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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 1978-2008

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Abstract

Greenland halibut are widely distributed throughout the waters off Labrador and eastern Newfoundland. During the late 1970s and most of the 1980s 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-1980s after which it declined substantially to reach an all time low in the early 1990s 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. By 1999 the stock declined again and by 2002, it reached its lowest point since the early 1990s. Subsequently, the overall stock has increased and current biomass indices in Divisions 2J3K are similar to the estimates from 1995-1999. Recruitment following these strong year-classes appeared weaker at younger ages, yet conversely have appeared to be average or above average at older (commercially selected) ages. 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 well over a decade. This paper updates the Canadian research vessel survey results using data collected in 2008, and compares these results to prior observations. Most of the key indicators from 2008 surveys indicate declines from 2007 level, although the 2008 estimates are subject to some bias as a result of incomplete survey coverage. Recent estimates of recruitment suggest poor stock rebuilding prospects in the near future.

Introduction

The abundance and biomass estimates for Greenland halibut (NAFO Subarea 2 and Divisions 3KLMNO) from random-stratified research vessel (RV) spring and autumn multi-species surveys conduced by Canada are updated for 2008. Stratified mean number and weight per tow are updated for each division, as are age-disaggregated survey indices. Healey and Brodie (2009) review the performance of the Canadian multi-species surveys in 2007 and 2008. In addition, Brodie and Stansbury (2006) provide an overview of the Canadian spring and autumn RV multi-species surveys including detail of survey coverage and timing over 1995-2006. Coverage shortfalls during the fall 2008 survey, particularly in deep water (1000m +), have resulted in Greenland Halibut survey indices which are not directly comparable to the indices in previous years.

Materials and Methods

Canadian Research Vessel Surveys

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. A total of twenty strata in Divisions 2J and 3K were not completed in the fall of 2008. These include the inshore strata (strata 608-616), added to the survey design in 1996. Healey and Brodie (2009) describe the 2008 survey deficiencies in detail, and provide illustrations of the current survey stratification scheme used in Canadian surveys.

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

Surveys have been conducted by Canada in Divisions 3LMNO for many years; 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. 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, inshore strata were added to the Division 3L survey. These strata (strata 784-800, inclusive) have been surveyed in most subsequent years with coverage deficiencies in 1999 (no coverage), 2006 (limited coverage) and 2007 & 2008 (no coverage). In addition to the inshore strata, the fall surveys of Division 3L were not fully completed during the 2004, 2005 and 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. Divisions 3LNO are surveyed annually in the spring and again in the autumn.

Comparative Fishing Exercises

The Canadian autumn survey series has employed various survey vessels and gear types (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 have not been conducted due to poor coverage of depths where most Greenland halibut are encountered.

Survey Coverage and Timing

Fall survey coverage details by NAFO division and depth zone for the true *Campelen 1800* surveys from 1996-2008 are presented in Table 1a. Similar information for the 1996-2008 spring surveys are presented in Table 1b. 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. These gaps in survey coverage increase the uncertainty in the survey results, and introduce bias to the total estimates of biomass and abundance as well as the stratified mean estimates.

Due to mechanical problems with the survey vessels, the duration of the survey period has lengthened in several of the recent years. 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 (2006). Healey and Mahé (2009) investigate the impact of the coverage deficiencies during the fall 2008 survey in Divisions 2J3K on the assessment of this stock.

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. See Evans et al. (2000) for an alternate method of estimating the variability of stratified survey indices.

Age-length keys for Division 2J3KL combined, Division 3MNO combined were applied to the respective individual divisions (sample sizes presented in Table 2a), in order to obtain survey estimates at age. (One exception is that for the age-specific results for Division 2J3K combined – otoliths were only used from Divisions 2J and 3K.) The reduced number of otoliths from the fall 2008 survey is reflective of the decrease in the number of survey sets completed. 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 2b for sample sizes).

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 1990-2008. These relationships were calculated using the model $W=aL^b$; resultant estimates are shown in Table 3. For the years 1978-89, the 1990 estimates were applied. The R^2 value was high for each relationship (Table 3), 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. We emphasize that this underestimation is problematic only for the biomass-at-length results.

Results and Discussion

Geographic Distribution

Figure 1 shows the area covered by this survey and place names referred to in the text. Figure 1 contains distribution plots for the most recent two fall surveys, 2007 and 2008, and for comparison, distribution plots from 1991 (small catches throughout Divisions 2J3K) and 2001 (widespread distribution within 2J3K, large catches along entire slope edge). Distribution patterns in 2007 and 2008 are quite similar to that in 2001, and the average weight caught per set in 2007 is comparable to that in the 2001 survey. Stock distribution in 2008 was similar to that in 2007, but the catches in Divisions 2J3K were higher in 2007 within the Hawke and Cartwright channels, and also the Funk Island Deep. Biomass in the Flemish Pass (Division 3LM deepwater) remains relatively low, despite the concentration of fishing effort in this area. In 2008, large catches were also measured within the Hopedale Channel in Division 2H. A comparison of the 2007 and 2008 distribution gives some spatial indication of the deficiencies of the 2008 survey, though the inshore strata of Divisions 3KL were not covered in either of these years (refer to the 2001 panel).

Trends in Stock Size

Biomass and abundance indices for Division 2G (by stratum) are presented in Tables 4 & 5, respectively; Tables 6 & 7 for Division 2H; Tables 8 & 9 for Division 2J; Tables 10 & 11 for Division 3K; Tables 12 & 13 for Division 3L fall; Tables 14 & 15 for Division 3M; Tables 16 & 17 for Division 3N fall; Tables 18 & 19 for Division 3O fall; Table 20 for Division 3L spring; Table 21 for Division 3N spring; and Table 22 for Division 3O spring. Survey coverage may also be inferred from these tables by examining the number of strata which do not contain survey results. (Table entries with "." indicate that the stratum was not covered by at least two successful fishing sets, whereas values of 0 indicate the stratum was surveyed with no Greenland Halibut captured.)

Within Divisions 2GH, the temporal coverage of the survey has been irregular. Although Division 2G has not been surveyed since 1999, the historical biomass and abundance results (Tables 4 and 5, respectively) are provided. In Division 2H, the biomass index (Table 6) declined from 1978 through the late-1980's (excluding 1979 which was considered to be an anomaly). The index has generally increased since then, and the 2006 estimate of survey biomass is now the second largest in the time-series, exceeded by only the 1979 value. The 2008 survey biomass is an under-estimate, as six strata were not completed during the fall of 2008. Some of these strata have been historically important to the total Division 2H biomass index. 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.

The annual survey series is continuous over 1978-2008 for both Divisions 2J and 3K. In Division 2J the biomass index was generally stable from 1978-84 (Table 8a and b). 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 1998-2007, the biomass index was generally stable. However, the 2006 index value was the largest in the Campelen time-series, predominantly as a result of substantial increases in just two strata in Hawke Channel (strata 208 and 227). The biomass index for 2008 is the second lowest value in the 1995-2008 period, although several of the strata that were not completed in the fall 2008 survey are typically important for Greenland Halibut. Of the strata covered by the 2008 survey, the current biomass estimate is 30% lower than any other year over 1996-2007, i.e. years which the Canadian survey covered down to 1500m. Estimates of abundance were variable throughout the late 1970's and 1980's (Table 9a and b). 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. A sizeable one-year increase in the 2006 value, influenced by large estimates in two strata, has not been subsequently sustained. A comparison of the Division 2J abundance from the strata covered in 2008 over the full 1996-2008 period indicates that the 2008 abundance is the lowest in this time-series.

In Division 3K, the biomass index was variable over 1978-89 at a relatively high level (Table 10a and b). By 1992, it had declined by over 50%, and remained low until 1995. After this time, the biomass index increased rapidly due to recruitment of the strong 1993, 1994 and 1995 year-classes to the survey, increasing steadily until 1999, the highest value in the time series (Table 10a and b). The index decreased rapidly over 1999 to 2002, but has subsequently increased, with a substantial change from 2006 – 2007, with increased survey catches over much of Division 3K. 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 the fourth-largest in the 1995-2008 period. The Division 3K abundance index (Table 11a and b) indicated an increasing trend over most of the 1980's through to the mid-1990's. After 1996, the abundance index has decreased, and the 2005 and 2006 values are approximately half of the survey estimated abundance over 1998-2001. Although incomplete, the 2008 abundance estimate remains above the levels of 2005 and 2006, when the survey was fully completed.

The fall survey biomass indices for each of Divisions 3L, 3M, 3N and 3O are shown in Tables 12, 14, 16 & 18, respectively. 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 (Tables 14, 16 & 18, respectively), particularly so in the deeper waters of Divisions 3NO (>732m) where higher concentrations of Greenland Halibut are typically found. The fall survey coverage problems of 2008 impact each of Divisions 3LNO to various degrees and Division 3M was not surveyed during 2008. Recent estimates of survey abundance indices for Divisions 3M, 3N and 3O (Tables 15, 17 & 19, respectively), are relatively low. The overall combined biomass estimate for Divisions 3LNO is low in proportion to the Subarea 2 + Division 3 total (14% for 2007).

Stock size estimates for the Divisions 3L 3N and 3O spring survey series are shown in Tables 20, 21 and 22, respectively. Each of the estimated biomass indices has declined substantially relative to the late-1990 levels, but recent estimates have shown some improvement since 2002, most notably in Division 3L during 2007, although this estimate is imprecise. Abundance estimates from Divisions 3L, 3N, and 3O spring surveys have been generally declining since the late-1990's. During the spring of 2006 very few strata within Divisions 3NO were sampled, and those covered were at relatively shallow depths (refer to Tables 20-22 for strata coverage).

Stratified Mean Number and Weight (kg) Per Tow by Division

Mean weights and numbers per tow (MWPT and MNPT, respectively) by division are presented in Tables 24a-g and 25a-g, respectively, and the mean weights per tow by Division are illustrated in Figure 3. Note that recent survey values

affected by substantial coverage deficiencies are indicated by different plotting symbols. Mean weight per tow by division with approximate 95% confidence intervals are also plotted in Figure 3. The mean weights per tow show similar trends to the annual swept area biomass series for all Divisions, although some estimates of MWPT and MNPT are biased due to the previously noted deficiencies in survey coverage.

MWPT estimates were highest in the late 1970's for Division 2G and 2H (Table 24a; Figure 3a) then declined to the lowest value in each time series in 1991. Within Division 2H, MWPT has been variable in more recent surveys, with relatively large estimates as compared to Divisions further south. The MNPT trends in each Division (Table 25a) have been similar to the MWPT results.

For Division 2J and 3K, the MWPT are given in Table 24b, as well as Figure 3a. In each division, the MWPT index declined from relatively high estimates of the early 1980's to reach an all time low in 1992. Over the next several years it increased to a peak in 1999 approaching the levels recorded in the early 1980's for Division 3K, compared to about 50% of the early 1980's level for Division 2J. A decline in MWPT from 1999 to 2000 was measured in both Divisions 2J and 3K. The index in Division 2J was stable over 2000-2007, with the exception of a substantial increase in 2006. However, within Division 3K, further declines were observed until 2002, and the index has subsequently increased in each of the past four years, increasing by almost two-fold from 2006-2007. The MWPT estimates in 2008 are substantially lower in 2008 compared to 2007 estimates, but are significantly biased as a result of incomplete 2008 survey coverage. The MNPT results from Divisions 2J and 3K (Table 25b) have been generally consistent over time, but as noted above, recent results indicate a divergence, particularly after 2001.

A comparison of mean weight per tow estimates between spring and fall surveys in Divisions 3LNO during 1996-2008(includes fall 1995 data for Division 3L) is presented in Table 24c-e and Figure 3b (mean number per tow found in Tables 25 c-e). All series indicate declines from the peak values of the late 1990's. Although some increases have been observed in Divisions 3L, 3N, and 3O in recent years (particularly in the 2007 3L spring survey) in general the MWPT indices remain low. Estimates of MWPT from Divisions 3LNO combined over 1996-2008 show that an increasing trend from 2002-2007 (excluding 2006, not surveyed), and the 2008 value is close to the time-series average. We emphasize that indices from fall surveys in Divisions 3NO may not be reliable indicators of the resource due to variations in the survey coverage of the deepwater over the time-series. In addition, recent problems in completing the surveys have affected the coverage of these divisions (e.g. Division 3L in autumn of 2004, Divisions 3NO during 2006 spring survey). The MNPT results (Tables 25 c-e) are similar to the MWPT, and overall the indices have been declining since the late 1990's.

The MWPT index from Division 3M (Table 24f and Figure 3d) has generally been declining since 1998. Note that this 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). Similar trends have been measured in MNPT (Table 25f), and the 2006 (most recent survey) MWPT and MNPT results are amongst the lowest values in the time-series.

Table 24 g and Figure 3e shows a comparison of mean weight per tow in Divisions 2J3K and Divisions 2J3KL from 1995-2008. In general, each of these indices increased up until 1999, subsequently decreased to 2002, and with a consistent increase over the 2002-2007 period. As previously discussed, the 2008 estimates are biased. The Division 2J3K MWPT index resemble trends from the Division 3K index more closely as Division 3K is the larger of the two areas. Figure 4 compares the mean weight and number per tow for Divisions 2J and 3K combined for the entire time series. There was little trend in mean number per tow (Table 25h and Figure 4) up until the early 1990's, after which there was an increase in the index peaking with the highest level observed by 1996. Subsequent to this, the index has steadily declined. The MWPT results presented in Figure 4 indicated that the total stock (as represented by the Division 2J3K index) began to rebuild after 1995 and by 1999 approached near historic highs of the early 1980's. It declined again since then and by 2002 was near the low level that it was during the early 1990s. After 2002, the index has increased steadily to 2007; and although biased, the 2008 survey result is slightly below average.

Trends in Mean Biomass Per Tow by Size Category

Most of the stock biomass resides in Divisions 2J and 3K combined (Tables 26a and b) and these divisions comprise the longest time series of annual survey data throughout the stock area. In order to illustrate the mean biomass per tow trends for important size categories from 1978-2008, the data were combined for Divisions 2J and 3K (Fig. 4). Figure 4 shows trends in mean biomass per tow for Greenland halibut <30 cm, between 31-69 cm and >=70 cm. 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.

The recruitment signal from this index is pessimistic - the current biomass estimate of the < 30 cm size group is amongst the lowest in the Campelen time-series. All recent values are much lower than the high levels driven by the 1993-1995 cohorts. (The 1978-1994 values for the <30cm are likely to '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 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. The 2007 biomass per tow result for Greenland Halibut ranging from 30-70 cm is more than 2.5 times the 2002-2004 average. Such increases are consistent with indications of improvement in the commercial CPUE from various fleets throughout the stock area (Brodie et *al*. (2008), Fernández et *al.* (2008), and Vargas et *al.* (2008)). Investigations of the potential biases by age (discussed in detail by Healey and Mahé (2009)) would suggest that the stratified estimators of mean biomass over lengths from 30-70 cm for 2008 are likely to be negatively biased.

Based upon mean lengths-at-age, the 1993-1995 year-classes would be expected to producing an increase in the 70+cm values in the most recent two surveys. However, the 2007 value for the 70+cm class (0.07 per tow) is well below the series 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. The survey estimates indicate that any recent improvement in the stock has not come from the spawning stock biomass.

Age Composition

Annual stratified mean number per tow at age compositions from the Divisions 2J and 3K combined time series from 1978-2008 are presented in Table 26 and Figure 6. 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 (Tables 26a and b). 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 in the surveys at least up to 14 years old which continued into 2007 (Table 26b). For ages 1-4, the population abundance increased considerably during the mid-1990s as the large 1993-95 year-classes (Table 26b; Fig. 6) recruited to the survey. The mean number of fish per tow for these age classes has generally declined since that time. The current estimates for ages 1-4 are amongst the lowest in the Campelen portion of the time series (1995-2008). In fact, the most recent four survey estimates of the recruiting age groups have been lower than any of the estimates from the previous decade. The abundance of Greenland Halibut ages 5+ increased in the late 1990's on the strength of the prior recruitment, but swiftly declined after 1999. The age 5+ index increased considerably over 2002-2007 (Table 26). In the 2007 survey, the estimate for age 6 is the second largest in the Campelen time-series, and the results for ages 7 through 12 are the largest values, respectively, in this time period. Again, we note that the 2008 estimates are biased. The amount and direction of these biases are likely to differ across age groups and hence it is difficult to compare the 2008 values against previous years. The mean number per tow estimate from the fall surveys of Division 2J3KL is shown in Table 27. Trends are generally consistent with the Division 2J3K index. For comparison, the increase in the data at ages 5+ is compared to index data for ages 6-9, which represents over 85% of landed weight in recent years. Excluding the biased 2008 estimates, the recent trends for the age 6-9 data are similar to estimated trends in several commercial CPUE series.

Age compositions (mean numbers per tow) of Greenland halibut by division from Campelen surveys during 1996-2008 are shown in Table 28a and b. 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.

Age compositions for the Div 3LNO combined spring series (Table 29) demonstrate that younger age groups are typically most abundant in this survey. Observe that almost all of the year classes subsequent to those of 1993-1995 do not appear to be as strong at similar ages. In the previous assessment, the 2007 age 1 estimate was noted for being the second largest age 1 MNPT value over 1996-2007 (Healey, 2008). Yet at age 2, this year-class appears to be of average strength. Also, the strong results reported for ages 6-8 in the 2007 spring survey were maintained only for the 2000 and 2001 year-classes, aged 7 and 8 in 2008. The 2008 age 8 MNPT result is, by far, the largest in the time-series. Survey estimates in for each of these year-classes at young ages (<5) were generally below average.

Mean Length and Weight at Age

Survey estimates of mean length and weight at age within Divisions 2J3K over time are given in Table 30 and Figure 10. 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 - 2008

Survey results for the Canadian fall survey of 2008 are difficult to interpret due to the substantial coverage deficiencies in most Divisions. Over 2005 – 2007, significant increases in Greenland Halibut biomass was 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 preceeded 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.

The 2005 - 2007 2J3K results are unusual in that the length structure (and subsequently, age structure) is unlike anything observed in the Divisions 2J3K Campelen time series. There are relatively few fish at the youngest ages, and the survey values for ages 6 and older in 2007 considerably exceed the average level for each age group. If the survey observations of low abundance at the youngest age groups translate into poor recruitment into the exploitable and spawning stock biomass, then this stock will be under considerable risk of collapse. The survey results for Division 3L and in Divisions 3NO (Figure 7) have similar age distributions. However, within Divisions 3LNO, these patterns have been observed in previous years, and are not a substantial aberration as in the case of the Division 2J3K results. In Divisions 3NO for instance, the changing age structure is reflecting the variations in annual depth coverage.

Recent survey results from Division 3L, immediately south of Divisions 3K, exhibit similar abundance and biomass dynamics to those within Divisions 2J3K. However, the relative increase in the Division 3L biomass index is much smaller than that within Divisions 2J3K.

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 2008 is approximately 30% lower than the 2007 level. However, survey results for the Canadian fall survey of 2008 are difficult to interpret due to the substantial coverage deficiencies in most Divisions. Stock size estimates from 2008 among Divisions and surveys are somewhat variable, but they generally remained relatively low. Recent recruitment results suggest poor prospects for stock rebuilding in the future.

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Table 1a. Summary of successful sets in fall surveys in SA 2+3 in 1995 - 2008. Depth range is given in meters, numbers of sets appear in parentheses.

Year	Division	Ship				Year	Division	Ship			
		Teleost	*W.Templeman*	*A.Needler*	***Total***			*Teleost*	*W.Templeman*	*A.Needler*	***Total***
1995	2G	Not surveyed in 1995				2002	2G	Not surveyed in 2002			
	2H						2H				
	2J	145-948 (84)			84		2J	102-1372 (98)	136-572 (19)		117
	3K	166-1444 (31)	162-494 (100)		131		3K	156-1395 (64)	121-481 (111)		175
	3L	733-1210 (5)	63-640 (161)		166		3L	763-1431 (30)	35-670 (176)		206
	3M	Not surveyed in 1995					3M	818-1403 (26)			26
	3N		40-650 (90)		90		3N	811-1429 (24)	44-675 (70)		94
	3O		63-730 (81)		81		3O	775-1504 (24)	65-696 (75)		99
	1995 fall survey extended into January 1996 (66 sets)				**552**		2002 fall survey extended into January 2003 (128 sets)				**717**
1996	2G	127 - 1436 (47)			47	2003	2G	Not surveyed in 2003			
	2H	122 - 1415 (77)			77		2H				
	2J	126 - 1410 (117)			117		2J	123-1404 (116)			116
	3K	111 - 1368 (115)	126 - 472 (60)		175		3K	151-1474 (118)	115-489 (50)		168
	3L	805 - 1433 (31)	51 - 671 (180)		211		3L	753-1446 (30)	32-702 (175)		205
	3M	784 - 1400 (18)	127 - 707 (68)		86		3M	795-1455 (26)			26
	3N	390 - 1147 (13)		37 - 309 (54)	67		3N		43-727 (70)		70
	3O	68 - 690 (24)	65 - 139 (19)	63 - 304 (15)	58		3O	761-1382 (8)	63-650 (75)		83
					838		2003 fall survey extended into January 2004 (210 sets)				**668**
1997	2G	201-1209 (69)			69	2004	2G	Not surveyed in 2004			
	2H	220-1382 (71)			71		2H	109-1415 (87)			87
	2J	123-1488 (117)			117		2J	127-1365 (115)			115
	3K	143-1431 (155)	117-421 (20)		175		3K	112-1412 (135)	212-549 (16)		151
	3L	161-1436 (71)	35-714 (134)		205		3L	151-522 (4)	44-653 (143)		147
	3M	799-1379 (26)			26		3M	Not surveyed in 2004			
	3N		41-769 (74)		74		3N		40-659 (69)		69
	3O		62-611 (73)		73		3O		63-634 (76)		76
					810		2004 fall survey extended into February 2005 (36 sets)				**645**
1998	2G	143-1488 (34)			34	2005	2G	Not surveyed in 2005			
	2H	98-1473 (83)			83		2H				
	2J	126-1398 (118)			118		2J	118-1427 (108)	172-416 (9)		117
	3K	122-1415 (154)	121-346 (17)		171		3K	150-1334 (26)	136-669 (141)		167
	3L	691-1437 (32)	34-675 (172)		204		3L	803-1351 (7)	50-706 (120)	161-667 (57)	184
	3M	768-1436 (26)			26		3M	Not surveyed in 2005			
	3N	834-1447 (12)	37-1079 (78)		90		3N	776-1445 (17)	42-633 (69)		86
	3O		82-1076 (87)		87		3O	754-1410 (24)	69-649 (75)		99
					813		2005 fall survey extended into January 2006 (86 sets)				**653**
1999	2G	142-1415(69)			69	2006	2G	Not surveyed in 2006			
	2H	104-1454(81)			81		2H	107-1437 (81)			81
	2J	109-1375(115)			115		2J	107-1443 (117)			117
	3K	146-1477(154)			154		3K	153-1384 (93)	109-480 (61)		154
	3L	1366(1)	63-1407 (169)		170		3L	111-1401 (34)	61-641 (151)		185
	3M	853-1403(12)			12		3M	756-1352 (23)			23
	3N		39-664(68)		68		3N		46-650 (70)		70
	3O		58-692(75)		75		3O		63-674 (74)		74
					744						**704**
2000	2G	Not surveyed in 2000				2007	2G	Not surveyed in 2007			
	2H						2H				
	2J	127-1400 (117)			117		2J	127-1494 (115)			115
	3K	113-1379 (159)			159		3K	145-1358 (92)	149-683 (37)		129
	3L	152-1430 (74)	42-447 (102)		176		3L	81-1424 (48)	61-694 (120)		168
	3M	764-1401 (26)			26		3M	768-1404 (26)			26
	3N	747-1419 (24)	46-642 (70)		94		3N	775-1419 (25)	48-652 (69)		94
	3O	752-1424 (24)	62-654 (76)		100		3O	753-1410 (24)	64-632 (75)		99
					672						**631**
2001	2G	Not surveyed in 2001				2008	2G	Not surveyed in 2008			
	2H	999-1466 (8)		117-655 (49)	57		2H	114-1392 (69)			69
	2J	120-1389 (49)		105-574 (71)	120		2J	253-1422 (20)	125-630 (79)		99
	3K	146-1479 (106)	128-439 (55)	170-252 (4)	165		3K	839-1439 (10)	147-608 (52)	148-455 (46)	108
	3L	146-1457 (34)	38-702 (169)	187-203 (2)	205		3L		62-664 (83)	71-332 (43)	126
	3M	763-1407 (26)			26		3M	Not surveyed in 2008			
	3N	739-1410 (24)	45-660 (70)		94		3N		38-643 (64)		64
	3O	803-1391 (22)	67-703 (75)		97		3O		60-661 (66)		66
					764						**532**

Table 1b. Summary of successful sets in spring surveys in SA 2+3 in 1996 - 2008. Depth ranç given in metres, numbers of sets appear in parentheses.

Year	Division	Ship		Year	Division	Ship*	
		W.Templeman	***Total***			*W.Templeman*	***Total***
1996	3L	66-664(188)	188	2003	3L	62-698 (156)	156
	3N	42-665(82)	82		3N	39-681 (79)	79
	3O	65-685(86)	86		3O	63-726(79)	79
			356				**314**
1997	3L	60-681(158)	158	2004	3L	47-710 (151)	151
	3N	35-689(71)	71		3N	44-675 (79)	79
	3O	62-669(81)	81		3O	61-636 (79)	79
			310				**309**
1998	3L	53-721(163)	163	2005	3L	64-672 (133)	133
	3N	38-682(88)	88		3N	45-691 (78)	78
	3O	64-657(93)	93		3O	66-719 (79)	79
			344				**290**
1999	3L	41-692(177)	177	2006	3L	60-701 (141)	141
	3N	40-659(82)	82		3N	46-77 (22)	22
	3O	62-679(86)	86		3O	64-103 (32)	32
			345				**195**
2000	3L	61-681(134)	134	2007	3L	61-702 (137)	137
	3N	45-664(81)	81		3N	44-636 (79)	79
	3O	61-694(83)	83		3O	64-719 (79)	79
			298				**295**
2001	3L	34-695(154)	154	2008	3L	60-684 (122)	122
	3N	40-650(79)	79		3N	40-623 (71)	71
	3O	74-699(79)	79		3O	64-704 (80)	80
			312				**273**
2002	3L	42-710(146)	146				
	3N	40-641(79)	79				
	3O	63-628(79)	79				
			304				

* CCGS *A. Needler* conducted 47 sets in Divs 3NO during 2006 survey.
* CCGS *Teleost* conducted 40 sets in Div. 3L during 2007 survey.
* CCGS *Teleost* conducted 43 sets in Div. 3L during 2008 survey.

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

	Div. 2GH			Div. 2J3KL				Div. 3MNO			
Year	2G	2H	**Total**	2J	3K	3L	**Total**	3M	3N	3O	**Total**
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**

Table 2b. Number of age samples available per division combinations used to develop spring age-length keys. Age-length keys for Div. 3LNO combined were applied to the respective individual divisions.

	Div. 3LNO			
Year	3L	3N	3O	**Total**
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**

*Survey not completed.

Table 3. Length-weight relationships for Greenland halibut, for Division 2J3K, 1990-2008. W = round weight (kg) and L = total length (cm). From 1978-1989, the 1990 annual L/W equations 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

* Survey Incomplete.

Table 4. Biomass estimates (tons) by depth stratum of Greenland halibut from various Canadian surveys in Division 2G during the period 1978-99 (No survey since then). 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
<=200	2773	2773	909	7475	1547	2139	.	.	47	142	.	271	117
	2339	2339	910	11062	1788	1890	.	.	45	23	.	11	128
	1804	1804	925	10644	3064	2508	.	.	.	15	.	.	92
201 - 300	1213	1213	901	7714	7673	7143	2228	2823	623	517	853	.	1526
	585	585	908	607	1960	393	396	139	86	606	587	451	300
	692	692	911	599	879	585	456	29	110	241	975	525	209
	756	756	924	765	1197	1596	556	198	.	225	815	.	384
	433	433	926	.	.	.	.	592	.	426	443	.	301
301 - 400	120	120	902	.	.	.	287	41	.	312	253	67	106
	73	73	912	.	.	.	112	2	.	.	227	87	64
	186	186	923	5650	.	1357	97	317	.	200	195	.	77
	832	832	927	.	.	.	2694	864	.	6729	1623	.	3342
401 - 500	80	80	903	.	832	526	120	123	30	.	112	123	95
	62	62	913	.	.	.	181	170	.	.	34	37	19
	186	186	922	5085	.	1591	.	.	.	.	273	.	195
	783	783	928	.	.	.	4257	1061	.	6949	2957	.	1134
501 - 750	153	153	904	.	4025	1816	770	410	.	.	233	249	198
	113	113	914	.	.	.	377	891	.	.	88	211	63
	142	142	921	.	9314	.	209	260	.	.	470	.	127
	1261	1261	929	.	18966	26440	6809	5045	.	5891	2706	.	.
751 -1000	164	164	905	.	.	.	.	3038	.	.	.	688	481
	96	96	915	.	.	.	.	1835	.	.	.	.	.
	172	172	920	.	.	.	4428	3283	.	.	.	.	.
1001 -1250	229	229	906	.	.	.	40	538	.	.	776	699	795
	146	146	916	.	.	.	.	181	.	.	.	1092	.
	316	316	919	.	.	.	.	579	.	.	1883	.	.
1251 -1500	360	360	907	.	.	.	.	.	.	.	.	.	773
	165	165	917	.	.	.	.	.	.	.	.	.	.
	515	515	918	.	.	.	.	.	.	.	.	.	.
Total Biomass (t)				49600	51244	47985	24016	22419	941	22275	15503	4511	10525

Table 5. Abundance estimates (000s) by depth stratum of Greenland halibut from various Canadian surveys in Division 2G during the period 1978-99 (No survey since then). 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
<=200	2773	2773	909	60505	13478	5054	.	.	496	6379	.	8774	1730
	2339	2339	910	34669	9371	4223	.	.	2413	804	.	572	2181
	1804	1804	925	17917	6080	4632	.	.	.	358	.	.	1551
201 - 300	1213	1213	901	56325	25196	50893	42883	15018	5435	14165	6213	.	13349
	585	585	908	724	30794	241	20376	1288	1100	9013	5195	3380	3139
	692	692	911	1690	2546	3395	20593	190	238	4760	12202	6886	2031
	756	756	924	624	1040	2444	9308	3682	.	4312	6397	.	6898
	433	433	926	.	.	.	.	1866	.	1387	1430	.	1162
301 - 400	120	120	902	.	.	.	435	66	.	2330	998	206	388
	73	73	912	.	.	.	110	10	.	.	899	241	176
	186	186	923	2699	.	793	90	563	.	870	915	.	409
	832	832	927	.	.	.	3411	7554	.	15176	5778	.	9557
401 - 500	80	80	903	.	820	259	138	171	99	.	619	314	286
	62	62	913	.	.	.	230	158	.	.	171	132	47
	186	186	922	2162	.	806	.	.	.	.	819	.	422
	783	783	928	.	.	.	2693	969	.	14756	7827	.	2908
501 - 750	153	153	904	.	2498	663	659	442	.	.	968	579	582
	113	113	914	.	.	.	326	847	.	.	315	567	241
	142	142	921	.	5792	.	166	244	.	.	1391	.	498
	1261	1261	929	.	7849	11391	4718	3556	.	23379	7056	.	.
751 -1000	164	164	905	.	.	.	.	2267	.	.	.	1027	699
	96	96	915	.	.	.	.	1373	.	.	.	.	.
	172	172	920	.	.	.	2904	3005	.	.	.	.	.
1001 -1250	229	229	906	.	.	.	63	252	.	.	973	630	740
	146	146	916	.	.	.	.	40	.	.	.	1306	.
	316	316	919	.	.	.	.	283	.	.	2360	.	.
1251 -1500	360	360	907	.	.	.	.	.	.	.	.	.	371
	165	165	917	.	.	.	.	.	.	.	.	.	.
	515	515	918	.	.	.	.	.	.	.	.	.	.
Abundance (000s)				177315	105464	84795	109103	43844	9781	97689	62525	24612	49365

Table 6. Biomass estimates (tons) by depth stratum of Greenland halibut 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
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
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
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
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
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
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
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
Total Biomass (t)				56300	130030	47835	39539	41694	4946	26062	38628	38988	30730	37682	48222	65849	32311

Table 7. Abundance estimates (000s) by depth stratum of Greenland halibut 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
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
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
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
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
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
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
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
Abundance (000s)				232902	366466	93601	322194	373163	42392	217026	239069	168649	140410	203855	280924	286110	148141

Table 8a. Biomass (tons) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 2J from 1978-1992.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
101 - 200	1427	633	201	257	91	486	439	1620	524	913	91	206	42	21	171	103	34	0
	1823	1594	205	1753	2385	1007	2591	4878	2748	1521	502	283	113	168	126	87	104	16
	2582	1870	206	3384	2279	3315	9691	5703	2647	3370	1545	1399	250	590	217	335	99	75
	2246	2264	207	6538	2707	2153	4177	2601	1921	1526	627	352	93	58	14	0	0	0
	.	733	237	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	778	238	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
201 - 300	440	621	202	1007	1437	1673	1778	1915	1307	4167	563	448	867	.	32	246	164	79
	1608	680	209	4481	15830	15100	8547	19662	8897	5183	6062	2398	1491	1997	2003	1488	574	454
	774	1035	210	956	782	960	549	1845	3694	2268	566	374	281	786	654	908	266	373
	1725	1583	213	2686	1921	4701	5070	6550	4853	3547	6427	3754	1918	1146	494	609	84	301
	1171	1341	214	5954	2893	1904	6928	9277	5862	7527	7489	1398	1923	2598	862	883	176	425
	1270	1302	215	3247	1181	2407	1842	5350	1967	5528	2829	2056	1920	1265	896	1445	750	869
	1428	2196	228	528	1406	3057	1289	1643	1817	2615	1119	1392	889	330	1034	1517	475	424
	508	530	234	7009	4357	3916	3492	5306	2665	4868	1143	922	454	1426	853	386	226	141
301 - 400	480	487	203	2311	4188	1296	2925	3502	11077	12390	1400	6043	1586	2104	4732	2108	2424	587
	448	588	208	7045	4799	6542	10304	15563	5125	19043	17885	8229	4397	3640	9245	8660	2572	2006
	330	251	211	3152	1736	2734	1256	1821	4216	1912	5424	3300	1992	3049	1016	6051	922	352
	384	360	216	2832	6574	6969	2551	7456	4258	6788	3213	1460	2197	170	487	447	166	167
	441	450	222	3064	3243	3729	2527	7887	5835	2964	1850	128	1506	1847	407	865	70	154
	567	536	229	1024	1412	1464	2017	1261	2235	681	1021	985	371	208	233	152	545	783
401 - 500	354	288	204	21544	12476	.	9195	11739	9016	8750	728	8930	6466	6227	20968	5584	3045	2276
	268	241	217	4717	1845	3767	1192	1694	1595	.	3480	2589	1325	1349	181	1012	164	100
	180	158	223	1711	1208	2623	1635	1622	1106	1893	1358	2065	462	1134	306	574	72	75
	686	598	227	6618	2186	5935	3056	3822	2768	2565	2912	1652	3068	2352	4044	3232	1101	1937
	420	414	235	5146	4006	5923	2000	4265	10840	3224	3269	7547	4825	2789	6721	8779	661	609
	.	133	240	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
501 - 750	664	557	212	11338	15580	7520	9579	9423	3113	4609	7201	23242	21891	4953	2937	5488	1658	2331
	420	362	218	11403	.	5223	6388	1767	1695	.	1461	3151	2308	2513	859	2077	1096	174
	270	228	224	2250	3012	1067	2825	1182	1438	1167	847	5782	1554	1661	89	374	248	191
	237	185	230	2124	.	4016	1823	769	2452	629	766	2386	1369	1273	1063	1268	903	1647
	.	120	239	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
751 -1000	213	283	219	.	.	.	1005	.	2120	.	1664	6187	1872	1104	791	2015	293	253
	182	186	231	2634	.	3261	.	1805	1117	1842	2372	580	791	2975	.	2131	574	730
	122	193	236	.	.	.	640	946	1287	718	1113	2478	1199	182	.	1390	1501	593
1001 -1250	324	303	220	1571	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	177	195	225	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	236	228	232	870	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1251 -1500	286	330	221	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	180	201	226	99	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	180	237	233	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total Biomass (t)				129254	99533	102747	107311	142873	110193	112208	86927	101716	69422	49917	61433	60215	20968	18121

Table 8b. Biomass (tons) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 2J from 1993-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
101 - 200	1427	633	201	6	27	.	82	26	91	0	65	27	133	11	135	50	27	491	33
	1823	1594	205	6	14	.	514	35	502	532	281	863	754	706	1055	990	245	1769	530
	2582	1870	206	28	132	399	1120	404	349	403	357	1367	1586	890	813	1079	404	617	835
	2246	2264	207	0	33	1	56	51	74	192	16	208	35	192	118	30	15	160	51
	.	733	237	0	0	0	1	4	19	320	0	5	42	3	0	37	0	280	17
	.	778	238	.	7	.	15	0	79	0	53	27	6	54	81	18	8	696	43
201 - 300	440	621	202	8	307	95	89	157	593	1685	574	2215	491	871	2260	898	797	901	876
	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
	1725	1583	213	302	422	236	1338	1146	1962	1426	893	2332	1336	1950	1163	1325	3620	2343	2776
	1171	1341	214	1064	507	327	4057	1258	1502	1883	1204	1930	485	1337	2500	2520	3241	2087	1904
	1270	1302	215	1349	855	1370	1247	1448	1889	1986	1139	1967	3499	1360	1592	3091	1633	1920	909
	1428	2196	228	967	2749	2219	5478	3666	4356	2566	2870	2803	1850	1175	2858	3626	3389	3339	891
	508	530	234	895	129	.	163	753	352	311	122	349	75	1237	54	1367	327	671	337
301 - 400	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
	441	450	222	170	535	122	1672	930	382	751	995	1151	1086	322	371	164	593	289	637
	567	536	229	246	1202	1799	3900	1940	2514	1206	1639	1591	1123	2336	439	728	3408	625	1607
401 - 500	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
	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
501 - 750	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
751 -1000	213	283	219	639	1579	2021	405	1727	2249	1402	1731	1297	621	1248	1156	374	761	1083	.
	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	.
1001 -1250	324	303	220	.	.	.	1296	503	1196	.	568	786	749	1480	1116	871	472	3420	.
	177	195	225	.	.	.	835	693	655	478	175	1219	65	171	112	481	186	408	319
	236	228	232	.	.	.	717	935	627	1787	1063	1146	626	56	714	502	300	1001	666
1251 -1500	286	330	221	.	.	.	131	1246	692	567	401	268	654	124	166	249	17	469	.
	180	201	226	.	.	.	277	407	1313	626	400	368	243	756	217	217	334	185	.
	180	237	233	.	.	.	889	596	542	418	628	844	938	438	195	233	566	662	442
Total Biomass (t)				25880	27786	35591	64772	82095	62111	87147	54858	65777	53590	59769	59135	61078	105925	57733	37444

Table 9a Abundance (000s) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 2J from 1978-1992.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
101 - 200	1427	633	201	654	1669	1570	4515	1865	523	2487	1832	118	196	1080	2895	393	916	0
	1823	1594	205	8777	7147	6457	11159	23615	2981	2382	18275	1505	1304	418	2784	658	752	63
	2582	1870	206	21666	20201	9184	71327	9314	4186	4133	23036	4295	4262	4212	1694	1808	6097	3694
	2246	2264	207	16838	6921	4202	5287	4820	4109	1324	7011	1545	225	2692	649	0	0	0
	.	733	237	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	778	238	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
201 - 300	440	621	202	3768	8353	5947	6446	10774	1604	6567	6234	817	3934	.	182	2088	3813	444
	1608	680	209	13530	45061	22673	10396	19405	11660	5246	12166	6383	1797	5397	10175	4830	2654	2654
	774	1035	210	5491	1012	1022	3230	2200	3780	2502	2209	1171	772	1952	1544	1562	852	5704
	1725	1583	213	5254	1017	2877	4944	9658	3109	3607	26577	5352	1977	4271	1345	3352	712	8792
	1171	1341	214	9274	1101	3286	14755	5739	3947	5638	20807	2524	4618	2175	1638	4382	3383	12323
	1270	1302	215	17317	4542	15592	8491	6639	2621	10366	32058	16422	2920	5341	9288	9725	6383	16212
	1428	2196	228	917	1604	1807	1637	864	1244	2301	1740	1801	2133	1061	4395	4715	2619	4440
	508	530	234	28190	22799	14518	28267	12695	4589	7687	4449	3075	6662	6918	5556	2341	1468	4216
301 - 400	480	487	203	8716	20491	4226	19710	11313	22142	70783	4380	21856	5547	12810	16683	14725	16463	6119
	448	588	208	10637	12926	8119	14791	31163	6933	16455	32827	15314	15746	6255	22525	22925	14072	24610
	330	251	211	4903	3632	4058	2542	3110	5311	2678	6144	6106	12824	10214	3881	16388	4984	3125
	384	360	216	1726	3024	3249	2932	2747	1074	3486	1770	1796	2404	792	1400	1875	370	599
	441	450	222	1626	1031	1320	971	3074	1557	1193	1062	243	1486	910	607	3337	324	586
	567	536	229	507	1190	799	585	585	1034	286	858	2002	286	78	520	273	1430	3900
401 - 500	354	288	204	133064	82687	.	80982	35662	22254	17093	3068	15169	30825	14658	52836	20867	24933	19284
	268	241	217	1696	645	866	387	553	369	.	1843	1677	774	774	258	1807	406	221
	180	158	223	570	322	582	458	483	310	669	631	1350	248	681	483	1770	190	239
	686	598	227	5143	944	5426	3067	2397	1203	1416	2548	1887	7903	3271	12386	6323	3130	7455
	420	414	235	7511	6355	7453	8291	9841	20106	3486	3149	12740	10313	5287	15599	24439	1521	4410
	.	133	240	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
501 - 750	664	557	212	17446	21648	8632	4978	6376	1736	4110	7627	25088	20894	7307	3928	8586	3014	6303
	420	362	218	3958	.	1156	1271	404	433	.	664	1156	1531	1184	867	3987	1473	404
	270	228	224	650	817	279	799	371	576	371	390	1857	761	854	149	594	557	316
	237	185	230	636	.	1369	489	261	1157	196	424	913	864	864	815	1206	1744	3912
	.	120	239	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
751 -1000	213	283	219	.	.	.	234	.	659	.	440	5538	967	557	674	1494	542	1392
	182	186	231	964	.	1527	.	789	325	1239	1452	351	588	2153	.	1377	951	1252
	122	193	236	.	.	.	227	344	646	260	638	1418	613	76	.	1393	1636	1133
1001 -1250	324	303	220	513	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	177	195	225	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	236	228	232	325	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1251 -1500	286	330	221	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	180	201	226	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	180	237	233	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total No. (000s)				332313	277137	138197	313166	217059	132178	177961	226308	161466	145374	104242	175753	169218	107390	143801

Table 9b. Abundance (000s) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 2J from 1993-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
101 - 200	1427	633	201	87	131	.	2235	218	740	0	958	305	392	218	1350	522	1219	6418	653
	1823	1594	205	157	146	.	16190	767	4105	4276	1759	10624	16205	9622	7528	13595	3712	20319	7236
	2582	1870	206	161	2315	22586	42257	5071	4336	5549	15413	29015	37704	16515	9801	22306	3197	7187	11557
	2246	2264	207	0	208	78	1142	519	727	857	381	1077	379	1458	1285	346	173	1048	583
	.	733	237	0	0	0	101	34	202	2790	0	50	192	38	0	336	0	1770	451
	.	778	238	.	2569	.	321	0	603	0	759	71	245	107	617	212	71	4120	238
201 - 300	440	621	202	214	4328	732	1068	2772	4046	22296	3930	22424	5894	14711	28105	10977	10550	12216	8483
	1608	680	209	2557	6501	3555	17149	4116	1666	41034	8419	1608	13277	17060	5238	2650	28339	10704	1471
	774	1035	210	5944	641	17946	49120	5232	9966	9682	3915	8839	55598	21550	9824	1886	8614	8934	3755
	1725	1583	213	8347	10090	4609	33785	17703	16223	18872	15316	31344	19448	25177	11469	11982	57851	21957	24979
	1171	1341	214	21657	17678	17525	102676	13946	9703	22210	18927	18652	3616	12913	23465	25088	22837	15726	31757
	1270	1302	215	13146	7988	18080	14129	22364	13051	13433	10961	33998	40295	15536	13110	35248	16836	25110	11975
	1428	2196	228	10909	51858	42618	112816	40114	34324	20882	33305	35242	21339	12472	21977	17181	20013	18842	4765
	508	530	234	8640	802	.	2625	5209	1786	1005	620	1094	401	8603	365	9806	1750	3572	2041
301 - 400	480	487	203	13633	11690	3153	5862	19093	27969	19320	13164	37956	8953	37650	82434	10216	24548	17887	13726
	448	588	208	10111	40470	43881	75750	122273	32031	67095	50294	45512	43569	25277	50149	39917	95445	22378	11643
	330	251	211	17540	8908	12534	16642	16470	3930	22424	4713	18264	22157	17592	11688	18611	17437	6014	4926
	384	360	216	1510	1808	300	2284	4209	5401	3032	6983	4581	1560	4266	2625	1808	3169	1089	3720
	441	450	222	867	18777	1238	11620	5076	1802	2259	5571	4640	9237	3064	3621	1238	1764	1021	1843
	567	536	229	1180	14157	24774	14857	6890	13972	3281	7189	5510	12498	17843	1512	2359	12682	922	7078
401 - 500	354	288	204	24682	28327	21397	26841	62076	51107	20444	50711	43690	11073	95691	67614	68221	51206	25335	27042
	268	241	217	1061	751	583	3599	2254	1936	2105	2188	8789	1828	1250	928	2967	1127	309	580
	180	158	223	283	942	1695	1883	1043	1720	1272	.	815	1363	685	1511	716	989	348	263
	686	598	227	6773	11039	3743	34184	35002	7486	46025	16946	16740	6299	36401	4748	18056	96369	14437	5228
	420	414	235	5999	6378	19335	25337	41431	13753	17414	14260	19161	24375	36961	7774	11378	10479	7802	1493
	.	133	240	320	427	3061	1601	1336	672	1491	448	1088	1976	924	357	311	1162	249	277
501 - 750	664	557	212	22412	5670	20151	25042	44440	11915	49344	13485	13366	30998	20228	12681	9118	10932	14186	11136
	420	362	218	573	373	3818	5951	3205	3231	2238	1369	2589	1942	1455	1818	1195	1145	398	203
	270	228	224	188	1077	889	2023	1286	934	608	1506	800	641	502	627	690	706	125	372
	237	185	230	305	1120	2799	3084	3932	1400	4428	1552	1377	2065	865	611	356	865	585	560
	.	120	239	22953	10367	11193	18970	21936	36305	34310	8955	15341	4284	30415	33980	5175	23440	12752	7597
751 -1000	213	283	219	915	2063	5586	547	2180	3523	2219	2745	1995	1505	1875	1732	553	940	1129	.
	182	186	231	832	1254	760	1663	1151	3425	2815	4618	3915	2738	572	996	806	1804	1950	1343
	122	193	236	1208	195	3270	850	504	1043	1513	982	1412	1128	916	491	531	717	996	.
1001 -1250	324	303	220	.	.	.	1751	646	1005	.	688	634	1227	1646	1096	959	333	3485	.
	177	195	225	.	.	.	845	563	590	644	228	1419	104	151	161	438	161	322	335
	236	228	232	.	.	.	643	737	748	2371	1349	1354	688	128	725	643	282	952	439
1251 -1500	286	330	221	.	.	.	78	931	402	318	363	141	636	136	182	129	26	268	.
	180	201	226	.	.	.	140	221	1078	512	415	401	269	1009	290	240	332	180	.
	180	237	233	.	.	.	359	342	560	538	717	880	994	391	261	228	505	592	326
Total No. (000s)				205162	271047	311890	678016	517293	329415	470904	326101	446712	409089	493875	424743	348995	533728	293637	210076

Table 10a Biomass (tons) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 3K from 1978-1992.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
101 - 200	.	798	608	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	445	612	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	250	616	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1455	1347	618	.	.	.	.	.	.	263	874	49	17	31	70	0	0	0
	1588	1753	619	.	.	.	.	.	.	685	401	108	41	26	78	0	0	0
201 - 300	.	342	609	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	573	611	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	251	615	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2709	2545	620	18712	9129	9090	9404	7175	6302	4074	5095	4164	2108	3737	583	451	899	152
	2859	2537	621	41597	36475	15203	11844	6287	12035	6600	12389	2323	4458	3166	4278	485	1151	2264
	668	1105	624	837	878	491	305	467	232	527	434	298	445	196	310	288	335	413
	447	.	632	204	147	620	344	426	187	.	394	133	86	49	81	384	111	267
	1618	1555	634	1482	1819	1196	1233	3348	1410	1293	1157	877	1919	776	587	707	526	296
	1274	1274	635	1548	960	3092	2074	3013	1388	1668	773	1924	1932	910	1335	307	46	88
	1455	1455	636	1650	872	2155	2163	3642	792	1299	861	806	353	852	701	401	240	282
	1132	1132	637	723	575	907	1180	1366	2275	662	1780	1441	1349	700	466	818	293	144
301 - 400	.	256	610	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	263	614	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	593	617	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1027	494	623	16992	3898	9646	10319	16038	24364	29298	8090	18912	14251	17661	11384	4603	5417	2598
	850	888	625	1915	1387	1530	3242	822	5794	3856	4936	3449	5773	3204	847	3881	2176	484
	919	1113	626	7394	4470	14225	6023	11576	11302	20810	13944	16278	8319	12970	11682	3365	3698	5003
	1085	1085	628	4700	4183	8400	2305	1867	5126	4652	9824	9477	5858	6368	4150	2513	902	590
	499	495	629	532	834	1790	2004	4063	3706	1779	1335	2978	5191	7176	4634	1053	385	1058
	544	332	630	2056	800	1368	7048	.	4258	485	2244	1861	4436	4313	3075	2065	2188	917
	2179	2067	633	2393	2472	4271	2834	2296	3115	3219	3432	4445	5532	3380	5842	5285	3440	2813
	2059	2059	638	4198	3427	2615	4854	4801	4371	2922	7321	5983	4382	3057	2972	6809	1993	2625
	1463	1463	639	1031	1254	1385	1266	3321	2174	436	872	1288	703	653	511	854	766	1175
401 - 500	.	30	613	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	632	691	622	16724	8517	3448	10766	7914	14953	8922	4742	36448	12755	17950	13695	30531	6256	4326
	1184	1255	627	11452	5878	9820	24040	16903	27637	38222	18219	33516	21372	21502	37862	18637	10870	4355
	1202	1321	631	8523	3909	4910	8787	5115	8693	12698	9456	8334	15010	11317	17190	4993	16791	3570
	198	69	640	835	.	1177	756	531	.	344	398	204	417	163	225	367	310	130
	204	216	645	462	.	336	534	434	97	1157	1055	.	613	351	81	460	103	213
	.	134	650	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
501 - 750	584	230	641	776	1647	2245	1521	1622	3609	3924	1384	.	1367	.	.	2661	651	440
	333	325	646	2231	3156	1852	2656	590	2959	3167	2337	.	1143	.	.	449	1083	375
	.	359	651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
751 -1000	931	418	642	2417	.	3824	1134	3305	.	8496	3279	.	2722	.	.	4475	4484	9225
	409	360	647	7096	2019	3855	3634	1817	.	.	4473	.	.	.	.	3857	1197	655
	.	516	652	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1001 -1250	1266	733	643	1254	1364	.	.	.	.	.	.	.	.	.	.	.	.	.
	232	228	648	406	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	531	653	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1251 -1500	954	474	644	1890	783	.	.	.	.	.	.	.	.	.	.	.	.	.
	263	212	649	366	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	479	654	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total biomass (t)				162396	100851	109450	122269	108737	146777	160510	120223	155137	122493	120451	122490	100699	66310	44458

Table 10b Biomass (tons) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 3K from 1993-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
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	.	.
	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
201 - 300	.	342	609	.	.	.	117	386	202	.	177	8	8	86	96	43	68	.	.
	.	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
	2859	2537	621	972	1021	1068	3967	1320	2524	858	1495	113	1149	1870	1856	185	639	1221	565
	668	1105	624	1017	754	508	2516	1610	1752	1805	1186	2358	1027	258	1950	2825	723	1112	420
	447	.	632	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1618	1555	634	990	962	727	2370	2144	1321	1933	1197	2195	1493	455	497	1930	3313	2820	1813
	1274	1274	635	99	41	128	1344	1545	1266	971	491	215	125	167	0	1052	.	1008	334
	1455	1455	636	829	398	1393	2336	1171	1054	1002	1015	641	699	303	747	1138	1948	2052	5157
	1132	1132	637	435	119	179	1722	869	2008	1145	.	526	393	403	1095	983	1138	734	472
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
	1027	494	623	1672	1931	308	3588	1938	6167	3346	4322	5040	3698	1732	4159	1152	591	2533	2215
	850	888	625	3229	2385	1437	4381	3075	3944	6783	3649	6294	917	649	6723	3701	1394	3747	1935
	919	1113	626	3469	4263	1962	5453	10283	9604	18305	3890	2111	3683	4768	6046	2328	5332	28371	15373
	1085	1085	628	1438	1372	529	1799	2685	3116	10764	5142	2763	719	1366	2837	4019	4444	5761	7311
	499	495	629	1324	1337	2682	6569	2179	6214	5900	4291	1429	622	354	518	3839	7928	5502	4226
	544	332	630	1274	1331	858	4800	3261	1561	5114	3821	4474	1429	1226	1100	3012	2633	2286	2900
	2179	2067	633	4511	2868	4649	3487	6739	4178	7634	3474	6544	3178	3528	2288	6802	7941	8104	3911
	2059	2059	638	2804	1908	1750	3952	7031	8115	2400	4792	2535	1686	2512	3399	5441	2775	9432	3905
	1463	1463	639	1718	872	1520	1381	1556	1266	1183	2362	2114	1330	1120	1667	937	862	1830	5228
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
	1184	1255	627	31882	7308	18946	15576	22176	25568	45497	42775	11732	11721	12754	18257	22914	21080	36798	22020
	1202	1321	631	9779	9453	10094	25499	14500	13683	18514	23958	20494	15856	13580	8550	17899	15925	20469	14880
	198	69	640	77	111	179	105	59	37	39	144	103	44	96	39	25	165	56	54
	204	216	645	110	108	357	192	162	75	114	446	253	242	140	180	186	387	123	80
	.	134	650	193	338	252	147	242	224	39	.	18	109	162	20	193	188	64	167
501 - 750	584	230	641	411	109	227	394	197	369	1020	.	558	62	602	192	151	1382	329	280
	333	325	646	105	463	327	564	1180	158	84	436	811	205	323	239	122	291	717	130
	.	359	651	704	894	1222	321	1361	1016	734	.	2603	899	754	199	508	1104	1595	407
751 -1000	931	418	642	1541	2336	1741	760	2036	2513	3081	2134	2677	892	1074	942	4877	1962	1991	1268
	409	360	647	2413	1829	1087	749	2025	2961	2191	2465	3228	1301	1503	819	4436	1835	1434	.
	.	516	652	2242	1445	2366	3585	2575	4843	3246	2591	6162	1366	2990	2034	3554	1247	2807	1169
1001 -1250	1266	733	643	.	.	1487	2121	6830	5453	3480	1537	4660	2815	890	1865	2469	5074	3120	.
	232	228	648	.	.	.	1641	1118	1687	1552	624	2891	763	475	376	186	422	1274	.
	.	531	653	1718	.	1583	2306	1643	3660	3927	3045	2514	477	933	668	542	1344	1787	937
1251 -1500	954	474	644	.	.	688	870	2036	2845	1480	1917	2084	137	998	760	1082	735	2436	.
	263	212	649	.	.	.	387	1083	282	681	622	908	174	1125	427	437	87	172	.
	.	479	654	.	.	1376	1016	3612	4808	3358	2287	4953	252	973	981	1241	773	1722	.
Total biomass (t)				89603	53988	69206	120336	130547	142196	175632	143329	128721	67000	71453	90509	112580	110175	179096	121955

Table 11a Abundance (000s) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 3K from 1978-1992.

Depth Range (m)	V1 Area	V4 Area	Stratum	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
101 - 200	.	798	608	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	445	612	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	250	616	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1455	1347	618	.	.	.	.	.	.	1451	5437	560	114	1134	1426	0	0	0
	1588	1753	619	.	.	.	.	.	.	18849	28835	7471	1311	1623	3195	0	0	0
201 - 300	.	342	609	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	573	611	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	251	615	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	2709	2545	620	79313	26011	22483	45352	21324	19900	10750	22838	22690	14773	32669	5143	2691	6734	870
	2859	2537	621	163739	93030	31584	74868	31379	45130	23738	93419	30733	41918	22142	41850	5435	8102	39198
	668	1105	624	2704	1424	1999	781	391	758	1080	1723	459	1378	1409	1562	735	1470	6065
	447	.	632	228	261	307	154	307	512	.	389	154	307	31	123	2552	498	3008
	1618	1555	634	5911	2281	2798	3180	13334	2048	1812	3809	5564	8964	3079	3466	3021	2822	5475
	1274	1274	635	9561	2256	6630	6239	9674	4352	4009	2479	10077	12852	7150	7035	1227	307	818
	1455	1455	636	11409	1544	3374	5071	9267	2102	1651	1451	6355	2488	3603	2522	1658	1401	7939
	1132	1132	637	3841	3070	2492	3140	3404	5357	1220	2558	8409	3659	6443	1308	2336	2388	1038
301 - 400	.	256	610	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	263	614	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	593	617	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1027	494	623	62444	10278	18366	40758	31561	51095	62359	26654	56934	33624	79255	55309	18620	33247	34895
	850	888	625	3079	6595	3410	7308	877	8692	4888	11482	10835	27390	14996	4151	16077	16643	7912
	919	1113	626	37167	10366	35220	15903	19924	35302	45005	47205	67065	46497	58431	48166	20891	21491	58068
	1085	1085	628	13497	7582	15672	5572	4702	14851	10426	30622	30448	19493	30328	12649	7731	4826	7562
	499	495	629	2826	2025	3062	5858	9644	8763	3569	4256	9930	19586	42181	27663	3398	1853	6384
	544	332	630	10514	2114	3405	12684	.	9429	798	6511	6960	21053	17311	14143	8905	11000	6486
	2179	2067	633	2864	4167	4286	4871	5824	3122	3717	3322	14238	25233	5733	18794	19347	13644	18848
	2059	2059	638	9099	5161	4123	9772	9800	11124	4504	16531	12958	9234	5877	6669	16365	4724	22625
	1463	1463	639	1096	956	1174	1409	6118	1294	453	1258	6876	1093	973	1509	2300	2147	10739
401 - 500	.	30	613	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	632	691	622	146318	18866	6781	41426	10201	19822	17431	22691	126974	33182	74999	78998	126018	44426	65813
	1184	1255	627	64905	20088	26874	44410	46628	47016	75267	48629	106258	115015	63455	166401	77527	55702	68189
	1202	1321	631	60931	15102	11574	15311	6945	14881	13459	32503	21537	62006	34558	74737	17747	65120	23920
	198	69	640	912	.	586	272	300	.	150	254	123	381	95	259	558	763	436
	204	216	645	225	.	112	196	131	182	449	318	.	463	225	126	814	206	767
	.	134	650	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
501 - 750	584	230	641	362	1125	1366	803	964	2116	2330	864	.	1044	.	.	3615	924	924
	333	325	646	527	1031	618	962	137	802	1145	1619	.	321	.	.	321	2046	687
	.	359	651	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
751 -1000	931	418	642	1217	.	1921	768	2412	.	4120	2433	.	1614	.	.	4184	5635	16265
	409	360	647	3516	703	1688	1210	816	.	.	2082	.	.	.	.	3207	1500	1107
	.	516	652	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1001 -1250	1266	733	643	522	348	.	.	.	.	.	.	.	.	.	.	.	.	.
	232	228	648	96	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	531	653	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
1251 -1500	954	474	644	394	328	.	.	.	.	.	.	.	.	.	.	.	.	.
	263	212	649	145	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	.	479	654	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total No. (000s)				699361	236713	211905	348277	246062	308649	314629	422171	563608	504993	507699	577204	367279	309619	416037

Table 11b Abundance (000s) by stratum (converted to Campelen units from 1978-94) from Canadian fall surveys in Division 3K from 1993-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
101 - 200	.	798	608	.	.	.	0	293	110	.	0	63	37	0	37	63	0	.	.
	.	445	612	.	.	.	0	857	0	.	31	0	92	0	0	35	0	.	.
	.	250	616	.	.	.	0	34	120	.	17	0	0	0	0		0	.	.
	1455	1347	618	0	53	3330	226	93	139	124	62	0	803	1805	834	226	112	762	0
	1588	1753	619	0	0	841	425	448	0	121	95	34	208	1160	543	90	60	69	34
201 - 300	.	342	609	.	.	.	839	1506	602	.	349	47	47	528	753	107	256	.	.
	.	573	611	.	.	.	465	1340	586	.	90	109	709	2102	828	158	744	.	.
	.	251	615	.	.	.	236	432	784	.	138	200	0	104	17	104	259	.	.
	2709	2545	620	233	7702	8286	50340	10662	8370	8816	36955	7433	15989	9484	10722	4119	6754	7416	908
	2859	2537	621	8531	12044	17351	40571	14182	14778	3966	10239	2169	9935	16293	19500	2334	6539	15250	2844
	668	1105	624	14571	20622	9987	41839	15930	17967	14677	10519	34688	14508	3557	13984	14927	5047	5545	6120
	447	.	632	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	1618	1555	634	10642	10321	12468	28382	18641	11979	10390	6369	26367	12868	3893	3102	9334	31373	19713	44552
	1274	1274	635	643	131	1057	11407	17490	11602	6975	4431	846	779	1297	0	4881	.	8850	1428
	1455	1455	636	13810	8406	19987	26446	9607	5504	5504	6829	5296	6635	2273	5204	4248	4337	5738	11737
	1132	1132	637	3737	8743	3512	11087	6167	10713	5025	.	5853	2685	2647	7762	5083	4018	2918	2120
301 - 400	.	256	610	.	.	.	2195	4560	7343	.	9191	11171	1461	6061	4349	3504	1080	.	.
	.	263	614	.	.	.	1369	3021	923	.	1318	326	247	724	2098	1194	2476	.	.
	.	593	617	60446	45722	64933	45872	39808	22113	17998	14955	52343	15541	23140	28823	12236	24508	46334	9666
	1027	494	623	21321	19594	3228	51938	23445	32102	22561	28065	38176	67140	49177	37036	8087	5946	18246	16185
	850	888	625	41573	41980	18861	69363	28279	37542	28615	22904	43640	9725	4611	50480	21499	10994	14811	7546
	919	1113	626	36745	39756	15421	61923	132559	64794	84650	35409	34372	41059	71470	32497	9282	30216	113817	54720
	1085	1085	628	13980	8557	3974	11330	26358	12955	30657	32507	15530	5048	8969	20482	14746	13963	15075	20597
	499	495	629	9964	9976	23208	55189	18794	37008	35306	25834	8677	3329	2928	3419	11474	17500	20186	13505
	544	332	630	14310	9286	9215	31901	32380	12240	25141	29679	27676	12240	8837	4362	11354	11192	14226	11806
	2179	2067	633	53772	35827	54535	31687	47011	16523	37329	13147	39049	22404	27928	16270	17349	28067	22807	13813
	2059	2059	638	24967	33314	26066	44481	46671	38835	9072	14615	16777	12103	20505	16218	16840	6093	20823	6702
	1463	1463	639	17173	16628	22428	9276	9224	4595	3815	11347	10546	11770	6105	9258	3211	2348	3019	8952
401 - 500	.	30	613	.	.	.	448	1577	549	.	586	66	49	279	2795	273	686	.	.
	632	691	622	56296	72546	39289	132742	104560	64289	73410	52914	69929	41540	44447	66633	32181	26172	53072	56298
	1184	1255	627	358859	96592	225916	116359	206365	158172	160052	151814	69006	78084	70512	98534	68017	68643	110834	66370
	1202	1321	631	103337	111802	128176	162295	96509	65419	78684	100559	84520	82638	65215	43794	48446	44232	58634	34463
	198	69	640	326	494	1429	377	142	104	66	242	218	152	380	89	57	195	62	55
	204	216	645	436	396	1590	624	393	211	178	1040	465	475	461	267	330	490	178	158
	.	134	650	1057	2258	2120	654	691	479	100	.	28	344	544	37	328	240	90	161
501 - 750	584	230	641	1371	475	886	1076	348	902	1951	.	1076	199	1535	316	323	1962	413	337
	333	325	646	343	1371	1185	1321	2347	335	201	700	1140	492	827	536	103	425	792	143
	.	359	651	2799	4309	5778	840	2609	2692	1449	.	4628	1834	2321	321	771	1728	2234	370
751 -1000	931	418	642	3872	6383	3364	1179	3179	4284	4773	3092	3524	1294	1827	1179	7073	2358	2243	1150
	409	360	647	2806	3797	2649	1411	3417	5497	3615	2894	4383	1931	2674	1358	5769	2030	1560	.
	.	516	652	6246	4277	4969	6637	4969	10470	4933	3336	8239	1810	5324	2910	4401	1333	2910	1100
1001 -1250	1266	733	643	.	.	2252	2252	9109	8470	4403	1888	5411	4045	1255	1837	3798	5042	3197	.
	232	228	648	.	.	.	1786	1555	2368	2478	737	3595	958	596	470	157	282	1291	.
	.	531	653	1437	.	2264	2849	2131	6063	5750	4325	2854	621	986	840	657	1278	1483	730
1251 -1500	954	474	644	.	.	565	587	1891	2706	1695	2013	2237	163	1369	685	1108	652	2252	.
	263	212	649	.	.	.	160	1094	204	619	617	802	167	1183	423	442	77	158	.
	.	479	654		.	1120	988	4159	6109	3594	2519	5727	297	937	1167	1263	758	1721	
Total No. (000s)				885602	633361	742239	1063373	956834	709549	698691	644371	649233	484453	478268	512769	351981	372466	598731	394570

Table 12 Biomass estimates (t) of Greenland halibut from Canadian fall surveys in Div. 3L using a Campelen trawl during 1995-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
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	24	0	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	0
	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	0
	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	59	0	1	.	.
	.	261	788	.	0	45	31	.	0	0	0	0	0	4	10	.	.
	.	89	790	.	0	6	6	.	25	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	0	4	.	0	0	0	0	0	6	0	.	.
184 - 274	1494	1582	344	16	11	96	885	181	42	0	7	17	918	761	797	661	1783
	983	983	347	2	0	37	1021	297	160	88	28	0	476	338	1123	281	1903
	1394	1394	366	204	338	878	2172	2108	62	265	689	119	.	2545	2185	2261	2365
	961	961	369	72	108	888	2347	719	85	296	55	278	.	3319	1720	829	2690
	983	983	386	126	447	1010	1683	1129	473	337	998	453	.	3491	1741	652	758
	821	821	389	71	900	875	474	673	727	1143	531	563	706	244	644	416	601
	282	282	391	177	344	892	257	135	379	89	135	448	144	192	262	68	170
	.	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	.	.	.
	.	100	798	.	76	108	152	.	226	19	50	38	806	1096	.	.	.
275 - 366	1432	1432	345	937	3747	1775	4359	1665	2659	1249	2344	2052	3998	2282	2488	2996	5552
	865	865	346	2237	5483	2378	2062	1312	1021	1224	1045	4602	3555	3908	2960	2027	3288
	334	334	368	385	690	338	2272	860	857	871	1829	1059	.	1106	581	968	2950
	718	718	387	1546	1765	1614	1609	5284	4897	4503	661	1147	.	586	2336	3862	1246
	361	361	388	310	711	814	380	270	704	993	309	554	431	317	582	1047	388
	145	145	392	69	500	618	215	170	234	116	53	266	165	137	77	93	61
	.	175	796	.	37	355	289	.	154	96	41	2	318	385	380	.	.
	.	81	800	.	.	313	517	.	233	191	215	52	636	725	.	.	.
367 - 549	186	186	729	215	648	496	242	239	1002	438	100	218	139	13	103	149	81
	216	216	731	242	.	713	305	1795	891	407	318	306	262	151	227	145	55
	468	468	733	501	706	752	2535	1511	1321	906	312	949	364	1215	2248	488	172
	272	272	735	526	1111	938	2093	2465	728	1504	1177	412	.	808	1457	1368	1125
	.	50	792	.	186	349	608	.	316	69	31	200	1021	602	.	.	.
550 - 731	170	170	730	140	37	330	44	224	125	627	200	183	74	32	196	294	30
	231	231	732	83	463	590	705	519	858	319	152	430	130	226	123	377	152
	228	228	734	280	642	604	515	184	554	671	214	124	.	34	136	131	205
	175	175	736	271	1117	951	1285	498	4028	1038	910	214	.	195	445	1862	864
732 - 914	.	227	737	1244	2198	1981	4765	1472	1522	1689	1433	1041	.	2097	1463	542	.
	.	223	741	.	867	3224	5059	961	444	1653	1337	661	.	.	2061	478	.
	.	348	745	.	1075	1722	1299	358	364	680	267	971	.	.	282	440	.
	.	159	748	.	429	287	166	255	390	458	26	74	.	.	26	140	.
915 -1097	.	221	738	1490	1906	1439	769	548	903	857	571	750	.	.	527	156	.
	.	206	742	.	567	901	918	628	451	579	982	2183	.	.	639	886	.
	.	392	746	.	783	992	531	1231	363	1126	132	39	.	.	601	142	.
	.	126	749	.	125	377	135	.	185	17	50	6	.	.	.	129	.
1098 -1280	.	254	739	.	1227	2248	1784	245	515	329	227	918	.	459	569	168	.
	.	211	743	.	931	2820	472	2427	861	671	1527	358	.	.	336	505	.
	.	724	747	.	438	1446	570	284	622	37	204	110	.	.	288	311	.
	.	556	750	.	586	3947	1750	1100	1872	348	581	119	.	.	.	462	.
1281 -1463	.	264	740	.	981	2604	1013	337	1109	1068	946	456	.	738	332	343	.
	.	280	744	.	2961	1101	1746	.	698	1295	957	3571	.	.	1153	547	.
	.	229	751	.	1207	2810	2633	.	711	1061	206	59	.	.	.	480	.
Total Biomass (t)				11282	36642	48596	55927	33955	34161	29886	22377	26123	15940	30123	32452	27616	27476

Table 13 Abundance estimates (000s) of Greenland halibut from Canadian fall surveys in Div. 3L using a Campelen trawl during 1995-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
30 - 56	.	268	784	.	0	0	0	.	0	0	0	0	0	0	.	.	.
57 - 92	2071	2071	350	71	0	0	0	0	0	0	0	41	0	0	41	0	0
	1780	1780	363	0	0	0	0	0	0	0	0	0	41	0	0	0	0
	1121	1121	371	0	39	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
	1120	1120	384	31	0	0	0	0	0	0	0	0	0	39	116	0	0
	.	465	785	.	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
	1574	1574	341	0	72	595	650	43	173	0	38	0	62	0	87	0	0
	585	585	342	0	40	201	80	0	201	0	0	0	40	64	0	0	0
	525	525	343	0	0	96	132	0	36	0	0	0	72	0	36	0	0
	2120	2120	348	0	83	458	622	311	73	83	79	0	357	708	595	83	194
	2114	2114	349	144	125	208	686	914	0	0	0	42	184	337	125	0	0
	2817	2817	364	86	0	517	1287	43	0	172	43	0	129	178	0	86	201
	1041	1041	365	179	0	668	382	143	.	95	0	48	.	716	1193	90	525
	1320	1320	370	73	227	227	2623	986	171	227	136	52	.	0	499	0	272
	2356	2356	385	1577	540	3110	1058	770	36	203	648	243	1273	486	1094	1575	4248
	1481	1481	390	272	204	815	1892	693	149	1580	1100	81	477	774	303	761	306
	.	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	0	31	0	0	.	.
	.	72	799	.	0	0	9	.	0	0	0	0	0	10	0	.	.
184 - 274	1494	1582	344	73	69	696	3096	392	64	0	44	87	2497	1312	1237	979	4328
	983	983	347	120	0	180	3200	541	456	45	90	45	1871	631	1923	676	4823
	1394	1394	366	2246	2732	6673	7278	4913	192	2923	6286	682	.	5787	5331	5830	6999
	961	961	369	338	1124	4451	7193	1880	595	2071	813	1807	.	13969	4465	3241	6572
	983	983	386	1758	2524	7437	5980	4958	1037	1017	6641	3316	.	12613	4297	2144	2529
	821	821	389	753	8019	7680	2146	3338	2485	7943	3179	3802	4480	652	1778	941	2654
	282	282	391	886	3369	6459	969	601	3491	369	1410	2289	834	1060	1254	655	1293
	.	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	.	.	.
275 - 366	1432	1432	345	4671	18723	12712	22231	6457	24864	7192	10703	10046	20558	6624	7582	9718	12301
	865	865	346	23203	40360	16064	7913	3490	5421	9162	7972	25821	16698	9963	7175	4270	5826
	334	334	368	3630	8664	1815	7305	1940	1447	3045	4411	4847	.	2924	1358	1580	3763
	718	718	387	16297	13169	8214	5004	10310	11803	12922	1778	8758	.	1462	3731	6859	2030
	361	361	388	1639	2657	6605	894	472	1788	4569	1018	2226	1539	670	957	2913	574
	145	145	392	537	4317	4149	568	459	559	436	239	1116	973	559	168	233	115
	.	175	796	.	72	1071	975	.	1061	542	235	36	746	903	867	.	.
	.	81	800	.	.	1839	1821	.	.	936	584	145	1788	1677	.	.	.
367 - 549	186	186	729	587	1797	1241	461	486	1689	819	273	537	316	32	193	225	114
	216	216	731	604	.	2333	517	2791	1501	728	700	782	458	198	272	145	66
	468	468	733	1610	2694	3058	5991	2414	2437	2015	601	2439	554	2110	3358	876	172
	272	272	735	2301	3511	3592	4808	4457	1154	3031	2611	1310	.	1219	2927	1530	1250
	.	50	792	.	1494	1510	1861	.	517	277	137	957	2486	1247	.	.	.
550 - 731	170	170	730	342	84	503	52	366	164	1050	412	322	104	43	266	401	52
	231	231	732	374	607	1414	1176	763	1128	632	234	1198	226	254	170	524	238
	228	228	734	668	1854	1812	929	298	795	1129	394	248	.	48	181	232	339
	175	175	736	706	2848	2696	3045	867	6644	2195	1626	535	.	277	722	2070	781
732 - 914	.	227	737	3170	4965	4216	9306	2014	1936	2264	2123	2077	.	3138	1733	741	.
	.	223	741	.	1917	8083	10239	1363	506	1810	2163	1210	.	.	2976	521	.
	.	348	745	.	1891	3064	1987	404	438	814	407	1963	.	.	335	533	.
	.	159	748	.	853	711	264	400	427	667	25	55	.	.	33	175	.
915 -1097	.	221	738	2919	3283	2003	1176	725	1094	1125	775	1094	.	.	623	195	.
	.	206	742	.	808	2706	1204	867	468	652	1474	3245	.	.	609	1053	.
	.	392	746	.	1267	1845	674	770	351	1159	129	67	.	.	620	162	.
	.	126	749	.	121	841	186	.	121	19	61	9	.	.	.	147	.
1098 -1280	.	254	739	.	1655	3127	2568	349	472	360	332	1136	.	472	507	175	.
	.	211	743	.	1205	2245	493	3316	1055	697	1901	566	.	.	305	377	.
	.	724	747	.	498	1029	498	299	697	50	199	199	.	.	238	360	.
	.	556	750	.	841	4245	1874	814	2027	153	497	191	.	.	.	578	.
1281 -1463	.	264	740	.	1543	2978	1217	436	1180	908	946	617	.	817	345	233	.
	.	280	744	.	2773	1213	2140	.	757	1266	770	4452	.	.	790	494	.
	.	229	751	.	1040	2991	3103	.	929	971	221	54	.	.	.	394	.
Abundance (000s)				71863	147500	153954	142871	68018	85354	80458	66613	90941	62770	76390	63701	54777	62678

Table 14 Biomass estimates (t) of Greenland halibut from Canadian fall surveys in Div. 3M using a Campelen trawl during 1996-2007. Division 3M was not surveyed in 2004, 2005 or 2008.

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	537	.	.	.	.	.	.	.	.	.	.
550 - 731	634	634	516	342	.	.	.	.	.	.	.	.	.
	216	216	517	77	.	.	.	.	.	.	.	.	.
	210	210	518	143	.	.	.	.	.	.	.	.	.
	414	414	519	581	.	.	.	.	.	.	.	.	.
	.	194	538	.	.	.	.	.	.	.	.	.	.
732 - 914	.	525	520	.	.	.	.	.	.	.	.	.	.
	.	253	524	.	.	.	.	.	.	.	.	.	.
	.	530	528	279	1580	2297	.	950	1142	922	639	410	387
	.	98	533	59	270	77	.	119	78	56	185	130	152
	.	133	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
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
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
Total Biomass (t)				10175	6966	7776	2408	5511	5260	2525	4306	3249	3376

Table 15 Abundance estimates (000s) of Greenland halibut from Canadian fall surveys in Div. 3M using a Campelen trawl during 1996-2008. Division 3M was not surveyed in 2004, 2005, or 2008.

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	537	.	.	.	.	.	.	.	.	.	.
550 - 731	634	634	516	358	.	.	.	.	.	.	.	.	.
	216	216	517	131	.	.	.	.	.	.	.	.	.
	210	210	518	176	.	.	.	.	.	.	.	.	.
	414	414	519	658	.	.	.	.	.	.	.	.	.
	.	194	538	.	.	.	.	.	.	.	.	.	.
732 - 914	.	525	520	.	.	.	.	.	.	.	.	.	.
	.	253	524	.	.	.	.	.	.	.	.	.	.
	.	530	528	292	1977	3297	.	1094	1361	923	778	405	413
	.	98	533	94	351	120	.	173	74	61	94	128	155
	.	133	539	.	.	.	.	.	.	.	.	.	
915 -1097	.	517	521	.	.	.	.	.	.	.	.	.	
	.	226	525	.	.	.	.	.	.	.	.	.	
	.	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
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
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
Abundance (000s)				15841	7841	9258	2635	5672	5045	2452	4267	3271	2875

Table 16 Biomass estimates (t) of Greenland halibut from Canadian fall surveys in Div. 3N using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<=56	1593	1593	375	0	0	0	0	0	0	0	1	0	0	0	1	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
	1853	1853	361	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
	2520	2520	373	0	2	0	0	0	0	0	0	0	0	0	2	0
	931	931	374	0	12	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
93 - 183	421	421	359	0	160	724	67	28	81	0	0	2	1	22	57	29
	100	100	377	4	166	30	21	30	1	0	10	7	58	0	11	0
	647	647	382	0	24	111	0	0	0	96	0	1	42	0	297	5
184 - 274	225	225	358	140	94	42	13	5	488	1	8	4	4	12	0	6
	139	139	378	112	262	2198	257	5	237	206	20	135	1	274	36	0
	182	182	381	802	615	1622	590	253	138	73	67	114	146	170	109	47
275 - 366	164	164	357	40	58	7	.	6	8	20	21	8	228	0	29	27
	106	106	379	581	41	31	22	36	404	98	59	629	26	15	21	172
	116	116	380	178	516	794	330	151	141	95	130	362	138	201	56	19
367 - 549	155	155	723	115	109	336	14	48	70	8	31	11	64	0	53	37
	105	105	725	165	1646	65	95	171	59	54	42	.	52	16	104	30
	160	160	727	1006	371	509	494	391	570	211	209	342	225	19	167	183
550 - 731	124	124	724	160	589	374	126	67	62	154	.	122	99	193	250	156
	72	72	726	296	448	765	55	30	517	214	136	52	74	104	80	72
	156	156	728	1035	455	675	511	201	299	510	291	1084	38	54	451	359
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	.
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	.
1098 -1280	.	180	754	.	.	1554	.	179	83	103	.	.	.	.	142	.
	.	99	758	.	.	443	.	427	274	78	.	.	126	.	421	.
	.	212	762	.	.	.	.	1096	772	339	.	.	233	.	307	.
1281 -1463	.	385	755	.	.	658	.	965	571	454	.	.	.	.	555	.
	.	127	759	.	.	165	.	509	378	217	.	.	85	.	534	.
	.	261	763	.	.	.	.	2135	509	1111	.	.	286	.	197	.
Total Biomass (t)				5079	6448	14788	2738	9330	7155	5705	1057	2885	3253	3253	5292	1153

Table 17 Abundance estimates (000s) of Greenland halibut from Canadian fall surveys in Div. 3N using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<=56	1593	1593	375	0	31	0	0	0	0	0	55	0	0	0	55	0
	1499	1499	376	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
	1853	1853	361	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
	2520	2520	373	0	99	0	0	0	0	0	0	0	0	0	51	0
	931	931	374	0	49	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
93 - 183	421	421	359	0	1419	1853	87	29	290	0	0	29	29	29	109	29
	100	100	377	31	571	76	55	69	16	10	110	28	206	0	14	0
	647	647	382	0	45	223	0	0	0	401	0	51	89	0	1187	134
184 - 274	225	225	358	959	696	232	77	14	2132	15	90	46	45	31	0	14
	139	139	378	1027	1589	7276	1013	34	417	676	76	1080	19	1270	85	19
	182	182	381	19548	3693	6534	2353	739	663	613	310	688	313	513	386	114
275 - 366	164	164	357	370	481	45	.	21	66	60	113	23	959	0	59	79
	106	106	379	4511	132	169	69	80	710	416	305	1999	162	26	80	262
	116	116	380	2525	1779	2278	846	339	412	465	606	2066	303	766	113	57
367 - 549	155	155	723	320	591	1002	53	95	113	38	84	64	107	0	63	57
	105	105	725	701	12676	231	217	372	318	213	193	.	182	64	141	140
	160	160	727	10334	1123	1868	1079	658	884	649	698	757	430	31	313	271
550 - 731	124	124	724	644	2789	1421	213	159	94	468	.	415	105	409	436	245
	72	72	726	1124	1406	2665	122	53	1033	1074	584	168	199	185	212	119
	156	156	728	3573	1356	2060	1094	377	807	2361	975	2997	46	97	944	644
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	.
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	.
1098 -1280	.	180	754	.	.	2392	.	173	66	99	.	.	.	.	144	.
	.	99	758	.	.	536	.	586	302	86	.	.	109	.	449	.
	.	212	762	.	.	.	.	1448	864	525	.	.	335	.	258	.
1281 -1463	.	385	755	.	.	871	.	1074	556	424	.	.	.	.	477	.
	.	127	759	.	.	183	.	580	376	132	.	.	96	.	489	.
	.	261	763	.	.	.	.	2805	521	1364	.	.	421	.	215	.
Abundance (000s)				48959	35487	40002	7536	13763	12740	13237	4663	10461	6581	6581	7815	2242

Table 18 Biomass estimates (t) of Greenland halibut from Canadian fall surveys in Div. 3O using a Campelen trawl during 1996-2008.

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

Table 19 Abundance estimates (000s) of Greenland halibut from Canadian fall surveys in Div. 3O using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
57 - 92	2089	2089	330	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	131	940	261	104	0	0	0	209	209	0	0	52	104
	1716	1716	340	0	0	0	34	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
	2580	2580	352	659	25	111	0	0	101	0	0	0	0	0	0	118
	1282	1282	353	4321	4453	2293	397	0	0	88	0	750	353	0	304	411
93 - 183	1721	1721	329	47	1657	47	95	84	47	0	0	47	0	0	0	0
	1047	1047	332	1224	864	624	0	0	0	0	384	192	0	0	176	0
	948	948	337	717	522	169	261	0	0	0	174	0	149	0	87	246
	585	585	339	0	1086	138	.	201	80	0	40	0	0	0	443	241
	474	474	354	87	619	65	3097	130	174	333	652	531	65	1565	116	0
184 - 274	151	147	333	.	121	0	0	20	0	9	0	71	10	0	0	54
	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
275 - 366	92	96	334	.	53	33	0	0	0	0	0	6	0	6	0	0
	58	58	335	12	28	0	8	8	0	0	16	4	0	4	27	32
	61	61	356	57	55	8	22	17	4	29	0	17	12	0	11	4
367 - 549	93	166	717	.	34	57	11	0	57	0	46	13	20	0	81	46
	76	76	719	52	37	31	42	12	16	5	0	18	0	0	0	0
	76	76	721	329	182	125	88	37	31	16	105	0	9	5	41	10
550 - 731	111	134	718	.	590	553	120	28	46	116	524	53	199	41	221	678
	105	105	720	461	.	274	173	276	207	255	231	25	122	186	77	58
	93	93	722	768	2900	385	294	180	203	108	1478	80	182	.	167	118
732 - 914	.	105	764	.	.	1760	.	758	383	708	.	.	419	.	373	.
	.	99	768	.	.	2997	.	763	429	624	.	.	143	.	206	.
	.	135	772	.	.	3714	.	592	.	259	248	.	520	.	720	.
915 -1097	.	124	765	.	.	210	.	1032	273	184	.	.	188	.	53	.
	.	138	769	.	.	854	.	494	484	427	.	.	275	.	361	.
	.	128	773	.	.	778	.	518	376	634	537	.	132	.	540	.
1098 -1280	.	144	766	.	.	.	.	205	283	271	.	.	89	.	89	.
	.	128	770	.	.	.	.	170	1039	324	.	.	88	.	88	.
	.	135	774	.	.	.	.	186	195	72	244	.	93	.	274	.
1281 -1463	.	158	767	.	.	.	.	116	261	76	.	.	54	.	62	.
	.	175	771	.	.	.	.	179	481	193	.	.	108	.	60	.
	.	155	775	.	.	.	.	77	107	146	192	.	160	.	38	.
Abundance (000s)				9309	14482	15604	4754	6092	5291	4967	5144	2362	3411	1865	4692	2632

Table 20a Biomass estimates (t) of Greenland halibut from Canadian spring surveys in Div. 3L using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
30 - 56	.	268	784	.	.	0	0	.	0	0	.	0	.	.	.	.
57 - 92	2071	2071	350	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
	1121	1121	371	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
	1120	1120	384	0	0	0	0	0	0	0	0	0	0	0	0	0
	.	465	785	.	.	0	0	.	0	0	.	0	.	.	.	.
93 - 183	1519	1519	328	0	0	0	0	18	0	0	0	1	13	0	0	.
	1574	1574	341	2	0	14	0	26	0	0	0	0	0	0	0	0
	585	585	342	0	0	5	0	0	0	0	0	0	0	0	1	0
	525	525	343	0	0	2	0	0	0	0	0	0	30	0	0	0
	2120	2120	348	1	9	0	0	0	0	0	0	0	0	1	5	0
	2114	2114	349	1	0	11	0	14	2	0	0	0	5	0	0	0
	2817	2817	364	0	6	0	0	0	1	0	1	0	0	0	0	0
	1041	1041	365	1	0	0	14	0	0	0	0	0	45	41	0	1
	1320	1320	370	0	0	0	0	0	0	0	0	0	0	0	43	0
	2356	2356	385	0	0	0	0	0	0	0	0	12	0	0	0	4
	1481	1481	390	0	24	0	0	6	0	0	0	0	9	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	.	.	.	.
184 - 274	1494	1582	344	3	59	0	21	24	3	0	31	34	23	0	2	44
	983	983	347	1	5	0	0	1	0	0	0	0	32	0	665	3
	1394	1394	366	6	169	10	30	0	1	48	148	255	236	44	861	10
	961	961	369	1	2	79	17	0	1	0	464	0	199	943	1078	48
	983	983	386	1	84	11	633	0	0	0	0	115	494	2078	309	5
	821	821	389	38	435	122	435	1070	143	3	2	36	994	909	1595	692
	282	282	391	9	3	43	0	4	3	16	58	0	238	274	872	65
	.	164	795	.	.	.	0	.	.	.	0	.	.	.	.	.
	.	72	789	.	.	.	18	.	.	.	.	0	.	.	.	.
	.	227	791	.	.	.	113	.	.	.	.	.	.	.	.	.
	.	100	798	.	.	.	23	.	.	.	0	.	.	.	.	.
275 - 366	1432	1432	345	335	892	302	926	891	495	566	441	1953	429	333	3510	347
	865	865	346	354	1372	639	338	366	513	245	307	469	789	645	2372	100
	334	334	368	137	216	263	228	456	311	327	703	241	362	1826	638	147
	718	718	387	208	2514	2585	2026	4356	439	97	359	724	2967	2600	3783	3905
	361	361	388	304	382	1404	464	482	220	223	608	989	332	483	1413	894
	145	145	392	288	117	464	100	143	85	74	248	111	356	122	303	157
	.	175	796	.	.	.	7	.	.	.	0	.	.	.	.	.
	.	81	800	.	.	.	210	.	.	.	.	.	.	.	.	.
367 - 549	186	186	729	803	236	3921	1351	1286	555	407	589	724	292	187	802	798
	216	216	731	897	299	3531	1284	1725	664	217	1336	496	288	507	437	367
	468	468	733	3016	3003	7556	3311	2290	1139	847	3444	1138	2315	943	2067	2456
	272	272	735	302	4063	5100	4332	4656	2186	939	598	1207	1685	977	1027	1658
	.	50	792	.	.	.	533	.	903	.	148	.	.	.	.	.
550 - 731	170	170	730	245	0	1693	292	745	772	177	53	54	129	160	120	559
	231	231	732	462	1420	3220	1219	996	1173	533	465	560	354	105	560	957
	228	228	734	1327	1361	4169	1324	2887	621	362	367	592	459	255	466	.
	175	175	736	791	1793	5037	3463	4372	2804	1378	1747	259	1923	915	5514	4945
732 - 1463				***Deepwater Strata not sampled during spring surveys.***												
Total Biomass (t)				9533	18467	40182	22724	26815	13035	6459	12118	9973	14997	14348	28442	18162

Table 20b Abundance estimates (000s) of Greenland halibut from Canadian spring surveys in Div. 3L using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
30 - 56	.	268	784	.	.	0	0	.	0	0	.	0	.	.	.	.
57 - 92	2071	2071	350	0	0	0	0	0	0	0	0	0	0	0	0	0
	1780	1780	363	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
	2460	2460	372	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
	.	465	785	.	.	0	0	.	0	0	.	0	.	.	.	.
93 - 183	1519	1519	328	30	0	0	0	84	42	0	0	42	104	0	0	.
	1574	1574	341	31	0	87	0	130	0	0	0	0	0	0	0	0
	585	585	342	0	0	40	0	0	0	0	0	0	0	0	40	0
	525	525	343	0	0	36	0	0	0	0	0	0	32	0	0	0
	2120	2120	348	29	32	0	0	0	0	0	0	0	0	47	49	49
	2114	2114	349	65	0	73	0	36	42	0	0	0	48	0	42	0
	2817	2817	364	30	43	0	0	39	86	0	129	0	0	0	0	0
	1041	1041	365	29	0	0	32	0	0	0	0	0	143	102	0	95
	1320	1320	370	30	0	0	0	0	0	0	0	0	0	0	45	0
	2356	2356	385	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
	.	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	.	.	.	.	.
	.	98	797	.	.	.	0	.	.	.	0	.	.	.	.	.
	.	72	799	.	.	.	.	.	.	.	.	0	.	.	.	.
184 - 274	1494	1582	344	62	261	36	39	163	87	0	44	435	87	0	109	54
	983	983	347	34	68	0	0	85	0	0	0	0	90	0	1082	90
	1394	1394	366	38	1406	146	170	0	38	1364	1304	1283	805	384	2280	240
	961	961	369	33	59	397	78	0	44	0	3746	0	1425	2380	4930	302
	983	983	386	68	781	68	2710	0	0	0	0	481	1412	5544	1232	240
	821	821	389	791	5141	979	1694	4574	866	142	75	264	2711	2598	4359	3079
	282	282	391	388	52	282	0	188	155	116	407	0	892	856	2914	155
	.	164	795	.	.	.	0	.	.	.	0	.	.	.	.	.
	.	72	789	.	.	.	65	.	.	.	.	0	.	.	.	.
	.	227	791	.	.	.	208	.	.	.	.	.	.	.	.	.
	.	100	798	.	.	.	61	.	.	.	0	.	.	.	.	.
275 - 366	1432	1432	345	4268	7958	3400	4062	3758	4478	2872	3034	13951	1646	4885	16839	3053
	865	865	346	8673	16262	3094	1728	1988	4447	3587	3512	3411	2102	2181	5553	1190
	334	334	368	1501	2413	1718	1066	1437	791	1362	4628	1133	1195	4411	1899	1215
	718	718	387	5461	24347	13689	8520	17334	1800	658	2321	2853	11452	6420	6985	16478
	361	361	388	4247	1962	7824	1837	2008	1192	1363	3327	3487	971	1217	3349	1722
	145	145	392	3551	1127	2753	509	355	509	329	1935	888	1427	329	593	426
	.	175	796	.	.	.	43	.	.	.	36	.	.	.	.	.
	.	81	800	.	.	.	456	.	.	.	.	.	.	.	.	.
367 - 549	186	186	729	3774	1076	20763	3416	2890	1621	1720	2887	2623	721	432	1240	2513
	216	216	731	4958	1530	13617	4115	4558	1598	1000	4632	1638	647	1180	773	687
	468	468	733	18551	13680	23219	10880	6152	4178	3122	17443	3813	6695	2157	3744	7911
	272	272	735	1949	18286	17174	11726	10063	5355	3645	2736	4141	3749	2039	2055	3873
	.	50	792	.	.	.	1220	.	1401	.	404	.	.	.	.	.
550 - 731	170	170	730	531	0	4022	608	1668	1287	608	118	159	180	269	156	698
	231	231	732	1657	4435	9612	2955	1729	2599	1624	1321	1285	706	214	764	1319
	228	228	734	5504	3980	11277	3288	4767	1469	1267	937	2107	1073	596	712	.
	175	175	736	2846	5862	13325	6795	6668	4696	2749	5903	824	3723	1575	8731	6235
732 - 1463				***Deepwater Strata not sampled during spring surveys.***												
Abundance (000s)				69126	110862	147631	68316	71080	38783	27530	60919	44896	44111	39815	70474	52055

Table 21a Biomass estimates (t) of Greenland halibut from Canadian spring surveys in Div. 3N using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<=56	1593	1593	375	0	0	0	0	0	0	0	1	0	0	0	0	0
	1499	1499	376	12	0	0	0	0	1	0	0	0	70	0	1	0
57 - 92	2992	2992	360	19	349	130	471	183	23	0	0	71	62	0	0	0
	1853	1853	361	0	0	1	0	0	4	0	0	0	0	0	0	0
	2520	2520	362	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
	931	931	374	9	0	0	0	0	0	73	0	0	0	0	0	0
	674	674	383	0	0	0	0	0	0	0	0	0	0	.	0	0
93 - 183	421	421	359	145	133	31	165	96	19	0	2	4	133	.	0	30
	100	100	377	6	4	0	321	0	0	0	0	0	25	.	51	12
	647	647	382	0	0	76	0	20	0	0	0	1	356	.	0	49
184 - 274	225	225	358	259	677	413	458	46	17	29	118	51	27	.	5	0
	139	139	378	48	37	49	719	4	14	6	82	7	15	.	120	21
	182	182	381	178	90	10	217	33	7	0	41	0	92	.	610	285
275 - 366	164	164	357	57	82	375	17	4	43	0	13	134	26	.	12	2
	106	106	379	85	183	170	1047	312	28	88	736	16	29	.	297	6
	116	116	380	117	162	58	43	53	28	19	287	72	220	.	176	135
367 - 549	155	155	723	333	134	300	68	173	71	24	60	27	25	.	35	15
	105	105	725	242	952	130	37	289	150	68	153	15	201	.	148	14
	160	160	727	389	1482	1499	328	843	358	22	315	219	174	.	348	431
550 - 731	124	124	724	196	142	368	575	114	95	201	142	72	24	.	92	.
	72	72	726	93	254	1463	63	257	139	52	125	91	45	.	36	61
	156	156	728	1226	.	576	1475	1804	1088	222	686	642	79	.	428	1082
732 - 1463				***Deepwater Strata not sampled during spring surveys.***												
Total Biomass (t)				3415	4681	5647	6003	4228	2084	805	2761	1422	1603	0	2357	2144

Table 21b Abundance estimates (000s) of Greenland halibut from Canadian spring surveys in Div. 3N using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
<=56	1593	1593	375	0	0	0	0	0	0	0	88	0	0	0	0	0
	1499	1499	376	41	0	0	0	0	41	0	0	0	247	0	41	0
57 - 92	2992	2992	360	225	2190	1098	2507	453	41	0	0	329	320	0	0	0
	1853	1853	361	0	0	32	0	0	85	0	0	0	0	0	0	0
	2520	2520	362	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
	931	931	374	85	0	0	0	0	0	299	43	0	0	0	0	0
	674	674	383	0	0	0	0	0	0	0	0	0	0	.	0	0
93 - 183	421	421	359	852	1390	129	550	347	203	0	91	29	898	.	29	58
	100	100	377	14	21	0	935	0	7	7	14	7	83	.	156	28
	647	647	382	0	0	178	0	89	0	0	0	51	801	.	0	267
184 - 274	225	225	358	3853	6782	1871	1594	138	232	74	327	495	220	.	93	0
	139	139	378	660	229	220	1673	223	102	31	429	60	63	.	277	48
	182	182	381	2189	490	200	613	2754	206	11	601	0	318	.	1070	626
275 - 366	164	164	357	471	180	1636	66	20	144	11	80	514	271	.	23	11
	106	106	379	853	938	890	5009	7945	97	2318	6517	109	94	.	690	39
	116	116	380	1763	1548	559	247	756	121	291	1125	431	810	.	1355	306
367 - 549	155	155	723	1773	853	1386	192	341	126	47	152	64	85	.	71	77
	105	105	725	2035	5545	712	100	650	571	356	718	70	884	.	355	67
	160	160	727	3363	7545	7538	1101	2348	1487	204	1436	942	558	.	1096	1615
550 - 731	124	124	724	1002	687	1008	2167	212	159	350	337	179	34	.	128	.
	72	72	726	293	763	5477	178	525	228	105	393	256	114	.	58	92
	156	156	728	6532	.	2154	4496	4286	2457	707	2384	2382	225	.	669	1962
732 - 914				***Deepwater Strata not sampled during spring surveys.***												
Abundance (000s)				26004	29159	25088	21429	21086	6307	4811	14735	5918	6026	0	6109	5197

Table 22a Biomass estimates (t) of Greenland halibut from Canadian spring surveys in Div. 3O using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
57 - 92	2089	2089	330	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
	1898	1898	338	478	40	62	0	0	0	2	0	13	0	9	0	0
	1716	1716	340	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
	2580	2580	352	114	48	0	0	0	0	3	0	0	0	0	0	0
	1282	1282	353	119	146	331	2	25	0	3	0	1	84	57	0	0
93 - 183	1721	1721	329	1	13	0	0	1	1	0	0	0	14	.	0	0
	1047	1047	332	148	376	475	0	4	0	1	6	24	62	.	0	0
	948	948	337	179	139	4	0	3	31	1	91	17	37	.	13	1
	585	585	339	0	2	8	0	0	33	0	0	0	0	21	26	17
	474	474	354	807	122	330	3	0	11	22	8	25	43	.	1	6
184 - 274	151	147	333	5	62	23	0	9	0	8	0	2	12	.	0	10
	121	121	336	100	168	11	0	7	3	8	11	6	15	.	0	16
	103	103	355	249	168	20	0	3	84	5	46	42	13	.	26	12
275 - 366	92	96	334	20	39	6	2	1	0	1	0	0	3	.	0	1
	58	58	335	9	92	15	0	2	0	0	0	1	1	.	1	0
	61	61	356	161	68	47	1	0	3	1	7	1	3	.	34	17
367 - 549	93	166	717	42	165	55	0	0	1	0	0	6	0	.	0	0
	76	76	719	9	24	29	1	8	0	21	0	23	18	.	0	14
	76	76	721	161	59	112	5	30	1	8	2	7	3	.	0	0
550 - 731	111	134	718	70	116	154	11	26	8	41	60	73	56	.	35	338
	105	105	720	29	61	111	4	45	23	3	12	63	122	.	36	148
	93	93	722	57	176	203	23	120	23	43	3	86	51	.	240	187
732 - 1463				***Deepwater Strata not sampled during spring surveys.***												
Total Biomass (t)				2757	2084	2010	1328	284	224	173	245	391	538	88	412	766

Table 22b Abundance estimates (000s) of Greenland halibut from Canadian spring surveys in Div. 3O using a Campelen trawl during 1996-2008.

Depth Range (m)	V1 Area	V4 Area	Stratum	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
57 - 92	2089	2089	330	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
	1898	1898	338	5035	459	298	0	0	0	87	0	186	0	33	0	0
	1716	1716	340	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
	2580	2580	352	907	592	0	0	0	0	89	0	0	0	0	0	0
	1282	1282	353	1340	1195	1905	8	141	44	176	0	44	441	366	0	0
93 - 183	1721	1721	329	79	250	0	0	47	47	0	0	0	47	.	0	0
	1047	1047	332	1914	5425	3909	1	144	0	48	144	432	384	.	0	0
	948	948	337	1739	1415	98	0	33	391	43	2521	360	130	.	174	43
	585	585	339	0	72	40	0	0	161	0	0	0	0	72	80	80
	474	474	354	20278	1467	2289	8	0	186	685	98	359	442	.	33	65
184 - 274	151	147	333	111	600	233	1	131	0	131	0	22	131	.	18	103
	121	121	336	1987	1680	141	0	105	92	75	100	50	227	.	7	277
	103	103	355	8005	1467	88	0	6	1155	54	484	681	88	.	35	35
275 - 366	92	96	334	343	252	125	6	26	0	33	0	0	26	.	0	7
	58	58	335	126	794	156	2	36	8	4	0	9	18	.	12	0
	61	61	356	2031	369	183	3	0	30	26	34	38	37	.	243	19
367 - 549	93	166	717	544	1060	396	1	0	10	34	0	11	0	.	0	0
	76	76	719	97	177	90	1	5	5	54	0	25	183	.	19	12
	76	76	721	1673	391	350	12	37	5	28	14	58	33	.	0	0
550 - 731	111	134	718	325	664	828	30	28	18	37	147	74	121	.	46	403
	105	105	720	182	331	575	7	77	54	17	14	126	200	.	44	224
	93	93	722	381	1086	886	70	199	56	30	18	121	125	.	304	274
732 - 1463				***Deepwater Strata not sampled during spring surveys.***												
Abundance (000s)				47095	19746	12652	4013	1017	2262	1651	3573	2595	2633	470	1059	1587

Table 23a. Greenland halibut biomass estimates (000 t), by division, from Canadian fall surveys during 1995-2008.

	DIVISION											
Year	2G	2H	2J	3K	**SA2+3K**	3L	**2J3KL**	3M	3N	3O	**3LMNO**	**TOTAL**
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	110.2	**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**

*In several years, there are substantial coverage deficiencies - refer to tables 1-19.

Table 23b. Abundance and biomass estimates of Greenland halibu
by Division, from the Canadian fall 2008.
Upper and lower indicate approximate 95% confidence li

Area	Total	Upper	Lower
Division 2H			
Abundance	148,141,222	385,704,563	-89,422,118
Biomass (kg)	32,310,855	50,097,195	14,524,515
Division 2J			
Abundance	210,076,298	263,756,651	156,395,946
Biomass (kg)	37,443,503	43,302,334	31,584,673
Division 3K			
Abundance	394,570,259	575,205,736	213,934,781
Biomass (kg)	121,955,437	173,090,488	70,820,386
Division 3L			
Abundance	62,677,704	77,995,148	47,360,260
Biomass (kg)	27,476,323	37,692,366	17,260,280
Division 3M			
Abundance	**NO SURVEY**		
Biomass (kg)			
Division 3N			
Abundance	2,242,370	3,538,966	945,774
Biomass (kg)	1,153,023	1,940,869	365,176
Division 3O			
Abundance	2,631,767	4,200,133	1,063,401
Biomass (kg)	886,081	1,246,700	525,463
Combined SA2+Div. 3KLMNO			
Abundance	820,339,620	997,422,401	643,256,839
Biomass (kg)	221,225,222	271,276,931	171,173,513

Table 24a. Mean weight (kg) per tow and associated CI for Greenland halibut in Div. 2G and 2H for 1978 - 2008. Refer to Tables 4 and 7 for variations in strata surveyed. In several years, Divs. 2GH have not been surveyed.

	Division					
	2G			2H		
Year	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 24b. Mean weight (kg) per tow for Greenland halibut in Division 2J and 3K for 1978-2008. Refer to Tables 8 and 10 for variations in strata surveyed.

	Division					
	2J			3K		
Year	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

Table 24c. Mean weight (kg) per tow for Greenland halibut in Division 3L Fall and Spring for 1995-2008. Refer to Tables 12 and 20 for variations in strata surveyed.

	Division					
	3L - Fall			3L - Spring		
Year	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

*Substantially reduced coverage (Fall survey).

Table 24d. Mean weight (kg) per tow for Greenland halibut in Division 3N Spring and Fall for 1996-2008. Refer to Tables 17 and 21 for variations in strata surveyed.

	Division					
	3N - Fall			3N - Spring		
Year	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

*No Greenland Halibut captured (survey incomplete).

Table 24e. Mean weight (kg) per tow for Greenland halibut in Division 3O Spring and Fall for 1996-2008. Refer to Tables 18 and 22 for variations in strata surveyed.

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

*Substantially reduced coverage in spring survey.

Table 24f. Mean weight (kg) per tow for Greenland halibut in Division 3M for 1996-2007. Refer to Table 14 for variations in strata surveyed. Div. 3M not surveyed in 2004,2005 or 2008.

	Division			Division		
	3M - Fall			3M - Fall Strata 528-536 only		
Year	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 24g. Mean weight (kg) per tow for Greenland halibut in Div. 2J3K for 1978-2008 and Div. 2J3KL for 1995-2008. Refer to Tables 8, 10, and 11 for variations in strata surveyed.

	Division					
	2J3K			2J3KL		
Year	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

*Substantially reduced coverage in Division 3L.

Table 25a. Mean numbers per tow and associated CI for Greenland halibut in Div. 2G and 2H for 1978 - 2008. Refer to Tables 4 and 6 for variations in strata surveyed. In several years, Divs. 2GH have not been surveyed.

	Division					
	2G			2H		
Year	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 25b. Mean numbers per tow for Greenland halibut in Division 2J and 3K for 1978-2008. Refer to Tables 8 and 10 for variations in strata surveyed.

	Division					
	2J			3K		
Year	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

Table 25c. Mean numbers per tow for Greenland halibut in Division 3L Spring and Fall for 1995-2008. Refer to Tables 12 and 20 for variations in strata surveyed.

	Division					
	3L - Fall			3L - Spring		
Year	Mean no/tow	Upper Limit	Lower Limit	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

*Substantially reduced coverage (Fall survey).

Table 25d. Mean numbers per tow for Greenland halibut in Division 3N Spring and Fall for 1996-2008. Refer to Tables 16 and 21 for variations in strata surveyed.

	Division					
	3N - Fall			3N - Spring		
Year	Mean no/tow	Upper Limit	Lower Limit	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

*No Greenland Halibut captured (survey incomplete).

Table 25e. Mean numbers per tow for Greenland halibut in Division 3O Spring and Fall for 1996-2008.
Refer to Tables 18 and 22 for variations in strata surveyed.

	Division					
	3O - Fall			3O - Spring		
Year	Mean no/tow	Upper Limit	Lower Limit	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

*Substantially reduced coverage in spring survey.

Table 25f. Mean numbers per tow for Greenland halibut in Division 3M for 1996-2007.
Refer to Table 14 for variations in strata surveyed. Div. 3M not surveyed in 2004, 2005 or 2008.

	Division			Division		
	3M - Fall			3M - Fall Strata 528-536 only		
Year	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 25g. Mean numbers per tow for Greenland halibut in Div. 2J3K for 1978-2008 and Div. 2J3KL for 1995-2008. Refer to Tables 8, 10, and 12 for variations in strata surveyed.

	Division					
	2J3K			2J3KL		
Year	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

*Substantially reduced coverage in Division 3L.

Table 26a Greenland halibut stratified mean number per set at age from Canadian fall surveys conducted in Divisions 2J and 3K combined during 1978-1992. Only otoliths collected in Div. 2J or 3K are used in the analysis. Numbers expressed in Campelen 1800 catch units.

Age (yrs)	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
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	0.92
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	5.69
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	23.78
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	20.40
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	13.59
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	4.84
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	3.11
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	1.27
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	0.12
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	0.02
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	0.01
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	0.00
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	0.00
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	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	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	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	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	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	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	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	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	73.76
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	63.46
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	9.37
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	4.52

Table 26b Greenland halibut stratified mean number per set at age from Canadian fall surveys conducted in Divisions 2J and 3K combined during 1993-2008[1]. Only otoliths collected in Div. 2J or 3K are used in the analysis. Numbers expressed in Campelen 1800 catch units.

Age (yrs)	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
0	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	3.75	2.21	9.15
1	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	32.34	32.61	15.98
2	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	17.98	14.51	11.71
3	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	8.50	12.81	8.20
4	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	17.60	18.77	9.57
5	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	13.03	9.57	7.57
6	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	9.11	10.35	6.25
7	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	4.18	6.17	3.51
8	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	1.15	2.14	1.68
9	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	0.18	0.34	0.20
10	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	0.03	0.08	0.03
11	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	0.02	0.04	0.02
12	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	0.01	0.02	0.00
13	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	0.00	0.01	0.00
14	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	0.00	0.01	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	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	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	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	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	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	0.00
Ages 0-20	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	107.89	109.64	73.87
Ages 1-4	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	76.42	78.70	45.46
Ages 5+	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	27.72	28.73	19.26
Ages 6-9	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	14.62	19.00	11.64

[1]2008 estimates biased due to substantial coverage deficiencies.

Table 27 Greenland halibut stratified mean number per set at age from Canadian fall surveys conducted in Divisions 2J3KL combined during 1995-2008[1]. Only otoliths collected in Div. 2J, 3K or 3L are used in the analysis. Numbers expressed in Campelen 1800 catch units.

Age (yrs)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
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
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
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
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
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	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	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
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
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
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
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
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
12	0.00	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00
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
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
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	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
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
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
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

Table 28a Stratified mean number per tow, at age, by division, from 1996 -2001 Canadian fall surveys. See Table 2 for explanation of otoliths used.

1996

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0	0.79	0.32	10.52	1.10	0.11	0.02	0.24	0.70	1.88
1	19.51	56.79	103.40	96.48	5.26	0.14	8.63	0.54	39.42
2	9.81	43.74	42.63	50.34	4.57	0.93	6.42	1.33	22.81
3	6.34	16.75	18.88	40.79	5.89	0.78	2.46	0.59	13.94
4	5.28	8.62	8.98	10.07	2.48	0.81	1.33	0.33	5.56
5	4.24	5.41	6.48	6.22	2.31	1.26	0.89	0.16	3.68
6	2.78	3.04	2.68	2.26	1.50	2.15	0.36	0.06	1.85
7	1.13	1.23	0.84	0.88	0.79	1.17	0.03	0.01	0.75
8	0.60	0.55	0.19	0.18	0.18	0.69	0.01	0.00	0.24
9	0.58	0.37	0.23	0.09	0.11	0.17	0.00	0.01	0.16
10	0.16	0.08	0.04	0.05	0.04	0.04	0.00	0.00	0.04
11	0.08	0.04	0.02	0.03	0.01	0.03	0.00	0.00	0.02
12	0.05	0.05	0.02	0.01	0.01	0.01	0.00	0.00	0.02
13	0.00	0.00	0.03	0.01	0.00	0.02	0.00	0.00	0.01
14	0.00	0.00	0.01	0.00	0.00	0.04	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
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unk	0.22	0.10	0.04	0.00	0.01	0.02	0.02	0.04	0.02
5+	**9.84**	**10.87**	**10.58**	**9.72**	**4.95**	**5.59**	**1.32**	**0.27**	**6.80**
9+	**1.08**	**0.63**	**0.38**	**0.19**	**0.18**	**0.33**	**0.03**	**0.04**	**0.28**
Total	**51.55**	**137.10**	**194.99**	**208.49**	**23.26**	**8.26**	**20.39**	**3.76**	**90.40**

1997

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0	0.73	5.91	3.32	1.51	0.35	0.00	0.04	0.00	1.54
1	7.44	33.09	16.35	36.69	1.86	0.00	0.23	0.65	14.81
2	8.66	57.91	52.29	60.18	3.68	0.00	3.57	1.57	30.82
3	10.60	61.60	33.87	49.10	4.78	0.03	6.44	2.06	27.05
4	13.63	45.16	25.07	21.96	4.65	0.18	2.12	0.90	14.77
5	6.57	16.76	9.27	11.11	4.31	2.50	1.61	0.39	7.18
6	3.93	9.06	5.70	4.11	2.39	5.28	0.54	0.10	3.53
7	2.37	4.60	2.14	2.02	1.33	4.88	0.16	0.02	1.80
8	0.84	1.43	0.45	0.77	0.55	3.06	0.05	0.03	0.67
9	0.23	0.44	0.17	0.19	0.15	0.41	0.01	0.00	0.18
10	0.21	0.12	0.06	0.05	0.04	0.12	0.00	0.00	0.07
11	0.11	0.09	0.07	0.01	0.03	0.15	0.00	0.00	0.04
12	0.02	0.03	0.03	0.01	0.02	0.06	0.00	0.00	0.02
13	0.00	0.05	0.02	0.00	0.02	0.14	0.00	0.00	0.02
14	0.00	0.06	0.01	0.01	0.02	0.05	0.00	0.00	0.02
15	0.00	0.01	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
Unk	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5+	**14.28**	**32.64**	**17.92**	**18.28**	**8.84**	**16.65**	**2.37**	**0.53**	**13.53**
9+	**0.57**	**0.79**	**0.36**	**0.27**	**0.27**	**0.93**	**0.01**	**0.01**	**0.35**
Total	**55.34**	**236.31**	**148.81**	**187.72**	**24.15**	**16.86**	**14.78**	**5.71**	**102.52**

1998

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0	0.08	0.61	2.76	0.67	0.07	0.05	0.02	0.03	0.64
1	13.28	8.86	15.80	26.43	1.18	0.00	0.49	0.08	8.94
2	2.82	20.01	18.22	30.35	2.14	0.00	1.32	0.37	12.16
3	1.52	37.54	27.02	33.41	2.69	0.04	2.72	0.88	14.82
4	1.67	22.64	16.18	23.61	5.15	0.67	3.50	1.64	11.46
5	1.52	10.72	9.15	15.81	6.19	3.30	3.42	1.64	8.01
6	1.18	5.26	3.31	5.62	3.07	6.54	2.25	0.79	3.56
7	0.91	2.68	1.61	2.48	1.31	5.94	1.06	0.27	1.61
8	0.55	1.05	0.45	0.58	0.40	2.12	0.30	0.12	0.50
9	0.04	0.19	0.12	0.15	0.13	0.48	0.07	0.03	0.12
10	0.04	0.04	0.04	0.06	0.03	0.29	0.04	0.01	0.05
11	0.02	0.04	0.04	0.02	0.02	0.20	0.02	0.02	0.03
12	0.00	0.02	0.03	0.02	0.01	0.18	0.01	0.00	0.02
13	0.02	0.02	0.01	0.01	0.01	0.08	0.00	0.00	0.01
14	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.01
15	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
Unk	0.12	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
5+	**4.40**	**20.01**	**14.77**	**24.75**	**11.18**	**19.14**	**7.23**	**2.88**	**13.90**
9+	**0.23**	**0.30**	**0.26**	**0.26**	**0.20**	**1.25**	**0.20**	**0.06**	**0.22**
Total	**23.76**	**109.68**	**94.75**	**139.23**	**22.41**	**19.91**	**15.27**	**5.89**	**61.91**

1999

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0	1.29	3.60	11.43	2.77	0.36	0.00	0.02	0.06	2.77
1	6.56	12.09	23.79	8.23	0.11	0.00	0.02	0.02	5.94
2	5.47	26.09	31.64	37.30	0.90	0.00	0.20	0.17	15.11
3	1.74	10.55	19.49	32.61	0.66	0.00	0.49	0.32	10.82
4	4.21	16.17	21.88	29.54	1.49	0.11	0.70	0.34	11.96
5	3.42	12.89	19.19	20.23	3.23	0.82	1.02	0.46	9.35
6	1.47	5.44	6.81	14.00	3.36	2.58	0.51	0.30	5.44
7	0.74	2.88	2.16	4.37	1.21	3.48	0.17	0.13	1.95
8	0.40	1.02	0.53	0.77	0.22	1.26	0.03	0.05	0.42
9	0.09	0.51	0.11	0.14	0.04	0.51	0.02	0.01	0.11
10	0.04	0.13	0.04	0.08	0.02	0.46	0.00	0.01	0.04
11	0.03	0.07	0.02	0.02	0.01	0.07	0.00	0.00	0.02
12	0.01	0.03	0.00	0.01	0.01	0.00	0.00	0.00	0.01
13	0.01	0.05	0.03	0.02	0.02	0.00	0.00	0.00	0.02
14	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.02	0.01	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
Unk	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00
5+	**6.21**	**23.05**	**28.88**	**39.64**	**8.10**	**9.18**	**1.75**	**1.02**	**17.36**
9+	**0.19**	**0.82**	**0.20**	**0.27**	**0.10**	**1.04**	**0.02**	**0.09**	**0.20**
Total	**25.48**	**91.54**	**137.11**	**150.08**	**11.61**	**9.29**	**3.17**	**1.92**	**63.95**

2000

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0			6.14	0.86	0.20	0.00	0.00	0.00	1.31
1			28.36	45.12	3.23	0.00	0.01	0.00	15.33
2			23.35	22.61	1.85	0.00	0.13	0.05	10.39
3			12.27	19.48	0.72	0.00	0.04	0.02	6.39
4			8.53	15.24	1.31	0.03	0.21	0.17	6.10
5			8.71	17.13	2.23	0.76	0.82	0.48	6.51
6			5.16	9.18	2.70	4.04	1.99	0.76	4.64
7			1.46	2.83	1.26	4.44	1.40	0.46	1.80
8			0.29	0.52	0.26	1.64	0.36	0.15	0.37
9			0.07	0.06	0.04	0.70	0.11	0.06	0.08
10			0.03	0.03	0.02	0.20	0.02	0.01	0.03
11			0.02	0.02	0.01	0.20	0.01	0.02	0.02
12			0.01	0.00	0.01	0.10	0.02	0.01	0.01
13			0.00	0.00	0.01	0.01	0.00	0.01	0.01
14			0.00	0.01	0.00	0.01	0.00	0.00	0.00
15			0.00	0.00	0.00	0.01	0.00	0.00	0.00
16			0.00	0.00	0.00	0.05	0.00	0.00	0.00
Unk			0.02	0.00	0.00	0.00	0.00	0.00	0.00
5+	**0.00**	**0.00**	**15.76**	**29.78**	**6.53**	**12.17**	**4.73**	**1.96**	**13.47**
9+	**0.00**	**0.00**	**0.15**	**0.12**	**0.09**	**1.29**	**0.17**	**0.11**	**0.15**
Total	**0.00**	**0.00**	**94.40**	**133.09**	**13.85**	**12.20**	**5.12**	**2.20**	**52.97**

2001

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0		7.84	12.11	6.03	0.83	0.00	0.00	0.00	3.98
1		43.08	43.39	43.11	2.75	0.01	0.09	0.04	19.46
2		42.01	25.43	19.33	0.80	0.00	0.22	0.05	11.03
3		24.85	15.11	17.72	1.16	0.00	0.71	0.06	8.68
4		22.33	14.41	16.46	1.85	0.01	0.32	0.03	7.89
5		11.47	8.72	10.01	1.57	0.45	0.53	0.22	5.00
6		9.37	6.37	9.55	2.05	2.97	1.35	0.63	4.66
7		4.02	2.40	4.18	1.20	4.21	0.86	0.56	2.19
8		0.49	0.33	0.83	0.32	2.09	0.26	0.20	0.48
9		0.24	0.09	0.11	0.07	0.52	0.05	0.06	0.09
10		0.13	0.03	0.01	0.02	0.16	0.02	0.03	0.03
11		0.02	0.02	0.01	0.01	0.26	0.02	0.03	0.02
12		0.02	0.01	0.00	0.01	0.08	0.02	0.02	0.01
13		0.02	0.01	0.02	0.01	0.03	0.00	0.01	0.01
14		0.00	0.00	0.00	0.00	0.05	0.01	0.00	0.00
15		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
Unk		0.03	0.07	0.01	0.00	0.00	0.28	0.00	0.01
5+	**0.00**	**25.81**	**18.05**	**24.72**	**5.24**	**10.82**	**3.40**	**1.75**	**12.51**
9+	**0.00**	**0.46**	**0.22**	**0.16**	**0.11**	**1.10**	**0.41**	**0.15**	**0.18**
Total	**0.00**	**165.92**	**128.50**	**127.37**	**12.62**	**10.85**	**4.74**	**1.92**	**63.55**

No Survey

Table 28b Stratified mean number per tow, at age, by division, from 2002-2007 Canadian fall surveys. See Table 2 for explanation of otoliths used.

2002

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0			14.85	3.80	0.23	0.00	0.00	0.00	3.47
1			44.05	36.95	2.40	0.00	0.35	0.12	16.64
2			24.64	24.35	1.24	0.00	0.27	0.04	10.66
3			12.12	12.53	1.28	0.00	1.14	0.09	5.86
4			11.25	8.84	1.55	0.01	0.83	0.09	4.62
5			6.89	5.82	1.83	0.36	0.70	0.21	3.26
6			2.45	1.87	0.98	1.41	0.69	0.41	1.41
7			1.00	0.69	0.61	1.57	0.65	0.47	0.72
8			0.31	0.18	0.24	1.18	0.21	0.23	0.25
9			0.04	0.02	0.04	0.54	0.04	0.06	0.05
10			0.02	0.01	0.01	0.15	0.02	0.02	0.02
11			0.01	0.00	0.01	0.04	0.01	0.03	0.01
12			0.00	0.00	0.01	0.00	0.00	0.01	0.00
13			0.01	0.00	0.01	0.01	0.00	0.01	0.01
14			0.00	0.00	0.00	0.01	0.00	0.00	0.00
15			0.00	0.00	0.00	0.00	0.00	0.01	0.00
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unk			0.05	0.00	0.01	0.00	0.01	0.00	0.01
5+	**0.00**	**0.00**	**10.77**	**8.59**	**3.73**	**5.26**	**2.34**	**1.44**	**5.74**
9+	**0.00**	**0.00**	**0.13**	**0.03**	**0.07**	**0.74**	**0.08**	**0.13**	**0.10**
Total	**0.00**	**0.00**	**117.68**	**95.06**	**10.44**	**5.27**	**4.93**	**1.79**	**46.99**

No Survey

2003

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0			5.67	12.51	0.32	0.00	0.04	0.02	4.17
1			65.67	31.78	3.13	0.00	0.22	0.31	19.51
2			37.73	18.60	1.80	0.00	0.25	0.21	11.81
3			13.06	11.78	2.51	0.00	0.54	0.15	6.22
4			10.13	9.61	2.76	0.26	0.50	0.29	5.32
5			6.10	6.50	2.00	1.75	0.31	0.30	3.50
6			2.33	2.04	1.03	2.68	0.08	0.28	1.35
7			1.06	0.74	0.51	2.08	0.02	0.18	0.59
8			0.23	0.21	0.15	1.46	0.01	0.11	0.19
9			0.03	0.04	0.03	0.53	0.01	0.03	0.04
10			0.02	0.01	0.01	0.21	0.00	0.02	0.02
11			0.02	0.01	0.00	0.02	0.00	0.02	0.01
12			0.01	0.00	0.00	0.06	0.00	0.01	0.01
13			0.01	0.00	0.01	0.00	0.00	0.00	0.00
14			0.00	0.00	0.00	0.02	0.00	0.00	0.00
15			0.00	0.00	0.00	0.11	0.00	0.00	0.00
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unk			0.00	0.01	0.00	0.00	0.00	0.03	0.00
5+	**0.00**	**0.00**	**9.79**	**9.55**	**3.74**	**8.91**	**0.42**	**0.98**	**5.71**
9+	**0.00**	**0.00**	**0.08**	**0.07**	**0.05**	**0.95**	**0.01**	**0.11**	**0.08**
Total	**0.00**	**0.00**	**142.05**	**93.83**	**14.26**	**9.18**	**1.96**	**1.96**	**52.74**

No Survey

2004

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0		10.68	6.48	2.56	0.09		0.03	0.02	2.62
1		44.81	38.71	29.43	2.04		0.53	0.23	17.31
2		47.15	38.89	26.11	2.31		0.62	0.31	18.90
3		18.88	15.01	14.84	2.23		0.80	0.17	8.93
4		22.90	12.32	12.35	3.16		0.84	0.08	8.06
5		19.11	6.51	11.11	2.42		1.19	0.09	6.21
6		8.52	2.39	2.74	0.76		0.25	0.01	2.02
7		3.38	1.32	1.01	0.20		0.09	0.02	0.82
8		1.22	0.41	0.32	0.02		0.01	0.00	0.26
9		0.26	0.09	0.08	0.00		0.00	0.00	0.06
10		0.08	0.04	0.03	0.00		0.00	0.00	0.02
11		0.00	0.01	0.00	0.00		0.01	0.00	0.00
12		0.05	0.01	0.00	0.00		0.00	0.00	0.01
13		0.01	0.00	0.01	0.00		0.00	0.00	0.00
14		0.02	0.00	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
16		0.00	0.00	0.00	0.00		0.00	0.00	0.00
Unk		0.05	0.00	0.00	0.00		0.00	0.00	0.00
5+	**0.00**	**13.59**	**10.77**	**15.31**	**3.40**	**0.00**	**1.55**	**0.11**	**9.41**
9+	**0.00**	**0.21**	**0.15**	**0.13**	**0.00**	**0.00**	**0.01**	**0.00**	**0.10**
Total	**0.00**	**166.44**	**122.18**	**100.61**	**13.23**	**0.00**	**4.38**	**0.92**	**65.22**

No Survey

No Survey

2005

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0			9.86	1.78	0.15		0.00	0.00	2.97
1			31.62	4.56	1.33		0.04	0.08	7.30
2			19.61	14.06	1.32		0.17	0.07	6.29
3			10.86	7.27	1.03		0.29	0.09	3.92
4			11.35	15.31	2.85		0.36	0.08	5.72
5			9.38	12.74	2.69		0.57	0.18	4.36
6			4.18	8.57	2.13		0.65	0.25	3.15
7			2.60	4.85	1.33		0.28	0.18	1.94
8			0.56	0.71	0.16		0.14	0.19	0.39
9			0.15	0.08	0.02		0.04	0.07	0.08
10			0.05	0.02	0.01		0.01	0.02	0.02
11			0.01	0.04	0.00		0.00	0.01	0.01
12			0.00	0.01	0.00		0.00	0.01	0.01
13			0.00	0.01	0.00		0.00	0.00	0.00
14			0.01	0.00	0.00		0.00	0.00	0.00
15			0.01	0.00	0.00		0.00	0.00	0.00
16			0.00	0.00	0.00		0.00	0.00	0.00
Unk			0.15	0.00	0.00		0.00	0.00	0.08
5+	**0.00**	**0.00**	**17.09**	**27.04**	**6.34**	**0.00**	**1.69**	**0.91**	**10.03**
9+	**0.00**	**0.00**	**0.38**	**0.17**	**0.03**	**0.00**	**0.05**	**0.10**	**0.20**
Total	**0.00**	**0.00**	**100.39**	**70.02**	**13.02**	**0.00**	**2.56**	**1.23**	**36.23**

No Survey

No Survey

No Survey

2006

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0		2.49	4.48	3.23	0.28	0.00	0.01	0.00	1.66
1		35.12	51.44	17.88	1.54	0.00	0.15	0.34	15.08
2		28.69	26.40	12.88	0.40	0.00	0.16	0.24	9.78
3		26.02	16.22	2.97	0.15	0.00	0.13	0.04	5.56
4		39.41	22.80	13.79	1.30	0.01	0.21	0.02	10.03
5		28.76	17.71	9.80	2.14	0.24	0.38	0.06	8.00
6		12.26	9.78	8.83	2.67	1.90	0.26	0.03	5.42
7		6.61	3.58	4.75	1.49	2.66	0.07	0.01	2.58
8		1.70	0.86	1.32	0.43	1.44	0.02	0.01	0.75
9		0.49	0.16	0.17	0.08	0.71	0.01	0.00	0.14
10		0.10	0.03	0.04	0.02	0.07	0.00	0.00	0.03
11		0.09	0.02	0.03	0.02	0.15	0.00	0.00	0.02
12		0.00	0.02	0.01	0.01	0.05	0.00	0.00	0.01
13		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14		0.01	0.01	0.00	0.00	0.05	0.00	0.00	0.00
15		0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
16		0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unk		0.00	0.04	0.00	0.00	0.00	0.03	0.00	0.01
5+	**0.00**	**50.08**	**32.20**	**24.94**	**6.86**	**7.26**	**0.77**	**0.10**	**16.96**
9+	**0.00**	**0.74**	**0.27**	**0.23**	**0.13**	**1.03**	**0.04**	**0.00**	**0.21**
Total	**0.00**	**181.81**	**153.53**	**75.68**	**10.53**	**7.28**	**1.43**	**0.74**	**59.07**

No Survey

2007

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0			4.21	0.72	0.13	0.00	0.08	0.00	2.62
1			29.88	35.49	1.24	0.00	0.17	0.18	17.31
2			17.63	11.06	0.93	0.00	0.09	0.07	18.90
3			8.38	15.44	0.31	0.00	0.13	0.05	8.93
4			7.63	28.43	1.14	0.00	0.24	0.05	8.06
5			7.04	10.86	1.06	0.01	0.32	0.16	6.21
6			4.72	14.79	2.04	0.49	0.65	0.38	2.02
7			3.08	8.42	1.63	2.35	0.63	0.37	0.82
8			1.37	2.90	0.60	2.14	0.45	0.25	0.26
9			0.31	0.32	0.09	0.66	0.08	0.12	0.06
10			0.08	0.07	0.02	0.25	0.03	0.04	0.02
11			0.05	0.04	0.02	0.12	0.00	0.02	0.00
12			0.02	0.02	0.00	0.11	0.01	0.02	0.01
13			0.01	0.01	0.00	0.07	0.02	0.00	0.00
14			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
16			0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unk			0.03	0.02	0.00	0.00	0.02	0.00	0.00
5+	**0.00**	**0.00**	**16.73**	**37.46**	**5.46**	**6.18**	**2.21**	**1.35**	**9.41**
9+	**0.00**	**0.00**	**0.51**	**0.49**	**0.14**	**1.20**	**0.16**	**0.21**	**0.10**
Total	**0.00**	**0.00**	**84.45**	**128.60**	**9.21**	**6.18**	**2.91**	**1.69**	**65.22**

No Survey

No Survey

Table 28c Stratified mean number per tow, at age, by division, from 2008 Canadian fall surveys. See Table 2 for explanation of otoliths

2008

Age (yrs)	Div. 2G	Div. 2H	Div. 2J	Div. 3K	Div. 3L	Div. 3M	Div. 3N	Div. 3O	Total
0		0.20	13.85	5.56	0.47		0.04	0.03	3.78
1		27.82	13.49	18.05	1.82		0.03	0.10	8.64
2		24.87	15.00	8.36	0.61		0.04	0.17	6.11
3		12.92	4.91	11.33	1.35		0.13	0.26	5.03
4		15.77	6.35	11.96	1.98		0.12	0.06	5.56
5		12.55	3.87	10.32	1.72		0.12	0.12	4.35
6		6.89	2.97	8.90	1.70		0.19	0.15	3.56
7		4.41	2.09	4.64	1.31		0.14	0.09	2.13
8		2.12	0.95	2.27	0.72		0.10	0.05	1.04
9	**No Survey**	0.42	0.18	0.21	0.05	**No Survey**	0.02	0.02	0.13
10		0.13	0.05	0.02	0.01		0.00	0.00	0.03
11		0.06	0.01	0.02	0.00		0.00	0.00	0.01
12		0.03	0.01	0.00	0.00		0.00	0.00	0.00
13		0.00	0.00	0.01	0.00		0.00	0.00	0.00
14		0.01	0.01	0.00	0.00		0.00	0.00	0.00
15		0.01	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
Unk		0.16	0.01	0.00	0.01		0.00	0.00	0.00
5+	**0.00**	**26.80**	**10.14**	**26.37**	**5.52**	**0.00**	**0.58**	**0.42**	**11.25**
9+	**0.00**	**0.83**	**0.27**	**0.25**	**0.07**	**0.00**	**0.03**	**0.02**	**0.18**
Total	**0.00**	**108.37**	**63.74**	**81.63**	**11.76**	**0.00**	**0.93**	**1.03**	**40.37**

Table 29 - Greenland halibut stratified mean number per set at age from Canadian spring surveys conducted in Divisions 3LNO combined during 1996-2008 (not surveyed in 2006). Only otoliths collected in 3L, 3N, or 3O are used in the analysis. Numbers are expressed in Campelen 1800 units.

Age (yrs)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
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
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
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
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
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
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
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
7	0.06	0.10	0.33	0.24	0.56	0.28	0.05	0.05	0.04	0.21	**No Survey**	1.12	0.64
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
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
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
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
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
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

Table 30a. Estimates of Mean Length (cm) at age, ages 0-10, from Canadian fall surveys in Divisions 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

Table 30b. Estimates of Mean Weight (kg) at age, ages 0-10, from Canadian fall surveys in Divisions 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

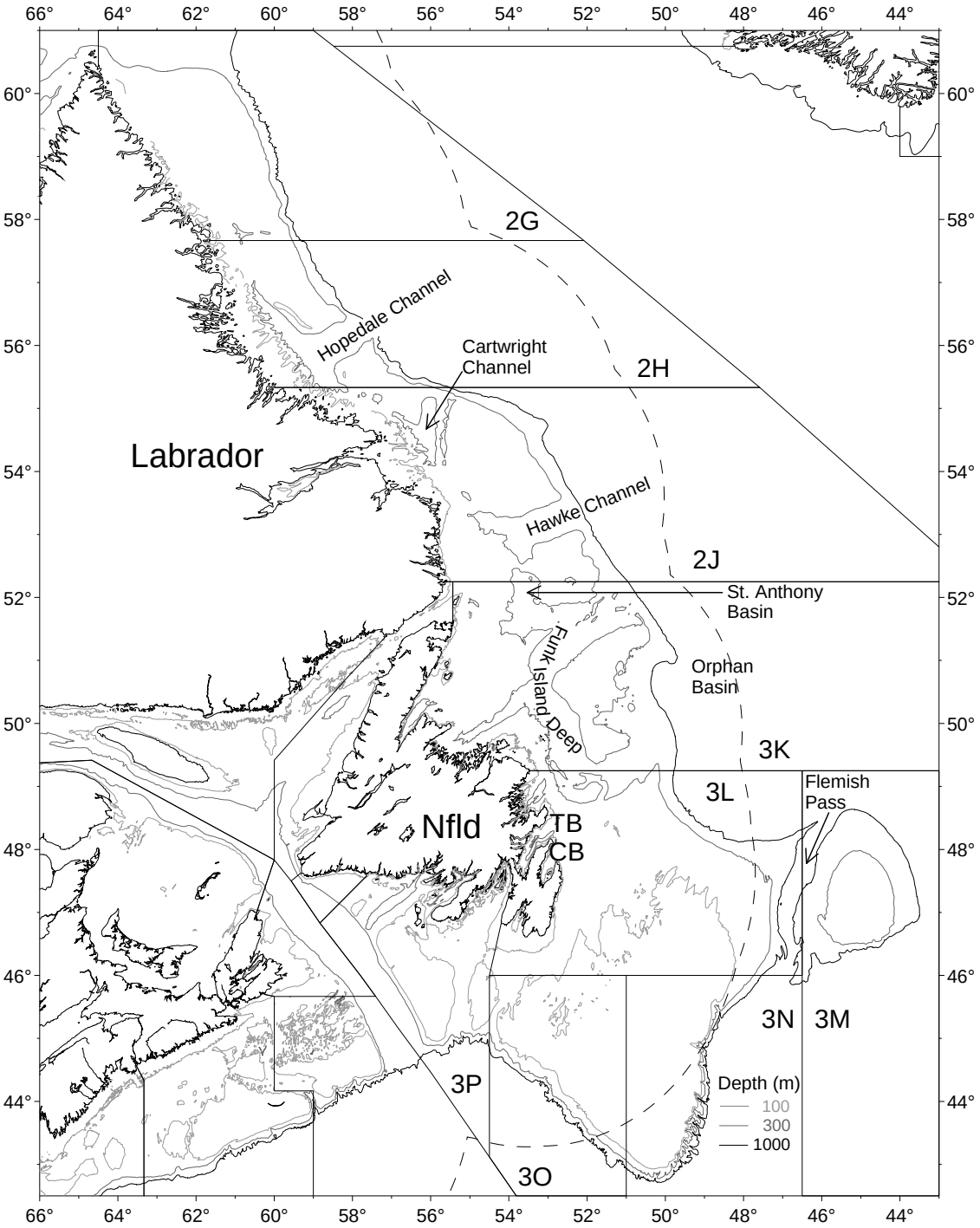


Figure 1. Map of stock area, with NAFO dividing lines, select isobaths, and names referred to in the text. TB and CB refer to Trinity and Conception Bays, respectively.

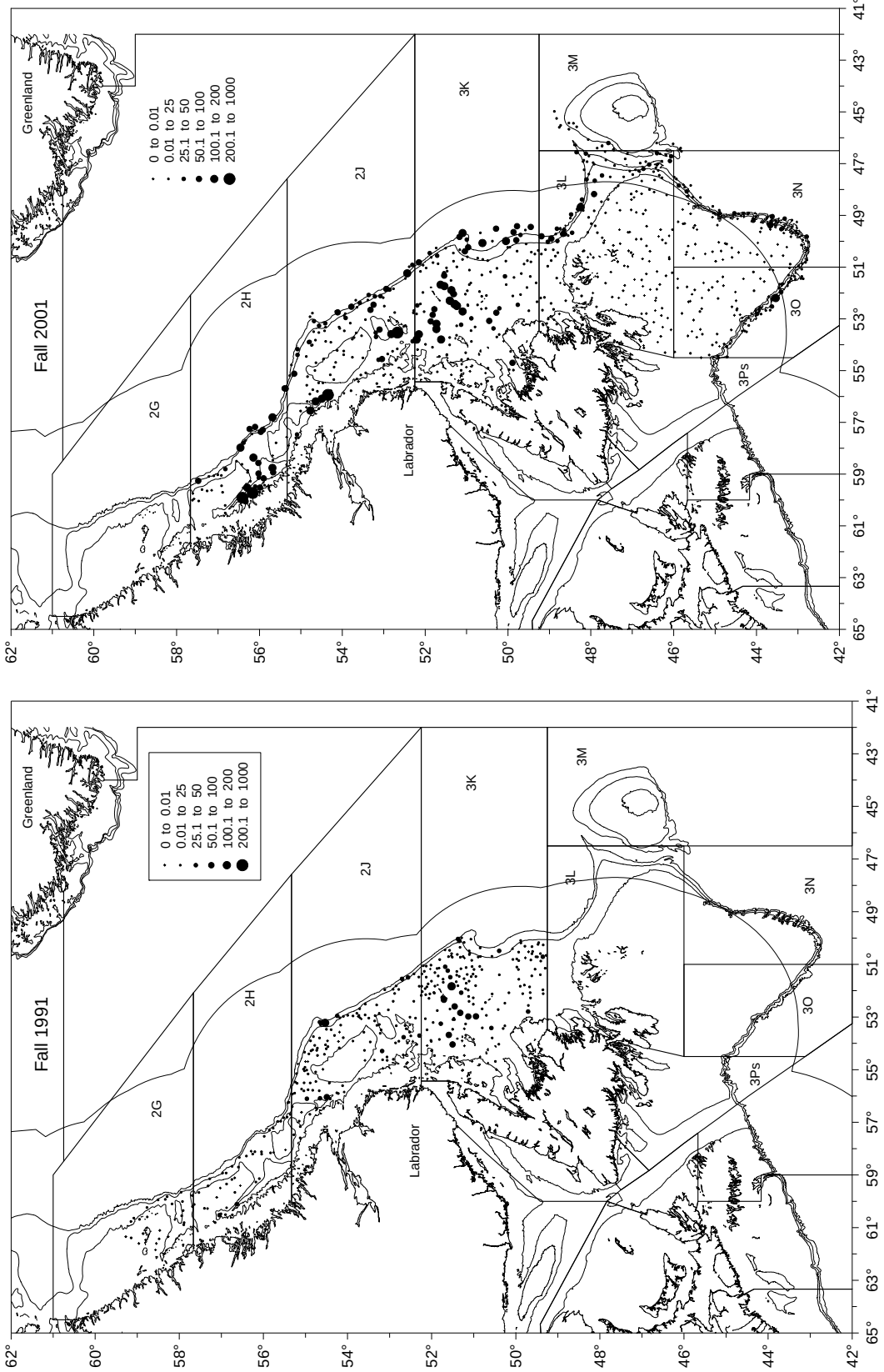


Figure 2. Distribution (kg per set) of Greenland halibut from Canadian fall surveys during 1991 (left) and 2001 (right). Depth contours at 200m, 500m, and 1000m are plotted, along with the NAFO Divisional boundary lines, and the 200 mile limit demarcating Canadian waters.

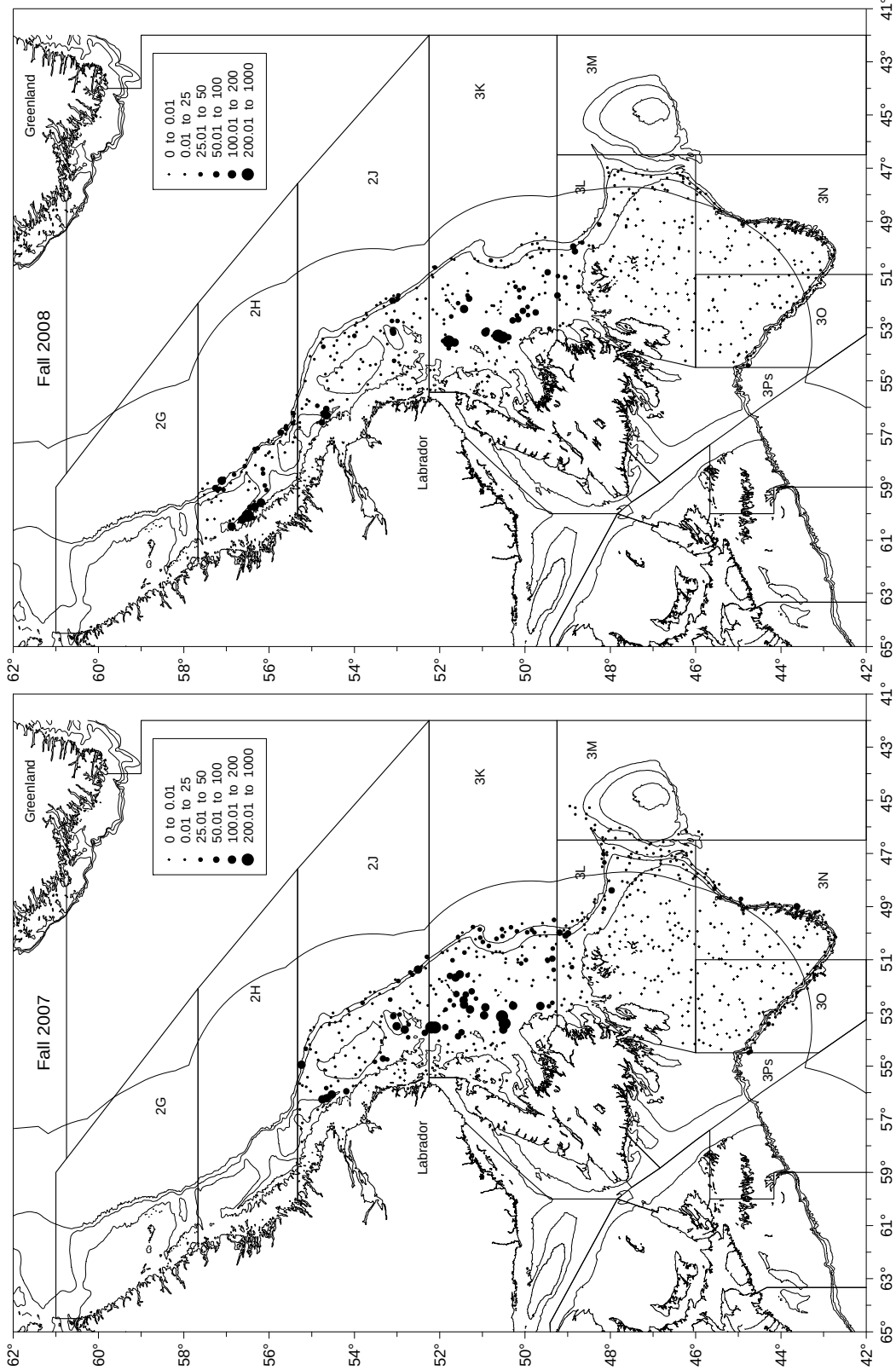


Figure 2.(cont.) Distribution (kg per set) of Greenland halibut from Canadian fall surveys during 2006 (left) and 2007 (right). Depth contours at 200m, 500m, and 1000m are plotted, along with the NAFO Divisional boundary lines, and the 200 mile limit demarcating Canadian waters.

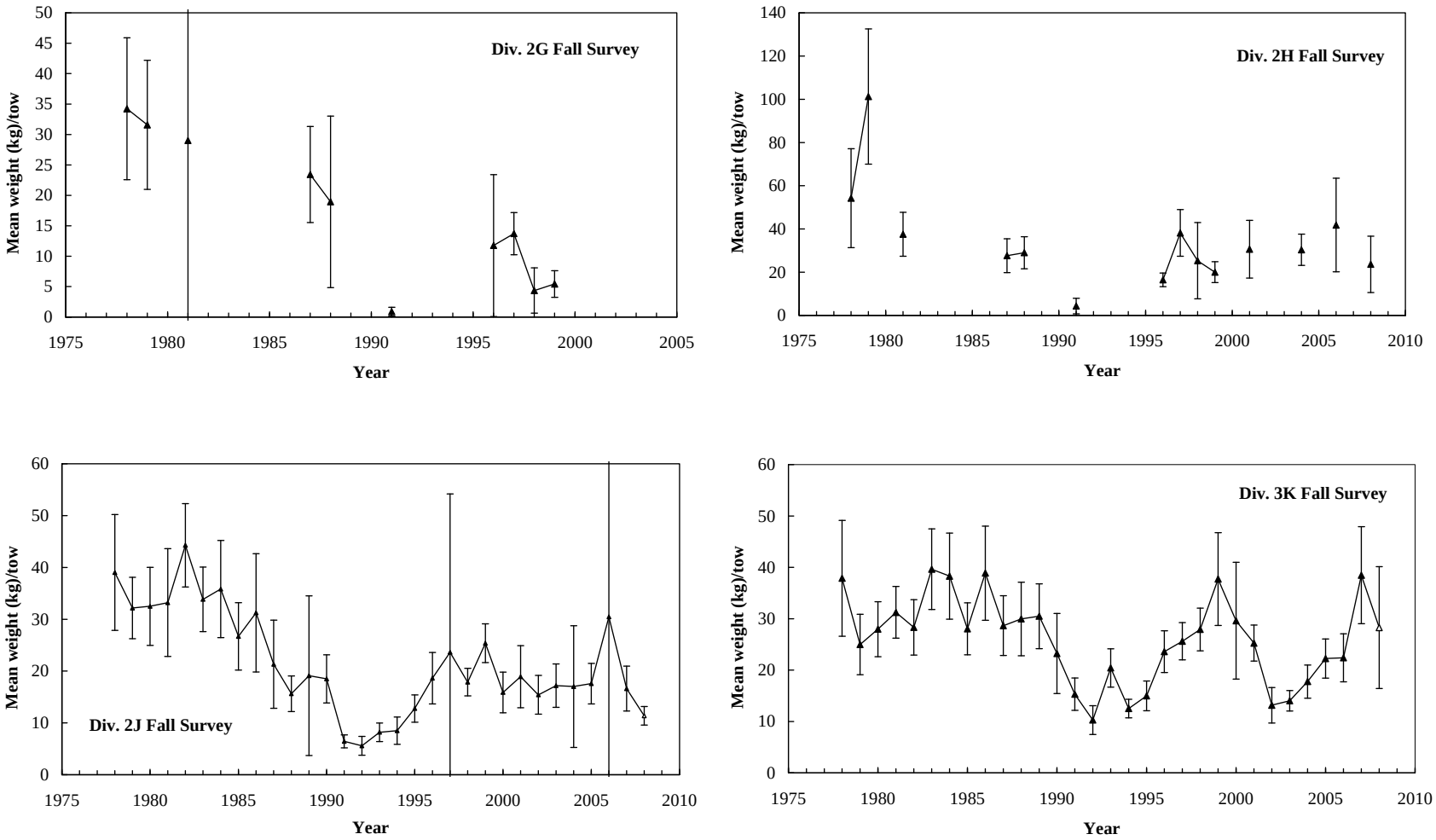


Figure 3a. Campelen stratified mean weight per tow estimates by NAFO Division from Canadian fall surveys during 1978-2008.

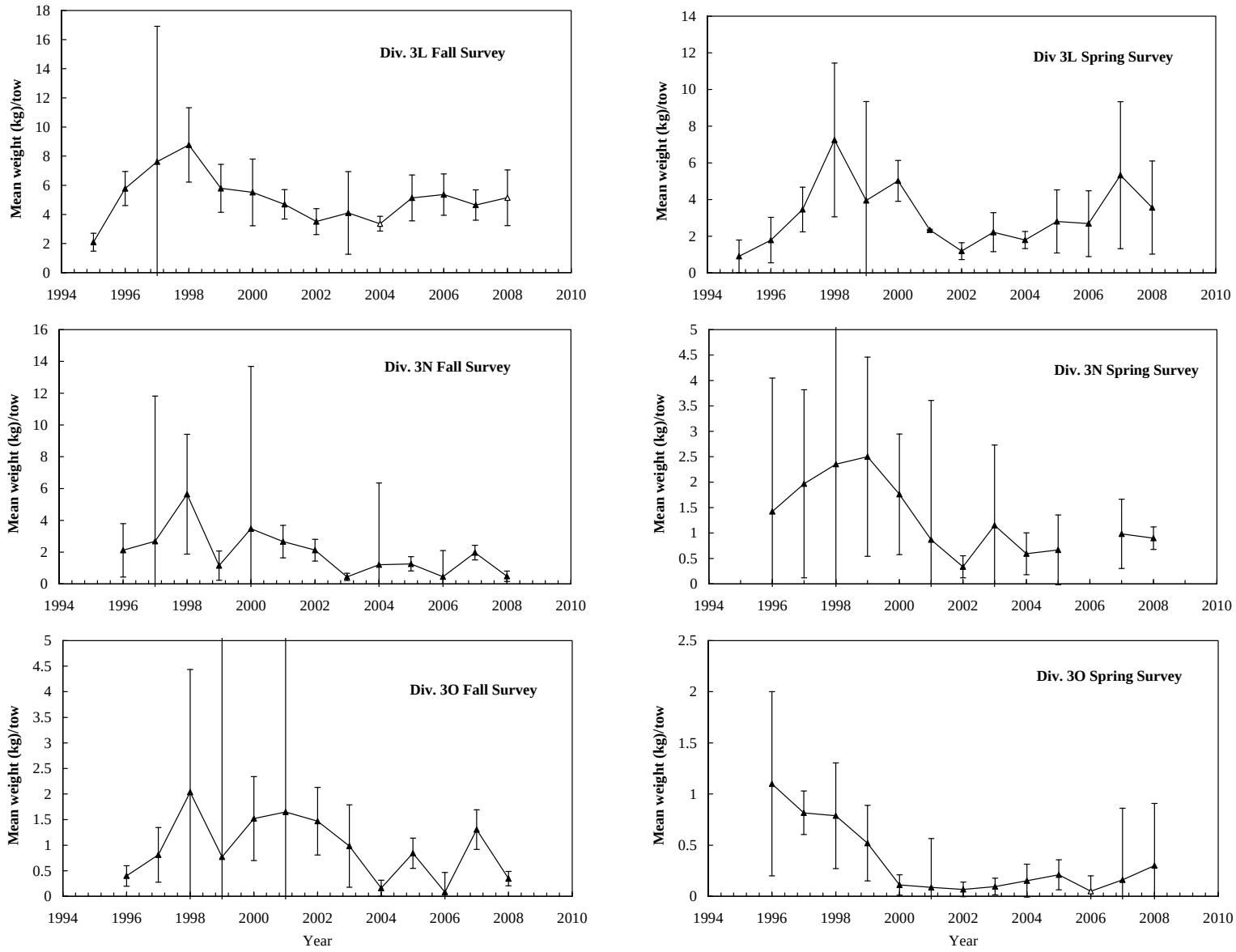


Figure 3b. Campelen stratified mean weight per tow estimates by NAFO Division during fall and spring surveys.

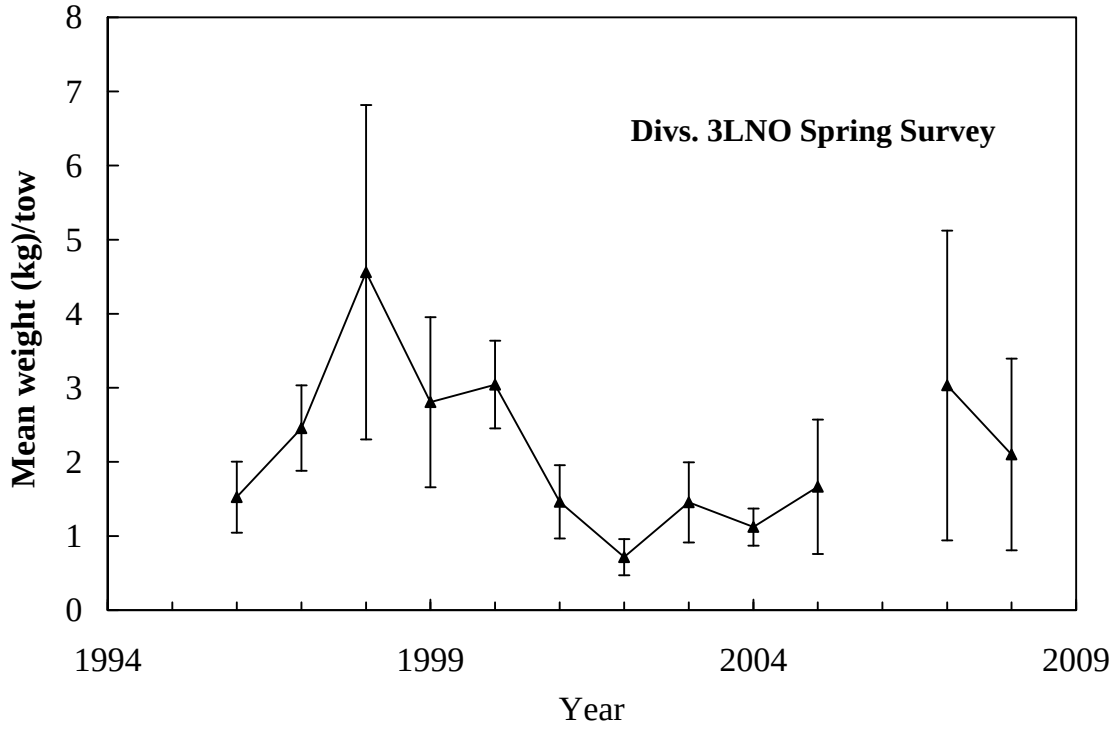


Figure 3c. Biomass Index for spring surveys in Divisions 3LNO combined.

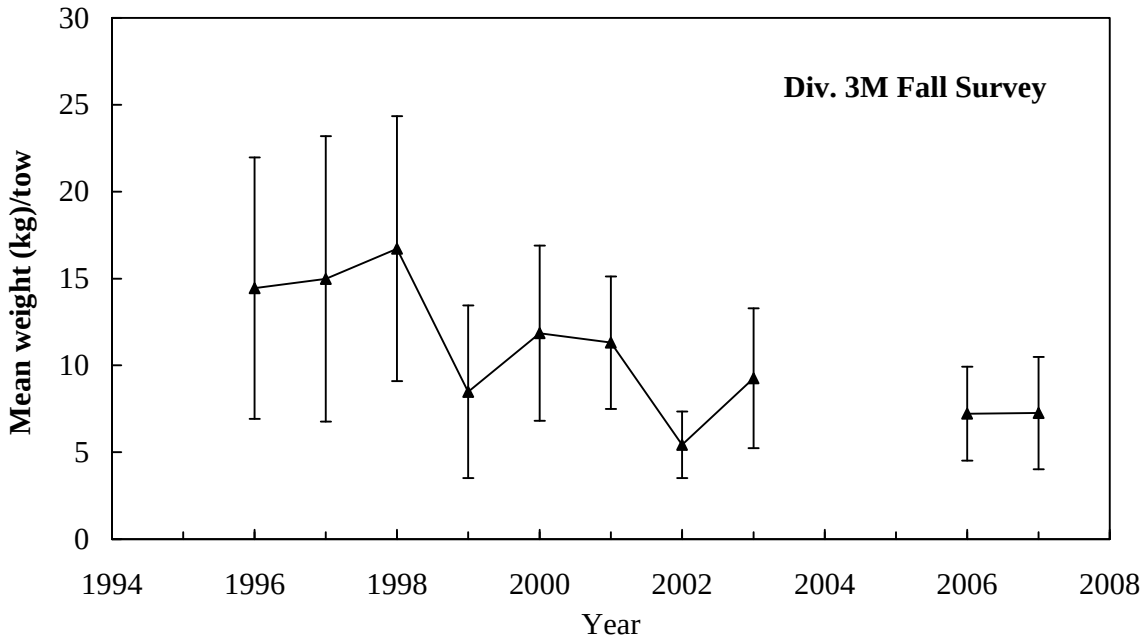
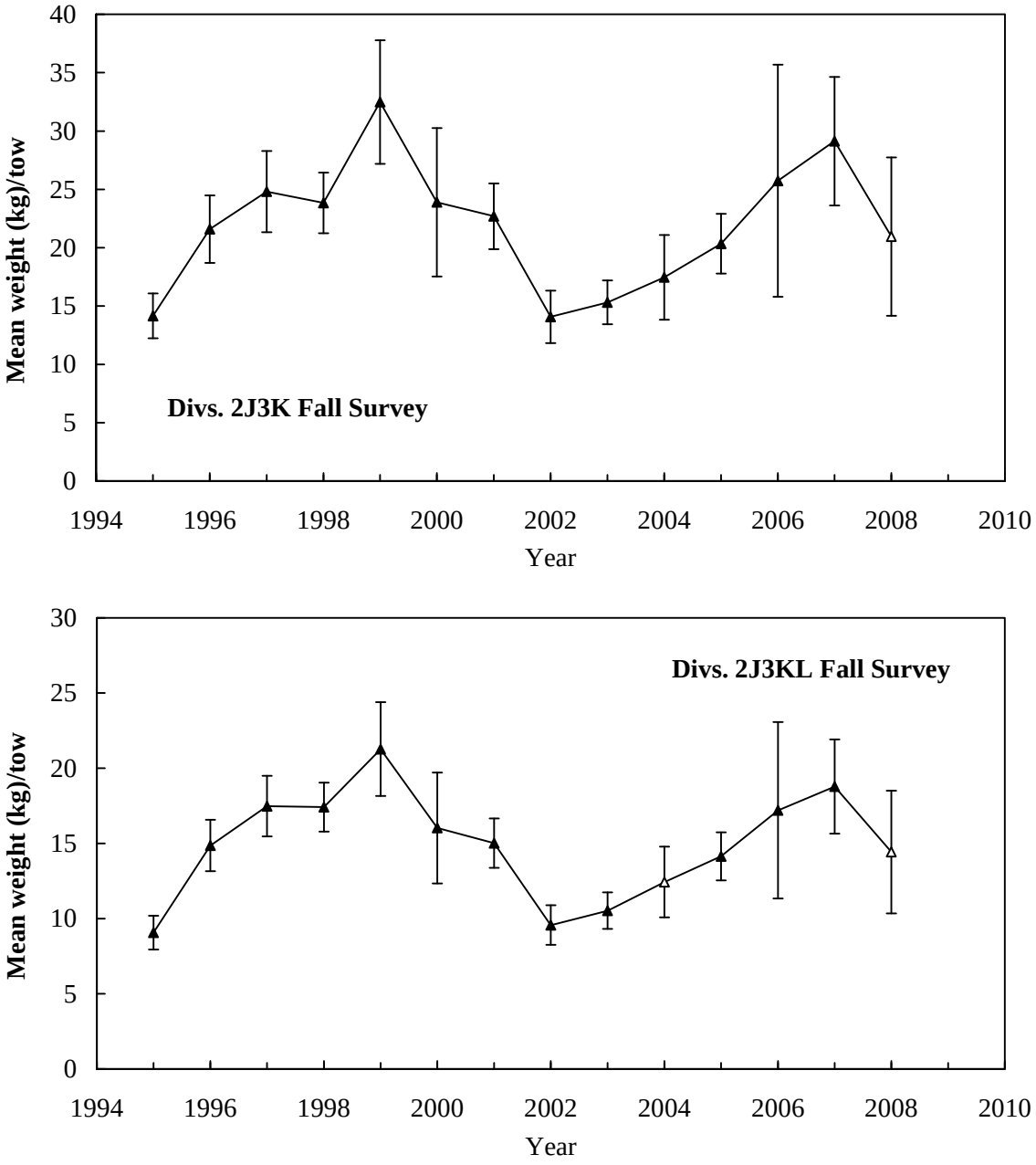


Figure 3d. Campelen stratified mean weight per tow estimates for Division 3M (strata 528-536 only).



Figures 3e. Campelen stratified mean weight per tow estimates for Divisions 2J3K combined and 2J3KL combined.

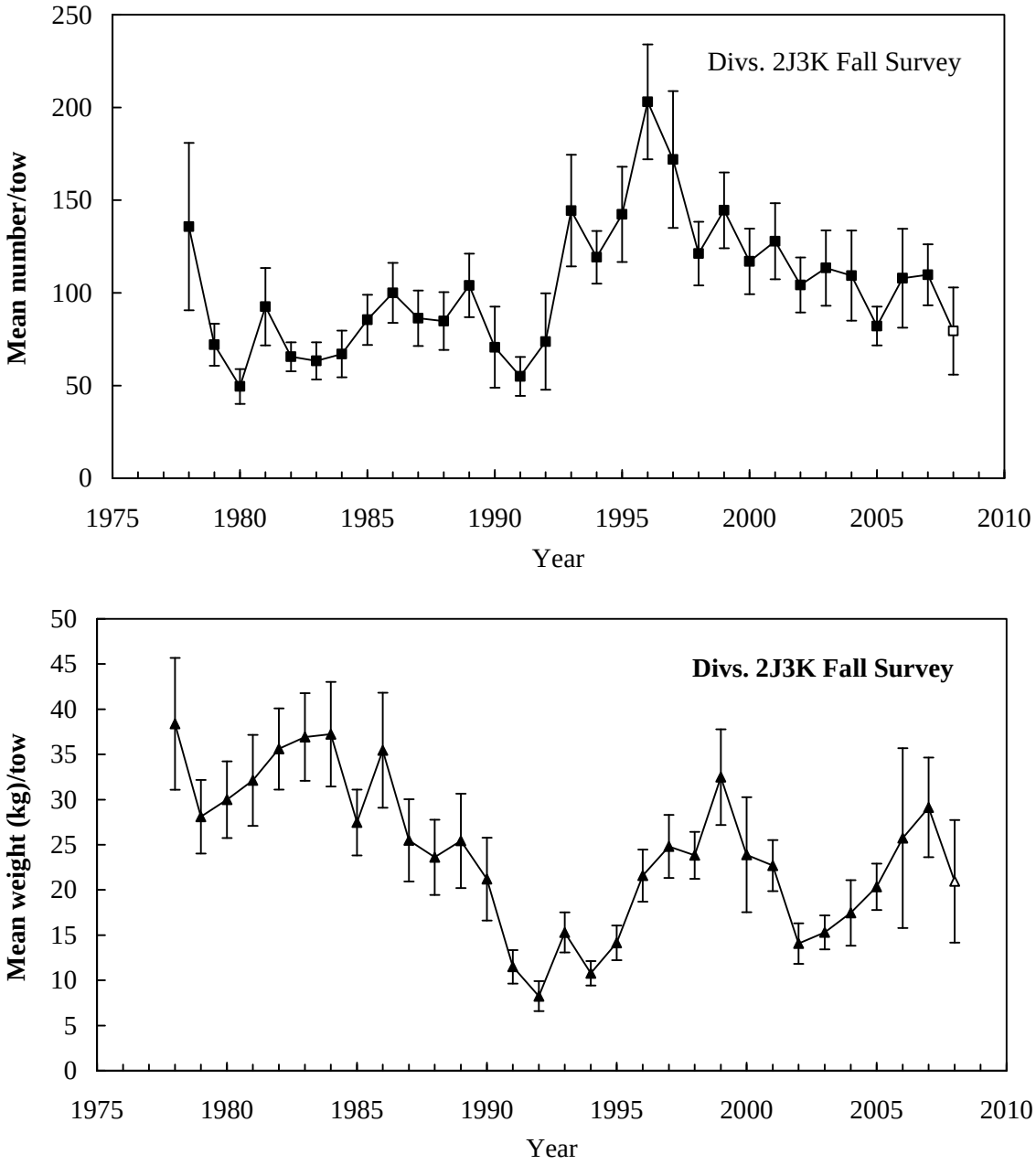


Figure 4. Campelen (or equivalent) stratified mean number and weight (kg) per tow of Greenland Halibut from fall surveys in NAFO Divisions 2J3K combined during 1978-2008.

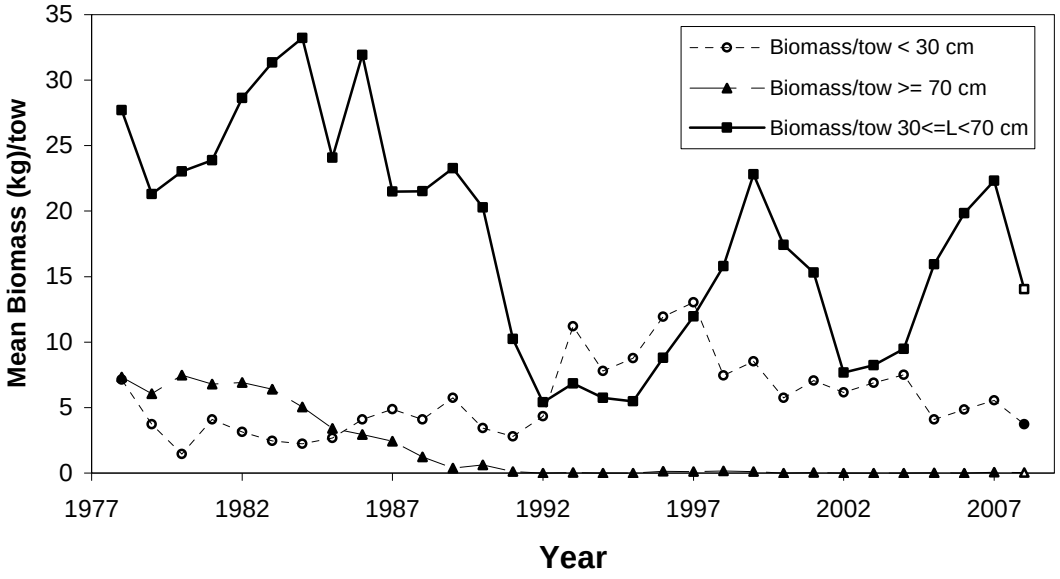


Figure 5. Mean biomass (kg) per tow of Greenland Halibut by selected length classes from fall surveys conducted in Divisions 2J3K during 1978-2008. See text for computational details.

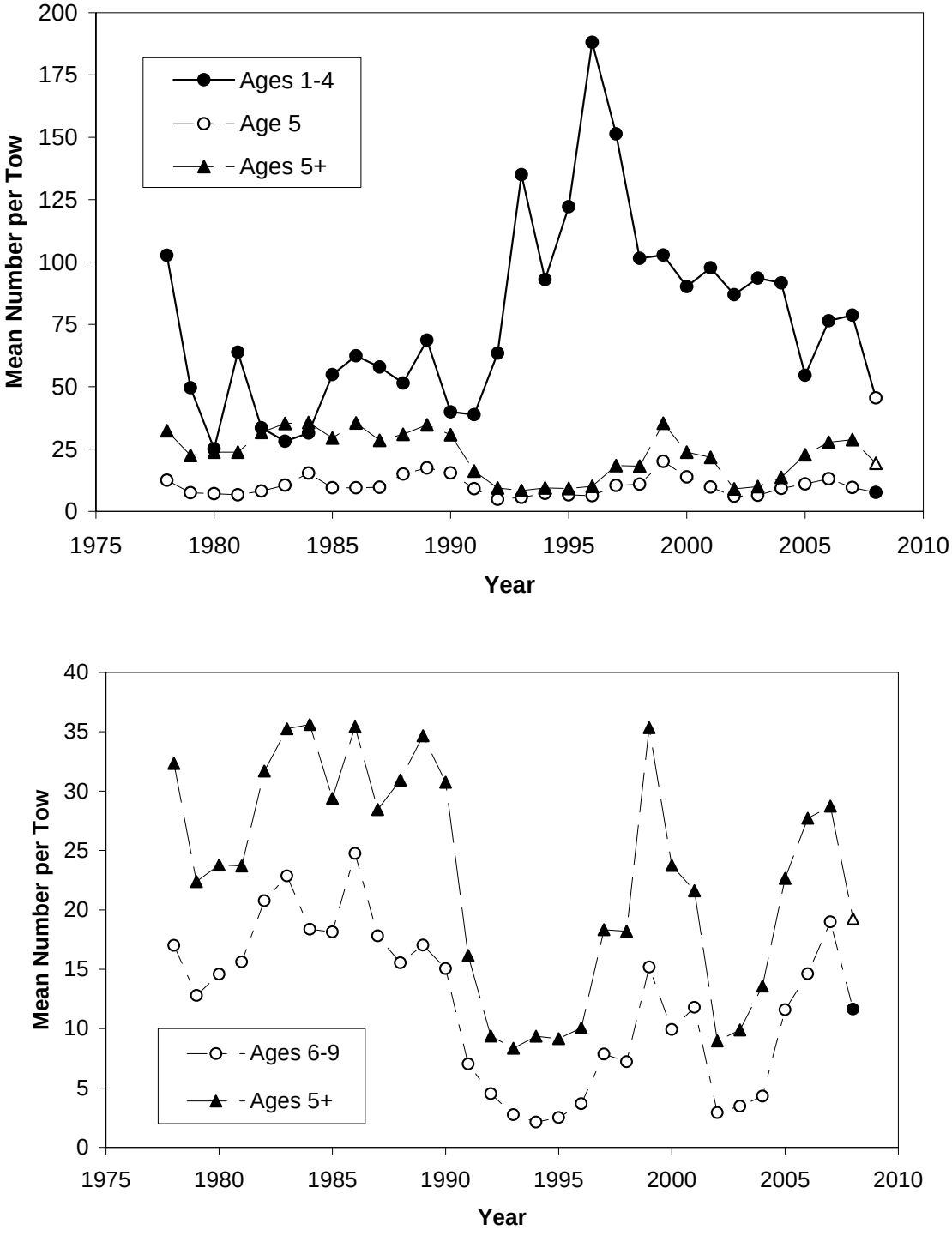


Figure 6. Trends in mean number per tow estimates by age/age grouping from Canadian fall surveys in Divs. 2J3K combined during 1978-2008. Upper panel: Ages 1-4 representative of recruitment, age 5 recruitment to the fishery, and ages 5+ exploitable biomass. Lower panel: Comparison of ages 5+ and ages 6-9.

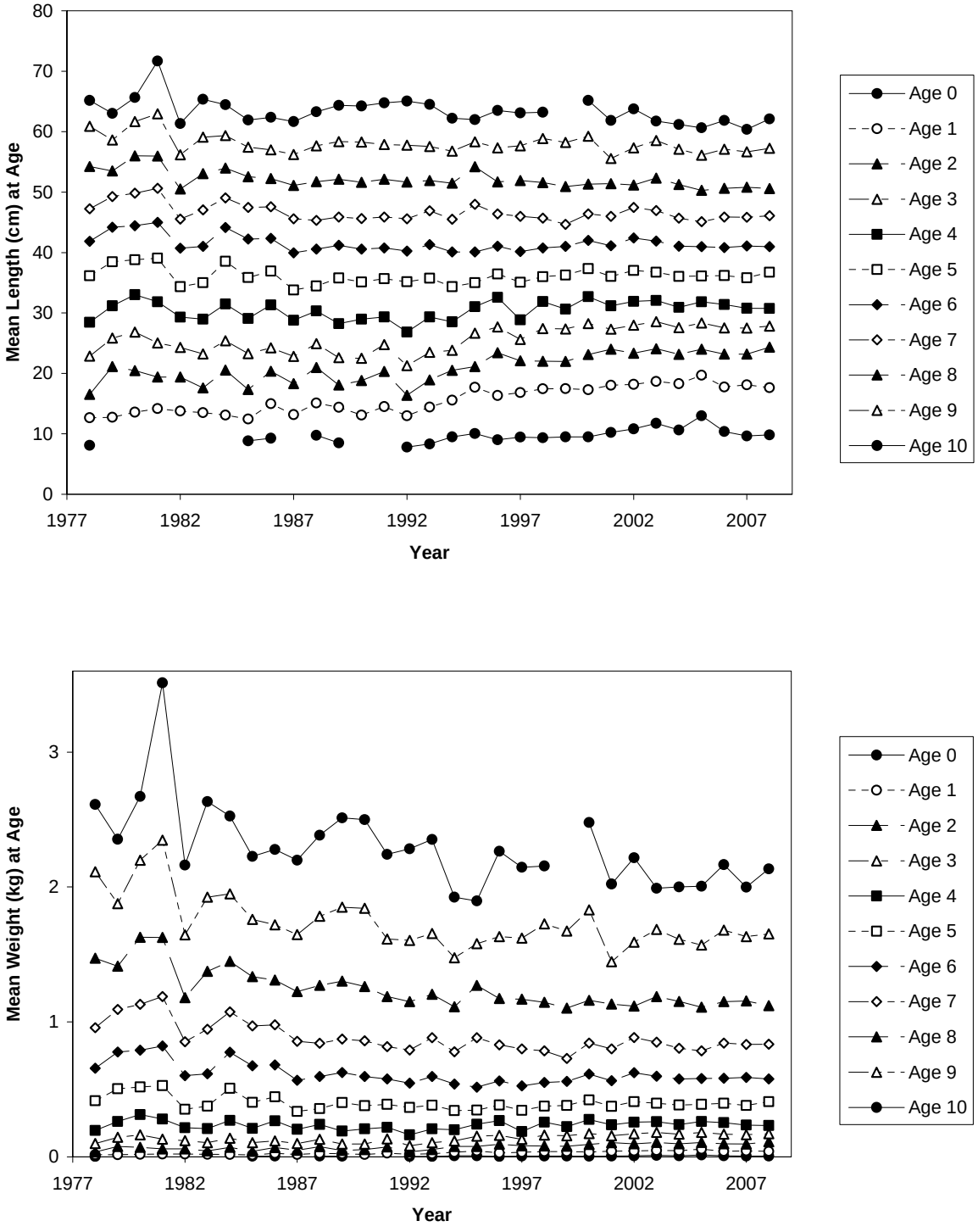


Figure 7. Length at age (cm) and weight at age (kg) for Greenland halibut from Canadian fall surveys in Div. 2J3K, ages 0-10, from 1978-2008.