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An Assessment of American Plaice in NAFO Divisions 3LNO

by

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Abstract

Catches from this stock were generally in the range of 40,000 to 50,000 t per year throughout the 1970's and 1980's, before declining to low levels in the early 1990's. There has been no directed fishing on this stock since 1993. The TAC's in 1995-2003 have been set at 0. The catch from 1999 to 2001 increased from 2600 t to 5700 t. Catch in 2002 was 4800 t. Catch in all three years was mainly taken in the NAFO regulatory area (NRA). The Canadian spring surveys show a large decline in abundance and biomass from the mid to late 1980's to the mid 1990's with the average biomass index of the last 3 years (expressed as mean weight per tow) being only 22% of that of the mid 1980's. The fall survey has also shown large declines and the biomass index is only 32 % of that of 1990. There may be a slight increase in both surveys since the mid 1990's. Mortality on younger (less than 5) ages has remained high throughout the time series. For older ages mortality declined after the mid 1990's but has increased on most ages over 6 in both surveys. The survey indicates no good year-classes since the mid-1980s. The VPA analyses showed that population abundance and biomass declined fairly steadily from the mid 1970's. Biomass has been relatively stable over the last number of years. F since 1995 has increased fairly steadily from 1995 to 2000. Average F on ages 11-14 in 2002 was 0.17, lower than in 2001, consistent with the decline in catch. SSB remains at a very low level at just over 20 000 t. This is only 10% of the level in the mid 1960's and 16% of the level in the mid-1980s. Recruitment has been steadily declining since the 1986 year-class and there have been no good year classes since then. No good recruitment is seen below an SSB of 50 000 t, the Blim for this stock. Projections indicate that the stock will experience 5 times greater growth over the next 5 years at F=0 compared to current levels of F. However, even at F=0 the stock will not reach B_{lim} within 5 years.

TAC regulation

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This stock has been under TAC regulation since 1973 when a TAC of 60,000 t was established. From 1973-87, the TAC varied from 47,000 t to 60,000 t (Table 1) but was lowered to 33,585 t in 1988. Further reductions followed, bringing the TAC to 10,500 t in 1993. In 1994, a TAC of 4.800 t was implemented, but the Fisheries Commission of NAFO stated that no directed fisheries were to take place on this stock. The TAC has been set at 0 since then.

Catch trends

Catches increased from about 20,000 t in the early 1960s to a peak of 94,000 t in 1967, were relatively stable around 45,000-50,000 t in 1973-82, then declined to 39,000 t in 1984-85 (Table 1, Fig. 1). Catches increased to 65,000 t in 1986 and then declined rapidly thereafter, to about 7,400 t in 1994. The catch declined following the moratorium in 1995, but then steadily increased until 2001 when it was over 5,700 t. Catch decreased somewhat in 2002 to 4,870 t. Most of these catches occurred as by catch in the skate and Greenland halibut fisheries in the NRA. In 2002, the Canadian catch totalled about 1,380 t, most of which was taken as by catch in the yellowtail flounder fishery.



From 1977 to 1982, the catch was taken almost exclusively by Canadian vessels, but the catch by other nations increased rapidly from less than 2,000 t in 1981-82 to over 30,000 t in 1986 as new fisheries were developed in the

Regulatory Area (Tables 1 and 2). Considerable doubts have arisen about some nominal catches in the 1985 to 1994 period, resulting in various catch estimates being used. These include surveillance estimates, breakdowns of unspecified flounder catches by S. Korea prior to 1991 based on reported flounder catches, and any other estimates deemed by Scientific Council to be reliable. There is also some uncertainty regarding catches prior to 1973, when large amounts of unspecified flounder catches from some nations were broken down by species based on estimates of species composition. As well, estimates of discards are not available, and are believed to be substantial during some periods.

Canadian research vessel surveys

Spring

Stratified-random surveys have been carried out on the Grand Bank by Canadian research vessels in the spring (April to June period) of each year from 1971 to 2002, with the exception of 1983. The stratification scheme used is shown in Figure 2. The data can be split into 3 time periods, based on the trawl used in each period: 1971-82 was Yankee 36, 1983-95 was Engel 145, and 1996-2002 was Campelen 1800 (see McCallum and Walsh (1996) for a description of the various trawls). Conversions exist for the first to second series (Gavaris and Brodie 1984), and from the second to the third (Morgan et al. 1998). However, data from the first series have not been converted to be comparable with the third series. Thus comparable data exist for 1971-95, and for 1984 to 2002. A full comparison between the Engel and Campelen data series is given in Brodie et al. (1998).

Biomass estimates for each Division by stratum and depth for 1996 to 2002 are given in Tables 3-5. In the spring survey in 2002 the biomass estimates for 3L, 3N and 3O were 17 000, 52 000 and 59 000 t respectively. From 1996 to 1998 the estimate for Div. 3N biomass was approximately half of the estimate for Div. 3O while from 1999 to 2002 the estimates in the two divisions are similar. Biomass in Div. 3LNO combined has increased somewhat since 1996 but is only 22% of that of the mid 1980's (Fig. 3).

In Figure 4 and 5 the biomass index is shown as mean weight per tow. In Figure 4 the index is presented by division and in Figure 5 for Div. 3LNO combined. Overall the combined index shows the same trend as the swept area estimate of biomass with a large decline followed by a slight increase since 1996. As with the swept area estimate the average mean weight per tow in the last 3 years is 22% of the average of the mid 1980's. The decrease in mean weight per tow has been greatest in Div. 3L (Fig. 4).

Figure 6 shows the abundance for Div. 3LNO combined from 1985 to 2002. The total abundance has fluctuated since 1996 with perhaps a slight increase over the period. Mean number per tow for Div. 3LNO combined shows the same trend (Fig. 7). As with the biomass estimate, mean number per tow has shown the greatest decline in Div. 3L (Fig. 8).

Tables 6-9 show the abundance at age from the Canadian spring surveys by division and for Div. 3LNO combined. The proportion of fish that are ages 0 to 5 are among the highest in the time series in 2000-2002, but these ages are probably 'under converted' in the 1985 to 1995 data (Table 9).

American plaice are distributed throughout the Div. 3LNO area but the largest concentration of fish in each year since 1996 has been in the southern portion of Div. 3O extending across the border into Div. 3N (Fig. 9). The concentration of fish in the southern area can also be seen in the low proportion of fish north of 45 N (Fig. 10).

Fall

Stratified-random surveys have been conducted in Div. 3L in the fall from 1981 to 2002, usually in October-November. From 1990 to 2002, fall surveys were also carried out in Div. 3NO. Surveys from 1983 to 1994 were done with the Engel trawl and starting in fall 1995, a Campelen 1800 trawl was used.

Biomass estimates by stratum and depth are given for each Division in Tables 10-12. Biomass estimates from the fall survey in 2002 were 44 000, 157 000 and 44 000 t for Div. 3L, 3N and 3O respectively. The large biomass estimate in 3N in 2000 is heavily influenced by a single large set in stratum 360. By contrast the large estimate in Div.

3N in 2002 is the result of a broader distribution of good catches (Table 11). Except for a decline in 2000, biomass in 3L in the fall survey has been fairly stable. During 1995 to 1997, Div. 3N constituted on average 40% of the Div. 3NO total while from 1999 to 2002 it averaged more than 65% of the Div. 3NO total.

The overall biomass for Div. 3LNO in the fall has shown a slight increasing trend since 1995 (Fig. 3). The biomass index remains well below that of 1990 with the average of the 2000 to 2002 indices representing only 37% of that of 1990. The biomass index expressed as mean weight per tow shows the same overall trend with the average of the last 3 years being 32% of the level of 1990 (Fig. 5). Mean weight per tow has shown the largest decline in Div. 3L and has been increasing since 1997 in Div. 3N (Fig. 11).

Figure 6 shows the abundance for Div. 3LNO combined from 1990 to 2002. Abundance showed a substantial decline from 1990 to 1998 but has been somewhat higher since 1998. Mean numbers per tow show the same pattern (Fig. 7). The largest decline was once again in Div. 3L (Fig. 12).

Tables 13-16 show the abundance by age for 1990 to 2001. Ageing was not available for 2002. Abundance in Div. 3L declined in each year since 1995 to 2000 but increased in 2001. The age composition has been rather stable over the time period, although younger ages have made up a higher proportion of the population in the last 2 years (Table 16).

Plots of distribution by weight (Fig. 13) for the fall surveys in 1995 to 2002 show that A. plaice are distributed throughout the Div. 3LNO area. However the area of highest concentration is southern 3NO, particularly the southern edge of Div. 3O and on the tail of the bank in 3N.

Comparison of Spring and Fall Surveys

Biomass and abundance from the spring and fall surveys can be seen in Figures 3 and 6. Both surveys have shown similar trends in biomass and abundance over the 1990 to 2002 period. Both surveys have shown the largest decline in Div. 3L. Distribution is also similar between the two surveys, with the majority of the fish being distributed in southern Div. 3NO.

Catch to RV Biomass ratio

In 2000 STACFIS recommended that *in future catch to survey biomass plots be presented*. Therefore, as a proxy for fishing mortality on this stock, the ratio of catch to biomass from spring RV surveys was examined. Examination of the catch/biomass ratios from Campelen data from 1985 to 2002 is shown in Figure 14. The Campelen ratios were highest in the 1991-94 period (similar to 1986), and the most recent values (1995-2002) are much lower, reflecting a period of reduced catches (Table 1). However, catch/biomass ratios have increased substantially over the 1995 to 2002 period.

Mortality

Estimates of total mortality (Z) from the Campelen or equivalent, spring and fall survey data were calculated for ages 1 to 16 (Fig. 15 and 16). Both surveys indicate an increase in mortality up to the mid 1990's. Mortality on younger (less than 5) ages has remained high throughout the time series. For older ages mortality declined after the mid 1990's but has increased in the last few years on most ages over 6 in both surveys.

Weights and lengths at age

Mean weights at age were calculated for male and female American plaice for Div. 3LNO using spring survey data from 1990 to 2002. Mean lengths at age were calculated using data from 1985 to 2002. Means were calculated accounting for the length stratified sampling design. There is little indication of trend over the time period in either mean length or mean weight (Fig. 17 and 18).

Maturities

Age and length at 50% maturity were produced from spring RV data. Maturity data were collected during research vessel surveys from 1960-2002. Stratified random surveys were used where possible (1971-2002). Data

from earlier years came from surveys that were conducted mainly as line transects. The coverage of a stock area would generally not be as complete as the stratified random surveys. For the period of the stratified random surveys, observed proportion mature at age was calculated according to the method of Morgan and Hoenig (1997) to account for the length stratified method of sampling. Prior to this, only data from the aged fish was used without weighting by the length frequencies. This should not have a large impact on the model estimates (Morgan and Hoenig 1997). Data from 1985-1995 were converted to Campelen equivalents.

Estimates were produced by cohort. For males, A_{50} declined and then showed an increase, although the most recent two cohorts have shown a decline (Fig. 19). For females, estimates of A_{50} have shown a large decline since the beginning of the time series. The A_{50} for males in recent cohorts is about 4 years compared to 6 years at the beginning of the time series. For females the A_{50} for recent cohorts is about 8 years compared to 11 years for cohorts at the beginning of the time series.

Estimates of maturity at length were produced using the data described above and are presented by cohort in Figure 20. L_{50} declined for both sexes but recovered in recent cohorts. The current L_{50} for males of about 20 cm is similar to the earliest cohorts estimated. The L_{50} of most recent cohorts for females is in the range of 34-36 cm, somewhat lower than the 38 cm of the earliest cohorts.

Recruitment

A multiplicative model was used to estimate the relative year class strength produced by the spawning stock. Survey abundance data at ages 3-5 from the Canadian spring and fall (both Engels and Campelen) survey series are inputs to the analysis. The model formulation is identical to that used in the previous assessment of American plaice in Div. 3LNO (Morgan et al. MS 2002).

 $\log(I_{s,a,v}) = \mu + Y_v + (SA)_{s,a} + \varepsilon_{s,a,v},$

On a log-scale the model can be written as follows:

where:

 $\mu = \text{overall mean}$ s = survey subscript a = age subscript y = year class subscript I = Index (Abundance in 000's) Y = year class effect SA = Survey * Age effect, and $\varepsilon = \text{error term.}$

We assume that $\varepsilon_{sa,y} \sim N(0,\sigma_{group}^2)$, (independently and identically) for pre-specified *groups*. Likelihood ratio tests (Table 17) indicate that a constant variance model (a general linear model) is not statistically different than the full model which estimates a variance parameter for each survey-age combination. Estimates (Fig. 21) are back-transformed. Predicted year class strength generally declines over time; the estimates indicate no substantial recruitment since 1989. However, estimated strength for the 1995-1998 cohorts have shown successive improvement. The standardized residuals (Fig. 22) show no systematic patterns that would indicate violation of model assumptions; however year effects are evident.

Catch at age

Results of the catch at age calculations for American plaice catches in 1993-2001 are given in detail in Morgan et al. (MS 1999a, b; 2001; 2002). In 2002, sampling data were available from by-catch of A. plaice in Canadian fisheries in Div. 3LNO. As in previous years, much of the Canadian sampling data came from 100% observer coverage in the yellowtail fishery, which took 1047 tons of A. plaice by-catch in 3LNO in 2002. Some sampling was also available from the by-catch in the fishery for Greenland halibut (206 tons in Div. 3L), and redfish (29 tons in Div. 3O). The remaining 98 tons of reported Canadian catch came as by-catch in various other fisheries, e.g. for cod and winter flounder in Div. 3L, skate and monkfish in Div. 3NO. Total Canadian catch of A. plaice in 3LNO in 2001 was 1380 tons, which was 240 tons lower than in 2001, due mainly to reduced effort in the yellowtail

fishery in 2002. Since the beginning of 2000, fishing for yellowtail has been permitted in Div. 3L, resulting in some by-catch of American plaice there, although the majority of the catch in 2002 came from Div. 3N (Table 18) as in the previous years. Almost 50% of the Canadian catch in 2002 occurred from September to December.

Sampling of the Canadian catch in 2002 consisted of 55,550 length measurements from all months except July, and 2537 otoliths. These sampling levels were about 6% lower than 2001 for length data and about 12% lower for otoliths, although there are some additional otoliths from 2002 that can be read at a later date and added to the analysis if required. The same weight-length relationship was used as in recent years (see below) and the sum of products check in 2002 was less than 1% higher than the catch. The Canadian catch in 2002 consisted of about 1.9 million A. plaice, compared to about 2.3 million in 2001. The catch in 2002 was comprised mainly of fish aged 7 to 11 years, with a peak at age 8 (Table 19). Although the peak age was lower in 2002, the overall catch at age was very similar to that calculated for 1999-2001, as well as that from the Canadian fishery for A. plaice on the Grand Bank in the early 1990's (Brodie et al. MS 1994). The mean fish size and weight in 2002 were very similar to the 2000 and 2001 values (0.67 kg in 2000, 0.68 kg in 2001, and 0.70 kg in 2002). Individual weights at age were slightly higher in 2002 than in 2001, although similar to the values from recent years. One reason for the increased mean weights in 2002 may be the higher proportion of the catch taken late in the year, compared to 2001.

Although the divisional age compositions were similar in 2002, there is one notable difference between the A. plaice taken as by-catch in the deepwater (mostly deeper than 1000 m) fishery for G. halibut in 3L and the by-catch in the yellowtail fishery in 3NO, which occurs in waters less than 100 m. The by-catch from the deep water consisted of greater than 94% females in all months sampled, while the by-catch length frequencies from the shallow water were comprised of between 58 and 90% females, generally around 70%.

For 2002, length frequency data were also available from Portugal, Russia and Spain. Details on the sampling levels and descriptions of the fisheries are contained in Vargas et al. (MS 2003), Gonzalez et al. (MS 2003) and Vaskov et al. (MS 2003). In all cases, age-length keys from the Canadian spring surveys in Div. 3LNO in 2002 were used to derive age compositions, which were then combined and adjusted to the total catch to account for all non-sampled catches. Catch at age, weight at age (using the weight-length relationship Log_{10} weight = (3.3247 * Log_{10} length -5.553) used in previous assessments of this stock) and sum of products (SOP) for 2002 are given in Table 20.

Ages 8 to 11 were the most dominant in the Portuguese and Russian catch. While these ages were also prevalent in the Spanish catch, the age distribution of that country showed a second peak at ages 4 to 5. This was the result of the catch of small fish in Div. 3N. For Spain 44% of the by-catch in Div. 3N and 77% of the by-catch in Div. 3O was taken in the first half of the year, but sampling was only from the second half of the year. Mean lengths and weights at age in the Canadian fishery were higher than in international catches, likely a result of larger mesh size used in the Canadian fishery and also the use of research vessel age-length keys for the catches of non-Canadian fleets.

Comparison of catch at age calculated with commercial vs. research otoliths

To calculate catch at age from fleets other than Canada for the years since 1994, age-length keys (ALKs) from Canadian spring surveys have been used in conjunction with length frequency (LF) data from the various fleets fishing in the NAFO Regulatory Area (NRA). In these cases, the ALKs have been for males + females combined, as the LF data were sometimes unsexed. The main reason for using survey ALK's was that available commercial ALK's usually did not contain data for fish as small as those found in many LF's from the NRA. To examine the effects of using the survey ALKs, two comparisons were made, both involving data from Div. 3N: 1) Sexed ALK's from the 2001 survey were used with sexed LF data from the Canadian commercial catch in 2001, and the results compared to the results using commercial ALKs with the same LF data; and 2) Canadian commercial ALKs (sexes combined) from 2002 were used with unsexed LF data from 3 fleets fishing in the NRA, and the results compared to the standard analysis using the 2002 spring survey unsexed ALKs.

In the first analysis, catch numbers at age for ages less than 9 were quite similar for both ALK's, with the largest differences occurring at ages 10-13 (Table 21). Mean weights at ages 7-13, which encompass 96% of the catch numbers, were very similar. In the second analysis, there are very large differences in the age compositions and mean weights at age for the two ALK's used (Table 22). These are due to the lack of data in the commercial

ALK at lengths corresponding to the smaller fish in the LF's. One result of this is the large number of fish classified as "age unknown" when using the commercial ALK.

In summary, this simple exercise confirms that Canadian commercial ALK's are often inadequate to apply to LF data from A. plaice caught in fisheries in the NRA. This supports the continued use of RV ALK's. In cases where minimum lengths in the LF data correspond to those in the ALK's, the effect of using either commercial or RV ALK's is likely to be minimal.

Virtual Population Analysis

A formulation of ADAPT using the same structure as that used in the accepted virtual population analysis (VPA) from the 2001 and 2002 assessments (Morgan et al MS 2001, 2002) was run. The ADAPT used catch–at-age for ages 5 to 14 with a age 15 plus group which included all catch from ages 15 to 21 (Table 23). The ratio of F on the plus group to F on the last true age was set at 1.0. M was set at 0.2 except at 0.53 for all ages from 1989 to 1996. Survey ages 5 to 14 were used in the calibration matrix. Beginning of the year weights-at-age and maturities-at-age are given in Tables 24 and 25. Numbers at age 5 to 14 from the Canadian spring (1985 to 2002) and fall (1990 to 2001) surveys were used.

The results of an ADAPT run using the formulation described above are given in Table 26 and Figures 23-27. The model provides a good fit to the data. The mean square of the residuals was 0.27. Relative errors on the population estimates ranged from 0.19 to 0.54. The relative errors on the catchabilities were all less than 0.2. The residuals from the spring survey showed little pattern although there was a tendency for them to be larger in more recent years. The residuals from the fall survey seem to display some pattern which is caused by two almost all negative years in 1996 and 1997. There is some tendency for there to be a lag between the predicted and observed survey estimates at age for the fall survey.

Population numbers and F from this run are shown in Table 27. Biomass was calculated by multiplying the population numbers at age by the beginning of the year weights at age. The VPA analyses showed that population abundance and biomass declined fairly steadily from the mid 1970's. Biomass has been relatively stable over the last number of years (Table 27, Fig. 28). Average F on ages 9 to 14 and ages 11 to 14 showed an increasing trend from about 1965 to 1985. There was a large peak in F in 1993, which may be an artifact. F since 1995 has been generally lower than in the earlier period but increased fairly steadily from 1995 to 2000. Average F on ages 11-14 in 2002 was 0.17, lower than in 2001, consistent with the decline in catch (Table 27, Fig. 28).

Spawning stock biomass was calculated by multiplying the biomass at age by the female maturity ogive. SSB has shown 2 peaks, one in the mid 1960's and another in the early to mid 1980's. Since then it declined to a very low level (less than 10 000 t) in 1994 and 1995 (Figure 29). It has increased since then but still remains at a very low level at just over 20 000 t. This is only 10% of the level in the mid 1960's and 16% of the level in the mid-1980s. The stock recruit scatter is also shown in Figure 29. Recruitment has been steadily declining since the 1986 year-class and there have been no good year classes since then. An examination of the stock recruit scatter shows that there has been only good recruitment observed above 155 000 t and no good recruitment observed at SSB below 50 000 tons (Fig. 30). This level of 50 000 tons has been taken as a B_{lim} for this stock.

A retrospective analysis was conducted by sequentially removing one year of data from 2002 to 1996 for a comparison of 7 years. The results of this analysis are shown in Figures 31 to 33. There is little evidence of a retrospective pattern when examined for population abundance in total or on an age by age basis. There is also little pattern in the analysis on average F.

Medium Term Projections

Previous assessments of this stock have used stochastic simulations including uncertainty in the survivors from the SPA representing the starting population for the projection and uncertainty in future recruitment to explore the prospects for stock rebuilding under different levels of fishing mortality. Uncertainty in future recruitment is the major source of variation in population size 5 to 10 years after the start of the simulation. In many cases data on recruitment variation may provide useful information about the probability of outcomes under alternative management options. However, data accumulated on recruitment variation as a stock declines may not be very

error distribution around the fitted model, most often assumed to be lognormal, may have the upper tail of the distribution influenced by a large range of recruitment values observed at intermediate spawner stock size, and may not appropriately reflect the expected distribution of recruit values at low stock size. Under such circumstances, deterministic projections may be more informative about the prospects of, for example stock recovery, under different conditions. In addition, limiting the time frame of such projections to 5 years, decreases the impact of uncertainties in recruitment rate, as longer term projections are increasingly driven on assumptions about recruitment.

Projections were carried out for 5 years to examine the trajectory of the spawning stock biomass under 2 scenarios of fishing mortality: F = 0, $F = F_{current}$. For these deterministic projections the results of the VPA were used. $F_{current}$ was set as the average F on age 13 (the fully recruited age in the VPA) over the last 3 years and was 0.26. PR and weights were averaged over the last 3 years. Recruitment was the average R/S for the last 3 year-classes and was equal to 1.85. In addition the following values were used:

Age	5	6	7	8	9	10	11	12	13	14	15+
Μ	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
PR	0.04	0.13	0.34	0.58	0.77	0.84	1	0.98	0.91	0.73	0.73
Weight	0.19	0.24	0.32	0.39	0.45	0.57	0.73	0.92	1.14	1.38	1.78
Maturite	es										
2004	0.02	0.07	0.20	0.47	0.68	0.93	0.98	1.0	1.0	1.0	1.0
2005	0.02	0.07	0.20	0.47	0.75	0.87	0.98	1.0	1.0	1.0	1.0
2006	0.02	0.07	0.20	0.47	0.75	0.91	0.96	0.99	1.0	1.0	1.0
2007	0.02	0.07	0.20	0.47	0.75	0.91	0.97	0.99	1.0	1.0	1.0
2008	0.02	0.07	0.20	0.47	0.75	0.91	0.97	0.99	1.0	1.0	1.0

The stock is estimated to increase under both $F=F_{current}$ and F=0, with the increase in SSB being 5 times greater at F=0 than at current F. The increase under current conditions of F is only about 5 000 t over the 5 year period. The spawning stock does not reach the B_{lim} of 50 000 t by 2008 even with F=0 (Fig. 34).

References

- Brodie, W.B., M.J. Morgan, and D. Power. 1994. An assessment of the American plaice stock in Divisions 3LNO. NAFO SCR Doc. 94/55, Ser. No. N2426, 43 p.
- Brodie, W.B., W.R. Bowering, D. Orr, D. Maddock Parsons, and M.J. Morgan. 1998. An assessment update for American plaice in NAFO Div. 3LNO. NAFO SCR Doc. 98/69, Ser. No. 3061, 30p.
- Gavaris, S. and W.B. Brodie. 1984. Results of comparative fishing between the A.T. Cameron and the Wilfred Templeman during July-August 1983. CAFSAC Res. Doc. 84/41, 16p.
- Gonzalez, F., J.L. del Rio, A. Vázquez, H. Murua and E. Román. MS 2003. Spanish research report for 2002. NAFO SCS Doc. 03/11, Ser. No. N4837, 26p.
- McCallum, B.R. and S.J. Walsh. 1996. Groundfish Survey trawls used at the Northwest Atlantic Fisheries Centre, 1971-present. NAFO SCR Doc. 96/50, Ser No. N2726, 18p.
- Morgan, M. J., and J. M. Hoenig. 1997. Estimating maturity-at-age from length stratified sampling. J. Northw. Atl. Fish. Sci., **21**: 51-63.

- Morgan, M.J., W.B. Brodie, W.R. Bowering, D.Maddock Parsons, and D.C. Orr. 1998. Results of Data Conversions for American plaice in Div. 3LNO from Comparative Fishing Trials between the Engel Otter Trawl and the Campelen 1800 Shrimp Trawl. NAFO SCR Doc. 98/70, Ser. No. N3062, 10p.
- Morgan, M.J., W.B. Brodie, and W.R. Bowering. 1999a. An assessment of American plaice in NAFO Divisions 3LNO. NAFO SCR Doc. 99/40, Ser. No. N4099.
- Morgan, M.J., W.B. Brodie, and D. Maddock Parsons. 1999b. Virtual population analyses of the American plaice stock in Div. 3LNO from 1975 to 1997. NAFO SCR Doc. 99/58, Ser. No. N4117, 36p.
- Morgan, M.J., W.B. Brodie, B.P. Healey, D Maddock Parsons, D. Stansbury, and D. Power. 2001. An assessment of American plaice in NAFO Divisions 3LNO. NAFO SCR Doc. 01/59, Ser. No. N4437, 70p.
- Morgan, M.J., W.B. Brodie, B.P. Healey, D. Maddock Parsons, K.S.Dwyer and D. Power. MS 2002. An assessment of American plaice in NAFO Divisions 3LNO. NAFO SCR Doc. 02/70, Ser. No. N4683, 68p.
- Vargas, J, R. Alpoim, E. Santos and A.M. Ávila de Melo. MS 2003. Portuguese research report for 2002. NAFO SCS Doc. 03/7, Ser. No. N4815, 54p.
- Vaskov, A., K. Gorchinsky, T. Igashov, S. Lobodenko, S. Melnikov and N. Shakuro. MS 2003. Russian research report for 2002, Part II. NAFO SCS Doc. 03/6, Ser. No. N4807, 31p.

Year	Canada	France	Poland	USSR/Russia	South Korea ^a	Other	Total	TAC
1960	21,352	2,106	-	569	_	20	24,047	-
1961	14,903	1,473	286	1,248	-	3	17,913	-
1962	15,217	973	171	1,841	-	4	18,206	-
1963	24,591	93	457	466	-	112	25,719	-
1964	35,474	1,582	539	680	-	292	38,567	-
1965	45,365	2,056	977	4,544	-	319	53,261	-
1966	51,225	1,246	860	11,484	-	196	65,011	-
1967	54,190	1,326	3,234	35,139	-	524	94,413	-
1968	48,674	406	203	23,751	-	133	73,167	-
1969	64,815	43	34	14,493	-	52	79,437	-
1970	54,929	389	40	10,232	-	1,055	66,645	-
1971	49,394	323	370	17,173	-	628	67,888	-
1972	41,605	322	2,515	14,164	-	755	59,361	-
1973	38,586	310	1,116	12,516	-	315	52,843	60,000
1974	35,101	418	615	10,074	-	89	46,297	60,000
1975	34,015	442	537	7,682	-	545	43,221	60,000
1976	47,806	305	5	3,280	-	429	51,825	47,000
1977	42,579	31	-	1,023	-	348	43,981	47,000
1978	48,634	168	-	1,048	-	178	50,028	47,000
1979	47,131	113	-	1,190	-	135	48,569	47,000
1980	48,296	183	-	336	-	271	49,086	47,000
1981	48,177	210	-	847	-	924	50,158	55,000
1982	49,620	133	-	67	715	517	51,052	55,000
1983	35,907	41	-	170	815	1,602	38,535	55,000
1984	33,756	140	l	360	1,582	3,606°	39,445	55,000
1985	40,024	-	4	81	2,483	11,620°	54,212	49,000
1986	33,409	46	-	188	3,952	26,975	64,570	55,000
1987	33,967	17	-	4/	2,741	18,240	55,012	48,000
1988	20,832	-	-	159	2,522	11,322°	40,855	33,385
1989	27,901	92	-	0	125	14,045°	43,309	30,300
1990	22,000	-	-	17	1,117	8,707 0.471 ^b	32,501	24,900
1991	25,240 10221 ^a	-	-	50	1,910	9,471	12 250	25,800
1992 1002 ⁰	7 454	-	-	50	12	2,331 0,650 ^b	13,330	25,800
1995	7,434	-	-	0	100	7,059	7 378	10,500 4 800 ^f
1994	71 50	-	-	-	100	7,207 578 ^b	637	4,000
1995	59	-	-	-	-	854 ^b	013	0
1990	114	-	-	-	-	1 203 ^b	1 401	0
1997	212	-	-	10	-	1,295 1,396 ^b	1,401	0
1999	316	_	_	147	_	$2,102^{b}$	2 565	0
2000 ^{g,a}	622	-	-	318	-	4 236	5 176	0
2000 ^a	1 620	-	- 1	308	-	3 810	5 739	0
2002	1 380	_	-	400	_	3,090	4 870	0
2003	1,500			100		5,070	1,070	0

Table 1. Estimates of catches (t) of American plaice for NAFO Divisions 3LNO, 1960-2002 and TACs from 1973 to 2003.

^aIncludes a portion of catches reported as unspecified flounder. See text for details.

^bIncludes some catches estimated from surveillance reports.

^cCatch may have been as high as 19,400.

^dEffective TAC.

^fNo directed fishing.

^gSTACFIS unable to determine precise estimates because of discrepancies between various sources

Year	Spain	Portugal	Panama ^b	USA	Caymen Islands ^b	Misc. ^a	Total
1004	1 (22)		1.000			104	2 (0)
1984	1,622	-	1,800	-	-	184	3,606
1985	5,498	27	3,892	1,310	797	96	11,620
1986	11,882	9,240	3,756	1,506	572	19	26,975
1987	14,476	2,516	-	1,248	-	-	18,240
1988	8,956	872	-	1,379	-	115 ^c	11,322
1989	10,909	583	-	1,134	-	2,019 ^c	14,645
1990	294	356	-	8	-	8,109 ^c	8,767
1991	786	187	-	-	-	8,498 ^c	9,471
1992	412	139	-	-	-	$2,000^{\circ}$	2,551
1993	199	92	-	-	-	9,368 ^c	9,659
1994	5,476	630	-	575	-	526 ^c	7,207
1995	430	148	-	-	-	-	578
1996	554	263	-	-	-	37	854
1997	951	336	-	-	-	6	1,293
1998	999	313	-	-	-	84	1,396
1999	1,242	800	-	-	-	60	2,102
2000	3,522	527	-	-	-	187	4,236
2001	2,627	959	-	-	-	224	3,810
2002	854	2,111	-	-	-	125	3,090

Table 2. Breakdown of estimated catches from Table 1 listed as "other" for 1984-2002.

^aCountries not in Tables 1 or 2. ^bNot reported to NAFO. Catches estimated from surveillance reports. ^cIncludes some estimated catches.

			Bornasa					
Depth	Status	1990	1997	1998	1000	2000	2001	2003
30-86	T04	1111421112	1.1.2000	02		110201		0
	1 COM	- 2	20		- C.			5
\$1.92	350	23	0.3	0.3	8.1	18	14	0.2
	071	0.0	0.2	0.1	2.4	0.9	0.1	0.3
	272	1.6	0.0	1.0	27	2.7	1.2	03
	204	- 85	0.0	02	0.8	3.2	22	0.4
	Tester	2	20			-14		
2002	Tetar		3.0	*1	18.7	14.8		1
3-183	328	10	0.5	0.7	24	0.9	12	0.5
	342	01	0.1	0.4	64	0.2	0.1	*
	243	0.3	0.0		0.6	0.2		
	248	14	0.0	12	28	1.5	- 22	0.3
	364		10	0.0		1.3	14	1.2
	365	3.3	0.5	0.9	14	1.2	0.3	0.6
	370	1.8	0.6	1.6	24	1.9	0.9	0.6
	360	20	0.0	0.5	25	1.9	14	0.7
	706		-	0.3	0.5		64	- 2
	767	- C+2		0.5	0.8	1	0.1	- 6
	TOD	(+)	+	+	0.3		0.00	- 5
	790	- 21	- 31	- 10	- 2	- 0	1023	- 5
	754	- C	-	-				- 2
	797	-	+	+		. +		- 8
	1.048	3		13.00	13.5	- 10		- 25
	Tetal	15.5	5.5	7.0	26.9	19.5		5.4
64-374	344	1	0.9	08	18	85	03	0.3
	247	20	0.2	0.5	0.0	0.2	37	0.1
	369	0.3	0.2	0.2	12	0.7	0.8	0.8
	386	0.5	0.2	0.4	1.4	1.7	.0.4	0.5
	369	04	0.2	0.4	0.6	0.0		0.0
	705		-	0.2	65	- C		
	791*	+	.+.	-	0.3			+
	796	-	1	11 I.	0.1			- 1
	1.040	- C.	- C.	12.10		12	2.24	100
	Tetal	35	1.5	2.9	7.2	45	3.7	3.0
75-300	245	0.5	0.2	0.3	15	0.5	0.7	0.7
	246		0.3	02	0.2	0.5		0.8
	367		0.6	D.E	0.4	1.6		0.1
	366	0.6	0.2	0.2	0.8	0.3	0.4	0.1
	392	0.5	0.1	0.4	0.2	0.1	0.1	0.3
	792	100	101				0.1	- +
	000	-	- 2	2	0.2		-	- I
	Total	2.9	1.6	20	37	2.4	2.4	22
	-							
51-040	720	82	0.6	22	01	12	63	0.2
	753	67	0.0	0.3	. 1	0.1	2.5	0.6
	728	1.4	1.6	12	0.6	1.2	2.1	1.2
	Total	2.0	2.4	3.7	1.8	2.0	5.8	2.2
50-731	730		0.0	02		0.1	0.1	0.3
	732	*	0.0	0.0		03	34	0.6
	736	1	0.0	0.1	- C			0.9
	Testar			0.2	1		10	
		10	<u> </u>		1.5			
10-01-0	741			-	- 2	2		- 0
	745		+					- 2
	748	1.0	-		1.8			
	Total	-		+	1	-	- 5	-
5-1087	736	÷.	-41	4	24	-	÷2	
	742	-	100	+	1.0	÷.		
	746			÷.	1	1		-
		- St	1	153	- 19	12		- 3
	Tetal	+	1	+	1	5 *		- 7
88-1280	T29		(*)	+		1 th	1.1	
	743	3	1		50		55	
	750	12	310	10	10	12	2	- 0
	Total	1.00	141	14	1.04			
Contra	740	3		8		13		- 6
1.1000	744	2	1.2	- C	12	1		- 0
	751	-	+	-			-	-
	Total	12	221	12	22	12		2
	and the second sec							

			Biomass					
Depth	Stratum	1996	1997	1998	1999	2000	2001	2002
< 56	375	2.9	2.2	1.1	1.8	5.1	21	3.9
2019	376	0.8	1.8	2.0	3.2	5.1	9.3	8.6
	Total	3.7	4.0	3.1	5.0	10.2	11.4	12.5
57-92	360	8.8	8.6	7.9	27.4	22.8	50.3	28.0
	361	3.8	1.9	2.0	5.5	4.2	9.0	6.0
	362	2.8	5.5	4.0	4.6	6.6	7.0	2.7
	373	1.6	0.5	0.9	8.3	3.2	2.6	0.4
	374	1.1	04	0.3	1.7	0.9	10	0.6
	383	0.5	0.1		1.0	0.2	0.1	+
	Total	18.6	17.0	15.1	48.5	37.9	69.9	37.7
93-183	359	1.1	1.1	1.6	3.3	5.1	5.1	0.6
	377	0.2	0.1		0.2	+	0.9	0.1
	382	0.1	0.1	0.7	0.2	0.4	0.1	0.1
	Total	1.4	1.3	2.3	3.7	5.5	6,1	0.8
184-274	358	0.1	0.1	1.4	0.3	0.6	0.5	0.1
	378	0.1	0.2	0.2	0.9	+	0.1	0.1
	381	0.3	0.1	0.1	0.2	0.1	0.1	0.1
	Total	0.5	0.4	1.7	1.4	0.7	0.7	0,3
275-386	357	0.1	0.1	0.1		0.1	0.1	0.1
	379	+	0.1	0.1	0.1	0.1	0.1	0.1
	380	0.2	0.8	0.1	0.2	+	0.1	
	Total	0.3	1.0	0.3	0.3	0.1	0.2	0.1
367-549	723	0.2	0.4	0.3		0.0	0.1	0.3
	725	0.1	0.5	0.2	+	0.4	0.1	+
	727	0.5	2.2	2.0	0.4	1.2	2.5	D.1
	Total	0.8	3.1	2.5	0.4	1.2	2.5	0.1
550-731	724	0.2	0.5	0.2	+	0.1	0.1	0.5
	728		0.1			0.1		
	728	D.5	·+	0.3	0.2	0.5	1.0	0.4
	Total	0.7	0.5	0.5	0.2	0.5	1.0	0.4
732-914	752	-	. A.	2.4			-	14
	756							1.0
	760	*	12	1		1.0		. *
	Total			<u>_</u>	1.5	3.53		27
915-1097	753	-	. e		(24)	(**)	+	
	757	-						1.1
	761		3÷		. *	+		. 7
	Total		+	1.4			14	94
1098-1280	754	+	14	2				1.0
	758			1.1	((#))	10)		
	Total	*	-		a .	5	-	
1281-1453	755		62			1	1	172
100000	759	+	-	-	-			1.1
	recal	e den	3					1
Grand Total		26.0	27.4	25.5	59.5	56.1	91.8	51.9

Table 4. Biomass estimates ('000t) of A plaice, by stratum and depth zone (m), from Canadian spring surveys in Div. 3N in 1996-2002 (Campelen). (+) indicates biomass <50 t, (-) means stratum not surveyed.

			Biomass					
Depth	Stratum	1996	1997	1998	1999	2000	2001	200
67.02	330	3.8	0.8	6.9	3.5	5.0	4.2	21
	331	1.4	0.3	0.3	27	23	2.6	22
	328	6.0	5.7	6.0	4.0	2.3	6.0	2.4
	340	2.2	17	1.8	2.0	1.0	17	0.5
	354	2.2		1.0	2.0	2.4	0.5	0.0
	301	2.9	4.4	3.8	4.6	3.4	6.5	3.4
	352	9.1	13.8	10.6	14.2	13.4	17.0	18.
	303	/.0	0.3	10.9	21,9	21.1	20.6	14.
	Total	33.2	34.9	40.3	53,4	50.3	59.1	44.5
93-183	329	1.6	1.4	4.4	4.7	3.9	1.9	1.4
	332	3.9	2.5	3.8	2.2	0.9	2.2	3.1
	337	4.6	1.9	3.2	2.7	1.5	1.2	1.4
	339	1.4	0.8	0.8	2.1	2.1	2.6	0.9
	354	1.6	1.1	5.0	9.0	1.3	1.6	6.4
	Total	13.1	7,8	17.2	20.7	9.7	9.5	13.
184-274	333	+	0.3	0.1	0.1	+	+	0.3
	336	0.2	0.3	+	0.2	+	0.1	+
	355	0.5	0.3	0.1	0.1	0.1	0.4	0.4
	Total	0.7	0.9	0.2	0.4	0.1	0.5	0.7
275-366	334	0.2	0.8	0.0	0.1	+	+	0.2
	335	0.2	0.2	0.0	+		+	+
	356	0.1	*	+	0.1	+	+	+
	Total	0.5	1.0	+	0.2	+	+	0.2
367-549	717	0.2	1.7		0.1	0.0	+	0.4
	719	0.1	0.5	+	+	0.0	+	+
	721	0.2	0.1	+	0.1	+	0.2	+
	Total	0.5	2.2	+	0.2	+	0.2	0.4
550-731	718	-	0.1			0.0	÷.	
000 101	720		0.1	+		0.0	0.1	0.0
	722	1.0	4.2	0.0	0.2	0.1	0.2	0.1
	Total	1.0	4.4	+	0.2	0.1	0.2	0.1
732-914	764			1411	1.0	2.1		
1.000 0000	768	<u>_</u>	62	1	-	23		
	772	-						
	100	8	S	2244	1996	5	82	510
	Totai				1.00	+	2.94	
915-1097	765	-	2				1.5	
	769		18	-		+		
	773	÷.	1.2			40 E	1.0	- 4
	Total		12	100	195	$t^{(i)}$	2.8	

Table 5. Biomass estimates ('000t) of A plaice, by stratum and depth zone (m), from Canadian

Table 6 . Abundance index (millions) at age of A. plaice in spring surveys in Div. 3L from 1985 to 2002.

Age/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
0	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	0.00	0.00
1	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.11	0.00	2.29	1.15	0.00
2	0.00	1.32	5.23	4.10	1.86	0.00	1.32	0.00	0.30	0.00	0.00	8.40	0.63	0.68	1.89	17.73	37.91	7.65
3	8.11	4.55	11.39	18.84	17.35	5.24	3.23	1.74	2.26	0.36	0.40	29.93	5.44	3.14	5.42	12.32	32.83	34.07
4	25.76	23.56	50.30	80.86	80.96	70.17	14.00	5.14	5.75	7.48	0.82	91.96	14.04	10.24	6.59	4.94	15.63	18.24
5	146.34	115.41	242.76	279.24	174.03	137.97	110.19	46.07	22.68	31.03	11.84	82.54	31.70	21.10	25.82	8.95	5.95	7.98
6	349.77	451.71	566.10	554.37	416.73	231.75	178.00	61.69	59.15	46.46	17.43	48.50	26.57	36.67	42.99	29.81	9.41	5.19
7	513.51	496.70	553.70	501.15	351.42	277.32	102.04	89.33	37.42	44.40	31.75	26.16	14.58	30.44	66.66	28.55	18.61	9.46
8	317.45	260.25	333.72	277.15	208.59	152.33	79.23	33.11	16.71	13.72	31.28	8.01	6.83	19.43	65.01	27.47	16.40	9.72
9	152.45	156.89	132.67	188.17	143.33	94.21	43.70	18.53	5.56	6.13	17.63	3.62	2.42	6.38	39.59	18.83	17.27	8.67
10	85.19	66.89	65.65	60.04	52.54	55.70	19.02	7.07	2.96	1.38	5.28	0.64	0.69	2.90	19.36	10.78	15.22	6.50
11	44.66	27.01	22.24	32.65	26.90	18.40	10.45	2.88	1.23	0.83	1.14	0.09	0.39	1.60	10.42	5.46	7.50	4.22
12	22.13	18.07	19.32	20.02	14.77	9.59	6.61	1.44	0.43	0.14	0.21	0.03	0.09	0.64	3.36	1.31	2.97	1.00
13	12.34	11.84	9.13	10.11	8.57	6.33	2.57	0.64	0.29	0.15	0.06	0.03	0.02	0.17	1.34	0.25	0.81	0.35
14	5.99	4.40	3.93	5.87	4.85	2.40	1.39	0.38	0.13	0.05	0.00	0.00	0.00	0.00	0.18	0.09	0.13	0.14
15	2.99	2.64	2.00	3.27	3.36	1.57	0.99	0.19	0.03	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.05	0.00
16	1.91	1.58	0.74	1.54	1.07	1.04	0.48	0.06	0.03	0.00	0.00	0.00	0.00	0.02	0.09	0.07	0.10	0.00
17	0.39	0.44	0.24	0.36	0.43	0.58	0.18	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.03	0.22	0.02	0.00	0.09	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.03	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unk1	0.23	0.51	0.00	0.45	0.05	3.04	0.03	0.01	0.69	0.00	0.00	0.00	0.00	0.12	0.04	0.01	0.05	0.16
Ages 0+	1669.25	1643.96	2019.37	2038.19	1506.93	1067.63	5/3.54	268.29	155.67	152.11	117.64	300.15	103.40	133.65	286.61	168.87	182.03	113.35
Ages 6+	1006.62	1498.62	1/09.4/	1004./1	1232.08	601.22	444./8	215.33	123.99	113.25	104.78	67.06	51.60	98.20	249.04	122.63	85.51	45.24
Ages 9+	328.09	289.97	255.94	322.03	255.94	189.82	85.51	31.20	10.71	8.67	24.32	4.41	3.61	11.72	/4.38	36.80	44.09	20.87
Ages 12+	40.79	39.19	30.39	41.16	33.17	21.50	12.34	2.72	0.95	0.33	0.27	0.06	0.11	0.84	5.01	1.72	4.10	1.46

Table 7. Abundance index at age (millions) for American plaice in NAFO Div. 3N from Canadian spring surveys from 1985 to 2002.

Age/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
0	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	0.00	0.00
1	0.26	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.71	0.46	1.31	0.00
2	2.33	2.52	17.27	3.67	4.37	4.30	0.43	0.41	0.78	0.00	0.00	2.06	0.15	0.24	17.60	12.74	16.04	3.61
3	33.52	13.39	72.32	45.69	49.06	29.60	2.54	3.15	3.84	1.24	0.74	6.01	1.51	0.24	6.98	44.81	155.19	15.10
4	109.11	46.72	113.73	87.97	312.98	165.10	30.46	24.50	74.10	4.10	4.08	6.01	4.28	3.00	1.78	20.53	47.80	34.75
5	60.97	106.13	84.60	62.94	106.44	282.87	117.51	38.48	75.44	29.51	14.99	15.58	5.46	3.99	4.19	3.95	4.18	14.76
6	60.72	72.84	57.12	27.63	38.68	35.98	75.70	51.69	68.23	12.91	13.29	26.37	16.84	6.12	12.40	6.59	7.98	7.29
7	30.06	41.09	32.02	17.23	17.28	11.61	12.85	22.66	54.04	12.31	8.39	20.45	24.42	11.92	12.19	17.71	22.99	7.95
8	25.11	17.90	18.64	13.31	18.09	8.03	5.62	5.58	30.27	7.68	4.62	6.89	15.66	19.74	17.65	15.26	21.47	16.35
9	20.17	14.53	16.04	11.16	14.71	8.86	5.64	2.67	9.35	4.18	2.45	3.88	5.92	12.52	27.81	21.08	23.17	10.66
10	20.35	13.21	11.42	8.69	6.77	5.09	5.47	1.25	4.18	1.30	0.81	0.84	1.70	4.96	24.97	16.79	17.00	6.91
11	15.38	7.30	6.89	4.90	5.23	4.00	3.41	1.04	2.68	1.02	0.28	0.54	0.86	2.07	11.01	9.95	18.15	8.76
12	9.12	6.11	5.35	3.57	4.34	2.64	1.97	0.72	1.41	0.22	0.05	0.87	0.52	0.80	5.01	4.75	7.67	6.70
13	4.80	4.16	4.46	2.95	3.70	2.24	1.77	0.27	0.51	0.45	0.00	0.14	0.20	0.45	2.59	2.08	2.28	1.82
14	2.93	2.17	3.36	2.00	2.69	2.21	1.16	0.33	0.52	0.60	0.00	0.07	0.04	0.18	0.78	0.33	1.17	1.39
15	2.39	2.13	3.00	1.92	2.96	2.34	1.18	0.45	0.16	0.34	0.00	0.11	0.04	0.06	0.38	0.59	0.82	0.13
16	0.71	1.27	1.67	0.91	1.11	1.43	0.67	0.30	0.25	0.17	0.00	0.00	0.00	0.06	0.19	0.37	0.35	0.26
17	0.19	0.98	0.66	0.79	0.96	0.79	0.53	0.03	0.18	0.00	0.00	0.00	0.00	0.00	0.19	0.10	0.34	0.04
18	0.00	0.18	0.38	0.29	0.43	0.37	0.23	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.17	0.05	0.22	0.00
19	0.00	0.05	0.05	0.06	0.11	0.09	0.09	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.04
20	0.00	0.00	0.03	0.00	0.00	0.10	0.11	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00
unk1	0.26	0.23	0.88	0.07	0.03	0.46	0.00	0.32	0.14	0.00	0.00	0.11	0.00	0.00	0.04	0.00	80.0	0.08
Ages 0+	398.36	352.91	449.91	295.75	589.93	568.36	267.31	153.98	326.18	76.04	49.70	89.93	77.59	66.41	146.71	178.15	348.31	136.60
Ages 6+	191.92	183.91	161.11	95.41	117.04	85.75	116.37	87.12	171.87	41.19	29.89	60.16	66.19	58.88	115.41	95.66	123.71	68.30
Ages 9+	76.02	52.08	53.32	37.24	42.99	30.14	22.21	7.19	19.34	8.28	3.59	6.44	9.27	21.10	73.18	56.10	71.26	36.71
Ages 12+	20.13	17.05	18.97	12.49	16.29	12.21	7.69	2.23	3.14	1.78	0.05	1.19	0.79	1.56	9.38	8.28	12.93	10.38

Table 8. Abundance index at age (millions) for American plaice in NAFO Div. 30 from Canadian spring surveys from 1985 to 2002.

Age/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
0	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	0.00	0.00
1	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.08	0.37	7.72	2.00	2.76	0.31
2	0.00	0.58	5.38	0.69	0.00	5.45	0.00	4.09	1.30	0.00	0.00	35.87	5.79	8.83	22.96	24.10	47.02	26.61
3	8.60	13.38	16.95	15.85	20.37	10.62	24.86	28.66	3.39	0.94	0.89	63.90	33.35	7.29	22.70	92.19	87.85	49.52
4	24.12	39.55	57.58	22.47	51.19	113.04	39.65	30.20	40.67	9.53	6.22	27.81	36.80	39.43	14.11	47.07	49.56	97.60
5	56.50	34.46	132.85	26.43	55.67	197.91	170.49	25.73	39.93	38.68	15.08	35.55	28.12	44.71	36.73	22.08	18.72	33.76
6	44.06	36.82	124.23	34.62	96.36	110.17	110.46	76.76	52.76	46.67	26.80	55.64	40.99	26.40	49.12	30.61	18.95	28.85
7	52.08	39.37	70.48	25.50	101.47	82.08	65.32	38.93	68.61	28.66	19.75	50.51	40.32	34.39	26.02	31.75	32.26	34.53
8	47.24	28.92	45.95	24.51	47.05	39.90	28.07	24.72	42.46	21.87	14.04	24.61	26.23	40.22	28.86	21.84	24.57	27.75
9	35.38	22.23	35.93	18.52	29.60	27.41	18.21	12.92	17.32	9.69	7.40	8.69	10.60	29.01	39.91	19.25	17.98	18.93
10	34.70	18.02	24.03	16.56	15.36	16.74	10.70	9.18	9.37	2.72	2.25	3.02	3.66	11.70	20.99	19.62	12.82	11.01
11	24.27	11.65	12.70	11.09	7.72	9.99	8.40	5.53	3.72	2.10	1.25	1.32	1.42	6.26	9.09	12.52	8.91	7.05
12	13.96	10.20	9.14	8.99	7.96	9.23	4.78	3.24	2.42	1.04	0.28	1.33	1.22	1.84	4.65	3.47	5.37	4.86
13	5.58	5.74	6.33	5.68	4.56	5.87	2.89	2.43	0.98	0.64	0.03	0.35	0.34	1.00	2.58	1.70	2.45	1.84
14	5.06	2.33	3.84	4.10	2.11	4.20	2.98	1.06	0.68	0.35	0.04	0.18	0.14	0.27	0.93	0.48	1.47	0.48
15	4.00	2.30	3.03	2.36	2.19	2.04	1.89	1.78	0.49	0.13	0.00	0.10	0.13	0.41	0.74	0.63	1.10	0.40
16	1.59	0.92	1.83	2.31	1.82	1.71	1.03	1.25	0.55	0.09	0.00	0.17	0.13	0.05	0.59	0.19	0.61	0.44
17	0.31	0.72	0.97	0.48	1.07	1.22	0.58	0.24	0.36	0.00	0.00	0.00	0.00	0.00	0.32	0.29	0.38	0.17
18	0.03	0.18	0.46	0.51	0.43	0.55	0.44	0.51	0.09	0.00	0.00	0.00	0.00	0.00	0.25	0.14	0.15	0.10
19	0.00	0.05	0.20	0.03	0.03	0.22	0.24	0.13	0.08	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.04	0.00
20	0.29	0.00	0.00	0.03	0.03	0.00	0.08	0.13	0.05	0.00	0.00	0.00	0.00	0.00	0.04	0.11	0.04	0.00
unk1	0.06	0.00	0.00	0.66	0.27	0.00	2.46	0.87	0.39	0.04	0.00	0.05	0.00	0.14	0.03	0.04	0.71	0.24
Ages 0+	357.82	267.40	552.13	221.37	445.23	638.34	493.54	268.34	285.62	163.15	94.01	309.22	229.31	252.31	288.54	330.07	333.74	344.45
Ages 6+	268.54	179.43	339.10	155.28	317.74	311.33	256.07	178.79	199.94	113.96	71.83	145.93	125.16	151.55	184.28	142.60	127.12	136.41
Ages 9+	125.16	74.34	98.45	70.65	72.87	79.17	52.23	38.39	36.10	16.76	11.24	15.17	17.63	50.53	80.28	58.40	51.34	45.28
Ages 12+	30.81	22.43	25.79	24.48	20.19	25.03	14.91	10.77	5.70	2.26	0.35	2.13	1.95	3.57	10.29	7.01	11.62	8.29

Table 9. Abundance at age (millions) for American plaice in NAFO Div. 3LNO from Canadian spring surveys from 1985 to 2002.

Age/Year		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
	0	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	0.00	0.00
	1	0.26	0.00	0.48	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.35	0.08	0.54	8.43	4.76	5.22	0.31
	2	2.33	4.42	27.88	8.47	6.23	9.74	1.75	4.50	2.38	0.00	0.00	46.33	6.57	9.75	42.46	54.56	100.97	37.86
	3	50.22	31.32	100.65	80.37	86.77	45.46	30.62	33.55	9.50	2.54	2.02	99.84	40.30	10.67	35.10	149.32	275.88	98.69
	4	158.99	109.83	221.62	191.29	445.13	348.31	84.11	59.84	120.53	21.11	11.12	125.79	55.12	52.67	22.49	72.54	112.98	150.59
	5	263.81	256.00	460.21	368.61	336.14	618.75	398.19	110.28	138.05	99.22	41.91	133.68	65.28	69.80	66.74	34.98	28.85	56.50
	6	454.55	561.36	747.45	616.62	551.77	377.90	364.16	190.14	180.14	106.04	57.52	130.51	84.40	69.20	104.51	67.01	36.35	41.33
	7	595.65	577.16	656.21	543.88	470.17	371.00	180.21	150.92	160.06	85.37	59.88	97.12	79.31	76.74	104.87	78.01	73.86	51.94
	8	389.80	307.06	398.31	314.97	273.73	200.26	112.92	63.40	89.45	43.27	49.94	39.51	48.72	79.39	111.52	64.57	62.44	53.82
	9	208.01	193.65	184.64	217.85	187.64	130.48	67.54	34.12	32.23	19.99	27.48	16.19	18.94	47.91	107.31	59.16	58.43	38.25
	10	140.24	98.12	101.10	85.29	74.68	77.52	35.19	17.50	16.51	5.40	8.34	4.50	6.05	19.56	65.32	47.19	45.04	24.42
	11	84.30	45.96	41.83	48.63	39.84	32.39	22.26	9.45	7.63	3.95	2.66	1.94	2.68	9.93	30.52	27.93	34.57	20.03
	12	45.20	34.38	33.80	32.58	27.07	21.46	13.36	5.40	4.26	1.40	0.54	2.23	1.82	3.28	13.02	9.54	16.02	12.56
	13	22.72	21.74	19.93	18.75	16.83	14.43	7.22	3.34	1.78	1.24	0.09	0.52	0.56	1.62	6.51	4.04	5.54	4.01
	14	13.98	8.90	11.14	11.97	9.65	8.81	5.53	1.77	1.33	1.00	0.04	0.25	0.17	0.45	1.89	0.90	2.77	2.01
	15	9.37	7.07	8.03	7.56	8.51	5.95	4.05	2.42	0.67	0.47	0.00	0.21	0.16	0.47	1.16	1.22	1.96	0.53
	16	4.20	3.76	4.24	4.76	3.99	4.17	2.18	1.61	0.84	0.26	0.00	0.17	0.13	0.14	0.88	0.63	1.05	0.70
	17	0.89	2.14	1.87	1.63	2.45	2.60	1.28	0.27	0.59	0.00	0.00	0.00	0.00	0.00	0.51	0.39	0.72	0.21
	18	0.06	0.58	0.86	0.79	0.94	0.92	0.70	0.54	0.14	0.00	0.00	0.00	0.00	0.00	0.42	0.19	0.37	0.10
	19	0.03	0.10	0.25	0.10	0.18	0.31	0.33	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.18	0.04
	20	0.29	0.00	0.03	0.03	0.03	0.10	0.29	0.22	0.05	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.04	0.00
unk1		0.55	0.74	0.88	1.19	0.35	3.50	2.50	1.20	1.22	0.04	0.00	0.16	0.00	0.26	0.10	0.05	0.83	0.48
Ages 0+		2444.88	2263.53	3020.53	2554.13	2541.74	2270.83	1331.89	689.41	766.25	391.26	261.55	699.14	410.29	452.11	723.96	677.04	863.24	593.91
Ages 6+		1969.28	1861.97	2209.69	1905.39	1667.46	1248.30	817.22	481.25	495.80	268.39	206.50	293.16	242.94	308.69	548.73	360.89	339.33	249.95
Ages 9+		529.27	416.39	407.71	429.92	371.80	299.13	159.94	76.79	66.15	33.71	39.15	26.02	30.51	83.36	227.84	151.30	166.69	102.86
Ages 12+		96.73	78.67	80.14	78.15	69.64	58.74	34.95	15.72	9.79	4.37	0.67	3.38	2.84	5.96	24.69	17.02	28.65	20.16
proportion 0 to	o 5	0.19	0.18	0.27	0.25	0.34	0.45	0.39	0.30	0.35	0.31	0.21	0.58	0.41	0.32	0.24	0.47	0.61	0.58
proportion 9+		0.22	0.18	0.13	0.17	0.15	0.13	0.12	0.11	0.09	0.09	0.15	0.04	0.07	0.18	0.31	0.22	0.19	0.17

0.01.000.000			Bonass		Concernation of the				
Depti	Status	1985	1966	1987	1008	188	2000	2001	200
30.56	794	e de la competition de la comp	•		4.0	- 255		*	*
	Tutar			1.1	40	1.2			
17-92	250	3.1	20	14	2.1	1.0	2.3	37	0.5
	371	5.2	1.1	0.2	0.5	0.4	0.8	0.8	1.8
	372	3.4	18	15	0.3	12	0.0	28	0.9
	785	- 22				1.0	*	0.1	0.1
	Total	81	7.2	48	4.2	4.5	4.3	16.1	6.7
93-163	328	3.0	1.0	0.0	0.5	2.0	0.0	18	73
	341	1.6	2.8	0.8	2.5	0.8	0.7	0.9	0.8
	342	67		0.0	01	1.21	0.2	01	0.1
	349	3.1	1.8	1.3	1.8	1.4	0.4	0.6	1.0
	349	- 22	34	12	0.8	- 22	0.3	- 22	0.1
	305	1.7	5.5	10	14	1.0		- 64	0.6
	370	2.0	6.3	1.3	44	3.8	1.1	2.2	- 37
	300	1.9	1.4	1.0	40	11	0.0	12	1.0
	786	12	0.3	0.1	0.1	122	0.1	0.2	0.1
	787		0.4	0.5	0.1	243	0.1	0.5	0.1
	790		0.2	12		- 222			
	793		0.1	0.1	0.1	1.20		0.1	
	794	- 22		0.1	2	121	12	:	
	299		0.1	0.1		194	+	+	0.4
	Total	24.5	25.4	15.8	24.5	15.5	7.1	10.4	29.2
84.274	344	1.6	1.1	6.1	0.5	0.5	0.4	0.6	87
	347	3.6	0.7	0.3	0.8	0.5	0.4	24	0.7
	309	- 10	16	0.5	1.8	1.0	0.0	27	1.1
	386	1.8	2.6	1.0	0.9	1.2	0.4	1.3	2.3
	389	0.6	0.0	0.8	0.7	25	0.4	14	0.4
	789		82	0.2	0.1		0.1	0.2	0.1
	791*		0.5	8.4	0.1	1.5	0.3	0.3	0.7
	798	120	42	87	0.5	1.1		6.2	
	Total	8.2		4.6	44	6.4	53	7.5	6.6
75-366	345	4.5	2.4	4.8	2.5	1.5	0.0	4.6	1.3
	346	2.8	1.1	22	1.7	1.7	0.4	0.0	0.8
	200	0.4	82	9.2	0.4	1.8	1.0	- 22	0.2
	398	0.3	0.1	8.4		0.8	0.4	0.1	0.1
	202	*		9.2	0.1	0.5	0.2	23	0.1
	800	(E)			0.2	213	0.2	6.5	0.3
	Total	7.8	5.2	5.5	5.5	4.8	3.4	8.1	3.4
87-540	729			0.2	0.1	0.7	1.8	6.4	
	731	0.2	1.1	9.6	0.1	1.0	1.1	0.1	. •
	733	0.2	9.2	0.5	0.0	18	2.1	14	0.3
	792		0.2	1.9	0.3	1.0	0.2	- 0.6	0.1
	Total	3.1	1.1	3.6	5.8	3.8	6.0	13	1.5
60-731	790	+		0.5	0.5	0.2	0.4	0.9	0.1
	732	1		13	0.2	1.8	0.7	1.3	
	736	0.2	4.8	4.8	0.6		1.5	1.1	1.7
	Total	0.2	0.7	2.8	1.0	2.8	27	3.5	1.0
12-814	737	0.4	1.5	1.0	2.3	0.8	0.7	24	1.0
	741	58	1.8	2.3	1.7	0.1	0.0	0.0	0.6
	7.45		0.1	22	0.1	07	0.0	22	0.0
	Deter		4.0	2.0			0.7		
15,1000	-								
10-1002	742	0.0	4.7	0.0	00	+	0.0		0.0
	746	+	4.1	0.0		0.0	0.0	0.0	0.0
	2.49			.0.2		1.53	0.0		0.0
0.000	Total .	0.6	-		1		0.0		
95-1200	739	-	0.0	0.0	0.0	22	0.0	22	0.0
	747		0.0	9.0	4.1		0.0	0.0	0.0
	750		41	4.0	0.5	0.0	0.0	0.0	0.5
	Total	-	8.1	4.8	0.1		0.0		0.0
81-1403	740	-	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	751	1	0.0	0.0	0.0	120	0.0	0.0	0.0
							2000		1.1
	Town.						10.00		100

			Biomass						
Depth	Stratum	1995	1996	1997	1998	1999	2000	2001	2002
≤ 56	375	1.9	1.1	3.9	5.2	0.6	1.7	0.6	9.8
	376	4.7	2,4	7.7	4.4	4.3	35.8	15.4	34.1
	Total	6.6	3.5	11.6	9.6	4.9	37.5	16.0	43.9
67-92	360	22.3	7.4	28.4	39.2	43.4	96.4	46.0	67.4
	361	3.5	4.1	3.3	2.1	1.8	3.9	2.3	9.2
	362	5.0	1.1	5.1	2.9	2.9	2.6	5,3	6.1
	373	1.8	0.2	2.3	1.7	4.2	1.7	6.9	2.9
	383	2.4	0.4	0.5	0.8	0.8	+	0.5	0.5
	Total	35.0	13.5	41.4	48.0	55.8	106.3	64.7	86.6
12.443	100								
30.105	325	6.6	0.5	2.3	11.0	0.0	07	3.0	6.1
	382	0.3	0.3	0.8	6.1	2.7	1.0	3.5	2.2
	Total	3.0	1.0	6.9	18.B	13.4	33.9	10.5	25.8
184-274	358	0.0	0.2	0.4	0.3	0.3	0.6	1.0	0.2
	378	0.1	0.2	0.1	0.1	0.4	0.2	0.1	0.4
	381	0.1	0.4	0.2	0.1	0.3	0.3	0.3	0.1
	Total	1.0	0.8	0.7	0.5	1,0	1.3	1.4	0.7
275-366	357	0.1	0.1	0.0	+	10	+	+	+
	379	+	0.2	0.1		0.3		0.1	
	380	0.1	0.2	0.1	0.1	0.7	0.3	0.1	+
	Total	0.2	0.5	0.2	0.1	1.0	0.3	0.2	
367-549	723	+	+	0.0	0.1		+	+	0.0
	725	0.1	0.1	0.0	+	0.1	0.2	+	0.0
	727		0.1	0.1	0.1	1.5	0.4	0.1	0.3
	Total	0.1	0.2	0.2	0.2	1.6	0.6	0.1	0.3
550-731	724	0.1	0.3	0.0	0.0	D.1	0.0	0.0	0.0
	726		0.3	0.1	*			1	0.0
	728	1	0.8	0,1	0.1	0.5	0.6	÷.	0.1
	Total	0.1	1.4	0.2	0.1	0.4	0.6	*	0.1
732-914	752	28	100	+	1.5	20	0.0	0.0	0.0
	756	100	1.0		0.1	7	1.2	0/0	0.0
	760	25	1.0		0.0			0.0	0.0
	Total				0.0	2	0.0	0.0	0.0
915-1097	753	64		+	+		0.0	0.0	0.0
	757	12	1.0		0.0	÷.		0.0	0.0
	761	1.0		+	0.0	*		0.0	0.0
	Total	1	12	2	+	22	0.0	0.0	0.0
1098-1280	754	1		G.	0.0		0.0	0.0	0.0
	758	1.5	100	-	0.0	-	0.0	0.0	0.0
	762	300	1	Š.,	11	12	8.	0.0	0.0
	Total	15	152	2	0.0	÷.)	0.0	0.0	0.0
1281-1463	756	55	2.4.2	100	0.0		0.0	0.0	0.0
	759	8		+	0.0	- 53	+	0.0	0.0
	763			12	51	1	12	0.0	0.0
	Total	22	1993		0.0	7	0.0	0.0	0.0
Grand Total		46.0	20.9	61.0	77.3	78.1	180.3	92.9	157.4

Table 11. Biomass estimates (1000) of A plaice, by stratum and depth zone (m), from Canadian fail surveys in Div. 3N in 1995-2002 (Campelen). (+) indicates biomass <50 t. (-) means stratum not surveyed.

			Biomass						
Decth	Chrokent	1006	1006	1007	1008	1000	2000	2001	2002
57.02	220	7.7	0.0	5.5	5.0	5.4	6.3	5.0	4.5
01-92	330	1.2	0.0	0.0	0.9	3.4	10	5.5	4.5
	331	1.2	0.5	0.9	1.0	1.0	1.0	1.1	2.2
	338	0.0	3.3	0.4	3.4	3.8	2.1	4.4	
	340	7.2	0.4	3.2	1.1	2.8	2.2	1.7	3.7
	361	1.7	0.9	5.2	3.3	2.9	6.4	4.3	2.9
	352	4.6	9.1	8.9	8.4	3.2	8.4	8.0	6.7
	353	5.6	14.4	14.8	19.3	10,3	14.5	13.9	11.2
	Total	34.6	29.2	42.9	43.2	29.4	39.9	39.3	30.2
93-183	329	3.2	1.5	2.7	5.0	6.6	8.0	76	3.7
	332	3.5	3.0	1.6	3.9	1.9	2.8	1.3	2.5
	337	2.4	26.3	7.6	5.5	1.4	1.0	0.5	4.75
	333		23.5	a	1.0	1.4	1.0	0.5	0.0
	338	6.0	0.9	5.1	1.4		3.8	2.4	3.Z
	354	4.5	80	2.4	3.7	27.0	3.8	27	3.0
	Total	20.1	39.6	14.4	15.5	36.9	20.2	14.5	13.7
84-274	333		3253			0.1		0.0	0,1
	336	+	0.1	0.1	+	0.1	0.1	+	0.1
	355	0.2	5.4	0.1	+	0.3	+	0.1	0.1
	Total	0.2	5.5	0.2	+	0.5	0.1	0.1	0.3
275-366	334	0.0	-	+		+	0.0	0.0	0.0
	335	+		+	+	+		+	+
	356	0.0	0.1	+		+	+	0.0	0.0
	Total		0.1	0.1	+	0.1	0.0	0.0	0.0
87-549	717	0.0	-		0.0				0.0
(e.) (e. 1 e.)	719		0.2	0.0	+	+		0.0	0.0
	721	+	0.6	0.0	0.0	+	+	0.0	0.0
	Total	*	0.8	+	+	+	+	0.0	0.0
50.711	718	0.0	-	0.0	1.2	0.0	0.0	0.0	0.0
	770	0.0	- A - F	0.0		0.0		2.0	0.0
	720	0.0		0.0	0.0		0.0	0.0	0.0
	Total	0.0	121	0.0				0.0	0.0
	1000	0.0	2.0	9.9		2	85	0.0	0.0
32-914	764	1.18	+	1.5	0.0	+ 2		0.0	0.0
	768	÷.		12	0.0	43		0.0	0.0
	772	÷.			0.0	-		1	0.0
	Total	24	10	3	0.0	(+)	14	0.0	0.0
15-1097	765	2	2.5	-	0.0	10	55	0.0	0.0
1000	765	182	1.5	100	0.0	1	293	0.0	0.0
	773	12	20	-	0.0	1	1	0.0	0.0
	Total				0.0	27		0.0	0.0
100.1000	784	2111		1.40	10005	× 3 1	0.0	0.0	0.0
100-1200	700	100	- 5C	1.5		1	0.0	0.0	0.0
	770		÷2	1.1		*	0.0	0.0	0.0
	774		*2	1			0.0	0.0	0.0
	Total	-4	28	1		÷.	0.0	0.0	0.0
281-1463	767	-	+5	-		-	0.0	0.0	0.0
	771	-	-	-		-	0.0	0.0	0.0
	775	-	+			+	0.0	0.0	0.0
	Total	1.4		4			0.0	0.0	0.0
and Total		54.0	75.7	57.5	58.7	0.55	20.7	63.0	44.7
the second se			the second se	and the second se	and the second se				

Table 13. Abundance index (millions) at age for A. plaice in Div. 3L from Canadian fall surveys from 1990 to 2001.

Age/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.34	0.00	0.00
1	0.78	0.12	0.00	0.00	0.00	0.45	1.12	0.17	2.71	14.04	16.17	8.93
2	2.39	2.09	0.75	3.10	0.00	11.05	16.62	1.52	3.84	19.86	31.38	102.85
3	26.07	14.38	12.54	21.10	0.00	25.11	57.94	21.44	6.89	10.52	26.11	70.83
4	309.25	91.21	52.65	71.20	14.48	59.35	170.16	63.91	28.35	7.92	8.33	34.69
5	597.38	295.78	171.91	123.36	25.75	198.76	149.44	105.70	64.67	29.39	27.69	20.68
6	548.02	372.37	269.73	218.20	42.96	187.22	84.67	84.48	90.34	50.01	34.64	21.12
7	303.10	164.87	102.93	138.57	54.51	101.25	31.85	35.87	57.37	46.36	22.80	34.07
8	145.95	77.59	32.27	27.74	28.54	36.23	6.04	10.59	25.21	37.97	12.56	31.22
9	95.12	43.16	10.42	7.96	8.82	19.26	2.46	5.73	14.46	24.81	8.54	25.12
10	36.73	18.31	5.51	2.65	1.88	3.65	0.83	1.27	3.74	8.91	2.73	10.85
11	17.48	8.27	1.87	1.13	0.29	0.36	0.14	0.82	1.26	4.64	1.77	8.38
12	9.06	5.12	1.63	0.29	0.06	0.10	0.06	0.19	0.41	2.10	0.33	3.24
13	5.46	1.95	0.46	0.09	0.02	0.00	0.05	0.14	0.06	0.63	0.12	0.55
14	3.94	1.51	0.26	0.07	0.07	0.00	0.00	0.00	0.00	0.22	0.00	0.32
15	1.52	0.88	0.12	0.24	0.00	0.00	0.00	0.01	0.00	0.03	0.05	0.07
16	0.51	0.23	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.03	0.05	0.00
17	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.01	0.00	0.00	0.00	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
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
unk	0.31	0.01	0.00	0.00	0.00	1.69	0.00	0.50	0.27	0.08	0.17	0.46
Ages 0+	2103.06	1098.06	663.07	615.76	177.38	644.47	521.37	332.31	299.68	257.85	193.46	373.37
Ages 6+	1166.89	694.48	425.23	397.01	137.15	348.06	126.10	139.08	192.86	175.70	83.59	134.94
Ages 9+	169.82	79.65	20.29	12.50	11.14	23.36	3.54	8.15	19.94	41.36	13.59	48.53
Ages 12+	20.50	9.90	2.49	0.75	0.15	0.10	0.11	0.33	0.48	3.00	0.56	4.17

Table 14. Abundance index (millions) at age for American plaice in Div. 3N from Canadian fall surveys from 1990 to 2001.

Age/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	2.34	0.82	5.84	0.00	0.00	1.97	0.11	1.81	1.93	46.35	20.47	8.24
2	40.24	84.64	78.12	1.90	0.00	17.53	1.70	1.34	1.38	69.91	158.97	19.95
3	134.78	193.91	161.07	52.32	16.51	15.09	4.08	8.06	0.86	11.42	264.89	130.79
4	295.80	284.75	130.72	283.60	65.29	16.40	3.31	14.95	11.62	2.61	53.91	42.75
5	169.59	288.82	130.17	135.26	96.33	27.70	9.34	8.33	18.51	7.83	22.80	5.07
6	30.73	72.35	131.01	67.76	43.86	62.43	13.60	29.97	11.44	12.62	38.99	17.05
7	9.34	19.55	53.35	74.65	23.60	15.42	12.65	41.44	25.97	12.16	59.27	27.83
8	3.83	10.86	12.33	23.64	14.33	9.03	4.55	24.91	35.67	29.10	53.08	22.08
9	6.62	10.35	8.02	8.78	7.29	6.09	1.82	8.00	37.85	25.04	39.83	12.52
10	3.31	7.24	3.71	4.70	1.97	2.21	0.79	3.60	8.76	18.08	39.29	9.91
11	2.53	5.98	2.20	2.20	0.78	0.72	0.36	1.64	3.54	9.46	19.14	13.06
12	1.71	3.26	1.74	1.65	1.00	0.71	0.27	0.43	1.21	7.39	5.20	6.16
13	1.60	4.31	1.45	0.88	0.42	0.25	0.00	0.49	0.61	2.75	2.49	1.39
14	1.53	2.50	1.23	0.78	0.69	0.02	0.00	0.34	0.52	0.58	0.68	0.58
15	1.49	1.45	0.33	0.66	0.29	0.00	0.06	0.15	0.08	0.06	0.34	0.27
16	1.59	1.05	0.46	0.34	0.00	0.00	0.00	0.04	0.24	0.36	0.00	0.11
17	0.47	0.48	0.29	0.10	0.00	0.00	0.00	0.00	0.13	0.30	0.34	0.12
18	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
19	0.00	0.04	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.08	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
unk	0.16	0.06	1.73	0.21	0.09	0.07	0.00	0.19	0.12	0.00	0.00	0.18
Ages 0+	707.78	992.55	723.78	659.44	272.46	175.66	52.65	145.70	160.43	256.19	779.70	318.07
Ages 6+	64.87	139.55	216.12	186.17	94.24	96.89	34.10	111.02	126.02	118.06	258.66	111.09
Ages 9+	20.97	36.80	19.43	20.11	12.44	10.01	3.30	14.70	52.93	64.19	107.32	44.12
Ages 12+	8.51	13.22	5.50	4.43	2.40	0.98	0.33	1.45	2.79	11.60	9.07	8.63

Table 15. Abundance index (millions) at age for American plaice in Div. 30 from Canadian fall surveys from 1990 to 2001.

Age/Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.61	1.38	0.00	0.00
1	8.24	0.63	0.00	0.00	0.00	35.77	2.28	1.32	17.60	93.19	54.15	28.67
2	10.51	12.10	2.58	5.10	0.00	97.32	80.15	16.68	21.30	80.38	139.26	61.24
3	25.25	56.20	44.10	42.54	3.02	20.35	74.47	71.61	9.03	49.89	124.51	100.89
4	100.36	73.88	74.88	143.08	23.98	35.12	54.27	67.87	77.71	13.19	60.63	39.78
5	86.13	139.80	65.85	101.84	68.22	69.48	49.52	39.82	37.99	55.24	23.18	28.22
6	64.11	134.09	98.45	86.11	64.26	86.70	75.81	45.40	27.31	30.79	58.38	29.01
7	57.19	64.96	69.79	103.34	56.80	35.29	37.70	42.67	29.30	21.05	33.52	35.87
8	41.89	27.82	32.12	52.74	46.38	16.19	10.77	17.73	22.54	31.85	18.15	10.36
9	22.78	28.33	17.21	16.26	12.54	14.17	4.54	9.60	16.11	22.84	13.45	11.07
10	15.16	18.75	8.47	7.97	3.97	4.89	1.46	2.43	5.45	6.67	6.91	6.58
11	9.19	11.66	4.38	3.47	1.60	0.80	1.29	0.76	2.14	4.75	4.47	4.91
12	6.66	5.48	3.48	3.15	0.67	0.50	0.26	0.59	2.01	2.82	1.53	2.29
13	4.99	5.96	1.43	2.11	0.48	0.20	0.05	0.22	1.37	1.51	0.48	0.90
14	3.85	2.96	1.67	1.53	0.41	0.28	0.12	0.26	0.32	0.27	0.16	0.23
15	2.41	2.12	0.70	0.79	0.10	0.05	0.28	0.31	0.10	0.08	0.13	0.16
16	2.36	1.05	0.67	0.96	0.00	0.00	0.00	0.03	0.14	0.32	0.19	0.27
17	1.17	0.33	0.24	0.18	0.00	0.00	0.00	0.00	0.31	0.28	0.37	0.11
18	80.0	0.28	0.27	0.31	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.16
19	0.00	0.11	0.06	0.19	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
unk	0.17	1.31	0.13	1.45	0.00	0.00	0.00	0.37	0.81	1.20	0.09	0.10
Ages 0+	462.49	587.83	426.46	573.11	282.41	417.10	392.95	317.68	273.20	417.77	539.57	360.85
Ages 6+	231.82	303.91	238.92	279.10	187.20	159.07	132.27	120.01	107.15	123.29	137.74	101.94
Ages 9+	68.64	77.04	38.57	36.91	19.77	20.90	7.99	14.21	28.00	39.59	27.69	26.69
Ages 12+	21.51	18.30	8.51	9.22	1.65	1.04	0.71	1.42	4.31	5.33	2.86	4.12

Table 16. Abundance index (millions) at age for American plaice in Div. 3LNO from Canadian fall surveys from 1990 to 2001.

Age/Year		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	1.72	0.00	0.00
	1	11.36	1.56	5.84	0.00	0.00	38.19	3.52	3.30	22.23	153.58	90.79	45.83
	2	53.13	98.83	81.45	10.10	0.00	125.90	98.46	19.54	26.52	170.15	329.62	184.04
	3	186.10	264.49	217.71	115.95	19.53	60.55	136.49	101.12	16.78	71.84	415.51	302.51
	4	705.41	449.84	258.26	497.88	103.74	110.88	227.74	146.72	117.67	23.72	122.87	117.22
	5	853.10	724.40	367.93	360.45	190.30	295.94	208.29	153.85	121.17	92.46	73.67	53.98
	6	642.86	578.81	499.19	372.08	151.09	336,35	174.08	159.85	129.09	93.43	132.01	67.18
	7	369.63	249.38	226.08	316.57	134.91	151.96	82.20	119.98	112.64	79.57	115.59	97.77
	8	191.67	116.27	76.71	104.12	89.25	61.45	21.37	53.22	83.42	98.92	83.79	63.67
	9	124.52	81.84	35.65	33.00	28.65	39.52	8.82	23.33	68.42	72.70	61.82	48.71
8	10	55.20	44.30	17.68	15.32	7.82	10.75	3.08	7.30	17.95	33.66	48.92	27.34
	11	29.20	25.92	8.45	6.80	2.67	1.88	1.78	3.22	6.94	18.85	25.38	26.36
3	12	17.43	13.86	6.85	5.10	1.72	1.31	0.59	1.21	3.63	12.31	7.07	11.69
	13	12.05	12.21	3.33	3.08	0.92	0.45	0.10	0.85	2.04	4.89	3.09	2.83
	14	9.32	6.98	3.15	2.38	1.17	0.31	0.12	0.60	0.84	1.08	0.84	1.13
3	15	5.42	4.45	1.15	1.68	0.40	0.05	0.35	0.48	0.18	0.16	0.53	0.50
	16	4.45	2.34	1.17	1.36	0.00	0.00	0.00	80.0	0.38	0.71	0.24	0.38
1	17	1.64	1.00	0.52	0.27	0.00	0.00	0.00	0.00	0.45	0.58	0.71	0.23
	18	0.21	0.42	0.27	0.31	0.00	0.00	0.00	0.00	0.05	0.12	0.00	0.16
12	19	0.00	0.17	0.06	0.22	0.00	0.00	0.00	0.00	0.00	0.08	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
unk		0.64	1.38	1.86	1.65	0.09	1.77	0.00	1.05	1.20	1.28	0.27	0.74
Ages 0+		3272.68	2677.06	1811.45	1846.66	732.15	1235.46	966.97	794.63	732.11	930.53	1512.46	1051.54
Ages 6+		1463.58	1137.94	880.27	862.28	418.59	604.02	292.47	370.11	426.03	417.05	479.99	347.97
Ages 9+		259.43	193.48	78.29	69.52	43.34	54.26	14.83	37.06	100.88	145.14	148.60	119.34
Ages 12+		50.51	41.42	16.50	14.40	4.21	2.12	1.15	3.20	7.57	19.93	12.49	16.93
proportion 0 to 5	(– I	0.55	0.57	0.51	0.53	0.43	0.51	0.70	0.53	0.42	0.55	0.68	0.67
proportion 9+		0.08	0.07	0.04	0.04	0.06	0.04	0.02	0.05	0.14	0.16	0.10	0.11

 Table 17.
 Likelihood ratio tests to evaluate reduction in number of variance parameters estimated. The alternative is a model with a variance parameter estimated for each survey*age combination (12 parameters). The null model has – 2*RLL=140.2.

Null Model	Test Statistic	df	p-val
SPR_ENGL	0.6888	2	0.7086
SPR_CAMP	0.9833	2	0.6116
FALL_CAMP	0.9313	2	0.6277
FALL_ENGL	0.2605	2	0.8779
Survey vp	2.4024	8	0.9661
Common vp	5.5676	11	0.9006

Table 18. Canadian catches of A. plaice by Division, month, and gear during 2002.

		3L		3N				_	3LNO	
	OT	Gillnet	OT	Seine	Gillnet	OT	Seine	Gillnet		Total
Jan						7		2		9
Feb	23		13			9		3		48
Mar	18		74			12				104
Apr	48		154			11				213
May	6	1	135	22		12	3			179
Jun	91	1								92
Jul	9	3	12			4		1		29
Aug	9	3	9	7		3		2		33
Sep			94	9		34	5			142
Oct			120		2	73				195
Nov	16		162	9		11	1			199
Dec			70	2		60	5			137
Total	220	8	843	49	2	236	14	8		1380

Summaries:	GN=18	3L=228
	OT=1299	3N=894
	Seine=63	3O=258

By-catch in directed yellowtail fishery = 1047 By-catch in directed G.halibut fishery = 206 By-catch in directed redfish fishery = 29 Table 19. Catch at age (000 of fish) and mean length (cm) and weights (kg) at age from the Canadian catch of
A. plaice in Div. 3LNO in 2002. S.O.P. is catch numbers x mean weights.

An asterisk indicates catch of less than 500 fish.

						2002		3LNO
A	Age	3L	3N	30	Total	Mean length	Mean weight	S.O.P. (t)
	4	*	3	*	4	31.1	0.262	1.0
	5	3	23	3	28	34.6	0.375	10.5
	6	7	59	16	82	36.7	0.452	37.1
	7	16	134	78	229	38.0	0.512	117.2
	8	83	278	120	482	39.4	0.585	282.0
	9	161	206	64	431	39.8	0.611	263.3
	10	108	126	35	269	41.9	0.737	198.3
	11	68	129	35	232	45.0	0.914	212.0
	12	25	67	16	108	48.6	1.166	125.9
	13	8	24	4	36	51.3	1.409	50.7
	14	1	5	1	7	57.6	2.049	14.3
	15		4	*	5	59.3	2.230	11.2
	16		2	*	2	63.1	2.738	5.5
	17		1	*	0.7	64.4	2.900	2.1
	18		*	*	0.2	63.5	2.786	0.5
	19		*		0.1	64.5	2.906	0.2
То	otal	480	1061	372	1916			1332
							catch=	1320

Table 20. Catch agt age for all feets Div. 3LNO American place, 2002.

			Part	lugal			Russia			Spain			
	//ge	3LNO	Mean len	Mean wgt	5.0.P.	3LNO	Mean len	Mean wgt	5.0 P.	3LNO	Mean len	Mean wgt	\$.0.P.
2002	Age 1 2 3 4 5 6 7 8 9 10 11 12 13	3UNO 0 4 97 110 218 603 619 485 480 296 100	Mean len 0.0 15.6 19.9 26.7 29.9 31.9 38.0 37.9 40.5 43.6 47.5 43.6 47.5	Mean wgt 0.000 0.026 0.058 0.250 0.250 0.250 0.416 0.416 0.419 0.750 1.054 1.193	5.0 P. 0 0 15 22 31 70 251 300 300 379 314 119	3LNO 0 0 8 17 27 54 163 154 119 108 52 16	Mean len 0.0 23.8 28.9 32.0 34.0 34.7 36.7 36.7 36.1 40.3 42.9 46.7 48.1	Mean wgt 0.000 0.000 0.105 0.201 0.221 0.345 0.372 0.446 0.505 0.609 0.750 0.994 1.094	S O.P. 0 0 2 5 9 200 73 78 77 81 17 17	3LNO 0 8 321 162 93 200 190 181 211 132 47	Mean len 0.0 16.5 22.5 26.2 28.5 30.5 32.6 35.1 37.8 40.7 43.8 48.5 50.0 50.0	Mean wgt 0.000 0.001 0.037 0.146 0.192 0.241 0.299 0.335 0.492 0.631 0.631 0.602 1.122 1.248	5.0.P 0 0 1 47 31 19 28 77 77 93 114 169 148 58
	14 15 16 17 18 19 20 Unk	28 17 15 5 1 0 0 2	53.4 57.5 58.7 61.6 64.5 0.0 0.0 0.0 66.0	1.550 1.962 2.126 2.407 2.907 0.000 0.000 2.965	44 33 32 12 3 0 0 7	4 1 0 0 0 1	51.5 55.6 0.0 0.0 0.0 0.0 54.5	1.379 1.775 1.819 0.000 0.000 0.000 0.000 1.660	01100000	22 6 6 1 0 0 4	53.1 56.7 58.5 64.5 68.5 0.0 60.5	1.523 1.890 2.108 2.500 2.907 3.550 0.000 2.346	33 11 12 3 0 1 0 9
Total					1938				418				854

			Car	ada		Ov	erall (LF data	available)		Japan	Estonia	Poland	Lithuania
	Age .	3LNO	Mean len	Mean wot	SOP.	3LNO	Mean len	Mean wot	SOP.	3LNO	3LNO		<u> </u>
	1	0	0	0	0	0	0.0	0.000	0				
	2	Ď	ă	ö	à	ő	15.7	0.028	ò				
	3	ő	ő	õ	ő	12	21.7	0.078	1				
		4	31.1	0.262	1	4:10	26.5	0.150	- 65				
	5	28	34.6	0.375	11	304	29.9	0.225	68				
	6	82	36.7	0.452	37	300	33.3	0.322	97				
	7	229	38.0	0.512	117	594	35.4	0.395	235				
	8	482	39.4	0.585	282	1448	37.3	0.472	683				
	9	431	39.8	0.611	263	1393	38.7	0.531	740				
~	10	269	41.9	0.737	198	1053	41.1	0.650	684				
8	- 11	232	45.0	0.914	212	1031	44.0	0.816	841				
8	12	108	48.6	1.166	128	539	48.0	1.085	639				
	13	36	51.3	1.409	51	198	49.9	1.237	245				
	14	7	57.5	2.049	14	61	53.8	1.588	95				
	15	5	59.3	2.230	11	28	57.7	2.004	66				
	16	2	63.1	2.738	5	23	69.0	2.166	50				
	17	1	64.4	2.900	2	6	61.9	2.534	16				
	18	0	63.5	2.786	1	1	64.4	2.886	3				
1	19	0	64.5	2.906	0	0	67.0	3.292	1				
1	20	0	0	0	0	0	0.0	0.000	0				
	Unk	0	0	0	0	.8	60.9	2.401	19				
Total					1332				4540				
										22	10		20

		Total 3LNO Numbers@	Total
		age (000s)	SOP
	Aga	3LNO	
	1	0	0
	2	0	0
	3	12	1
	4	448	67
	5	317	71
	6	313	101
	7	618	244
		1509	712
	9	1451	771
04	10	1097	713
8	- 11	1074	877
14	12	614	665
	13	206	255
	14	63	100
	15	29	58
	16	24	52
	17	7	17
	18	1	3
	19	0	1
	20	-0	0
	Unk	8	19
Total			4729

	Commercial	ALK	RV A	LK
Age	number	av wgt	number	av wgt
5	1	0.204	2	0.362
6	11	0.379	7	0.330
7	56	0.443	58	0.469
8	94	0.544	93	0.571
9	106	0.573	107	0.573
10	106	0.742	91	0.727
11	92	0.889	110	0.872
12	38	1.062	44	1.071
13	17	1.308	11	1.338
14	6	1.539	5	1.300
15	3	1.897	3	1.999
16	1	2.245	1	2.390

Table 21. Comparison of Canadian catch at age, Div 3N, 2'nd quarter 2001 using RV and commercial ALK's.

	3N Number	at age				
	Russia		Portugal		Spain	
	3N (RV)	(comm)	3N (RV)	(comm)	(RV)	(comm)
2	0	0	17	0	39	0
3	24	0	1138	0	7996	0
4	4971	0	48748	0	319344	0
5	13478	1536	52117	3718	158925	2933
6	20959	10345	52460	29167	69497	36499
7	35086	44575	78063	108123	60062	96092
8	89329	99121	200990	235809	106135	93949
9	64083	82499	180670	232247	76725	114936
10	29687	31682	118676	132632	54357	64445
11	32383	21030	152040	109604	82585	69078
12	12890	8733	79891	54192	60852	42376
13	2446	2113	18201	17529	16235	16281
14	1438	237	11606	4045	10583	3800
15	0	98	698	3958	872	3758
16	109	0	2981	2492	1752	2005
17	0	0	673	824	262	609
18	0	0	0	404	0	303
19	0	0	0	0	149	0
	0	73717	1356	65580	1291	478054

Table 22 - Comparison of 2002 age compositions in the NRA using different ALK's.

Unk

	3NMean wg	gt at age				
	Russia		Portugal		Spain	
	(RV)	(comm)	3N (RV)	(comm)	(RV)	(comm)
2	0.000	0.000	0.031	0.000	0.031	0.000
3	0.116	0.000	0.070	0.000	0.088	0.000
4	0.216	0.000	0.166	0.000	0.146	0.000
5	0.297	0.339	0.249	0.329	0.192	0.320
6	0.368	0.339	0.330	0.312	0.236	0.271
7	0.400	0.375	0.383	0.355	0.290	0.294
8	0.450	0.473	0.452	0.501	0.359	0.475
9	0.532	0.509	0.582	0.554	0.565	0.489
10	0.672	0.711	0.747	0.781	0.792	0.848
11	0.784	0.909	0.851	0.958	0.934	1.041
12	1.086	1.115	1.127	1.141	1.205	1.221
13	1.155	1.320	1.243	1.496	1.337	1.539
14	1.529	1.742	1.780	2.065	1.744	1.986
15	0.000	1.916	1.872	2.164	1.872	2.062
16	2.101	0.000	2.505	2.638	2.457	2.683
17	0.000	0.000	2.618	2.937	2.618	3.174
18	0.000	0.000	0.000	2.642	0.000	2.620
19	0.000	0.000	0.000	0.000	3.550	0.000
	0.000	0.415	3.128	0.155	3.213	0.149

Unk

	5	6	7	0	0	10	11	10	10	14	15.
1060	447	218.8	8/1 Q	1365.0	1738.3	2280.0	2540.0	3473.6	2752 5	25647	107
1900	28.1	200.4	531.2	1230.9	2/63.0	2200.0	2/67 1	2272.0	27 32.3	2579/	5102.7
1062	62.4	445 1	657.2	1006 1	1184 5	1660.1	2432.4	2607.6	2409 5	2076.8	5058.8
1902	1// 3	1029.7	1866 /	1/3/ 1	15/6.8	2237.6	2402.4	2097.0 /17/ 8	2409.0	3851 0	5622.8
1967	268.6	1025.7	1000.4	3253 /	6174.5	8768.6	6960.2	61/08	3245.9	3033.6	5552.8
1065	475.5	3157.0	7224.8	0205.4	70/8 0	7562.0	5731 G	5700.8	5245.5	1333.0	6510.2
1905	1750.8	6271 7	10036.6	111325	0516.7	7362.9	7106.4	5667.6	5731.0	5000.8	8475 7
1967	133.0	3345 3	10834.8	7647.2	9504 5	13713.2	13672.7	14564.6	9/95 5	6572.1	132/17.8
1068	275.8	2242.3	1130.2	0785.0	11210 5	11631.0	7735 /	13842.2	8778.0	6330.2	8/10 3
1900	600 3	2342.3	7875.0	1/186.6	18181.0	12778.0	12735 3	103066	7053.8	5305 1	7666.2
1070	115.9	2433.1	2554 1	10006.8	13536.7	11286.1	11170 1	8248.5	5556 4	4661 3	0285 D
1070	1135.0	17/0 6	8/11 7	10457.6	15504 1	1/16/ 8	10003 1	90265	5195.2	3720.6	7130.5
1972	578.2	2573.8	2367.8	7696.8	11301 7	12765.9	12718.0	10706.0	6783.8	4354.0	7033.1
1973	46.4	1079 1	6329.1	10518.1	13016 7	10042.3	9980.4	6762.3	6589.6	3733.8	7013.8
1974	354.0	5955.0	10475.0	10069.0	7768.0	9004.0	7086.0	4596.0	3809.0	2278.0	2164.0
1975	883.0	3128.0	7220.0	9433.0	9234.0	7903.0	5701.0	4732.0	3788.0	2617.0	2933.0
1976	837.0	3907.0	8781.0	19363.0	16597.0	12338.0	8323.0	5156.0	3024.0	2309.0	2241.0
1977	974.0	6723.0	8743.0	11730.0	13559.0	11157.0	6520.0	4257.0	2369.0	1493.0	1625.0
1978	1558.0	4467.0	9195.0	10397.0	12743.0	13881.0	9938.0	6823.0	3655.0	2239.0	2440.0
1979	1257.0	6551.0	13532.0	18747.0	14977.0	12506.0	8791.0	3775.0	1843.0	714.0	580.0
1980	263.0	2977.0	9531.0	12578.0	14111.0	14212.0	11288.0	8088.0	3732.0	1565.0	1022.0
1981	154.0	554.0	2248.0	4786.0	7921.0	11425.0	13565.0	11872.0	8693.0	5591.0	4697.0
1982	27.0	314.0	1814.0	4799.0	8946.0	12836.0	15801.0	14489.0	7942.0	4224.0	2943.0
1983	119.0	991.0	3053.0	5797.0	8343.0	7707.0	8493.0	7517.0	4588.0	2480.0	1771.0
1984	48.0	397.0	1516.0	3311.0	5853.0	9958.0	12887.0	8964.0	5072.0	2515.0	1602.0
1985	296.0	788.0	2362.0	5652.0	10694.0	15741.0	14528.0	9233.0	4108.0	1969.0	1792.0
1986	4407.0	9707.0	12556.0	12530.0	13372.0	13874.0	14246.0	10376.0	5947.0	2637.0	2155.0
1987	2237.0	4941.0	7691.0	10893.0	15867.0	17640.0	11404.0	6986.0	3076.0	1303.0	1046.0
1988	2908.0	3213.0	4853.0	7269.0	10123.0	10325.0	9260.0	6040.0	2692.0	1156.0	962.0
1989	12745.0	11553.0	11432.0	9652.0	14180.0	12387.0	8405.0	4972.0	2029.0	1027.0	715.0
1990	15134.0	7694.0	4489.0	4604.0	8666.0	8666.0	6452.0	3633.0	1702.0	945.0	548.0
1991	6103.0	12152.0	7846.0	9331.0	7856.0	6589.0	4394.0	2294.0	811.0	364.0	484.0
1992	148.0	1023.0	2591.0	3395.0	3618.0	2154.0	1507.0	875.0	576.0	513.0	579.0
1993	1172.4	3712.9	8820.9	11590.5	5720.0	3376.9	1853.1	1002.5	526.9	354.7	526.8
1994	4316.3	3837.1	5426.1	4459.7	2777.0	736.9	475.6	162.8	120.9	54.7	27.7
1995	99.2	313.9	453.2	333.0	203.3	65.5	13.6	4.1	0.1	0.1	0.4
1996	180.9	742.8	975.0	452.7	211.1	51.9	10.4	8.1	2.3	1.0	1.3
1997	19.4	134.9	543.7	719.4	409.4	149.3	93.5	56.8	26.2	1.4	1.4
1998	10.6	54.8	272.7	767.1	804.9	455.5	278.5	117.3	69.0	49.2	18.3
1999	26.0	174.5	268.4	579.2	1030.0	1079.5	627.5	278.6	126.0	45.1	27.5
2000	24.6	318.7	953.5	1380.5	1943.3	1773.3	1095.7	449.9	194.9	43.6	114.8
2001	110.2	330.6	1136.8	1410.6	1581.9	1593.6	1402.1	663.9	231.8	85.8	109.0
2002	316.6	312.6	618.4	1508.9	1451.5	1097.1	1074.0	613.5	206.3	63.2	61.4

Table 23. Catch-at-age used in the virtual population analyses. Age 15 is a plus group.

	5	6	7	8	9	10	11	12	13	14	15+
1960	0.227	0.198	0.232	0.320	0.423	0.539	0.663	0.775	0.872	1.041	1.274
1961	0.227	0.198	0.232	0.320	0.423	0.539	0.663	0.775	0.872	1.041	1.274
1962	0.201	0.192	0.227	0.326	0.441	0.549	0.663	0.810	0.885	1.035	1.281
1963	0.179	0.218	0.229	0.326	0.447	0.569	0.668	0.790	0.876	1.021	1.357
1964	0.178	0.244	0.293	0.382	0.458	0.579	0.687	0.789	0.882	1.023	1.352
1965	0.182	0.246	0.323	0.434	0.554	0.620	0.727	0.813	0.891	1.076	1.420
1966	0.178	0.241	0.327	0.427	0.565	0.702	0.828	0.904	0.925	1.095	1.444
1967	0.182	0.245	0.326	0.416	0.552	0.710	0.817	1.003	1.025	1.161	1.563
1968	0.177	0.240	0.316	0.415	0.531	0.652	0.819	0.916	1.052	1.219	1.612
1969	0.182	0.246	0.303	0.379	0.504	0.635	0.740	0.914	1.020	1.227	1.623
1970	0.188	0.240	0.309	0.363	0.470	0.619	0.730	0.813	1.012	1.106	1.495
1971	0.181	0.233	0.302	0.365	0.443	0.573	0.725	0.850	0.933	1.087	1.354
1972	0.193	0.241	0.310	0.400	0.461	0.557	0.679	0.818	0.922	1.102	1.365
1973	0.190	0.226	0.285	0.376	0.501	0.576	0.716	0.885	1.038	1.117	1.466
1974	0.191	0.229	0.288	0.349	0.465	0.600	0.759	0.951	1.190	1.396	1.705
1975	0.192	0.231	0.296	0.376	0.484	0.627	0.789	0.994	1.208	1.439	1.817
1976	0.183	0.236	0.296	0.380	0.482	0.610	0.757	0.955	1.109	1.332	1.683
1977	0.187	0.234	0.305	0.386	0.504	0.612	0.761	0.919	1.119	1.271	1.631
1978	0.152	0.233	0.305	0.384	0.469	0.614	0.718	0.897	1.098	1.303	1.626
1979	0.167	0.251	0.312	0.400	0.476	0.558	0.657	0.847	1.061	1.414	1.681
1980	0.155	0.262	0.362	0.425	0.495	0.560	0.629	0.720	0.958	1.290	1.757
1981	0.175	0.281	0.365	0.430	0.484	0.538	0.560	0.663	0.765	0.993	1.446
1982	0.210	0.250	0.369	0.416	0.469	0.509	0.565	0.638	0.812	1.005	1.336
1983	0.290	0.313	0.375	0.447	0.530	0.582	0.610	0.671	0.842	1.091	1.502
1984	0.245	0.306	0.382	0.466	0.553	0.609	0.676	0.771	0.923	1.177	1.638
1985	0.222	0.298	0.367	0.425	0.503	0.601	0.679	0.849	1.120	1.463	1.921
1986	0.079	0.203	0.302	0.420	0.509	0.605	0.713	0.901	1.195	1.570	2.082
1987	0.219	0.189	0.278	0.349	0.452	0.599	0.749	0.925	1.175	1.500	2.017
1988	0.163	0.242	0.317	0.421	0.463	0.547	0.712	0.934	1.229	1.560	2.062
1989	0.065	0.178	0.257	0.365	0.467	0.545	0.696	0.909	1.223	1.572	2.070
1990	0.103	0.158	0.253	0.341	0.464	0.586	0.745	0.986	1.317	1.697	2.049
1991	0.168	0.215	0.321	0.408	0.520	0.661	0.845	1.104	1.478	1.880	2.224
1992	0.234	0.238	0.330	0.415	0.514	0.667	0.861	1.096	1.412	1.806	2.327
1993	0.088	0.228	0.279	0.358	0.453	0.568	0.730	0.926	1.205	1.466	2.008
1994	0.084	0.148	0.244	0.320	0.441	0.613	0.727	0.906	1.163	1.444	1.792
1995	0.166	0.168	0.252	0.341	0.515	0.742	1.102	1.226	1.313	1.849	1.776
1996	0.116	0.194	0.265	0.386	0.537	0.807	1.058	1.457	1.625	2.109	2.353
1997	0.162	0.189	0.266	0.379	0.542	0.745	0.953	1.187	1.531	1.924	2.613
1998	0.136	0.165	0.255	0.350	0.495	0.633	0.806	0.985	1.260	1.732	2.014
1999	0.159	0.212	0.227	0.316	0.411	0.553	0.673	0.860	1.065	1.387	1.747
2000	0.138	0.229	0.300	0.346	0.435	0.559	0.715	0.893	1.147	1.357	1.791
2001	0.186	0.242	0.332	0.408	0.449	0.572	0.741	0.931	1.161	1.390	1.789
2002	0.205	0.268	0.357	0.435	0.510	0.581	0.723	0.940	1.128	1.404	1.741
2003	0.176	0.246	0.330	0.397	0.465	0.571	0.726	0.922	1.145	1.384	1.773

Table 24. Commercial weights-at-age for Div. 3LNO American plaice.

	_		_								
	5	6	7	8	9	10	11	12	13	14	15
1960	0.002	0.004	0.016	0.040	0.127	0.232	0.561	0.810	0.932	0.977	0.992
1961	0.003	0.005	0.014	0.046	0.105	0.333	0.564	0.810	0.932	0.977	0.992
1962	0.002	0.009	0.013	0.041	0.126	0.250	0.632	0.847	0.932	0.977	0.992
1963	0.001	0.006	0.027	0.037	0.117	0.298	0.486	0.855	0.960	0.977	0.992
1964	0.001	0.002	0.019	0.082	0.100	0.291	0.556	0.728	0.953	0.990	0.992
1965	0.005	0.004	0.009	0.056	0.218	0.240	0.559	0.787	0.884	0.986	0.998
1966	0.013	0.016	0.017	0.038	0.158	0.468	0.474	0.797	0.916	0.956	0.996
1967	0.005	0.033	0.050	0.063	0 141	0.371	0.735	0 720	0 924	0.970	0.984
1068	0.000	0.000	0.082	0.000	0.209	0.404	0.649	0.897	0.880	0.070	0.001
1960	0.003	0.012	0.002	0.140	0.205	0.509	0.043	0.853	0.000	0.974	0.000
1070	0.000	0.000	0.001	0.130	0.381	0.505	0.802	0.000	0.903	0.000	0.001
1071	0.001	0.009	0.025	0.070	0.301	0.027	0.002	0.921	0.940	0.909	0.304
1971	0.000	0.002	0.025	0.062	0.163	0.010	0.642	0.941	0.980	0.963	0.990
1972	0.000	0.002	0.008	0.065	0.160	0.372	0.809	0.944	0.984	0.995	0.994
1973	0.000	0.001	0.007	0.026	0.158	0.353	0.610	0.918	0.982	0.996	0.999
1974	0.002	0.001	0.006	0.025	0.086	0.338	0.611	0.806	0.967	0.994	0.999
1975	0.002	0.006	0.007	0.025	0.085	0.248	0.581	0.818	0.917	0.987	0.998
1976	0.002	0.007	0.021	0.029	0.108	0.258	0.537	0.790	0.928	0.967	0.995
1977	0.001	0.007	0.023	0.070	0.121	0.359	0.563	0.803	0.911	0.974	0.987
1978	0.000	0.004	0.023	0.073	0.212	0.386	0.723	0.827	0.935	0.965	0.991
1979	0.001	0.001	0.015	0.070	0.209	0.491	0.742	0.924	0.947	0.980	0.987
1980	0.001	0.004	0.008	0.057	0.193	0.469	0.775	0.929	0.983	0.985	0.994
1981	0.002	0.006	0.024	0.047	0.192	0.432	0.747	0.925	0.984	0.996	0.996
1982	0.000	0.010	0.031	0.122	0.224	0.483	0.707	0.908	0.978	0.996	0.999
1983	0.001	0.003	0.051	0.152	0.442	0.628	0.786	0.884	0.971	0.994	0.999
1984	0.000	0.009	0.030	0.229	0.501	0.818	0.908	0.936	0.960	0.991	0.998
1985	0.004	0.005	0.064	0.228	0.620	0.850	0.962	0.983	0.983	0.987	0.997
1086	0.008	0.022	0.055	0.345	0.738	0.900	0.970	0 003	0.007	0.996	0.006
1087	0.000	0.022	0.000	0.0424	0.750	0.964	0.970	0.990	0.997	1 000	0.000
10.88	0.007	0.030	0.112	0.412	0.000	0.904	0.900	0.004	0.000	1.000	1 000
1000	0.002	0.010	0.133	0.412	0.304	0.909	0.990	1 000	0.999	1.000	1.000
1909	0.002	0.010	0.077	0.474	0.790	0.992	0.996	1.000	0.999	1.000	1.000
1990	0.003	0.009	0.050	0.272	0.615	0.956	0.999	0.999	1.000	1.000	1.000
1991	0.006	0.013	0.052	0.209	0.626	0.956	0.992	1.000	1.000	1.000	1.000
1992	0.001	0.022	0.059	0.241	0.573	0.883	0.991	0.999	1.000	1.000	1.000
1993	0.005	0.008	0.082	0.232	0.647	0.872	0.971	0.998	1.000	1.000	1.000
1994	0.026	0.034	0.067	0.260	0.595	0.914	0.972	0.993	1.000	1.000	1.000
1995	0.076	0.106	0.195	0.377	0.579	0.877	0.984	0.994	0.999	1.000	1.000
1996	0.008	0.174	0.345	0.627	0.837	0.843	0.972	0.997	0.999	1.000	1.000
1997	0.005	0.036	0.349	0.701	0.921	0.977	0.954	0.994	1.000	1.000	1.000
1998	0.020	0.027	0.154	0.577	0.913	0.988	0.997	0.988	0.999	1.000	1.000
1999	0.023	0.071	0.139	0.469	0.777	0.979	0.998	1.000	0.997	1.000	1.000
2000	0.018	0.078	0.219	0.486	0.810	0.899	0.995	1.000	1.000	0.999	1.000
2001	0.020	0.055	0.230	0.508	0.846	0.954	0.958	0.999	1.000	1.000	1.000
2002	0.020	0.068	0.162	0.514	0.792	0.970	0.990	0.983	1.000	1.000	1.000
2003	0.020	0.068	0.204	0.388	0.789	0.934	0.995	0.998	0.993	1.000	1.000

Table 25. Estimated proportion mature-at-age for Div. 3LNO American plaice.

	ORTHOGO MEAN SQU	NALITY OF JARE RESI	FSET DUALS	0. 0	.00032).2702	22 269	
	Parameter	· Es	st. Std. I	Err. Re	I. Err.	Bias	Rel. Bias
	N[2003 6]	1.88E+04	1.02E+04	· 0	.54 2	2.76E+03	0.147
	N[2003 7]	7.00E+03	2.27E+03	0.3	324 3	3.70E+02	0.053
	N[2003 8]	6.08E+03	1.63E+03	0.2	268 2	2.12E+02	0.035
	N[2003 9]	7.12E+03	1.84E+03	0.2	259 2	2.09E+02	0.029
	N[2003 10]	5.59E+03	1.41E+03	0.2	253 1	.46E+02	0.026
	N[2003 11]	4.37E+03	1.08E+03	0.2	248 1	.04E+02	0.024
	N[2003 12]	3.78E+03	9.56E+02	0.2	253 8	8.75E+01	0.023
	N[2003 13]	2.73E+03	6.94E+02	0.2	254 6	5.22E+01	0.023
	N[2003 14]	1.39E+03	3.52E+02	0.2	253 3	8.18E+01	0.023
	N[2003 15]	9.30E+02	1.77E+02	. 0	.19 1	.02E+01	0.011
Spring	q 5	2.70E-03	3.56E-04	0.1	132 ⁻	1.84E-05	0.007
	q 6	4.59E-03	5.88E-04	0.1	128 🕄	3.00E-05	0.007
	q 7	5.86E-03	7.43E-04	0.1	127 🕄	3.87E-05	0.007
	q 8	5.41E-03	6.84E-04	0.1	126 🕄	3.70E-05	0.007
	q 9	5.00E-03	6.33E-04	0.1	127 3	3.56E-05	0.007
	q 10	4.03E-03	5.11E-04	0.1	127 2	2.99E-05	0.007
	q 11	3.96E-03	5.06E-04	0.1	128 🕄	3.09E-05	0.008
	q 12	4.40E-03	5.69E-04	0.1	129 3	3.63E-05	0.008
	q 13	4.34E-03	5.70E-04	0.1	131 3	3.75E-05	0.009
	q 14	4.47E-03	5.99E-04	0.1	134 4	4.01E-05	0.009
Fall	q 5	7.34E-03	1.17E-03	0	.16	7.49E-05	0.01
	q 6	9.77E-03	1.54E-03	0.1	157 9	9.79E-05	0.01
	q 7	9.43E-03	1.47E-03	0.1	156 9	9.55E-05	0.01
	q 8	8.00E-03	1.25E-03	0.1	156 8	8.29E-05	0.01
	q 9	7.54E-03	1.18E-03	0.1	156 8	8.13E-05	0.011
	q 10	5.78E-03	9.07E-04	0.1	157 (6.49E-05	0.011
	q 11	5.80E-03	9.21E-04	0.1	159 (6.89E-05	0.012
	q 12	6.65E-03	1.07E-03	0.1	162 8	8.38E-05	0.013
	q 13	6.69E-03	1.11E-03	0.1	166 8	8.99E-05	0.013
	q 14	7.85E-03	1.31E-03	0.1	166 ⁻	1.06E-04	0.013

Table 26. Results of ADAPT for Div. 3LNO American plaice using Canadian Spring and Fall surveys.

			-			40		47			15		
1940	200711	215872	141212	120313	00754	50500	48425	54420	21084	16264	26100	5+ milliona 1/078	
1941	283342	245342	176535	114854	07270	72734	49737	37358	25054	15519	30700	11.45	
1942	265661	231855	200688	144565	92923	77414	GORAN	36039	28536	17009	30405	1182	
1902	270674	217448	189507	181716	116953	75009	01974	44214	97873	21190	30602	1919	
1954	250403	221724	177102	153470	132744	94355	59392	47856	32435	18655	34147	1232	
1965	255220	212957	179802	140485	122713	103109	09345	42353	33540	23629	35500	1252	
1965	250042	235545	171504	140679	106625	94109	77595	51605	29450	22846	38652	1219	
1967	223369	203128	187185	131350	105137	78715	70495	67122	37142	18963	38224	1151	
1958	176502	182487	163296	143478	100947	77508	52103	45415	33683	21879	29058	1026	
1909	174804	144258	147292	129950	109641	72298	52983	35691	24763	19692	28456	939	
1970	164001	142494	115893	113486	93636	72579	47091	31933	19890	13941	27770	043	
1971	204824	134234	114703	92579	83891	64445	49250	28997	18734	11295	21647	825	
1972	242725	100670	108321	86323	66372	54731	40026	30446	15843	10674	17241	830	
1973	292802	198204	134133	88548	63734	44166	33335	21363	15334	6744	12668	909	
1974	280066	239684	161301	104107	01301	40472	27132	10036	11425	6663	6330	957	
1975	293986	228979	190860	122612	76157	43255	25040	15849	10883	5939	6656	1020	
1976	276668	239898	184647	149745	91877	54031	28301	15376	8729	5515	5353	1060	
1977	232204	225760	192884	143251	105154	60285	33144	15701	7965	4437	4829	10.25	
1978	218525	189233	178767	150029	106705	73876	39317	21270	9032	4399	4791	998	
1979	200731	177506	150897	138064	113454	75678	47994	23261	11296	4125	3351	947	
1980	193508	193210	139416	111341	96148	79394	50964	31382	15646	7589	4956	893	
1951	166451	158194	130936	105545	79822	66010	52211	31495	18428	9455	7943	848	
1982	191239	154152	129017	105172	82094	58211	43760	30561	15155	7327	5105	822	
1983	180788	155540	125025	103002	81776	50140	36117	21672	12080	5332	3808	796	
1984	191307	155278	127276	100342	79911	56431	41483	21936	11007	5789	3688	798	
1985	187071	159659	126772	102836	79164	60146	39093	22402	9941	4482	4079	793	
1985	159513	152893	127550	101650	79094	55100	35103	19405	10063	4405	3649	749	
1987	141647	120619	116420	93106	71940	52719	32711	15995	6712	2972	2386	003	
1988	161364	113850	99207	88378	66413	44633	27348	16562	6852	2748	2287	630	
1989	186670	129487	90394	78844	65802	45258	27290	14090	8149	3201	2228	649	
1990	194513	100249	67503	44604	37998	28128	17418	9807	4617	3283	1904	610	
1991	63915	103068	53199	36342	22785	15874	10124	6491	3091	1461	1943	347	
1992	65525	50669	51517	25418	14430	7509	4502	2737	1547	1215	1372	227	
1993	58497	38456	29049	28364	12408	5799	2871	1534	962	485	721	179	
1994	71546	33544	19836	10540	8173	3121	963	370	190	185	94	149	
1995	623396	38861	16854	7837	2999	2/100	1287	232	100	29	103	133	
1990	422/0	39915	226.00	80/7	6263	10/4	10/2	747	123	08	/5	129	
1997	54004	24/4/	50969	12563	0,295	2338	1007	918	434	11		93	
1998	22000	20101	20139	10060	19033	2000	1779	1200	/00	331	123	WY	
2000	10190	10012	10949	10242	12010	0004	2030	1200	420	201	512	20	
2000	12100	10007	10,040	110220	0.000	9004	0244	1/00	107	439	500	26	
2001	10020	8443	7051	10405	0000	64.22	5555	3030	1884	4.20	624	70	
2002	13633	10030	0031	5870	0214	5443	4770	3607	2665	1355	010	67	
	and the second second	10000	NAME AND ADDRESS OF	antero ter	10100 1100	0.4.4.0	-101.0	and an i		1.01.010			
geometric 1	nean of 100	0 to 2001											
geometric fr	fean of 199	9 to 2001											
geometric¶ Bias aiustor	Nean of 199	0 to 2001											
geometric¶ Bias ajusted	Ream of 199 J Fishing me	o to 2001 ortalities	7	8		10	11	12	13	14	15	ava 9-14	avg 11-14
geometric 17 Bios ajusted 1990	Assen of 1990 5 Fishing me 6 0.000	0 to 2001 ortalities 6 0.002	7	8 0.013	9	10 0.043	11	12 0.118	13 0.148	14 0.190	15 0.190	avg 9-14 0.097	avg 11-14 0 129
geometric 17 Bios ajusted 1990 1951	Fishing me 6 0.000 0.000	0 to 2001 ortalities 6 0.002 0.001	7 0.007 0.003	8 0.013 0.012	9 0.021 0.025	10 0.043 0.049	11 0.060 0.050	12 0.118 0.069	13 0.148 0.187	14 0.190 0.202	15 0.190 0.202	avg 9-14 0.097 0.099	avg 11-14 0.129 0.130
geometric 17 Bias ajusted 1960 1961 1962	Fishing me 6 0.000 0.000 0.000	0 to 2001 ortalities 0.002 0.001 0.002	7 0.007 0.003 0.004	8 0.013 0.012 0.005	9 0.021 0.025 0.014	10 0.043 0.049 0.024	11 0.060 0.050 0.048	12 0.118 0.069 0.086	13 0.148 0.187 0.098	14 0.190 0.202 0.238	15 0.190 0.202 0.238	avg 9-14 0.097 0.099 0.085	avg 11-14 0.129 0.130 0.118
geometric 17 Bias ajustos 1960 1951 1952 1953	Fishing me 6 0.000 0.000 0.000 0.000 0.000	9 to 2001 ortalities 0.002 0.001 0.002 0.005	7 0.007 0.003 0.004 0.011	8 0.013 0.012 0.008 0.010	9 0.021 0.028 0.014 0.015	10 0.043 0.049 0.024 0.033	11 0.060 0.050 0.048 0.057	12 0.118 0.069 0.086 0.110	13 0.148 0.187 0.098 0.172	14 0.190 0.202 0.238 0.223	15 0.190 0.202 0.238 0.223	avg 9-14 0.097 0.099 0.095 0.102	avg 11-14 0.129 0.130 0.118 0.141
geometric 17 Bias ajustos 1960 1961 1962 1963 1964	Rean of 1990 5 0.000 0.000 0.000 0.000 0.001 0.001	0 to 2001 ortalities 0.002 0.001 0.002 0.005 0.010	7 0.007 0.003 0.004 0.011 0.032	8 0.013 0.012 0.008 0.010 0.024	9 0.021 0.028 0.014 0.015 0.053	10 0.043 0.049 0.024 0.033 0.108	11 0.060 0.050 0.048 0.057 0.138	12 0.118 0.069 0.086 0.110 0.152	13 0.148 0.187 0.058 0.172 0.117	14 0.190 0.202 0.238 0.223 0.197	15 0.190 0.202 0.238 0.223 0.197	avg 9-14 0.097 0.099 0.085 0.102 0.127	awg 11-14 0.129 0.130 0.118 0.141 0.151
geometric 17 Bias ajusted 1960 1961 1962 1963 1964 1965	Rean of 1990 5 0.000 0.000 0.000 0.000 0.001 0.001 0.001 0.002	01alities 6 0.002 0.001 0.002 0.005 0.010 0.010 0.016	7 0.007 0.003 0.004 0.011 0.032 0.045	8 0.013 0.012 0.008 0.010 0.024 0.076	9 0.021 0.028 0.014 0.015 0.053 0.055	10 0.043 0.049 0.024 0.033 0.108 0.094	11 0.090 0.050 0.048 0.057 0.138 0.095	12 0.118 0.009 0.086 0.110 0.152 0.163	13 0.148 0.187 0.098 0.172 0.117 0.187	14 0.190 0.202 0.238 0.223 0.197 0.225	15 0.190 0.202 0.238 0.223 0.197 0.225	8vg 9-14 0.097 0.099 0.085 0.102 0.127 0.137	avg 11-14 0.129 0.130 0.118 0.141 0.151 0.160
geometric 17 Bias ajustos 1960 1961 1962 1963 1964 1965 1965	Ream of 1990 5 0.000 0.000 0.000 0.000 0.001 0.001 0.001 0.001 0.002 0.008	01ailiées 6 0.002 0.001 0.005 0.010 0.016 0.010 0.010 0.010	7 0.037 0.034 0.034 0.032 0.045 0.045	8 0.013 0.012 0.008 0.010 0.024 0.076 0.091	9 0.021 0.028 0.014 0.015 0.053 0.005 0.103	10 0.043 0.024 0.024 0.033 0.108 0.004 0.009	11 0.060 0.050 0.057 0.138 0.095 0.106	12 0.118 0.099 0.098 0.110 0.152 0.163 0.129	13 0.148 0.167 0.008 0.172 0.117 0.187 0.241	14 0.190 0.202 0.238 0.223 0.197 0.225 0.276	15 0.190 0.202 0.238 0.223 0.197 0.225 0.276	ovg 9-14 0.097 0.029 0.035 0.102 0.127 0.137 0.157	avg 11-14 0.129 0.130 0.118 0.141 0.151 0.160 0.100
geometric 17 Bies ajusted 1960 1961 1962 1963 1964 1965 1960 1967	Tean of 1990 5 0.000 0.000 0.000 0.001 0.001 0.001 0.002 0.002 0.002	01ailiies 6 0.002 0.001 0.005 0.010 0.010 0.010 0.010 0.010 0.010	7 0.037 0.033 0.034 0.011 0.032 0.045 0.067 0.096	8 0.013 0.012 0.008 0.010 0.024 0.026 0.091	9 0.021 0.028 0.014 0.015 0.053 0.005 0.103 0.105	10 0.043 0.049 0.024 0.035 0.108 0.004 0.009 0.215	11 0.060 0.050 0.048 0.048 0.057 0.138 0.095 0.106 0.240	12 0.118 0.099 0.098 0.110 0.152 0.163 0.129 0.328	18 0.148 0.187 0.008 0.172 0.117 0.187 0.241 0.329	14 0.190 0.232 0.238 0.223 0.197 0.225 0.276 0.477	15 0.190 0.202 0.228 0.223 0.197 0.225 0.276 0.276	ovg 9-14 0.097 0.029 0.025 0.102 0.127 0.137 0.157 0.282	avg 11-14 0.129 0.130 0.118 0.141 0.151 0.160 0.100 0.244
geometric 17 Bios ajustos 1960 1961 1962 1963 1964 1965 1966 1967 1968	Tean of 1990 5 0.000 0.000 0.001 0.001 0.001 0.002 0.002 0.002 0.002	01ailities 6 0.002 0.001 0.005 0.010 0.016 0.010 0.016 0.018 0.014	7 0.007 0.003 0.004 0.011 0.032 0.045 0.057 0.056 0.028	8 0.013 0.012 0.008 0.010 0.024 0.076 0.091 0.056 0.078	9 0.021 0.028 0.014 0.015 0.053 0.005 0.103 0.103 0.103	10 0.043 0.049 0.024 0.035 0.108 0.094 0.019 0.215 0.180	11 0.090 0.050 0.048 0.057 0.138 0.095 0.106 0.240 0.178	12 0.110 0.009 0.100 0.152 0.152 0.152 0.129 0.328 0.407	13 0.148 0.187 0.098 0.172 0.117 0.241 0.329 0.337	14 0.190 0.202 0.238 0.223 0.197 0.225 0.276 0.477 0.382	15 0.190 0.202 0.228 0.223 0.197 0.225 0.276 0.276 0.477 0.382	avg 9-14 0.097 0.099 0.085 0.102 0.127 0.137 0.137 0.282 0.299	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.100 0.244 0.326
geometric 17 Bias ajusteo 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969	Tean of 1990 5 0,000 0,000 0,000 0,001 0,001 0,001 0,002 0,002 0,002 0,002 0,002 0,002 0,002	9 to 2001 (ntailities 6 0.002 0.001 0.005 0.010 0.010 0.010 0.010 0.018 0.014 0.019	7 0.007 0.003 0.004 0.011 0.045 0.045 0.045 0.057 0.056 0.028 0.028	8 0.013 0.012 0.008 0.010 0.024 0.076 0.091 0.091 0.056 0.078 0.128	9 0.021 0.028 0.014 0.053 0.065 0.103 0.103 0.105 0.131 0.203	10 0.043 0.049 0.024 0.035 0.108 0.084 0.089 0.215 0.180 0.216	11 0.090 0.050 0.048 0.057 0.138 0.095 0.240 0.240 0.178 0.306	12 0.118 0.059 0.086 0.110 0.152 0.163 0.129 0.228 0.407 0.385	13 0.148 0.187 0.008 0.172 0.107 0.187 0.329 0.337 0.374	14 0.190 0.202 0.238 0.223 0.197 0.225 0.276 0.477 0.382 0.350	15 0.190 0.202 0.238 0.223 0.197 0.225 0.276 0.477 0.382 0.350	8vg 9-14 0.097 0.099 0.085 0.102 0.127 0.137 0.157 0.157 0.282 0.299 0.308	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.160 0.244 0.326 0.354
geometric 17 Bias ajusted 1960 1961 1962 1963 1964 1965 1900 1967 1968 1969 1970	Tean of 1990 1 Fishing me 6 0.000 0.000 0.001 0.001 0.002 0.000 0.000 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.002 0.002 0.002 0.002 0.001 0.002	9 to 2001 (ntailities 0.002 0.001 0.005 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.010 0.018 0.014 0.014 0.014 0.014	7 0.037 0.033 0.034 0.011 0.045 0.045 0.045 0.045 0.028 0.061 0.025	8 0.013 0.012 0.008 0.010 0.024 0.076 0.091 0.065 0.078 0.102	9 0.021 0.028 0.014 0.015 0.005 0.103 0.103 0.103 0.103 0.103 0.103 0.103 0.103	10 0.043 0.049 0.024 0.035 0.108 0.084 0.089 0.215 0.180 0.216 0.188	11 0.060 0.050 0.048 0.057 0.138 0.095 0.106 0.240 0.178 0.306 0.298	12 0.118 0.059 0.086 0.110 0.162 0.163 0.129 0.228 0.407 0.385 0.333	13 0.148 0.187 0.098 0.172 0.117 0.241 0.329 0.337 0.374 0.366	14 0.190 0.202 0.238 0.223 0.197 0.225 0.276 0.477 0.382 0.350 0.456	15 0.190 0.202 0.238 0.225 0.255 0.275 0.275 0.265 0.477 0.382 0.350 0.456	0vg 9-14 0.097 0.095 0.102 0.102 0.102 0.107 0.137 0.157 0.282 0.289 0.306 0.302	ang 11-14 0.129 0.130 0.118 0.141 0.160 0.100 0.244 0.326 0.354 0.363
geometric 17 Bias ajusted 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971	Team of 1990 1 Fishing me 5 0,000 0,000 0,001 0,001 0,002	9 to 2001 (1alities 6 0.002 0.005 0.010 0.016 0.010 0.018 0.018 0.014 0.017 0.014	7 0.007 0.033 0.034 0.011 0.045 0.045 0.057 0.061 0.061 0.025 0.084	8 0.013 0.012 0.008 0.010 0.024 0.076 0.076 0.076 0.076 0.128 0.128 0.128 0.133	9 0.021 0.028 0.014 0.015 0.005 0.103 0.105 0.103 0.105 0.103 0.103 0.103 0.103 0.103 0.103 0.103 0.123	10 0.043 0.024 0.033 0.108 0.094 0.215 0.180 0.216 0.188 0.276	11 0.960 0.050 0.048 0.957 0.138 0.995 0.106 0.240 0.178 0.396 0.298 0.298	12 0.118 0.099 0.096 0.110 0.162 0.129 0.328 0.407 0.385 0.333 0.417	13 0.148 0.167 0.008 0.172 0.177 0.241 0.329 0.337 0.374 0.366 0.363	1.4 0.190 0.232 0.238 0.223 0.197 0.225 0.276 0.477 0.382 0.395 0.3950 0.459 0.467	15 0.190 0.202 0.238 0.238 0.255 0.276 0.477 0.382 0.382 0.382 0.382 0.456	ovg 9-14 0.097 0.029 0.025 0.127 0.137 0.137 0.282 0.299 0.308 0.302 0.335	avg 11-14 0.129 0.130 0.118 0.161 0.161 0.160 0.354 0.356 0.354 0.363 0.363
geometric 17 Bias ajusted 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972	Team of 1990 5 0,000 0,000 0,000 0,000 0,000 0,001 0,001 0,002 0,002 0,002 0,002 0,004 0,001 0,002 0,002 0,004 0,001 0,000 0,002	9 to 2001 ortalilies 6 0,002 0,001 0,005 0,016 0,016 0,016 0,016 0,016 0,016 0,016 0,016 0,017 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,014 0,015 0,00	7 0.037 0.034 0.011 0.032 0.045 0.038 0.038 0.038 0.038 0.038 0.038 0.038	8 0.013 0.012 0.024 0.076 0.076 0.076 0.078 0.128 0.128 0.128 0.128 0.128 0.128 0.128	9 0.021 0.025 0.015 0.053 0.005 0.102 0.105 0.103 0.105 0.103 0.103 0.203 0.227	10 0.043 0.024 0.033 0.108 0.018 0.019 0.213 0.180 0.216 0.216 0.216 0.276 0.295	11 0.990 0.050 0.048 0.057 0.138 0.957 0.138 0.240 0.240 0.778 0.306 0.240 0.240 0.240 0.240 0.240 0.281	12 0.118 0.089 0.086 0.110 0.152 0.102 0.208 0.407 0.383 0.407 0.383 0.417 0.485	13 0.148 0.187 0.098 0.172 0.117 0.209 0.357 0.374 0.356 0.368 0.368 0.3641	14 0.100 0.202 0.238 0.223 0.107 0.225 0.276 0.477 0.382 0.477 0.382 0.459 0.459	15 0.190 0.202 0.238 0.225 0.275 0.275 0.477 0.382 0.362 0.362 0.456 0.447 0.500	avg 9-14 0.097 0.099 0.102 0.122 0.127 0.137 0.137 0.282 0.299 0.396 0.396 0.395 0.395 0.395	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.366 0.354 0.354 0.354 0.354
geometric 17 Bias ajusted 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973	Ream of 1999 5 Fishing me 5 0.000 0.000 0.001 0.001 0.002	9 to 2001 ortailities 6 0.002 0.002 0.005 0.016 0.016 0.016 0.018 0.019 0.019 0.017 0.019 0.017 0.019 0.017 0.019	7 0.033 0.004 0.011 0.032 0.045 0.067 0.025 0.061 0.025 0.024 0.024 0.024	8 0.013 0.012 0.008 0.010 0.024 0.026 0.026 0.128 0.102 0.102 0.103 0.103 0.103	9 0.021 0.025 0.014 0.015 0.065 0.103 0.105 0.105 0.105 0.203 0.203 0.207 0.207	10 0.049 0.024 0.024 0.035 0.089 0.216 0.216 0.216 0.216 0.216 0.216 0.226 0.226	11 0.960 0.948 0.948 0.948 0.948 0.246 0.246 0.246 0.248 0.248 0.248 0.248 0.248	12 0.118 0.089 0.086 0.110 0.152 0.163 0.407 0.385 0.407 0.385 0.433 0.446 0.436	13 0.148 0.187 0.068 0.172 0.117 0.241 0.241 0.357 0.374 0.366 0.366 0.366 0.3641 0.653	14 0.190 0.202 0.238 0.238 0.276 0.476 0.497 0.382 0.350 0.499 0.499 0.499 0.500 0.500	15 0.190 0.208 0.223 0.197 0.225 0.477 0.382 0.350 0.450 0.447 0.590 0.447	049 9-14 0.097 0.099 0.085 0.102 0.127 0.137 0.157 0.282 0.299 0.306 0.305 0.305 0.3451 0.487	awg 11-14 0,129 0,130 0,118 0,141 0,160 0,160 0,160 0,354 0,356 0,356 0,356 0,356 0,356 0,356
georretric 77 Bias ajusted 1960 1961 1962 1963 1964 1965 1965 1965 1965 1966 1967 1968 1969 1977 1972 1973 1974	Ream of 1999 5 Fishing me 5 0.000 0.000 0.001 0.001 0.002	9 to 2001 ortalilies 6 0.002 0.000 0.000 0.000 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.0000000 0.00000000	7 0.033 0.034 0.011 0.035 0.045 0.067 0.038 0.025 0.034 0.025 0.034 0.025 0.034 0.025 0.034	8 0.013 0.010 0.008 0.010 0.024 0.026 0.026 0.128 0.102 0.133 0.102 0.133 0.102 0.133 0.102	9 0.021 0.028 0.074 0.055 0.105 0.105 0.105 0.105 0.105 0.103 0.227 0.227 0.224 0.150	10 0.043 0.046 0.024 0.035 0.084 0.084 0.084 0.215 0.180 0.216 0.186 0.276 0.287 0.287 0.287	11 0.048 0.048 0.048 0.048 0.048 0.040 0.140 0.040 0.298 0.298 0.288 0.288 0.288 0.288 0.288 0.288 0.288	12 0.118 0.069 0.160 0.152 0.163 0.263 0.263 0.407 0.383 0.417 0.383 0.417 0.486 0.333 0.417 0.486 0.322	13 0.148 0.187 0.098 0.172 0.187 0.241 0.229 0.337 0.374 0.386 0.386 0.386 0.386 0.384 0.533 0.454	14 0.190 0.202 0.238 0.223 0.225 0.276 0.477 0.380 0.459 0.459 0.459 0.459 0.459 0.459 0.459	16 0.190 0.202 0.238 0.225 0.225 0.276 0.477 0.350 0.456 0.456 0.450 0.521 0.456	avg i+14 0.097 0.099 0.085 0.102 0.127 0.137 0.259 0.306 0.306 0.306 0.305 0.441 0.435	awg 11-14 0,129 0,130 0,118 0,141 0,160 0,160 0,160 0,354 0,356 0,357 0,556 0,554 0,368 0,377
georretric 77 Bios ajustos 1960 1961 1962 1963 1965 1965 1965 1966 1965 1966 1965 1966 1965 1965	Ream of 1999 3 Fishing me 5 0 000 0 0000 0 0000 0 0000 0 0000 0 0000 0	9 to 2001 xtalilies 6 0.002 0.001 0.002 0.016 0.016 0.016 0.014	7 0.077 0.033 0.004 0.012 0.045 0.028 0.028 0.028 0.028 0.024 0.024 0.024 0.024 0.024 0.024 0.024	8 0.013 0.012 0.006 0.010 0.024 0.076 0.026 0.128 0.128 0.128 0.128 0.128 0.133 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.143 0.145 0.145 0.145 0.145 0.145 0.0566 0.056 0.056 0.0560 0.0560 0.0560 0.0560000000000	9 0.021 0.028 0.014 0.053 0.065 0.103 0.103 0.103 0.103 0.207 0.207 0.207 0.207 0.207 0.207	10 0.043 0.049 0.024 0.038 0.064 0.018 0.215 0.160 0.216 0.216 0.216 0.226 0.226 0.226 0.226	11 0.960 0.950 0.948 0.955 0.965 0.966 0.266 0.281 0.428 0.388 0.281 0.428 0.338 0.338 0.338	12 0.118 0.089 0.086 0.162 0.162 0.162 0.208 0.407 0.333 0.417 0.486 0.428 0.428 0.428 0.522 0.349	13 0.148 0.187 0.098 0.117 0.187 0.394 0.359 0.354 0.363 0.363 0.363 0.364 0.363 0.454 0.454	14 0.100 0.202 0.238 0.235 0.267 0.225 0.477 0.382 0.469 0.447 0.590 0.447 0.590 0.447 0.590 0.447 0.590 0.447 0.590 0.447	16 0.190 0.202 0.238 0.225 0.275 0.275 0.477 0.382 0.360 0.456 0.447 0.502 0.456 0.447 0.502 0.456 0.521	avg ii-14 0.097 0.029 0.085 0.1027 0.137 0.282 0.209 0.306 0.306 0.306 0.306 0.306 0.305 0.441 0.487 0.335 0.364	awg 111-14 0.129 0.130 0.118 0.160 0.544 0.356 0.354 0.356 0.356 0.356 0.356 0.356 0.356 0.356 0.357 0.536 0.357 0.536 0.456 0.456
georretric 77 Bios ajustos 1961 1961 1963 1964 1965 1964 1965 1967 1968 1967 1967 1971 1972 1973 1974 1975 1974 1975	Ream of 1999 5 Fishing mo 6 0,000 0,000 0,001 0,001 0,001 0,002 0,002 0,002 0,002 0,002 0,002 0,003	0 10 2001 vitalities 6 0.002 0.001 0.006 0.010 0.010 0.016 0.016 0.016 0.016 0.014 0.014 0.014 0.014 0.017 0.014 0.017 0.014 0.017 0.016 0.026 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.026 0.016 0.026 0.016 0.026 0.026 0.016 0.026 0.00	7 0.033 0.034 0.032 0.045 0.036 0.036 0.038 0.036 0.038 0.034 0.025 0.034 0.025 0.034 0.025 0.034 0.025 0.034 0.025 0.034	8 0.013 0.012 0.006 0.024 0.026 0.026 0.026 0.126 0.126 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.012 0.006 0.012 0.006 0.012 0.006 0.012 0.006 0.012 0.006 0.012 0.006 0.012 0.006 0.012 0.006 0.024 0.006 0.012 0.006 0.024 0.006 0.012 0.024 0.0260 0.0260 0.0260 0.0260000000000	9 0.021 0.028 0.014 0.053 0.065 0.105 0.105 0.105 0.203 0.173 0.207 0.207 0.224 0.193 0.227 0.244 0.193	10 0.043 0.024 0.024 0.008 0.004 0.004 0.004 0.215 0.168 0.216 0.216 0.296 0.296 0.296 0.296 0.296 0.296 0.296	11 0.960 0.950 0.948 0.957 0.138 0.956 0.240 0.736 0.286 0.286 0.286 0.288 0.288 0.388 0.388 0.388 0.388 0.388	12 0.118 0.099 0.089 0.110 0.152 0.103 0.238 0.405 0.333 0.417 0.385 0.333 0.417 0.385 0.486 0.486 0.486 0.486 0.486 0.486 0.486	13 0.148 0.187 0.072 0.172 0.177 0.201 0.374 0.366 0.366 0.366 0.366 0.364 0.366 0.451 0.453 0.454	14 0.190 0.202 0.233 0.107 0.223 0.477 0.350 0.479 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459	16 0.190 0.202 0.238 0.225 0.225 0.226 0.426 0.382 0.380 0.456 0.446 0.450 0.590 0.590 0.591 0.456 0.456 0.456	avg 9-14 0.097 0.099 0.085 0.102 0.127 0.282 0.289 0.302 0.302 0.305 0.441 0.487 0.355 0.365	awg 11-14 0.129 0.130 0.118 0.160 0.160 0.306 0.354 0.358 0.357 0.536 0.554 0.465 0.466
georretric 77 Bias ajusted 1960 1961 1962 1963 1964 1965 1965 1965 1967 1968 1967 1967 1971 1972 1973 1974 1975 1974	Ream of 1999 5 Fishing me 5 0.000 0.001 0.001 0.001 0.002 0.002 0.002 0.002 0.001 0.001 0.001 0.001 0.000 0.000 0.001 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	0 10 2001 vitalilies 6 0.002 0.001 0.000 0.010 0.010 0.010 0.010 0.010 0.010 0.014 0.014 0.017 0.014 0.017 0.014 0.017 0.005 0.028 0.005 0.005 0.014 0.014 0.014 0.014 0.014 0.014 0.005 0.005 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.015 0.01	7 0.033 0.034 0.032 0.045 0.035 0.045 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.038 0.034 0.025 0.054 0.054	8 0.012 0.008 0.010 0.024 0.076 0.026 0.076 0.076 0.076 0.078 0.102 0.133 0.102 0.133 0.102 0.133 0.144 0.113 0.054 0.014 0.0154	9 0.021 0.028 0.053 0.065 0.105 0.105 0.105 0.105 0.101 0.227 0.277 0.274 0.277 0.254 0.190 0.224 0.190 0.221 0.125	10 0.040 0.024 0.035 0.008 0.004 0.004 0.004 0.004 0.004 0.215 0.206 0.206 0.206 0.206 0.206 0.206 0.206 0.206 0.206 0.206	11 0.060 0.068 0.057 0.138 0.240 0.738 0.240 0.738 0.29800000000000000000000000000000000000	12 0.118 0.089 0.089 0.160 0.162 0.163 0.463 0.467 0.383 0.417 0.383 0.417 0.383 0.417 0.383 0.417 0.383 0.417 0.322 0.366 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.426 0.427 0.426 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.426 0.426 0.427 0.426 0.426 0.426 0.426 0.426 0.426 0.426 0.427 0.426 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.426 0.427 0.4266 0.426 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.4266 0.42666 0.42666 0.42666666666666666666666666666666666666	13 0.148 0.187 0.598 0.172 0.117 0.229 0.374 0.386 0.386 0.386 0.386 0.386 0.384 0.386 0.384 0.484 0.483 0.454 0.477 0.544	14 0.190 0.202 0.233 0.233 0.275 0.275 0.477 0.350 0.459 0.459 0.459 0.459 0.459 0.421 0.421 0.421 0.421 0.421 0.421	15 0.190 0.202 0.238 0.255 0.275 0.275 0.350 0.477 0.382 0.350 0.456 0.447 0.502 0.456 0.447 0.502 0.456 0.521 0.456 0.521 0.456	avg i+14 0.097 0.099 0.085 0.102 0.127 0.137 0.282 0.302 0.302 0.302 0.305 0.441 0.487 0.355 0.365 0.407 0.355 0.407 0.355 0.407 0.355 0.407 0.355 0.407 0.355 0.407 0.355 0.407	awg 111-14 0.129 0.130 0.118 0.160 0.151 0.160 0.354 0.356 0.356 0.356 0.404 0.360 0.596 0.404
georretric 77 Bias ajustos 1960 1961 1962 1963 1964 1965 1965 1965 1965 1965 1977 1978 1977 1974 1975 1974 1975 1977 1978	Ream of 1999 1 Fishing me 5 0 000 0 0000 0 0000 0 0000 0 0000 0 0000 0	9 to 2001 (vtalilies 6 0.002 0.001 0.002 0.016 0.016 0.016 0.016 0.016 0.014 0.017 0.014 0.017 0.014 0.017 0.028 0.015 0.028 0.015 0.028 0.015 0.028 0.025 0.028 0.026 0.028 0	7 0.037 0.033 0.024 0.032 0.045 0.032 0.036 0.028 0.034 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024	8 0.013 0.012 0.008 0.010 0.024 0.076 0.024 0.078 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.128 0.129 0.135 0.069 0.015 0.069 0.015 0.009 0.009 0.009 0.009	9 0.021 0.028 0.014 0.055 0.105 0.105 0.105 0.105 0.105 0.207 0.207 0.207 0.207 0.207 0.207 0.207 0.207 0.150 0.160 0.160 0.160 0.160 0.160 0.160 0.160 0.160 0.208	10 0.043 0.049 0.024 0.024 0.008 0.004 0.004 0.216 0.216 0.216 0.206 0.207 0.280 0.280 0.280 0.287 0.280 0.289 0.227 0.221 0.225 0.221 0.225 0.255 0.555	11 0.960 0.950 0.948 0.955 0.106 0.178 0.398 0.286 0.286 0.288 0.288 0.388 0.388 0.388 0.388 0.388 0.388 0.388 0.388 0.388 0.388	12 0.118 0.089 0.089 0.160 0.162 0.163 0.407 0.406 0.333 0.417 0.406 0.333 0.417 0.406 0.333 0.417 0.406 0.322 0.369 0.353 0.459 0.353 0.459	13 0.148 0.187 0.088 0.172 0.117 0.241 0.365 0.357 0.356 0.366 0.366 0.366 0.366 0.365 0.454 0.454 0.450 0.454 0.457 0.394 0.394 0.394	14 0.190 0.202 0.238 0.235 0.477 0.382 0.469 0.447 0.591 0.469 0.447 0.521 0.469 0.561 0.469 0.661 0.460 0.661 0.460 0.661	15 0.100 0.202 0.238 0.255 0.275 0.382 0.350 0.456 0.447 0.590 0.459 0.459 0.459 0.656 0.656 0.656 0.656	avg i+14 0.097 0.029 0.085 0.1027 0.127 0.137 0.282 0.299 0.306 0.306 0.305 0.335 0.3441 0.435 0.355 0.364 0.400	awg 111-14 0.129 0.130 0.118 0.160 0.366 0.354 0.366 0.354 0.366 0.455 0.465 0.465 0.465 0.465
georretric 77 Bios ajustos 1961 1961 1963 1964 1965 1964 1965 1965 1967 1968 1969 1971 1972 1973 1974 1975 1974 1975 1976 1978 1979 1979	Ream of 1999 5 Fishing mo 5 0,000 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,002 0,004 0,003	0 10 2001 v1alifies 6 0.000 0.001 0.000 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.014 0.	7 0.037 0.035 0.034 0.032 0.045 0.036 0.036 0.036 0.034 0.025 0.034 0.025 0.034 0.025 0.034 0.025 0.034 0.054 0.054 0.054 0.054	8 0.012 0.008 0.024 0.026 0.026 0.026 0.128 0.128 0.128 0.128 0.128 0.128 0.133 0.144 0.169 0.154 0.059 0.154	9 0.021 0.028 0.014 0.053 0.065 0.105 0.105 0.105 0.105 0.203 0.207 0.224 0.109 0.224 0.109 0.221 0.149 0.221 0.149	10 0.043 0.024 0.024 0.035 0.108 0.215 0.108 0.216 0.216 0.296 0.296 0.296 0.296 0.296 0.296 0.299 0.224 0.299 0.224 0.299 0.224 0.299	11 0.960 0.950 0.948 0.957 0.138 0.966 0.240 0.786 0.286 0.286 0.288 0.388 0.388 0.388 0.388 0.388 0.389 0.388 0.389 0.288 0.389 0.288	12 0.118 0.009 0.089 0.110 0.152 0.238 0.407 0.333 0.417 0.385 0.333 0.417 0.385 0.486 0.428 0.486 0.428 0.596 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.4550000000000	13 0.148 0.187 0.072 0.172 0.177 0.291 0.374 0.366 0.366 0.366 0.366 0.454 0.454 0.454 0.454 0.454 0.454 0.454 0.454 0.454	14 0.190 0.232 0.233 0.197 0.223 0.477 0.350 0.459	16 0.190 0.202 0.238 0.197 0.225 0.477 0.382 0.456 0.456 0.456 0.521 0.459 0.651 0.459 0.651 0.459 0.611 0.459 0.611	avg 9-14 0.097 0.099 0.085 0.102 0.127 0.282 0.289 0.305 0.305 0.441 0.487 0.355 0.497 0.305 0.407 0.497 0.395 0.497	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.326 0.354 0.355 0.355 0.355 0.464 0.465 0.465 0.464 0.363 0.465 0.464 0.363 0.363
georretric 77 Bias ajusted 1960 1961 1962 1963 1964 1965 1965 1967 1968 1967 1971 1972 1973 1974 1975 1976 1976 1976 1976 1976 1978 1978 1978 1978 1978 1978 1978 1978	Ream of 1999 5 Fishing me 5 0.000 0.001 0.001 0.001 0.002 0.002 0.002 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.002 0.001 0.005 0.002 0.002 0.002 0.002 0.003 0.005 0.007 0.007 0.005 0.007 0.007 0.007 0.005 0.007	0 10 2001 viailies 6 0.002 0.001 0.000 0.010 0.010 0.010 0.010 0.010 0.010 0.014 0.014 0.014 0.017 0.014 0.017 0.014 0.017 0.014 0.016 0.028 0.028 0.005 0.028 0.005 0.005 0.014 0.005 0.005 0.014 0.014 0.014 0.014 0.014 0.014 0.015 0.015 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.010 0.016 0.006 0.028 0.026	7 0.033 0.034 0.032 0.045 0.036 0.038 0.038 0.038 0.038 0.038 0.034 0.025 0.034 0.025 0.034 0.025 0.054 0.054 0.054 0.054 0.054 0.054	8 0.012 0.008 0.010 0.024 0.076 0.024 0.076 0.076 0.078 0.102 0.133 0.098 0.102 0.133 0.144 0.113 0.086 0.0154 0.055 0.054 0.055 0.054	9 0.021 0.028 0.053 0.065 0.105 0.105 0.105 0.105 0.101 0.227 0.274 0.277 0.274 0.273 0.224 0.163 0.221 0.163 0.221 0.163 0.221 0.163	10 0.040 0.024 0.024 0.024 0.004 0.004 0.004 0.004 0.215 0.108 0.216 0.207 0.200 0.206 0.207 0.200 0.200 0.201 0.211 0.201 0.2111 0.2111 0.2111 0.2111 0.2111 0.2111 0.211	11 0.060 0.068 0.048 0.048 0.048 0.240 0.738 0.240 0.240 0.240 0.240 0.240 0.288 0.288 0.288 0.3880000000000	12 0.118 0.089 0.089 0.162 0.162 0.163 0.426 0.333 0.417 0.366 0.426 0.322 0.366 0.426 0.322 0.366 0.457 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.457 0.456 0.456 0.456 0.456 0.456 0.457 0.456 0.457 0.4566 0.456 0.456 0.4560 0.4560 0.45600000000000000000000000000000000000	13 0.148 0.187 0.056 0.172 0.117 0.229 0.3374 0.366 0.366 0.366 0.364 0.366 0.484 0.460 0.477 0.364 0.460 0.477 0.364 0.450	14 0.190 0.232 0.233 0.233 0.233 0.235 0.276 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.451 0.4210 0.42100000000000000000000000000000000000	15 0.190 0.202 0.238 0.197 0.225 0.477 0.380 0.456 0.447 0.360 0.456 0.447 0.502 0.456 0.447 0.502 0.456 0.611 0.460 0.611 0.460 0.0211 0.456	avg (+ 14 0.097 0.099 0.085 0.102 0.127 0.137 0.282 0.302 0.302 0.302 0.302 0.305 0.4437 0.355 0.4637 0.355 0.405 0.405 0.4251 0.495	awg 111-14 0.129 0.130 0.118 0.160 0.151 0.160 0.354 0.3526 0.354 0.363 0.377 0.536 0.354 0.363 0.594 0.363 0.404 0.363 0.404 0.363 0.404 0.363 0.404 0.208 0.208 0.208 0.208
georretric 77 Bias ajusted 1960 1961 1962 1963 1964 1965 1965 1965 1965 1965 1965 1965 1965	Ream of 1999 1 Fishing me 5 0.000 0.000 0.000 0.001 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.002 0.003	9 to 2001 (vtalifies 6 0.002 0.001 0.002 0.000 0.016 0.016 0.016 0.016 0.016 0.014 0.014 0.014 0.017 0.014 0.004 0.004 0.024 0	7 0.037 0.033 0.024 0.032 0.045 0.032 0.038 0.025 0.034 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.025 0.051 0.051 0.051 0.051 0.051 0.051	8 0.013 0.012 0.008 0.010 0.024 0.076 0.096 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.108 0.109 0.113 0.069 0.059 0.133 0.051 0.051	9 0.021 0.028 0.014 0.055 0.105 0.105 0.105 0.105 0.207 0.207 0.207 0.207 0.207 0.207 0.207 0.207 0.209 0.155 0.155 0.155 0.157 0.157 0.157 0.157	10 0.043 0.024 0.034 0.036 0.084 0.094 0.215 0.168 0.216 0.216 0.216 0.207 0.227 0.280 0.227 0.280 0.227 0.227 0.2211 0.22	11 0.960 0.960 0.948 0.955 0.108 0.178 0.388 0.286 0.286 0.286 0.288 0.388 0.388 0.388 0.388 0.388 0.388 0.388 0.388 0.344 0.325 0.279 0.344 0.555	12 0.118 0.089 0.086 0.110 0.152 0.407 0.303 0.407 0.303 0.417 0.406 0.333 0.417 0.406 0.332 0.3408 0.353 0.453 0.453 0.453 0.453 0.453 0.453 0.453 0.453 0.453 0.453 0.352 0.352	13 0.148 0.187 0.098 0.172 0.117 0.241 0.357 0.357 0.357 0.366 0.363 0.545 0.454 0.454 0.457 0.354 0.454 0.364 0.364 0.364 0.364	14 0.190 0.202 0.238 0.235 0.777 0.382 0.407 0.409 0.447 0.990 0.447 0.991 0.400 0.021 0.400 0.011 0.460 0.011 0.460 0.021 0.460 0.011 0.460 0.021	15 0.100 0.202 0.238 0.255 0.275 0.255 0.275 0.382 0.356 0.447 0.582 0.456 0.447 0.592 0.456 0.456 0.656 0.656 0.656 0.656 0.656 0.656 0.257 1.026 0.257 1.026 0.257	avg ii-14 0.097 0.099 0.085 0.102 0.127 0.137 0.252 0.269 0.306 0.306 0.305 0.441 0.435 0.355 0.355 0.364 0.405 0.305 0.420 0.199	awg 111-14 0.129 0.130 0.118 0.141 0.151 0.160 0.354 0.354 0.356 0.465 0.455 0.465 0.4550000000000
georretric 77 Bias ajustod 1961 1961 1963 1964 1965 1964 1965 1967 1968 1967 1971 1972 1973 1974 1975 1974 1975 1974 1975 1976 1979 1979 1988 1979 1988	Ream of 1999 5 Fishing mm 5 0,000 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,003	0 10 2001 v1alifies 6 0.002 0.001 0.006 0.006 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.010 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.026 0.026 0.026 0.026 0.026 0.026 0.004 0.	7 0.037 0.035 0.034 0.032 0.045 0.045 0.045 0.025 0.044 0.025 0.024 0.024 0.023 0.024 0.023 0.024 0.023 0.024 0.023 0.054 0.054 0.054 0.054 0.054 0.054 0.054 0.055	8 0.013 0.012 0.006 0.024 0.076 0.026 0.076 0.128 0.102 0.138 0.102 0.130 0.144 0.069 0.154 0.059 0.152 0.162 0.051 0.051 0.051	9 0.021 0.028 0.014 0.053 0.065 0.105 0.105 0.105 0.105 0.207 0.224 0.103 0.227 0.224 0.103 0.227 0.244 0.103 0.221 0.141 0.157 0.116 0.116 0.116	10 0.043 0.024 0.024 0.024 0.009 0.215 0.108 0.216 0.296 0.296 0.296 0.296 0.296 0.296 0.296 0.296 0.299 0.221 0.299 0.221 0.299 0.221 0.299 0.211 0.209	11 0.960 0.950 0.948 0.957 0.138 0.966 0.240 0.178 0.240 0.2250 0.2250000000000	12 0.118 0.009 0.089 0.110 0.152 0.229 0.228 0.429 0.333 0.417 0.385 0.333 0.415 0.486 0.436 0.436 0.426 0.466 0.456 0.426 0.456 0.456 0.456 0.456 0.457 0.571 0.372 0.511 0.372	13 0.148 0.187 0.052 0.172 0.117 0.290 0.374 0.366 0.366 0.366 0.366 0.454 0.454 0.454 0.454 0.454 0.454 0.456 0.456 0.456 0.356	14 0.190 0.202 0.233 0.107 0.223 0.276 0.477 0.350 0.45900000000000000000000000000000000000	15 0.190 0.202 0.238 0.255 0.276 0.477 0.350 0.456 0.456 0.456 0.456 0.456 0.456 0.456 0.590 0.590 0.590 0.591 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.611 0.456 0.656 0.611 0.456 0.611 0.456 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.6211 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.656 0.611 0.500 0.500 0.500 0.656 0.611 0.500000000	avg 8-14 0.097 0.098 0.085 0.1027 0.137 0.282 0.299 0.306 0.302 0.305 0.4457 0.355 0.4457 0.356 0.4457 0.356 0.4420 0.198 0.490 0.490 0.490	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.306 0.354 0.356 0.356 0.356 0.464 0.368 0.465 0.466 0.464 0.368 0.466 0.464 0.350 0.464 0.250000000000
georretric 77 Bias ajusted 1961 1961 1962 1963 1964 1965 1965 1967 1968 1967 1968 1967 1971 1972 1973 1974 1975 1976 1977 1976 1976 1977 1976 1977 1978 1976 1977 1978 1970 1980 1980 1980 1980 1980 1980 1980 198	Ream of 1999 1 Fishing mm 5 0 000 0 0000 0 0000 0 0000 0 0000 0 0000 0	9 to 2001 vtalifies 6 0.002 0.001 0.010 0.010 0.010 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.028 0.016 0.028 0.018 0.033 0.028 0.033 0.028 0.018 0.033 0.028 0.018 0.033 0.028 0.042 0.000 0.002 0.000 0.	7 0.033 0.034 0.032 0.045 0.038 0.045 0.038 0.084 0.025 0.084 0.025 0.094 0.025 0.094 0.025 0.094 0.025 0.094 0.055 0.054 0.055 0.054 0.055 0.054 0.055 0.054 0.055	8 0.012 0.006 0.010 0.024 0.076 0.076 0.076 0.078 0.102 0.133 0.065 0.154 0.055 0.154 0.055 0.154 0.055 0.153	9 0.021 0.028 0.053 0.065 0.105 0.105 0.105 0.105 0.103 0.227 0.224 0.150 0.224 0.150 0.224 0.153 0.221 0.153 0.221 0.153 0.157 0.178 0.157 0.179 0.254	10 0.049 0.024 0.024 0.008 0.008 0.215 0.108 0.216 0.206 0.206 0.206 0.206 0.206 0.206 0.209 0.227 0.200 0.211 0.200 0.211 0.200 0.211 0.200	11 0.960 0.960 0.948 0.985 0.106 0.240 0.738 0.290 0.2980 0.298 0.29800000000000000000000000000000000000	12 0.118 0.089 0.089 0.110 0.152 0.120 0.228 0.428 0.426 0.426 0.426 0.426 0.426 0.469 0.459 0.459 0.459 0.459 0.453 0.453 0.453 0.453 0.453 0.453 0.453 0.551	13 0.148 0.187 0.098 0.172 0.117 0.187 0.366 0.366 0.366 0.368 0.484 0.485 0.480 0.480 0.480 0.480 0.364 0.354 0.354 0.354 0.354 0.354 0.354 0.354 0.35560.3556 0.3566 0.3566 0.3566 0.3566 0.3566 0.35660000000000000000000000000000000000	14 0.190 0.232 0.233 0.107 0.223 0.45900000000000000000000000000000000000	16 0.100 0.202 0.238 0.197 0.225 0.477 0.380 0.456 0.456 0.450 0.521 0.450 0.611 0.460 0.611 0.450 0.611 0.257 1.0577 1.05777 1.05777 1.05777 1.057777 1.05777777777777777777777777777777777777	avg (+14 0.097 0.099 0.085 0.102 0.127 0.137 0.282 0.209 0.302 0.302 0.302 0.305 0.441 0.487 0.355 0.407 0.355 0.407 0.407 0.355 0.407	awg 11-14 0.129 0.130 0.118 0.141 0.151 0.160 0.354 0.356 0.354 0.363 0.377 0.536 0.363 0.377 0.536 0.363 0.363 0.484 0.363 0.484 0.363 0.484 0.363 0.484 0.363 0.2080 0.2080 0.2080 0.2080000000000
georretric 77 Bias ajustos 1960 1961 1962 1963 1964 1965 1965 1965 1965 1965 1965 1966 1977 1978 1977 1978 1974 1975 1976 1976 1975 1978 1979 1980 1981 1982 1984 1985	Ream of 1999 5 Fishing me 5 0.000 0.000 0.001 0.001 0.002 0.002 0.002 0.002 0.002 0.002 0.003	9 to 2001 vtalilies 6 0.002 0.001 0.002 0.000 0.016 0.016 0.016 0.018 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.014 0.015 0.028 0.014 0.016 0.028 0.016 0.028 0.016 0.028 0.016 0.028 0.016 0.028 0.016 0.028 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.028 0.006 0.008 0.	7 0.033 0.034 0.032 0.045 0.055 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.054 0.055 0.054 0.055 0.054 0.055 0.054 0.05500000000	0 013 0 022 0 006 0 010 0 004 0 006 0 006 0 106 0 016 0 016 0 016 0 016 0 016 0 016 0 006 0 016 0 006 0 016 0 006 0 00000000	9 0.021 0.028 0.074 0.053 0.065 0.105 0.105 0.105 0.105 0.103 0.227 0.274 0.173 0.224 0.190 0.145 0.153 0.221 0.153 0.221 0.153 0.197 0.178 0.197 0.178 0.197 0.178	10 0.043 0.024 0.034 0.036 0.064 0.064 0.215 0.160 0.216 0.260 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.227 0.220 0.219 0.211 0.200	11 0.990 0.990 0.948 0.948 0.946 0.138 0.240 0.778 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.289 0.2990000000000	12 0.118 0.089 0.089 0.160 0.162 0.268 0.407 0.383 0.417 0.383 0.417 0.383 0.417 0.383 0.426 0.352 0.352 0.369 0.459 0.352 0.553 0.167 0.352 0.577 0.352 0.577 0.352	13 0.148 0.187 0.598 0.172 0.117 0.229 0.337 0.386 0.366 0.368 0.368 0.368 0.368 0.454 0.457 0.358 0.454 0.365 0.365 0.365 0.366 0.366 0.366 0.366 0.367 0.366 0.366 0.367 0.366 0.3	14 0.190 0.202 0.238 0.238 0.275 0.275 0.477 0.380 0.459 0.459 0.459 0.459 0.459 0.459 0.447 0.221 0.499 0.659 0.491 0.490 0.511 0.490 0.211 0.490 0.511 0.491 0.257 1.040 0.257 1.040 0.257 1.040 0.257 1.040 0.257 0.257 0.257 0.257 0.257 0.257 0.257 0.251 0.257 0.251 0.251 0.257 0.255 0.275 0.2	15 0.100 0.202 0.238 0.255 0.275 0.477 0.382 0.362 0.456 0.447 0.502 0.456 0.447 0.502 0.456 0.456 0.456 0.651 0.460 0.651 1.026 0.257 1.026 0.257 1.026 0.257 1.026 0.251 0.257 0.257 0.255 0.2	avg ii-14 0.097 0.099 0.085 0.102 0.127 0.137 0.282 0.269 0.305 0.302 0.305 0.481 0.335 0.364 0.305 0.407 0.407	awg 111-14 0.129 0.130 0.118 0.141 0.151 0.160 0.344 0.326 0.353 0.377 0.536 0.464 0.363 0.377 0.536 0.465 0.465 0.465 0.465 0.465 0.465 0.465 0.465 0.465 0.203 0
georretric 77 Bias ajustod 1960 1961 1962 1965 1964 1965 1965 1966 1967 1968 1967 1970 1971 1972 1973 1974 1975 1975 1975 1976 1976 1976 1976 1978 1978 1978 1978 1978 1978 1978 1978	Ream of 1999 5 Fishing mic 6 0,000 0,000 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,001 0,002 0,002 0,002 0,002 0,003	9 to 2001 vtalifies 6 0.002 0.001 0.002 0.010 0.016 0.010 0.016 0.016 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.02 0.02	7 0.037 0.033 0.044 0.032 0.045 0.025 0.046 0.025 0.040 0.025 0.040 0.054 0.055 0.054 0.055 0.054 0.055 0.054 0.05500000000	8 0.013 0.012 0.006 0.024 0.026 0.026 0.026 0.128 0.102 0.138 0.102 0.138 0.102 0.154 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.154 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.155 0.059 0.059 0.155 0.059 0.059 0.059 0.155 0.059 0.155 0.059 0.059 0.059 0.155 0.0590000000000	9 0.021 0.028 0.014 0.053 0.103 0.103 0.103 0.103 0.103 0.103 0.207 0.207 0.207 0.207 0.224 0.141 0.159 0.141 0.157 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.116 0.221	10 0.043 0.0243 0.0243 0.108 0.009 0.213 0.108 0.216 0.216 0.226 0.226 0.226 0.226 0.226 0.226 0.227 0.220 0.224 0.229 0.221 0.220 0.221 0.220 0.221 0.220 0.221 0.220 0.221 0.220 0.221 0.221 0.221 0.225 0.221 0.221 0.221 0.225 0.225 0.221 0.221 0.225 0.255 0	11 0.960 0.950 0.948 0.957 0.138 0.965 0.240 0.246 0.246 0.248 0.388 0.388 0.288 0.388 0.288 0.388 0.288 0.388 0.288 0.388 0.288 0.388 0.225 0.225 0.225 0.225 0.238 0.538 0.538 0.538 0.538	12 0.118 0.089 0.089 0.110 0.152 0.229 0.228 0.407 0.385 0.433 0.447 0.486 0.433 0.447 0.486 0.433 0.429 0.4200 0.4200 0.4200 0.420000000000	13 0.148 0.187 0.057 0.172 0.177 0.291 0.374 0.368 0.357 0.374 0.368 0.364 0.480 0.480 0.484 0.480 0.484 0.480 0.484 0.484 0.484 0.484 0.484 0.484 0.484 0.364 0.566 0.586 0.586 0.586 0.586 0.586	14 0.190 0.202 0.223 0.107 0.276 0.477 0.350 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.469 0.221 0.469	15 0.190 0.202 0.238 0.225 0.276 0.477 0.350 0.456 0.450 0.456 0.450 0.656 0.611 0.450 0.656 0.611 0.450 0.656 0.611 0.211 0.211 0.211 0.251 0.211 0.251 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.255 0.211 0.2555 0.255 0.255 0.255 0.255 0.255 0.2555 0.255 0.255 0.255 0	avg 9-14 0.097 0.099 0.095 0.102 0.107 0.282 0.290 0.306 0.306 0.306 0.306 0.306 0.306 0.306 0.306 0.441 0.487 0.306 0.306 0.420 0.420 0.490	awg 11-14 0.129 0.130 0.141 0.161 0.160 0.326 0.356 0.356 0.356 0.465 0.465 0.465 0.465 0.208 0.
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georretric 77 Bias ajusto: 1960 1961 1962 1963 1964 1965 1965 1965 1965 1965 1965 1965 1970 1971 1972 1975 1974 1975 1974 1975 1975 1976 1975 1975 1975 1980 1980 1981 1982 1985 1985 1985 1985 1985 1985 1985 1985	Ream of 1999 5 Fishing mm 5 0.000 0.000 0.001 0.001 0.002 0.002 0.002 0.002 0.002 0.003	0 10 2001 vtalilies 6 0.002 0.001 0.002 0.000 0.016 0.016 0.016 0.016 0.016 0.016 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.016 0.017 0.006 0.028 0.016 0.033 0.028 0.016 0.033 0.028 0.016 0.033 0.028 0.020 0.006 0.028 0.020 0.006 0.028 0.020 0.006 0.028 0.020 0.006 0.028 0.007 0.006 0.028 0.006 0.033 0.006 0.032 0.006 0.03 0.006 0.032 0.006 0.032 0.006 0.032 0.006 0.03 0.006 0.03 0.006 0.03 0.00 0.00	7 0.033 0.034 0.032 0.045 0.065 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.084 0.025 0.054 0.051 0.054 0.051 0.054 0.054	0 013 0 024 0 005 0 000 0 004 0 006 0 006 0 102 0 103 0 102 0 133 0 102 0 133 0 102 0 133 0 104 0 113 0 006 0 0154 0 0154 0 0154 0 0154 0 0152 0 0154 0 0152 0 0154 0 0152 0 0154 0 0154 0 0154 0 0155 0 0154 0 0155 0 0154 0 0155 0 0055 0 0055 00000000	9 0.021 0.028 0.033 0.065 0.105 0.105 0.105 0.105 0.105 0.105 0.227 0.224 0.150 0.224 0.150 0.224 0.150 0.224 0.150 0.128 0.129 0.178 0.179 0.224 0.159 0.128 0.128	10 0.043 0.024 0.024 0.024 0.004 0.004 0.004 0.004 0.215 0.160 0.216 0.266 0.276 0.287 0.280 0.227 0.280 0.221 0.290 0.221 0.290 0.221 0.200 0.219 0.221 0.200 0.219 0.215 0.200 0.219 0.221 0.200 0.219 0.221 0.200 0.219 0.221 0.200 0.219 0.215 0.200 0.221 0.200 0.215 0.200 0.221 0.200 0.221 0.200 0.215 0.200 0.215 0.200 0.215 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.217 0.200 0.2210 0.200 0.221 0.200 0.20	11 0.960 0.960 0.948 0.945 0.106 0.240 0.778 0.289 0.289 0.299	12 0.118 0.089 0.089 0.162 0.162 0.263 0.407 0.363 0.417 0.426 0.427 0.426 0.426 0.427 0.426 0.426 0.426 0.427 0.426 0.426 0.426 0.427 0.426 0.426 0.426 0.427 0.426 0.426 0.427 0.426 0.426 0.426 0.427 0.426 0.427 0.426 0.426 0.427 0.426 0.426 0.427 0.426 0.427 0.426 0.527 0.426 0.527 0.426 0.527 0.426 0.527 0.527 0.527 0.527 0.527 0.527 0.527 0.527 0.527 0.527 0.5570000000000	13 0.148 0.187 0.0592 0.117 0.187 0.374 0.386 0.386 0.386 0.386 0.384 0.484 0.480 0.480 0.480 0.480 0.384 0.480 0.384 0.585 0.55500000000	14 0.190 0.232 0.233 0.233 0.233 0.235 0.276 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.459 0.451 0.459 0.611 0.460 0.611 0.459 0.257 1.0257 0.2570 0.2570 0.2570 0.25700000000000000000000000000000000000	15 0.190 0.202 0.238 0.255 0.275 0.275 0.350 0.477 0.382 0.350 0.456 0.447 0.360 0.456 0.447 0.501 0.456 0.451 0.450 0.611 0.257 1.026 0.961 0.963 0.963 0.963 0.964 0.964 0.965	avg i+14 0.097 0.099 0.085 0.102 0.127 0.137 0.282 0.209 0.302 0.302 0.302 0.305 0.441 0.487 0.355 0.405	awg 111-14 0.129 0.130 0.118 0.141 0.151 0.160 0.344 0.326 0.363 0.377 0.536 0.363 0.377 0.536 0.363 0.377 0.536 0.464 0.363 0.596 0.464 0.363 0.253 0.654 0.505 0.871 0.874 0.874
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Table 27. Bias adjusted population numbers (000) and fishing mortalities from VPA.



Figure 1. Catches and TAC's of American plaice in Div. 3LNO.



Figure 2. Stratification scheme used in Canadian research vessel surveys of Div. 3LNO.



Figure 3. Biomass ('000 tons) of American plaice from spring and fall Canadian surveys in Div. 3LNO combined.



Figure 4. Mean (\pm 1 Std. dev.) weight per tow (Kg) of American plaice from Canadian spring surveys inDiv. 3L, 3N and 3O.



Figure 5. Mean weight per tow (\pm 1 Std. dev.) of American plaice from Canadian spring and fall surveys of Div. 3LNO combined.



Figure 6. Abundance (millions) of American plaice from spring and fall Canadian surveys in Div. 3LNO combined.



Figure 7. Mean (\pm 1 Std. Dev.) number per tow of American place from Canadian spring and fall surveys of Div. 3LNO combined.



Figure 8. Mean (\pm 1 Std. Dev.) number per tow of American plaice from Canadian spring surveys of Div. 3L, 3N and 3O.



Figure 9. Distribution of American plaice (Kg) from Canadian spring surveys in NAFO Divisions 3LNO from 1996 to 2002.



Figure 9. Continued



Figure 10. Proportion of American plaice biomass located north of 45 N in Div. 3LNO in Canadian spring surveys.



Figure 11. Mean (\pm 1 Std. Dev.) weight (Kg) per tow of American place from Canadian fall surveys in Div. 3L, 3N and 3O.



Figure 12. Mean (\pm 1 Std. Dev.) number per tow of American plaice from Canadian fall surveys of Div. 3L, 3N and 3O.



Figure 13. Distribution of American plaice (Kg) from Canadian fall surveys in NAFO Divisions 3LNO from 1995 to 2002.



Figure 13. Continued



Figure 14. Total catch from 1977 to 2002 and RV biomass index from 1985 to 2002. Also shown is the catch/biomass ratio. Biomass is Campelen or equivalent.



Figure 15. Estimates of mortality for ages 1 to 16 from Canadian spring surveys from 1985 to 2002.



Figure 16. Estimates of mortality for ages 1 to 16 from Canadian fall surveys from 1990 to 2001.



Figure 17. Mean length at age for selected ages of Div. 3LNO American plaice from Canadian spring RV surveys.



