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An Assessment of the American Plaice Stock in Divisions 3LNO

by

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TAC Regulation

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.

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 then increased to 65,000 t in 1986 and then declined steadily to about 13,000 t in 1992, which was the lowest since the 1950's. The catch for 1993 was around 17,500, with the increase coming from fleets of non-contracting parties (NCP) fishing mainly on the Tail of the Bank in the NAFO Regulatory Area (Fig. 2).

The following table shows the catch (t) in 1992 and 1993 by country, and it should be noted that the 1993 figures for the EU nations are Canadian surveillance estimates:

	1992	1993
Canada	9,542	7,585
EU Spain	412	525
EU Portugal	140	50
S. Korea	518	13
Other	2,000	9,084
Total	**12,612**	**17,257**

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. Catches from these fleets have generally declined in recent years, as has the Canadian catch

(Tables 1 and 2), although NCP catches in 1993 were an exception to this trend. Considerable doubts have arisen about some nominal catches in recent years, 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 STACFIS to be reliable. For 1993, it was estimated that catches may have been as high as 19,400 t. For 1992, catches are estimated to be 1,500 t higher than the value used in last year's assessment. 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.

In 1993, the Canadian catch totalled about 7,600 t (Table 3), which is about 20 percent lower than the catch in 1992 and about 66 percent below the catches in 1990 and 1991 (Table 1). The 1993 catch by inshore gears of 289 t, mainly by gillnet, was the lowest in the 21-year time series for which catches by inshore gears were available and was similar to the value in 1992. Catches in these 2 years were lower due to the moratorium on the northern cod fishery, which removed much of the inshore effort from Div. 3L from July, 1992 onward. Most of the remainder of the 1993 catch was taken by otter trawl, although about 900 t was caught by seiners, down by one-third from 1992, and about 400 t was taken by gillnets in offshore areas (mostly in 3L), which was about one-quarter the catch of this fleet in 1992. The otter trawl catch in Div. 3L, which ranged from 14,000 t to 32,000 t from 1975-1989, declined to 675 t in 1992 and was only 6 t in 1993.

Table 4 shows that the otter trawl catch in Div. 3O in 1991 was the highest by Canada in this division since 1974, and virtually the entire otter trawl fishery in 1992 was conducted in this area. There was a shift of some effort to Div. 3N in 1993, but over two-thirds of the otter trawl catch by Canada was in Div. 3O. In each year from 1991 to 1993, the directed fishery by Canada was as high or higher in Div. 3O than in either Div. 3L or 3N (Table 5), these being the only years in which that has happened. This shift in effort also resulted in increased by-catches of yellowtail in Div. 3O (Table 5), where much of the fishery for that species also occurred. In fact, some of the fishery in this area was actually a mixed fishery for both flatfish species. This represents a substantial change from earlier years when most of the directed A.plaice fishery was in Div. 3L and most of the fishery for yellowtail took place in Div. 3N.

Catch-at-age, Mean Weights-at-age

Sampling was available from the Canadian (Table 6), Spanish, and Portuguese fisheries in 1993. Table 7 shows the catch-at-age from the Canadian fishery in Div. 3LNO combined. As in 1992, ages 7-10 comprised the majority of the catch, with the peak being age 8 in 1993 and 9 in 1992. The mean weights were higher at most ages in 1993 compared to 1992, which may reflect the higher proportion of fish in the catch from Div. 3N in 1993, where weights at age are generally higher.

Table 8 shows the catch at age in 1993 for Spain and Portugal combined, based on Canadian surveillance estimates of 575 tons. Peak ages were 7 and 8, similar to the Canadian fishery. The weights at age were considerably lower than in the Canadian fishery, eg. about 0.4 kg at age 9 compared to 0.63 kg in the Canadian fishery. Weights at age in the Portuguese catches have declined substantially from 1990 to 1993, with most of the decline occurring in the last year.

Canadian catch rates (C/E)

As in all recent assessments of this stock, a multiplicative model was used to analyze the C/E data from the Canadian offshore trawler fleet from 1956-93. These vessels have taken most of the catch from this stock over time, and in the late 1970s and early 1980s were the only vessels for which a series of C/E data was available. Results from the model are shown in Table 9 and Figure 3. The C/E declined steadily from 1956 to 1976 and rose gradually to a relatively stable level from 1980-85. The C/E dropped sharply in 1986 and remained at this relatively low level through 1990. Since then, the C/E has declined sharply in each year, to a level in 1993 which was about one-fourth of the mean C/E from the late 1980's, and far below the previous low values. These declines were evident in all divisions (Fig. 4).

Given the major distributional changes in the fishery since 1990, caution should be exercised in evaluating the results of the catch rate analyses. Nonetheless, it is clear that catch rates of A.plaice in the Canadian fishery in all areas of the Grand Bank in 1993 were far below any observed in the 38 year time series for this fleet.

Canadian Research Vessel Surveys

Spring

Stratified-random surveys have been carried out on the Grand Bank on Canadian vessels in the spring of each year from 1971 to 1994, with the exception of 1983. The stratification scheme used is shown in Figure 2.

In Div. 3L, the trawlable biomass was highest from 1978-82, then declined to a lower but stable level from 1985 to 1988. From 1989 to 1994, the index declined by at least 38% in each year, with the preliminary estimate in 1994 of 4,800 t being only 3 percent of the mean of 1985-88 (Table 10). Strata 729-734 in the deep water, which had not been surveyed in this series from 1986 to 1990, accounted for less than 5% of the 1991 estimate, then increased to about 18% of the 1992 total and about 24% of the 1993 biomass (Table 11). A stratified-random survey of the deepwater slope in Div. 3L during February and March 1994, using a similar trawl with different footgear, gave a trawlable biomass estimate of about 7,000 tons in depths from 550 to 1475 m (Morgan et al. 1994).

In Div. 3N, the biomass index also shows a decline in recent years, with 1992 and 1994 being the lowest points in the series (Table 12, Fig. 5), which casts some doubt on the increase seen in 1993. There is no evidence of a pronounced movement of plaice to deeper waters, at least as far as the 732 m (400 fm) limit covered in the surveys (Table 13).

In Div. 3Ø, the biomass index has shown a consistent decline since 1990 (Fig. 5), with the 1993 and 1994 values being the lowest in the series (Table 14). As in Div. 3N, most of the trawlable biomass continues to be found in the shallower strata (Table 15).

Tables 16 to 18 show the trawlable abundance at age for Div. 3L, 3N, and 3Ø respectively, with Table 19 containing the combined index. It should be noted that the data from the 1994 survey were not available on an age-by-age basis at this time. Figure 6 shows the trends in the total abundance index and Figs. 7-9 indicate the 95% confidence limits around the abundance estimates in Div. 3L, 3N, and 3O respectively. In all areas, trends in abundance generally track the biomass trends. The abundance of older fish in the stock continues to decline very rapidly, with the 1993 value for age 9+ abundance (a proxy for spawning stock size) being 83% lower than the 1990 value, and about 96% lower than the peak values in 1981-82. In 1992 or 1993, the abundance at each age over 3 years was the lowest ever observed.

Another observation which causes concern is that from 1975 to 1987, the estimate of every cohort (10 out of 10) increased between age 7 and 8 (indicating that the fish at age 7 were not fully recruited to the survey trawl). Since 1987, the trend has been reversed, and the estimate of every cohort (6 out of 6) has decreased between these ages. This change may be an indication of a large increase in mortality.

Fall

Stratified-random surveys have been conducted in Div. 3L in the fall from 1981 to 1992, usually in October-November and Figure 10 shows the trends in the trawlable biomass and abundance indices. Declines over the time period are apparent in both indices, and like the spring series, 1993 is far below any other estimates. Table 20 shows the mean catch weights on a stratified basis since 1981 and Table 21 contains the trawlable biomass estimates by stratum and depth zone for 1990-1993 only. There is no noticeable movement to deeper water in Div. 3L in the fall. Similar to the spring surveys, the 1993 abundance estimates at every age older than 4 years are the lowest in the series (Table 22), and there are virtually no fish in the index older than 9 (only 6 % of the total 3L abundance). This compares with age 9+ percentages of 25 to 40 in the early 1980's. Prior to 1988, the pattern observed between the estimates on a cohort at ages 7 and 8 was more irregular than in the spring surveys, but from 1988 onward the estimates for 4 out of 5 cohorts have declined by 50% or more between ages 7 and 8.

Figure 11 shows a time series of abundance estimates from all surveys in Div. 3L over the period 1981-93, including the data from the spring and fall surveys discussed above. From 1990 to 1993, fall surveys were also carried out in Div. 3NO. Tables 23 and 24 give the biomass estimates by stratum and depth zone. Fig. 12 compares the total abundance estimates from the spring and fall surveys in 1990-1992 and there are a number of interesting points here. The index of total abundance for Div. 3LNO combined increased between spring and fall in each year

(40% in 1990, 75% in 1991, 125% in 1992, and 89% in 1993.). This spring to fall increase has not been observed consistently in Div 3L in other years (Fig. 11) and cannot be explained at present. As well, the estimates of total abundance from the spring surveys show declines of 55% or more in each division from 1990 to 1992. However, the fall surveys do not show this pattern in Div. 3N and 3O, but only in Div. 3L. Nonetheless, the fall surveys indicate a decline in the total abundance index of 55% from 1990 to 1993, compared to a decrease of 67% during this period in the spring surveys.

Table 25 gives the age compositions of plaice in Div. 3N and 3O, as well as Div. 3LNO combined, from the fall surveys of 1990-1993. Again, similar to the spring surveys, the number of older fish has declined rapidly between 1990 and 1993, with age 9+ abundance decreasing by 80% in this period.

USSR/Russian RV Surveys

Results of surveys by the former Soviet Union from 1972-1991 have been discussed in detail in the previous assessments of this stock. The results agree with those of the Canadian spring surveys, indicating an increase in stock size in the late 1970's and early 1980's, followed by an almost continuous decline since 1984. Estimates in 1990 and 1991 are the lowest in the time series. Age data are available for only the period 1984-90 and were examined in the 1991 assessment of this stock. No comparable survey was conducted in 1992 and the data for 1993 are not available at this time.

Age at Maturity

Maturity at age was estimated from each Division and sex from 1971 to 1993 using the method of Morgan & Hoenig (1993). Combined 3LNO estimates of proportion mature at age were calculated as described in Brodie et al. (1993). These estimates were used to produce estimates of age at 50% maturity (A_{50}) using probit analysis, assuming a normal distribution.

The combined 3LNO estimate of A_{50} for females has been substantially lower in the 1984 to 1993 period (average 8.43) than in the 1975 to 1982 period (average 10.60, Figure 13). In 3N and 3O the A_{50} for females has shown some signs of increasing in recent years but in 3L there is little sign of returning to the level observed in the 1970's.

For males the average A_{50} for 3LNO since 1984 has been 4.78 (Figure 14). In the 1975 to 1982 period the average A_{50} was 5.98. The greatest decline has been in Div. 3L. None of the Divisions shows any sign of an upturn.

Both male and female Div. 3LNO combined estimates of A_{50} were significantly correlated with Div. 3LNO 5+ biomass estimated from the Laurec-Shepherd analysis (using RV only) from the 1993 assessment (females r_s=0.83 $p<0.0005$ N=17, males r_s=0.77 $p<0.0005$ N=17, Spearman rank correlation). The A_{50} estimates for males and females in Div. 3L and 3N were significantly correlated with RV 5+ abundance estimates (3L males r_s=0.74 $p<0.001$ N=17, 3L females r_s=0.68 $p<0.003$ N=17, 3N males r_s=0.50 $p<0.05$ N=16, 3N females r_s=0.85 $p<0.0005$ N=16). The A_{50} estimates for males and females in Div. 3O were not correlated with 5+ abundance estimates from the RV surveys (females r_s=0.45 p=0.07 N=17, males r_s=0.007 p=0.98 N=17).

Because it was not possible to separate the SPA population numbers by sex in this assessment, maturity ogives calculated were not applied to the population estimates at age. The assumption in recent assessments that ages 9+ represented the spawning stock is probably reasonable, as this is about the mean of the female A_{50} estimates. However, the ogives should be used if possible in the future, given the recent downward trends indicated by these data.

Stock-recruitment Data

Fig. 15 shows the scatterplot of stock size and recruitment data. SSB is age 9+ beginning of year biomass in year n from the Laurec/Shepherd VPA run in 1993 and recruitment is the number of fish aged 5 years in year n+5 from the same VPA. There is a clear downward trend in both indices during the 1980's, however some caution should be used in the interpretation of these data because of problems with VPA-based models in assessments of this stock (see below).

Assessment

In the past, VPA-based models such as ADAPT and Laurec-Shepherd have been used to provide population estimates of American plaice in Div. 3LNO. In 1991, STACFIS concluded that there were serious problems with the VPA for this stock and rejected the results of the analysis. Despite the continuation of these problems, VPA-based assessments were used in 1992 and 1993. The following is a list of reasons why no VPA-based analyses were presented for this stock in 1994:

1) Catches by non-contracting parties in 1993 were estimated by Canadian surveillance to be 9,000 t. This represents about 50% of the total catch from this stock in 1993, up from about 20% in 1992. There are no sampling data whatsoever for these fleets and Canadian surveillance has noted the use of small-mesh gear in these fisheries, making estimation of the catch-at-age from sampling data of other fleets virtually impossible. Similar difficulties have resulted in catch-at-age estimates not being calculated for yellowtail flounder in Div. 3LNO in recent years.

2) Confidence in catch levels and catch-at-age for many recent years is low, as STACFIS has noted on a number of occasions. There is considerable uncertainty over the catch numbers of younger fish, which affects estimates of recruitment.

3) The models used to calibrate VPA's in recent years have suffered from lack of fit, which has shown in the residual patterns. For example, the 1993 ADAPT formulation (Brodie et al. 1993), which used the Canadian spring surveys in Div. 3LNO as the index of abundance, showed all residuals in 1993 to be negative and about 80% of the residuals from 1988-91 to be positive. This feature has been noticed in other assessments where survey indices have declined sharply in recent years. Speculation on the reasons range from catches not being accounted for to increased natural mortality.

4) There is a severe retrospective pattern in VPA assessments of this stock. This results in substantial downward revisions in the population estimate of the most recent year from one assessment to the next. This is not model-specific nor stock-specific, but remains unexplained at present. In 1991, the retrospective difference was about 20%, but had increased to 40-45% in the 1993 assessment.

5) The need for VPA estimates of stock size is not as great at the present time. Although fishing mortality estimates would be useful, the problems outlined above would make these estimates very uncertain. Recent surveys estimate the stock size to be extremely low, with continuing declines in SSB and no sign of good recruitment. STACFIS advice last year was to keep the catch at the lowest possible level, and not to exceed 4,800 t. The Fisheries Commission of NAFO set the TAC at this level, and said that there were to be no directed fisheries on the stock in 1994.

Prognosis

There is no doubt that this stock has declined to a small fraction of its size in the early 1980's. Despite a reduction of the fishery in Div. 3L, the decline continues to be most severe in this Division. Concern must be expressed over the decrease seen in both the spawning stock and the recruitment. Stock rebuilding is uncertain, even if no directed fisheries are permitted. Given the low level of abundance, there should be no fisheries on this stock in 1995.

References

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Table 1. Nominal catches (t) of American plaice for NAFO Divisions 3LNO, 1960-92 and TACs from 1973 to 1994.

Year	Canada	France	Poland	USSR	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	1	360	1,582	3,606[b]	39,445	55,000
1985	40,024	-	4	81	2,483	11,620[b]	54,212	49,000
1986	33,409	46	-	188	3,952	26,975[b]	64,570	55,000
1987	33,967	17	-	47	2,741	18,240	55,012	48,000
1988[c]	26,832	-	-	159	2,522	11,322[b]	40,835	33,585[d]
1989[c]	27,901	92	-	6	725	14,645[b]	43,369	30,300
1990	22,600	-	-	17	1,117	8,767[b]	32,501	24,900
1991[e]	22,486	-	-	60	1,910	9,361[b]	33,817	25,800
1992[e]	9,542	-	-	-	518	1,052[b]	12,612	25,800
1993[c]	7,585							10,500
1994								4,800[f]

[a] Includes a portion of catches reported as unspecified flounder. See text for details.
[b] Includes some catches estimated from surveillance reports.
[c] See text for details of 1993 catches.
[d] *Effective* TAC.
[e] Provisional.
[f] TAC of 7,000 set by Fisheries Commission, but no directed fisheries allowed.

Table 2. Breakdown of catches from Table 1 listed as "other" for 1984-92.

		Other[a]					
Year	Spain	Portugal	Panama[b]	USA	Caymen Islands[b]	Misc.	Total
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	186	-	-	-	8,389[c]	9,361
1992	412	140	-	-	-	2,000[c]	2,552

[a]Countries not in Tables 1 or 2.
[b]Not reported to NAFO. Catches estimated from surveillance reports.
[c]Includes some estimated catches.

Table 3. Breakdown of Canadian catches of American plaice by division, month, and gear, 1993 Div. 3LNO.

	3L			3N			3Ø				
		Gillnet									3LNO
Month	OT	Offshore	Inshore	OT	Seine	Other	OT	Seine	Gillnet	Other	Total
Jan							33				33
Feb							23				23
Mar							43		1		44
Apr	1			26	21		55	7	14		124
May		1	2	21	54	1	6	32	77	18	212
Jun		156	58	5	58	1	759	113	52	4	1206
Jul		241	162	779	49	2	1109	65	7	9	2423
Aug			55	516	248		803	11			1633
Sep		2	9	404	116		418	34		1	984
Oct		2	3	92	19		196	17			329
Nov	5			22			255	26	2		310
Dec				9		2	239	10	4		264
Total	**6**	**402**	**289**	**1874**	**565**	**6**	**3939**	**315**	**157**	**32**	**7585**

Division Totals	3L	3N	3Ø	Can (N) = 7192	Can (SF) = 393[a]
	697	2445	4443		
Gear Totals	OT	Seine	GN	Other	
	5819	880	849	37	

[a]Reported as unspecified flounder.

Table [4] Canadian catches of A. plaice (otter trawl only), by division, from 1973 to 1993.

Year	3L	3N	3Ø	3LNO	Percentage of Canadian Catch
1973	14367	11575	9966	35908	93
1974	11745	13741	7895	33381	95
1975	11356	16306	3859	31521	93
1976	20648	17171	6383	44202	92
1977	19493	15536	3528	38557	91
1978	25574	12527	6242	44343	91
1979	23698	13923	4665	42286	90
1980	28083	14786	1893	44762	93
1981	32297	9308	1810	43415	90
1982	28204	11971	5043	45218	91
1983	19091	8677	4324	32092	89
1984	16784	10950	3312	31046	92
1985	20210	13327	3935	37472	94
1986	17461	8066	3867	29394	88
1987	21511	4396	3843	29750	88
1988	14126	5195	4441	23762	89
1989	15755	4665	4024	24444	88
1990[a]	11465	4181	3611	19257	85
1991[a]	8406	2940	7502	18848	84
1992[a]	675	376	5068	6119	64
1993[a]	6	1874	3939	5819	77

[a]Provisional.

Table 5 Catches and by-catches (t) of A. plaice and yellowtail, by division, from 1982-93 for Can(N) TC 5 stern trawlers. Figures in square brackets represent the percentage of directed catch taken by division each year, and the figures in parentheses represent the by-catch rates of one species in the directed fishery for the other.

		Directed plaice fishery		Directed yellowtail fishery	
		Plaice	Yellowtail by-catch	Yellowtail	Plaice by-catch
1982	3L	22452 [67]	1106 (5)	650 [12]	416 (39)
	3N	8631 [26]	2100 (20)	4568 [86]	1979 (30)
	3Ø	2423 [7]	560 (19)	71 [2]	50 (41)
1983	3L	11986 [60]	920 (7)	477 [10]	291 (38)
	3N	5733 [29]	1120 (16)	3909 [79]	1416 (27)
	3Ø	2330 [11]	256 (10)	535 [11]	355 (40)
1984	3L	10063 [55]	800 (7)	1787 [28]	781 (30)
	3N	6042 [33]	1162 (16)	4482 [70]	1813 (29)
	3Ø	2042 [12]	85 (4)	107 [2]	53 (33)
1985	3L	14617 [55]	995 (6)	793 [12]	328 (29)
	3N	9978 [38]	1764 (15)	5385 [84]	1439 (21)
	3Ø	1917 [7]	317 (14)	222 [4]	148 (40)
1986	3L	12410 [64]	890 (7)	619 [7]	319 (34)
	3N	4767 [25]	934 (16)	7632 [88]	1666 (18)
	3Ø	2128 [11]	375 (15)	450 [5]	241 (35)
1987	3L	14089 [80]	216 (2)	198 [2]	98 (33)
	3N	1774 [10]	357 (17)	7672 [91]	1492 (16)
	3Ø	1767 [10]	358 (17)	587 [7]	296 (34)
1988	3L	8262 [58]	165 (2)	220 [4]	95 (30)
	3N	3279 [23]	392 (11)	5096 [86]	912 (15)
	3Ø	2709 [19]	430 (14)	571 [10]	310 (35)
1989	3L	11049 [66]	149 (1)	64 [4]	41 (38)
	3N	3129 [19]	428 (12)	1321 [68]	514 (28)
	3Ø	2483 [15]	437 (15)	548 [28]	321 (37)
1990	3L	7388 [57]	176 (2)	194 [9]	92 (32)
	3N	2759 [21]	427 (13)	1753 [80]	626 (26)
	3Ø	2919 [22]	238 (8)	237 [11]	131 (36)
1991	3L	6107 [43]	328 (5)	93 [3]	56 (38)
	3N	2202 [15]	295 (12)	2212 [72]	440 (17)
	3Ø	6089 [42]	1067 (15)	758 [25]	411 (35)
1992	3L	550 [16]	31 (5)	62 [2]	34 (35)
	3N	182 [5]	35 (16)	977 [25]	145 (13)
	3Ø	2782 [79]	918 (25)	2898 [73]	1205 (29)
1993	3L	1 [-]	0 (0)	0 [0]	0 (0)
	3N	1302 [46]	63 (5)	1645 [42]	232 (12)
	3Ø	1538 [54]	436 (22)	2292 [58]	882 (28)

Table 6. Samples used to calculate catch at age and mean weights at age for American plaice in the Canadian fishery in Div. 3LNO in 1993. Numbers in parentheses are the numbers of observations and 'n' is the number of samples.

Age-length key	Length Frequency	n	Catch (t)	Description
Q1, 3Ø (60) Q2, 3N (55) Q2, 3Ø (522)	OT, Feb, 3Ø (301)	1	100	All gears, 3LNO, Jan-Mar
Q2, 3N (55) Q3 (622)	SS, May, 3N (352)	1	187	All gears, 3N, Apr-Jun
Q2, 3Ø (522)	OT, May, 3Ø (317)	1	174	OT+GN, 3LO, Apr-May
	OT, Jun, 3Ø (2201)	7	1029	OT+GN, 3LO, Jun
	DS, Jun, 3Ø (329)	1	152	Seine, 3Ø, Apr-Jun
Q3, 3N (622)	OT, Jul, 3N (1011)	3	781	OT + Other, 3N, Jul
	OT, Aug, 3N (1647)	5	516	OT + Other, 3N, Aug
	OT, Sep, 3N (673)	2	404	OT + Other, 3N, Sep
	SS, Aug, 3N (370)	1	413	SS, 3N, Jul-Sep
Q3, 3Ø (946)	OT, Jul, 3Ø (1218)	4	1593	All gears, 3LO, Jul
	OT, Aug, 3Ø (3284)	10	869	All gears, 3LO, Aug
	OT, Sep, 3Ø (1282)	4	464	All gears, 3LO, Sep
Q4, 3Ø (632)	OT, Oct, 3Ø (954)	3	329	All gears, 3LNO, Oct
	OT, Nov, 3Ø (2024)	6	310	All gears, 3LNO, Nov
	OT, Dec, 3Ø (1316)	4	264	All gears, 3LNO, Dec

Table 7. Catch at age (000) and mean weights at age (kg) of A.plaice in the Canadian fishery (7585 t) in 1993 in Div. 3LNO.

	AVERAGE		CATCH		
AGE	WEIGHT	LENGTH	MEAN	STD. ERR.	C. V.
* 4	0.145	26.105	3	0.92	0.36
* 5	0.237	30.278	100	15.58	0.16
6	0.307	32.654	649	49.47	0.08
7	0.368	34.507	2782	102.62	0.04
8	0.483	37.391	3007	113.79	0.04
9	0.634	40.617	1877	83.90	0.04
10	0.849	44.393	993	50.40	0.05
*11	1.059	47.500	514	30.89	0.06
12	1.282	50.311	420	24.81	0.06
13	1.608	53.894	279	18.93	0.07
*14	1.855	56.289	168	14.30	0.09
*15	2.174	59.021	165	12.92	0.08
16	2.522	61.750	108	10.15	0.09
*17	2.917	64.524	53	6.82	0.13
*18	3.614	68.774	38	6.29	0.16
*19	3.794	69.727	15	4.36	0.30
20	4.031	71.140	6	3.05	0.54
21	3.549	68.500	1	0.92	0.91

Table 8. Estimated catch at age (000) of A.plaice from Spanish and Portuguese fisheries in the NAFO Regulatory Area in 1993. Catch numbers are for a catch of 575 tons.

AGE	1993
4	36
5	51
6	146
7	289
8	410
9	184
10	114
11	64
12	28
13	12
14	9
15	4
16	1
17	2

TABLE 9 . ANOVA RESULTS AND REGRESSION COEFFICIENTS FROM A MULTIPLICATIVE MODEL UTILIZED TO DERIVE A STANDARDIZED CATCH RATE SERIES FOR AMERICAN PLAICE IN NAFO DIV. 3LNO (1991-1993 BASED ON PRELIMINARY DATA).

REGRESSION OF MULTIPLICATIVE MODEL
MULTIPLE R..... 0.828
MULTIPLE R SQUARED..... 0.686

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	DF	SUMS OF SQUARES	MEAN SQUARES	F-VALUE
INTERCEPT	1	4.919E1	4.919E1	
REGRESSION	52	1.165E1	2.241E-1	71.877
Country¦Gear¦TC (1)	2	1.125E0	5.626E-1	180.470
Division (2)	2	2.781E-1	1.391E-1	44.609
Month (3)	11	2.483E-1	2.257E-2	7.240
Year (4)	37	9.804E0	2.650E-1	84.992
RESIDUALS	1709	5.328E0	3.118E-3	
TOTAL	1762	6.617E1		

REGRESSION COEFFICIENTS

CATEGORY	CODE	VARIABLE	COEFFICIENT	STD. ERROR	NO. OBS.
Country¦Gear¦TC	3125	INTERCEPT	0.360	0.069	1762
Division	32				
Month	7				
Year	56				
(1)	3114	1	-0.367	0.019	485
	3124	2	-0.108	0.018	413
(2)	34	3	-0.075	0.014	633
	35	4	-0.153	0.017	478
(3)	1	5	0.064	0.036	77
	2	6	0.068	0.034	91
	3	7	-0.022	0.033	95
	4	8	-0.143	0.030	126
	5	9	-0.136	0.027	163
	6	10	-0.045	0.025	182
	8	11	-0.012	0.025	181
	9	12	-0.041	0.026	187
	10	13	-0.082	0.026	166
	11	14	-0.043	0.026	165
	12	15	-0.022	0.029	131
(4)	57	16	-0.061	0.095	13
	58	17	-0.100	0.087	16
	59	18	-0.114	0.084	17
	60	19	-0.160	0.083	18
	61	20	-0.255	0.085	16
	62	21	-0.428	0.082	19
	63	22	-0.302	0.079	22
	64	23	-0.272	0.078	33
	65	24	-0.318	0.073	55
	66	25	-0.345	0.071	68
	67	26	-0.428	0.071	70
	68	27	-0.740	0.073	60
(4)	69	28	-0.883	0.072	70
	70	29	-0.917	0.073	59
	71	30	-1.005	0.074	60
	72	31	-1.030	0.074	65
	73	32	-0.935	0.073	70
	74	33	-1.156	0.073	64
	75	34	-1.208	0.074	59
	76	35	-1.236	0.072	73
	77	36	-1.190	0.074	60
	78	37	-1.133	0.072	76
	79	38	-1.044	0.073	62
	80	39	-0.877	0.073	60
	81	40	-0.883	0.073	65
	82	41	-0.878	0.074	60
	83	42	-0.811	0.075	54
	84	43	-0.927	0.077	45
	85	44	-0.840	0.075	51
	86	45	-1.144	0.076	49
	87	46	-1.195	0.078	43
	88	47	-1.189	0.077	43
	89	48	-1.180	0.077	43
	90	49	-1.163	0.079	35
	91	50	-1.719	0.079	36
	92	51	-2.131	0.090	19
	93	52	-2.601	0.089	20

(MORE)

TABLE 9 . (CONTINUED)

	PREDICTED CATCH RATE					
	LN TRANSFORM		RETRANSFORMED			
YEAR	MEAN	S.E.	MEAN	S.E.	CATCH	EFFORT
1956	0.3598	0.0048	1.432	0.099	5968	4168
1957	0.2986	0.0058	1.346	0.102	5316	3949
1958	0.2596	0.0043	1.296	0.085	8189	6320
1959	0.2457	0.0038	1.278	0.079	9434	7381
1960	0.2002	0.0035	1.221	0.072	21352	17482
1961	0.1047	0.0040	1.110	0.070	14903	13428
1962	-0.0681	0.0034	0.934	0.055	15217	16292
1963	0.0581	0.0029	1.060	0.057	24591	23201
1964	0.0875	0.0027	1.092	0.057	35474	32497
1965	0.0421	0.0017	1.044	0.043	45365	43462
1966	0.0144	0.0014	1.015	0.038	51225	50451
1967	-0.0680	0.0013	0.935	0.034	54190	57949
1968	-0.3799	0.0015	0.685	0.026	48674	71106
1969	-0.5234	0.0013	0.593	0.021	64815	109293
1970	-0.5576	0.0014	0.573	0.022	54929	95854
1971	-0.6456	0.0015	0.525	0.020	49394	94123
1972	-0.6697	0.0014	0.512	0.019	41605	81216
1973	-0.5747	0.0013	0.563	0.021	35908	63739
1974	-0.7960	0.0014	0.452	0.017	33381	73927
1975	-0.8480	0.0015	0.429	0.017	31521	73544
1976	-0.8766	0.0012	0.417	0.014	44202	106100
1977	-0.8303	0.0014	0.436	0.016	38557	88376
1978	-0.7730	0.0012	0.462	0.016	44343	95970
1979	-0.6838	0.0013	0.505	0.018	42286	83707
1980	-0.5174	0.0014	0.597	0.022	44762	75028
1981	-0.5227	0.0014	0.593	0.022	43415	73163
1982	-0.5186	0.0015	0.596	0.023	45218	75892
1983	-0.4509	0.0016	0.638	0.025	32092	50338
1984	-0.5671	0.0019	0.568	0.025	31046	54702
1985	-0.4804	0.0016	0.619	0.025	37472	60536
1986	-0.7842	0.0017	0.457	0.019	29394	64349
1987	-0.8354	0.0019	0.434	0.019	29750	68554
1988	-0.8291	0.0018	0.437	0.019	23762	54408
1989	-0.8198	0.0019	0.441	0.019	24444	55455
1990	-0.8036	0.0021	0.448	0.021	19257	42990
1991	-1.3591	0.0021	0.257	0.012	18848	73332
1992	-1.7709	0.0039	0.170	0.011	6119	35969
1993	-2.2407	0.0037	0.106	0.006	5819	54717

AVERAGE C.V. FOR THE RETRANSFORMED MEAN: 0.046

NOTE: Catches from 1956-1959 are Can(NFLD) directed Otter Trawl catches
Catches from 1960-1972 are Canadian Total catches
Catches from 1973-1993 are Canadian Otter Trawl catches

LEGEND FOR AVOVA RESULTS:

CGT CODES: 3114 = Can(NFLD) TC 4 Side Trawler
CGT CODES: 3124 = " TC 4 Stern Trawler
3125 = " TC 5 "

DIVISION CODES: 32 = 3L, 34 = 3N, 35 = 3O

Table 10. Mean weight (kg) of American plaice per tow, by stratum, from R.V. surveys in Division 3L. Numbers in parentheses are the number of successful 30-minute tows in each stratum. The stratified mean weight per tow (kg/30 min.) and the biomass estimates (t x 10^{-3}), are given at the bottom of the table.

			Year - Trip											
Depth (fm)	Stratum	No.of trawlable units	1971 ATC 187	1972 ATC 199	1973 ATC 207, 208 209	1974 ATC 222	1975 ATC 233	1976 ATC 246	1977 ATC 262	1978 ATC 276	1979 ATC 289, 290, 291	1980 ATC 304, 305	1981 ATC 317, 318, 319	1982 ATC 327, 328, 329
51-100	328	114,023	-	-	-	-	-	-	26.9(3)	-	27.3(5)	-	52.5(2)	72.8(3)
51-100	341	118,151	-	-	48.4(3)	-	-	-	94.2(4)	43.8(4)	88.8(6)	47.0(6)	136.5(2)	146.6(5)
51-100	342	43,913	-	-	-	-	-	-	75.4(2)	72.6(2)	59.5(4)	77.0(4)	-	43.3(3)
51-100	343	39,409	-	-	-	-	-	-	103.1(2)	112.6(3)	90.2(4)	107.1(4)	177.5(2)	115.8(4)
101-150	344	112,146	-	-	-	-	-	92.3(4)	100.5(4)	62.4(4)	28.6(2)	105.5(3)	105.8(5)	58.0(4)
151-200	345	107,492	-	-	-	-	-	22.8(4)	27.1(4)	56.3(2)	8.4(4)	10.1(5)	32.5(4)	7.6(4)
151-200	346	64,931	-	-	-	-	45.9(2)	22.3(2)	8.4(3)	-	4.8(4)	2.8(3)	29.8(3)	5.3(3)
101-150	347	73,788	28.8(2)	-	-	24.5(2)	61.9(2)	151.5(3)	91.1(3)	59.3(4)	58.3(4)	102.3(5)	86.1(4)	93.0(2)
51-100	348	159,136	214.4(3)	92.3(3)	-	73.6(6)	47.5(4)	83.7(6)	211.6(6)	232.8(6)	150.2(6)	168.7(7)	89.5(7)	118.3(4)
51-100	349	158,686	281.2(3)	46.8(4)	-	17.0(4)	23.6(2)	66.6(3)	124.3(6)	65.1(6)	105.7(7)	110.8(9)	72.8(4)	125.6(6)
31- 50	350	155,458	77.9(3)	56.5(2)	33.5(4)	82.3(3)	78.1(3)	99.0(4)	40.5(4)	44.3(6)	45.5(9)	96.8(10)	114.5(3)	76.6(7)
31- 50	363	133,614	56.3(3)	111.7(3)	50.1(4)	69.8(4)	21.5(3)	90.4(4)	103.1(5)	96.8(5)	88.0(8)	77.2(5)	62.3(3)	168.0(5)
51-100	364	211,456	155.7(4)	138.8(3)	-	92.3(4)	99.4(2)	164.6(3)	236.1(7)	172.4(6)	195.5(8)	166.9(6)	172.3(3)	195.5(6)
51-100	365	78,142	192.0(3)	158.5(2)	-	43.1(3)	79.0(2)	62.4(3)	243.7(3)	243.3(2)	161.6(4)	156.1(4)	141.5(2)	88.7(3)
101-150	366	104,639	34.4(3)	-	-	63.0(3)	37.6(4)	40.8(4)	76.7(4)	-	7.2(4)	70.5(4)	20.2(3)	8.3(5)
151-200	368	25,071	0.0(2)	-	-	4.8(2)	1.1(2)	29.0(3)	0.0(3)	-	0.7(4)	0.8(2)	6.3(2)	0.5(2)
101-150	369	72,137	31.8(3)	-	-	14.2(3)	23.8(3)	52.9(4)	51.0(3)	18.6(2)	16.8(4)	13.7(3)	39.8(2)	20.5(2)
51-100	370	99,085	44.0(2)	82.5(3)	-	90.5(3)	43.3(3)	93.1(3)	162.1(3)	70.7(3)	211.7(4)	172.2(3)	54.0(2)	133.0(2)
31- 50	371	84,147	95.8(3)	91.9(2)	-	63.1(3)	-	-	93.4(3)	114.1(3)	175.8(3)	147.0(3)	177.0(2)	102.9(4)
31- 50	372	184,658	27.1(4)	36.3(3)	124.1(3)	50.4(3)	36.1(3)	47.5(3)	35.0(6)	24.5(7)	38.4(9)	39.7(6)	95.8(4)	50.8(6)
31- 50	384	84,072	87.9(3)	69.5(2)	12.4(3)	26.6(3)	-	-	54.0(2)	54.5(3)	79.0(4)	48.8(2)	60.5(2)	32.3(2)
51-100	385	176,851	139.5(4)	84.2(4)	34.5(3)	17.3(2)	72.1(4)	79.5(2)	168.0(6)	135.4(6)	102.2(7)	224.4(4)	87.3(3)	70.8(3)
101-150	386	73,788	20.9(2)	-	-	24.1(3)	22.6(3)	51.7(2)	4.8(3)	19.5(3)	11.5(4)	7.2(3)	20.8(2)	9.2(3)
151-200	387	53,896	1.2(3)	-	-	0.5(3)	0.0(2)	1.0(3)	2.5(2)	2.7(3)	1.0(4)	0.7(2)	1.0(2)	1.3(3)
151-200	388	27,098	1.4(2)	-	12.2(2)	2.6(3)	0.2(2)	13.0(2)	0.7(2)	0.3(2)	0.6(3)	0.1(2)	0.1(2)	0.4(2)
101-150	389	61,628	17.4(3)	17.0(2)	13.4(2)	14.5(3)	22.7(2)	38.8(2)	7.0(3)	8.2(3)	2.3(4)	4.8(3)	23.9(2)	4.5(2)
51-100	390	111,170	236.2(3)	30.1(3)	9.7(3)	1.6(3)	278.2(3)	-	68.1(2)	66.1(4)	93.8(5)	99.0(3)	18.5(2)	35.8(4)
101-150	391	21,168	-	24.1(2)	12.2(2)	43.3(3)	16.8(2)	-	45.4(2)	15.4(2)	17.2(4)	11.0(2)	4.3(2)	10.3(2)
151-200	392	10,884	-	-	291.9(3)	1.8(4)	2.4(2)	-	3.1(2)	1.9(3)	4.2(2)	1.5(2)	2.8(2)	0.8(2)
201-300	729	13,962	-	-	-	-	-	-	-	-	-	-	-	-
301-400	730	12,761	-	-	-	-	-	-	-	-	-	-	-	-
201-300	731	16,214	-	-	-	-	-	-	-	-	-	-	-	-
301-400	732	17,340	-	-	-	-	-	-	-	-	-	-	-	-
201-300	733	35,130	-	-	-	-	-	-	-	-	-	-	-	-
301-400	734	17,115	-	-	-	-	-	-	-	-	-	-	-	-
201-300	735	20,417	-	-	-	-	-	-	-	-	-	-	0.0(2)	-
1301-400	736	13,136	-	-	-	-	-	-	-	-	-	-	-	-
Mean (#sets)			109.4(58)	79.0(38)	49.2(32)	47.1(70)	60.7(55)	76.8(64)	98.3(102)	87.1(94)	80.9(140)	95.3(115)	80.7(80)	80.4(103)
Biomass			232.8	135.8	53.3	101.7	124.8	163.9	271.3	213.7	223.4	252.1	221.0	222.0

Table 10. (Cont'd.)

Stratum	1984 AN 28	1985 WT 28, 29, 30	1986 WT 48	1987 WT 58, 59, 60	1988 WT 70, 71	1989 WT 82, 83	1990 WT 96	1991 WT 106, 107	1992 WT 119-122	1993 WT 136-138
				Year - Trip						
328	12.5(2)	51.6(4)	51.2(9)	85.9(7)	23.3(2)	22.9(8)	71.0(7)	14.7(6)	4.8(4)	1.8(6)
341	69.6(4)	40.3(9)	43.7(9)	82.5(6)	50.8(6)	31.4(8)	111.0(4)	8.2(6)	0.7(8)	1.2(6)
342	60.1(4)	35.2(3)	53.5(3)	91.8(2)	94.0(2)	39.6(3)	32.5(2)	3.6(2)	0.5(3)	0.7(3)
343	-	12.7(3)	48.0(4)	111.5(3)	67.0(3)	135.3(3)	27.4(3)	5.3(2)	3.1(3)	1.7(2)
344	-	41.6(5)	80.3(8)	51.1(4)	83.2(6)	145.6(7)	24.4(6)	2.0(5)	1.7(6)	1.1(6)
345	-	23.3(5)	16.3(7)	11.0(4)	12.9(8)	7.6(9)	6.3(4)	10.7(3)	1.7(6)	1.4(6)
346	-	26.3(2)	33.1(5)	7.3(5)	8.8(4)	6.4(4)	9.4(4)	-	2.7(4)	3.9(4)
347	-	42.1(5)	50.4(5)	43.5(3)	50.5(5)	63.3(6)	43.9(4)	4.1(4)	0.9(4)	2.7(4)
348	-	65.1(18)	104.9(12)	130.1(8)	142.3(11)	79.2(9)	44.5(11)	7.7(8)	3.2(9)	3.0(8)
349	89.5(6)	49.8(14)	58.3(14)	105.1(11)	135.9(8)	45.7(11)	29.4(9)	9.5(9)	2.8(9)	0.8(9)
350	108.2(6)	98.5(12)	99.5(11)	68.7(11)	86.1(8)	61.7(11)	30.6(7)	30.8(8)	2.9(11)	1.1(9)
363	92.2(5)	107.8(8)	138.4(10)	68.6(9)	97.0(7)	53.6(9)	36.1(7)	23.4(7)	3.4(9)	1.4(8)
364	144.4(5)	102.3(17)	87.4(17)	164.0(15)	136.1(10)	94.4(16)	50.0(12)	18.4(11)	3.8(12)	0.8(12)
365	-	54.1(7)	68.5(5)	107.9(5)	82.5(4)	88.0(6)	13.6(4)	27.8(4)	4.8(4)	1.6(5)
366	-	37.6(6)	21.4(8)	14.5(7)	18.8(6)	15.3(8)	12.2(6)	-	4.0(6)	3.2(7)
368	-	30.5(2)	16.5(2)	1.7(3)	2.0(2)	1.6(3)	7.6(2)	-	20.9(2)	10.0(2)
369	-	71.7(5)	16.1(6)	8.4(5)	6.3(4)	12.5(6)	7.5(5)	5.0(2)	6.0(4)	1.5(5)
370	-	56.6(8)	96.6(8)	69.8(7)	129.5(5)	77.3(8)	26.8(7)	22.9(6)	8.4(6)	1.5(6)
371	-	107.5(7)	68.0(6)	58.3(7)	147.8(5)	108.3(6)	63.3(6)	19.8(5)	0.8(5)	1.8(5)
372	63.7(5)	109.9(12)	69.6(14)	30.1(13)	58.3(11)	52.7(13)	22.8(7)	12.6(10)	2.5(10)	7.0(1)
384	-	100.3(6)	114.0(6)	56.4(7)	53.9(5)	102.0(6)	8.7(4)	6.1(4)	2.8(5)	0.4(5)
385	-	48.8(15)	62.8(13)	74.1(11)	46.3(10)	73.3(12)	8.5(11)	16.2(8)	6.6(10)	2.1(11)
386	-	26.0(5)	9.7(6)	7.5(5)	32.5(4)	12.7(6)	14.2(5)	14.4(3)	9.7(4)	1.2(5)
387	-	20.8(6)	3.0(4)	0.0(4)	1.2(4)	2.5(5)	2.1(4)	8.1(3)	10.9(3)	3.0(3)
388	-	25.5(2)	11.5(2)	1.4(2)	0.9(2)	2.0(3)	0.5(2)	5.5(3)	9.7(2)	9.7(2)
389	-	27.2(5)	27.7(5)	10.6(6)	19.7(3)	14.6(5)	4.8(4)	7.2(3)	3.4(3)	2.9(4)
390	-	15.0(9)	14.5(8)	28.0(7)	11.1(5)	9.4(8)	6.1(5)	4.9(5)	1.5(6)	1.0(6)
391	-	9.5(2)	61.0(2)	12.5(2)	27.8(2)	7.4(3)	4.8(2)	13.3(2)	2.3(2)	7.3(2)
392	-	13.8(2)	9.5(2)	0.6(2)	0.9(2)	1.5(3)	3.2(2)	5.8(2)	4.3(2)	3.9(2)
729	-	0.5(2)	-	-	-	-	-	2.2(2)	17.0(2)	15.6(2)
730	-	0.3(2)	-	-	-	-	-	0.1(2)	3.0(2)	5.7(2)
731	-	326.0(2)	-	-	-	-	-	3.4(2)	4.0(2)	6.1(2)
732	-	0.3(2)	-	-	-	-	-	0.9(2)	6.3(2)	3.3(2)
733	-	21.4(3)	-	-	-	-	-	0.5(2)	13.2(2)	15.3(3)
734	-	1.5(3)	-	-	-	-	-	3.4(2)	1.9(2)	0.0(2)
735	-	57.0(2)	-	-	-	-	-	-	63.4(2)	42.1(2)
736	-	5.0(2)	-	-	-	-	-	-	16.6(2)	11.4(2)
Mean (#sets)	87.4(37)	60.3(221)	63.1(211)	65.5(181)	69.9(154)	55.4(205)	29.9(156)	12.9(143)	4.5(178)	2.8(181)
Biomass	97.9	175.1	174.1	180.9	193.0	153.0	82.6	34.5	13.0	8.1

Table 11. Biomass estimates (000 t) of A. plaice, by stratum and depth zone, from Canadian spring surveys in Div. 3L from 1985-1993. (+) indicates stratum biomass < 50 t and (-) indicates stratum not surveyed.

Depth (fm)	Stratum	Year								
		1985	1986	1987	1988	1989	1990	1991	1992	1993
31-50	350	15.3	15.5	10.7	13.4	9.6	4.8	4.8	0.5	0.2
	363	14.4	18.5	9.2	13.0	7.2	4.8	3.1	0.5	0.2
	371	9.0	5.7	4.9	12.4	9.1	5.3	1.7	0.1	0.2
	372	20.3	12.8	5.6	10.8	9.7	4.2	2.3	0.5	1.3
	384	8.4	9.6	4.7	4.5	8.6	0.7	0.5	0.2	+
	Total	**67.4**	**62.1**	**35.1**	**54.1**	**44.2**	**19.8**	**12.4**	**1.8**	**1.9**
51-100	328	5.9	5.8	9.8	2.6	2.6	8.1	1.7	0.5	0.2
	341	4.8	5.2	9.7	6.0	3.7	13.1	1.0	0.1	0.1
	342	1.5	2.3	4.0	4.1	1.7	1.4	0.2	+	+
	343	0.5	1.9	4.4	2.6	5.3	1.1	0.2	0.1	0.1
	348	10.4	16.7	20.7	22.6	12.6	7.1	1.2	0.5	0.5
	349	7.9	9.2	16.7	21.6	7.3	4.7	1.5	0.4	0.1
	364	21.6	18.5	34.7	28.8	20.0	10.6	3.9	0.8	0.2
	365	4.2	5.4	8.4	6.4	6.9	1.1	2.2	0.4	0.1
	370	5.6	9.6	6.9	12.9	7.7	2.7	2.3	0.8	0.2
	385	8.6	11.1	13.1	8.2	13.0	1.5	2.9	1.2	0.4
	390	1.7	1.6	3.1	1.2	1.0	0.7	0.5	0.2	0.1
	Total	**72.7**	**87.3**	**131.2**	**117.0**	**81.8**	**52.1**	**17.6**	**5.0**	**2.0**
101-150	344	4.7	9.0	5.7	9.3	16.3	2.7	0.2	0.2	0.1
	347	3.1	3.7	3.2	3.7	4.7	3.2	0.3	0.1	0.2
	366	3.9	2.2	1.5	2.0	1.6	1.3	-	0.4	0.3
	369	5.2	1.2	0.6	0.4	0.9	0.5	0.4	0.4	0.1
	386	1.9	0.7	0.6	2.4	0.9	1.0	1.1	0.7	0.1
	389	1.7	1.7	0.6	1.2	0.9	0.3	0.4	0.2	0.2
	391	0.2	1.3	0.3	0.6	0.2	0.1	0.3	+	0.2
	Total	**20.7**	**19.8**	**12.5**	**19.6**	**25.5**	**9.1**	**2.7**	**2.0**	**1.2**
151-200	345	2.5	1.8	1.2	1.4	0.8	0.7	1.1	0.2	0.1
	346	1.7	2.1	0.5	0.6	0.4	0.6	-	0.2	0.3
	368	0.8	0.4	+	+	+	0.2	-	0.5	0.3
	387	1.1	0.2	+	+	0.1	0.1	0.4	0.6	0.2
	388	0.7	0.3	+	+	+	+	0.1	0.3	0.3
	392	0.1	0.1	+	+	+	+	0.0	+	+
	Total	**6.9**	**4.9**	**1.7**	**2.0**	**1.3**	**1.6**	**1.6**	**1.8**	**1.2**
201-300	729	+	-	-	-	-	-	+	0.2	0.2
	731	5.3	-	-	-	-	-	+	0.1	0.1
	733	0.8	-	-	-	-	-	+	0.5	0.5
	735	1.2	-	-	-	-	-	-	1.3	0.9
	Total	**7.3**	-	-	-	-	-	**+**	**2.1**	**1.7**
301-400	730	+	-	-	-	-	-	+	+	0.1
	732	+	-	-	-	-	-	+	0.1	0.1
	734	+	-	-	-	-	-	+	+	0.0
	736	+	-	-	-	-	-	-	0.2	0.1
	Total	**+**	-	-	-	-	-	**+**	**0.3**	**0.3**
Grand Total		175.0	174.1	180.5	192.7	152.8	82.6	34.3	13.0	8.3

Table 12. Mean weight (kg) of American plaice per tow, by stratum, from R. V. surveys in Division 3N. Numbers in parentheses are the number of successful 30-minute tows in each stratum. The stratified mean weight per tow (kg/30 *min.*) and the biomass estimates (t x 10^{-3}) are given at the bottom of the table.

Depth (fm)	Stratum	No. of trawlable units	1971 ATC 187	1972 ATC 199	1973 ATC 208, 209	1974 ATC 222	1975 ATC 233	1976 ATC 245	1977 ATC 263	1978 ATC 277, 278	1979 ATC 289	1980 ATC 304	1981 ATC 319	1982 ATC 328, 329
151-200	357	12,311	-	-	0.0(2)	-	-	-	5.5(2)	-	2.4(3)	0.5(3)	0.0(2)	0.8(2)
101-150	358	16,889	-	2.4(4)	6.5(3)	-	-	-	20.0(2)	-	2.1(2)	1.8(3)	0.0(3)	3.5(2)
51-100	359	31,602	-	46.3(3)	31.3(3)	-	-	66.3(3)	114.4(2)	-	60.3(4)	36.0(4)	25.4(3)	28.5(2)
31-501	360	224,592	-	34.1(4)	-	-	23.5(4)	44.3(4)	58.8(4)	106.7(4)	60.4(9)	39.9(11)	43.3(6)	37.8(7)
31-50	361	139,094	17.3(2)	49.2(3)	25.2(4)	37.2(4)	46.3(4)	21.1(5)	22.1(3)	17.5(4)	20.3(8)	33.7(7)	-	45.5(6)
31-50	362	189,162	89.0(2)	110.4(4)	58.0(5)	40.8(4)	18.6(3)	38.7(5)	27.4(5)	27.6(4)	37.3(12)	46.5(11)	75.8(5)	46.8(8)
31-50	373	189,162	93.1(4)	55.6(4)	27.6(4)	12.1(4)	-	75.5(5)	70.5(4)	70.3(5)	35.2(11)	33.6(8)	83.4(5)	31.8(5)
31-50	374	69,885	64.7(2)	66.7(2)	45.1(4)	30.4(2)	21.3(2)	-	68.1(3)	89.9(3)	46.3(4)	54.7(3)	170.0(3)	12.4(4)
≤ 30	375	119,577	17.3(3)	15.7(3)	41.5(3)	35.6(3)	14.6(3)	-	61.3(4)	39.1(5)	17.7(5)	16.8(4)	10.5(4)	18.5(5)
≤ 30	376	112,521	-	16.3(2)	22.3(3)	-	23.6(2)	33.0(3)	59.0(3)	240.3(2)	25.4(4)	71.3(3)	22.0(4)	22.9(7)
51-100	377	7,506	-	24.5(2)	52.2(2)	19.7(3)	165.3(2)	-	236.1(2)	28.6(2)	15.9(3)	36.1(4)	215.3(3)	62.0(2)
101-150	378	10,434	23.2(2)	22.3(2)	42.7(2)	21.0(3)	-	-	7.8(2)	10.0(2)	6.9(3)	10.0(2)	3.8(2)	6.5(2)
151-200	379	7,957	-	-	0.5(2)	12.0(3)	-	-	0.2(2)	0.3(2)	4.7(3)	9.7(3)	3.5(3)	2.0(2)
151-200	380	8,707	-	0.9(2)	15.7(3)	3.4(2)	-	-	2.3(2)	-	1.5(2)	2.7(3)	0.3(3)	-
101-150	381	13,662	22.1(4)	3.6(4)	144.1(3)	19.5(4)	15.6(2)	-	15.3(2)	7.6(3)	19.1(3)	13.1(4)	5.8(3)	5.6(2)
51-100	382	48,567	23.5(3)	4.5(4)	15.4(3)	6.1(3)	-	45.6(2)	39.0(3)	32.4(3)	174.9(3)	25.5(4)	103.5(2)	56.8(2)
31-50	383	50,593	69.0(2)	59.9(2)	0.1(2)	51.8(2)	-	14.5(3)	62.7(3)	87.7(2)	25.6(3)	33.0(4)	241.7(3)	19.8(2)
201-300	723	11,635	-	-	-	-	-	-	-	-	-	-	-	-
301-400	724	9,308	-	-	-	-	-	-	-	-	-	-	-	-
201-300	725	7,882	-	-	-	-	-	-	-	-	-	-	-	-
301-400	726	5,405	-	-	-	-	-	-	-	-	-	-	-	-
201-300	727	12,010	-	-	-	-	-	-	-	-	-	-	-	-
301-400	728	11,710	-	-	-	-	-	-	-	-	-	-	-	-
Mean (#sets)			58.5(24)	48.3(45)	34.2(48)	29.5(37)	25.8(22)	43.9(30)	51.7(48)	75.6(41)	40.4(82)	37.8(81)	67.6(54)	32.7(60)
Biomass			48.6	59.5	35.1	25.2	22.6	43.1	64.5	89.4	50.6	40.7	68.4	59.9

Table 12. (Cont'd.)

Stratum	1984 AN 27-28	1985 WT 29 AN 43	1986 WT 47	1987 WT 58, 59, 60	1988 WT WT 70	1989 WT 82	1990 WT 95, 96	1991 WT 105	1992 WT 119, 120	1993 WT 136, 137	1994* WT 152, 153
357	0.0(2)	22.3(2)	0.0(2)	-	0.0(2)	0.0(2)	0.5(2)	0.4(2)	1.5(2)	0.0(2)	
358	3.5(2)	180.5(2)	2.8(2)	1.5(2)	1.9(2)	0.8(2)	5.6(2)	11.6(2)	30.0(2)	7.2(2)	
359	51.8(2)	28.0(2)	27.0(2)	5.9(2)	3.9(2)	17.5(2)	12.9(2)	10.4(2)	17.8(2)	104.0(2)	
360	47.3(7)	38.2(16)	32.5(13)	15.3(15)	10.4(12)	22.2(15)	18.3(15)	15.6(12)	5.8(14)	17.7(11)	
361	39.0(5)	47.0(7)	22.7(10)	36.9(8)	26.5(7)	39.6(10)	39.0(9)	11.7(8)	3.3(8)	16.8(8)	
362	89.9(7)	66.9(11)	82.6(14)	55.4(13)	50.6(10)	56.9(13)	49.9(10)	29.8(10)	6.1(12)	10.9(9)	
373	66.1(7)	67.3(9)	26.4(14)	78.6(13)	44.1(10)	60.5(13)	9.5(10)	25.9(11)	3.7(10)	3.3(9)	
374	112.1(3)	49.5(4)	15.0(6)	36.5(5)	20.2(5)	30.8(5)	10.4(5)	15.6(5)	3.4(5)	3.8(3)	
375	46.2(5)	32.8(8)	45.6(8)	69.4(8)	36.8(6)	23.4(8)	24.9(8)	4.8(6)	11.9(6)	10.1(6)	
376	10.6(4)	21.7(7)	22.4(9)	27.4(8)	6.0(6)	19.8(8)	6.3(7)	10.9(7)	1.2(7)	10.7(6)	
377	319.5(2)	37.3(2)	34.0(2)	32.8(2)	26.8(2)	36.9(2)	56.3(2)	27.2(3)	19.8(2)	62.0(2)	
378	21.5(2)	36.5(2)	68.1(2)	7.0(2)	10.5(2)	2.1(2)	45.2(2)	11.7(3)	24.8(2)	126.5(2)	
379	4.5(2)	5.8(2)	1.0(2)	7.8(2)	0.1(2)	0.0(2)	0.9(2)	3.0(2)	13.0(2)	1.4(2)	
380	1.3(2)	10.8(2)	3.6(3)	0.0(2)	0.0(2)	2.6(2)	6.0(2)	3.7(2)	10.5(2)	13.5(2)	
381	53.8(2)	26.3(2)	15.3(3)	2.4(2)	5.8(2)	7.6(2)	15.7(2)	7.2(2)	10.0(2)	19.3(2)	
382	2.8(3)	63.4(4)	6.5(4)	50.3(3)	5.5(2)	15.7(3)	7.5(3)	1.4(2)	2.6(3)	2.0(2)	
383	61.5(3)	22.2(3)	19.9(4)	36.3(3)	24.0(3)	22.0(3)	56.4(2)	3.5(3)	2.1(2)	1.2(3)	
723	-	-	-	-	-	-	-	0.1(2)	3.0(2)	0.1(2)	
724	-	-	-	-	-	-	-	0.0(2)	3.9(2)	0.2(2)	
725	-	-	-	-	-	-	-	0.2(2)	-	0.6(2)	
726	-	-	-	-	-	-	-	0.9(2)	1.9(2)	5.6(2)	
727	-	-	-	-	-	-	-	2.8(2)	7.6(2)	16.4(2)	
728	-	-	-	-	-	-	-	1.1(2)	12.8(2)	15.0(2)	
Mean (#sets)	54.7(60)	47.8(85)	35.0(101)	42.6(91)	25.9(77)	34.1(94)	24.0(85)	15.2(93)	6.0(93)	13.6(85)	
Biomass	47.4	75.3	43.8	52.8	32.4	42.8	30.1	19.9	7.8	17.8	7.5

*Preliminary estimate.

Table 13. Biomass estimates (000 t) of A. plaice, by stratum and depth zone, from Canadian spring surveys in Div. 3N from 1985-1993.

Depth (fm)	Stratum	Year 1985	1986	1987	1988	1989	1990	1991	1992	1993
≤ 30	375	3.9	5.5	8.3	4.4	2.8	3.0	0.6	1.4	1.2
	376	2.4	2.6	3.1	0.7	2.2	0.7	1.2	0.1	1.2
	Total	**6.3**	**8.1**	**11.4**	**5.1**	**5.0**	**3.7**	**1.8**	**1.5**	**2.4**
31-50	360	8.6	7.3	3.4	2.3	5.0	4.1	3.5	1.3	4.0
	361	6.5	3.2	5.1	3.7	5.5	5.4	1.6	0.4	2.3
	362	12.7	15.6	10.5	9.6	10.8	9.4	5.6	1.2	2.1
	373	12.7	5.0	14.9	8.3	11.4	1.8	4.9	0.7	0.6
	374	3.5	1.3	2.6	1.4	2.2	0.7	1.1	0.2	0.3
	383	1.1	1.0	1.8	1.2	1.1	2.8	0.2	0.1	0.1
	Total	**45.1**	**33.4**	**38.3**	**26.5**	**36.0**	**24.2**	**16.9**	**3.9**	**9.4**
51-100	359	0.9	0.8	0.2	0.1	0.6	0.4	0.3	0.6	3.3
	377	0.3	0.3	0.3	0.2	0.3	0.4	0.2	0.1	0.5
	382	3.1	0.3	2.4	0.3	0.8	0.4	+	0.1	0.1
	Total	**4.3**	**1.4**	**2.9**	**0.6**	**1.7**	**1.2**	**0.5**	**0.8**	**3.9**
101-150	358	3.0	+	+	+	+	+	0.2	0.5	0.1
	378	0.4	0.7	+	0.1	+	0.5	0.1	0.3	1.3
	381	0.4	0.2	+	+	0.1	0.2	0.1	0.4	0.3
	Total	**3.8**	**0.9**	**+**	**0.1**	**0.1**	**0.7**	**0.4**	**1.2**	**1.7**
151-200	357	0.3	0.0	-	0.0	0.0	+	+	+	0
	379	+	+	+	+	0.0	+	+	0.1	+
	380	+	+	0.0	0.0	+	+	+	+	0.1
	Total	**0.3**	**+**	**+**	**+**	**+**	**+**	**+**	**0.1**	**0.1**
201-300	723	-	-	-	-	-	-	+	+	+
	725	-	-	-	-	-	-	+	+	+
	727	-	-	-	-	-	-	+	+	0.2
	Total	**-**	**-**	**-**	**-**	**-**	**-**	**+**	**+**	**0.2**
301-400	724	-	-	-	-	-	-	0.0	+	+
	726	-	-	-	-	-	-	+	+	+
	728	-	-	-	-	-	-	+	0.1	0.2
	Total	**-**	**-**	**-**	**-**	**-**	**-**	**+**	**0.1**	**0.2**
	Grand Total	59.8	43.8	52.6	32.3	42.8	29.8	19.6	7.6	17.9

Table 14. Mean weight (kg) of American plaice per tow, by stratum, from R. V. surveys in Division 3Ø. Numbers in parentheses are the number of successful 30-minute tows in each stratum. The stratified mean weight per tow (kg/30 min.) and the biomass estimates (t x 10^{-3}), are given at the bottom of the table.

Depth (fm)	Stratum	No. of trawlable units	Year - Trip 1973 ATC 207, 209	1975 ATC 233	1976 ATC 245	1977 ATC 263	1978 ATC 276, 277	1979 ATC 289, 291	1980 ATC 303	1981 318, 319	1982 ATC 327, 329
51-100	329	129,185	7.8(2)	-	91.7(2)	80.2(3)	16.6(5)	61.6(6)	45.8(2)	157.0(2)	54.9(6)
31-50	330	156,809	47.6(6)	25.7(3)	26.9(3)	101.1(3)	40.0(6)	78.4(7)	22.0(2)	54.6(4)	24.2(7)
31-50	331	34,229	28.6(2)	6.4(2)	41.2(2)	-	6.8(2)	28.9(3)	28.3(2)	-	24.0(4)
51-100	332	78,592	-	23.6(2)	13.5(3)	10.3(3)	14.9(3)	12.9(4)	18.9(2)	-	16.3(4)
101-150	333	11,335	-	5.7(2)	1.6(2)	4.3(2)	2.3(3)	5.3(2)	0.1(2)	-	1.3(4)
151-200	334	6,906	-	-	0.0(2)	0.0(2)	0.0(3)	0.6(3)	0.0(2)	-	0.1(4)
151-200	335	4,354	0.5(2)	-	13.3(3)	-	7.1(2)	4.1(2)	1.5(3)	-	0.7(2)
101-150	336	9,083	4.8(3)	7.6(2)	30.9(2)	10.4(2)	6.8(2)	8.1(4)	0.3(2)	-	2.5(2)
51-100	337	71,161	16.3(3)	3.0(3)	16.3(2)	21.8(2)	30.5(2)	1.3(4)	6.5(3)	-	22.3(3)
31-50	338	142,472	38.8(5)	20.0(2)	62.7(3)	22.9(4)	7.6(5)	19.9(7)	30.2(5)	-	13.2(5)
51-100	339	43,913	152.4(2)	47.2(2)	-	-	65.5(2)	262.4(3)	-	96.5(2)	27.0(4)
31-50	340	128,810	-	20.0(3)	81.2(6)	52.1(3)	18.0(3)	59.2(7)	85.8(2)	97.3(3)	35.3(6)
31-50	351	189,162	65.7(5)	73.5(4)	56.3(4)	62.7(5)	18.5(6)	46.8(11)	76.3(10)	180.0(4)	46.3(9)
31-50	352	193,666	25.8(5)	77.9(4)	61.1(4)	17.1(5)	8.4(4)	25.5(12)	38.0(11)	-	36.6(7)
31-50	353	96,232	42.0(3)	72.0(3)	46.3(2)	42.4(3)	41.5(3)	36.0(5)	75.9(4)	-	35.0(3)
51-100	354	35,580	49.0(3)	-	32.4(3)	34.5(2)	-	17.7(4)	101.8(3)	10.8(2)	34.8(2)
101-150	355	7,732	0.5(2)	3.6(2)	7.3(2)	-	-	16.8(4)	8.5(2)	28.5(2)	14.0(2)
151-200	356	4,579	0.9(2)	-	-	-	-	11.6(2)	4.8(2)	30.5(2)	-
201-300	717	6,981	-	-	-	-	-	-	-	-	-
301-400	718	8,332	-	-	-	-	-	-	-	-	-
201-300	719	5,705	-	-	-	-	-	-	-	-	-
301-400	720	7,882	-	-	-	-	-	-	-	-	-
201-300	721	5,705	-	-	-	-	-	-	-	-	-
301-400	722	6,981	-	-	-	-	-	-	-	-	-
Mean (#sets)			41.2(45)	42.9(34)	52.2(45)	47.4(39)	21.2(51)	46.5(90)	46.5(59)	115.1(21)	31.8(74)
Biomass			46.1	49.1	67.6	59.2	27.5	62.5	60.1	79.2	42.4

Table 14 (Cont'd.)

Stratum	Year - Trip 1984 AN 27	1985 AN 43	1986 WT 47	1987 WT 58, 60	1988 WT 70	1989 WT WT 82	1990 WT 94, 95	1991 WT 106, 107	1992 WT 119, 120	1993 WT 136	1994* WT 152, 153
329	25.7(5)	30.5(8)	23.4(8)	49.3(9)	8.2(7)	30.2(9)	19.4(7)	13.0(9)	3.0(8)	5.7(6)	
330	48.0(4)	118.4(10)	44.5(9)	56.1(11)	29.6(9)	40.1(11)	33.2(10)	29.4(11)	2.4(10)	3.4(7)	
331	80.2(3)	98.8(3)	11.4(4)	46.8(2)	43.8(2)	10.7(2)	-	36.5(2)	10.3(2)	42.7(2)	
332	6.0(2)	24.3(5)	38.8(6)	59.4(5)	5.5(4)	16.8(5)	16.9(5)	25.2(6)	20.4(5)	16.9(4)	
333	0.0(2)	0.0(2)	0.0(3)	0.4(2)	1.3(2)	0.2(2)	2.4(2)	1.0(2)	0.4(2)	0.2(2)	
334	0.0(2)	1.5(2)	0.4(2)	0.8(2)	0.1(2)	0.4(2)	3.9(2)	0.9(2)	2.0(2)	0.6(2)	
335	0.4(2)	0.7(2)	0.1(2)	0.4(2)	1.8(2)	0.1(2)	0.0(2)	3.0(3)	4.0(3)	9.8(2)	
336	0.0(2)	1.3(2)	0.3(2)	0.0(2)	1.8(2)	0.5(2)	0.6(2)	4.1(2)	17.5(2)	4.8(2)	
337	7.0(2)	15.8(5)	12.4(5)	14.3(6)	6.3(4)	10.5(5)	13.3(5)	17.5(5)	14.5(4)	4.9(2)	
338	60.1(5)	59.6(9)	28.5(9)	26.7(9)	50.3(8)	21.3(10)	35.9(8)	29.2(10)	19.0(6)	14.8(6)	
339	160.0(2)	13.9(3)	5.5(3)	68.5(3)	29.2(3)	84.0(3)	78.6(3)	30.5(3)	55.0(2)	11.2(2)	
340	49.5(4)	43.9(9)	35.9(7)	93.7(9)	56.1(7)	26.3(9)	55.1(9)	31.3(9)	16.5(5)	9.4(6)	
351	92.9(6)	73.3(9)	80.3(14)	71.1(13)	76.9(10)	57.5(13)	78.6(12)	43.0(12)	14.4(10)	12.0(9)	
352	27.0(7)	56.5(11)	34.2(14)	63.5(13)	52.2(11)	35.1(13)	47.4(13)	23.0(14)	30.6(8)	29.6(7)	
353	48.5(2)	55.5(6)	29.2(7)	44.4(6)	21.0(5)	28.7(7)	28.3(6)	8.3(7)	26.2(4)	24.7(4)	
354	11.8(2)	73.2(3)	9.8(3)	17.3(2)	6.0(2)	14.0(2)	10.4(2)	15.9(3)	22.7(2)	10.5(2)	
355	4.8(2)	20.3(2)	1.0(2)	1.8(2)	0.4(2)	13.0(2)	7.1(2)	14.8(2)	13.6(2)	1.5(2)	
356	4.3(2)	7.0(2)	0.0(2)	1.2(2)	1.0(2)	0.0(2)	0.5(2)	2.7(2)	12.6(2)	1.8(2)	
717	-	-	-	-	-	-	-	1.0(2)	0.0(2)	1.2(2)	
718	-	-	-	-	-	-	-	0.0(2)	0.0(2)	0.0(2)	
719	-	-	-	-	-	-	-	0.1(2)	1.1(2)	0.1(2)	
720	-	-	-	-	-	-	-	0.0(2)	0.2(2)	0.5(2)	
721	-	-	-	-	-	-	-	0.9(2)	1.6(2)	0.6(2)	
722	-	-	-	-	-	-	-	0.6(2)	1.6(2)	0.5(2)	
Mean (#sets)	48.0(56)	57.0(93)	35.9(102)	53.4(100)	37.7(84)	32.6(101)	40.4(92)	24.9(116)	16.9(91)	13.8(81)	
Biomass	64.5	48.2	71.7	50.7	76.6	43.8	52.9	34.5	23.3	19.1	13.5

*Preliminary estimate.

Table 15. Biomass estimates (000 t) of A. plaice, by stratum and depth zone, from Canadian spring surveys in Div. 3Ø from 1985-1993.

Depth (fm)	Stratum	Year								
		1985	1986	1987	1988	1989	1990	1991	1992	1993
31-50	330	18.6	7.0	8.8	4.6	6.3	5.2	4.6	0.4	0.5
	331	3.4	0.4	1.6	1.5	0.4	-	1.2	0.4	1.5
	338	8.5	4.1	3.8	7.2	3.0	5.1	4.2	2.7	2.1
	340	5.6	4.6	12.0	7.2	3.4	7.1	4.0	2.1	1.2
	351	13.9	15.2	13.2	14.5	10.9	14.9	8.1	2.7	2.3
	352	10.9	6.6	12.3	10.1	6.8	9.2	4.4	5.9	5.7
	353	5.3	2.8	4.3	2.0	2.8	2.7	0.8	2.5	2.4
	Total	**66.2**	**40.7**	**56.0**	**47.1**	**33.6**	**44.2**	**27.3**	**16.7**	**15.7**
51-100	329	3.9	3.0	6.4	1.1	3.9	2.5	1.7	0.4	0.7
	332	1.9	3.0	4.7	0.4	1.3	1.3	2.0	1.6	1.3
	337	1.1	0.9	1.0	0.4	0.7	0.9	1.2	1.0	0.3
	339	0.6	0.2	3.0	1.3	3.7	3.4	1.3	2.4	0.5
	354	2.6	0.3	0.6	0.2	0.5	0.4	0.6	0.8	0.4
	Total	**10.1**	**7.4**	**15.7**	**3.4**	**10.1**	**8.5**	**6.8**	**6.2**	**3.2**
101-150	333	0.0	0.0	+	+	+	+	+	+	+
	336	+	+	+	+	+	+	+	0.2	+
	355	0.2	+	+	+	0.1	+	0.1	0.1	+
	Total	**0.2**	+	+	+	**0.1**	+	**0.1**	**0.3**	+
151-200	334	+	+	+	+	+	+	+	+	+
	335	+	+	+	+	+	0.0	+	+	+
	356	+	0.0	+	+	0.0	+	+	+	+
	Total	+	+	+	+	+	+	+	+	+
201-300	717	-	-	-	-	-	-	+	0.0	+
	719	-	-	-	-	-	-	+	+	+
	721	-	-	-	-	-	-	+	+	+
	Total	-	-	-	-	-	-	+	+	+
301-400	718	-	-	-	-	-	-	0.0	0.0	0.0
	720	-	-	-	-	-	-	0.0	+	+
	722	-	-	-	-	-	-	+	+	+
	Total	-	-	-	-	-	-	+	+	+
Grand Total		**76.5**	**48.1**	**71.7**	**50.5**	**43.8**	**52.7**	**34.2**	**23.2**	**18.9**

TABLE 16 ABUNDANCE (MILLIONS) OF A.PLAICE FROM SPRING SURVEYS IN DIV. 3L.

AGE	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.1	0.0	0.0	0.6	0.5	0.3	0.5	0.4	1.3	0.4	0.1	0.0	0.0	0.1	0.3	0.2	0.1	0.0	0.1	0.0	0.1
3	1.6	0.3	1.0	0.2	2.3	7.4	2.4	10.7	0.9	4.1	4.1	2.6	0.0	0.5	0.2	0.6	1.0	1.0	0.2	0.2	0.1	0.1
4	9.4	10.7	8.2	3.6	3.7	14.1	10.6	15.9	12.9	7.3	4.4	9.6	0.4	1.7	1.5	2.7	4.7	4.7	3.7	0.8	0.3	0.5
5	38.7	22.3	39.4	5.5	9.8	15.0	34.5	61.0	42.0	39.9	15.7	10.6	1.5	9.2	6.5	13.2	19.2	12.3	9.6	7.1	2.8	2.0
6	58.4	50.5	45.6	21.0	27.0	16.5	70.8	70.8	71.0	77.4	45.5	30.1	16.5	29.5	40.0	50.6	58.6	49.1	18.5	16.1	5.5	7.9
7	117.1	74.6	62.3	34.7	49.7	52.1	131.4	111.7	105.3	100.7	66.2	56.5	64.5	83.2	101.1	119.5	108.9	76.3	41.2	14.7	11.7	7.1
8	62.3	77.9	38.4	49.5	91.7	116.2	207.0	170.6	168.0	200.5	178.4	120.5	97.6	97.3	94.2	124.7	104.8	83.2	45.7	19.0	8.6	4.5
9	115.9	50.0	30.2	55.0	99.3	137.0	151.1	137.6	139.8	172.8	173.1	186.8	107.7	66.5	74.5	65.0	90.8	63.5	40.9	17.9	7.4	1.9
10	52.7	53.9	40.3	57.5	87.0	144.2	155.7	105.6	123.7	113.1	106.7	152.9	60.4	42.0	35.9	35.9	32.6	26.0	28.6	9.7	3.7	1.1
11	47.8	32.4	34.6	32.4	44.5	92.0	68.0	36.3	62.6	50.1	57.7	90.5	27.7	22.9	14.7	12.1	17.8	13.4	10.0	5.7	1.5	0.5
12	44.7	34.3	29.8	28.7	32.6	54.0	45.8	25.3	27.0	32.1	23.1	39.8	17.3	11.6	9.9	10.5	10.9	7.7	5.2	3.6	0.8	0.2
13	33.6	16.0	16.2	16.9	15.8	25.7	19.0	11.2	9.9	16.6	10.6	21.5	6.5	6.7	6.4	5.0	5.5	4.3	3.3	1.4	0.3	0.1
14	23.4	12.9	11.3	9.2	8.8	7.3	7.2	7.2	5.3	6.3	3.7	10.4	3.9	3.3	2.4	2.1	3.2	2.6	1.3	0.8	0.2	0.0
15	11.7	10.6	4.3	5.4	3.9	5.6	5.4	3.0	3.3	3.7	2.9	3.3	1.6	1.8	1.4	1.1	1.8	1.8	0.9	0.5	0.1	0.0
16	8.1	7.3	2.5	1.9	3.4	2.7	3.1	1.5	1.6	2.9	2.0	2.5	0.8	1.3	0.9	0.4	0.8	0.6	0.6	0.3	0.0	0.0
17	4.6	2.4	0.5	0.3	0.9	1.9	1.4	0.8	0.7	0.8	1.1	1.3	0.4	0.3	0.2	0.1	0.2	0.2	0.3	0.1	0.0	0.0
18	2.6	0.7	1.4	0.0	0.3	0.6	0.9	0.2	0.2	0.4	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
19	0.5	0.3	0.0	0.1	0.0	0.2	0.2	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1+	633.0	457.0	366.0	322.0	481.0	693.0	915.0	770.0	775.0	830.0	696.0	739.0	407.0	378.0	390.0	444.0	461.0	347.0	210.0	98.0	43.0	26.0
2+	633.0	456.9	366.0	322.0	481.0	693.0	915.0	770.0	774.8	829.9	695.8	739.0	407.0	378.0	390.0	443.9	461.0	347.0	210.0	98.0	43.0	26.0
3+	633.0	456.8	366.0	322.0	480.4	692.5	914.7	769.5	774.4	828.6	695.4	738.9	407.0	378.0	389.9	443.6	460.8	346.9	210.0	97.9	43.0	26.0
4+	631.4	456.5	365.0	321.8	478.1	685.1	912.3	758.8	773.5	824.5	691.3	736.3	407.0	377.5	389.7	443.0	459.8	345.9	209.8	97.7	42.9	25.9
5+	622.0	445.9	356.7	318.2	474.5	671.0	901.7	742.9	760.6	817.2	686.9	726.7	406.6	375.8	388.2	440.3	455.1	341.2	206.1	96.9	42.6	25.4
6+	583.3	423.6	317.3	312.7	464.7	656.0	867.2	681.9	718.6	777.4	671.2	716.1	405.0	366.6	381.7	427.1	435.9	328.9	196.5	89.8	39.8	23.4
7+	524.9	373.1	271.7	291.7	437.7	639.6	796.4	611.1	647.6	700.0	625.7	686.0	388.6	337.1	341.7	376.5	377.2	279.9	178.0	73.7	34.3	15.5
8+	407.9	298.6	209.4	257.0	388.0	587.5	664.9	499.4	542.2	599.3	559.5	629.5	324.0	253.9	240.6	257.0	268.4	203.6	136.8	59.1	22.6	8.4
9+	345.5	220.7	171.0	207.5	296.3	471.3	457.9	328.8	374.2	398.8	381.1	509.0	226.4	156.6	146.4	132.3	163.6	120.3	91.1	40.1	14.0	3.9
10+	229.5	170.7	140.8	152.5	197.1	334.2	306.8	191.2	234.5	226.0	208.0	322.3	118.7	90.1	71.9	67.3	72.8	56.8	50.2	22.2	6.6	2.0
11+	176.9	116.8	100.5	95.0	110.1	190.0	151.0	85.5	110.7	113.0	101.3	169.4	58.3	48.1	36.0	31.4	40.2	30.8	21.6	12.5	2.9	0.9
12+	129.1	84.3	66.0	62.6	65.6	97.9	83.0	49.2	48.1	62.8	43.6	78.9	30.7	25.2	21.3	19.3	22.4	17.4	11.6	6.8	1.4	0.4

TABLE 17 ABUNDANCE (MILLIONS) OF A.PLAICE FROM SPRING SURVEYS IN DIV. 3N.

AGE	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.2	0.1	0.0	0.9	0.2	0.1	0.4	0.4	0.1	1.0	0.6	0.1	0.1	0.1	0.9	0.2	0.3	0.1	0.0	0.0	0.0
3	2.8	0.4	0.4	0.9	4.9	3.1	1.6	5.2	1.2	0.7	4.9	1.8	1.0	1.8	0.7	3.9	2.4	2.7	1.6	0.2	0.2	0.6
4	2.9	2.3	1.0	2.6	9.7	5.6	9.5	13.9	2.8	2.1	7.5	6.6	2.5	8.2	2.9	7.2	5.5	18.5	9.6	1.8	1.4	7.3
5	4.9	5.6	5.4	5.4	8.3	12.1	14.4	42.9	11.0	6.1	5.2	7.5	5.8	8.6	7.8	7.0	6.0	10.0	24.2	9.1	2.5	8.1
6	3.2	8.6	9.5	10.2	7.6	12.1	28.6	61.1	18.6	13.0	12.2	7.9	11.4	11.3	10.2	10.6	5.4	7.9	6.2	11.4	5.6	8.5
7	11.7	5.0	11.1	11.3	13.6	12.0	25.3	69.6	29.5	26.4	41.2	8.8	14.0	9.6	9.6	10.5	5.7	6.7	3.7	3.9	5.1	9.6
8	8.0	8.4	8.2	10.6	9.3	15.0	22.3	38.3	33.3	22.2	41.9	15.9	13.3	10.7	7.6	8.8	6.2	8.6	3.4	2.6	2.1	9.2
9	13.7	10.2	5.4	7.0	5.3	9.7	18.3	17.4	18.1	17.1	30.8	17.8	14.9	10.3	7.6	8.7	5.9	8.0	4.6	2.8	1.4	3.5
10	13.7	13.6	7.9	7.3	3.0	8.9	11.8	17.8	13.7	9.5	20.3	11.5	16.7	11.0	7.2	6.2	4.7	3.5	2.8	3.0	0.7	1.7
11	12.5	8.9	9.2	5.1	2.7	4.8	9.1	7.7	5.7	4.8	8.9	6.4	7.9	8.4	4.0	3.8	2.7	2.6	2.2	1.9	0.6	1.1
12	9.3	6.5	6.4	3.3	1.5	5.1	5.2	5.2	3.0	3.4	5.3	3.7	5.2	5.0	3.3	2.9	1.9	2.2	1.4	1.1	0.4	0.4
13	4.5	4.3	4.5	3.2	1.9	3.4	2.9	2.5	1.2	1.7	3.0	1.2	3.2	2.6	2.3	2.4	1.6	1.8	1.1	1.0	0.1	0.2
14	3.0	3.2	1.3	1.2	0.8	1.8	2.1	1.3	1.0	1.2	1.0	1.7	1.8	1.6	1.2	1.8	1.1	1.4	1.2	0.6	0.1	0.2
15	2.0	1.2	1.2	1.3	0.7	2.2	1.0	1.1	0.9	0.9	1.9	0.9	1.5	1.3	1.2	1.6	1.1	1.6	1.3	0.6	0.2	0.1
16	2.0	0.9	1.0	0.5	0.5	1.3	0.7	0.3	0.4	0.7	0.9	0.9	1.4	0.4	0.7	0.9	0.5	0.6	0.8	0.4	0.2	0.1
17	0.7	0.2	1.0	0.2	0.1	0.7	0.2	0.2	0.1	0.8	0.5	0.8	0.7	0.1	0.5	0.4	0.4	0.5	0.4	0.3	0.0	0.1
18	1.6	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.4	0.4	0.3	0.0	0.1	0.2	0.2	0.2	0.2	0.1	0.0	0.0
19	0.7	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0
1+	97.0	80.0	74.0	70.0	71.0	98.0	153.0	285.0	141.0	111.0	187.0	95.0	102.0	91.0	67.0	78.0	52.0	77.0	65.0	41.0	20.7	50.7
2+	97.0	79.9	74.0	70.0	71.0	97.9	153.0	284.9	140.9	110.9	186.9	94.7	102.0	90.9	67.0	78.0	52.0	77.0	65.0	41.0	20.7	50.7
3+	97.0	79.7	73.9	70.0	70.1	97.7	152.9	284.5	140.5	110.8	185.9	94.1	101.9	90.8	66.9	77.1	51.8	76.7	64.9	41.0	20.6	50.7
4+	94.2	79.3	73.5	69.1	65.2	94.6	151.3	279.3	139.3	110.1	181.0	92.3	100.9	89.0	66.2	73.2	49.4	74.0	63.3	40.8	20.4	50.1
5+	91.3	77.0	72.6	66.5	55.4	89.0	141.8	265.5	136.5	108.0	173.4	85.7	98.3	80.8	63.3	65.9	43.8	55.5	53.7	39.0	19.0	42.8
6+	86.5	71.4	67.2	61.1	47.1	76.9	127.5	222.5	125.5	101.9	168.2	78.1	92.6	72.2	55.5	58.9	37.8	45.5	29.5	29.9	16.5	34.7
7+	83.3	62.8	57.6	50.9	39.5	64.8	98.8	161.5	106.9	88.9	156.0	70.2	81.2	60.9	45.3	48.3	32.3	37.7	23.3	18.5	10.9	26.2
8+	71.6	57.8	46.5	39.7	25.9	52.9	73.6	91.9	77.4	62.5	114.8	61.3	67.2	51.3	35.7	37.8	26.6	31.0	19.6	14.6	5.8	16.6
9+	63.6	49.4	38.3	29.1	16.6	37.9	51.3	53.6	44.1	40.4	73.0	45.4	53.9	40.7	28.2	29.1	20.4	22.4	16.1	12.0	3.7	7.4
10+	49.9	39.2	33.0	22.1	11.3	28.2	33.0	36.2	26.1	23.3	42.2	27.6	39.0	30.4	20.6	20.4	14.4	14.4	11.5	9.2	2.3	3.9
11+	36.2	25.6	25.1	14.8	8.3	19.3	21.3	18.3	12.3	13.8	21.9	16.2	22.2	19.4	13.4	14.2	9.7	11.0	8.7	6.1	1.6	2.2
12+	23.7	16.7	15.9	9.7	5.6	14.5	12.2	10.6	6.6	9.0	13.0	9.8	14.3	11.0	9.4	10.4	7.0	8.4	6.5	4.2	1.0	1.1

TABLE 18. ABUNDANCE (MILLIONS) OF A.PLAICE FROM SPRING SURVEYS IN DIV. 3O.

AGE	1973	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.4	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
2	1.3	0.1	0.2	0.4	0.3	0.9	0.8	2.5	0.7	0.1	0.0	0.1	0.3	0.1	0.0	0.2	0.0	0.2	0.0
3	9.1	2.2	2.4	1.9	1.5	4.6	2.2	11.9	1.9	0.1	0.4	0.7	0.9	0.8	1.1	0.5	1.3	1.5	0.5
4	5.4	5.4	3.9	9.8	4.3	9.8	5.4	7.9	3.9	0.4	1.3	2.4	3.1	1.4	2.8	6.3	2.2	1.7	3.4
5	12.9	7.8	12.3	28.2	8.1	18.1	4.7	18.5	4.2	2.7	4.3	3.2	8.3	2.2	4.2	14.5	11.0	1.7	4.1
6	16.8	12.0	22.0	37.1	12.4	21.8	8.7	25.0	6.1	8.0	4.7	5.3	13.0	5.3	11.6	10.9	12.3	8.2	6.5
7	21.6	23.8	30.2	39.7	16.5	37.0	46.4	49.6	15.6	15.8	11.1	9.4	17.1	7.1	15.7	15.2	11.9	7.1	11.3
8	13.2	13.2	43.3	19.7	16.0	39.1	48.6	90.9	26.3	24.6	17.7	11.4	18.7	10.6	14.0	14.1	9.3	7.4	10.0
9	11.6	14.7	25.9	19.4	8.7	28.5	29.0	91.3	23.6	19.1	17.3	10.9	18.5	9.8	13.0	13.8	8.7	6.0	5.8
10	11.4	15.0	18.9	11.6	7.4	19.3	18.9	46.2	20.1	16.2	18.9	9.7	13.1	9.1	8.1	9.2	5.7	4.8	3.7
11	8.0	13.4	10.9	8.8	3.5	7.8	9.7	17.3	8.8	7.3	13.3	6.4	6.9	6.1	4.0	5.6	4.6	3.0	1.7
12	7.2	8.6	9.1	6.5	2.3	5.9	5.5	9.2	6.2	4.5	7.6	5.6	5.0	4.9	4.1	5.1	2.6	1.7	0.9
13	4.1	5.7	7.2	2.7	2.1	2.4	2.5	3.2	2.5	2.7	3.1	3.1	3.4	3.1	2.3	3.2	1.6	1.3	0.4
14	3.1	3.5	4.4	1.6	0.9	1.4	1.0	2.1	0.9	1.9	2.8	1.3	2.1	2.2	1.1	2.2	1.6	0.6	0.3
15	2.1	2.8	3.8	1.1	0.5	0.9	1.2	1.2	0.9	2.3	2.2	1.3	1.7	1.3	1.2	1.1	1.0	1.0	0.2
16	1.3	0.6	2.1	0.4	0.4	0.8	1.0	0.9	0.7	1.4	0.9	0.5	1.0	1.3	1.0	0.9	0.6	0.7	0.3
17	1.1	0.2	1.6	0.1	0.0	0.3	0.4	0.7	0.4	0.7	0.2	0.4	0.5	0.3	0.6	0.7	0.3	0.1	0.1
18	0.7	0.0	0.3	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.3	0.3	0.2	0.3	0.2	0.3	0.1
19	0.2	0.0	0.4	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0
1+	131.0	129.0	199.0	189.0	85.0	199.0	186.0	379.0	123.0	108.0	106.0	72.0	114.0	66.0	85.0	104.0	75.0	47.4	49.3
2+	130.9	129.0	198.9	189.0	85.0	198.9	186.0	378.6	122.9	108.0	106.0	72.0	113.9	66.0	85.0	104.0	75.0	47.4	49.3
3+	129.6	128.9	198.7	188.6	84.7	198.0	185.2	376.2	122.2	107.9	106.0	71.9	113.6	65.9	85.0	103.8	75.0	47.2	49.3
4+	120.6	126.7	196.3	186.7	83.2	193.4	183.0	364.2	120.3	107.8	105.6	71.2	112.7	65.1	83.9	103.3	73.7	45.7	48.8
5+	115.2	121.3	192.4	177.0	78.9	183.6	177.6	356.4	116.4	107.4	104.3	68.8	109.6	63.7	81.1	97.0	71.5	44.0	45.4
6+	102.3	113.4	180.1	148.8	70.8	165.4	173.0	337.9	112.2	104.7	100.0	65.6	101.4	61.5	76.9	82.5	60.5	42.3	41.3
7+	85.6	101.5	158.1	111.6	58.5	143.6	164.3	312.9	106.1	96.7	95.3	60.3	88.3	56.2	65.3	71.6	48.2	34.1	34.8
8+	63.9	77.7	127.9	71.9	42.0	106.7	117.9	263.2	90.5	80.9	84.2	50.9	71.2	49.1	49.6	56.4	36.3	27.0	23.5
9+	50.8	64.5	84.6	52.2	25.9	67.6	69.4	172.4	64.2	56.2	66.5	39.5	52.5	38.5	35.6	42.3	27.1	19.6	13.5
10+	39.2	49.8	58.6	32.8	17.2	39.1	40.4	81.0	40.7	37.1	49.1	28.5	34.0	28.7	22.6	28.5	18.4	13.6	7.7
11+	27.8	34.8	39.8	21.2	9.9	19.7	21.5	34.8	20.6	20.9	30.2	18.8	20.9	19.6	14.5	19.3	12.7	8.8	4.0
12+	19.8	21.4	28.8	12.4	6.4	11.9	11.8	17.4	11.8	13.6	16.9	12.4	14.0	13.5	10.5	13.7	8.1	5.8	2.3

TABLE 19 ABUNDANCE (MILLIONS) OF A.PLAICE FROM SPRING SURVEYS IN DIV. 3LNO.

AGE	1973	1975	1976	1977	1978	1979	1980	1981	1982	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.1	0.0	0.2	0.0	0.1	0.4	0.2	0.7	0.4	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
2	1.4	1.6	0.9	0.8	1.2	1.7	2.2	3.9	1.4	0.2	0.1	0.3	1.5	0.5	0.4	0.3	0.1	0.3	0.1
3	10.5	9.4	12.9	5.9	17.4	6.7	7.0	21.0	6.3	1.1	2.7	1.6	5.4	4.2	4.8	2.3	1.7	1.8	1.2
4	14.6	18.8	23.6	29.8	34.0	25.5	14.8	19.8	20.1	3.4	11.2	6.8	13.0	11.6	26.1	19.6	4.8	3.4	11.2
5	57.7	26.0	39.4	77.1	112.0	71.2	50.7	39.5	22.3	10.0	22.1	17.5	28.5	27.5	26.4	48.3	27.1	7.0	14.2
6	71.9	46.6	50.5	136.6	144.3	111.4	99.0	82.7	44.1	35.9	45.5	55.5	74.2	69.4	68.5	35.6	39.7	19.3	22.9
7	95.1	87.1	94.3	196.4	197.8	171.8	173.4	157.0	80.9	94.3	103.9	120.1	147.1	121.7	98.7	60.1	30.5	23.9	28.0
8	59.7	114.3	174.5	249.0	224.9	240.3	271.2	311.2	162.6	135.5	125.7	113.2	152.2	121.6	105.8	63.2	30.9	18.1	23.7
9	47.2	119.2	172.7	188.8	163.7	186.3	218.8	295.2	228.1	141.8	94.1	93.0	92.2	106.5	84.5	59.3	29.4	14.8	11.2
10	59.6	104.9	172.1	179.1	130.9	156.8	141.5	173.2	184.4	93.3	71.9	52.8	55.2	46.5	37.6	40.7	18.5	9.2	6.5
11	51.7	60.6	107.7	85.9	47.5	76.2	64.6	83.9	105.7	42.9	44.6	25.1	22.8	26.6	20.0	17.8	12.2	5.1	3.3
12	43.3	42.7	68.2	57.5	32.7	35.9	41.0	37.7	49.7	26.9	24.2	18.8	18.4	17.7	14.0	11.7	7.4	2.9	1.5
13	24.9	23.3	36.2	24.6	15.8	13.5	20.7	16.8	25.2	12.4	12.4	11.8	10.8	10.2	8.4	7.7	4.0	1.7	0.7
14	15.8	13.2	13.4	10.9	9.4	7.7	8.5	6.8	13.0	7.6	7.7	4.9	6.0	6.5	5.1	4.7	3.0	0.9	0.5
15	7.6	7.5	11.6	7.5	4.6	5.1	5.8	6.0	5.1	5.4	5.3	3.9	4.4	4.2	4.6	3.3	2.1	1.3	0.3
16	4.7	4.4	6.0	4.2	2.2	2.8	4.6	3.8	4.1	3.6	2.6	2.1	2.3	2.6	2.2	2.3	1.3	0.9	0.4
17	2.6	1.2	4.2	1.7	1.0	1.1	2.0	2.3	2.5	1.8	0.6	1.1	1.0	0.9	1.3	1.4	0.7	0.1	0.2
18	2.4	0.4	1.0	1.1	0.4	0.3	0.8	0.7	0.7	0.7	0.2	0.3	0.6	0.5	0.5	0.5	0.3	0.3	0.1
19	0.5	0.1	0.6	0.2	0.1	0.2	0.3	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.0
1+	571.0	681.0	990.0	1257.0	1140.0	1115.0	1127.0	1262.0	957.0	617.0	575.0	529.0	636.0	579.0	509.0	379.0	214.0	111.1	126.0
2+	570.9	681.0	989.8	1257.0	1139.9	1114.6	1126.8	1261.3	956.6	617.0	574.9	529.0	635.8	579.0	509.0	379.0	214.0	111.1	126.0
3+	569.5	679.4	988.9	1256.2	1138.7	1112.9	1124.6	1257.5	955.2	616.8	574.8	528.7	634.3	578.5	508.6	378.7	213.9	110.8	125.9
4+	559.0	670.0	976.0	1250.3	1121.3	1106.2	1117.6	1236.5	948.9	615.7	572.1	527.1	628.9	574.3	503.8	376.4	212.2	109.0	124.7
5+	544.5	651.2	952.4	1220.5	1087.3	1080.7	1102.9	1216.7	928.8	612.3	560.9	520.3	615.8	562.6	477.8	356.8	207.3	105.6	113.5
6+	486.8	625.2	913.0	1143.4	975.3	1009.5	1052.2	1177.3	906.4	602.3	538.8	502.8	587.3	535.2	451.3	308.5	180.2	98.6	99.3
7+	414.9	578.7	862.6	1006.8	831.1	898.1	953.2	1094.5	862.3	566.4	493.3	447.3	513.1	465.8	382.8	272.9	140.5	79.3	76.4
8+	319.9	491.6	768.3	810.4	633.2	726.3	779.8	937.6	781.4	472.1	389.4	327.2	366.1	344.1	284.1	212.7	110.0	55.4	48.4
9+	260.2	377.3	593.8	561.4	408.3	486.0	508.5	626.4	618.7	336.5	263.7	214.0	213.9	222.5	178.3	149.5	79.1	37.3	24.7
10+	212.9	258.1	421.1	372.6	244.6	299.6	289.7	331.2	390.6	194.8	169.6	121.0	121.8	116.0	93.8	90.2	49.7	22.5	13.5
11+	153.4	153.2	249.0	193.5	113.7	142.8	148.2	158.0	206.1	101.5	97.7	68.2	66.5	69.5	56.2	49.5	31.3	13.3	7.0
12+	101.7	92.6	141.3	107.6	66.2	66.7	83.6	74.0	100.4	58.6	53.1	43.1	43.7	42.9	36.3	31.7	19.1	8.2	3.7

Table 20. Mean weight (kg) of American plaice per tow, by stratum, from R.V. surveys (fall) in Division 3L. Numbers in parentheses are the number of successful 30-minute tows in each stratum. The stratified mean weight per tow (kg/30 min.) and the biomass estimates (t x 10^{-3}) are given at the bottom of the table.

Stratum	1981 ATC 323-325	1982 ATC 333, 334	1983 WT 7-9	1984 WT 16-18	1985 WT 37-39	1986 AN 72	1987 WT 65	1988 WT 78	1989 WT 87	1990 WT 101	1991 WT 113-115	1992 WT 128-130	1993 WT 144-146
328	-	-	-	50.1(4)	99.5(8)	90.1(6)	15.5(4)	153.0(7)	15.2(7)	9.4(5)	1.0(3)	3.1(3)	1.1(3)
341	8.2(3)	18.2(4)	121.3(4)	110.8(5)	21.6(7)	16.7(7)	262.4(9)	127.2(8)	113.1(8)	21.7(6)	3.0(3)	3.7(3)	0.1(3)
342	109.7(3)	44.8(3)	19.5(4)	162.5(2)	84.7(3)	4.4(3)	30.6(3)	19.2(3)	26.3(3)	194.6(2)	0.3(2)	1.5(3)	2.6(3)
343	50.9(4)	-	483.2(3)	53.3(4)	932.5(3)	17.2(3)	15.7(3)	28.5(3)	1.3(3)	8.7(3)	0.3(3)	0.3(2)	0.4(3)
344	227.3(4)	106.2(3)	70.7(6)	193.0(6)	93.8(9)	28.2(7)	46.3(4)	23.6(7)	124.6(7)	15.4(6)	0.9(2)	1.5(2)	1.2(2)
345	10.5(4)	17.4(6)	13.6(8)	48.4(7)	24.4(9)	12.5(4)	14.8(2)	24.1(7)	21.0(7)	16.9(5)	2.4(4)	5.0(4)	7.4(3)
346	13.0(3)	4.3(4)	10.8(5)	11.5(6)	6.5(5)	20.9(3)	4.3(4)	8.7(5)	11.5(4)	17.5(3)	16.1(15)	12.7(14)	6.4(11)
347	324.3(3)	235.9(4)	134.7(6)	216.5(6)	52.1(4)	30.7(4)	40.3(2)	191.5(5)	70.5(5)	93.2(2)	2.9(4)	1.9(2)	1.2(4)
348	114.1(6)	126.8(5)	112.3(11)	201.4(11)	43.4(14)	64.1(5)	46.7(9)	101.2(10)	45.3(9)	43.6(11)	0.8(4)	1.0(4)	-
349	20.1(7)	27.5(5)	113.1(9)	81.7(14)	21.3(10)	16.8(9)	45.8(10)	77.1(9)	15.4(10)	15.5(7)	8.3(5)	0.5(5)	2.6(3)
350	8.3(6)	4.3(2)	72.1(8)	128.9(12)	57.7(9)	11.5(11)	15.0(9)	56.4(10)	18.0(10)	47.4(8)	12.4(16)	4.5(4)	2.7(3)
363	65.5(4)	34.3(3)	253.7(3)	54.9(8)	48.0(10)	44.3(7)	45.0(9)	37.0(10)	29.8(9)	28.5(8)	23.8(17)	10.2(25)	1.8(3)
364	254.2(9)	114.7(11)	95.2(11)	254.6(10)	114.4(18)	86.0(5)	104.1(14)	87.5(14)	41.4(11)	108.0(12)	51.9(4)	9.1(5)	6.6(3)
365	242.8(4)	284.0(4)	198.7(5)	67.9(4)	136.6(8)	123.5(5)	98.2(6)	91.6(5)	30.3(4)	56.3(4)	12.0(3)	7.0(3)	6.8(3)
366	318.3(3)	19.3(6)	50.8(4)	39.7(11)	62.4(9)	205.5(4)	10.1(7)	67.8(7)	27.8(7)	140.4(6)	15.1(21)	9.9(24)	4.6(14)
368	0.0(2)	1.5(2)	-	0.0(2)	1.4(2)	5.9(2)	2.8(2)	0.4(2)	5.3(2)	0.6(2)	39.5(6)	57.5(10)	5.2(8)
369	218.5(2)	27.9(4)	129.4(6)	76.4(7)	67.3(6)	19.4(3)	35.5(4)	121.1(5)	44.3(5)	157.1(4)	176.2(9)	18.6(8)	14.3(7)
370	121.0(4)	88.2(6)	121.0(6)	145.8(7)	34.3(9)	145.3(2)	61.4(6)	23.6(7)	19.5(6)	28.1(5)	13.9(3)	12.1(3)	7.2(3)
371	149.9(4)	97.3(5)	180.4(5)	110.7(7)	156.9(7)	26.3(3)	61.4(5)	53.6(6)	12.6(4)	40.3(5)	16.7(3)	3.5(3)	4.3(3)
372	20.3(5)	79.9(7)	102.5(4)	74.0(13)	68.3(17)	37.5(9)	58.4(13)	43.0(13)	13.9(12)	53.0(10)	28.5(26)	11.0(24)	3.5(17)
384	63.2(3)	176.9(4)	105.0(3)	210.8(6)	92.6(8)	100.0(5)	111.8(6)	48.9(6)	36.8(5)	113.4(4)	40.2(18)	6.5(19)	6.3(8)
385	78.5(8)	128.4(8)	107.1(5)	96.5(12)	30.0(12)	86.1(8)	127.9(9)	61.7(13)	10.4(11)	30.6(7)	11.4(5)	17.7(5)	5.3(3)
386	121.8(3)	123.0(4)	-	99.0(8)	123.6(5)	31.4(4)	41.3(4)	209.5(5)	41.8(5)	36.1(4)	43.2(3)	26.7(3)	6.4(3)
387	2.3(2)	0.3(3)	-	0.7(3)	0.7(4)	0.9(2)	0.7(3)	4.0(4)	0.5(3)	0.4(3)	11.2(5)	15.3(3)	6.2(3)
388	-	0.0(3)	-	0.0(2)	14.0(2)	-	2.0(2)	10.0(2)	2.5(2)	2.0(2)	1.6(3)	3.1(3)	3.3(3)
389	-	25.1(4)	-	103.1(6)	183.0(5)	3.9(4)	82.0(4)	49.6(4)	93.3(4)	21.7(3)	14.3(3)	6.7(3)	11.9(3)
390	38.5(3)	87.8(4)	72.7(3)	89.5(3)	97.2(7)	26.8(6)	42.0(8)	18.6(8)	7.7(7)	17.5(6)	19.6(3)	24.2(3)	13.0(3)
391	-	37.0(2)	25.0(2)	233.8(2)	105.8(2)	37.3(2)	24.5(2)	27.5(2)	15.5(2)	7.6(2)	43.7(3)	7.1(3)	15.8(3)
392	-	5.1(2)	4.7(2)	10.5(2)	6.8(2)	0.9(2)	11.0(2)	9.0(2)	8.0(2)	13.3(2)	9.1(3)	0.8(3)	2.0(3)
729	-	-	-	3.3(2)	4.5(2)	0.0(2)	-	-	-	3.2(2)	1.5(3)	0.9(2)	0.7(3)
730	-	-	-	0.0(2)	0.0(2)	-	-	-	-	-	0.0(2)	0.0(2)	0.6(3)
731	-	-	-	0.0(2)	1.0(2)	-	-	-	-	0.1(2)	0.1(3)	0.1(3)	0.5(3)
732	-	-	-	0.0(2)	0.0(2)	-	-	-	-	0.0(2)	0.2(2)	0.6(2)	0.3(2)
733	-	-	-	0.0(4)	0.7(3)	-	-	-	-	0.3(2)	0.3(3)	6.9(3)	3.7(3)
734	-	-	-	0.0(3)	0.0(2)	-	-	-	-	0.0(2)	0.0(2)	0.0(2)	1.2(2)
735	-	2.3(2)	-	0.0(3)	0.2(2)	20.6(2)	-	-	-	-	14.4(3)	13.2(3)	9.1(3)
736	-	-	0.0(2)	-	6.8(2)	2.1(2)	-	-	-	6.4(2)	17.5(2)	8.3(2)	13.5(3)
Mean (#sets)	108.2(99)	78.6(120)	110.8(125)	108.4(208)	75.7(231)	52.7(141)	61.1(165)	68.6(189)	33.7(174)	47.1(161)	19.9(219)	8.6(215)	4.9(153)
Biomass (Total)	273.3	206.4	268.0	313.8	219.2	146.7	168.7	189.5	92.9	135.3	57.8	25.1	13.5

Table 21. Biomass estimates ('000 t) of A. plaice, by stratum and depth zone, from Canadian fall surveys in Div. 3L in 1990-1993.

Depth	Stratum	1990	1991	1992	1993
31-50	350	7.4	1.9	0.7	0.4
	363	3.8	3.2	1.4	0.2
	371	3.4	1.4	0.3	0.4
	372	9.8	5.3	2.0	0.6
	384	9.5	3.4	0.5	0.5
	Total	**33.9**	**15.2**	**4.9**	**2.1**
51-100	328	1.1	0.1	0.3	0.1
	341	2.6	0.4	0.4	+
	342	8.5	+	0.1	0.1
	343	0.3	+	+	+
	348	6.9	0.1	0.2	-
	349	2.5	1.3	0.1	0.4
	364	22.8	11.0	1.9	1.4
	365	4.4	0.9	0.5	0.5
	370	2.8	1.4	1.2	0.7
	385	5.4	2.0	3.1	0.9
	390	1.9	2.2	2.7	1.4
	Total	**59.2**	**19.4**	**10.5**	**5.5**
101-150	344	1.7	0.1	0.2	0.1
	347	6.9	0.2	0.1	0.1
	366	14.7	1.6	1.0	0.5
	369	11.3	12.7	1.3	1.0
	386	2.7	3.2	2.0	0.5
	389	1.3	0.9	0.4	0.7
	391	0.2	0.9	0.1	0.3
	Total	**38.8**	**19.6**	**5.1**	**3.2**
151-200	345	1.8	0.3	0.5	0.8
	346	1.1	1.0	0.8	0.4
	368	+	1.0	1.4	0.1
	387	+	0.6	0.8	0.3
	388	0.1	+	0.1	0.1
	392	0.1	0.1	+	+
	Total	**3.1**	**3.0**	**3.6**	**1.7**
201-300	729	+	+	+	+
	731	+	+	+	+
	733	+	+	0.2	0.1
	735	-	0.3	0.3	0.2
	Total	+	**0.3**	**0.5**	**0.3**
301-400	730	-	0.0	0.0	+
	732	0.0	+	+	+
	734	0.0	0.0	0.0	+
	736	0.1	0.2	0.1	0.2
	Total	**0.1**	**0.2**	**0.1**	**0.2**
Grand Total		135.1	57.7	24.7	13.0

Table 22. Abundance index (millions) of A.plaice from fall surveys in Div. 3L.

3L

AGE	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
1	0.9	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	1.1	1.8	0.2	0.0	0.0	0.8	1.4	0.3	0.0	0.1	0.1	0.0	0.2
3	8.3	5.7	2.6	0.1	0.3	1.9	2.0	3.1	1.4	1.4	0.8	0.7	1.9
4	12.4	19.6	9.8	2.9	1.6	10.5	5.1	8.1	13.2	18.1	5.4	3.0	5.6
5	22.2	35.7	52.9	18.7	14.3	33.3	24.3	30.4	23.1	47.1	23.6	12.3	11.3
6	45.0	80.2	120.9	66.0	69.2	92.6	65.9	81.1	54.6	67.8	37.2	29.3	18.0
7	176.2	142.7	218.3	181.5	170.3	92.9	100.8	110.1	64.4	78.1	30.2	21.4	16.1
8	163.7	189.9	185.7	207.4	134.2	91.8	87.8	108.7	55.2	57.4	26.9	12.5	5.6
9	139.4	110.9	89.7	122.5	93.9	53.6	62.3	66.1	24.0	46.9	20.2	5.3	2.6
10	136.4	61.1	49.8	81.2	37.3	22.6	20.2	25.8	9.3	19.7	9.7	2.9	0.9
11	58.3	30.9	20.9	32.0	16.2	9.0	11.0	10.1	5.3	9.5	4.5	1.1	0.3
12	42.2	13.6	15.2	18.8	11.2	4.8	5.6	6.0	1.9	4.8	2.8	0.9	0.1
13	16.1	4.9	9.0	9.1	5.9	2.4	3.0	3.1	1.7	3.0	1.1	0.3	0.0
14	4.5	1.9	1.4	4.3	1.9	1.1	1.4	1.6	0.6	2.1	0.8	0.1	0.0
15	1.2	2.0	1.6	2.8	1.2	0.4	0.9	1.0	0.2	0.8	0.5	0.1	0.1
16	0.3	0.8	0.8	1.2	0.5	0.1	0.2	0.3	0.2	0.3	0.1	0.0	0.0
17	0.0	0.3	0.2	0.3	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0
1+	828.0	702.0	779.0	749.0	558.0	418.0	392.0	456.0	255.0	357.0	164.0	90.0	62.7
2+	827.1	701.9	779.0	749.0	558.0	417.9	392.0	456.0	255.0	357.0	164.0	90.0	62.7
3+	826.0	700.1	778.8	749.0	558.0	417.1	390.6	455.7	255.0	356.9	163.9	89.9	62.5
4+	817.8	694.5	776.2	748.9	557.7	415.2	388.6	452.6	253.6	355.5	163.1	89.2	60.6
5+	805.3	674.8	766.5	746.0	556.1	404.7	383.5	444.5	240.4	337.4	157.7	86.2	55.0
6+	783.1	639.1	713.6	727.3	541.8	371.4	359.2	414.1	217.3	290.3	134.1	73.9	43.7
7+	738.2	558.9	592.7	661.3	472.6	278.8	293.3	333.0	162.7	222.5	96.9	44.6	25.7
8+	562.0	416.2	374.4	479.8	302.3	185.9	192.6	222.8	98.4	144.5	66.7	23.2	9.6
9+	398.3	226.3	188.6	272.3	168.1	94.1	104.8	114.1	43.2	87.1	39.8	10.7	4.0
10+	259.0	115.4	98.9	149.8	74.3	40.5	42.4	48.0	19.2	40.2	19.5	5.4	1.4
11+	122.6	54.3	49.1	68.6	37.0	17.9	22.3	22.2	9.9	20.5	9.9	2.5	0.5
12+	64.3	23.4	28.2	36.5	20.8	8.9	11.3	12.1	4.6	11.0	5.4	1.4	0.2

Table 23. Biomass estimates ('000 t) of A. plaice, by stratum and depth zone, from Canadian fall surveys in Div. 3N in 1990-1993.

Depth	Stratum	1990	1991	1992	1993
≤ 30	375	1.0	3.5	-	1.7
	376	1.9	1.3	0.6	3.3
	Total	**2.9**	**4.8**	**0.6**	**5.0**
31-50	360	2.9	7.0	11.6	6.7
	361	0.9	3.4	1.1	3.0
	362	5.9	10.3	4.3	1.7
	373	4.2	8.0	0.5	0.6
	374	1.4	3.3	-	0.7
	383	0.7	0.3	-	0.1
	Total	**16.0**	**32.3**	**17.5**	**12.8**
51-100	359	2.8	0.8	5.1	3.5
	377	0.2	-	0.9	0.8
	382	2.2	1.0	2.6	3.7
	Total	**5.2**	**1.8**	**8.6**	**8.0**
101-150	358	0.1	0.4	0.6	1.5
	378	0.5	0.4	0.4	1.4
	381	-	0.2	-	0.8
	Total	**0.6**	**1.0**	**1.0**	**3.7**
151-200	357	0.4	+	+	0.2
	379	+	-	+	0.3
	380	-	+	-	0.1
	Total	**0.4**	**+**	**+**	**0.6**
201-300	723	-	+	-	0.1
	725	-	-	0.1	0.4
	727	-	-	-	+
	Total	**-**	**+**	**0.1**	**0.5**
301-400	724	-	+	-	+
	726	-	-	-	+
	728	-	-	-	-
	Total	**-**	**+**	**-**	**+**
Grand Total		25.1	39.9	27.8	30.6

Table 24. Biomass estimates ('000 t) of A. plaice, by stratum and depth zone, from Canadian fall surveys in Div. 3Ø in 1990-1993.

Depth	Stratum	1990	1991	1992	1993
31-50	330	11.0	7.7	7.0	2.8
	331	0.9	1.4	1.0	2.8
	338	4.9	2.6	2.8	2.6
	340	1.6	19.8	5.0	4.2
	351	11.1	5.3	1.5	3.6
	352	4.2	5.4	5.5	3.7
	353	1.3	2.0	3.4	3.7
	Total	**35.0**	**44.2**	**26.2**	**23.4**
51-100	329	13.8	3.4	1.6	1.1
	332	2.3	0.5	1.0	2.0
	337	1.9	1.7	0.7	1.4
	339	2.7	3.1	1.2	3.2
	354	3.9	0.9	1.0	2.0
	Total	**24.6**	**9.6**	**5.5**	**9.7**
101-150	333	+	+	+	+
	336	+	0.1	+	+
	355	-	0.2	+	0.3
	Total	**+**	**0.3**	**+**	**0.3**
151-200	334	+	0.0	+	+
	335	+	+	+	+
	356	-	+	+	0.2
	Total	**+**	**+**	**+**	**0.2**
201-300	717	0.0	-	-	0.0
	719	0.0	0.0	-	+
	721	-	+	-	+
	Total	**0.0**	**+**	**-**	**+**
301-400	718	-	-	-	0.0
	720	-	-	-	+
	722	-	0.0	-	+
	Total	**-**	**0.0**	**-**	**+**
Grand Total		**59.6**	**54.1**	**31.7**	**33.6**

Table 25. Abundance indices (millions) of A.plaice from fall surveys in Div. 3N, 3O, and 3LNO combined.

3N

AGE	1990	1991	1992	1993
1	0.2	0.1	0.3	0.0
2	2.2	0.1	0.3	0.3
3	7.5	4.6	4.3	6.7
4	18.4	10.5	9.8	25.9
5	17.0	17.1	9.0	14.0
6	5.2	25.4	11.5	9.7
7	3.4	13.7	21.1	15.4
8	1.9	6.9	14.2	7.4
9	3.5	5.1	5.5	3.7
10	1.8	5.5	4.0	1.8
11	1.3	4.0	1.9	0.8
12	0.9	3.3	1.2	0.7
13	0.9	1.8	0.9	0.4
14	0.8	2.3	0.8	0.4
15	0.8	1.4	0.7	0.2
16	0.9	0.8	0.2	0.1
17	0.3	0.6	0.3	0.0
1+	67.0	103.2	86.0	87.5
2+	66.8	103.1	85.7	87.5
3+	64.6	103.0	85.4	87.2
4+	57.1	98.4	81.1	80.5
5+	38.7	87.9	71.3	54.6
6+	21.7	70.8	62.3	40.6
7+	16.5	45.4	50.8	30.9
8+	13.1	31.7	29.7	15.5
9+	11.2	24.8	15.5	8.1
10+	7.7	19.7	10.0	4.4
11+	5.9	14.2	6.0	2.6
12+	4.6	10.2	4.1	1.8

3O

AGE	1990	1991	1992	1993
1	0.4	0.0	0.0	0.0
2	0.5	0.7	0.0	0.5
3	1.4	3.2	2.4	3.7
4	6.3	4.4	5.0	12.9
5	8.8	13.9	6.0	11.3
6	12.1	17.6	15.0	12.4
7	16.3	17.6	15.1	18.1
8	16.6	10.8	11.3	14.0
9	11.4	13.4	7.8	6.0
10	8.2	9.7	4.6	3.2
11	5.0	6.4	2.4	1.4
12	3.7	3.0	1.9	1.5
13	2.8	3.2	0.8	0.8
14	2.1	1.6	0.9	0.7
15	1.3	1.2	0.4	0.3
16	1.3	0.6	0.4	0.4
17	0.6	0.2	0.1	0.1
1+	98.8	107.5	74.1	87.3
2+	98.4	107.5	74.1	87.3
3+	97.9	106.8	74.1	86.8
4+	96.5	103.6	71.7	83.1
5+	90.2	99.2	66.7	70.2
6+	81.4	85.3	60.7	58.9
7+	69.3	67.7	45.7	46.5
8+	53.0	50.1	30.6	28.4
9+	36.4	39.3	19.3	14.4
10+	25.0	25.9	11.5	8.4
11+	16.8	16.2	6.9	5.2
12+	11.8	9.8	4.5	3.8

3LNO

AGE	1990	1991	1992	1993
1	0.6	0.1	0.3	0.0
2	2.8	0.9	0.3	1.0
3	10.3	8.6	7.4	12.3
4	42.8	20.3	17.8	44.4
5	72.9	54.6	27.3	36.6
6	85.1	80.2	55.8	40.1
7	97.8	61.5	57.6	49.6
8	75.9	44.6	38.0	27.0
9	61.8	38.7	18.6	12.3
10	29.7	24.9	11.5	5.9
11	15.8	14.9	5.4	2.5
12	9.4	9.1	4.0	2.2
13	6.7	6.1	2.0	1.3
14	5.0	4.7	1.8	1.1
15	2.9	3.1	1.2	0.6
16	2.5	1.5	0.6	0.5
17	0.9	0.9	0.4	0.1
1+	522.8	374.7	250.1	237.6
2+	522.2	374.6	249.8	237.6
3+	519.4	373.7	249.4	236.5
4+	509.1	365.1	242.0	224.3
5+	466.3	344.8	224.2	179.9
6+	393.4	290.2	196.9	143.3
7+	308.3	210.0	141.1	103.2
8+	210.6	148.5	83.5	53.5
9+	134.7	103.9	45.5	26.5
10+	72.9	65.1	26.9	14.3
11+	43.2	40.3	15.4	8.4
12+	27.4	25.4	10.0	5.8

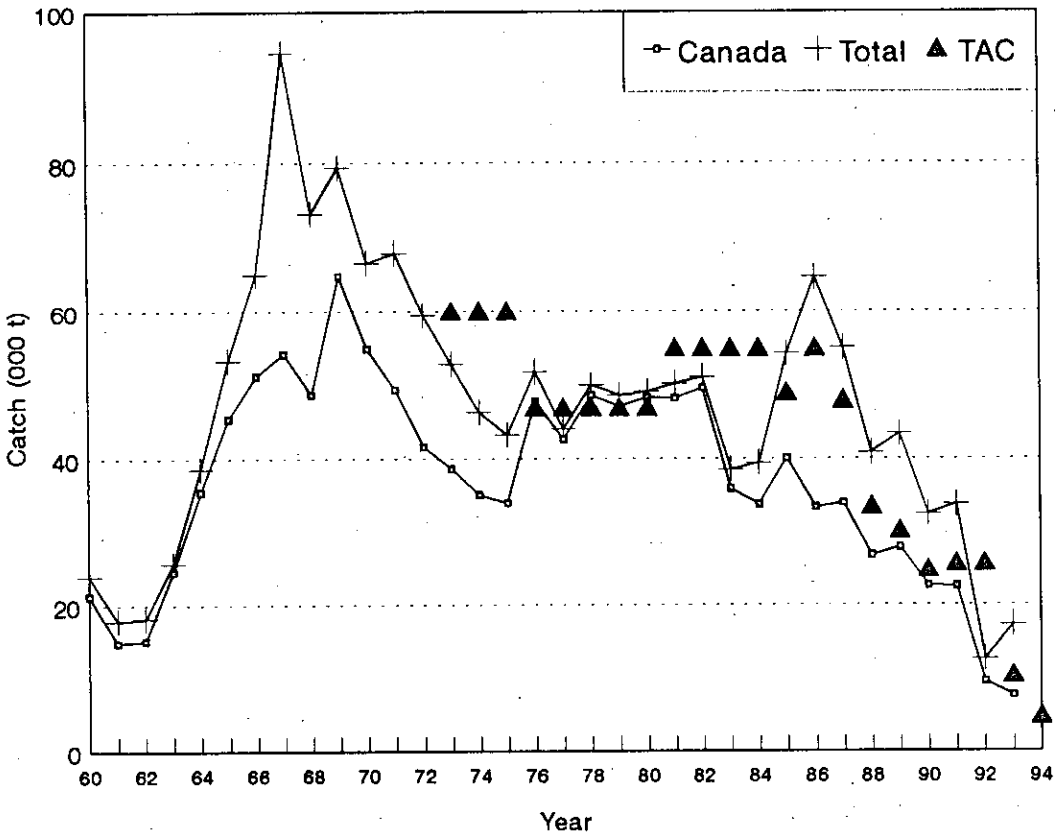

Fig. 1. Catches and TAC's of American plaice in Div. 3LNO.

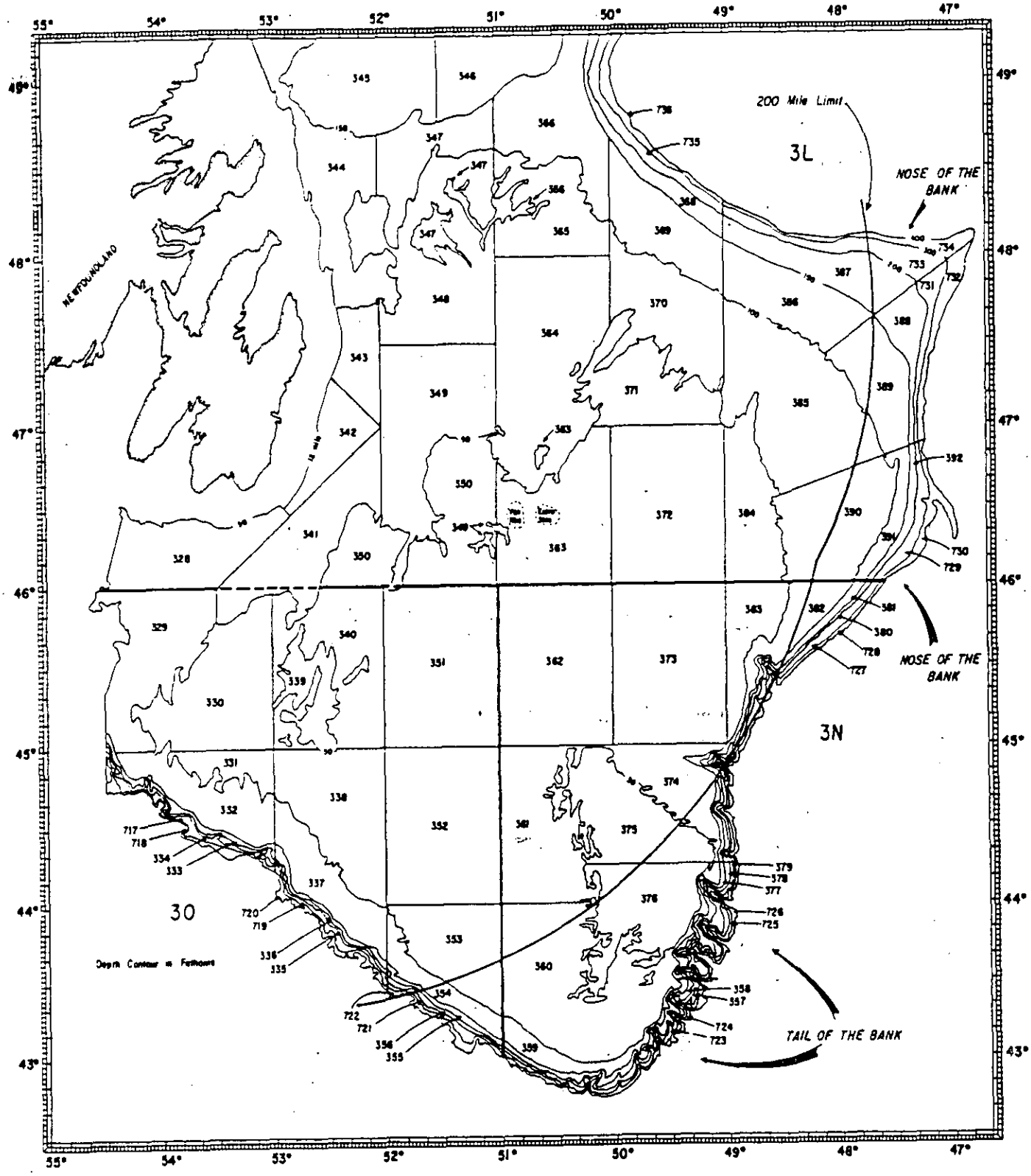

Fig. 2. Grand Banks, NAFO Div. 3LNO, showing the Canadian 200 mile limit in relation to the Nose and Tail of the Bank as well as the stratification scheme used in Canadian groundfish surveys.

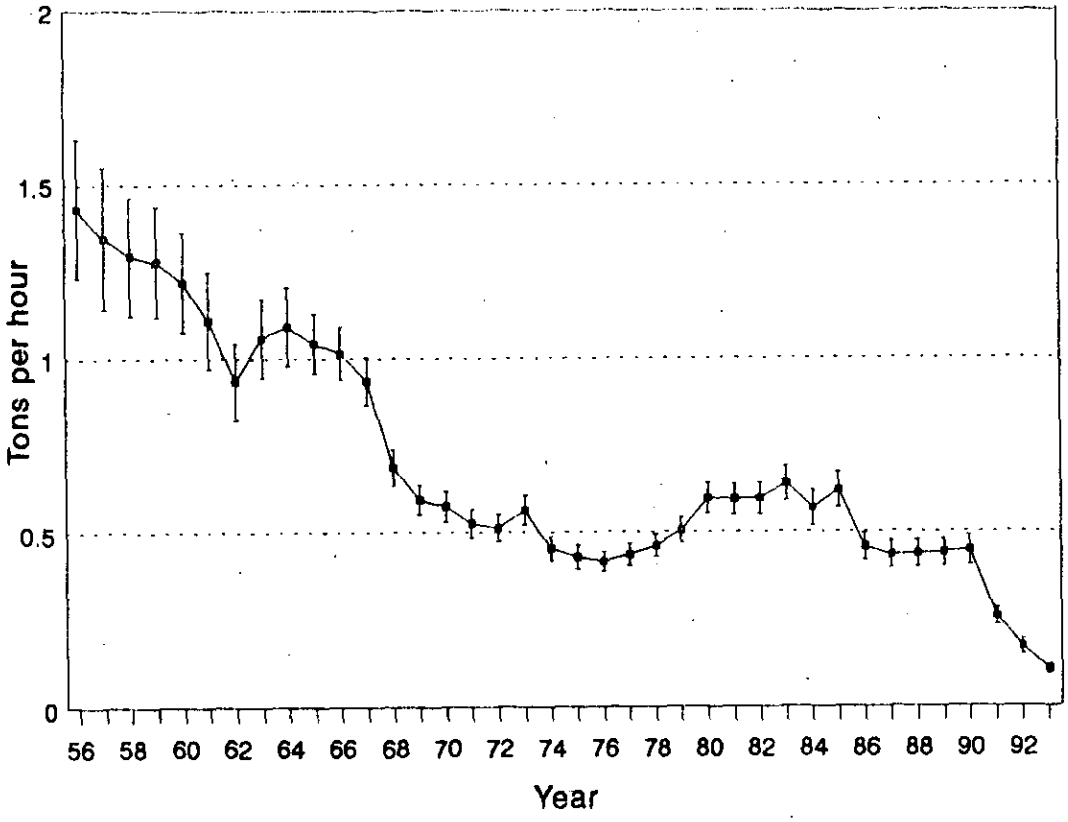

Fig. 3 Standardized CPUE with approximate 95% confidence interval for American plaice in Div. 3LNO from 1956-1993.

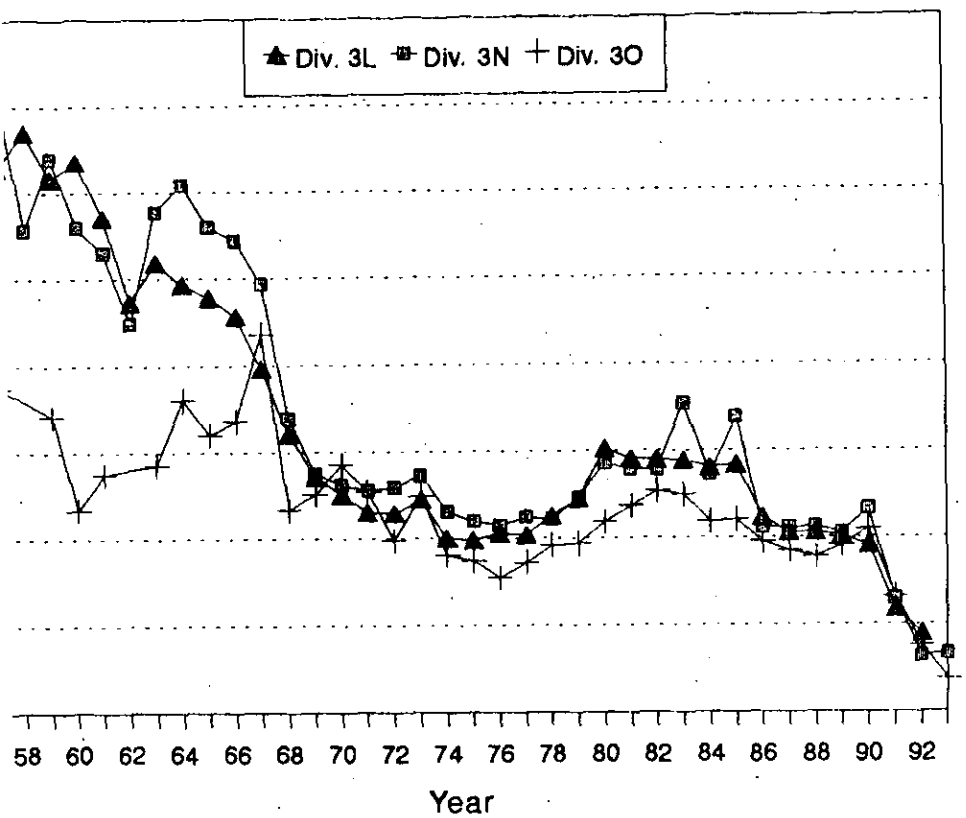

Fig. 4. Standardized CPUE, by Division, for A.plaice in Div. 3LNO from 1956-93.

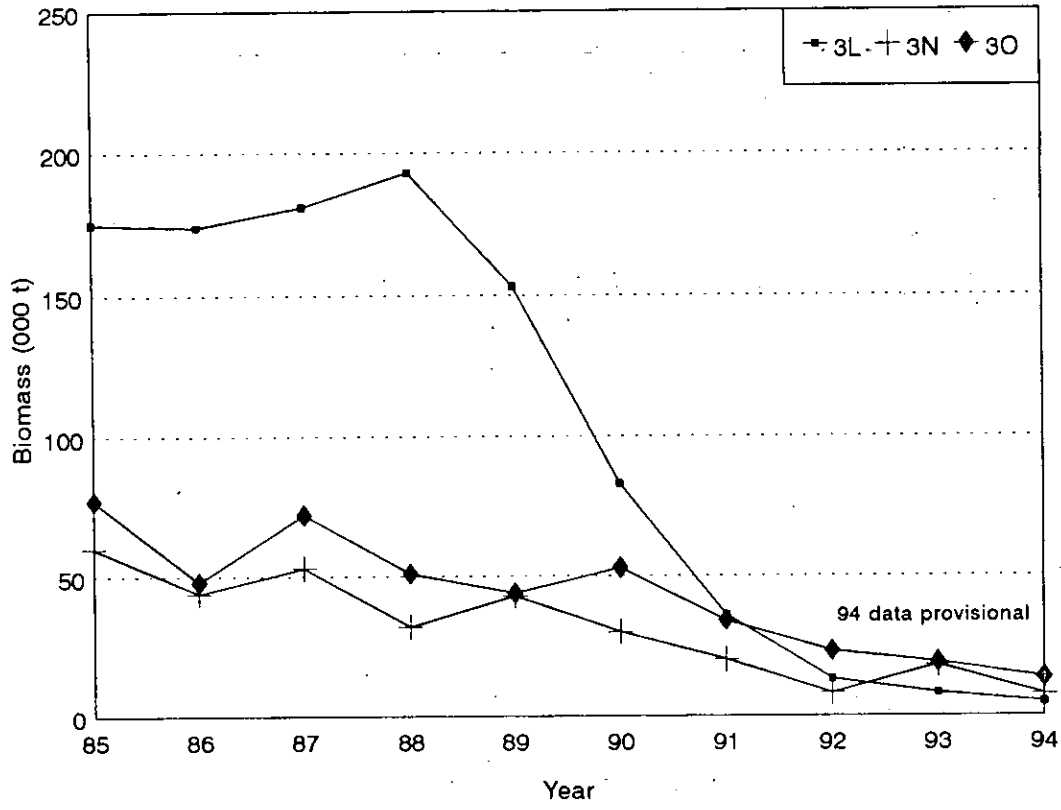

Fig.5 Biomass indices of A.plaice from spring surveys in Divisions 3L, 3N, 3O.

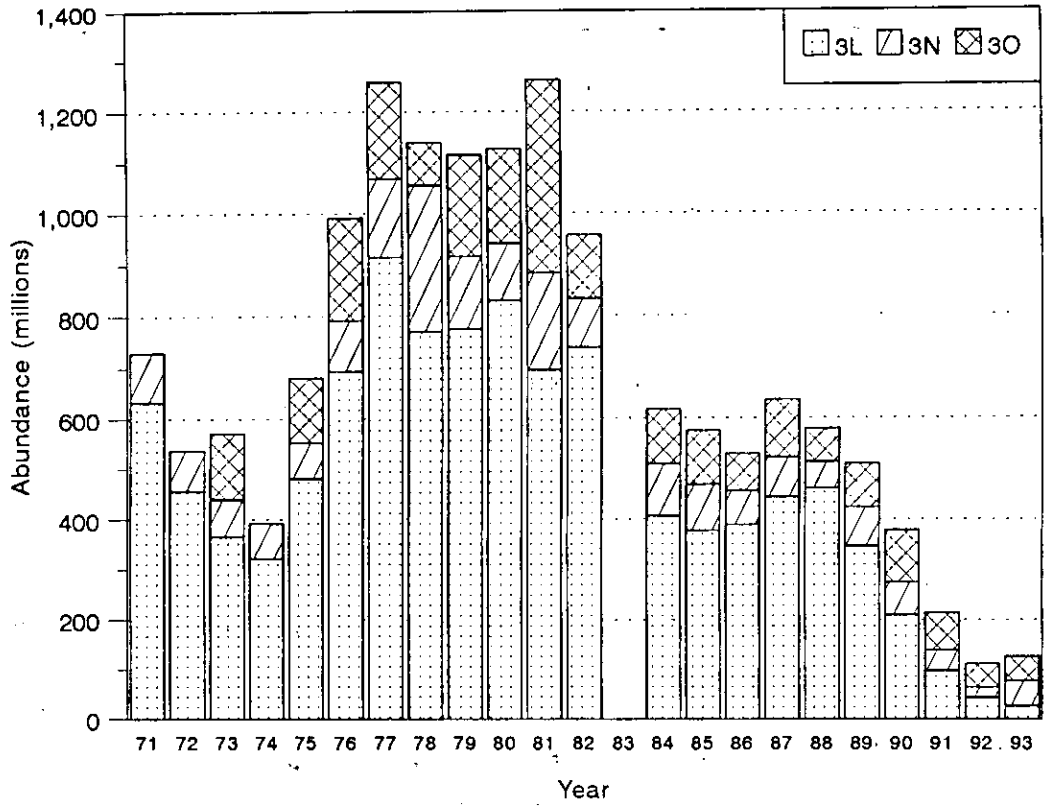

Fig.6 . Abundance of A.plaice from spring RV surveys conducted by Canada in Div. 3LNO.

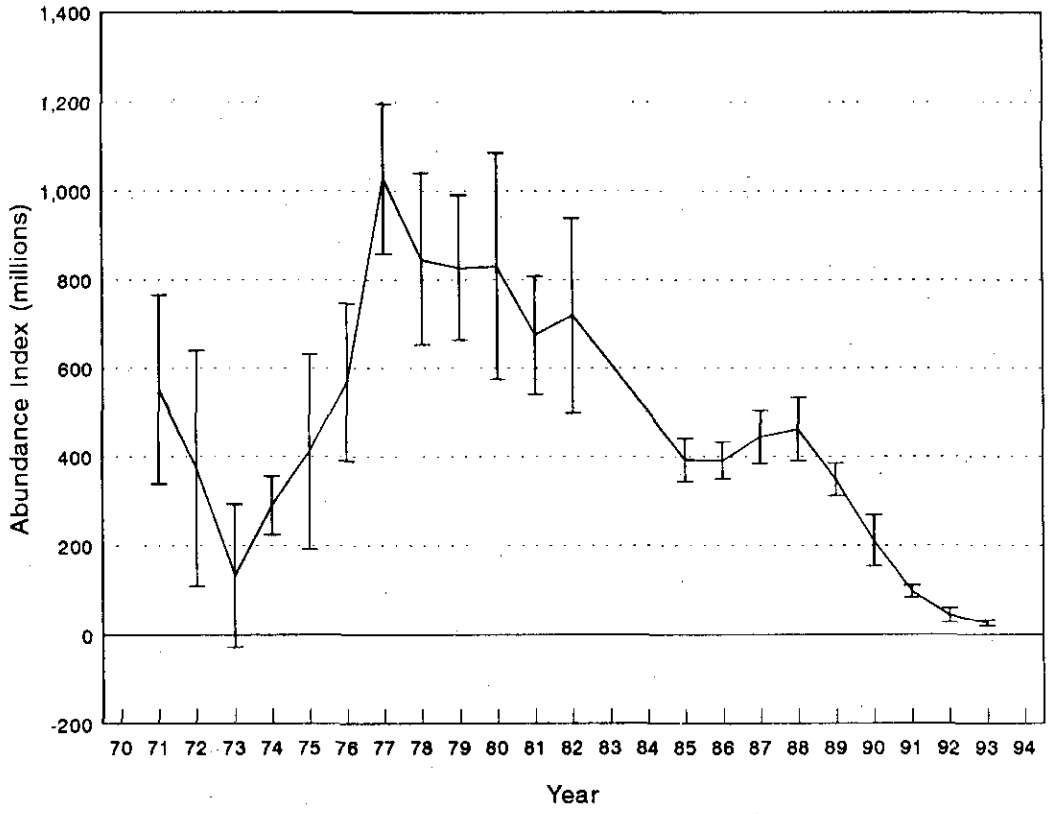

Fig. 7 . Abundance estimates of A.plaice (with 95% C.I.) from Canadian spring surveys in Div.3L.

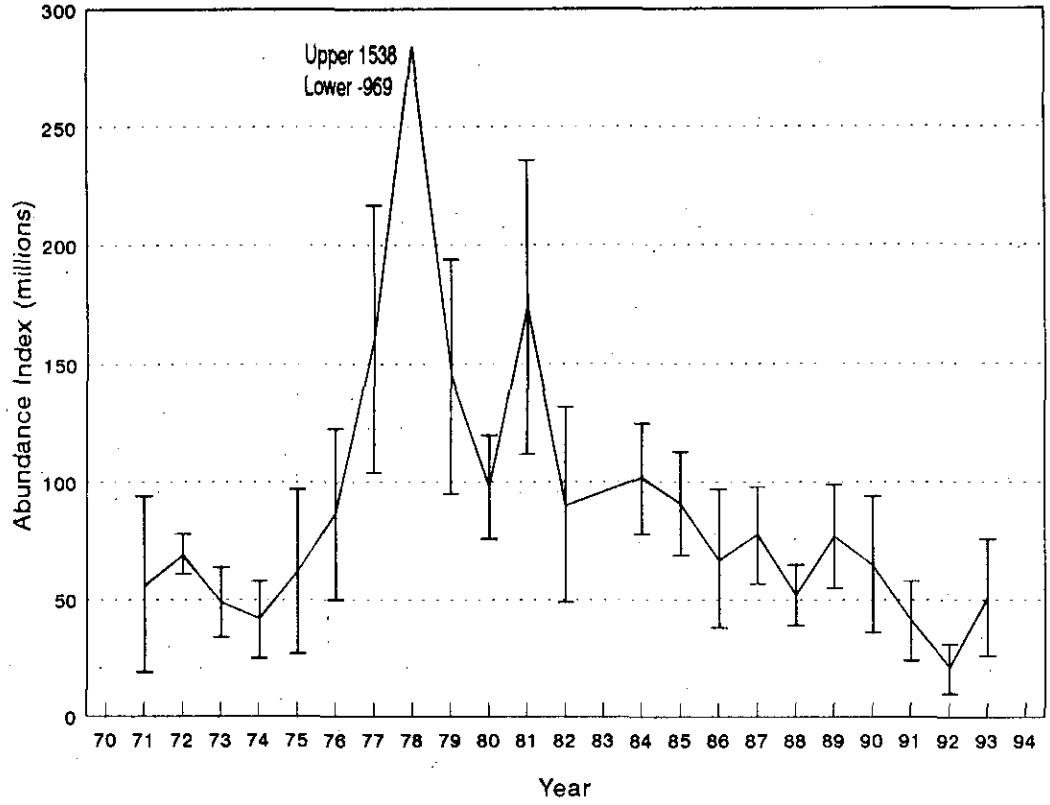

Fig. 8 . Abundance estimates of A.plaice (with 95% C.I.) from Canadian spring surveys in Div.3N.

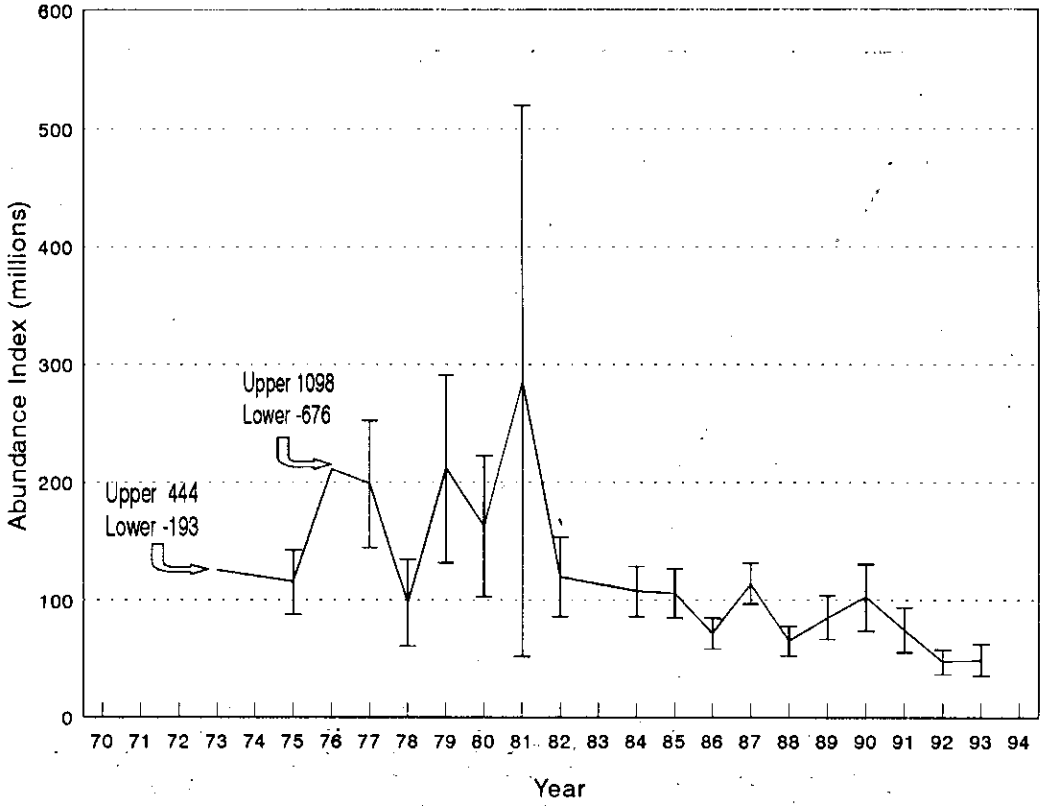

Fig. 9 . Abundance estimates of A.plaice (with 95% C.I.) from Canadian spring surveys in Div.3O.

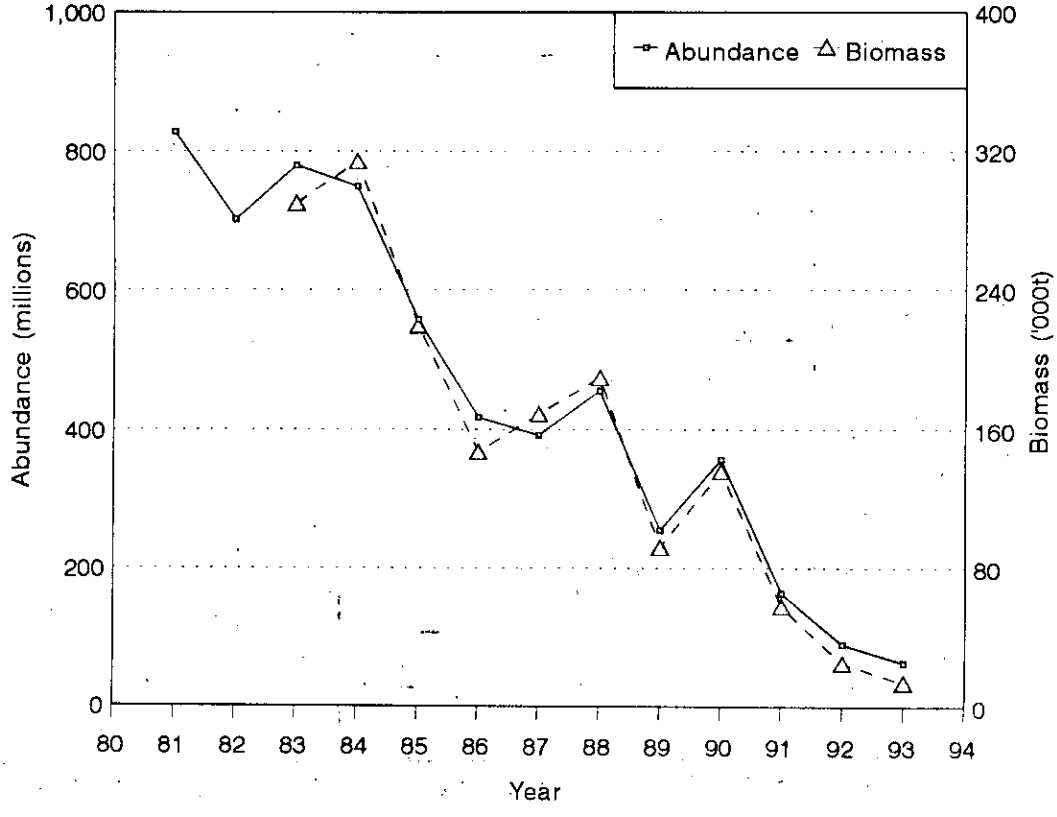

Fig.10. Abundance and biomass estimates of A.plaice from fall RV surveys in Div. 3L.

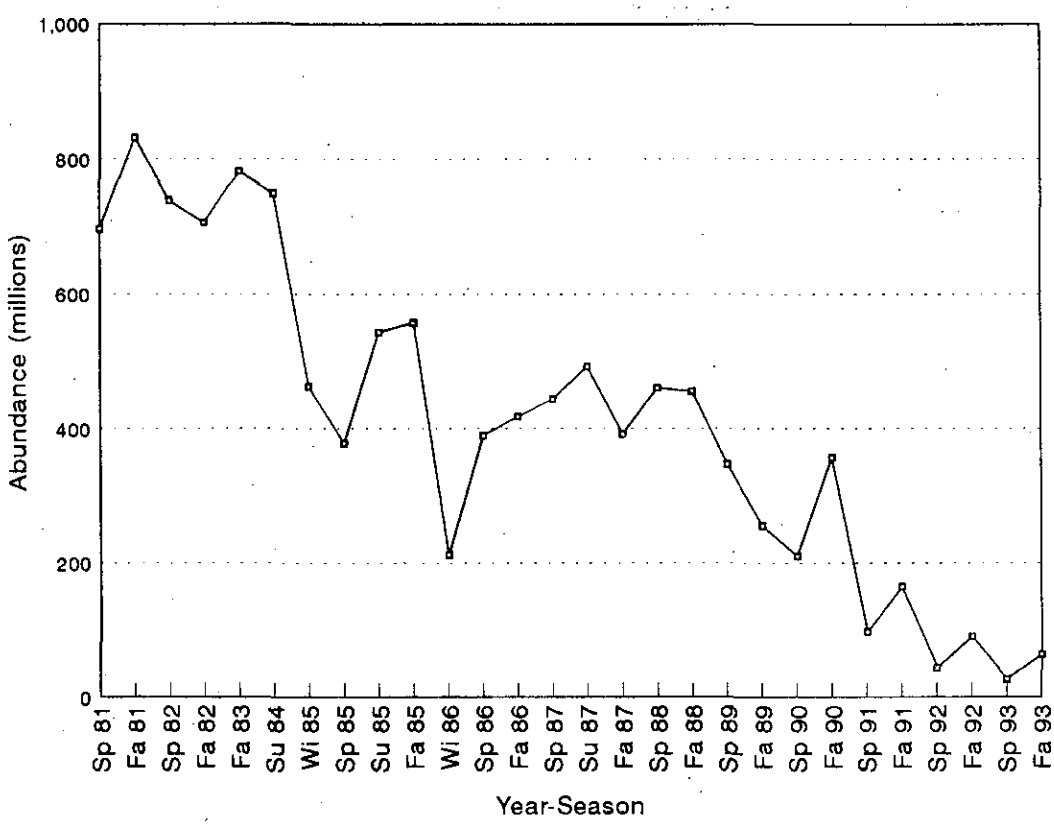

Fig. 11 Abundance of A. plaice from surveys conducted at various times in Div. 3L.

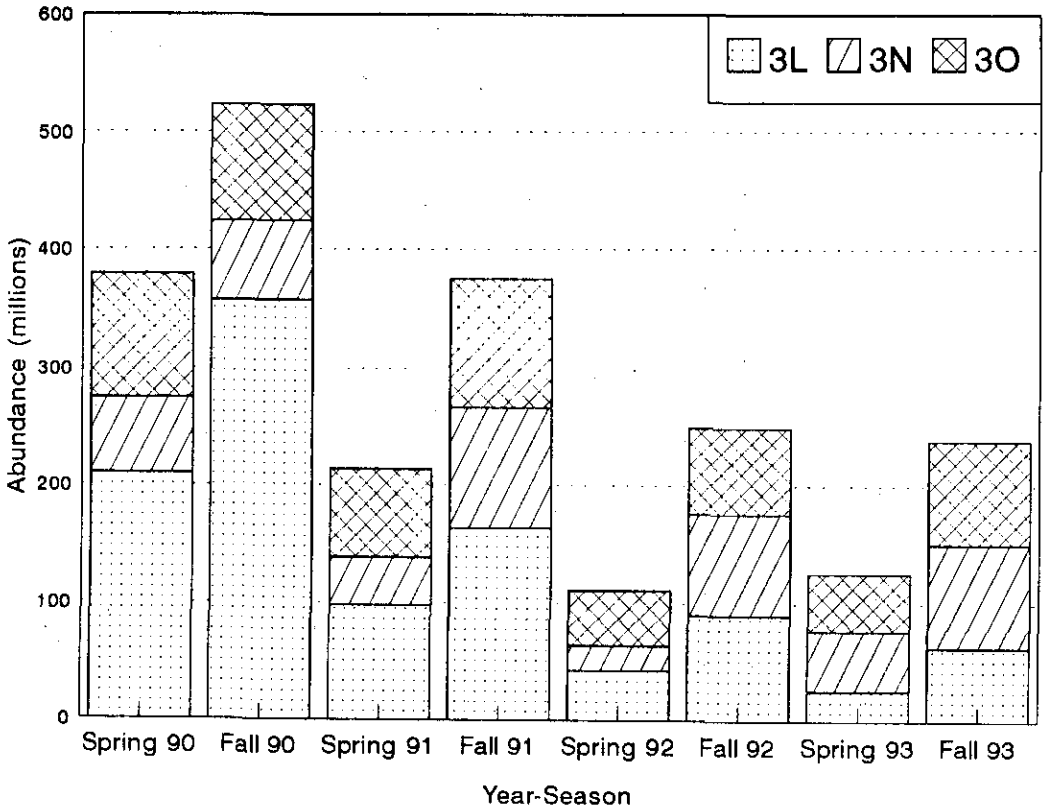

Fig. 12 Abundance of A. plaice from surveys conducted during spring and fall in Div. 3L, 3N, and 3O from 1990-1993.

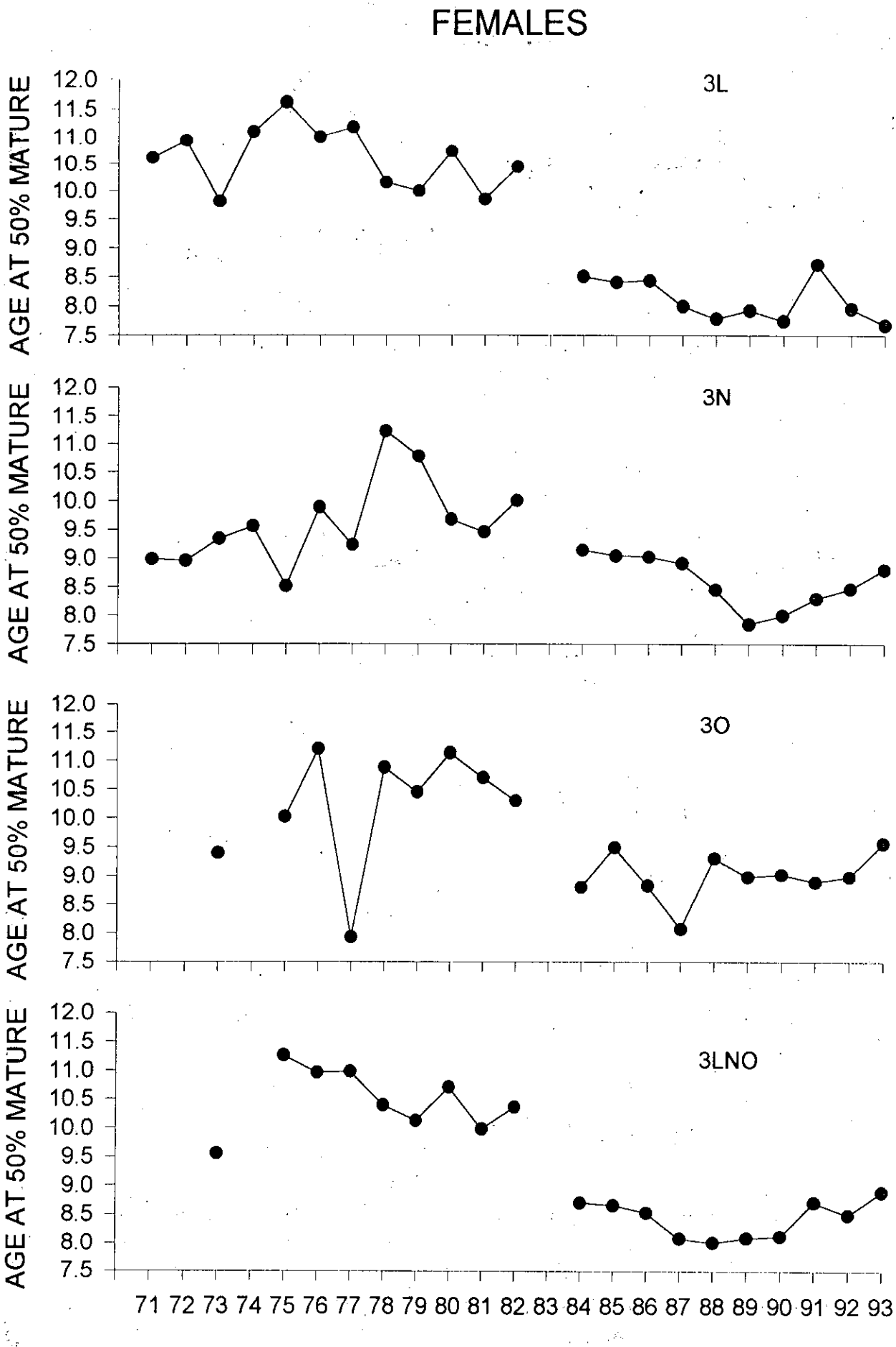

Fig. 13. Trends in age at 50% maturity for female A.plaice in Div. 3LNO.

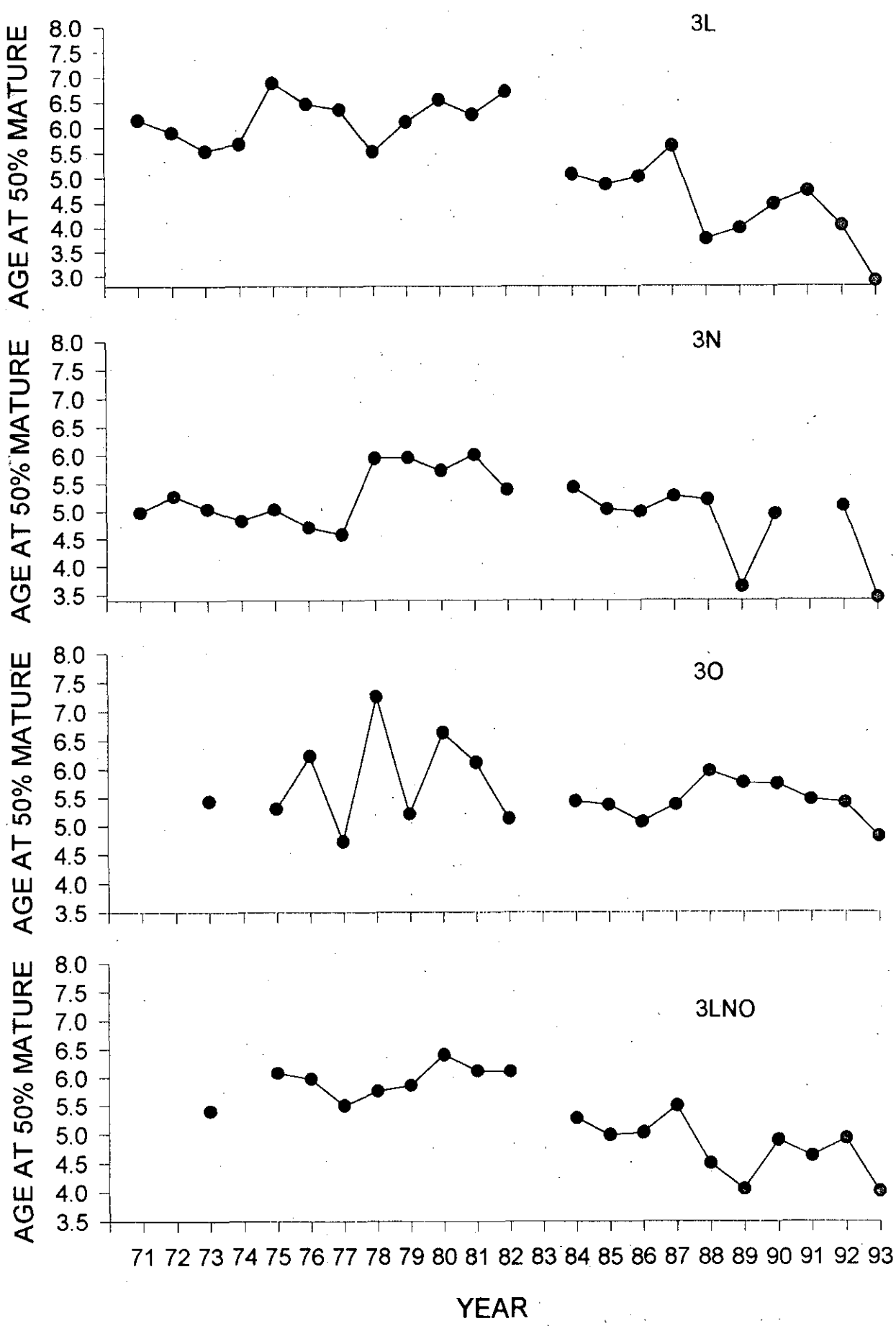

Fig. 14. Trends in age at 50% maturity for male A.plaice in Div. 3LNO

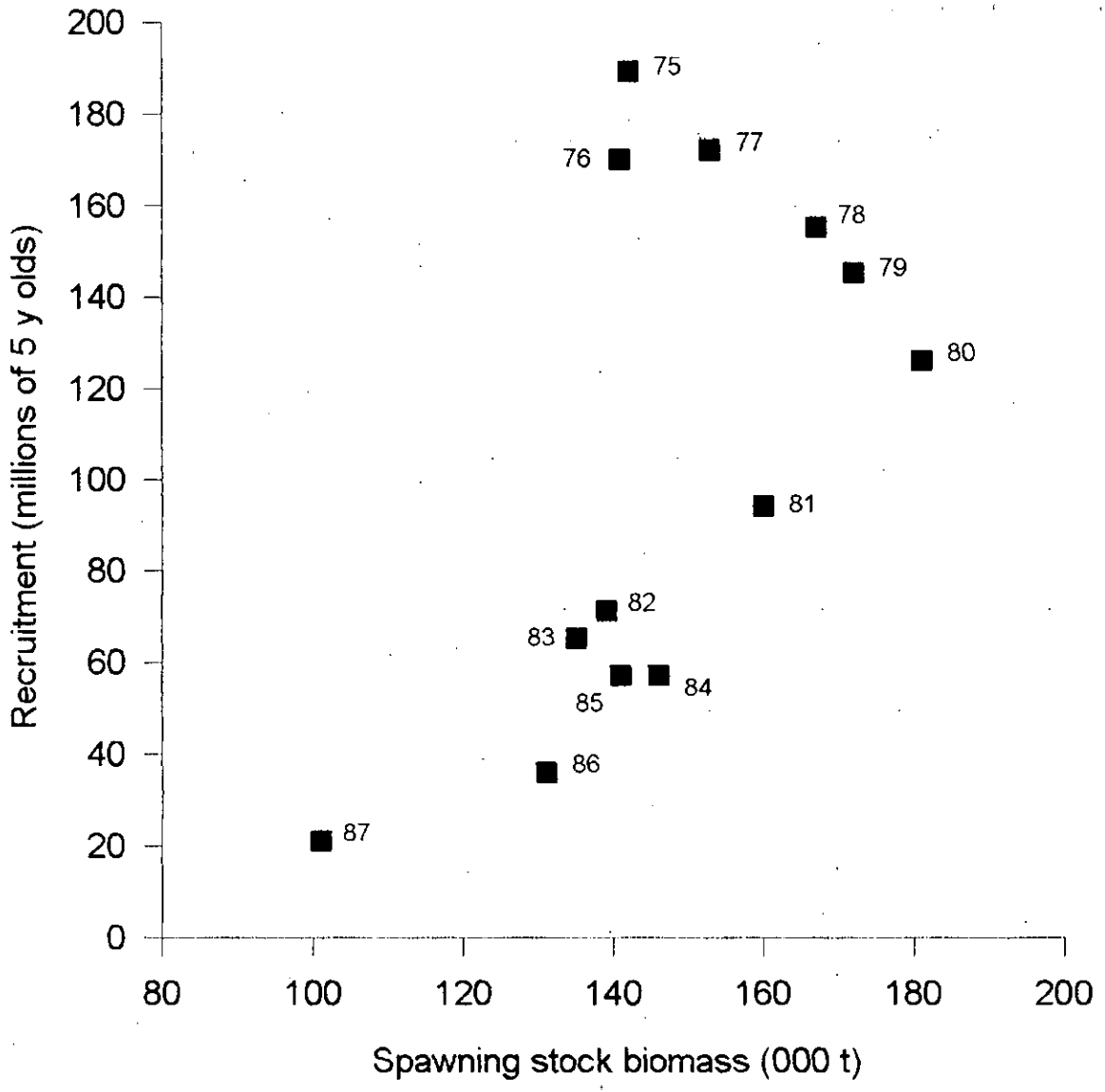

Fig. 15. Age 9+ biomass in year n from VPA plotted against age 5 population numbers in year n+5 from VPA for A.plaice in Div. 3LNO.