	.	.	.	.	.
	226	226	.	.	.	.	.	.	.	.	.	.	.
	488	529	110	224	614	537	470	1188	470	962	336	423	.
	238	532	1408	557	688	557	141	327	126	405	507	426	.
	486	534	735	2674	1790	.	1872	938	532	557	879	449	.
Sub-Total				2253	3455	3092	1094	2483	2454	1128	1924	1722	1297
1098 - 1280	533	522	.	.	.	.	.	.	.	.	.	.	.
	177	526	.	.	.	.	.	.	.	.	.	.	.
	1134	530	4619	1524	1595	1248	1181	884	201	1025	691	626	.
	92	535	165	247	373	.	386	34	104	70	14	62	.
Sub-Total				4784	1771	1968	1248	1567	918	305	1095	704	688
1281 - 1463	284	523	.	.	.	.	.	.	.	.	.	.	.
	171	527	.	.	.	.	.	.	.	.	.	.	.
	203	531	182	73	517	293	140	115	0	307	312	184	.
	112	536	74	216	265	.	216	123	35	69	.	139	.
Sub-Total				255	288	782	293	355	238	35	377	312	322
Abundance (000s)				15841	7841	9258	2635	5672	5045	2452	4267	3271	2875

Table 16. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3N over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<=56	1593	1593	375	0	0	0	0	0	0	1	0	0	0	1	0	0	
	1499	1499	376	0	0	0	0	0	0	0	0	0	0	0	0	0	
57 - 92	2992	2992	360	447	880	974	144	165	0	0	32	0	260	0	0	12	91
	1853	1853	361	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2520	2520	362	0	0	0	0	0	0	2	0	12	0	0	0	0	0
	2520	2520	373	0	2	0	0	0	0	0	0	0	0	0	2	0	0
	931	931	374	0	12	0	0	0	0	0	0	0	0	0	0	0	0
	674	674	383	0	0	0	0	0	0	0	0	0	0	0	0	0	14
	Sub-Total (to 92 m)			447	894	974	144	165	0	2	32	12	260	0	2	12	105
93 - 183	421	421	359	0	160	724	67	28	81	0	0	2	1	22	57	29	60
	100	100	377	4	166	30	21	30	1	0	10	7	58	0	11	0	43
	647	647	382	0	24	111	0	0	0	96	0	1	42	0	297	5	105
	Sub-Total			4	350	865	88	57	83	96	10	10	102	22	366	34	208
184 - 274	225	225	358	140	94	42	13	5	488	1	8	4	4	12	0	6	7
	139	139	378	112	262	2198	257	5	237	206	20	135	1	274	36	0	20
	182	182	381	802	615	1622	590	253	138	73	67	114	146	170	109	47	94
	Sub-Total			1053	971	3862	860	263	864	280	95	253	151	456	145	53	121
275 - 366	164	164	357	40	58	7	.	6	8	20	21	8	228	0	29	27	29
	106	106	379	581	41	31	22	36	404	98	59	629	26	15	21	172	12
	116	116	380	178	516	794	330	151	141	95	130	362	138	201	56	19	119
	Sub-Total			800	614	832	352	193	553	214	210	998	391	217	106	218	159
367 - 549	155	155	723	115	109	336	14	48	70	8	31	11	64	0	53	37	29
	105	105	725	165	1646	65	95	171	59	54	42	.	52	16	104	30	251
	160	160	727	1006	371	509	494	391	570	211	209	342	225	19	167	183	174
	Sub-Total			1285	2127	910	602	610	699	273	282	354	341	35	324	250	455
550 - 731	124	124	724	160	589	374	126	67	62	154	.	122	99	193	250	156	194
	72	72	726	296	448	765	55	30	517	214	136	52	74	104	80	72	510
	156	156	728	1035	455	675	511	201	299	510	291	1084	38	54	451	359	353
	Sub-Total			1490	1491	1814	692	299	878	878	428	1257	211	352	781	586	1057
732 - 914	.	134	752	.	.	563	.	664	68	97	.	.	.	.	241	.	.
	.	106	756	.	.	242	.	243	230	211	.	.	250	.	240	.	.
	.	154	760	.	.	352	.	183	283	786	.	167	.	289	.	437	.
	Sub-Total			0	0	1156	0	1090	581	1094	0	0	418	0	770	0	437
915 - 1097	.	138	753	.	.	224	.	109	55	75	.	.	.	.	118	.	.
	.	102	757	.	.	643	.	455	454	175	.	.	260	.	145	.	.
	.	171	761	.	.	687	.	778	402	315	.	390	.	380	.	477	.
	Sub-Total			0	0	1554	0	1342	911	565	0	0	650	0	643	0	477
1098 - 1280	.	180	754	.	.	1554	.	179	83	103	.	.	.	.	142	.	.
	.	99	758	.	.	443	.	427	274	78	.	.	126	.	421	.	.
	.	212	762	.	.	.	.	1096	772	339	.	233	.	307	.	469	.
	Sub-Total			0	0	1997	0	1702	1129	520	0	0	359	0	870	0	469
1281 - 1463	.	385	755	.	.	658	.	965	571	454	.	.	.	555	.	.	.
	.	127	759	.	.	165	.	509	378	217	.	85	.	534	.	.	.
	.	261	763	.	.	.	.	2135	509	1111	.	286	.	197	.	105	.
	Sub-Total			0	0	823	0	3609	1457	1783	0	0	371	0	1285	0	105
Total Biomass (t)				5079	6448	14788	2738	9330	7155	5705	1057	2885	3253	1081	5292	1153	3593

Table 17. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3N over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<=56	1593	1593	375	0	31	0	0	0	0	0	55	0	0	0	55	0	0
	1499	1499	376	0	0	0	0	0	0	0	0	0	0	0	0	0	0
57 - 92	2992	2992	360	3293	4961	3293	257	257	0	0	463	0	823	0	0	59	105
	1853	1853	361	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2520	2520	362	0	0	0	0	0	0	50	0	50	0	0	0	0	0
	2520	2520	373	0	99	0	0	0	0	0	0	0	0	0	51	0	0
	931	931	374	0	49	0	0	0	0	0	0	0	0	0	0	0	0
	674	674	383	0	0	0	0	0	0	0	0	0	0	0	0	0	46
Sub-Total (to 92 m)				3293	5140	3293	257	257	0	50	518	50	823	0	106	59	151
93 - 183	421	421	359	0	1419	1853	87	29	290	0	0	29	29	29	109	29	232
	100	100	377	31	571	76	55	69	16	10	110	28	206	0	14	0	89
	647	647	382	0	45	223	0	0	0	401	0	51	89	0	1187	134	119
Sub-Total				31	2034	2151	142	98	305	411	110	107	324	29	1310	162	440
184 - 274	225	225	358	959	696	232	77	14	2132	15	90	46	45	31	0	14	18
	139	139	378	1027	1589	7276	1013	34	417	676	76	1080	19	1270	85	19	41
	182	182	381	19548	3693	6534	2353	739	663	613	310	688	313	513	386	114	634
Sub-Total				21534	5979	14042	3444	786	3213	1304	477	1815	377	1815	471	147	693
275 - 366	164	164	357	370	481	45	21	66	60	113	23	959	0	59	79	10	
	106	106	379	4511	132	169	69	80	710	416	305	1999	162	26	80	262	69
	116	116	380	2525	1779	2278	846	339	412	465	606	2066	303	766	113	57	338
Sub-Total				7406	2393	2492	915	440	1188	941	1024	4088	1424	792	252	398	416
367 - 549	155	155	723	320	591	1002	53	95	113	38	84	64	107	0	63	57	60
	105	105	725	701	12676	231	217	372	318	213	193	.	182	64	141	140	268
	160	160	727	10334	1123	1868	1079	658	884	649	698	757	430	31	313	271	246
Sub-Total				11354	14390	3102	1348	1125	1314	901	976	821	719	95	517	468	573
550 - 731	124	124	724	644	2789	1421	213	159	94	468	.	415	105	409	436	245	280
	72	72	726	1124	1406	2665	122	53	1033	1074	584	168	199	185	212	119	1017
	156	156	728	3573	1356	2060	1094	377	807	2361	975	2997	46	97	944	644	481
Sub-Total				5342	5552	6146	1429	589	1934	3902	1559	3580	349	691	1593	1008	1778
732 - 914	.	134	752	.	995	.	959	74	184	.	.	.	.	350	.	.	
	106	756	.	.	525	.	396	314	343	.	.	459	.	355	.	.	
	154	760	.	.	821	.	354	478	1727	.	.	191	.	360	.	413	
Sub-Total				0	0	2342	0	1708	865	2253	0	0	650	0	1065	0	413
915 - 1097	.	138	753	.	351	.	142	66	129	.	.	.	.	123	.	.	
	102	757	.	.	1143	.	687	645	247	.	.	365	.	157	.	.	
	171	761	.	.	958	.	1264	524	470	.	.	588	.	188	.	397	
Sub-Total				0	0	2452	0	2092	1236	846	0	0	953	0	469	0	397
1098 - 1280	.	180	754	.	2392	.	173	66	99	.	.	.	.	144	.	.	
	99	758	.	.	536	.	586	302	86	.	.	109	.	449	.	.	
	212	762	.	.	.	.	1448	864	525	.	.	335	.	258	.	467	
Sub-Total				0	0	2928	0	2207	1232	710	0	0	444	0	851	0	467
1281 - 1463	.	385	755	.	871	.	1074	556	424	.	.	.	477	.	.	.	
	127	759	.	.	183	.	580	376	132	.	.	96	.	489	.	.	
	261	763	.	.	.	.	2805	521	1364	.	.	421	.	215	.	108	
Sub-Total				0	0	1054	0	4460	1452	1920	0	0	517	0	1181	0	108
Abundance (000s)				48959	35487	40002	7536	13763	12740	13237	4663	10461	6581	3421	7815	2242	5435

Table 18. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3O over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
57 - 92	2089	2089	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	456	456	331	0	0	11	0	0	0	0	0	0	0	0	0	0	0
	1898	1898	338	39	195	38	39	0	0	0	26	16	0	0	2	5	2
	1716	1716	340	0	0	0	17	0	0	0	0	0	0	0	0	0	0
	2520	2520	351	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2580	2580	352	56	9	28	0	0	4	0	0	0	0	0	0	9	0
	1282	1282	353	472	769	544	108	0	0	3	0	180	40	0	88	96	0
	Sub-Total			567	974	621	164	0	4	3	26	196	40	0	90	110	2
	1721	1721	329	28	57	11	50	46	3	0	0	0	0	0	0	0	0
	1047	1047	332	25	81	74	0	0	0	0	16	26	0	0	7	0	0
93 - 183	948	948	337	48	30	21	67	0	0	0	7	0	17	0	6	22	0
	585	585	339	0	103	8	.	46	16	0	1	0	0	0	181	60	0
	474	474	354	5	59	15	1094	95	71	24	84	39	6	77	5	0	6
	Sub-Total			106	329	130	1210	187	90	24	109	66	22	77	198	82	6
	151	147	333	.	10	0	0	3	0	0	0	5	0	0	0	5	0
	121	121	336	3	7	5	0	0	0	0	12	5	0	1	0	33	.
184 - 274	103	103	355	39	22	3	1	0	1	5	3	25	2	9	2	29	0
	Sub-Total			42	39	7	1	3	1	5	14	35	3	9	2	66	0
	92	96	334	.	6	6	0	0	0	0	0	0	0	1	0	0	0
275 - 366	58	58	335	7	2	0	3	3	0	0	5	0	0	1	1	3	0
	61	61	356	8	6	8	8	9	6	7	0	2	1	0	3	1	0
	Sub-Total			16	14	14	12	12	6	7	5	2	1	2	4	4	0
	93	166	717	.	42	27	6	0	72	0	27	1	3	0	51	25	0
367 - 549	76	76	719	11	4	14	36	18	10	1	0	31	0	0	0	0	46
	76	76	721	50	35	47	26	23	42	5	25	0	6	1	34	15	0
	Sub-Total			61	82	89	67	41	124	5	52	33	9	1	85	40	46
550 - 731	111	134	718	.	131	158	186	20	26	107	355	35	82	34	265	432	77
	105	105	720	82	.	92	105	181	141	152	131	17	79	84	101	60	35
	93	93	722	153	490	124	160	73	106	40	437	23	109	.	100	93	494
	Sub-Total			235	621	374	451	274	273	299	923	76	271	119	466	585	606
732 - 914	.	105	764	.	.	620	.	437	239	324	.	240	.	242	.	610	.
	.	99	768	.	.	1070	.	403	274	460	.	101	.	156	.	298	.
	.	135	772	.	.	1334	.	360	.	194	164	.	358	.	559	.	202
	Sub-Total			0	0	3023	0	1199	513	978	164	0	700	0	957	0	1110
915 - 1097	.	124	765	.	.	175	.	665	155	127	.	162	.	65	.	217	.
	.	138	769	.	.	409	.	405	438	374	.	306	.	408	.	478	.
	.	128	773	.	.	560	.	386	340	632	526	.	159	.	564	.	752
Sub-Total			0	0	1144	0	1456	932	1133	526	0	627	0	1036	0	1447	
1098 - 1280	.	144	766	.	.	.	.	322	238	267	.	94	.	82	.	693	.
	.	128	770	.	.	.	.	172	1116	379	.	129	.	80	.	153	.
	.	135	774	.	.	.	.	186	259	174	480	.	113	.	397	.	264
Sub-Total			0	0	0	0	681	1612	821	480	0	336	0	559	0	1110	
1281 - 1463	.	158	767	.	.	.	.	101	257	60	.	34	.	111	.	329	.
	.	175	771	.	.	.	.	171	604	254	.	123	.	68	.	107	.
	.	155	775	.	.	.	.	96	130	488	290	.	174	.	43	.	469
	Sub-Total			0	0	0	0	368	991	802	290	0	331	0	222	0	905
Total Biomass (t)				1026	2058	5402	1905	4222	4546	4077	2589	407	2339	208	3619	886	5231

Table 19. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian fall surveys in Division 3O over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
57 - 92	2089	2089	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	456	456	331	0	0	63	0	0	0	0	0	0	0	0	0	0	0
	1898	1898	338	131	940	261	104	0	0	0	209	209	0	0	52	104	44
	1716	1716	340	0	0	0	34	0	0	0	0	0	0	0	0	0	0
	2520	2520	351	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2580	2580	352	659	25	111	0	0	101	0	0	0	0	0	0	118	0
	1282	1282	353	4321	4453	2293	397	0	0	88	0	750	353	0	304	411	0
	Sub-Total			5110	5418	2727	535	0	101	88	209	958	353	0	356	634	44
93 - 183	1721	1721	329	47	1657	47	95	84	47	0	0	47	0	0	0	0	0
	1047	1047	332	1224	864	624	0	0	0	0	384	192	0	0	176	0	0
	948	948	337	717	522	169	261	0	0	0	174	0	149	0	87	246	0
	585	585	339	0	1086	138	.	201	80	0	40	0	0	0	443	241	0
	474	474	354	87	619	65	3097	130	174	333	652	531	65	1565	116	0	203
	Sub-Total			2076	4749	1044	3453	416	302	333	1250	770	214	1565	821	488	203
184 - 274	151	147	333	.	121	0	0	20	0	9	0	71	10	0	0	54	0
	121	121	336	25	75	31	0	8	0	0	50	42	0	8	0	340	.
	103	103	355	418	241	21	7	0	13	92	14	305	20	50	25	169	0
	Sub-Total			443	437	52	7	29	13	101	64	417	30	59	25	563	0
275 - 366	92	96	334	.	53	33	0	0	0	0	0	6	0	6	0	0	6
	58	58	335	12	28	0	8	8	0	0	16	4	0	4	27	32	0
	61	61	356	57	55	8	22	17	4	29	0	17	12	0	11	4	0
	Sub-Total			69	135	41	30	24	4	29	16	27	12	10	38	36	6
367 - 549	93	166	717	.	34	57	11	0	57	0	46	13	20	0	81	46	0
	76	76	719	52	37	31	42	12	16	5	0	18	0	0	0	0	30
	76	76	721	329	182	125	88	37	31	16	105	0	9	5	41	10	0
	Sub-Total			382	253	214	141	50	104	20	150	31	30	5	122	56	30
550 - 731	111	134	718	.	590	553	120	28	46	116	524	53	199	41	221	678	41
	105	105	720	461	.	274	173	276	207	255	231	25	122	186	77	58	29
	93	93	722	768	2900	385	294	180	203	108	1478	80	182	.	167	118	814
	Sub-Total			1229	3490	1213	587	484	456	479	2234	159	503	226	465	854	883
732 - 914	.	105	764	.	1760	.	758	383	708	.	.	419	.	373	.	710	.
	.	99	768	.	2997	.	763	429	624	.	.	143	.	206	.	313	.
	.	135	772	.	3714	.	592	.	259	248	.	520	.	720	.	194	.
	Sub-Total			0	0	8471	0	2113	812	1591	248	0	1082	0	1299	0	1217
915 - 1097	.	124	765	.	210	.	1032	273	184	.	.	188	.	53	.	248	.
	.	138	769	.	854	.	494	484	427	.	.	275	.	361	.	548	.
	.	128	773	.	778	.	518	376	634	537	.	132	.	540	.	586	.
	Sub-Total			0	0	1842	0	2044	1133	1245	537	0	595	0	953	0	1383
1098 - 1280	.	144	766	.	.	.	205	283	271	.	.	89	.	89	.	683	.
	.	128	770	.	.	.	170	1039	324	.	.	88	.	88	.	106	.
	.	135	774	.	.	.	186	195	72	244	.	93	.	274	.	143	.
	Sub-Total			0	0	0	0	561	1517	667	244	0	270	0	452	0	932
1281 - 1463	.	158	767	.	.	.	116	261	76	.	.	54	.	62	.	234	.
	.	175	771	.	.	.	179	481	193	.	.	108	.	60	.	82	.
	.	155	775	.	.	.	77	107	146	192	.	160	.	38	.	277	.
	Sub-Total			0	0	0	0	372	849	414	192	0	323	0	160	0	593
Abundance (000s)				9309	14482	15604	4754	6092	5291	4967	5144	2362	3411	1865	4692	2632	5291

Table 20. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3L over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
30 - 56	268	784		.	.	0	0	0	0	0	0	0	0	0	0	0	0
57 - 92	2071	2071	350	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1780	1780	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1121	1121	371	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2460	2460	372	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1120	1120	384	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	465	785		.	.	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total				0	0	0	0	0	0	0	0	0	0	0	0	0	0
93 - 183	1519	1519	328	0	0	0	0	18	0	0	0	1	13	0	0	.	0
	1574	1574	341	2	0	14	0	26	0	0	0	0	0	0	0	0	0
	585	585	342	0	0	5	0	0	0	0	0	0	0	0	1	0	2
	525	525	343	0	0	2	0	0	0	0	0	0	30	0	0	0	0
	2120	2120	348	1	9	0	0	0	0	0	0	0	0	1	5	0	0
	2114	2114	349	1	0	11	0	14	2	0	0	0	5	0	0	0	0
	2817	2817	364	0	6	0	0	0	1	0	1	0	0	0	0	0	0
	1041	1041	365	1	0	0	14	0	0	0	0	0	45	41	0	1	0
	1320	1320	370	0	0	0	0	0	0	0	0	0	0	0	43	0	1
	2356	2356	385	0	0	0	0	0	0	0	0	12	0	0	0	4	0
	1481	1481	390	0	24	0	0	6	0	0	0	0	9	0	0	0	0
	84	786	.	.	.	0	0	.	0	.	.	0	.	.	.	.	.
	613	787	.	.	.	0	0	.	0	.	.	0	.	.	.	.	.
	261	788	.	.	.	0	.	.	.	.	.	.	.	.	.	.	.
	89	790	.	.	.	10	.	.	.	.	.	.	.	.	.	.	.
	72	793	.	.	.	3	.	.	.	.	.	.	.	.	.	.	.
	216	794	.	.	.	0	.	.	.	0	.	.	.	.	.	.	.
	98	797	.	.	.	0	.	.	.	0	.	.	.	.	.	.	.
	72	799	.	.	.	0	.	.	.	0	.	.	.	.	.	.	.
Sub-Total				5	39	32	26	64	4	0	2	13	103	42	49	6	3
184 - 274	1494	1582	344	3	59	0	21	24	3	0	31	34	23	0	2	44	0
	983	983	347	1	5	0	0	1	0	0	0	0	32	0	665	3	0
	1394	1394	366	6	169	10	30	0	1	48	148	255	236	44	861	10	209
	961	961	369	1	2	79	17	0	1	0	464	0	199	943	1078	48	4
	983	983	386	1	84	11	633	0	0	0	0	115	494	2078	309	5	0
	821	821	389	38	435	122	435	1070	143	3	2	36	994	909	1595	692	1
	282	282	391	9	3	43	0	4	3	16	58	0	238	274	872	65	3
	164	795	.	.	.	0	.	.	.	0	.	.	.	.	.	.	.
	72	789	.	.	.	18	.	.	.	.	0	.	.	.	.	.	.
	227	791	.	.	.	113	.	.	.	.	.	.	.	.	.	.	.
	100	798	.	.	.	23	.	.	0	.	.	.	.	.	.	.	.
Sub-Total				58	758	267	1291	1099	150	67	702	440	2214	4249	5381	866	217
275 - 366	1432	1432	345	335	892	302	926	891	495	566	441	1953	429	333	3510	347	533
	865	865	346	354	1372	639	338	366	513	245	307	469	789	645	2372	100	662
	334	334	368	137	216	263	228	456	311	327	703	241	362	1826	638	147	894
	718	718	387	208	2514	2585	2026	4356	439	97	359	724	2967	2600	3783	3905	390
	361	361	388	304	382	1404	464	482	220	223	608	989	332	483	1413	894	433
	145	145	392	288	117	464	100	143	85	74	248	111	356	122	303	157	20
	175	796	.	.	.	7	.	.	0	.	.	.	.	.	.	.	.
	81	800	.	.	.	210	.	.	.	.	.	.	.	.	.	.	.
Sub-Total				1626	5494	5658	4299	6694	2064	1532	2667	4488	5235	6009	12019	5549	2932
367 - 549	186	186	729	803	236	3921	1351	1286	555	407	589	724	292	187	802	798	164
	216	216	731	897	299	3531	1284	1725	664	217	1336	496	288	507	437	367	296
	468	468	733	3016	3003	7556	3311	2290	1139	847	3444	1138	2315	943	2067	2456	8
	272	272	735	302	4063	5100	4332	4656	2186	939	598	1207	1685	977	1027	1658	374
Sub-Total				5019	7601	20108	10810	9958	5447	2410	6115	3566	4580	2614	4334	5279	843
550 - 731	170	170	730	245	0	1693	292	745	772	177	53	54	129	160	120	559	1157
	231	231	732	462	1420	3220	1219	996	1173	533	465	560	354	105	560	957	331
	228	228	734	1327	1361	4169	1324	2887	621	362	367	592	459	255	466	.	81
	175	175	736	791	1793	5037	3463	4372	2804	1378	1747	259	1923	915	5514	4945	35
Sub-Total				2826	4574	14118	6297	9001	5370	2449	2632	1466	2865	1434	6659	6461	1604
Deepwater Strata not sampled during spring surveys.																	
Total Biomass (t)				9533	18467	40182	22724	26815	13035	6459	12118	9973	14997	14348	28442	18162	5599

Table 21. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3L over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
30 - 56	268	784		.	.	0	0	.	0	0	0	0	.	0	0	0	.	
57 - 92	2071	2071	350	0	0	0	0	0	0	0	0	0	0	0	0	0	41	
	1780	1780	363	0	0	0	0	0	0	0	0	0	41	0	0	0	0	
	1121	1121	371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2460	2460	372	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1120	1120	384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
			465	785														
			Sub-Total		0	0	0	0	0	0	0	0	41	0	0	0	0	
93 - 183	1519	1519	328	30	0	0	0	84	42	0	0	42	104	0	0	.	0	
	1574	1574	341	31	0	87	0	130	0	0	0	0	0	0	0	0	0	
	585	585	342	0	0	40	0	0	0	0	0	0	0	0	40	0	40	
	525	525	343	0	0	36	0	0	0	0	0	0	32	0	0	0	0	
	2120	2120	348	29	32	0	0	0	0	0	0	0	0	47	49	49	42	
	2114	2114	349	65	0	73	0	36	42	0	0	0	48	0	42	0	0	
	2817	2817	364	30	43	0	0	39	86	0	129	0	0	0	0	0	0	
	1041	1041	365	29	0	0	32	0	0	0	0	0	143	102	0	95	0	
	1320	1320	370	30	0	0	0	0	0	0	0	0	0	0	45	0	156	
	2356	2356	385	0	0	0	0	0	0	0	0	0	41	0	0	0	432	
	1481	1481	390	0	102	0	0	407	0	0	41	0	73	0	0	0	0	
	.	84	786	.	.	0	7	.	6	.	0	.	.	.	.	.	.
	.	613	787	.	.	0	0	.	0	.	0	.	.	.	.	.	.
	.	261	788	.	.	0	.	.	.	.	.	.	.	.	.	.	.
	.	89	790	.	.	24	.	.	.	.	.	.	.	.	.	.	.
	.	72	793	.	.	5	.	.	.	.	.	.	.	.	.	.	.
	.	216	794	.	.	0	.	.	0	.	0	.	.	.	.	.	.
	.	98	797	.	.	0	.	.	0	.	0	.	.	.	.	.	.
	.	72	799	.	243	177	236	68	696	175	0	170	82	401	150	176	576	
184 - 274	1494	1582	344	62	261	36	39	163	87	0	44	435	87	0	109	54	0	
	983	983	347	34	68	0	0	85	0	0	0	0	90	0	1082	90	0	
	1394	1394	366	38	1406	146	170	0	38	1364	1304	1283	805	384	2280	240	844	
	961	961	369	33	59	397	78	0	44	0	3746	0	1425	2380	4930	302	353	
	983	983	386	68	781	68	2710	0	0	0	0	481	1412	5544	1232	240	90	
	821	821	389	791	5141	979	1694	4574	866	142	75	264	2711	2598	4359	3079	50	
	282	282	391	388	52	282	0	188	155	116	407	0	892	856	2914	155	121	
	.	164	795	.	.	0	.	0	.	0	0	.	.	.	.	.	.
	.	72	789	.	.	65	.	.	.	.	0	.	.	.	.	.	.
	.	227	791	.	.	208	.	.	61	0	.	.	.	.	.	.	.
	.	100	798	.	1413	7768	1908	5026	5010	1191	1622	5576	2462	7422	11760	16905	4161	
275 - 366	1432	1432	345	4268	7958	3400	4062	3758	4478	2872	3034	13951	1646	4885	16839	3053	2443	
	865	865	346	8673	16262	3094	1728	1988	4447	3587	3512	3411	2102	2181	5553	1190	2754	
	334	334	368	1501	2413	1718	1066	1437	791	1362	4628	1133	1195	4411	1899	1215	2501	
	718	718	387	5461	24347	13689	8520	17334	1800	658	2321	2853	11452	6420	6985	16478	1284	
	361	361	388	4247	1962	7824	1837	2008	1192	1363	3327	3487	971	1217	3349	1722	1969	
	145	145	392	3551	1127	2753	509	355	509	329	1935	888	1427	329	593	426	64	
	.	175	796	.	.	43	.	36	.	.	.	.	.	.	.	.	.
	.	81	800	.	.	456	.	.	36	.	.	.	.	.	.	.	.
			Sub-Total		27700	54068	32478	18220	26879	13216	10172	18793	25723	18793	19443	35219	24083	11014
367 - 549	186	186	729	3774	1076	20763	3416	2890	1621	1720	2887	2623	721	432	1240	2513	450	
	216	216	731	4958	1530	13617	4115	4558	1598	1000	4632	1638	647	1180	773	687	773	
	468	468	733	18551	13680	23219	10880	6152	4178	3122	17443	3813	6695	2157	3744	7911	32	
	272	272	735	1949	18286	17174	11726	10063	5355	3645	2736	4141	3749	2039	2055	3873	857	
	.	50	792	.	.	1220	.	1401	.	404	.	.	.	.	.	.	.
			Sub-Total		29232	34572	74773	31357	23663	14152	9488	28101	12214	11812	5808	7811	14984	2112
550 - 731	170	170	730	531	0	4022	608	1668	1287	608	118	159	180	269	156	698	1633	
	231	231	732	1657	4435	9612	2955	1729	2599	1624	1321	1285	706	214	764	1319	610	
	228	228	734	5504	3980	11277	3288	4767	1469	1267	937	2107	1073	596	712	188	188	
	175	175	736	2846	5862	13325	6795	6668	4696	2749	5903	824	3723	1575	8731	6235	60	
			Sub-Total		10538	14277	38237	13646	14832	10050	6248	8279	4374	5683	2653	10363	8251	2492
732 - 1463	Deepwater Strata not sampled during spring surveys.																	
Abundance (000s)	69127	110862	147631	68316	71080	38783	27530	60919	44894	44111	39815	70474	52055	17353	.	.	.	

Table 22. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3N over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
57 - 92	1593	1593	375	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
	1499	1499	376	12	0	0	0	0	1	0	0	70	0	1	0	0	0	
	2992	2992	360	19	349	130	471	183	23	0	0	71	62	0	0	0	0	
	1853	1853	361	0	0	1	0	0	4	0	0	0	0	0	0	0	0	
	2520	2520	362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2520	2520	373	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	931	931	374	9	0	0	0	0	0	73	0	0	0	0	0	0	0	
93 - 183	674	674	383	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
				41	349	131	471	183	28	73	2	71	132	0	1	0	0	
	421	421	359	145	133	31	165	96	19	0	2	4	133	.	0	30	0	
	100	100	377	6	4	0	321	0	0	0	0	0	25	.	51	12	1	
	647	647	382	0	0	76	0	20	0	0	0	1	356	.	0	49	0	
				Sub-Total	151	136	107	486	116	19	0	2	6	514	0	51	91	1
	184 - 274	225	225	358	259	677	413	458	46	17	29	118	51	27	.	5	0	0
275 - 366	139	139	378	48	37	49	719	4	14	6	82	7	15	.	120	21	8	
	182	182	381	178	90	10	217	33	7	0	41	0	92	.	610	285	35	
				Sub-Total	485	805	471	1394	82	38	35	240	58	133	0	734	306	43
	164	164	357	57	82	375	17	4	43	0	13	134	26	.	12	2	17	
	106	106	379	85	183	170	1047	312	28	88	736	16	29	.	297	6	1	
	116	116	380	117	162	58	43	53	28	19	287	72	220	.	176	135	21	
				Sub-Total	260	427	603	1107	368	98	107	1036	221	275	0	484	144	39
367 - 549	155	155	723	333	134	300	68	173	71	24	60	27	25	.	35	15	0	
	105	105	725	242	952	130	37	289	150	68	153	15	201	.	148	14	53	
	160	160	727	389	1482	1499	328	843	358	22	315	219	174	.	348	431	0	
				Sub-Total	964	2568	1928	433	1305	578	114	527	261	400	0	531	461	53
	550 - 731	124	124	724	196	142	368	575	114	95	201	142	72	24	.	92	.	308
	72	72	726	93	254	1463	63	257	139	52	125	91	45	.	36	61	90	
	156	156	728	1226	.	576	1475	1804	1088	222	686	642	79	.	428	1082	543	
732 - 1463				Sub-Total	1514	396	2407	2113	2175	1323	475	954	805	149	0	556	1143	941
Total Biomass (t)				3415	4681	5647	6003	4228	2084	805	2761	1422	1603	0	2357	2144	1078	

Table 23. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3N over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
57 - 92	1593	1593	375	0	0	0	0	0	0	88	0	0	0	0	0	0	0	
	1499	1499	376	41	0	0	0	0	41	0	0	247	0	41	0	0	0	
	2992	2992	360	225	2190	1098	2507	453	41	0	0	329	320	0	0	0	0	
	1853	1853	361	0	0	32	0	0	85	0	0	0	0	0	0	0	0	
	2520	2520	362	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2520	2520	373	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	931	931	374	85	0	0	0	0	0	0	299	43	0	0	0	0	0	
93 - 183	674	674	383	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
				Sub-Total	351	2190	1130	2507	453	167	299	130	329	568	0	41	0	0
	421	421	359	852	1390	129	550	347	203	0	91	29	898	.	29	58	0	
	100	100	377	14	21	0	935	0	7	7	14	7	83	.	156	28	106	
	647	647	382	0	0	178	0	89	0	0	0	51	801	.	0	267	0	
				Sub-Total	866	1411	307	1486	436	210	7	105	87	1781	0	185	352	106
	184 - 274	225	225	358	3853	6782	1871	1594	138	232	74	327	495	220	.	93	0	0
275 - 366	139	139	378	660	229	220	1673	223	102	31	429	60	63	.	277	48	110	
	182	182	381	2189	490	200	613	2754	206	11	601	0	318	.	1070	626	412	
				Sub-Total	6702	7501	2291	3880	3115	540	116	1357	555	601	0	1440	674	522
	164	164	357	471	180	1636	66	20	144	11	80	514	271	.	23	11	23	
	106	106	379	853	938	890	5009	7945	97	2318	6517	109	94	.	690	39	7	
	116	116	380	1763	1548	559	247	756	121	291	1125	431	810	.	1355	306	207	
				Sub-Total	3088	2666	3084	5322	8720	362	2620	7722	1054	1176	0	2067	356	237
367 - 549	155	155	723	1773	853	1386	192	341	126	47	152	64	85	.	71	77	0	
	105	105	725	2035	5545	712	100	650	571	356	718	70	884	.	355	67	92	
	160	160	727	3363	7545	7538	1101	2348	1487	204	1436	942	558	.	1096	1615	15	
				Sub-Total	7171	13942	9636	1392	3339	2184	607	2305	1076	1527	0	1521	1760	107
	550 - 731	124	124	724	1002	687	1008	2167	212	159	350	337	179	34	.	128	.	335
	72	72	726	293	763	5477	178	525	228	105	393	256	114	.	58	92	135	
	156	156	728	6532	.	2154	4496	4286	2457	707	2384	2382	225	.	669	1962	1036	
732 - 914				Sub-Total	7826	1450	8640	5023	2845	1162	3115	2817	374	0	855	2054	1505	
Abundance (000s)				26004	29159	25088	21429	21086	6307	4811	14735	5918	6026	0	6109	5197	2478	

Table 24. Biomass estimates (t) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3O over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009			
57 - 92	2089	2089	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	456	456	331	0	0	16	0	0	0	0	0	0	0	.	0	0	0			
	1898	1898	338	478	40	62	0	0	0	2	0	13	0	9	0	0	0			
	1716	1716	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
	2520	2520	351	0	0	0	0	0	0	0	0	0	0	0	1	0	0			
	2580	2580	352	114	48	0	0	0	0	3	0	0	0	0	0	0	0			
	1282	1282	353	119	146	331	2	25	0	3	0	1	84	57	0	0	1			
	Sub-Total			710	234	409	2	25	0	8	0	14	84	66	1	0	1			
	1721	1721	329	1	13	0	0	1	1	0	0	0	14	.	0	0	28			
	1047	1047	332	148	376	475	0	4	0	1	6	24	62	.	0	0	0			
93 - 183	948	948	337	179	139	4	0	3	31	1	91	17	37	.	13	1	0			
	585	585	339	0	2	8	0	0	33	0	0	0	0	0	21	26	17			
	474	474	354	807	122	330	3	0	11	22	8	25	43	.	1	6	5			
	Sub-Total			1135	651	817	3	8	76	24	106	67	157	21	39	24	37			
	151	147	333	5	62	23	0	9	0	8	0	2	12	.	0	10	1			
184 - 274	121	121	336	100	168	11	0	7	3	8	11	6	15	.	0	16	0			
	103	103	355	249	168	20	0	3	84	5	46	42	13	.	26	12	111			
	Sub-Total			355	398	54	0	18	87	21	57	50	40	0	26	38	12			
	92	96	334	20	39	6	2	1	0	1	0	0	3	.	0	1	2			
275 - 366	58	58	335	9	92	15	0	2	0	0	0	1	1	.	1	0	0			
	61	61	356	161	68	47	1	0	3	1	7	1	3	.	34	17	6			
	Sub-Total			190	199	68	3	3	3	3	7	2	7	0	34	17	8			
367 - 549	93	166	717	42	165	55	0	0	1	0	0	6	0	.	0	0	18			
	76	76	719	9	24	29	1	8	0	21	0	23	18	.	0	14	5			
	76	76	721	161	59	112	5	30	1	8	2	7	3	.	0	0	28			
	Sub-Total			212	248	196	7	39	3	30	2	36	20	0	0	14	51			
	111	134	718	70	116	154	11	26	8	41	60	73	56	.	35	338	45			
550 - 731	105	105	720	29	61	111	4	45	23	3	12	63	122	.	36	148	117			
	93	93	722	57	176	203	23	120	23	43	3	86	51	.	240	187	42			
	Sub-Total			156	353	467	37	191	55	87	74	222	230	0	310	673	204			
732 - 1463 Deepwater Strata not sampled during spring surveys.																				
Total Biomass (t)				2757	2084	2010	53	284	224	173	245	391	538	88	412	766	313			

Table 25. Abundance estimates (000s) of Greenland Halibut by depth stratum from Canadian spring surveys in Division 3O over 1996-2009.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
57 - 92	2089	2089	330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	456	456	331	0	0	63	0	0	0	0	0	0	0	.	0	0	0	
	1898	1898	338	5035	459	298	0	0	0	87	0	186	0	33	0	0	0	
	1716	1716	340	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2520	2520	351	0	0	0	0	0	0	0	0	0	0	0	43	43	0	
	2580	2580	352	907	592	0	0	0	0	89	0	0	0	0	0	0	0	
	1282	1282	353	1340	1195	1905	8	141	44	176	0	44	441	366	0	0	441	
	Sub-Total				7283	2246	2266	9	141	44	352	0	231	441	399	43	43	441
	1721	1721	329	79	250	0	0	47	47	0	0	0	47	.	0	0	47	
	1047	1047	332	1914	5425	3909	1	144	0	48	144	432	384	.	0	0	0	
93 - 183	948	948	337	1739	1415	98	0	33	391	43	2521	360	130	.	174	43	0	
	585	585	339	0	72	40	0	0	161	0	0	0	0	72	80	80	80	
	474	474	354	20278	1467	2289	8	0	186	685	98	359	442	.	33	65	98	
	Sub-Total				24009	8629	6337	9	224	786	776	2763	1151	1004	72	287	189	226
	151	147	333	111	600	233	1	131	0	131	0	22	131	.	18	103	101	
184 - 274	121	121	336	1987	1680	141	0	105	92	75	100	50	227	.	7	277	7	
	103	103	355	8005	1467	88	0	6	1155	54	484	681	88	.	35	35	50	
	Sub-Total				10103	3747	462	1	242	1246	260	584	753	446	0	61	416	68
	92	96	334	343	252	125	6	26	0	33	0	0	26	.	0	7	26	
275 - 366	58	58	335	126	794	156	2	36	8	4	0	9	18	.	12	0	0	
	61	61	356	2031	369	183	3	0	30	26	34	38	37	.	243	19	21	
	Sub-Total				2499	1415	464	10	63	38	63	34	47	81	0	255	25	477
367 - 549	93	166	717	544	1060	396	1	0	10	34	0	11	0	.	0	0	49	
	76	76	719	97	177	90	1	5	5	54	0	25	183	.	19	12	141	
	76	76	721	1673	391	350	12	37	5	28	14	58	33	.	0	0	42	
	Sub-Total				2314	1627	836	14	42	19	116	14	94	215	0	19	12	104
550 - 731	111	134	718	325	664	828	30	28	18	37	147	74	121	.	46	403	56	
	105	105	720	182	331	575	7	77	54	17	14	126	200	.	44	224	94	
	93	93	722	381	1086	886	70	199	56	30	18	121	125	.	304	274	26	
	Sub-Total				888	2081	2288	107	304	128	83	179	320	445	0	394	901	176
732 - 1463 Deepwater Strata not sampled during spring surveys.																		
Abundance (000s)				47095	19746	12652	149	1017	2262	1651	3573	2595	2633	470	1059	1587	665	

Table 26. Greenland Halibut biomass estimates (000 t), by division, from Canadian fall surveys during 1995-2009.

Year	DIVISION												TOTAL	
	2G	2H	2J	3K	SA2+3K	3L	2J3KL	3M	3N	3O	3LMNO			
1995	NO SURVEY		35.6	69.2	-	11.3	116.1		NO SURVEY		-			
1996	22.3	26.1	64.8	120.3	233.5	36.6	221.7	10.2	5.1	1.0	52.9		286.4	
1997	15.5	38.6	82.1	130.5	266.7	48.6	261.2	7.0	6.4	2.1	64.1		330.8	
1998	4.5	39.0	62.1	142.2	247.8	55.9	260.2	7.8	14.8	5.4	83.9		331.7	
1999	10.5	30.7	87.1	175.6	303.9	34.0	296.7	2.4	2.7	1.9	41.0		344.9	
2000	NO SURVEY		54.9	143.3	198.2	34.1	232.3	5.5	9.3	4.2	53.1		251.3	
2001	NO SURVEY	37.7	65.8	128.7	232.2	29.9	224.4	5.3	7.2	4.5	46.9		279.1	
2002	NO SURVEY		53.6	67.0	120.6	22.4	143.0	2.5	5.7	4.1	34.7		155.3	
2003	NO SURVEY		59.8	71.5	131.3	26.1	157.4	4.3	1.1	2.6	34.1		165.4	
2004	NO SURVEY	48.2	59.1	90.5	197.8	15.9	*	213.7	NO SURVEY	2.9	0.4	19.2		217.0
2005	NO SURVEY		61.1	112.6	173.7	30.1	203.8	NO SURVEY	3.3	2.3	35.7		209.4	
2006	NO SURVEY		65.8	105.9	281.9	32.5	314.4	3.2	1.1	0.2	37.0		318.9	
2007	NO SURVEY		57.7	179.1	236.8	27.6	264.5	3.4	5.3	3.6	39.9		276.7	
2008	NO SURVEY		32.3	37.4	122.0	191.7	27.5	219.2	NO SURVEY	1.2	0.9	29.6		221.3
2009	NO SURVEY		58.6	104.0	162.6	25.4	188.0	NO SURVEY	3.6	5.2	34.2		196.8	

Table 27. Abundance and biomass estimates of Greenland Halibut, by Division, from the 2009 Canadian fall survey. Columns “Upper” and “Lower” indicate approximate 95% confidence limits.

Area	Total	Upper	Lower
Division 2J			
Abundance	358,356,300	518,319,468	198,393,132
Biomass (kg)	58,588,631	75,175,707	42,001,555
Division 3K			
Abundance	589,270,751	710,256,615	468,284,888
Biomass (kg)	104,030,639	120,013,628	88,047,649
Division 3L			
Abundance	63,002,532	84,634,846	41,370,218
Biomass (kg)	25,408,830	32,626,040	18,191,619
Division 3M			
Abundance	NO SURVEY		
Biomass (kg)			
Division 3N			
Abundance	5,435,355	8,952,679	1,918,032
Biomass (kg)	3,593,123	5,759,611	1,426,635
Division 3O			
Abundance	5,290,707	6,977,835	3,603,579
Biomass (kg)	5,231,420	6,733,431	3,729,409
Combined SA2+Div. 3KLMNO			
Abundance	1,021,355,646	1,201,421,069	841,290,223
Biomass (kg)	196,852,643	218,473,681	175,231,605

Table 28. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 2G and 2H for 1978 - 2008. Refer to stratum-by-stratum tables for variations in survey coverage. In several years, Divs. 2GH have not been surveyed.

Year	Division					
	2G			2H		
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1978	34.2	45.9	22.6	54.2	77.1	31.4
1979	31.6	42.2	21.0	101.3	132.6	70.0
1981	29.0	63.2	-5.2	37.6	47.7	27.4
1987	23.4	31.3	15.5	27.7	35.5	19.8
1988	18.9	33.0	4.8	29.0	36.4	21.6
1991	0.9	1.6	0.2	4.4	8.0	0.8
1996	11.8	23.4	0.1	16.5	19.6	13.3
1997	13.7	17.2	10.3	38.2	49.0	27.4
1998	4.4	8.1	0.6	25.4	43.0	7.7
1999	5.4	7.6	3.2	20.0	24.8	15.2
2001	NO SURVEY			30.7	44.0	17.3
2004	NO SURVEY			30.4	37.6	23.2
2006	NO SURVEY			41.8	63.5	20.2
2008	NO SURVEY			23.6	36.7	10.6

Table 29. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 2J and 3K for 1978 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	2J			3K		
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1978	39.0	50.2	27.8	37.9	49.1	26.6
1979	32.2	38.1	26.2	25.0	30.9	19.1
1980	32.5	40.0	25.0	28.0	33.3	22.6
1981	33.2	43.6	22.8	31.2	36.3	26.2
1982	44.3	52.3	36.2	28.3	33.7	22.9
1983	33.8	40.1	27.6	39.6	47.5	31.8
1984	35.8	45.2	26.5	38.3	46.7	29.9
1985	26.7	33.2	20.2	28.0	33.1	23.0
1986	31.2	42.6	19.8	38.9	48.0	29.7
1987	21.3	29.8	12.8	28.6	34.5	22.8
1988	15.6	19.1	12.2	29.9	37.1	22.8
1989	19.1	34.5	3.7	30.5	36.8	24.2
1990	18.5	23.2	13.8	23.2	31.0	15.4
1991	6.4	7.7	5.2	15.3	18.5	12.1
1992	5.6	7.4	3.8	10.3	13.1	7.5
1993	8.2	10.0	6.4	20.4	24.1	16.7
1994	8.5	11.1	5.8	12.5	14.3	10.7
1995	12.8	15.4	10.1	15.0	17.9	12.1
1996	18.6	23.6	13.7	23.6	27.7	19.5
1997	23.6	54.2	-7.0	25.6	29.2	22.0
1998	17.9	20.5	15.2	27.9	32.1	23.7
1999	25.4	29.1	21.6	37.7	46.7	28.7
2000	15.9	19.8	11.9	29.6	41.0	18.2
2001	18.9	24.9	12.9	25.3	28.8	21.7
2002	15.4	19.2	11.7	13.1	16.6	9.7
2003	17.2	21.4	13.0	14.0	16.0	12.0
2004	17.0	28.8	5.3	17.8	21.0	14.5
2005	17.6	21.5	13.7	22.2	26.1	18.4
2006	30.5	91.8	-30.9	22.4	27.1	17.7
2007	16.6	20.9	12.3	38.5	47.9	29.0
2008 *	11.4	13.1	9.6	28.3	40.1	16.4
2009	16.9	21.6	12.1	22.1	25.5	18.7

*Substantially reduced coverage (Fall survey).

Table 30. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 3L for 1995 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	3L - Fall		3L - Spring			
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1995	2.1	2.7	1.5	0.9	1.8	0.0
1996	5.8	7.0	4.6	1.8	3.0	0.6
1997	7.6	16.9	-1.7	3.5	4.7	2.2
1998	8.8	11.3	6.2	7.3	11.4	3.1
1999	5.8	7.4	4.1	4.0	9.4	-1.5
2000	5.5	7.8	3.2	5.0	6.1	3.9
2001	4.7	5.7	3.7	2.4	2.4	2.3
2002	3.5	4.4	2.6	1.2	1.7	0.7
2003	4.1	6.9	1.3	2.2	3.3	1.2
2004 *	3.4	3.9	2.9	1.8	2.3	1.3
2005	5.1	6.7	3.6	2.8	4.5	1.1
2006	5.4	6.8	3.9	2.7	4.5	0.9
2007	4.6	5.7	3.6	5.3	9.3	1.3
2008	5.1	7.1	3.2	3.6	6.1	1.0
2009	4.3	5.5	3.1	1.0	1.6	0.5

*Substantially reduced coverage (Fall survey).

Table 31. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 3N for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	3N - Fall		3N - Spring			
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1996	2.1	3.8	0.4	1.4	4.0	-1.2
1997	2.7	11.8	-6.4	2.0	3.8	0.1
1998	5.6	9.4	1.9	2.4	10.0	-5.3
1999	1.2	2.1	0.2	2.5	4.5	0.5
2000	3.5	13.7	-6.7	1.8	2.9	0.6
2001	2.7	3.7	1.6	0.9	3.6	-1.9
2002	2.1	2.8	1.4	0.3	0.6	0.1
2003	0.4	0.7	0.2	1.1	2.7	-0.4
2004	1.2	6.3	-3.9	0.6	1.0	0.2
2005	1.3	1.7	0.8	0.7	1.4	0.0
2006	0.5	2.1	-1.2	*	*	*
2007	2.0	2.4	1.5	1.0	1.7	0.3
2008	0.5	0.8	0.2	0.9	1.1	0.7
2009	1.4	2.3	0.6	0.4	1.4	-0.5

*No Greenland Halibut captured (survey incomplete).

Table 32. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 3O for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			3O - Spring		
	3O - Fall	Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit
1996		0.4	0.6	0.2	1.1	2.0
1997		0.8	1.3	0.3	0.8	1.0
1998		2.0	4.4	-0.4	0.8	1.3
1999		0.8	6.3	-4.8	0.5	0.9
2000		1.5	2.3	0.7	0.1	0.2
2001		1.6	7.4	-4.1	0.1	0.6
2002		1.5	2.1	0.8	0.1	0.1
2003		1.0	1.8	0.2	0.1	0.2
2004		0.2	0.3	0.0	0.2	0.3
2005		0.8	1.1	0.5	0.2	0.4
2006 *		0.1	0.5	-0.3	0.1	0.2
2007		1.3	1.7	0.9	0.2	0.9
2008		0.3	0.5	0.2	0.3	0.9
2009		1.9	2.4	1.4	0.1	0.3

*Substantially reduced coverage in spring survey.

Table 33. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 3M for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			Division		
	3M - Fall			3M - Fall	Strata 528-536 only	
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1996	5.3	12.8	-2.2	14.4	42.4	-13.5
1997	15.0	23.2	6.8	15.0	23.2	6.8
1998	16.7	24.3	9.1	16.7	24.4	9.1
1999	8.5	13.5	3.5	8.5	13.5	3.5
2000	11.8	16.9	6.8	11.9	16.9	6.8
2001	11.3	15.1	7.5	11.3	15.1	7.5
2002	5.4	7.3	3.5	5.4	7.4	3.5
2003	9.3	13.3	5.2	9.3	13.3	5.2
2006	7.2	9.9	4.5	7.2	9.9	4.5
2007	7.3	10.5	4.0	7.3	10.5	4.0

Table 34. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 2J3K and 2J3KL for 1978 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	2J3K		2J3KL			
Mean wt/tow	Upper Limit	Lower Limit	Mean wt/tow	Upper Limit	Lower Limit	
1978	38.4	45.7	31.1	-	-	-
1979	28.1	32.2	24.0	-	-	-
1980	30.0	34.2	25.7	-	-	-
1981	32.1	37.2	27.1	-	-	-
1982	35.6	40.1	31.1	-	-	-
1983	36.9	41.8	32.1	-	-	-
1984	37.2	43.0	31.5	-	-	-
1985	27.5	31.1	23.8	-	-	-
1986	35.4	41.8	29.1	-	-	-
1987	25.5	30.0	20.9	-	-	-
1988	23.6	27.8	19.5	-	-	-
1989	25.4	30.7	20.2	-	-	-
1990	21.2	25.8	16.6	-	-	-
1991	11.5	13.4	9.6	-	-	-
1992	8.2	9.9	6.6	-	-	-
1993	15.3	17.5	13.1	-	-	-
1994	10.8	12.1	9.4	-	-	-
1995	14.1	16.1	12.2	9.1	10.2	8.0
1996	21.6	24.5	18.7	14.9	16.6	13.2
1997	24.8	28.3	21.3	17.5	19.5	15.5
1998	23.8	26.4	21.2	17.4	19.0	15.8
1999	32.5	37.8	27.2	21.3	24.4	18.2
2000	23.9	30.2	17.5	16.0	19.7	12.3
2001	22.7	25.5	19.9	15.0	16.7	13.4
2002	14.1	16.3	11.8	9.6	10.9	8.2
2003	15.3	17.2	13.4	10.5	11.7	9.3
2004 *	17.5	21.1	13.8	12.4	14.8	10.1
2005	20.3	22.9	17.8	14.1	15.7	12.5
2006	25.7	35.7	15.8	17.2	23.1	11.3
2007	29.1	34.6	23.6	18.8	21.9	15.7
2008	20.9	27.7	14.2	14.4	18.5	10.4
2009	19.9	22.4	17.3	13.3	14.8	11.8

*Substantially reduced coverage in Division 3L.

Table 35. Mean numbers per tow and associated CI for Greenland halibut in Div. 2G and 2H for 1978 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	2G		2H			
Mean no/tow	Upper Limit	Lower Limit	Mean no/tow	Upper Limit	Lower Limit	
1978	122.4	171.0	73.7	224.4	670.5	-221.7
1979	65.0	95.0	35.0	285.4	381.5	189.3
1981	51.2	68.3	34.2	73.5	97.8	49.2
1987	106.4	159.4	53.4	225.5	393.5	57.6
1988	37.0	53.6	20.5	259.9	361.1	158.8
1991	9.3	19.3	-0.8	37.6	49.1	26.0
1996	51.5	72.7	30.4	137.1	166.9	107.3
1997	55.3	66.0	44.6	236.3	323.2	149.3
1998	23.8	134.2	-86.6	109.7	186.9	32.4
1999	25.5	34.3	16.7	91.5	116.6	66.5
2001	NO SURVEY			165.9	226.6	105.2
2004	NO SURVEY			177.1	250.6	103.7
2006	NO SURVEY			181.8	246.2	117.4
2008	NO SURVEY			108.4	282.3	-65.4

Table 36. Mean numbers per tow and associated CI for Greenland halibut in Div. 2J and 3K for 1978 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	2J		3K			
Mean no/tow	Upper Limit	Lower Limit	Mean no/tow	Upper Limit	Lower Limit	
1978	100.4	419.4	-218.7	163.1	230.8	95.3
1979	89.6	109.0	70.2	58.6	73.4	43.8
1980	43.7	57.8	29.6	54.1	67.9	40.3
1981	96.9	140.3	53.6	88.9	105.6	72.3
1982	67.3	79.8	54.8	64.1	74.7	53.4
1983	40.6	51.8	29.4	83.3	100.6	66.1
1984	56.8	83.3	30.4	74.6	92.0	57.3
1985	69.5	90.7	48.3	97.4	115.9	78.9
1986	49.6	72.4	26.8	141.1	168.3	113.8
1987	44.7	67.0	22.3	118.0	141.4	94.7
1988	32.6	48.2	17.1	126.2	153.2	99.2
1989	54.7	84.9	24.4	143.5	172.2	114.7
1990	52.0	66.3	37.6	84.7	133.3	36.2
1991	33.0	43.4	22.5	71.4	89.2	53.7
1992	44.2	62.1	26.2	96.0	145.4	46.6
1993	64.8	86.1	43.6	201.7	254.3	149.1
1994	82.9	109.5	56.2	146.7	164.0	129.4
1995	112.0	140.4	83.6	160.6	201.2	120.0
1996	195.0	255.8	134.3	208.5	244.8	172.2
1997	148.8	450.9	-153.3	187.7	225.8	149.7
1998	94.8	127.7	61.8	139.2	164.5	113.9
1999	137.1	164.2	110.0	150.1	181.9	118.2
2000	94.4	110.9	77.9	133.1	162.1	104.1
2001	128.5	184.9	72.1	127.4	146.3	108.5
2002	117.7	139.8	95.6	95.1	116.3	73.8
2003	142.1	188.8	95.3	93.8	121.9	65.8
2004	122.2	186.0	58.4	100.6	118.1	83.1
2005	100.4	122.6	78.2	69.5	79.9	59.1
2006	153.5	233.4	73.6	75.7	87.5	63.8
2007	84.5	110.4	58.5	128.6	153.5	103.7
2008 *	63.7	80.0	47.4	91.5	133.4	49.6
2009	103.1	149.1	57.1	125.3	151.0	99.6

*Substantially reduced coverage (Fall survey).

Table 37. Mean numbers per tow and associated CI for Greenland halibut in Div. 3L for 1995 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			3L - Spring		
	3L - Fall			Mean no/tow	Upper Limit	Lower Limit
1995	13.3	20.1	6.6	3.2	5.8	0.6
1996	23.3	28.1	18.4	13.0	18.0	8.0
1997	24.2	28.6	19.8	20.8	35.4	6.2
1998	22.4	27.5	17.4	26.7	40.0	13.4
1999	11.6	14.7	8.5	11.9	13.7	10.1
2000	13.9	17.1	10.6	13.3	16.1	10.5
2001	12.6	16.1	9.2	7.0	9.3	4.7
2002	10.5	13.2	7.7	5.1	6.6	3.6
2003	14.3	19.2	9.4	11.2	38.7	-16.3
2004 *	13.2	16.5	10.0	8.1	10.1	6.1
2005	13.0	19.8	6.3	8.3	22.8	-6.2
2006	10.5	12.9	8.2	7.5	10.5	4.4
2007	9.2	11.8	6.7	13.2	19.0	7.4
2008 *	11.7	14.6	8.9	10.2	37.0	-16.6
2009	10.6	14.2	6.9	3.3	4.4	2.1

*Substantially reduced coverage (Fall survey).

Table 38. Mean numbers per tow and associated CI for Greenland halibut in Div. 3N for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			3N - Spring		
	3N - Fall			Mean no/tow	Upper Limit	Lower Limit
1996	20.4	136.4	-95.7	10.8	14.8	6.8
1997	14.8	83.4	-53.8	12.3	25.7	-1.2
1998	15.3	30.9	-0.3	10.4	46.2	-25.3
1999	3.2	13.8	-7.5	8.9	19.8	-1.9
2000	5.1	18.9	-8.7	8.8	55.4	-37.8
2001	4.7	8.9	0.6	2.6	4.9	0.4
2002	4.9	9.1	0.8	2.0	13.8	-9.8
2003	2.0	3.0	0.9	6.1	41.1	-28.9
2004	4.4	21.0	-12.3	2.5	3.6	1.3
2005	2.6	4.6	0.5	2.5	3.8	1.2
2006	1.4	8.3	-5.4	*	*	*
2007	2.9	3.9	1.9	2.5	4.2	0.9
2008	0.9	1.5	0.4	2.2	3.4	0.9
2009	2.2	3.6	0.8	1.0	1.7	0.4

*No Greenland Halibut captured (survey incomplete).

Table 39. Mean numbers per tow and associated CI for Greenland halibut in Div. 3O for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			3O - Spring		
	3O - Fall			Mean no/tow	Upper Limit	Lower Limit
1996	3.8	4.8	2.7	18.5	117.2	-80.3
1997	5.7	8.4	3.0	7.7	11.7	3.7
1998	5.9	6.9	4.9	5.0	8.3	1.6
1999	1.9	14.6	-10.8	1.6	2.8	0.3
2000	2.2	3.5	0.9	0.4	0.6	0.2
2001	1.9	3.7	0.1	0.9	6.6	-4.8
2002	1.8	2.4	1.2	0.6	0.8	0.5
2003	2.0	2.7	1.2	1.4	4.2	-1.4
2004	0.9	1.5	0.3	1.0	1.5	0.5
2005	1.2	1.6	0.8	1.0	1.7	0.4
2006 *	0.7	8.6	-7.1	0.3	1.2	-0.7
2007	1.7	2.4	1.0	0.4	0.9	0.0
2008	1.0	1.6	0.4	0.6	1.1	0.1
2009	1.9	2.5	1.3	0.3	0.4	0.1

*Substantially reduced coverage in spring survey.

Table 40. Mean numbers per tow and associated CI for Greenland halibut in Div. 3M for 1996 - 2009. Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division			Division		
	3M - Fall			3M - Fall	Strata 528-536 only	
Mean no/tow	Upper Limit	Lower Limit	Mean no/tow	Upper Limit	Lower Limit	
1996	8.3	25.7	-9.2	16.5	82.7	-49.7
1997	16.9	26.4	7.3	16.9	26.4	7.3
1998	19.9	32.4	7.4	19.9	32.4	7.4
1999	9.3	15.0	3.6	9.3	15.0	3.6
2000	12.2	19.1	5.3	12.2	19.1	5.3
2001	10.8	14.3	7.4	10.9	14.3	7.4
2002	5.3	6.6	3.9	5.3	6.6	3.9
2003	9.2	12.9	5.4	9.2	12.9	5.4
2006	7.3	9.1	5.4	7.3	9.1	5.4
2007	6.2	9.1	3.3	6.2	9.1	3.3

Table 41. Mean numbers per tow and associated CI for Greenland halibut in Div. 2J3K and 2J3KL for 1978 - 2009.
Refer to stratum-by-stratum tables for variations in survey coverage.

Year	Division					
	2J3K			2J3KL		
Mean no/tow	Upper Limit	Lower Limit	Mean no/tow	Upper Limit	Lower Limit	
1978	135.7	180.9	90.6	-	-	-
1979	72.1	83.3	60.8	-	-	-
1980	49.5	58.9	40.1	-	-	-
1981	92.6	113.4	71.7	-	-	-
1982	65.5	73.4	57.7	-	-	-
1983	63.3	73.4	53.3	-	-	-
1984	67.0	79.5	54.5	-	-	-
1985	85.4	99.0	71.9	-	-	-
1986	100.0	116.2	83.8	-	-	-
1987	86.3	101.4	71.3	-	-	-
1988	84.8	100.3	69.2	-	-	-
1989	104.0	121.2	86.9	-	-	-
1990	70.7	92.5	48.8	-	-	-
1991	54.9	65.4	44.5	-	-	-
1992	73.8	99.8	47.8	-	-	-
1993	144.4	174.5	114.2	-	-	-
1994	119.2	133.4	104.9	-	-	-
1995	142.3	168.1	116.6	88.0	102.9	73.1
1996	203.0	234.0	172.1	126.6	144.5	108.7
1997	172.0	208.8	135.1	108.9	130.2	87.7
1998	121.2	138.4	104.0	79.1	89.0	69.1
1999	144.6	165.0	124.1	88.7	100.6	76.8
2000	117.0	134.7	99.3	72.9	83.1	62.7
2001	127.8	148.4	107.3	78.7	90.6	66.8
2002	104.2	119.1	89.4	64.2	72.8	55.7
2003	113.4	133.7	93.0	71.1	82.6	59.6
2004 *	109.4	133.7	85.1	75.1	90.8	59.4
2005	82.1	92.5	71.6	54.0	60.4	47.5
2006	107.9	134.6	81.3	67.1	82.7	51.6
2007	109.7	126.2	93.3	67.3	76.8	57.7
2008	79.5	103.0	55.9	51.5	65.4	37.7
2009	115.9	137.7	94.0	71.5	84.2	58.8

*Substantially reduced coverage in Division 3L.

Table 42. Greenland halibut stratified mean number per set at age from Canadian fall surveys conducted in Divisions 2J and 3K combined during 1978-2009. Only otoliths collected in Div. 2J or 3K are used in the analysis. Numbers expressed in Campelen 1800 units.

Age (yrs)	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
0	0.48	0.00	0.00	0.00	0.00	0.00	0.00	1.20	1.06	0.00	2.17	0.66	0.00	0.00
1	9.61	10.81	6.78	19.39	4.75	1.66	4.47	24.59	17.21	5.04	8.82	7.10	1.34	13.80
2	40.24	18.07	6.53	22.99	5.10	4.45	7.11	14.67	13.96	11.21	10.54	12.54	5.26	5.59
3	33.37	13.47	6.20	15.42	12.78	10.56	9.56	8.71	16.62	29.44	15.04	23.84	9.95	6.08
4	19.52	7.15	5.58	6.01	10.81	11.41	10.29	6.87	14.64	12.17	17.03	25.22	23.39	13.32
5	12.50	7.47	7.07	6.58	8.09	10.45	15.34	9.50	9.49	9.62	14.90	17.40	15.38	9.05
6	8.34	7.21	7.56	7.25	5.76	7.45	7.74	8.86	11.04	6.89	7.82	9.95	9.21	5.41
7	5.15	3.50	4.72	5.15	6.06	7.56	5.44	5.98	9.54	6.39	5.65	5.34	4.81	1.29
8	2.26	1.41	1.59	2.21	6.29	5.67	3.50	2.26	3.19	3.27	1.65	1.36	0.83	0.26
9	1.27	0.67	0.71	1.02	2.65	2.19	1.70	1.03	1.00	1.25	0.43	0.40	0.21	0.08
10	0.96	0.64	0.56	0.59	1.02	0.65	0.74	0.75	0.34	0.37	0.16	0.11	0.10	0.05
11	0.81	0.42	0.63	0.48	0.60	0.46	0.35	0.30	0.26	0.19	0.10	0.08	0.09	0.02
12	0.49	0.37	0.41	0.22	0.38	0.33	0.24	0.27	0.23	0.19	0.06	0.02	0.05	0.01
13	0.32	0.31	0.27	0.12	0.27	0.24	0.20	0.12	0.12	0.10	0.05	0.00	0.03	0.00
14	0.10	0.15	0.15	0.06	0.28	0.16	0.18	0.13	0.07	0.08	0.04	0.01	0.02	0.00
15	0.07	0.10	0.06	0.04	0.18	0.07	0.09	0.08	0.08	0.05	0.03	0.01	0.01	0.00
16	0.05	0.09	0.03	0.00	0.09	0.02	0.06	0.04	0.04	0.03	0.02	0.00	0.00	0.00
17	0.03	0.03	0.01	0.00	0.01	0.00	0.03	0.04	0.01	0.02	0.01	0.00	0.00	0.00
18	0.00	0.02	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ages 0-20	135.55	71.89	48.87	87.52	65.12	63.33	67.04	85.44	98.91	86.32	84.53	104.03	70.69	54.94
Ages 1-4	102.74	49.50	25.09	63.81	33.44	28.08	31.43	54.84	62.43	57.86	51.43	68.70	39.94	38.79
Ages 5+	32.33	22.39	23.78	23.71	31.68	35.25	35.61	29.40	35.42	28.46	30.93	34.68	30.74	16.16
Ages 6-9	17.01	12.78	14.58	15.62	20.76	22.86	18.38	18.14	24.77	17.81	15.55	17.04	15.06	7.02
Age (yrs)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0	0.92	1.05	16.90	10.95	4.92	2.18	1.52	6.46	3.09	8.49	8.30	9.94	4.15	5.07
1	5.69	8.08	29.79	49.93	98.68	28.05	23.35	15.99	38.57	43.90	40.67	45.70	32.49	16.06
2	23.78	43.64	21.62	51.10	47.82	58.62	25.07	34.42	21.94	22.72	24.08	26.67	32.93	16.15
3	20.40	64.00	22.61	15.13	32.01	43.61	31.19	24.07	16.43	17.00	12.50	11.69	13.89	8.56
4	13.59	19.28	18.90	6.03	9.54	21.13	21.87	28.28	13.20	14.07	9.68	9.49	12.31	13.84
5	4.84	5.56	7.22	6.63	6.28	10.37	10.86	20.04	13.76	9.77	6.03	6.39	9.21	10.98
6	3.11	1.76	1.32	1.99	2.47	5.01	4.45	10.53	7.21	7.59	1.97	2.27	2.68	6.85
7	1.27	0.74	0.61	0.39	0.84	2.00	2.07	3.81	2.16	3.40	0.72	0.89	1.20	3.96
8	0.12	0.23	0.19	0.12	0.19	0.64	0.57	0.70	0.50	0.69	0.19	0.27	0.36	0.66
9	0.02	0.03	0.03	0.02	0.18	0.20	0.13	0.14	0.06	0.11	0.04	0.04	0.08	0.12
10	0.01	0.00	0.01	0.01	0.04	0.06	0.06	0.07	0.03	0.02	0.01	0.02	0.03	0.03
11	0.00	0.00	0.00	0.00	0.02	0.03	0.03	0.02	0.02	0.01	0.00	0.01	0.01	0.03
12	0.00	0.02	0.00	0.00	0.01	0.02	0.02	0.01	0.00	0.00	0.00	0.01	0.00	0.01
13	0.00	0.00	0.00	0.00	0.02	0.01	0.01	0.03	0.00	0.01	0.00	0.00	0.01	0.01
14	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ages 0-20	73.76	144.39	119.19	142.30	203.02	171.93	121.20	144.57	116.98	127.80	104.20	113.38	109.36	82.33
Ages 1-4	63.46	135.00	92.92	122.19	188.05	151.41	101.48	102.76	90.14	97.69	86.93	93.55	91.62	54.61
Ages 5+	9.37	8.34	9.37	9.16	10.05	18.34	18.20	35.35	23.75	21.62	8.97	9.90	13.58	22.65
Ages 6-9	4.52	2.76	2.14	2.51	3.67	7.85	7.22	15.18	9.93	11.80	2.92	3.47	4.32	11.59
Age (yrs)	2006	2007	2008	2009										
0	3.75	2.21	9.15	5.49										
1	32.34	32.61	15.98	50.62										
2	17.98	14.51	11.71	19.15										
3	8.50	12.81	8.20	11.40										
4	17.60	18.77	9.57	8.42										
5	13.03	9.57	7.57	9.89										
6	9.11	10.35	6.25	5.40										
7	4.18	6.17	3.51	3.59										
8	1.15	2.14	1.68	1.39										
9	0.18	0.34	0.20	0.25										
10	0.03	0.08	0.03	0.08										
11	0.02	0.04	0.02	0.02										
12	0.01	0.02	0.00	0.01										
13	0.00	0.01	0.00	0.01										
14	0.00	0.01	0.00	0.00										
15	0.00	0.00	0.00	0.00										
16	0.00	0.00	0.00	0.01										
17	0.00	0.00	0.00	0.00										
18	0.00	0.00	0.00	0.00										
19	0.00	0.00	0.00	0.00										
20	0.00	0.00	0.00	0.00										
Ages 0-20	107.89	109.64	73.87	115.73										
Ages 1-4	76.42	78.70	45.46	89.59										
Ages 5+	27.72	28.73	19.26	20.65										
Ages 6-9	14.62	19.00	11.64	10.63										

¹2008 estimates biased due to substantial cover.

Table 43. Greenland halibut stratified mean number per set at age from Canadian fall surveys conducted in Divisions 2J3KL combined during 1995-2009. Only otoliths collected in Div. 2J3KL are used in the analysis.

Age (yrs)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0	6.73	2.87	1.44	0.90	3.89	1.84	5.23	4.85	5.72	2.71	3.06	2.29	1.33	5.57	3.35
1	30.32	59.31	17.10	13.19	8.65	23.21	25.96	23.87	27.44	22.10	9.77	19.11	19.64	10.20	31.31
2	31.18	29.08	34.25	15.50	20.62	13.91	12.85	14.56	15.88	20.96	10.21	10.91	8.40	6.85	10.81
3	9.69	20.85	26.66	18.82	15.96	9.74	10.05	7.64	8.13	10.39	5.59	4.98	7.31	5.58	6.76
4	3.62	6.59	15.30	14.01	15.87	7.68	9.75	6.29	6.81	9.06	9.28	10.73	11.77	6.42	5.20
5	4.53	4.62	7.78	10.16	12.83	8.75	6.11	4.37	4.49	6.82	7.84	8.50	5.78	5.13	6.38
6	1.55	2.03	3.75	4.00	7.76	5.45	5.61	1.63	1.68	1.94	4.89	6.48	6.92	4.42	3.73
7	0.29	0.83	1.75	1.78	2.50	1.83	2.49	0.73	0.71	0.80	2.87	3.10	4.23	2.62	2.49
8	0.07	0.18	0.60	0.47	0.48	0.35	0.49	0.23	0.19	0.24	0.45	0.83	1.55	1.29	1.07
9	0.01	0.13	0.17	0.13	0.09	0.06	0.09	0.03	0.03	0.05	0.07	0.13	0.22	0.14	0.21
10	0.01	0.04	0.05	0.04	0.04	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.06	0.02	0.06
11	0.00	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.02	0.02	0.03	0.01	0.02
12	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.01
13	0.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01
14	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ages 0-20	88.00	126.58	108.91	79.07	88.72	72.86	78.68	64.22	71.10	75.10	54.09	67.12	67.26	48.26	71.41
Ages 1-4	74.82	115.83	93.31	61.52	61.10	54.54	58.61	52.36	58.25	62.51	34.85	45.73	47.12	29.05	54.07
Ages 5+	6.46	7.88	14.17	16.65	23.74	16.49	14.84	7.01	7.13	9.89	16.18	19.10	18.81	13.64	13.99
Ages 1-10	81.27	123.66	107.40	78.11	84.79	71.00	73.42	59.36	65.37	72.39	51.00	64.79	65.87	42.67	68.02

Table 44. Stratified mean number per tow at age, by division, from 2009 Canadian fall surveys.

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0		10.06	2.12	0.40		0.00	0.00		2.44
1		39.48	60.54	3.47		0.18	0.09		22.78
2		21.24	16.18	0.49		0.05	0.00		7.93
3		7.91	13.63	0.67		0.12	0.01		4.96
4		7.76	8.99	0.71		0.24	0.03		3.88
5		6.16	12.69	1.52		0.29	0.12		4.68
6		4.53	6.08	1.40		0.41	0.35		2.80
7	No Survey	3.83	3.38	1.01	No Survey	0.41	0.47		1.90
8	No Survey	1.52	1.30	0.63	No Survey	0.33	0.59		0.93
9	No Survey	0.26	0.22	0.17	No Survey	0.08	0.14		0.18
10	No Survey	0.07	0.08	0.05	No Survey	0.01	0.05		0.06
11	No Survey	0.03	0.02	0.02	No Survey	0.01	0.05		0.03
12	No Survey	0.02	0.01	0.01	No Survey	0.00	0.00		0.01
13	No Survey	0.00	0.02	0.02	No Survey	0.00	0.00		0.01
14	No Survey	0.00	0.00	0.00	No Survey	0.00	0.00		0.00
15	No Survey	0.00	0.00	0.00	No Survey	0.01	0.00		0.00
16	No Survey	0.01	0.01	0.00	No Survey	0.00	0.00		0.00
Unk	No Survey	0.22	0.06	0.01	No Survey	0.02	0.01		0.06
5+	0.00	0.00	16.63	23.86	4.84	0.00	1.58	1.78	10.65
9+	0.00	0.00	0.60	0.41	0.27	0.00	0.13	0.26	0.34
Total	0.00	0.00	103.09	125.32	10.57	0.00	2.17	1.91	52.63

Table 45. Greenland halibut stratified mean number per set at age from Canadian spring surveys conducted in Div. 3LNO combined during 1996-2009. Only otoliths collected in 3L, 3N, or 3O are used in the analysis. Numbers in Campelen 1800 units.

Age (yrs)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	1.62	1.16	0.22	0.29	0.79	0.57	0.64	0.93	0.66	0.35	1.60	0.44	0.27	
2	4.24	3.92	0.81	0.55	1.07	0.71	0.57	2.14	0.57	0.31	0.52	0.77	0.22	
3	4.60	5.16	3.85	1.15	1.07	0.74	0.60	1.66	1.18	1.09	0.80	0.96	0.19	
4	2.18	3.23	6.19	1.98	1.51	0.68	0.58	1.57	1.18	0.95	0.40	0.71	0.39	
5	0.83	1.46	4.96	3.39	1.95	0.80	0.61	1.06	1.16	1.37	1.41	1.25	0.45	
6	0.28	0.51	1.24	1.09	2.04	0.72	0.21	0.21	0.26	0.82	1.49	0.75	0.26	
7	0.06	0.10	0.33	0.24	0.56	0.28	0.05	0.05	0.04	0.21	1.12	0.64	0.13	
8	0.00	0.01	0.07	0.05	0.03	0.02	0.01	0.01	0.02	0.03	0.18	0.28	0.07	
9	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.01	
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	
Ages 1-4	12.64	13.47	11.07	3.98	4.44	2.69	2.40	6.30	3.60	2.70	3.31	2.89	1.06	
Ages 5+	1.17	2.08	6.60	4.78	4.59	1.81	0.87	1.32	1.48	2.43	4.22	2.96	0.92	
Ages 1-10	13.81	15.56	17.67	8.75	9.03	4.51	3.27	7.62	5.08	5.13	7.54	5.85	1.99	

Table 46. Estimates of Mean Length (cm) at age, ages 0-10 from Canadian fall surveys in Div. 2J3K.

Year	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10
1978	8.10	12.68	16.54	22.85	28.45	36.14	41.87	47.22	54.21	60.89	65.16
1979		12.72	21.14	25.83	31.18	38.48	44.18	49.27	53.51	58.62	63.03
1980		13.57	20.46	26.83	33.02	38.80	44.43	49.81	56.00	61.66	65.64
1981		14.17	19.40	25.05	31.84	39.06	44.98	50.62	55.97	62.97	71.66
1982		13.79	19.39	24.30	29.30	34.33	40.73	45.53	50.51	56.19	61.34
1983		13.50	17.59	23.21	28.98	35.00	41.01	47.04	53.05	59.09	65.33
1984		13.09	20.54	25.42	31.47	38.54	44.13	49.02	53.96	59.33	64.46
1985	8.85	12.43	17.33	23.28	29.09	35.86	42.22	47.44	52.54	57.42	61.92
1986	9.28	14.98	20.37	24.22	31.34	36.94	42.35	47.57	52.23	57.00	62.38
1987		13.19	18.28	22.82	28.80	33.81	39.94	45.57	51.11	56.20	61.67
1988	9.75	15.09	20.98	24.91	30.35	34.46	40.57	45.33	51.72	57.66	63.28
1989	8.50	14.38	18.06	22.61	28.22	35.77	41.21	45.87	52.14	58.36	64.36
1990		13.12	18.80	22.48	28.97	35.12	40.58	45.63	51.61	58.27	64.25
1991		14.51	20.32	24.78	29.33	35.68	40.77	45.89	52.14	57.89	64.74
1992	7.79	13.01	16.38	21.29	26.84	35.18	40.23	45.59	51.66	57.78	65.06
1993	8.31	14.42	18.92	23.50	29.33	35.76	41.29	46.91	51.90	57.53	64.50
1994	9.50	15.59	20.51	23.81	28.53	34.33	40.08	45.52	51.47	56.77	62.23
1995	10.07	17.71	21.13	26.65	31.04	35.02	40.08	47.97	54.20	58.31	62.00
1996	9.01	16.35	23.43	27.69	32.59	36.43	41.06	46.39	51.69	57.32	63.51
1997	9.46	16.83	22.08	25.64	28.86	35.07	40.17	45.97	51.92	57.66	63.11
1998	9.37	17.44	22.01	27.42	31.89	36.02	40.76	45.68	51.59	58.87	63.22
1999	9.49	17.47	21.97	27.35	30.63	36.26	41.00	44.64	50.93	58.20	
2000	9.50	17.29	23.11	28.26	32.69	37.33	42.00	46.40	51.33	59.23	65.16
2001	10.22	18.04	23.99	27.31	31.18	36.05	41.13	45.98	51.38	55.57	61.85
2002	10.81	18.18	23.34	27.98	31.92	37.03	42.40	47.45	51.17	57.33	63.78
2003	11.73	18.65	24.08	28.58	32.06	36.74	41.91	46.96	52.32	58.53	61.74
2004	10.65	18.28	23.17	27.59	30.92	36.03	41.06	45.68	51.25	57.12	61.20
2005	12.99	19.68	24.01	28.35	31.86	36.11	40.96	45.08	50.27	56.11	60.62
2006	10.38	17.75	23.19	27.53	31.40	36.17	40.82	45.87	50.63	57.09	61.85
2007	9.63	18.11	23.18	27.50	30.77	35.82	41.09	45.83	50.82	56.66	60.38
2008	9.83	17.62	24.34	27.84	30.73	36.74	40.97	46.08	50.60	57.25	62.10
2009	9.63	16.93	22.29	26.81	30.73	35.65	40.52	45.86	51.02	57.57	63.38

Table 47. Estimates of Mean Weight (kg) at age, ages 0-10 from Canadian fall surveys in Div. 2J3K.

Year	Age 0	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10
1978	0.004	0.016	0.036	0.099	0.197	0.416	0.657	0.957	1.472	2.113	2.611
1979		0.016	0.078	0.146	0.262	0.505	0.777	1.092	1.413	1.877	2.354
1980		0.02	0.071	0.164	0.313	0.519	0.791	1.13	1.628	2.198	2.671
1981		0.022	0.06	0.132	0.28	0.529	0.822	1.188	1.626	2.347	3.512
1982		0.021	0.06	0.121	0.216	0.354	0.603	0.854	1.18	1.645	2.162
1983		0.019	0.044	0.105	0.209	0.376	0.616	0.945	1.375	1.925	2.633
1984		0.018	0.071	0.139	0.27	0.508	0.775	1.075	1.45	1.95	2.525
1985	0.005	0.015	0.042	0.105	0.211	0.405	0.675	0.971	1.335	1.76	2.227
1986	0.006	0.027	0.07	0.119	0.267	0.445	0.681	0.979	1.31	1.72	2.278
1987		0.018	0.05	0.099	0.205	0.337	0.568	0.856	1.224	1.647	2.199
1988	0.007	0.027	0.076	0.13	0.241	0.358	0.596	0.842	1.271	1.783	2.383
1989	0.005	0.023	0.048	0.096	0.192	0.402	0.626	0.874	1.303	1.851	2.512
1990		0.018	0.054	0.095	0.208	0.38	0.596	0.86	1.262	1.842	2.499
1991		0.028	0.075	0.134	0.22	0.39	0.577	0.817	1.188	1.615	2.242
1992	0.004	0.019	0.038	0.082	0.164	0.366	0.546	0.793	1.15	1.604	2.283
1993	0.004	0.023	0.054	0.105	0.208	0.383	0.596	0.883	1.205	1.655	2.352
1994	0.008	0.035	0.078	0.119	0.201	0.344	0.539	0.779	1.112	1.476	1.925
1995	0.008	0.045	0.077	0.153	0.242	0.346	0.517	0.883	1.271	1.58	1.896
1996	0.004	0.03	0.094	0.16	0.269	0.384	0.563	0.831	1.174	1.632	2.265
1997	0.006	0.035	0.082	0.13	0.188	0.345	0.526	0.801	1.169	1.621	2.146
1998	0.006	0.039	0.081	0.161	0.257	0.376	0.551	0.786	1.146	1.727	2.155
1999	0.006	0.039	0.079	0.157	0.224	0.381	0.559	0.73	1.102	1.673	
2000	0.005	0.037	0.092	0.174	0.277	0.422	0.614	0.843	1.161	1.83	2.478
2001	0.007	0.043	0.105	0.157	0.237	0.374	0.564	0.8	1.133	1.446	2.022
2002	0.009	0.045	0.098	0.172	0.258	0.41	0.624	0.885	1.118	1.592	2.216
2003	0.011	0.048	0.107	0.182	0.26	0.397	0.597	0.85	1.189	1.685	1.99
2004	0.009	0.047	0.097	0.168	0.239	0.385	0.578	0.805	1.152	1.613	2
2005	0.0153	0.0571	0.1071	0.181	0.2621	0.3894	0.5802	0.7856	1.109	1.5693	2.0048
2006	0.0077	0.042	0.0978	0.1681	0.2546	0.3981	0.5831	0.8428	1.1508	1.6811	2.1652
2007	0.0059	0.0438	0.0958	0.1648	0.2353	0.3812	0.5892	0.8332	1.156	1.6325	1.9985
2008	0.0065	0.0406	0.1122	0.1711	0.2335	0.4094	0.577	0.8348	1.1206	1.6525	2.1345
2009	0.0061	0.0358	0.0847	0.1508	0.2313	0.3678	0.5488	0.8084	1.1286	1.6465	2.2238

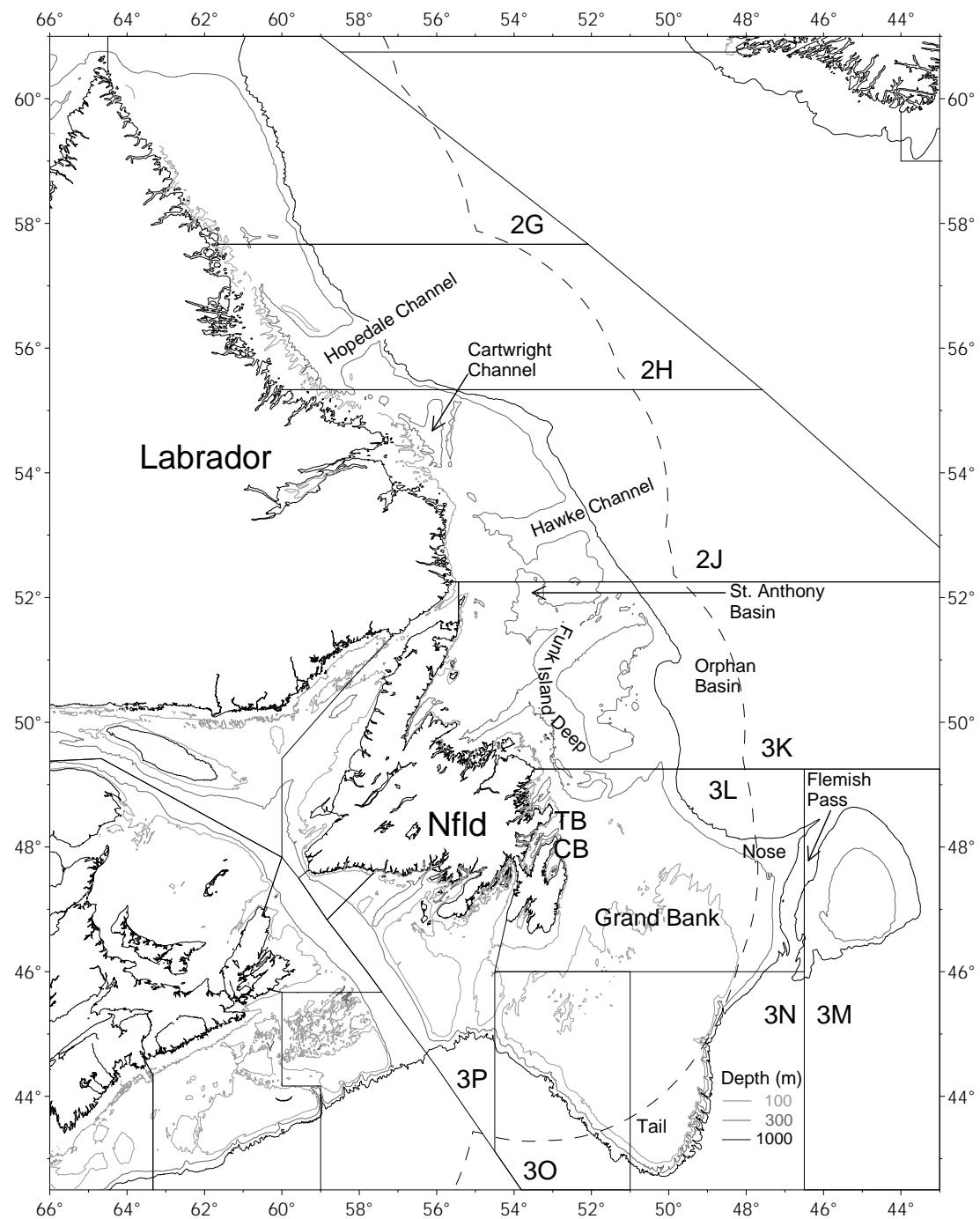


Figure 1. Map of stock area, with NAFO dividing lines, select isobaths, and names referred to in the text. TB and CB refer to Trinity and Conception Bays, respectively.

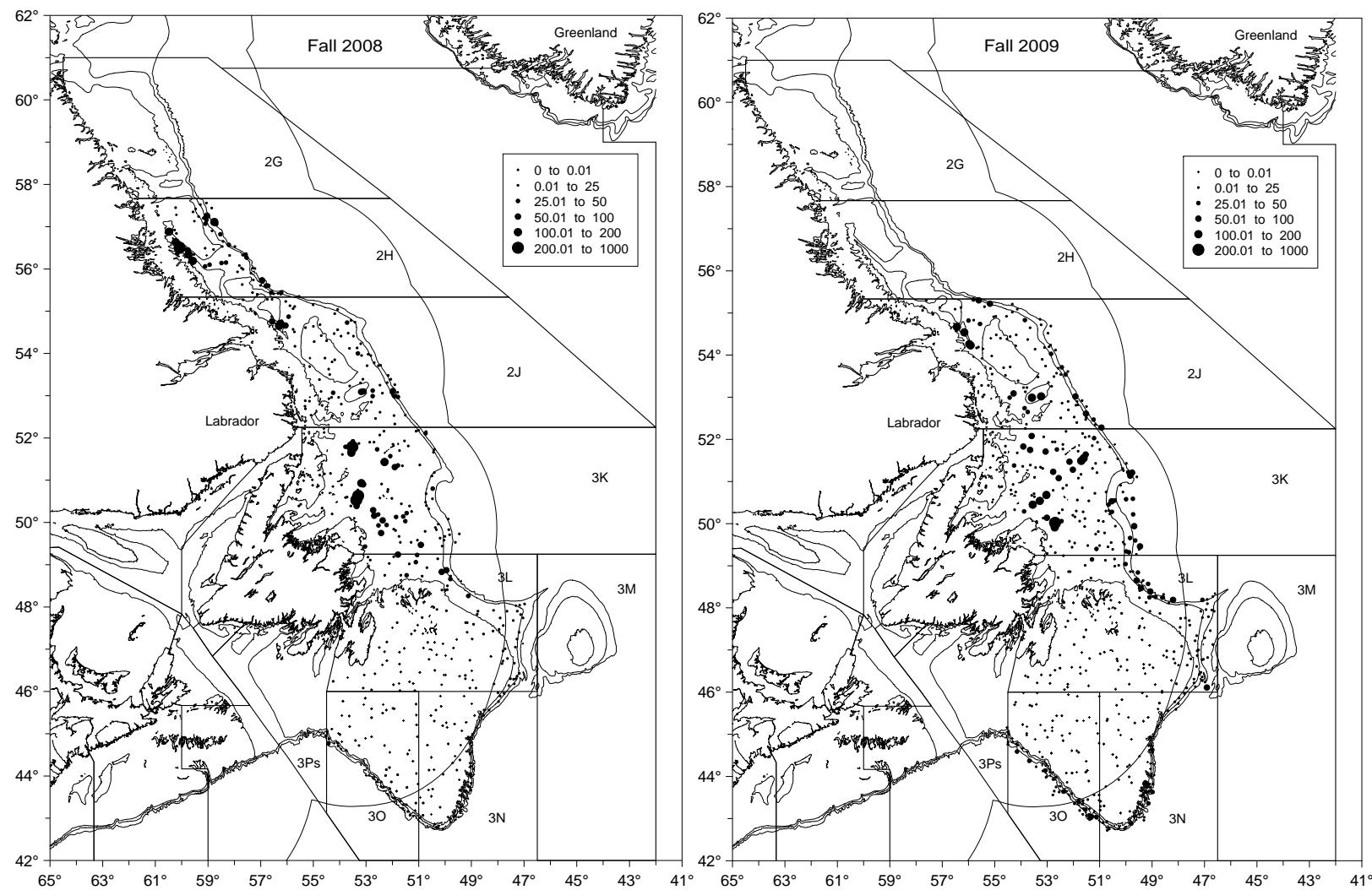


Figure 2. Distribution (kg per set) of Greenland halibut from Canadian fall surveys during 2008 (left) and 2009 (right). Depth contours of 200m, 500m, and 100m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

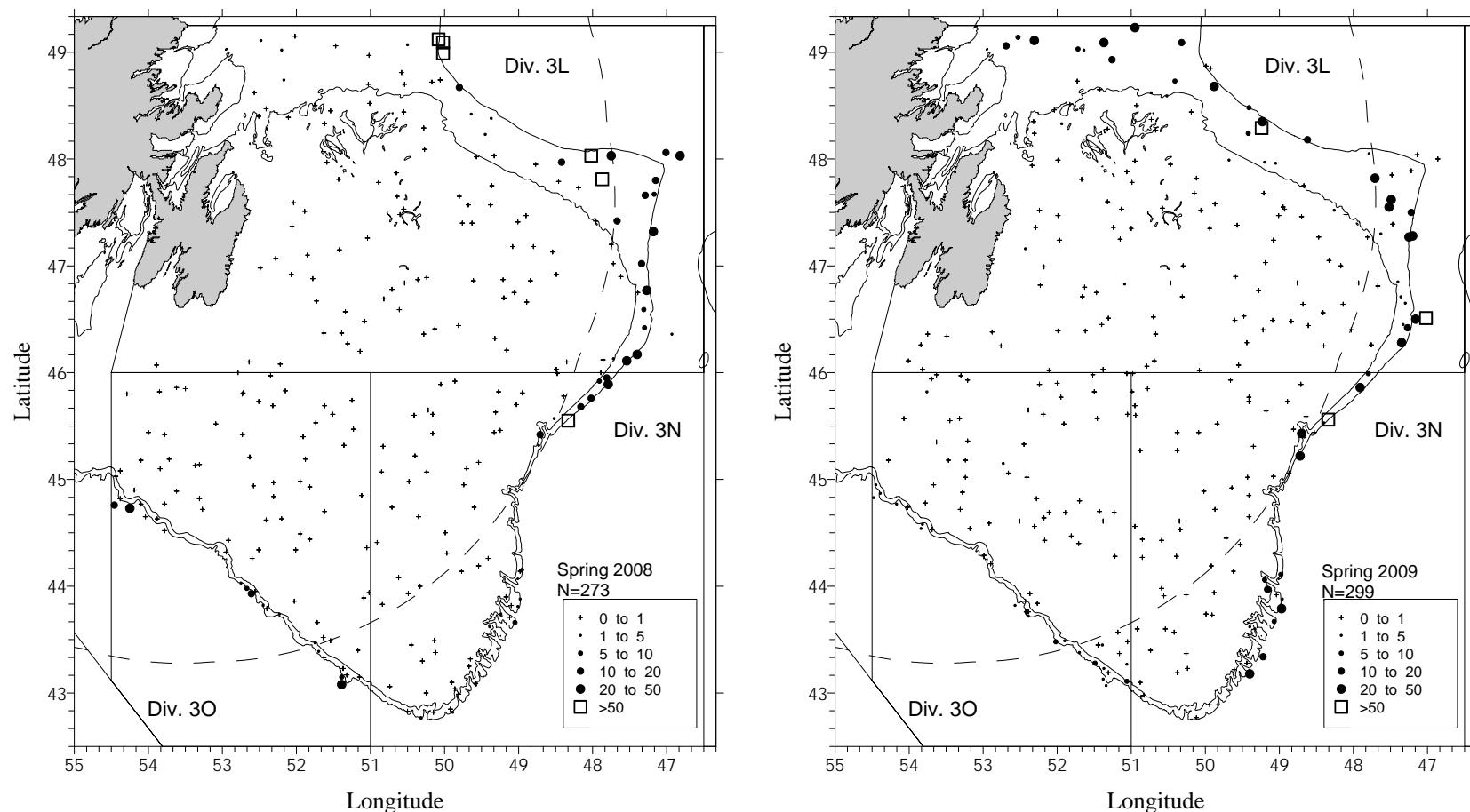


Figure 3. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2008 (left) and 2009 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ. (See also Appendix I).

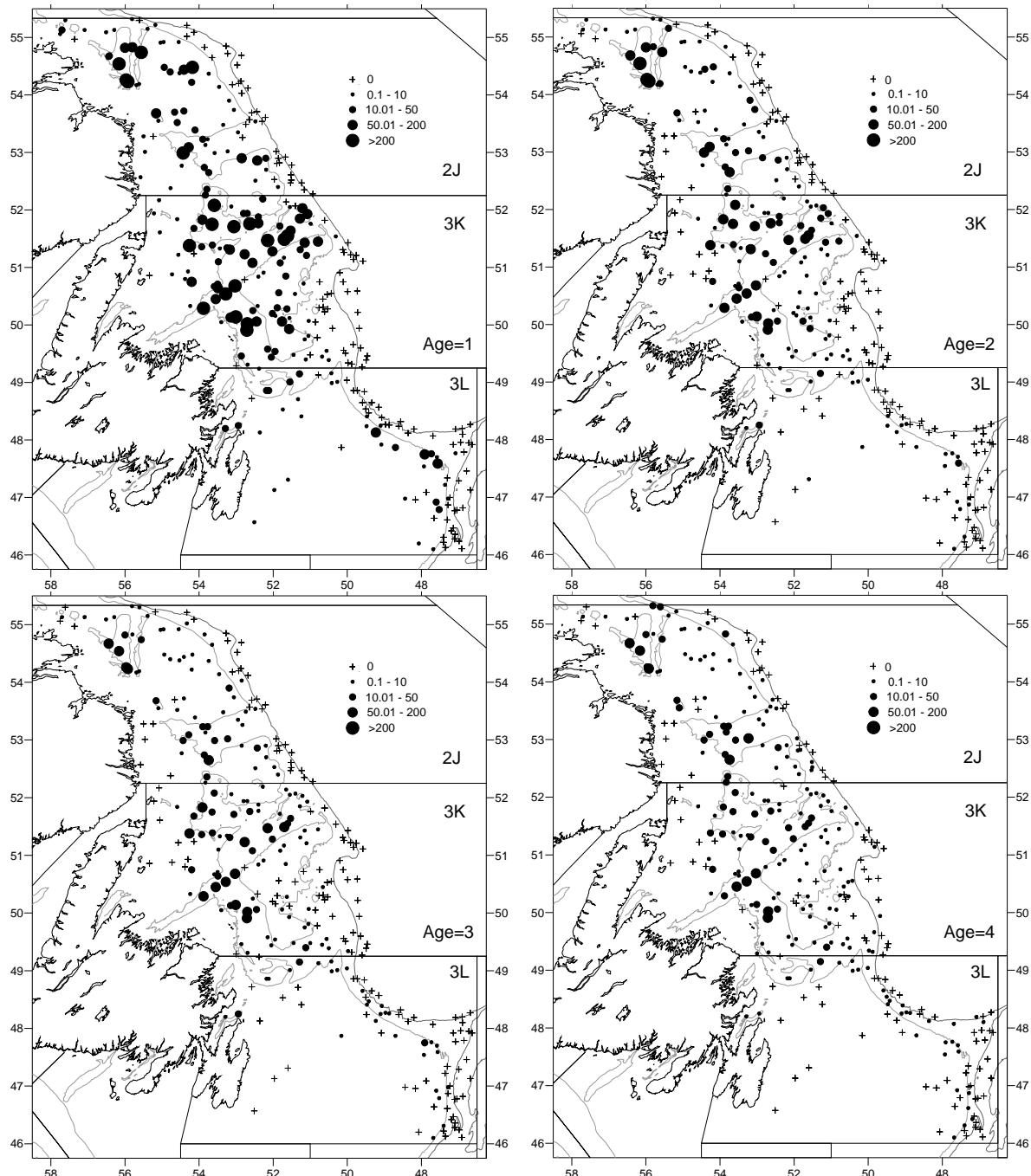


Figure 4. Distribution by age (numbers per set) of Greenland halibut from the 2009 Canadian fall survey, for ages 1-4. Note that only set locations with non-zero catch for at least one age group are plotted. Depth contours of 300m, and 1000m are shown.

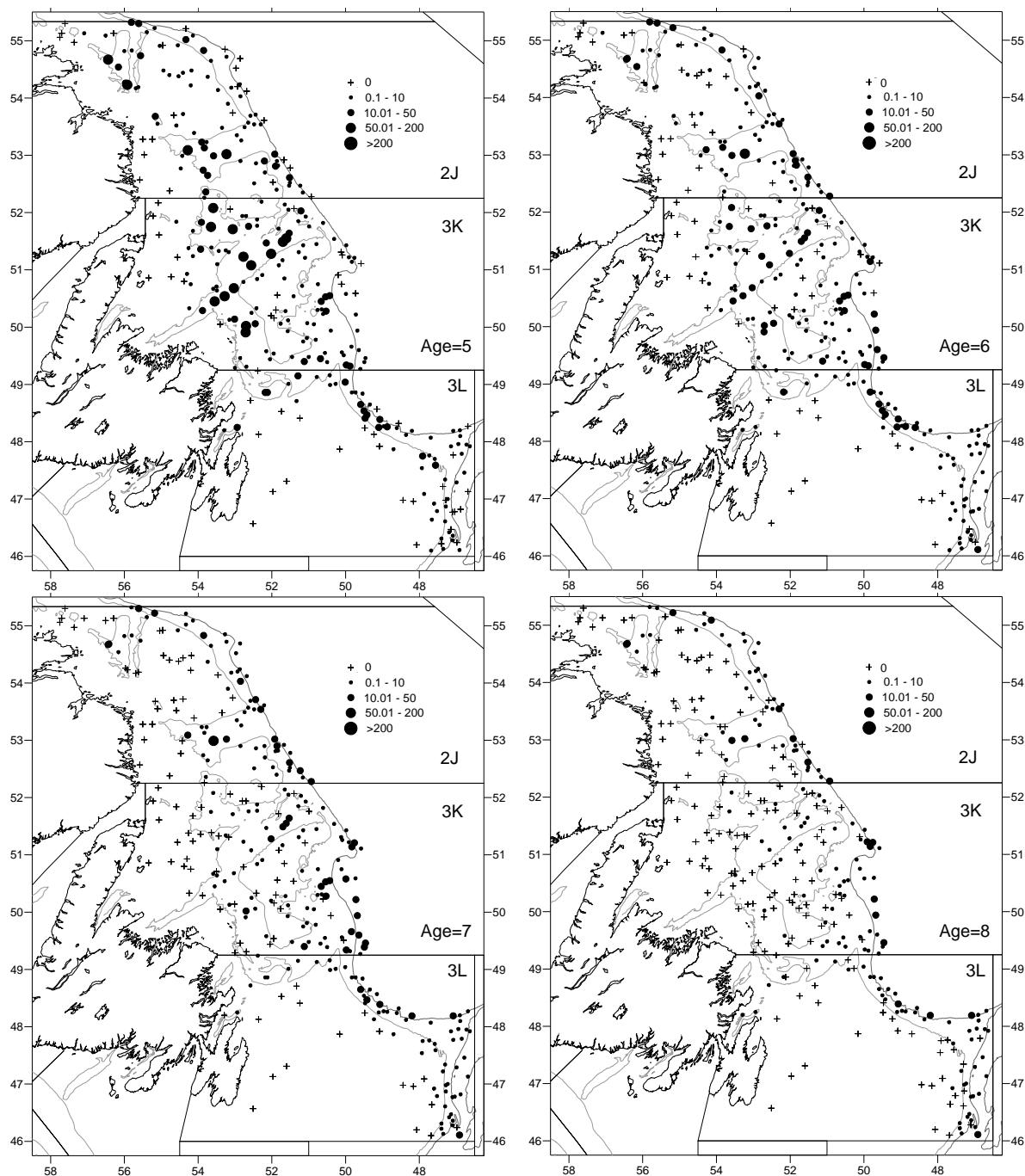


Figure 5. Distribution by age (numbers per set) of Greenland halibut from the 2009 Canadian fall survey, for ages 5-8. Note that only set locations with non-zero catch for at least one age group are plotted. Depth contours of 300m, and 1000m are shown.

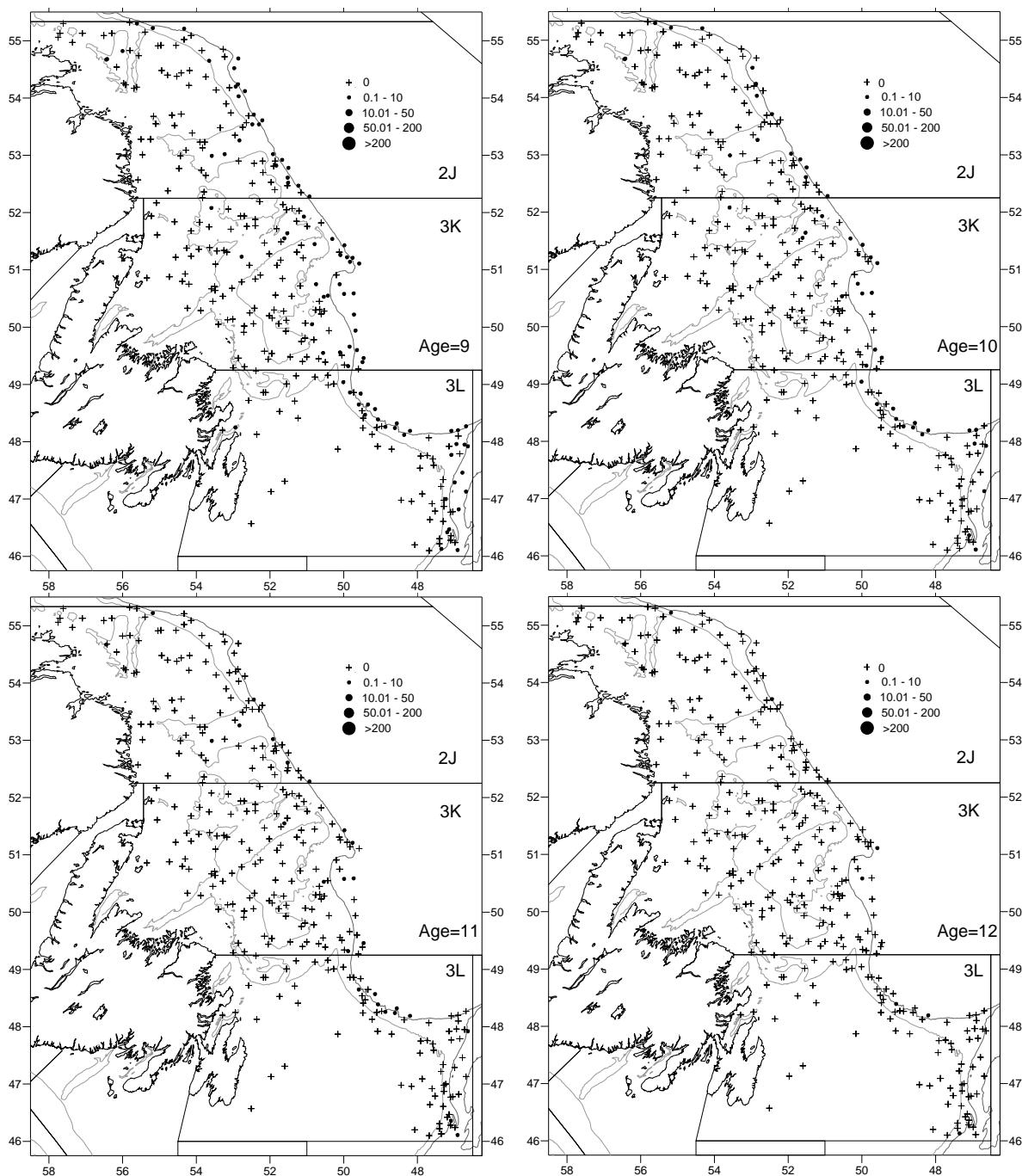


Figure 6. Distribution by age (numbers per set) of Greenland halibut from the 2009 Canadian fall survey, for ages 5-8. Note that only set locations with non-zero catch for at least one age group are plotted. Depth contours of 300m, and 1000m are shown.

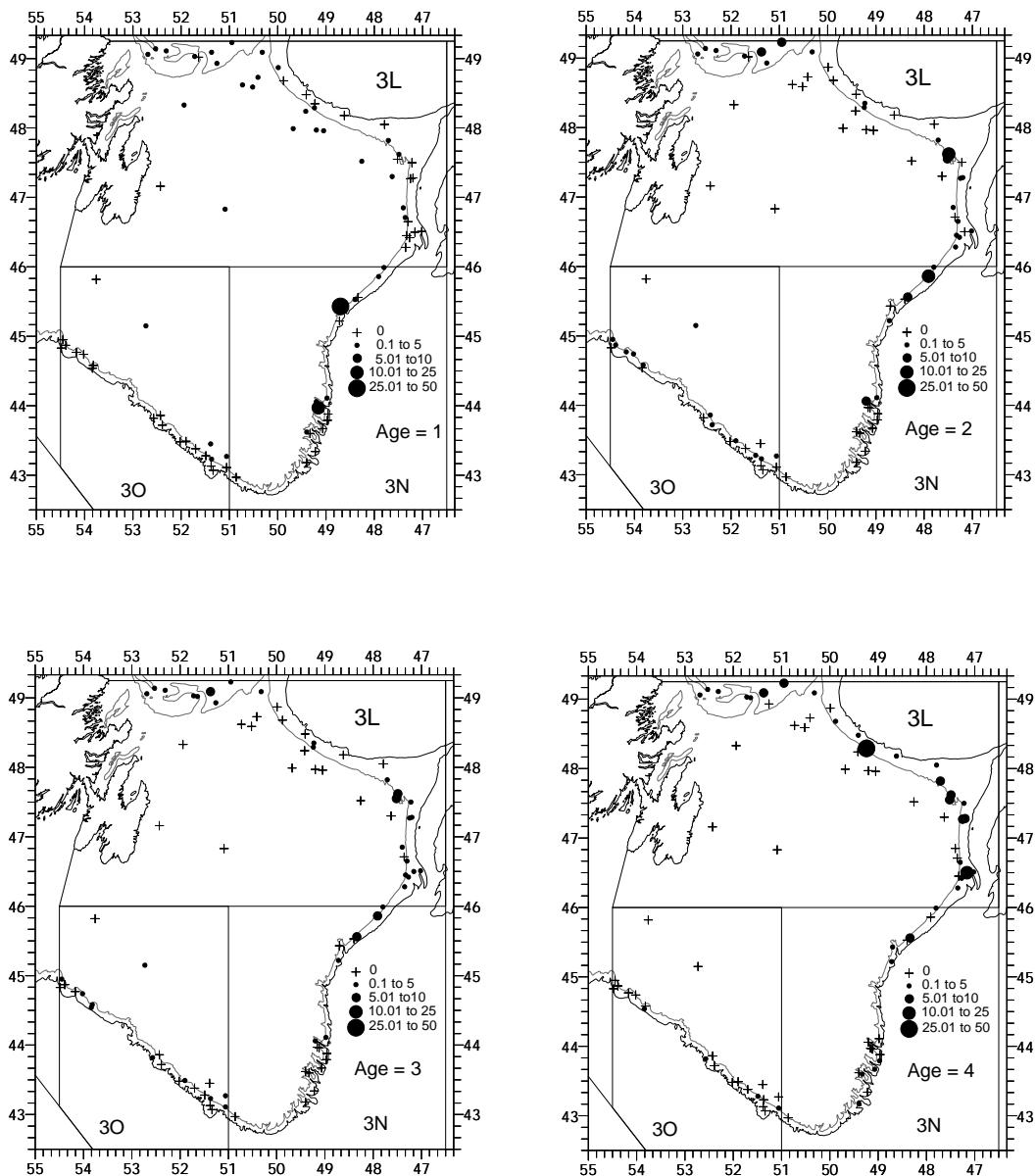


Figure 7. Distribution by age (numbers per set) of Greenland halibut from the 2009 Canadian spring survey, for ages 1-4. Note that only set locations with non-zero catch for at least one age group are plotted. Depth contours of 300m, and 1000m are shown.

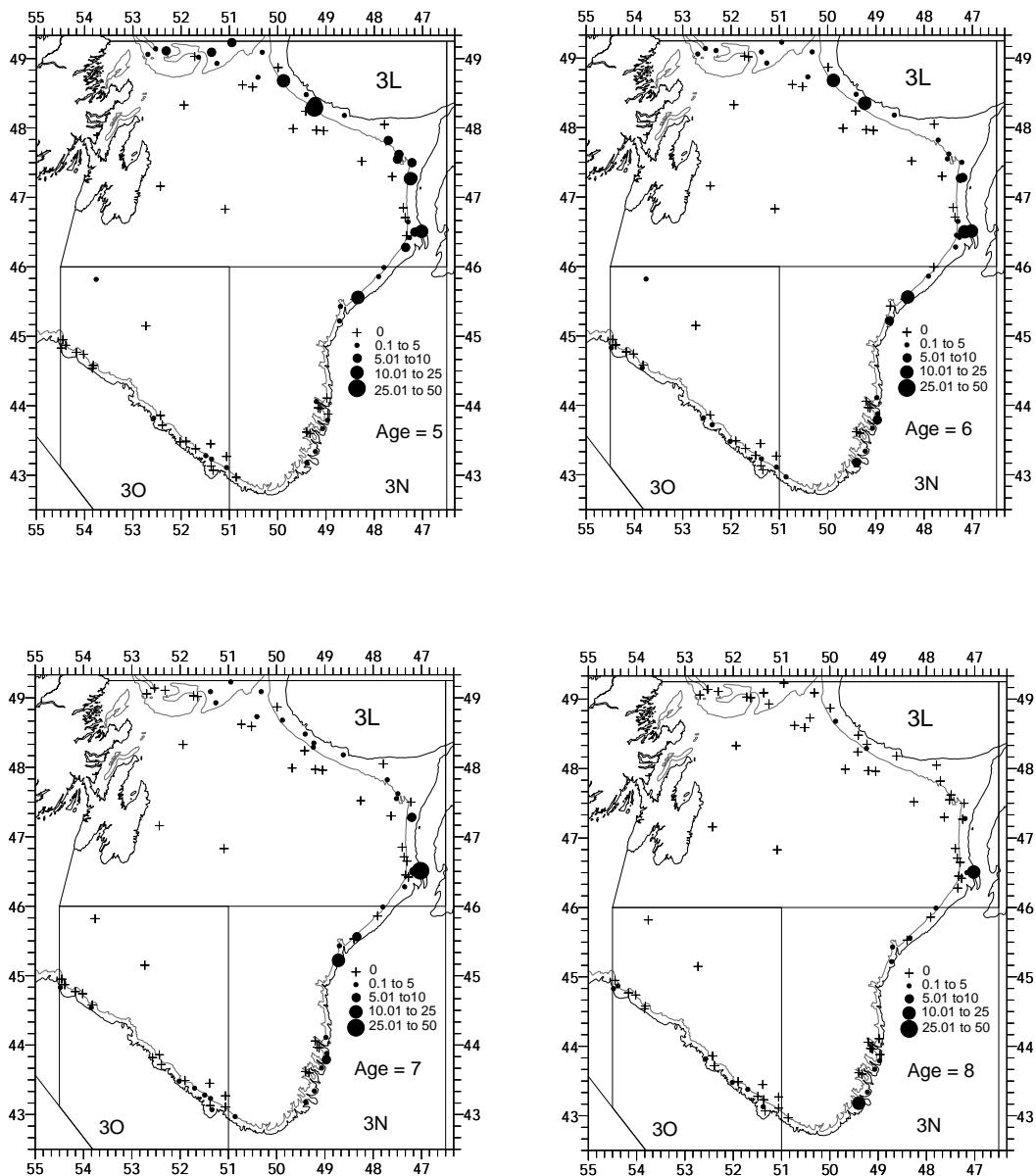


Figure 8. Distribution by age (numbers per set) of Greenland halibut from the 2009 Canadian spring survey, for ages 5-8. Note that only set locations with non-zero catch for at least one age group are plotted. Depth contours of 300m, and 1000m are shown.

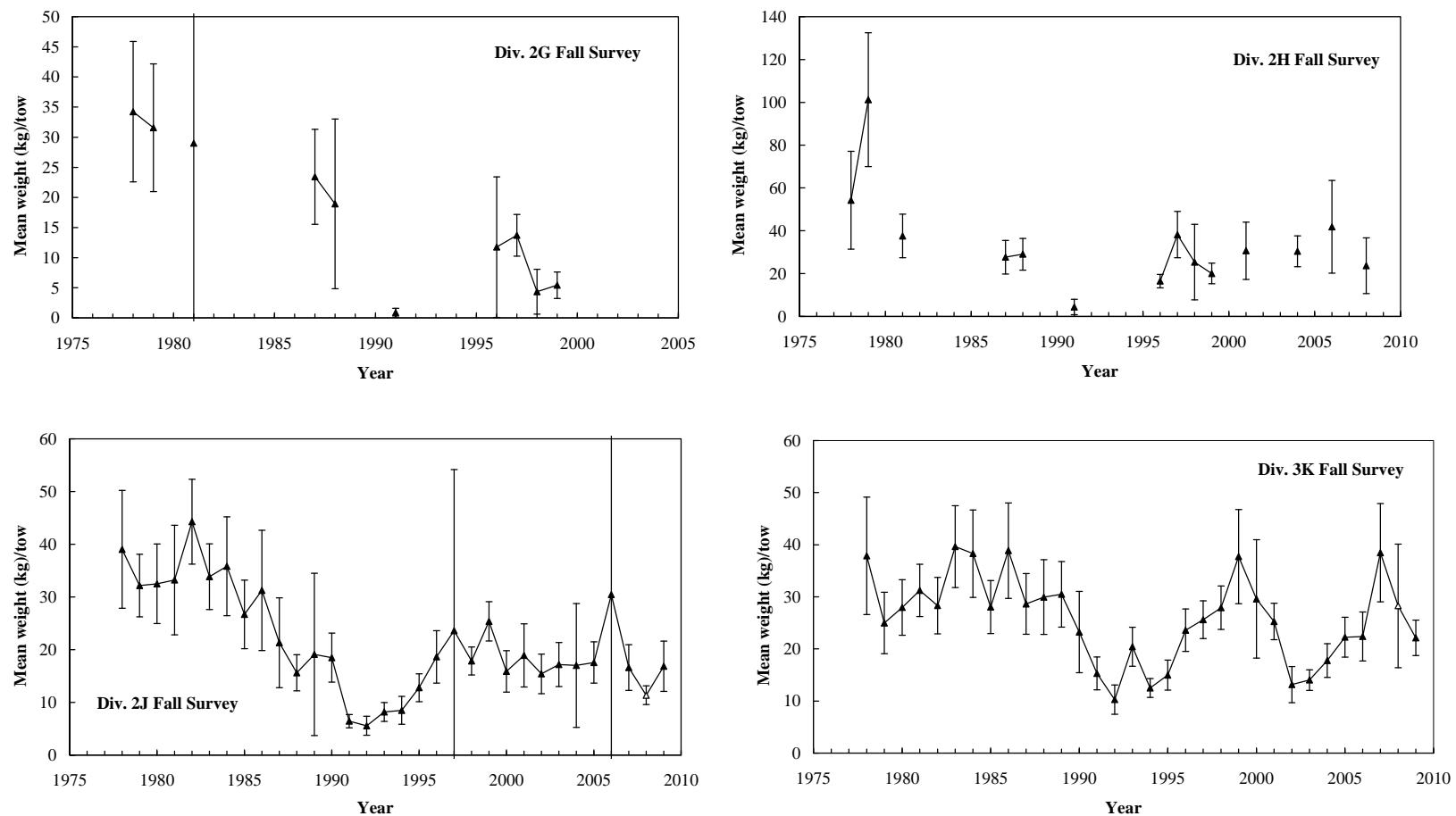


Figure 9. Stratified mean weight per tow (kg) estimates in NAFO Divisions 2G, 2H, 2J, and 3K from Canadian fall surveys during 1978-2009.

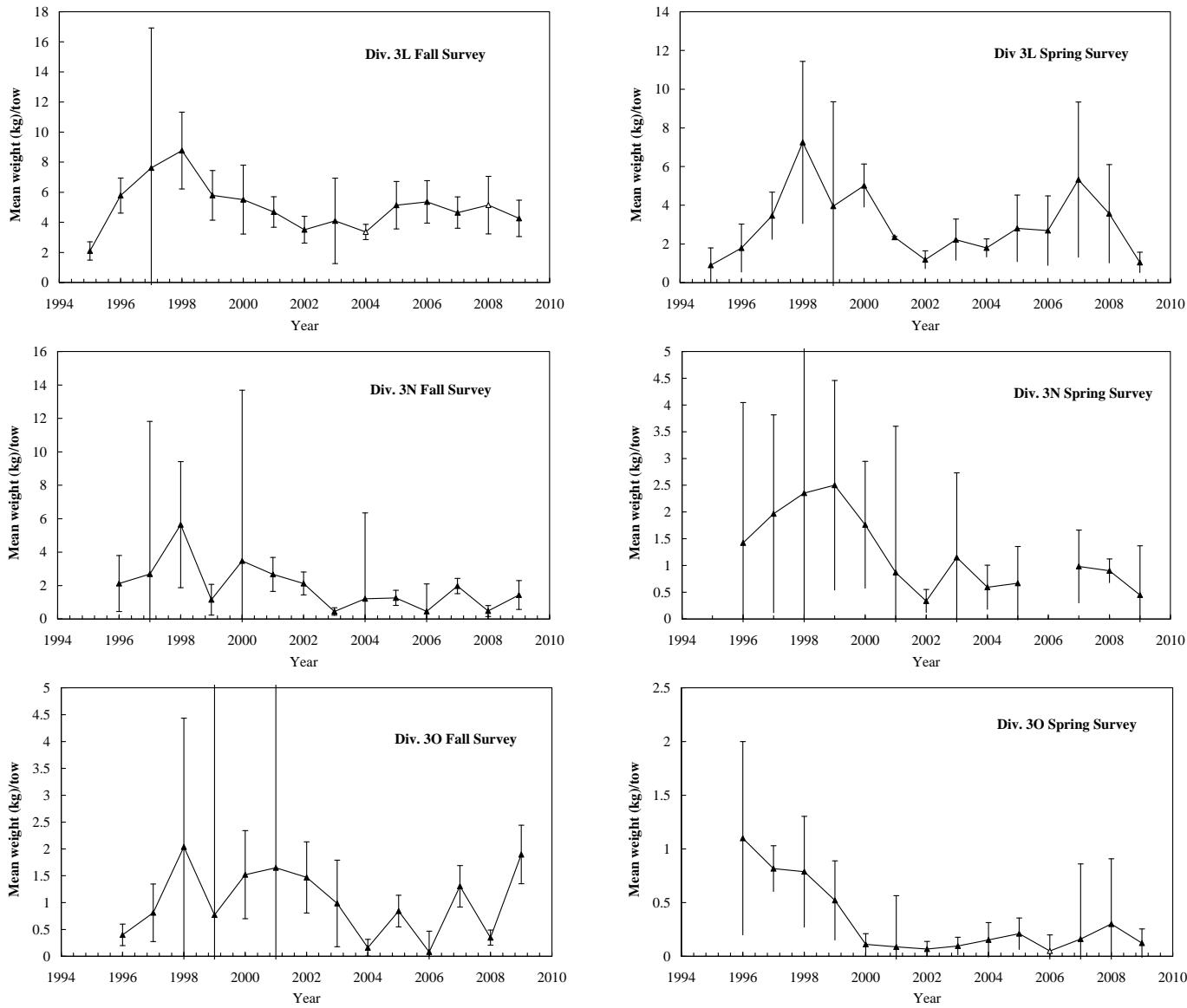


Figure 10. Stratified mean weight per tow estimates in NAFO Divisions 3L, 3N, and 3O during fall and spring surveys.

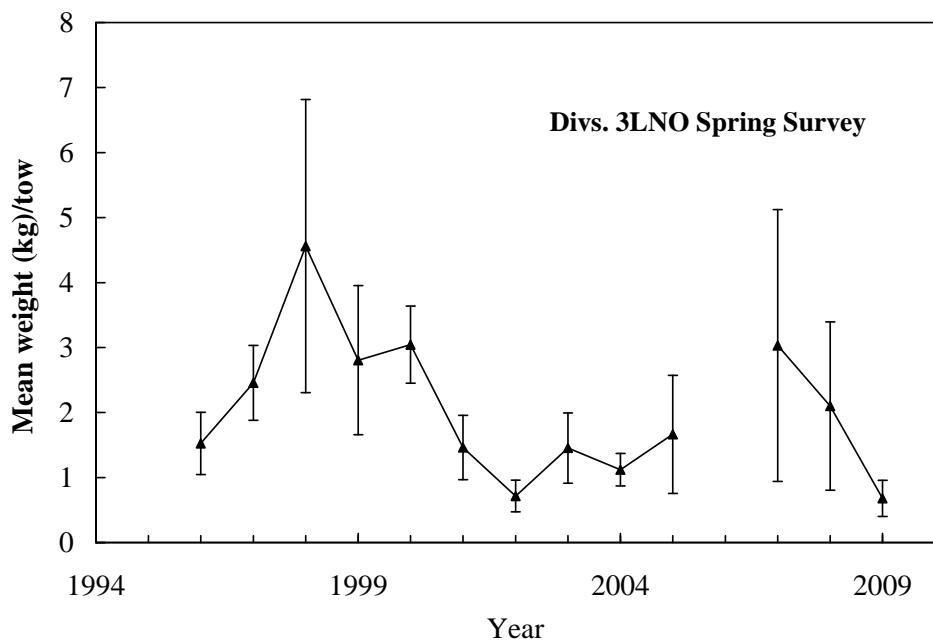


Figure 11. Biomass Index for spring surveys in Divisions 3LNO combined.

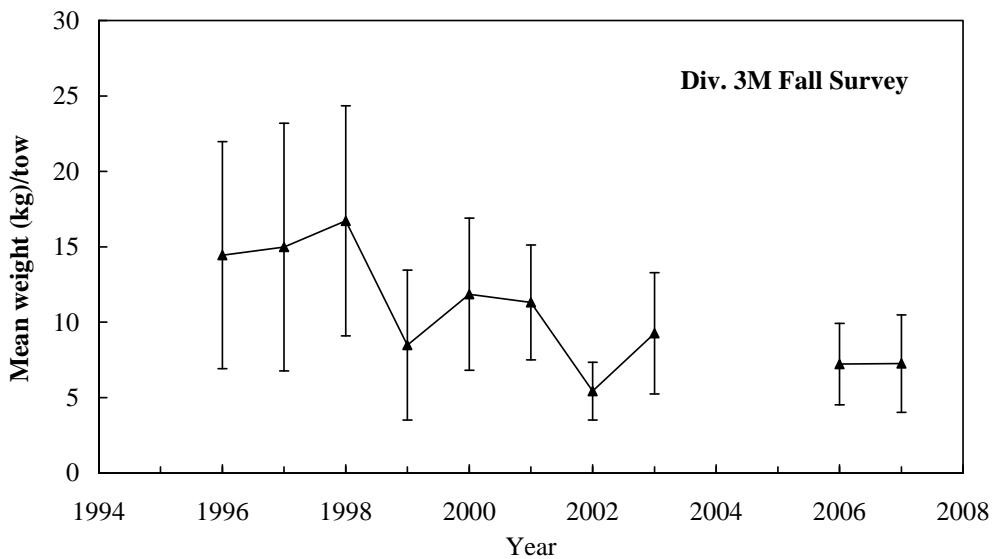


Figure 12. Stratified mean weight per tow estimates for Division 3M (strata 528-536 only).

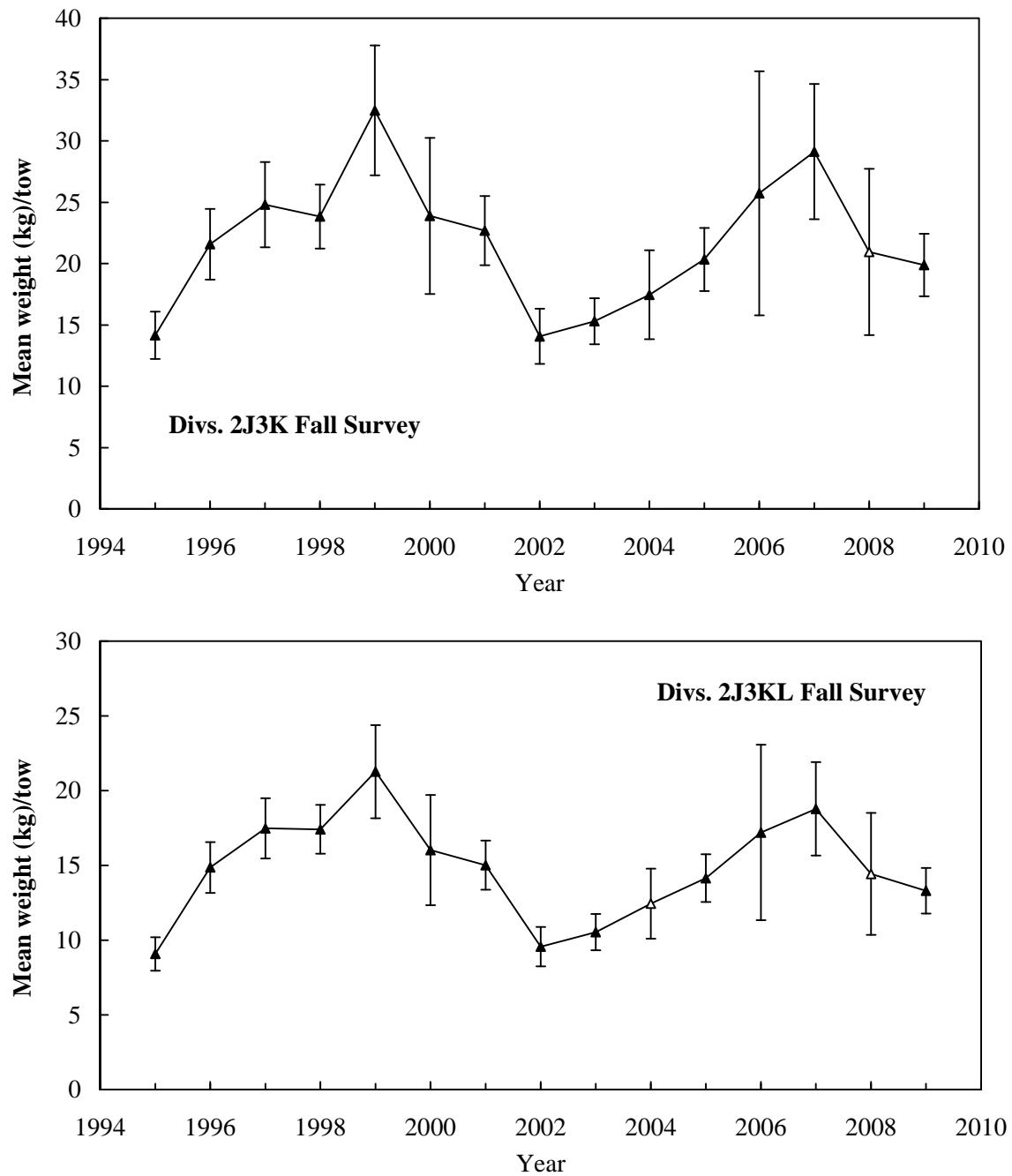


Figure 13. Stratified mean weight per tow estimates for Divisions 2J3K combined and 2J3KL combined.

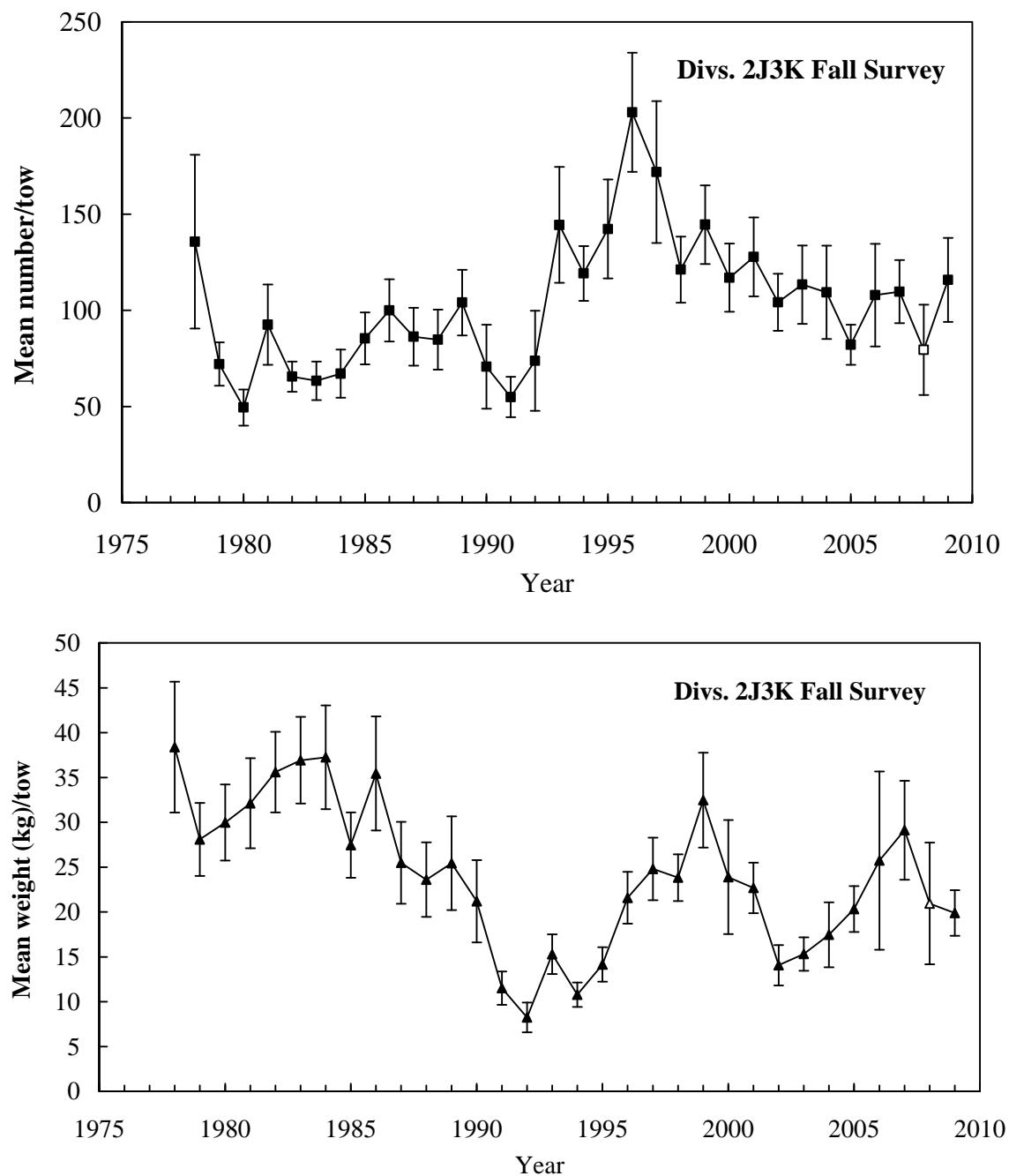


Figure 14. Campelen (or equivalent) stratified mean number and weight (kg) per tow of Greenland Halibut from fall surveys in NAFO Divisions 2J3K combined during 1978-2009.

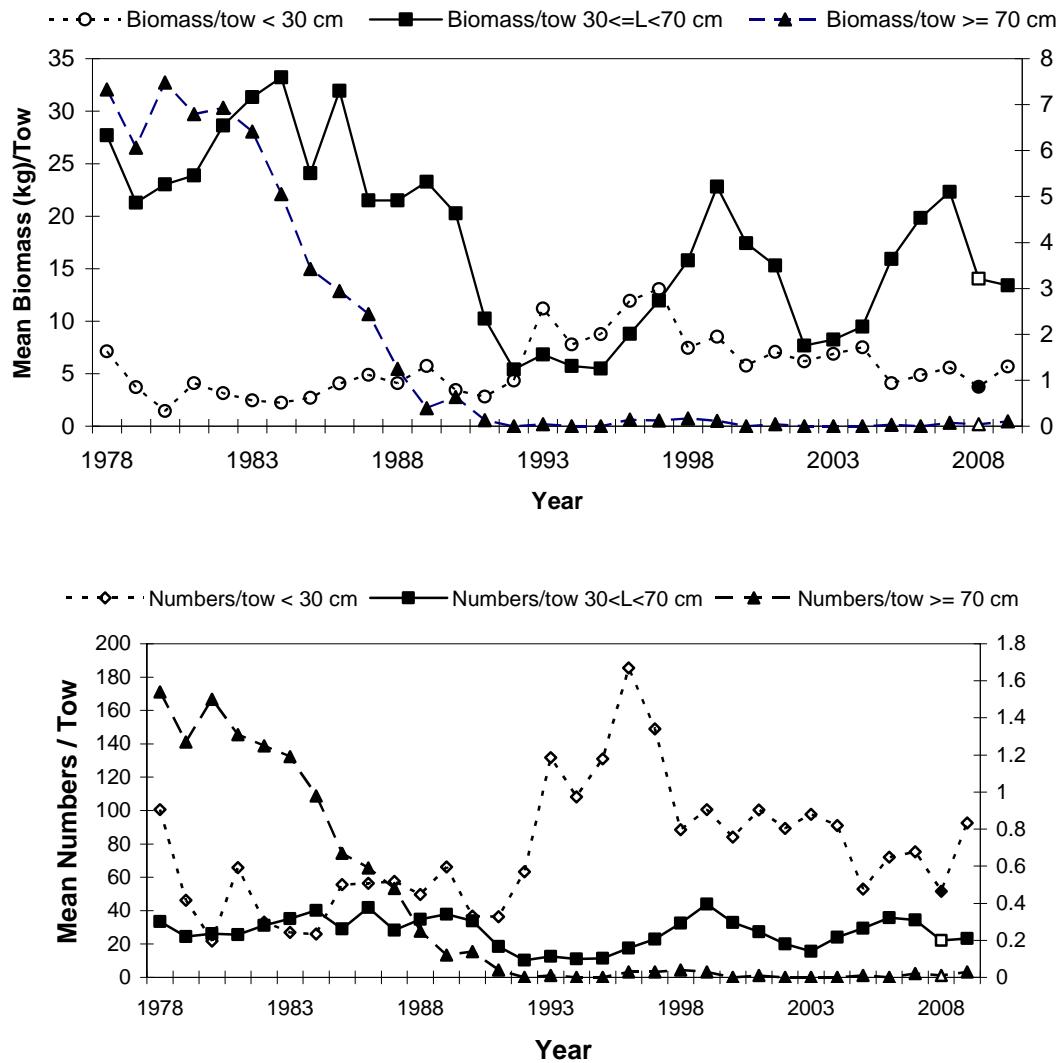


Figure 15. Mean biomass (kg; upper panel) and mean numbers (lower panel) per tow of Greenland Halibut by selected length classes from fall surveys conducted in Divisions 2J3K during 1978-2009. The data for 70+ cm Greenland Halibut are plotted on the right-hand vertical axis in each panel. See text for computational details.

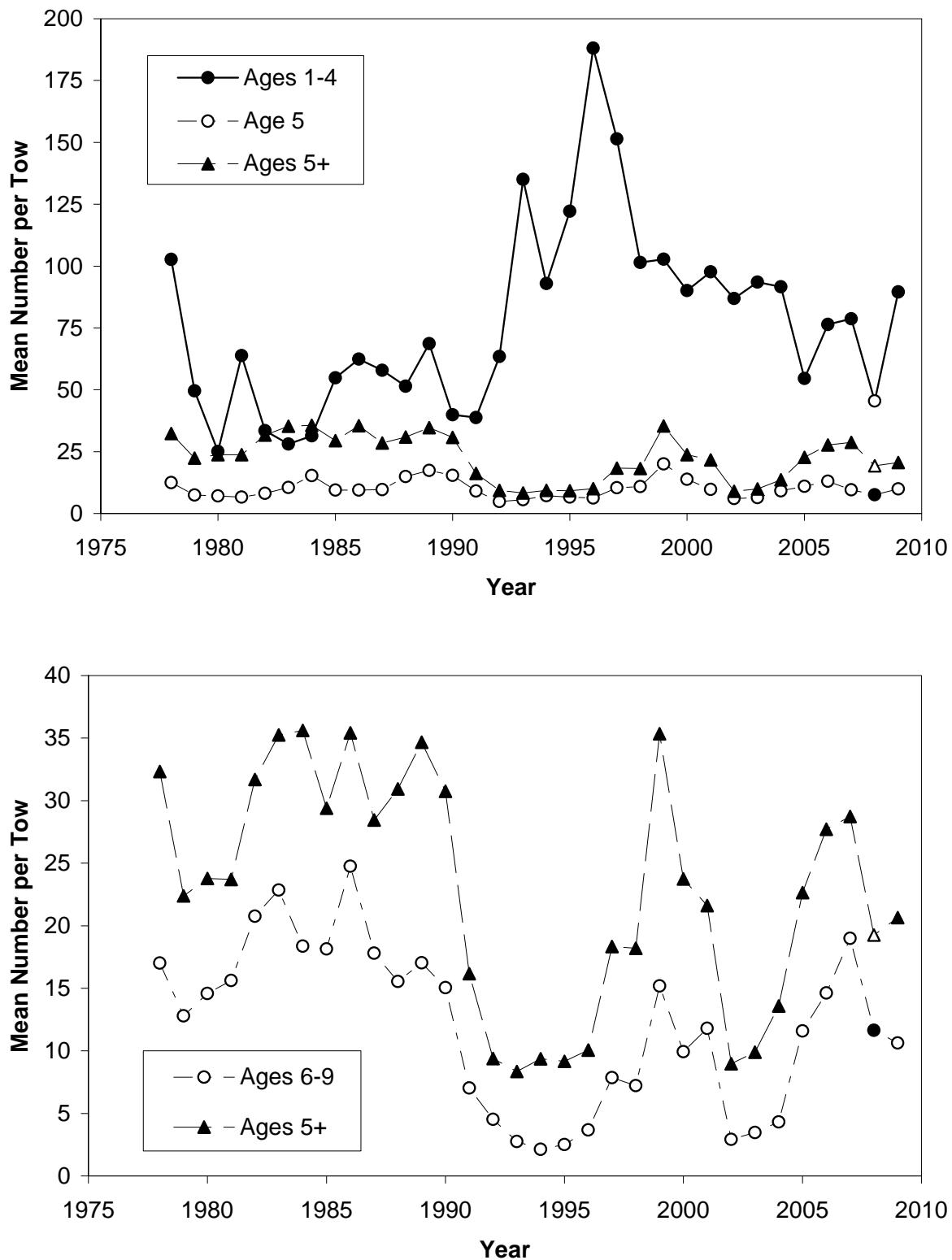


Figure 16. Trends in mean number per tow estimates by age/age grouping from Canadian fall surveys in Divs. 2J3K combined during 1978-2009. Upper panel: Ages 1-4 representative of recruitment, age 5 recruitment to the fishery, and ages 5+ exploitable biomass. Lower panel: Comparison of ages 5+ and ages 6-9.

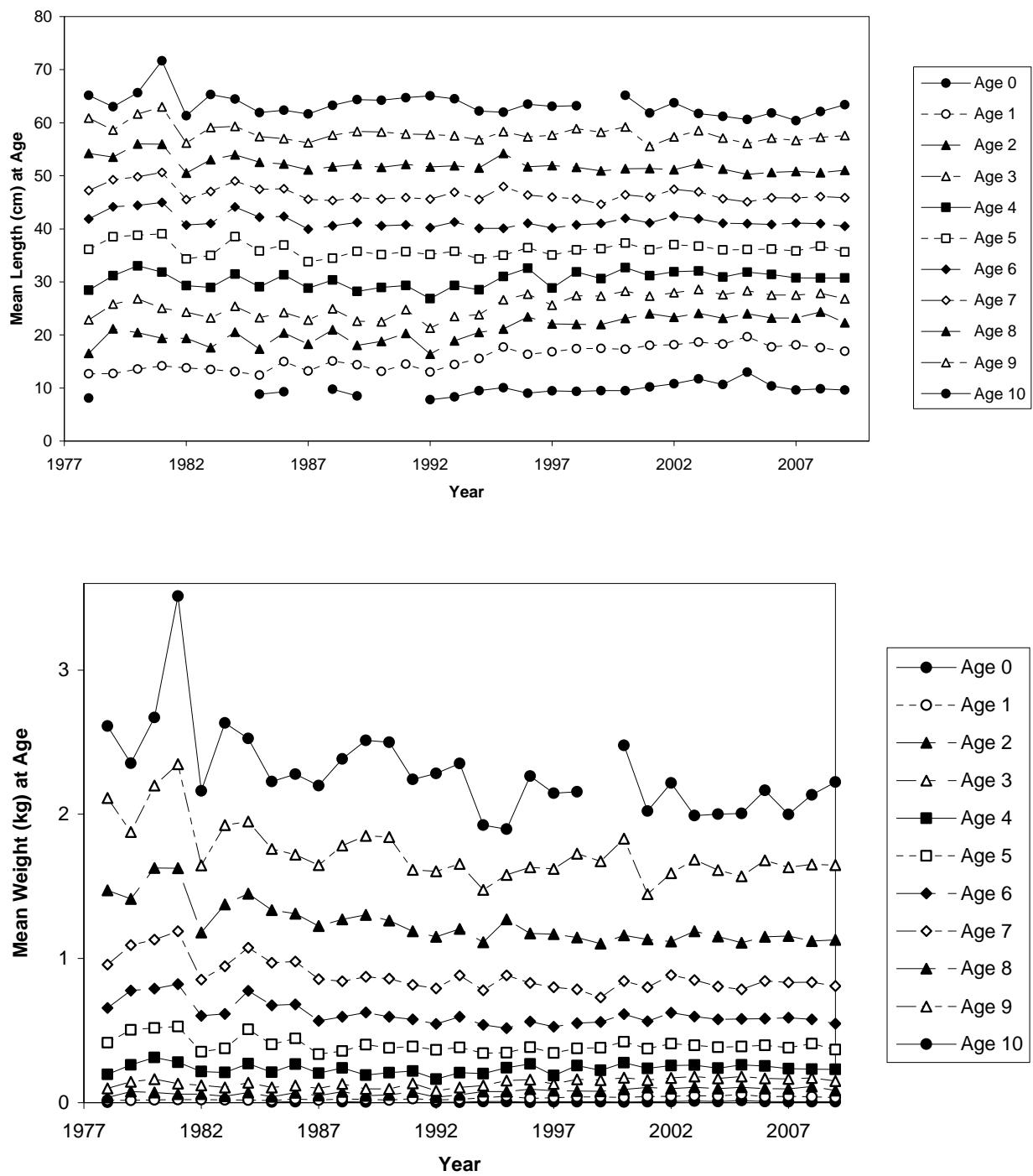


Figure 17. Length at age (cm) and weight at age (kg) for Greenland halibut from Canadian fall surveys in Div. 2J3K, ages 0-10, from 1978-2009.

Appendix I: Distribution maps from Canadian Spring Surveys, 1996-2009 (Note: 2006 survey not completed).

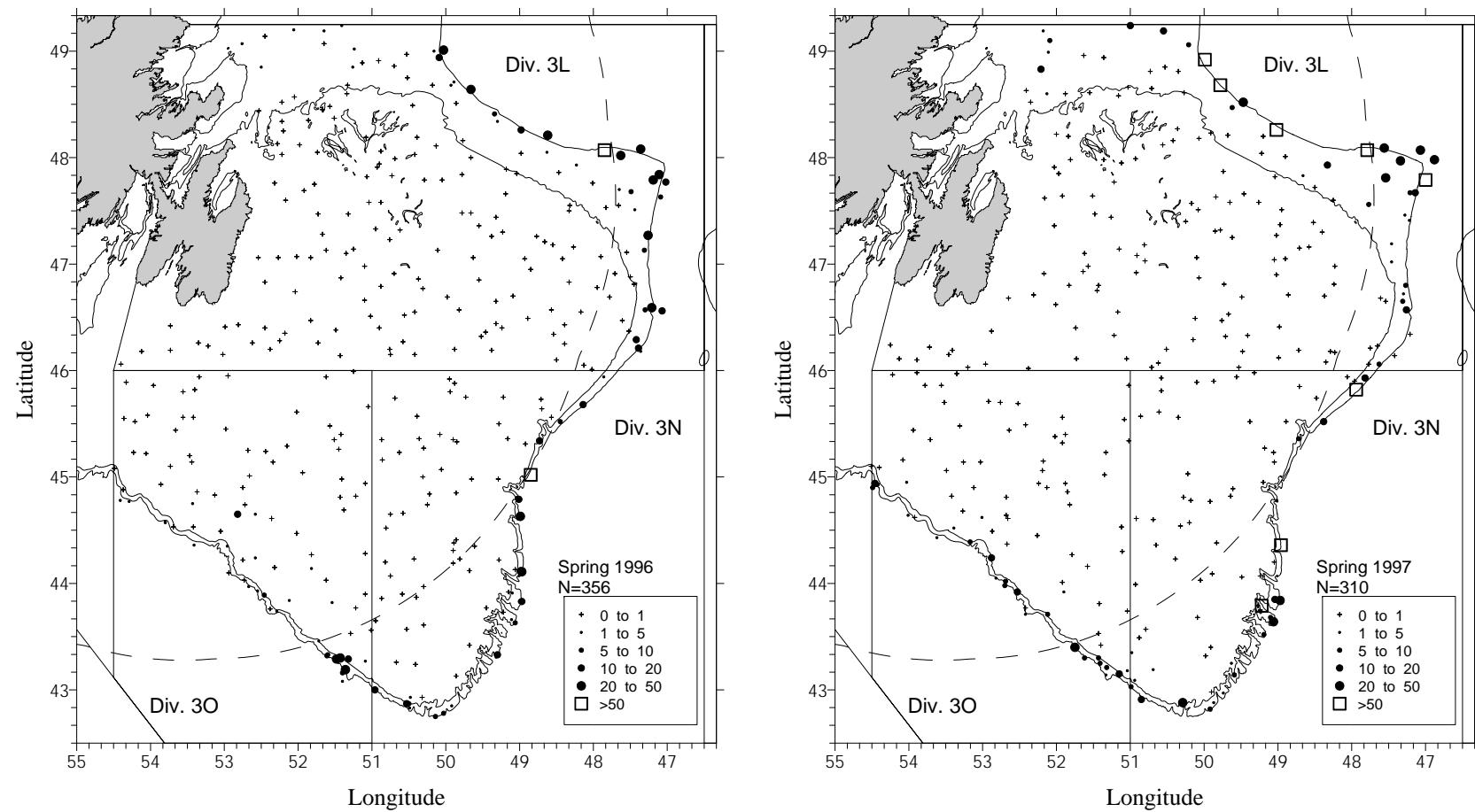


Figure 18. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 1996 (left) and 1997 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

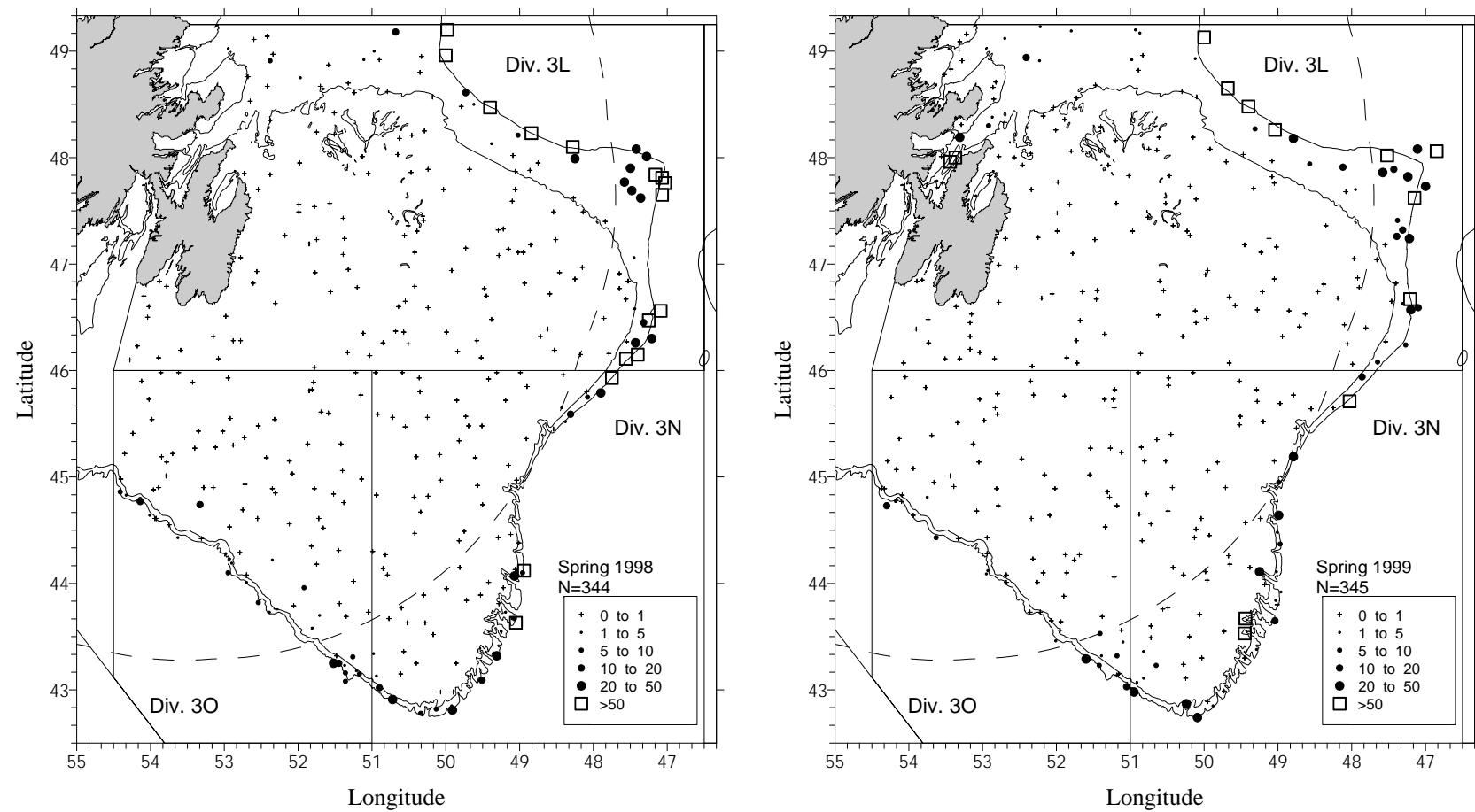


Figure 19. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 1998 (left) and 1999 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

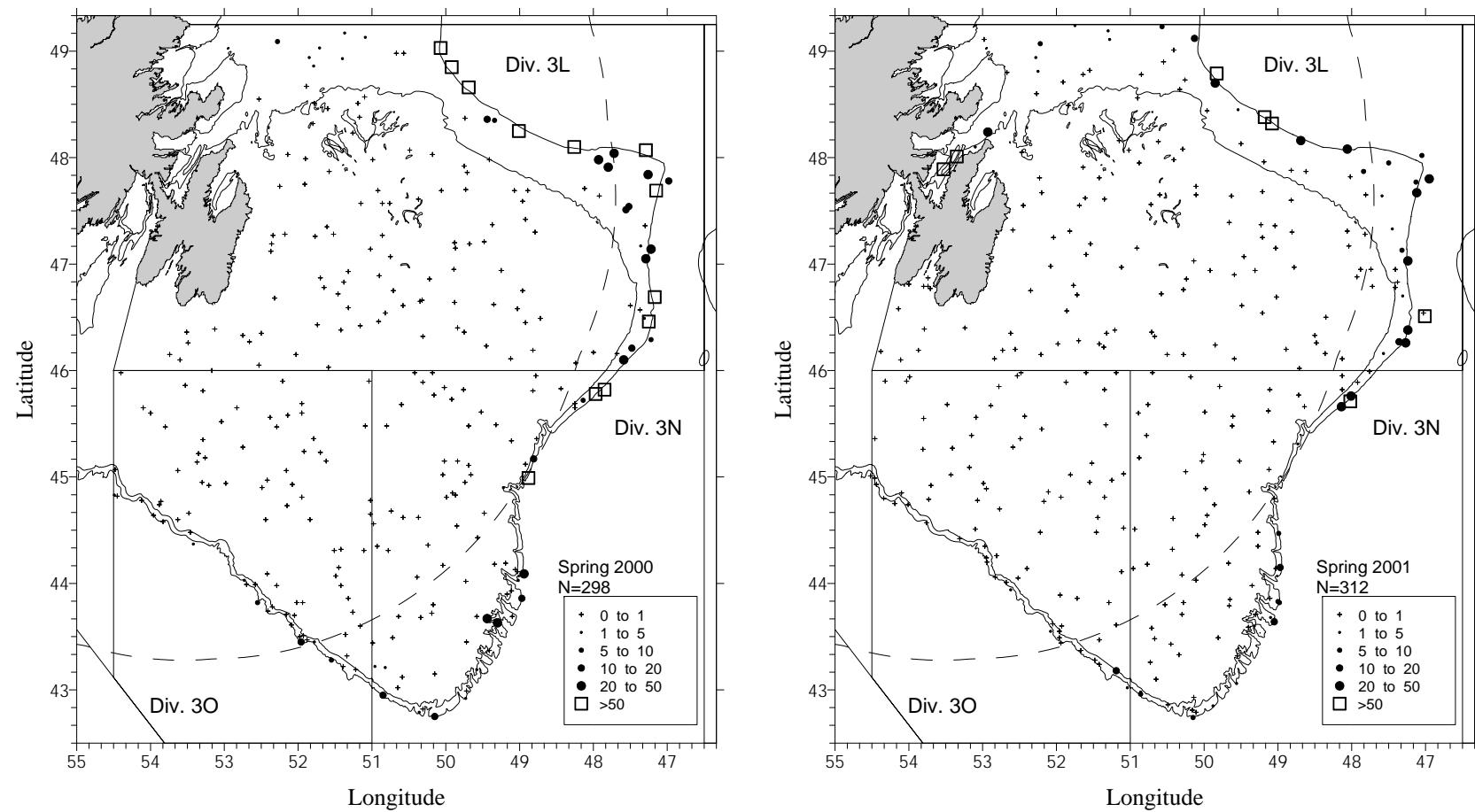


Figure 20. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2000 (left) and 2001 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

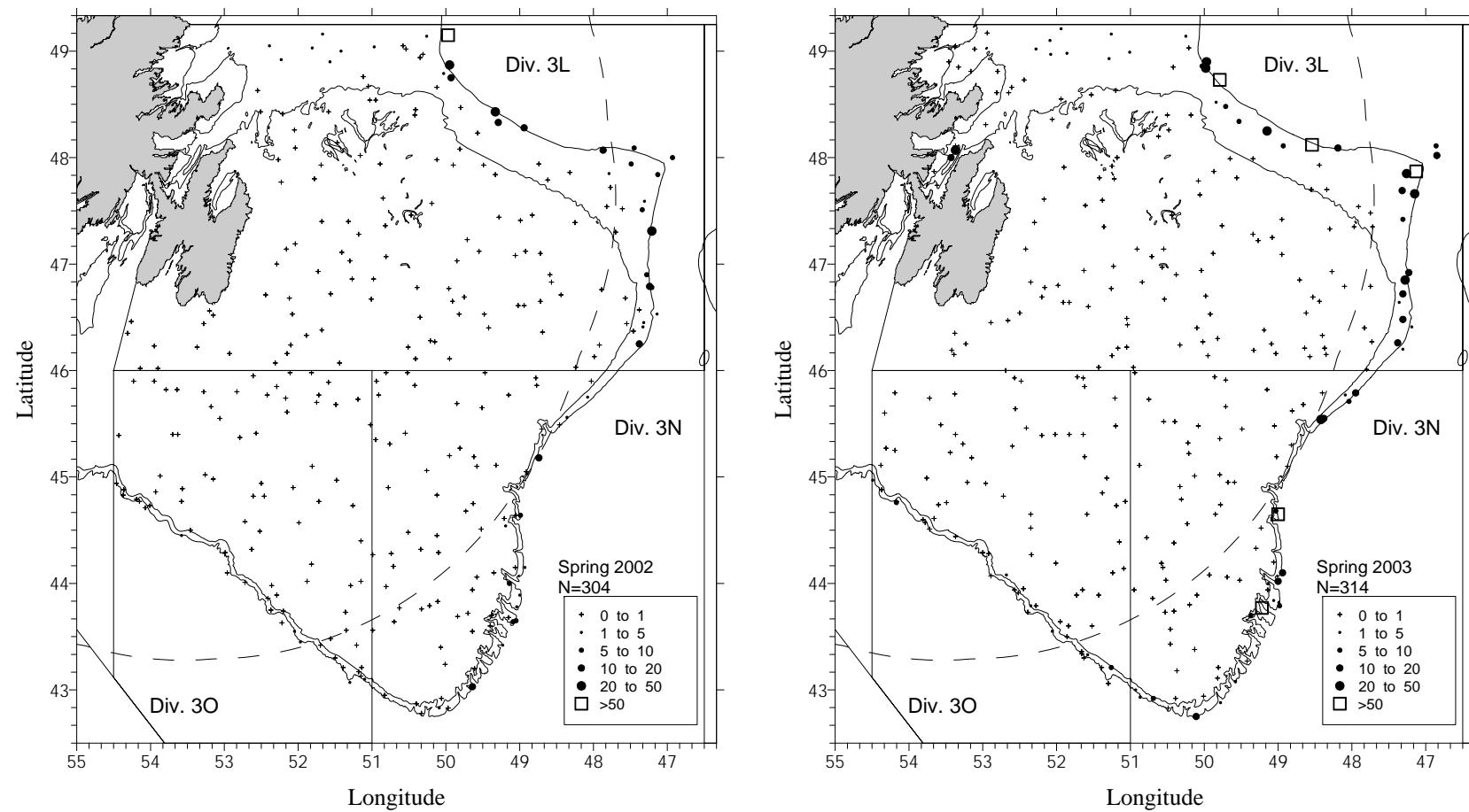


Figure 21. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2002 (left) and 2003 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

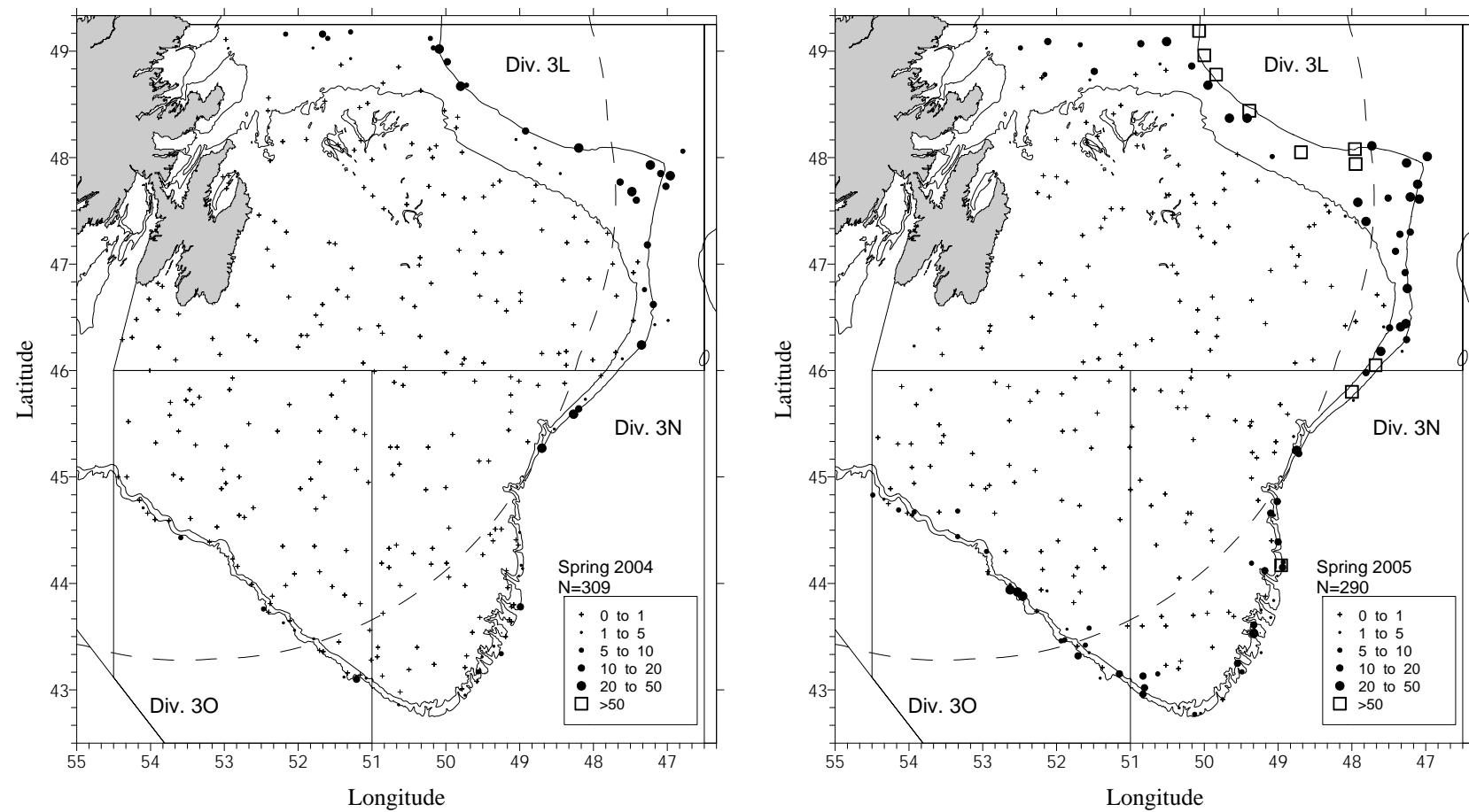


Figure 22. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2004 (left) and 2005 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

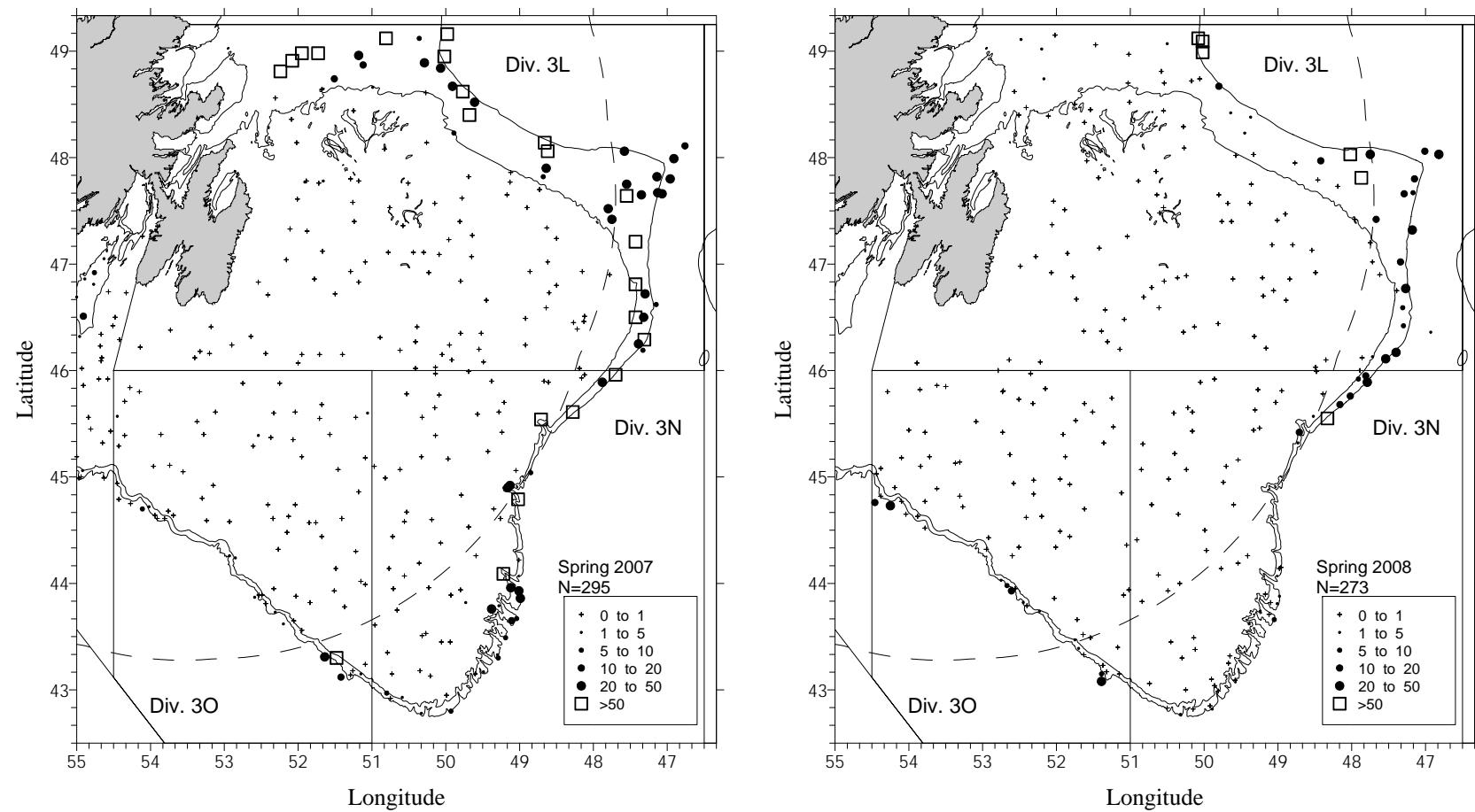


Figure 23. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2007 (left) and 2008 (right). Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.

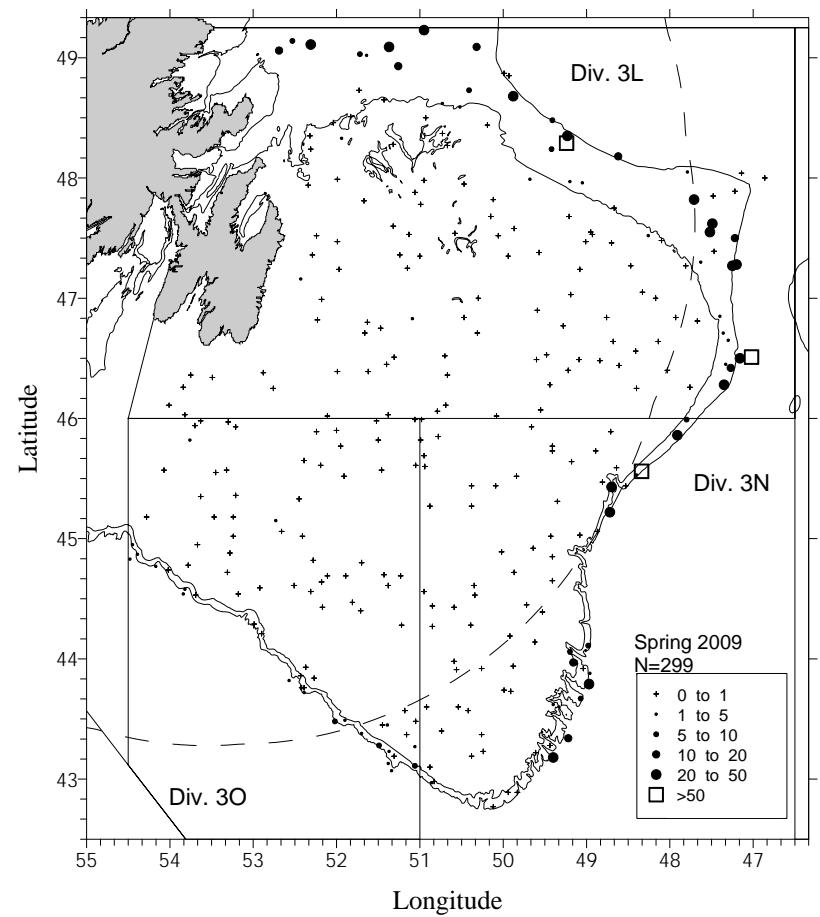


Figure 24. Distribution (kg per set) of Greenland halibut from Canadian spring surveys during 2009. Depth contours of 200m, and 500m are shown, along with the NAFO divisional boundary lines, and the Canadian EEZ.