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Trends in biomass and abundance estimates of American plaice (Hippoglossoides platessoides) from USSR surveys in Divisions 3K, 3L, 3M, 3N and 3O

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Introduction

American plaice comprises a very significant component of the commercial groundfish resource in NAFO Div. 3K, 3L, 3M, 3N and 3Ø as part of three separate management units. Division 3K is part of the Subarea 2 + Div. 3K stock assessed through CAFSAC while Div. 3LNØ and Div. 3M are two stocks assessed through the NAFO Scientific Council. The Div. 3M stock lies entirely outside the Canadian 200 mile fishery zone whereas the Div. 3LNØ stock overlaps the Canadian fishery zone and the NAFO Regulatory Area in all three divisions with a significant nursery area located in the NRA of Div. 3N. Both these stocks have been the subject of considerable exploitation in recent years especially due to heavy fishing pressure in the NRA where much of the effort is unregulated. Many countries comprising this effort do not report their catches to NAFO and as a result the database from the commercial fishery in recent years is largely deficient. In order to assess the status of these stocks the NAFO Scientific Council has, therefore, relied more and more on the results of independent research vessel surveys. The purpose of this paper is to provide results of new analyses of survey data collected by the USSR and analyzed in a similar fashion coincident with that of the Canadian groundfish surveys.

Materials and Methods

The USSR has been conducting regular groundfish surveys in NAFO Div. 3K, 3L, 3M, 3N, and 3Ø annually since 1972 during the spring-summer period. from 1972 to 1983 the surveys were conducted according to a fixed-station design and sets were of 1 hour duration. From 1984, for consistency, the USSR adopted the stratified random survey used by Canada and limited survey sets to 30 minutes duration. For the purpose of this paper no differentiation was made between vessels used (all were large high-powered vessels with similar fishing capability). The fishing gear over the period has remained essentially the same and was, therefore, considered standard.

The data analysis was conducted by first post-stratifying the surveys in the earlier years when they were conducted using fixed-station design. The data were then analyzed using the Canadian "stratified analysis program" (STRAP) in order to obtain mean numbers and weights per set, stratum and year and calculate estimates of abundance and biomass. For strata that were not surveyed in certain years, estimates were obtained using a multiplicative analysis model.

Abundance and biomass estimates are shown in Tables 1-10 and Fig. 1-10 by division for Div. 3K, 3L, 3M, 3N and 3Ø respectively. Combined estimates for Div. 3LNØ abundance and biomass are shown in Fig. 11 and 12 respectively.

Results and Discussion

Division 3K

Abundance (Table 1; Fig. 1) and biomass (Table 2; fig. 2) showed systematic increases from 1972 to about 1977 followed by a decrease from 1977 to 1978 back to the levels estimated for 1972 and did not show any increase to levels previously experienced. From about 1984 to 1989 further decreasing trends occurred with the 1989 estimates being the lowest recorded in the time series. What is most notable about these periods of declining trends is that the American plaice in this area has not been subjected to very high levels of fishing pressure during these periods and certainly not enough to explain the magnitudes of such declines.

Division 3L

Increasing trends in abundance (Table 3; Fig. 3) and biomass (Table 4; Fig. 4) were observed between 1972 and 1981 where estimated biomass went from about 123,000 t in 1972 to 522,000 t in 1981 (Table 4). Stock size declined substantially from 1981 to 1985 to a level of biomass of about 160,000 t. It has remained relatively stable from 1985 to 1989 at an average annual level of around 150,000 t.

Division 3M

Peak estimated abundance (Table 5; Fig. 5) and biomass (table 6; Fig. 6) occurred during 1974, then declined considerably from 1975 to 1979. Since that time stock size has fluctuated up to the mid 1980's then declined again with the 1989 estimate being near the lowest in the time series.

Division 3N

Abundance (Table 7; Fig. 7) and biomass estimates (Table 8; Fig. 8) varied considerably between 1972 and 1981, however, even at the lowest levels the estimated biomass (Table 8; Fig. 8) did not go below 50,000 t. From 1981 a declining trend occurred through to 1988 where biomass was estimated to be about 31,000 t. An increase to 45,000 t was observed for the 1989 survey and has averaged 39,000 t over the last 3 years (Table 8) where it appears to be relatively stable at a very low level.

Division 3Ø

Observations on abundance (Table 9; Fig. 9) and biomass (Table 10; fig. 10) were similar to those observed for Div. 3N. Average levels of biomass for the 1987-89 period appears relatively stable at about 38,000 t although this level is still below the lowest levels observed prior to the recent period of decline.

Divisions 3LNØ combined

Estimates of abundance and biomass are shown in Fig. 11 and 12 respectively. The overall trends were increasing from 1972 to 1981 from about 225,000 t in 1972 to a level more than three times that in 1981. Since 1981 the decline in stock size was dramatic and reached its lowest level in 1988 at about 150,000 t and increased again to about 242,000 t in 1989.

Table 1. Mean number per 30 minute set of American plaice from USSR spring surveys in Division 3K with the number of successful sets in brackets (*strata not included in MM analysis).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
*618	101-200	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
*619	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
620	201-300	-	87.00(6)	131.14(8)	115.46(6)	82.43(7)	225.71(8)	47.21(5)	50.66(6)	67.96(7)	145.71(6)	84.34(6)		184.17(6)	-	38.33(6)	32.17(6)	17.67(6)	5.83(6)
621	"	-	-	-	-	-	-	-	-	-	-	-		177.40(5)	103.00(2)	41.71(7)	22.50(6)	51.71(7)	9.83(6)
622	401-500	-	-	-	-	-	-	-	-	-	-	-		15.33(3)	-	18.00(3)	12.00(3)	15.67(3)	4.33(3)
623	301-400	-	67.89(2)	86.91(2)	8.23(2)	96.17(2)	84.34(3)	27.43(3)	99.51(4)	36.00(3)	59.49(3)	31.00(7)		18.75(4)	-	27.75(4)	24.75(4)	21.33(3)	16.33(3)
624	201-300	-	-	-	92.31(2)	86.14(2)	134.74(2)	16.97(2)	40.63(3)	63.43(3)	-	-		51.33(3)	-	28.75(4)	25.67(3)	8.00(3)	9.67(3)
625	301-400	-	87.09(3)	-	-	60.17(2)	-	50.66(2)	-	-	-	-		28.25(4)	-	24.00(4)	23.25(4)	18.25(4)	8.83(6)
626	"	-	-	-	-	-	-	-	-	-	-	-		9.33(3)	46.33(3)	25.00(4)	18.67(3)	61.25(4)	7.20(5)
627	401-500	-	-	-	-	-	22.63(3)	13.37(2)	36.17(3)	17.61(4)	23.31(3)	18.69(3)		6.75(4)	24.00(4)	42.60(5)	29.80(5)	207.60(5)	7.80(5)
628	301-400	-	-	-	-	32.74(3)	81.77(2)	33.26(3)	-	37.54(2)	-	19.03(2)		15.00(4)	30.33(3)	21.25(4)	26.50(4)	27.00(4)	9.20(5)
629	"	-	38.83(2)	90.69(3)	90.17(3)	-	35.23(2)	-	-	-	88.20(2)	-	N	18.00(3)	26.00(3)	36.00(3)	45.33(3)	25.25(4)	17.50(4)
630	"	-	-	63.26(2)	24.94(2)	-	62.23(3)	40.29(3)	-	-	42.17(2)	12.86(2)	O	-	7.00(2)	21.67(3)	45.67(3)	15.67(3)	7.67(3)
631	401-500	-	7.71(2)	-	16.97(2)	42.43(2)	-	20.83(2)	1.29(2)	16.97(2)	-	9.26(2)		8.25(4)	12.00(2)	14.00(5)	88.67(3)	24.00(3)	7.67(3)
632	201-300	-	57.34(2)	75.09(2)	-	-	101.83(2)	-	-	35.31(3)	-	-	D	9.00(3)	-	9.67(3)	9.33(3)	4.67(3)	13.33(3)
633	301-400	9.51(2)	16.54(6)	10.18(5)	37.18(7)	32.53(8)	67.58(5)	10.20(6)	19.71(6)	17.57(6)	18.09(6)	10.70(5)	A	3.67(9)	-	17.50(6)	5.86(7)	20.38(8)	7.75(4)
634	201-300	53.49(8)	105.33(5)	157.27(5)	430.97(4)	166.63(4)	132.17(4)	113.31(3)	42.94(2)	82.41(4)	11.31(3)	22.71(6)	T	15.80(5)	45.80(5)	39.67(6)	17.17(6)	23.75(4)	11.00(4)
635	"	59.14(3)	115.20(3)	167.31(3)	417.60(2)	199.80(4)	238.37(4)	56.88(5)	23.01(4)	70.97(3)	75.34(2)	73.20(3)	A	29.00(4)	61.00(5)	28.20(5)	8.25(4)	45.00(5)	11.60(5)
636	"	50.14(2)	142.63(3)	105.77(3)	159.43(2)	386.74(3)	127.03(3)	71.23(2)	17.49(2)	30.60(4)	6.86(3)	63.51(2)		6.00(3)	19.80(5)	5.60(5)	12.80(5)	53.80(5)	11.20(5)
637	"	-	38.31(2)	72.77(2)	117.77(3)	45.00(2)	-	-	1.03(2)	35.74(2)	28.80(2)	-	A	10.00(3)	9.67(3)	23.00(5)	34.00(3)	24.83(6)	8.00(6)
638	301-400	16.97(2)	67.11(4)	60.00(3)	73.93(4)	49.71(3)	47.31(3)	14.91(3)	3.09(2)	28.54(2)	0.90(4)	10.16(4)	V	5.40(5)	9.25(4)	25.80(5)	4.44(9)	16.80(5)	7.57(7)
639	"	10.11(6)	43.29(6)	32.23(6)	77.76(5)	24.94(6)	52.31(7)	17.49(6)	3.29(5)	3.60(4)	4.46(3)	6.00(6)	A	0.00(4)	4.00(4)	3.75(4)	11.00(5)	23.80(5)	11.33(6)
640	401-500	-	-	-	-	-	-	-	-	-	-	-	I	0.00(4)	0.00(3)	3.33(3)	1.00(4)	3.67(3)	0.25(4)
641	501-750	-	-	-	-	-	-	-	-	-	0.00(2)	-	L	0.00(5)	0.00(3)	2.67(3)	0.00(3)	2.33(3)	0.00(3)
642	751-1000	-	-	-	-	-	-	-	-	-	-	-	A	0.00(2)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
*643	1001-1250	-	-	-	-	-	-	-	-	-	-	-	B	0.00(3)	-	0.00(4)	-	-	-
*644	1251-1500	-	-	-	-	-	-	-	-	-	-	-	L	0.00(3)	-	0.00(3)	-	-	-
645	401-500	-	-	-	-	-	-	-	-	-	0.00(2)	1.54(2)	E	0.25(4)	-	2.33(3)	2.33(3)	2.33(3)	0.00(3)
646	501-750	-	-	-	-	-	-	-	-	-	-	-		0.00(4)	-	0.33(3)	10.33(3)	1.33(3)	0.00(3)
647	751-1000	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	-	0.00(3)	0.67(3)	1.50(4)	0.00(3)
*648	1001-1250	-	-	-	-	-	-	-	-	-	-	-		0.00(2)	-	0.00(3)	-	-	-
*649	1251-1500	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	-	0.00(3)	-	-	-
Abundance (000s) (area surveyed)		21943	89072	104537	172737	134025	145472	53708	35251	55505	54265	42903		89897	46432	49144	43019	68377	17130
Abundance (000s) (MM analysis)		69827	147595	168040	223487	180311	214213	71290	56304	69986	70458	63310		90367	59464	49163	43029	66379	17128

Table 2. Mean weight (kg) per 30 minute set of American plaice from USSR spring surveys in Division 3K with the number of successful sets in brackets (*strata not included in MM analysis).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
*618	101-200	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
*619	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
620	201-300	-	36.25(6)	50.91(8)	41.49(6)	30.69(7)	98.18(8)	14.60(5)	18.66(6)	25.23(7)	84.40(6)	46.46(6)		109.88(6)	-	17.87(6)	13.40(6)	3.48(6)	2.70(6)
621	"	-	-	-	-	-	-	-	-	-	-	-		101.72(5)	47.60(2)	15.03(7)	7.67(6)	8.93(7)	4.23(6)
622	401-500	-	-	-	-	-	-	-	-	-	-	-		9.53(3)	-	8.60(3)	6.20(3)	6.03(3)	2.37(3)
623	301-400	-	23.14(2)	32.35(2)	1.77(2)	35.82(2)	26.77(3)	10.85(3)	33.60(4)	19.22(3)	34.03(3)	19.47(7)		12.95(4)	-	12.43(4)	12.25(4)	4.27(3)	6.17(3)
624	201-300	-	-	-	14.37(2)	23.32(2)	25.17(2)	4.71(2)	8.37(3)	14.52(3)	-	-		23.73(3)	-	10.07(4)	15.67(3)	2.33(3)	2.90(3)
625	301-400	-	19.65(3)	-	-	12.57(2)	-	12.81(2)	-	-	-	-		12.88(4)	-	9.50(4)	10.50(4)	5.93(4)	3.98(6)
626	"	-	-	-	-	-	-	-	-	-	-	-		8.27(3)	20.20(3)	12.20(4)	9.00(3)	18.63(4)	3.16(5)
627	401-500	-	-	-	-	-	8.21(3)	4.11(2)	13.41(3)	6.45(4)	10.13(3)	8.88(3)		4.55(4)	8.60(4)	19.74(5)	14.00(5)	64.16(5)	2.82(5)
628	301-400	-	-	-	-	8.31(3)	14.84(2)	8.54(3)	-	8.77(2)	-	6.51(2)		7.98(4)	12.03(3)	8.98(4)	10.25(4)	9.55(4)	2.92(5)
629	"	-	9.13(2)	20.76(3)	13.39(3)	-	12.54(2)	-	-	-	24.45(2)	-	N	8.50(3)	9.03(3)	14.20(3)	18.00(3)	6.90(4)	7.03(4)
630	"	-	-	15.63(2)	5.66(2)	-	14.18(3)	9.34(3)	-	-	11.34(2)	4.09(2)	O	-	2.50(2)	8.40(3)	17.00(3)	3.07(3)	2.27(3)
631	401-500	-	3.70(2)	-	4.14(2)	11.21(2)	-	4.22(2)	0.31(2)	5.35(2)	-	3.83(2)		3.40(4)	4.50(2)	5.88(5)	50.67(3)	11.73(3)	3.40(3)
632	201-300	-	9.33(2)	13.96(2)	-	-	21.81(2)	-	-	10.63(3)	-	-	D	2.57(3)	-	2.37(3)	4.33(3)	1.27(3)	4.23(3)
633	301-400	1.65(2)	3.73(6)	2.78(5)	7.31(7)	6.70(8)	15.56(5)	2.49(6)	3.42(6)	4.07(6)	4.89(6)	2.62(5)	A	1.47(9)	-	6.40(6)	2.06(7)	8.77(8)	1.85(4)
634	201-300	10.50(8)	12.95(5)	24.77(5)	72.59(4)	27.37(4)	23.97(4)	16.39(3)	8.28(2)	14.98(4)	3.51(3)	5.69(6)	T	4.18(5)	6.70(5)	7.68(6)	4.33(6)	4.23(4)	1.98(4)
635	"	12.53(3)	14.93(3)	32.43(3)	80.92(2)	34.39(4)	45.40(4)	14.84(5)	5.40(4)	15.57(3)	16.05(2)	19.08(3)	A	11.35(4)	15.72(5)	6.94(5)	2.98(4)	5.94(5)	3.12(5)
636	"	4.01(2)	19.17(3)	14.25(3)	16.05(2)	55.85(3)	19.55(3)	9.00(2)	3.24(2)	9.01(4)	1.77(3)	13.45(2)		4.30(3)	3.30(5)	1.86(5)	2.80(5)	6.80(5)	2.34(5)
637	"	-	5.79(2)	14.40(2)	20.98(3)	9.39(2)	-	-	0.18(2)	9.51(2)	7.51(2)	-	A	4.57(3)	4.00(3)	8.16(5)	8.00(3)	5.55(6)	2.07(6)
638	301-400	2.31(2)	17.29(4)	16.90(3)	17.18(4)	11.86(3)	13.77(3)	3.93(3)	0.57(2)	7.77(2)	0.17(4)	3.01(4)	V	2.24(5)	2.70(4)	12.20(5)	1.87(9)	5.02(5)	2.44(7)
639	"	4.24(6)	9.03(6)	8.35(6)	18.61(5)	5.79(6)	10.68(7)	3.45(6)	0.56(5)	0.72(4)	1.56(3)	1.71(6)	A	0.00(4)	2.10(4)	1.95(4)	3.00(5)	6.08(5)	2.97(6)
640	401-500	-	-	-	-	-	-	-	-	-	-	-	I	0.00(4)	0.00(3)	1.77(3)	0.50(4)	1.77(3)	0.03(4)
641	501-750	-	-	-	-	-	-	-	-	-	0.00(2)	-	L	0.00(5)	0.00(3)	1.13(3)	0.00(3)	0.67(3)	0.00(3)
642	751-1000	-	-	-	-	-	-	-	-	-	-	-	A	0.00(2)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
*643	1001-1250	-	-	-	-	-	-	-	-	-	-	-	B	0.00(3)	-	0.00(4)	-	-	-
*644	1251-1500	-	-	-	-	-	-	-	-	-	-	-	L	0.00(3)	-	0.00(3)	-	-	-
645	401-500	-	-	-	-	-	-	-	-	-	0.00(2)	0.31(2)	E	0.10(4)	-	0.77(3)	1.33(3)	1.27(3)	0.00(3)
646	501-750	-	-	-	-	-	-	-	-	-	-	-		0.00(4)	-	0.03(3)	5.67(3)	0.70(3)	0.00(3)
647	751-1000	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	-	0.00(3)	0.40(3)	0.63(4)	0.00(3)
*648	1001-1250	-	-	-	-	-	-	-	-	-	-	-		0.00(2)	-	0.00(3)	-	-	-
*649	1251-1500	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	-	0.00(3)	-	-	-
Biomass (t) (area surveyed)		3835	20353	26430	34836	28473	40447	11936	10171	15810	24754	17091		50755	17105	19030	17983	17493	5679
Biomass (t) (MM analysis)		17491	36731	44511	50706	40470	61023	17798	19351	20811	31988	24527		51007	23052	19042	17990	16897	5680

Table 3. Mean number per 30 minute set of American plaice from USSR surveys in Division 3L with the number of successful sets in brackets (*strata not included in MM analysis).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
*328	93-183	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
341	"	-	-	-	-	-	-	-	-	-	-	-		1544.00(3)	-	138.25(4)	128.67(3)	36.75(4)	75.33(3)
*342	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
*343	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
344	184-274	117.77(2)	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
345	275-366	17.74(2)	-	-	-	39.09(2)	-	-	-	-	-	-		34.50(2)	17.67(3)	25.50(4)	32.67(3)	8.50(4)	58.00(4)
346	"	-	-	-	143.23(2)	-	-	6.94(2)	40.11(2)	-	-	-		16.67(3)	27.33(3)	46.00(3)	26.33(3)	79.00(4)	50.67(3)
347	184-274	98.74(2)	373.03(3)	458.74(3)	645.17(4)	265.54(3)	385.20(4)	205.71(3)	208.03(2)	622.11(3)	1104.43(2)	982.80(2)		149.33(3)	124.33(3)	150.67(3)	79.00(4)	27.50(4)	188.83(6)
348	93-183	290.31(2)	486.17(3)	406.80(3)	527.40(2)	-	1204.20(2)	391.11(2)	673.37(3)	984.60(2)	-	746.74(2)		979.33(3)	275.33(3)	427.25(4)	592.80(5)	117.00(6)	203.25(8)
349	"	-	-	-	-	206.49(2)	-	-	209.83(2)	-	-	576.00(2)		521.50(4)	77.00(4)	109.50(4)	256.80(5)	71.60(5)	45.50(6)
350	57-91	69.43(2)	92.31(2)	-	63.51(2)	109.29(2)	227.31(2)	-	-	113.14(2)	205.71(2)	-		132.75(4)	55.67(3)	52.50(4)	102.50(4)	62.80(5)	121.40(5)
363	"	-	-	-	549.77(2)	264.86(2)	988.97(2)	-	312.43(2)	334.29(2)	384.43(2)	124.20(2)		273.67(3)	89.00(3)	413.25(4)	163.50(6)	78.00(4)	81.75(4)
364	93-183	-	283.54(3)	1045.54(3)	265.03(3)	293.91(4)	1186.71(4)	507.86(2)	676.29(2)	1096.20(2)	863.23(2)	899.49(2)		847.75(4)	344.00(4)	348.20(5)	438.83(6)	248.14(7)	716.43(7)
365	"	169.20(2)	717.69(2)	1066.63(2)	419.66(3)	-	-	477.26(2)	-	-	-	-	E	1617.67(3)	101.67(3)	222.33(3)	152.25(4)	298.00(4)	381.33(3)
366	184-274	63.26(3)	275.94(5)	231.22(5)	376.80(3)	59.01(4)	187.30(5)	75.60(2)	54.34(3)	182.83(4)	230.01(4)	64.39(5)	O	304.00(4)	65.00(3)	53.00(4)	32.00(4)	19.75(4)	66.80(5)
368	275-366	-	50.40(2)	34.46(3)	8.40(3)	-	24.51(3)	0.00(2)	12.00(3)	6.00(3)	2.74(3)	-		0.75(4)	1.67(3)	17.00(3)	18.00(3)	45.25(4)	24.50(4)
369	184-274	52.63(3)	254.91(3)	-	202.97(3)	135.43(3)	253.14(3)	14.53(4)	240.43(4)	61.46(2)	484.71(2)	92.59(5)	D	48.00(4)	67.33(3)	130.00(4)	44.33(3)	95.67(3)	71.67(3)
370	93-183	183.09(3)	598.80(3)	406.03(2)	415.71(3)	554.06(3)	1849.79(5)	833.97(5)	629.49(4)	958.50(4)	732.09(4)	780.17(2)	A	939.00(3)	729.33(3)	334.75(4)	102.40(5)	182.67(3)	459.80(5)
371	57-91	-	62.74(2)	213.94(2)	397.54(2)	158.66(2)	-	-	-	-	-	-	T	237.00(3)	144.33(3)	551.75(4)	196.25(4)	250.75(4)	163.33(3)
372	"	88.46(5)	77.97(5)	385.33(4)	295.07(4)	147.21(4)	521.49(4)	301.37(2)	268.97(4)	116.40(3)	181.03(4)	317.44(4)	A	100.67(3)	61.50(4)	188.20(5)	70.40(5)	86.75(4)	73.20(5)
384	"	98.40(3)	141.77(3)	203.14(3)	220.80(3)	165.86(2)	384.94(2)	233.74(2)	386.23(2)	718.46(3)	161.74(2)	117.77(2)		208.67(3)	453.67(3)	138.50(4)	157.50(4)	35.67(3)	183.25(4)
385	93-183	248.23(3)	425.83(2)	90.51(2)	240.69(2)	70.20(2)	406.54(2)	1097.83(3)	218.31(2)	502.20(2)	-	161.23(2)	A	391.75(4)	106.67(3)	256.20(5)	300.00(5)	107.20(5)	228.20(5)
386	185-274	40.63(2)	574.33(4)	568.93(4)	581.53(4)	390.34(4)	429.69(4)	70.20(2)	39.43(3)	30.34(3)	179.49(2)	-	V	89.50(4)	37.67(3)	67.25(4)	24.75(4)	30.75(4)	82.50(4)
387	275-366	4.11(2)	30.60(2)	29.57(2)	16.20(2)	32.06(3)	-	-	-	-	6.00(3)	-	A	0.00(4)	2.00(3)	6.67(3)	6.00(3)	26.33(3)	4.20(5)
388	"	-	40.29(3)	26.49(2)	5.49(3)	21.34(2)	-	233.23(2)	-	-	4.37(2)	-	I	2.33(3)	60.75(4)	37.67(3)	10.00(3)	63.00(3)	8.75(4)
389	185-274	24.86(3)	91.54(2)	286.46(3)	765.51(2)	59.66(3)	458.49(4)	96.17(4)	118.29(5)	106.63(3)	232.71(4)	101.70(4)	L	226.67(3)	34.33(3)	74.00(4)	21.50(4)	58.75(4)	153.00(4)
390	93-183	33.94(2)	247.37(4)	124.11(3)	268.46(4)	222.81(4)	644.03(3)	199.37(3)	181.03(3)	398.06(3)	-	-	A	263.00(3)	208.75(4)	26.25(4)	61.60(5)	82.75(4)	83.40(5)
391	185-274	123.81(4)	269.83(3)	454.97(3)	248.74(3)	234.51(3)	-	-	-	-	131.31(3)	170.85(5)	B	3033.33(3)	34.50(4)	235.67(3)	73.00(3)	114.33(3)	299.33(3)
392	275-366	-	-	-	-	-	39.34(2)	0.00(2)	12.34(2)	-	-	5.91(2)	L	0.00(3)	4.00(4)	29.75(4)	3.00(3)	60.00(3)	5.00(3)
729	367-549	-	-	-	-	-	-	-	-	-	-	1.29(2)	E	0.00(3)	6.00(3)	36.67(3)	3.00(3)	0.00(3)	0.33(3)
730	550-731	-	-	-	-	-	0.00(2)	-	0.00(2)	-	-	-		0.00(3)	0.00(3)	47.33(3)	0.00(3)	0.00(3)	0.00(3)
731	367-549	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	56.33(3)	13.33(3)	2.67(3)	17.00(3)	0.00(3)
732	550-731	-	-	-	-	-	0.00(2)	-	-	-	-	-		0.00(2)	0.00(2)	106.33(3)	10.33(3)	7.33(3)	0.67(3)
733	367-549	-	-	-	-	-	0.00(2)	0.00(2)	-	0.00(2)	-	0.00(5)		0.00(2)	1.00(3)	0.67(3)	3.25(4)	7.00(3)	1.00(4)
734	550-731	-	-	-	-	-	0.00(2)	0.77(2)	0.00(3)	0.51(2)	-	-		0.00(3)	1.00(3)	0.67(3)	7.00(3)	3.33(3)	0.00(3)
735	367-549	-	-	-	-	-	-	6.69(2)	-	0.00(2)	-	1.29(2)		0.00(3)	0.00(3)	15.67(3)	12.25(4)	50.75(4)	6.50(4)
736	550-731	-	-	-	-	-	0.00(2)	-	-	-	-	-		0.00(3)	0.00(3)	0.00(3)	6.00(3)	39.00(3)	1.67(3)
Abundance (000s) (area surveyed)		192278	521312	647165	654662	357459	1142019	596815	555385	803405	533153	658051		1117801	350679	461722	411476	238555	436802
Abundance (000s) (MM analysis)		305473	604525	829375	920159	526092	1423532	828205	748377	1182702	1304851	812268		1126333	366486	468542	416468	242178	441806

Table 4. Mean weight (kg) per 30 minute set of American plaice from USSR surveys in Division 3L with the number of successful sets in brackets (*strata not included in MM analysis).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
*328	93-183	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
341	"	-	-	-	-	-	-	-	-	-	-	-		492.80(3)	-	48.10(4)	46.50(3)	11.38(4)	30.03(3)
*342	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
*343	"	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
344	184-274	31.78(2)	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
345	275-366	5.43(2)	-	-	-	13.63(2)	-	-	-	-	-	-		16.80(2)	7.83(3)	10.35(4)	10.67(3)	2.75(4)	19.95(4)
346	"	-	-	-	51.89(2)	-	-	2.57(2)	14.73(2)	-	-	-		6.03(3)	12.10(3)	19.30(3)	9.33(3)	29.40(4)	19.77(3)
347	184-274	43.71(2)	201.77(3)	76.58(3)	175.96(4)	89.21(3)	92.91(4)	55.06(3)	71.69(2)	214.18(3)	551.91(2)	570.32(2)		59.37(3)	53.23(3)	41.40(3)	28.38(4)	6.10(4)	66.55(6)
348	93-183	69.56(2)	107.18(3)	97.22(3)	84.34(2)	-	334.93(2)	135.82(2)	193.65(3)	338.35(2)	-	278.18(2)		365.13(3)	86.33(3)	120.85(4)	214.20(5)	32.67(6)	59.26(8)
349	"	-	-	-	-	64.05(2)	-	-	83.96(2)	-	-	220.50(2)		247.18(4)	27.03(4)	44.97(4)	89.60(5)	28.02(5)	23.18(6)
350	57-91	44.28(2)	58.24(2)	-	48.63(2)	74.01(2)	169.95(2)	-	-	72.36(2)	142.15(2)	-		180.53(4)	35.73(3)	35.55(4)	51.00(4)	45.38(5)	91.40(5)
363	"	-	-	-	131.37(2)	122.50(2)	267.80(2)	-	124.20(2)	118.39(2)	172.54(2)	77.40(2)		149.47(3)	59.20(3)	249.25(4)	95.67(6)	51.65(4)	57.40(4)
364	93-183	-	72.86(3)	213.10(3)	80.83(3)	75.79(4)	435.89(4)	176.89(2)	215.49(2)	460.34(2)	286.79(2)	268.07(2)		290.45(4)	120.13(4)	112.88(5)	127.83(6)	65.61(7)	239.67(7)
365	"	43.71(2)	147.52(2)	228.11(2)	84.41(3)	-	-	177.33(2)	-	-	-	-	E	511.33(3)	34.90(3)	72.57(3)	38.25(4)	67.03(4)	81.77(3)
366	184-274	17.79(3)	99.59(5)	67.43(5)	151.75(3)	18.26(4)	62.70(5)	20.93(2)	21.94(3)	55.98(4)	90.67(4)	24.38(5)	O	128.00(4)	30.30(3)	24.32(4)	13.75(4)	7.28(4)	26.18(5)
368	275-366	-	38.37(2)	10.05(3)	3.48(3)	-	6.00(3)	0.00(2)	3.39(3)	1.90(3)	1.30(3)	-		0.68(4)	1.03(3)	6.80(3)	8.00(3)	16.30(4)	10.55(4)
369	184-274	18.34(3)	237.29(3)	-	70.23(3)	33.60(3)	77.86(3)	3.64(4)	46.48(4)	20.93(2)	205.61(2)	19.79(5)	D	18.23(4)	28.80(3)	55.05(4)	17.33(3)	38.03(3)	21.90(3)
370	93-183	63.41(3)	126.58(3)	65.52(2)	81.77(3)	121.44(3)	581.74(5)	319.87(5)	135.14(4)	337.81(4)	233.86(4)	233.95(2)	A	311.77(3)	274.20(3)	91.93(4)	38.20(5)	52.60(3)	138.50(5)
371	57-91	-	21.86(2)	84.93(2)	130.29(2)	54.00(2)	-	-	-	-	-	-	T	131.47(3)	82.67(3)	297.23(4)	114.50(4)	130.70(4)	78.03(3)
372	"	62.31(5)	40.98(5)	136.13(4)	126.67(4)	51.16(4)	208.77(4)	177.79(2)	126.99(4)	76.87(3)	100.95(4)	173.82(4)	A	66.73(3)	48.38(4)	119.36(5)	46.40(5)	54.63(4)	41.22(5)
384	"	42.55(3)	50.19(3)	87.94(3)	69.93(3)	44.87(2)	157.24(2)	103.73(2)	180.59(2)	306.39(3)	74.37(2)	54.49(2)		106.33(3)	277.73(3)	62.90(4)	75.25(4)	19.47(3)	75.95(4)
385	93-183	89.45(3)	47.34(2)	13.14(2)	35.28(2)	12.37(2)	120.63(2)	365.38(3)	67.96(2)	120.03(2)	-	60.84(2)	A	159.88(4)	54.50(3)	67.56(5)	58.20(5)	25.10(5)	53.34(5)
386	185-274	6.58(2)	217.27(4)	126.32(4)	192.93(4)	83.70(4)	98.77(4)	10.75(2)	5.64(3)	4.92(3)	47.39(2)	-	V	34.22(4)	11.83(3)	24.67(4)	5.28(4)	8.88(4)	25.45(4)
387	275-366	1.13(2)	10.44(2)	16.25(2)	4.27(2)	8.42(3)	-	-	-	-	2.83(3)	-	A	0.00(4)	0.77(3)	2.13(3)	3.00(3)	9.37(3)	0.88(5)
388	"	-	13.35(3)	9.51(2)	0.81(3)	2.75(2)	-	49.40(2)	-	-	0.59(2)	-	I	1.43(3)	22.42(4)	15.90(3)	5.33(3)	20.37(3)	2.43(4)
389	185-274	5.97(3)	32.09(2)	97.66(3)	263.19(2)	14.37(3)	102.17(4)	14.37(4)	31.64(5)	19.89(3)	58.33(4)	37.93(4)	L	102.30(3)	13.80(3)	26.20(4)	3.55(4)	12.65(4)	30.33(4)
390	93-183	19.21(2)	146.76(4)	39.00(3)	97.12(4)	79.62(4)	246.62(3)	81.48(3)	70.46(3)	165.12(3)	-	-	A	103.60(3)	91.38(4)	8.27(4)	16.40(5)	15.18(4)	15.86(5)
391	185-274	38.19(4)	183.12(3)	159.12(3)	74.09(3)	80.09(3)	-	-	-	-	36.69(3)	50.35(5)	B	2089.10(3)	12.38(4)	77.93(3)	16.00(3)	26.27(3)	62.30(3)
392	275-366	-	-	-	-	-	5.59(2)	0.00(2)	2.88(2)	-	-	1.26(2)	L	0.00(3)	1.60(4)	13.95(4)	0.50(3)	15.33(3)	0.93(3)
729	367-549	-	-	-	-	-	-	-	-	-	-	0.44(2)	E	0.00(3)	4.63(3)	21.57(3)	1.00(3)	0.00(3)	0.17(3)
730	550-731	-	-	-	-	-	0.00(2)	-	0.00(2)	-	-	-		0.00(3)	0.00(3)	31.03(3)	0.00(3)	0.00(3)	0.00(3)
731	367-549	-	-	-	-	-	-	-	-	-	-	-		0.00(3)	31.90(3)	8.60(3)	1.20(3)	7.90(3)	0.00(3)
732	550-731	-	-	-	-	-	0.00(2)	-	-	-	-	-		0.00(2)	0.00(2)	58.80(3)	8.17(3)	5.17(3)	0.47(3)
733	367-549	-	-	-	-	-	0.00(2)	0.00(2)	-	0.00(2)	-	0.00(5)		0.00(2)	0.50(3)	0.27(3)	1.75(4)	2.90(3)	0.65(4)
734	550-731	-	-	-	-	-	0.00(2)	0.15(2)	0.00(3)	0.39(2)	-	-		0.00(3)	0.33(3)	0.57(3)	3.67(3)	1.27(3)	0.00(3)
735	367-549	-	-	-	-	-	-	2.37(2)	-	0.00(2)	-	0.46(2)		0.00(3)	0.00(3)	6.70(3)	6.00(4)	21.45(4)	2.95(4)
736	550-731	-	-	-	-	-	0.00(2)	-	-	-	-	-		0.00(3)	0.00(3)	0.00(3)	2.83(3)	16.77(3)	0.60(3)
Biomass (t) (area surveyed)		69866	162861	155487	188862	111606	381700	219779	184359	302626	217317	255060		461839	153107	186357	146886	85115	152522
Biomass (t) (MM analysis)		122682	187267	215298	295863	154322	475805	321738	256432	456352	522405	320956		467414	160441	190020	149372	86853	155048

Table 5. Mean number per 30 minute set of American plaice from USSR spring surveys in Division 3M (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
501	128-146	-	72.51(2)	54.00(2)	-	12.34(2)	30.60(2)	19.03(2)	18.90(4)	36.63(3)	47.06(2)	31.03(3)		54.83(6)	151.25(4)	224.50(4)	81.50(4)	140.25(4)	9.83(6)
502	147-183	27.26(3)	26.23(3)	43.97(2)	39.60(4)	165.60(2)	62.57(3)	-	13.63(4)	38.47(5)	46.54(2)	37.29(6)		60.50(8)	114.00(10)	197.11(9)	88.40(10)	23.00(9)	26.67(9)
503	185-256	48.09(2)	33.17(2)	67.63(2)	-	50.23(3)	101.83(2)	23.14(2)	15.30(4)	8.23(3)	14.91(3)	20.40(6)		22.33(6)	30.71(7)	48.75(8)	28.57(7)	22.00(7)	32.86(7)
504	"	-	-	-	-	-	-	-	14.01(4)	10.46(3)	16.46(2)	29.96(4)		18.75(4)	8.75(4)	89.50(4)	16.25(4)	17.50(4)	15.00(4)
505	"	9.00(2)	22.37(2)	-	-	2.83(2)	-	6.43(2)	12.86(2)	5.40(2)	-	25.46(6)	B	36.29(7)	33.50(8)	41.63(8)	25.11(9)	7.89(9)	6.50(10)
506	"	5.91(2)	37.03(2)	150.69(2)	110.06(2)	20.31(2)	23.40(2)	-	5.14(2)	19.67(4)	-	20.78(5)	O	27.80(5)	15.00(5)	39.00(6)	27.00(6)	12.17(6)	22.67(6)
507	258-366	11.83(2)	-	19.29(2)	-	-	-	36.86(3)	8.23(2)	11.66(3)	14.66(4)	12.03(5)		20.80(10)	15.70(10)	17.13(8)	11.80(10)	9.67(9)	13.00(9)
508	"	4.63(2)	3.86(2)	0.00(2)	20.40(3)	4.11(2)	12.00(3)	34.71(2)	1.80(2)	2.91(3)	3.94(3)	0.77(2)	D	4.75(8)	3.10(10)	5.22(9)	1.38(8)	3.25(8)	1.63(8)
509	"	-	-	-	-	-	12.86(4)	0.51(3)	12.65(5)	0.93(5)	0.17(3)	-	A	3.75(4)	2.00(4)	40.00(4)	1.00(4)	0.00(4)	10.60(5)
510	"	8.74(2)	-	23.14(2)	22.11(2)	-	12.86(2)	-	9.00(4)	22.73(5)	56.31(2)	9.77(4)	T	46.91(11)	17.45(11)	50.20(10)	41.33(12)	17.70(10)	12.70(10)
511	"	-	10.54(2)	-	38.06(2)	-	24.69(3)	30.34(3)	5.66(7)	21.70(5)	7.20(2)	9.43(3)	A	28.75(8)	5.78(9)	19.00(9)	11.80(10)	6.00(9)	9.57(7)
512	367-549	-	-	-	-	-	3.86(2)	-	1.34(5)	-	1.29(2)	0.21(5)		4.88(8)	1.14(7)	0.25(8)	0.11(9)	0.13(8)	0.13(8)
513	"	-	-	-	-	23.66(2)	0.00(2)	-	0.31(5)	-	0.00(2)	0.26(4)	A	8.50(2)	0.33(3)	0.00(4)	0.00(3)	0.00(3)	0.00(3)
514	"	-	-	-	-	-	-	-	0.93(5)	0.39(4)	3.86(2)	1.17(2)	V	4.63(8)	5.71(7)	5.63(8)	2.63(8)	6.00(7)	1.63(8)
515	"	-	-	-	-	-	-	-	2.40(3)	1.37(3)	-	1.37(6)	A	8.13(8)	3.29(7)	1.89(9)	0.13(8)	1.50(8)	0.44(9)
516	550-731	-	-	-	-	-	-	-	-	-	-	0.13(4)	I	0.71(7)	0.57(7)	0.00(8)	0.00(8)	0.00(8)	0.25(8)
517	"	-	-	-	-	-	-	-	0.26(2)	-	-	1.24(3)	L	0.00(5)	0.00(4)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
518	"	-	-	-	-	-	-	-	-	-	-	-	A	1.75(4)	1.00(4)	1.33(3)	0.00(4)	0.00(3)	0.00(4)
519	"	-	-	-	-	-	-	-	-	-	-	-	B	4.40(5)	0.20(5)	0.00(5)	0.00(4)	0.80(5)	0.00(5)
													L						
Abundance (000s)													E						
(area surveyed)		5989	8099	15121	10971	14025	13292	7395	5186	8562	10592	8822		16864	17573	32376	15672	9736	8072
Abundance (000s)																			
(MM analysis)		10851	12878	21610	26368	61198	17176	16289	5235	8607	12053	8863		16865	18731	32377	15672	9737	8072

Table 6. Mean weight (kg) per 30 minute set of American plaice from USSR spring surveys in Division 3M (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
501	128-146	-	55.85(2)	40.32(2)	-	9.85(2)	15.34(2)	12.52(2)	13.36(4)	32.93(3)	37.41(2)	24.34(3)		36.85(6)	112.85(4)	129.80(4)	49.25(4)	91.70(4)	6.27(6)
502	147-183	16.61(3)	17.57(3)	30.83(2)	37.18(4)	111.93(2)	134.26(3)	-	7.62(4)	26.22(5)	19.68(2)	21.54(6)		31.86(8)	61.72(10)	120.67(9)	49.94(10)	13.23(9)	13.98(9)
503	185-256	30.03(2)	25.12(2)	49.76(2)	-	11.66(3)	31.67(2)	17.00(2)	8.31(4)	5.30(3)	6.31(3)	6.28(6)		7.98(6)	16.20(7)	33.53(8)	15.14(7)	14.00(7)	19.36(7)
504	"	-	-	-	-	-	-	-	6.66(4)	8.85(3)	12.37(2)	12.20(4)		6.30(4)	4.85(4)	71.15(4)	9.82(4)	14.38(4)	10.10(4)
505	"	5.63(2)	20.34(2)	-	-	1.59(2)	-	3.68(2)	7.02(2)	3.83(2)	-	12.77(6)	M	14.86(7)	15.70(8)	22.89(8)	15.68(9)	5.52(9)	4.23(10)
506	"	2.75(2)	28.34(2)	135.03(2)	67.29(2)	8.69(2)	8.04(2)	-	1.75(2)	13.29(4)	-	6.33(5)	O	9.58(5)	6.42(5)	21.70(6)	16.95(6)	7.58(6)	14.28(6)
507	258-366	6.09(2)	-	13.58(2)	-	-	-	20.33(3)	3.57(2)	5.79(3)	8.16(4)	3.36(5)		6.81(10)	6.93(10)	10.66(8)	8.04(10)	6.42(9)	7.23(9)
508	"	2.24(2)	2.83(2)	0.00(2)	5.19(3)	0.90(2)	3.46(3)	20.85(2)	1.44(2)	2.74(3)	2.83(3)	0.08(2)	D	1.63(8)	1.74(10)	4.50(9)	0.78(8)	2.96(8)	1.33(8)
509	"	-	-	-	-	-	8.96(4)	0.38(3)	12.10(5)	0.57(5)	0.21(3)	-	A	2.17(4)	0.98(4)	16.23(4)	0.73(4)	0.00(4)	6.62(5)
510	"	3.60(2)	-	19.08(2)	15.09(2)	-	6.59(2)	-	5.22(4)	15.59(5)	34.71(2)	2.43(4)	T	11.57(11)	7.55(11)	21.33(10)	22.33(12)	10.16(10)	14.14(10)
511	"	-	8.33(2)	-	25.02(2)	-	10.85(3)	20.66(3)	2.88(7)	14.04(5)	3.19(2)	2.73(3)	A	8.53(8)	2.36(9)	10.01(9)	7.98(10)	4.23(9)	5.34(7)
512	367-549	-	-	-	-	-	1.62(2)	-	0.85(5)	-	0.59(2)	0.10(5)		1.98(8)	0.43(7)	0.10(8)	0.07(9)	0.15(8)	0.08(8)
513	"	-	-	-	-	28.83(2)	0.00(2)	-	0.42(5)	-	0.00(2)	0.28(4)	A	2.55(2)	0.07(3)	0.00(4)	0.00(3)	0.00(3)	0.00(3)
514	"	-	-	-	-	-	-	-	0.60(5)	0.32(4)	1.62(2)	1.10(2)	V	1.81(8)	2.56(7)	2.51(8)	1.38(8)	4.04(7)	0.98(8)
515	"	-	-	-	-	-	-	-	1.82(3)	0.94(3)	-	0.82(6)	A	3.68(8)	1.47(7)	0.98(9)	0.15(8)	0.81(8)	0.20(9)
516	550-731	-	-	-	-	-	-	-	-	-	-	0.14(4)	I	0.26(7)	0.26(7)	0.00(8)	0.00(8)	0.00(8)	0.25(8)
517	"	-	-	-	-	-	-	-	0.31(2)	-	-	0.52(3)	L	0.00(5)	0.00(4)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
518	"	-	-	-	-	-	-	-	-	-	-	-	A	0.75(4)	0.55(4)	0.40(3)	0.00(4)	0.00(3)	0.00(4)
519	"	-	-	-	-	-	-	-	-	-	-	-	B	2.76(5)	0.10(5)	0.00(5)	0.00(4)	0.54(5)	0.00(5)
													L						
Biomass (t) (area surveyed)		3449	6217	12013	7360	8458	11699	4635	2987	5937	5973	3993	E	6746	9756	19090	9123	6285	4826
Biomass (t) (MM analysis)		6534	9525	17916	14104	47492	13712	10547	3022	5978	7098	4012		6747	10264	19090	9124	6284	4827

Table 7. Mean number per 30 minute set of American plaice from USSR surveys in Division 3N (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
357	275-366	6.94(2)	1.95(5)	1.54(3)	8.87(4)	18.26(4)	-	5.66(2)	73.37(3)	5.66(2)	4.89(2)	3.60(2)		3.50(4)	1.00(4)	42.75(4)	2.00(4)	37.00(3)	7.50(6)
358	185-274	122.01(4)	30.34(2)	43.71(3)	54.77(4)	134.23(2)	543.70(5)	28.80(2)	-	-	59.49(3)	31.89(4)		3.20(5)	44.00(4)	326.80(5)	472.40(5)	6.00(3)	728.22(9)
359	93-183	159.17(4)	136.59(5)	194.49(6)	324.00(4)	184.32(5)	251.49(4)	97.03(6)	227.52(5)	123.94(3)	158.74(3)	149.40(4)		288.20(5)	669.00(4)	430.75(4)	869.25(4)	310.50(4)	316.40(5)
360	57-91	164.57(5)	146.29(9)	440.40(6)	380.28(7)	203.14(7)	1297.29(2)	-	913.89(6)	429.94(3)	183.34(4)	131.53(4)		192.80(5)	491.00(7)	456.60(5)	115.80(5)	260.40(5)	321.36(11)
361	"	32.14(2)	13.71(3)	61.20(2)	37.11(6)	68.40(3)	67.11(2)	54.60(6)	71.49(2)	33.94(3)	17.49(2)	51.43(2)		25.00(4)	37.00(3)	51.75(4)	18.50(4)	32.25(4)	51.00(4)
362	"	-	145.16(4)	79.59(4)	191.89(8)	106.20(4)	63.77(2)	34.71(2)	70.20(2)	63.26(2)	185.91(2)	68.40(2)		83.50(4)	102.75(4)	52.00(4)	106.60(5)	68.75(4)	102.25(4)
373	"	18.17(3)	175.24(4)	371.06(4)	239.91(4)	113.79(4)	564.86(3)	90.17(3)	118.80(3)	343.89(3)	188.36(4)	88.46(3)	B	213.25(4)	152.00(4)	88.40(5)	54.40(5)	10.00(4)	36.80(5)
374	"	36.77(2)	267.77(3)	51.17(2)	-	150.17(2)	-	66.86(2)	-	-	-	-	O	22.00(3)	315.67(3)	331.75(4)	21.25(4)	9.67(3)	17.75(4)
375	<56	9.60(3)	33.53(5)	50.91(4)	127.76(7)	18.62(5)	29.57(4)	-	31.71(3)	9.94(3)	27.60(3)	43.20(4)		19.00(3)	9.00(3)	23.25(4)	7.00(4)	1.67(3)	14.75(4)
376	<56	-	219.89(9)	129.00(6)	34.25(5)	43.46(2)	40.11(2)	-	28.11(3)	182.06(2)	222.69(2)	66.14(5)	D	16.80(5)	32.50(4)	23.25(4)	0.25(4)	10.00(4)	5.00(4)
377	93-183	128.74(3)	-	-	-	-	1153.14(5)	-	-	284.79(4)	459.26(3)	615.60(3)	A	554.33(3)	687.75(4)	330.00(3)	526.33(3)	388.67(3)	1209.50(4)
378	185-274	188.74(2)	-	40.63(2)	-	43.97(2)	-	354.34(3)	426.34(3)	133.46(2)	-	24.69(3)	T	74.00(3)	128.50(4)	195.00(3)	17.00(3)	42.67(3)	204.75(4)
379	275-366	38.31(2)	-	-	41.66(2)	-	3.86(2)	10.16(4)	115.20(2)	-	6.17(2)	-	A	6.75(4)	23.75(4)	10.33(3)	19.33(3)	6.33(3)	267.75(4)
380	"	-	-	95.49(3)	94.11(2)	85.37(3)	1.54(2)	41.40(2)	73.37(3)	28.29(2)	9.51(2)	4.97(3)		6.50(4)	14.67(3)	53.67(3)	31.33(3)	197.33(3)	73.60(5)
381	185-274	115.71(7)	316.03(6)	298.90(5)	220.80(6)	90.26(6)	171.60(3)	28.80(3)	105.17(2)	28.29(4)	-	54.51(4)	A	236.33(3)	56.20(5)	397.33(3)	42.50(2)	160.33(3)	312.25(4)
382	93-183	253.91(7)	93.43(6)	221.04(5)	440.64(5)	218.31(4)	242.57(3)	214.97(3)	679.54(3)	183.26(3)	732.47(4)	401.01(4)	V	117.67(3)	249.33(3)	42.67(3)	17.67(3)	88.75(4)	190.00(7)
383	57-91	-	-	-	-	-	-	-	-	-	-	-	A	93.33(3)	159.00(3)	30.33(3)	18.75(4)	15.75(4)	46.67(3)
723	367-549	-	-	-	-	-	0.00(2)	-	-	1.80(2)	-	-	I	0.00(3)	5.80(5)	0.00(3)	1.50(4)	684.00(3)	0.20(5)
724	550-731	-	-	-	-	-	-	-	-	-	-	-	L	0.33(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(4)
725	367-549	-	-	-	-	-	-	-	-	-	-	-	A	0.00(3)	0.33(3)	2.33(3)	0.33(3)	7.33(3)	1.25(4)
726	550-731	-	-	-	-	-	-	-	-	-	-	-	B	0.67(3)	0.00(2)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
727	367-549	-	-	-	-	-	0.00(3)	2.57(2)	-	-	3.94(3)	-	L	18.75(4)	25.67(3)	4.33(3)	24.67(3)	12.75(4)	7.00(6)
728	550-731	-	-	-	-	-	-	-	-	-	-	-	E	0.00(3)	0.00(3)	0.00(3)	0.00(3)	5.67(3)	0.00(5)
Abundance (000s) (area surveyed)		69814	149881	229619	218512	129941	447715	52196	293399	207808	180044	104763		130938	230190	190255	99688	106181	154596
Abundance (000s) (MM analysis)		95861	158779	232537	227826	140578	463446	86226	308858	217837	194476	11646		130938	230190	190255	99688	106181	154596

Table 8. Mean weight (kg) per 30 minute set of American plaice from USSR surveys in Division 3N (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
357	275-366	2.83(2)	1.28(5)	0.58(3)	8.41(4)	19.18(4)	-	4.27(2)	29.19(3)	3.70(2)	4.58(2)	2.65(2)		2.30(4)	0.57(4)	33.30(4)	1.00(4)	12.20(3)	5.65(6)
358	185-274	71.29(4)	18.54(2)	28.78(3)	42.35(4)	83.47(2)	258.79(5)	10.29(2)	-	-	43.80(3)	22.60(4)		3.04(5)	36.80(4)	82.36(5)	113.80(5)	1.27(3)	154.04(9)
359	93-183	60.54(4)	83.54(5)	99.75(6)	134.87(4)	45.33(5)	120.41(4)	46.47(6)	64.15(5)	49.70(3)	95.26(3)	72.72(4)		115.50(5)	472.00(4)	118.73(4)	131.50(4)	38.92(4)	47.32(5)
360	57-91	74.37(8)	42.89(9)	95.23(6)	92.81(7)	47.31(7)	244.01(2)	-	242.89(6)	109.46(3)	48.96(4)	57.29(4)		82.28(5)	87.77(7)	103.22(5)	18.54(5)	27.06(5)	37.75(11)
361	"	36.05(2)	14.23(3)	37.93(2)	18.55(6)	38.79(3)	42.58(2)	37.50(6)	45.31(2)	26.81(3)	12.47(2)	40.94(2)		21.13(4)	38.43(3)	49.35(4)	24.25(4)	33.75(4)	48.30(4)
362	"	-	62.85(4)	49.31(4)	70.28(8)	47.64(4)	34.13(2)	27.18(2)	39.93(2)	43.30(2)	112.91(2)	49.60(2)		60.68(4)	76.85(4)	43.45(4)	80.40(5)	38.33(4)	72.93(4)
373	"	25.32(3)	72.37(4)	330.53(4)	122.59(4)	72.94(4)	248.61(3)	48.24(3)	58.75(3)	204.63(3)	113.94(4)	78.65(3)	M	143.40(4)	139.40(4)	74.78(5)	39.60(5)	6.85(4)	22.58(5)
374	"	32.48(2)	200.98(3)	50.43(2)	-	63.33(2)	-	48.37(2)	-	-	-	-	O	24.57(3)	250.17(3)	205.48(4)	17.25(4)	5.63(3)	6.80(4)
375	<56	13.66(3)	41.92(5)	53.13(4)	149.13(7)	16.81(5)	27.88(4)	-	27.05(3)	8.98(3)	37.73(3)	48.97(4)		25.46(5)	8.37(3)	28.10(4)	10.82(4)	1.43(3)	17.93(4)
376	"	-	99.24(9)	73.17(6)	9.91(5)	18.44(2)	22.73(2)	-	16.44(3)	98.92(2)	82.98(2)	46.39(5)	D	20.94(5)	41.58(4)	17.25(4)	0.10(4)	2.45(4)	0.68(4)
377	93-183	44.76(3)	-	-	-	-	307.17(5)	-	-	72.28(4)	153.98(3)	214.15(3)	A	173.87(3)	147.05(4)	83.60(3)	94.00(3)	90.77(3)	87.53(4)
378	185-274	71.87(2)	-	17.10(2)	-	10.88(2)	-	110.86(3)	148.75(3)	42.89(2)	-	9.48(3)	T	12.82(3)	79.57(4)	90.40(3)	5.33(3)	13.60(3)	41.85(4)
379	275-366	22.99(2)	-	-	42.25(2)	-	0.67(2)	4.28(4)	30.37(2)	-	2.03(2)	-	A	4.75(4)	7.32(4)	6.63(3)	4.67(3)	1.93(3)	115.80(4)
380	"	-	-	82.30(3)	44.38(2)	57.63(3)	1.33(2)	17.79(2)	21.39(3)	8.25(2)	4.68(2)	1.75(3)		2.92(4)	5.87(3)	16.77(3)	12.17(3)	103.50(3)	27.52(5)
381	185-274	49.81(7)	261.71(6)	182.21(5)	92.25(6)	31.89(6)	63.05(3)	7.46(3)	31.29(2)	9.90(4)	-	19.70(4)	A	88.33(3)	35.86(5)	142.80(3)	11.50(2)	33.90(3)	58.17(4)
382	93-183	66.82(7)	77.16(6)	83.24(5)	217.25(5)	62.70(4)	86.44(3)	63.65(3)	185.40(3)	75.72(3)	411.87(4)	200.60(4)	V	41.40(3)	103.67(3)	10.83(3)	4.17(3)	23.97(4)	38.93(7)
383	57-91	-	-	-	-	-	-	-	-	-	-	-	A	55.57(3)	107.27(3)	11.90(3)	6.15(4)	4.55(4)	25.97(3)
723	367-549	-	-	-	-	-	0.00(2)	-	-	2.49(2)	-	-	I	0.00(3)	3.98(5)	0.00(3)	1.25(4)	601.50(3)	0.14(5)
724	550-731	-	-	-	-	-	-	-	-	-	-	-	L	0.23(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(4)
725	367-549	-	-	-	-	-	-	-	-	-	-	-	A	0.00(3)	0.20(3)	0.97(3)	0.33(3)	4.97(3)	0.57(4)
726	550-731	-	-	-	-	-	-	-	-	-	-	-	B	0.43(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
727	367-549	-	-	-	-	-	0.00(3)	1.77(2)	-	-	3.62(3)	-	L	7.80(4)	14.00(3)	2.53(3)	9.33(3)	5.13(4)	2.85(6)
728	550-731	-	-	-	-	-	-	-	-	-	-	-	E	0.00(3)	0.00(3)	0.00(3)	0.00(3)	2.97(3)	0.00(5)
Biomass (t) (area surveyed)		37107	74401	122262	92366	52194	129884	27879	94216	89940	90533	65435		75157	112866	79000	38817	30917	44444
Biomass (t) (MM analysis)		50740	79157	124345	99647	56357	137650	55435	101201	95962	97479	70831		75159	112867	79001	38817	30917	44444

Table 9. Mean number per 30 minute set of American plaice from USSR surveys in Division 3Ø (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
329	93-183	66.69(3)	227.93(5)	21.94(3)	28.54(2)	162.00(3)	367.71(3)	71.83(3)	142.63(3)	123.81(4)	286.97(3)	236.31(2)		202.67(3)	30.00(3)	266.75(4)	171.00(4)	240.50(4)	62.25(4)
330	57-91	32.40(3)	197.57(6)	100.67(4)	265.24(4)	82.20(6)	55.20(3)	50.06(3)	41.83(3)	41.14(2)	23.40(2)	59.83(3)		135.00(4)	76.67(3)	80.40(5)	29.40(5)	14.80(5)	32.20(5)
331	"	-	141.94(2)	-	-	-	-	-	-	-	120.09(2)	-		157.33(3)	13.33(3)	43.00(3)	38.67(3)	38.67(3)	21.67(3)
332	93-183	80.74(8)	69.38(10)	56.44(8)	271.77(9)	111.37(9)	45.17(6)	74.57(6)	49.68(5)	80.95(5)	18.39(4)	18.96(7)		16.00(4)	16.00(5)	29.25(4)	45.25(4)	53.00(4)	80.25(4)
333	185-274	12.73(4)	29.83(2)	19.80(4)	14.91(4)	4.89(4)	5.27(4)	13.20(3)	0.00(2)	1.54(4)	2.83(2)	1.20(3)		9.00(3)	0.00(3)	0.00(3)	3.00(3)	0.33(3)	2.20(5)
334	275-366	0.00(2)	2.40(3)	-	-	-	-	-	0.26(2)	-	6.69(2)	-		3.33(3)	0.50(4)	0.00(3)	0.00(3)	0.00(3)	0.00(4)
335	"	-	-	-	-	-	-	-	-	-	14.66(2)	-		6.00(4)	0.00(3)	5.67(3)	0.00(3)	0.67(3)	1.00(3)
336	185-274	1.80(2)	10.29(3)	16.46(2)	0.00(2)	30.09(2)	26.23(2)	24.34(3)	16.97(2)	0.00(2)	42.94(2)	0.26(2)	N	25.50(4)	23.67(3)	0.00(3)	0.00(3)	15.00(4)	1.33(6)
337	93-183	21.43(3)	112.89(4)	80.10(4)	98.23(6)	36.90(4)	35.83(3)	103.20(3)	28.03(4)	29.19(4)	37.89(3)	20.57(4)	O	30.75(4)	46.00(3)	118.33(3)	15.33(3)	80.75(4)	40.00(4)
338	57-91	175.76(4)	31.20(3)	118.63(3)	176.57(3)	197.83(3)	147.34(4)	36.90(4)	41.66(2)	67.54(3)	115.97(4)	46.97(3)		27.00(4)	90.33(3)	85.00(3)	55.00(3)	69.20(5)	43.60(5)
339	93-183	-	504.00(2)	-	636.69(3)	194.91(2)	-	-	-	-	-	-	D	230.00(3)	208.67(3)	158.00(3)	139.67(3)	108.00(3)	231.67(3)
340	57-91	-	312.17(4)	-	-	212.66(2)	-	-	-	-	-	-	A	130.33(3)	71.67(3)	144.50(4)	33.75(4)	104.67(3)	86.36(7)
351	"	44.74(2)	72.86(3)	109.54(2)	203.14(6)	-	131.31(3)	93.09(2)	69.69(2)	42.94(2)	76.89(2)	64.54(2)	T	173.00(5)	112.60(5)	202.25(4)	41.60(5)	41.20(5)	111.20(5)
352	"	52.25(5)	98.57(6)	60.54(7)	55.80(6)	191.44(8)	54.31(5)	102.77(6)	116.85(5)	162.45(8)	77.25(5)	114.79(5)	A	95.00(5)	27.75(4)	24.50(4)	13.00(4)	194.17(6)	28.50(6)
353	"	195.94(2)	115.71(2)	383.14(2)	-	-	126.00(2)	-	419.91(2)	-	-	180.51(2)		125.60(5)	144.75(4)	167.67(3)	122.00(3)	82.40(5)	152.00(4)
354	93-183	106.46(5)	93.21(4)	97.71(5)	205.51(5)	36.31(5)	160.71(4)	70.97(3)	27.90(4)	190.29(2)	26.40(3)	29.19(4)	A	76.77(3)	55.00(3)	95.67(3)	161.33(3)	33.33(3)	131.00(4)
355	185-274	12.86(2)	29.66(3)	0.00(2)	-	-	127.54(2)	12.09(2)	21.86(2)	26.91(3)	-	-	V	4.33(3)	4.75(4)	10.00(3)	20.00(3)	34.00(4)	18.25(4)
356	275-366	-	-	-	3.09(2)	-	-	-	-	6.43(2)	-	-	A	5.00(3)	0.00(3)	0.00(3)	4.00(3)	0.67(3)	43.50(4)
717	367-549	-	-	-	-	-	-	-	-	-	0.00(2)	0.00(2)	I	0.00(3)	0.33(3)	0.00(3)	0.00(4)	0.00(3)	0.00(3)
718	550-731	-	-	-	-	-	-	-	-	-	-	-	L	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
719	367-549	-	-	-	-	-	9.43(3)	-	-	-	-	-	A	0.00(4)	0.33(3)	0.00(3)	0.00(3)	0.33(3)	0.33(3)
720	550-731	-	-	-	-	-	-	-	-	-	-	-	B	0.00(3)	0.00(3)	1.33(3)	0.00(2)	0.00(3)	0.00(3)
721	367-549	-	-	-	-	-	-	-	-	-	-	-	L	1.33(3)	0.00(3)	0.00(3)	0.00(3)	3.33(3)	9.25(4)
722	550-731	-	-	-	-	-	-	-	-	-	-	-	K	0.00(3)	0.00(2)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
Abundance (000s) (area surveyed)		84345	185323	113769	175665	141730	131927	72853	109490	83411	92385	98063		146778	90928	152784	75698	122219	92717
Abundance (000s) (MM analysis)		107990	185649	152297	223127	203292	170069	118638	189146	137006	173892	130100		146778	90928	152784	75698	122220	92718

Table 10. Mean weight (kg) per 30 minute set of American plaice from USSR surveys in Division 3O (number of successful sets in brackets).

Stratum	Depth	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
329	93-183	21.39(3)	56.33(5)	5.19(3)	5.07(2)	34.39(3)	62.15(3)	34.44(3)	32.28(3)	43.62(4)	107.33(3)	135.28(2)		71.80(3)	13.63(3)	65.78(4)	40.50(4)	64.47(4)	17.00(4)
330	57-91	22.20(3)	120.81(6)	50.85(4)	82.05(4)	37.54(6)	47.32(3)	36.07(3)	29.02(3)	32.12(2)	21.24(2)	53.93(3)		97.63(4)	37.13(3)	53.54(5)	26.90(5)	12.94(5)	20.04(5)
331	"	-	64.41(2)	-	-	-	-	-	-	-	39.47(2)	-		118.43(3)	12.27(3)	29.80(3)	18.67(3)	23.57(3)	10.00(3)
332	93-183	22.23(8)	17.35(10)	17.42(8)	57.38(9)	24.47(9)	15.25(6)	22.41(6)	12.22(5)	21.87(5)	7.11(4)	8.04(7)		8.20(4)	6.20(5)	12.83(4)	28.00(4)	12.70(4)	26.57(4)
333	185-274	4.36(4)	8.74(2)	7.84(4)	7.43(4)	3.15(4)	3.41(4)	5.54(3)	0.00(2)	0.40(4)	0.77(2)	1.29(3)		1.87(3)	0.00(3)	0.00(3)	1.67(3)	0.07(3)	0.56(5)
334	275-366	0.00(2)	0.67(3)	-	-	-	-	-	0.13(2)	-	2.67(2)	-		1.27(3)	0.63(4)	0.00(3)	0.00(3)	0.00(3)	0.00(4)
335	"	-	-	-	-	-	-	-	-	-	7.46(2)	-		3.30(4)	0.00(3)	1.23(3)	0.00(3)	0.20(3)	0.37(3)
336	185-274	0.36(2)	3.82(3)	8.15(2)	0.00(2)	10.75(2)	15.08(2)	7.80(3)	4.53(2)	0.00(2)	16.53(2)	0.15(2)	M	14.23(4)	7.60(3)	0.00(3)	0.00(3)	4.25(4)	0.33(6)
337	93-183	4.89(3)	30.21(4)	19.43(4)	32.88(6)	8.13(4)	12.42(3)	33.45(3)	7.53(4)	10.98(4)	15.09(3)	11.21(4)	O	21.30(4)	26.67(3)	35.27(3)	4.50(3)	25.00(4)	13.08(4)
338	57-91	63.42(4)	24.03(3)	40.30(3)	42.84(3)	73.97(3)	41.24(4)	21.39(4)	22.17(2)	29.06(3)	40.62(4)	36.69(3)		21.65(4)	57.67(3)	40.23(3)	19.00(3)	42.06(5)	22.74(5)
339	93-183	-	140.84(2)	-	114.38(3)	42.33(2)	-	-	-	-	-	-	D	78.10(3)	80.50(3)	63.07(3)	41.33(3)	27.93(3)	70.70(3)
340	57-91	-	283.37(4)	-	-	112.86(2)	-	-	-	-	-	-	A	77.17(3)	38.70(3)	79.49(4)	17.33(4)	40.77(3)	45.96(7)
351	"	40.68(2)	36.27(3)	89.33(2)	121.45(6)	-	50.89(3)	57.29(2)	39.60(2)	19.90(2)	46.80(2)	57.93(2)	T	109.66(5)	66.60(5)	133.73(4)	39.00(5)	24.48(5)	54.86(5)
352	"	52.71(5)	75.51(6)	24.14(7)	36.29(6)	128.01(8)	35.81(5)	50.73(6)	67.24(5)	117.36(8)	36.91(5)	94.22(5)	A	62.86(5)	21.25(4)	22.88(4)	13.75(4)	41.73(6)	25.05(6)
353	"	73.52(2)	41.58(2)	99.44(2)	-	-	32.93(2)	-	130.45(2)	-	-	127.34(2)		77.46(5)	69.58(4)	67.90(3)	40.07(3)	20.34(5)	42.30(4)
354	93-183	31.99(5)	34.48(4)	32.65(5)	73.12(5)	7.24(5)	63.38(4)	23.28(3)	7.64(4)	46.03(2)	12.75(3)	12.78(4)	A	49.40(3)	19.77(3)	27.70(3)	47.67(3)	7.13(3)	19.48(4)
355	185-274	4.55(2)	18.43(3)	0.00(2)	-	-	39.44(2)	7.56(2)	5.01(2)	11.33(3)	-	-	V	2.80(4)	2.08(4)	6.40(3)	8.33(3)	15.00(4)	4.30(4)
356	275-366	-	-	-	2.06(2)	-	-	-	-	3.29(2)	-	-	A	2.50(3)	0.00(3)	0.00(3)	3.00(3)	0.63(3)	17.63(4)
717	367-549	-	-	-	-	-	-	-	-	-	0.00(2)	0.00(2)	I	0.00(3)	0.30(3)	0.00(3)	0.00(4)	0.00(3)	0.00(3)
718	550-731	-	-	-	-	-	4.09(3)	-	-	-	-	-	L	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
719	367-549	-	-	-	-	-	-	-	-	-	-	-	A	0.00(4)	0.30(3)	0.00(3)	0.00(3)	0.10(3)	0.23(3)
720	550-731	-	-	-	-	-	-	-	-	-	-	-	B	0.00(3)	0.00(3)	1.00(3)	0.00(2)	0.00(3)	0.00(3)
721	367-549	-	-	-	-	-	-	-	-	-	-	-	L	1.63(3)	0.00(3)	0.00(3)	0.00(3)	0.87(3)	2.48(4)
722	550-731	-	-	-	-	-	-	-	-	-	-	-	E	0.00(3)	0.00(2)	0.00(3)	0.00(3)	0.00(3)	0.00(3)
Biomass (t) (area surveyed)		41726	100575	47494	61462	62184	43941	37317	44803	43612	40816	71349		85784	49146	74180	33561	39735	39348
Biomass (t) (MM analysis)		53853	100784	57875	76350	87408	56928	57168	64444	70134	85248	85636		85786	49146	74184	33562	39735	39349

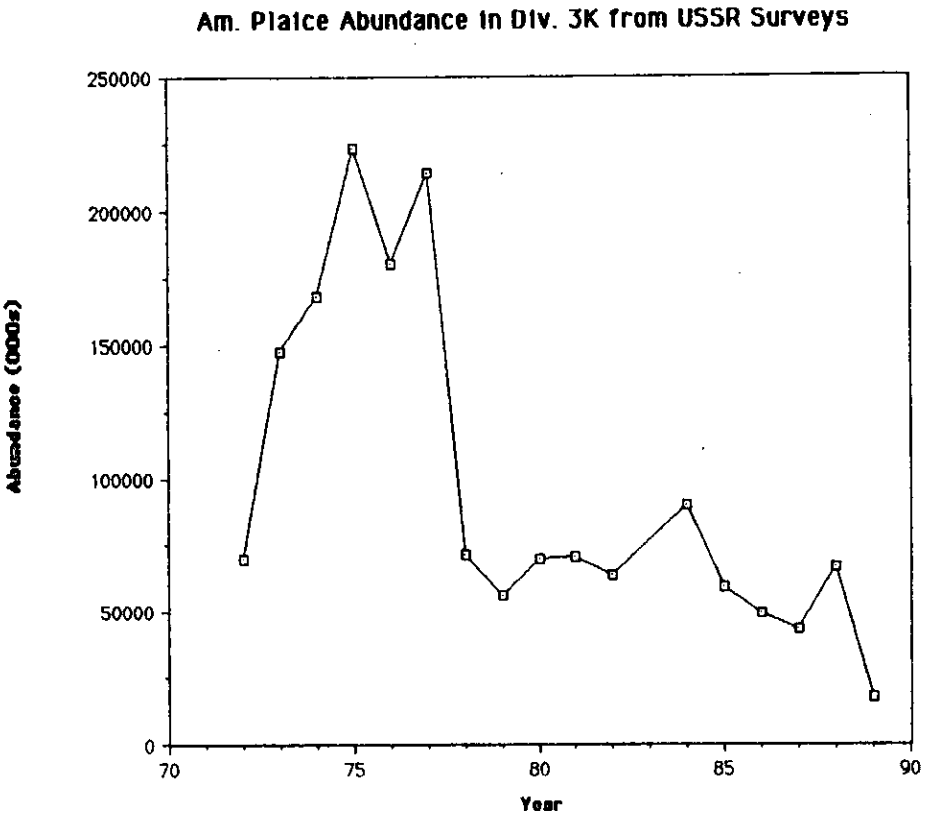

Fig. 1. Div. 3K abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

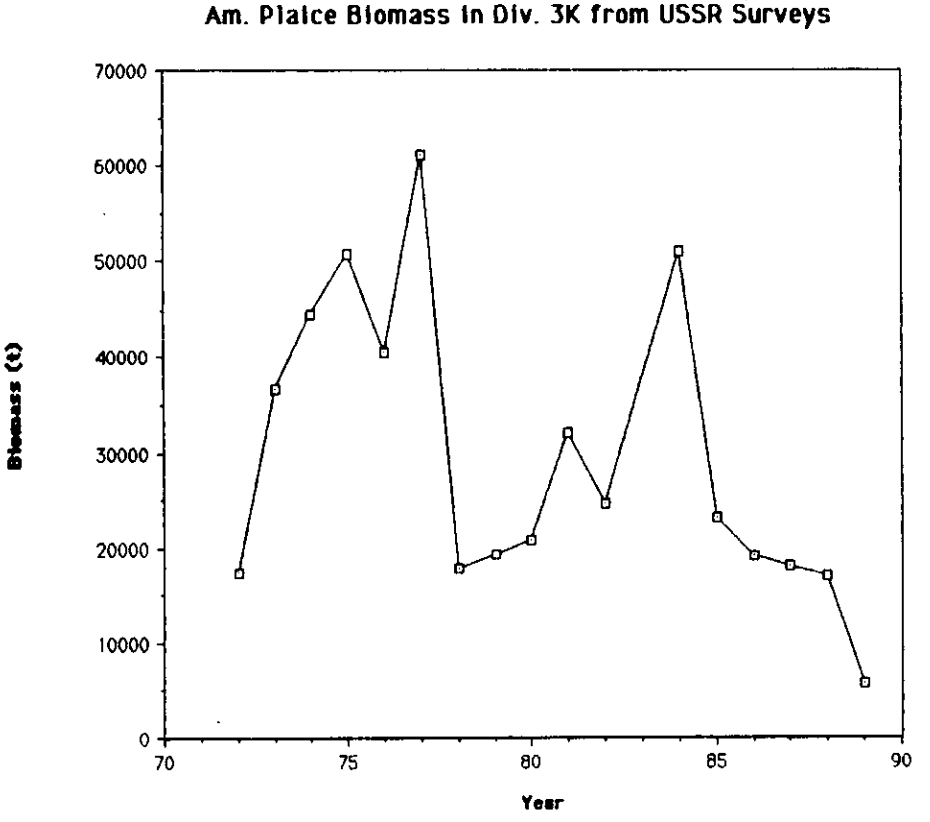

Fig. 2. Div. 3K biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

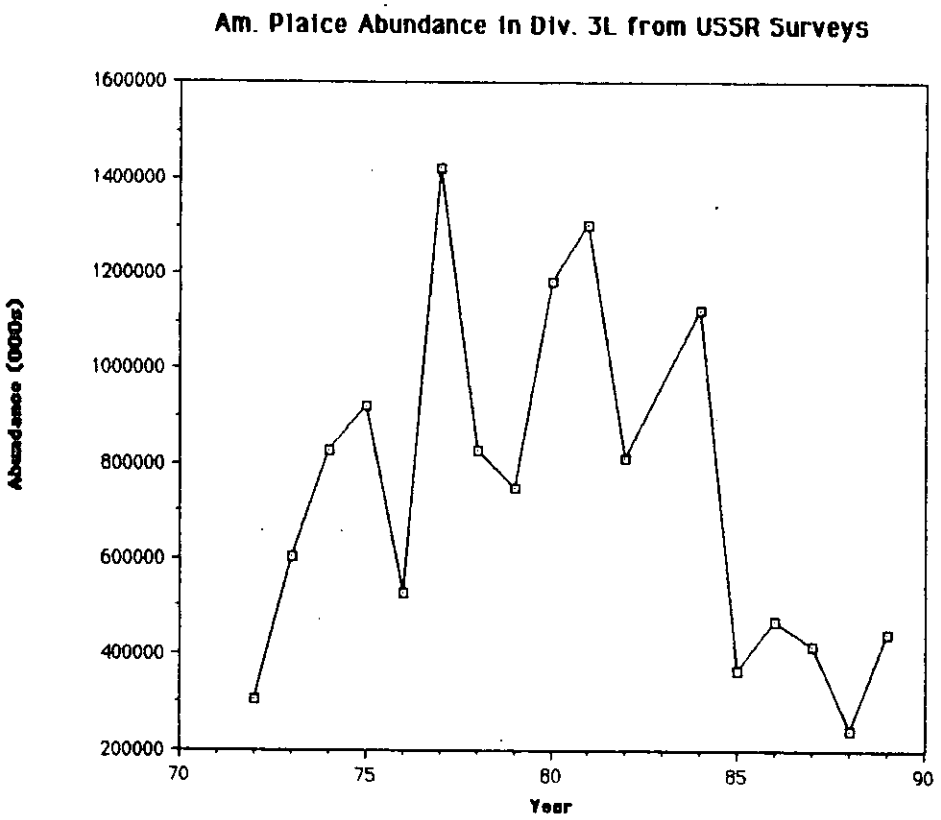

Fig. 3. Div. 3L abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

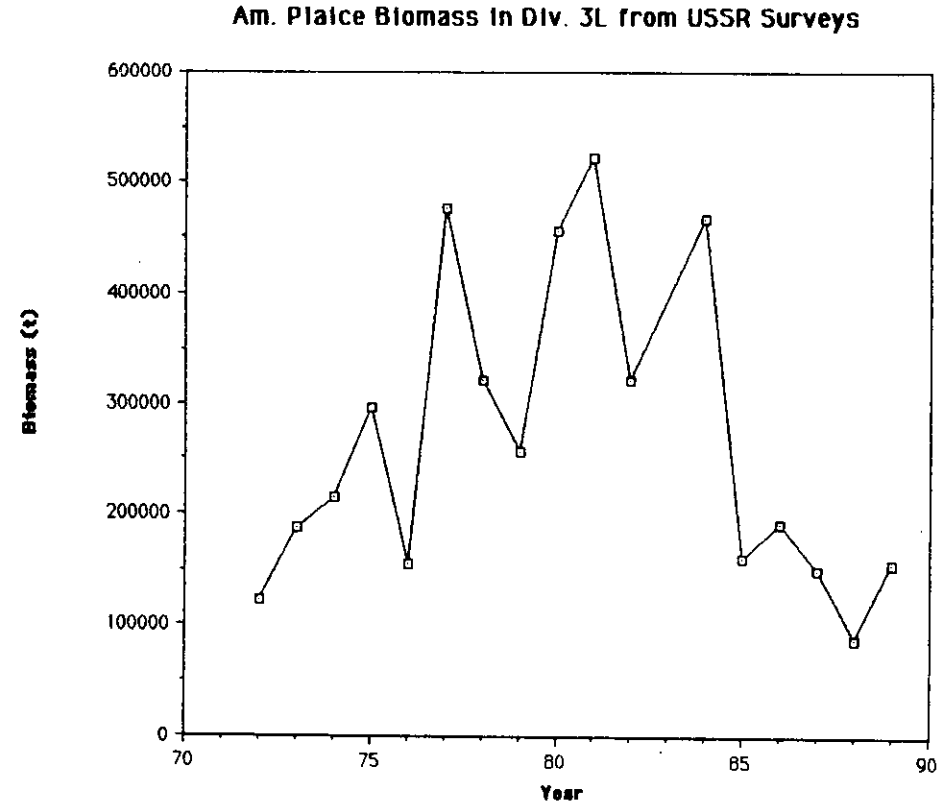

Fig. 4 Div. 3L biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

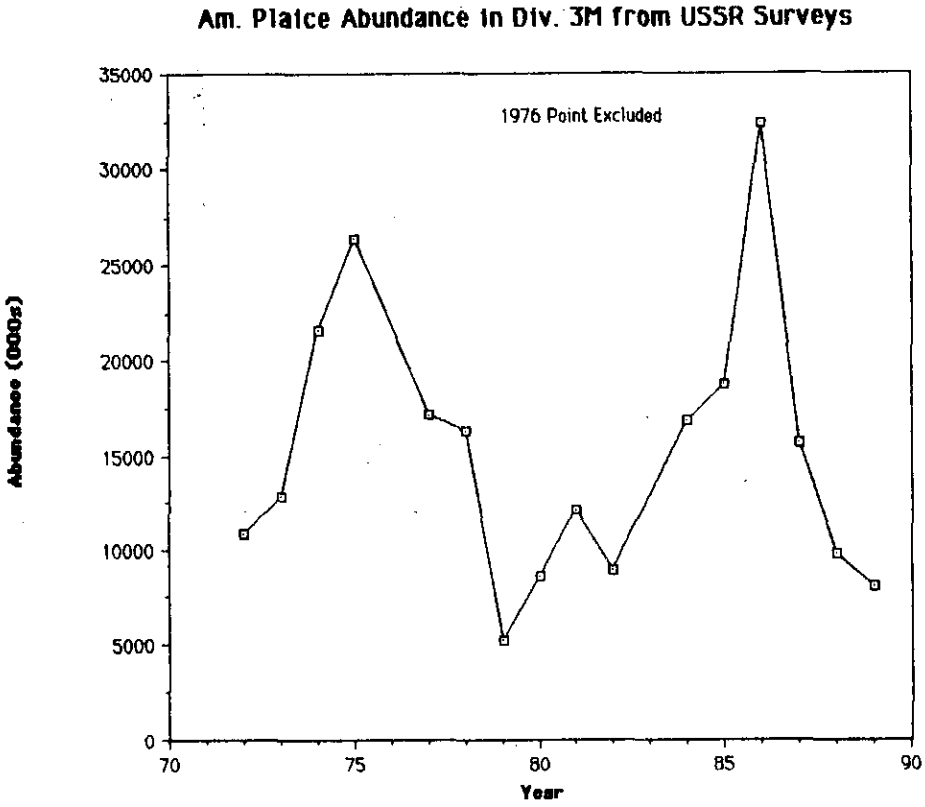

Fig. 5. Div. 3M abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (*no survey data available for 1983*).

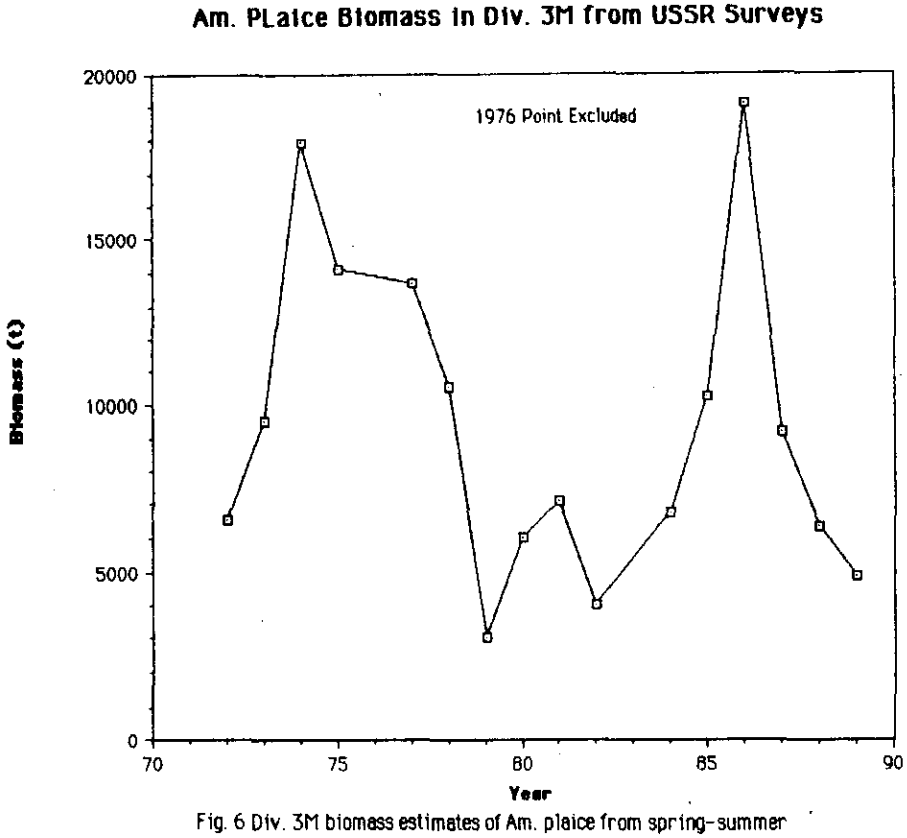

Fig. 6 Div. 3M biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

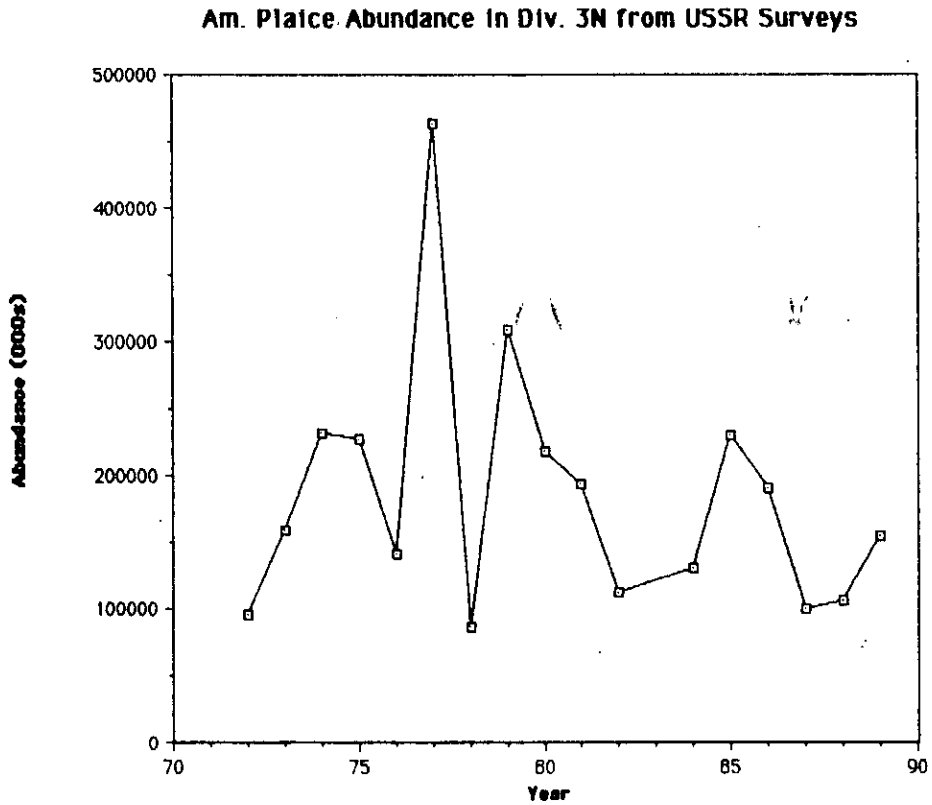

Fig. 7. Div. 3N abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

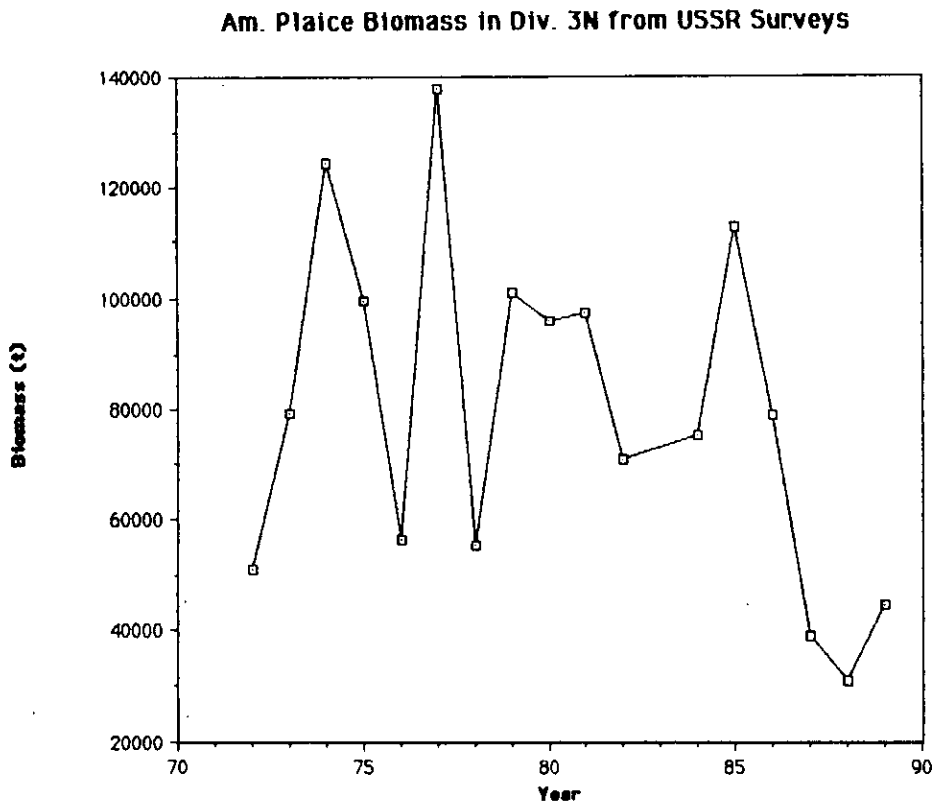

Fig. 8. Div. 3N biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

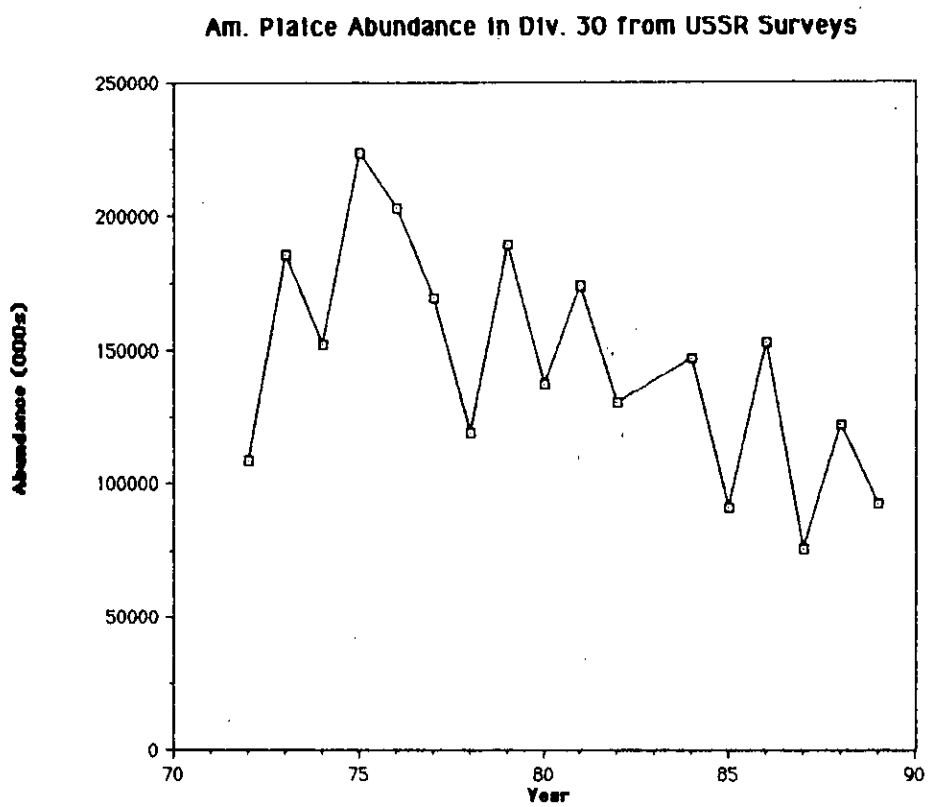

Fig. 9. Div. 30 abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

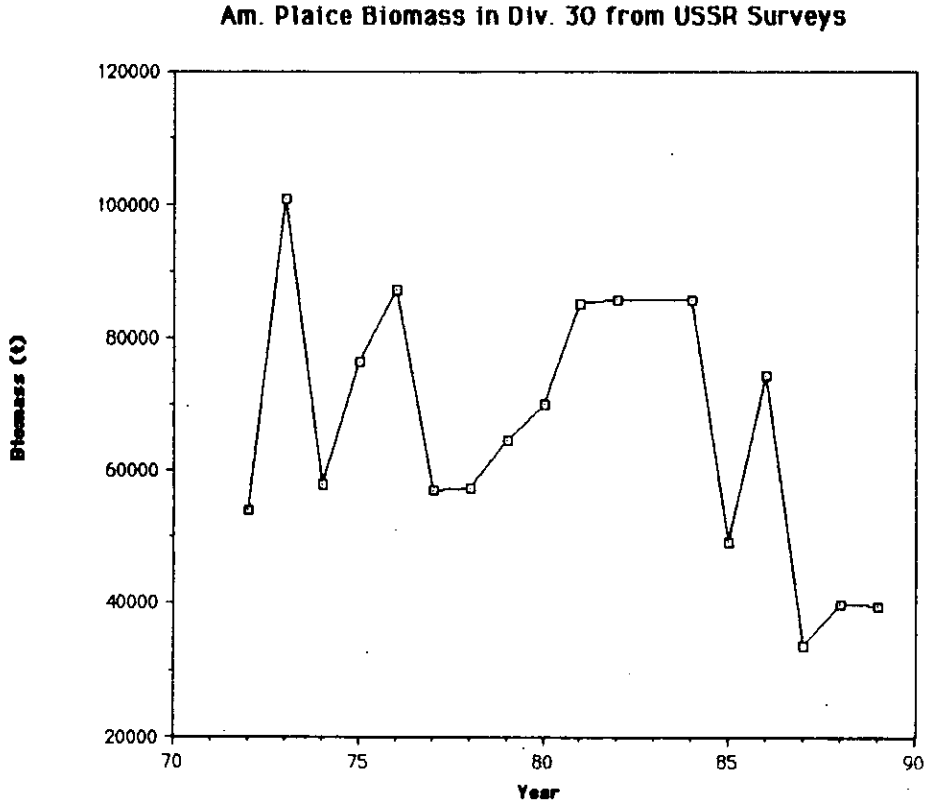

Fig. 10. Div. 30 biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

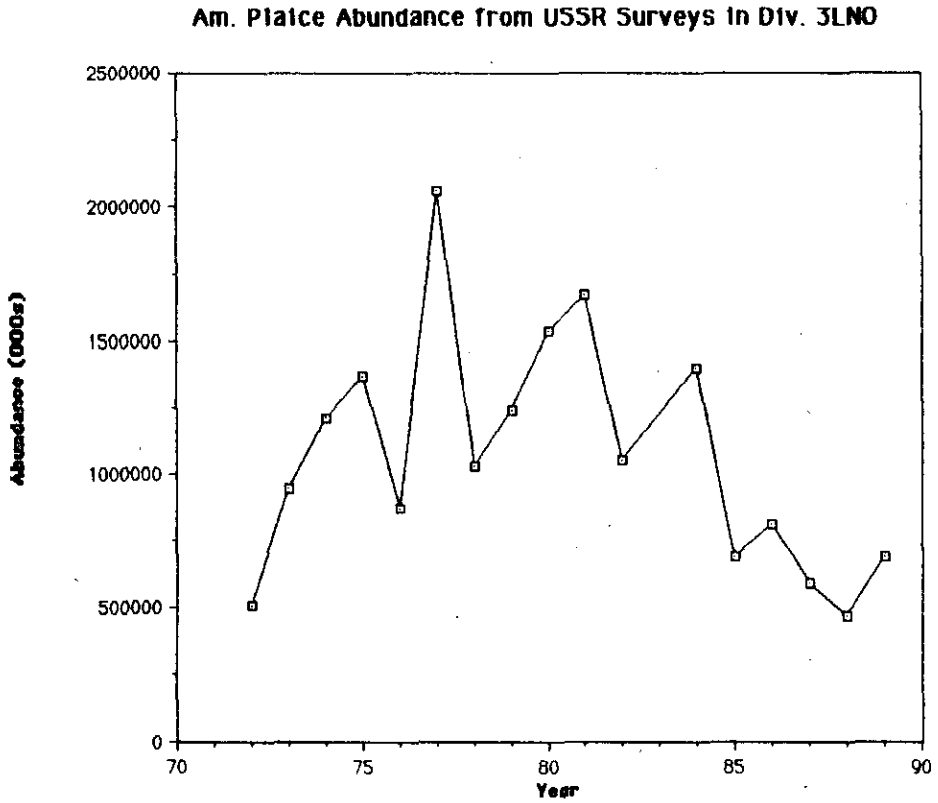

Fig. 11. Div. 3LNO abundance estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).

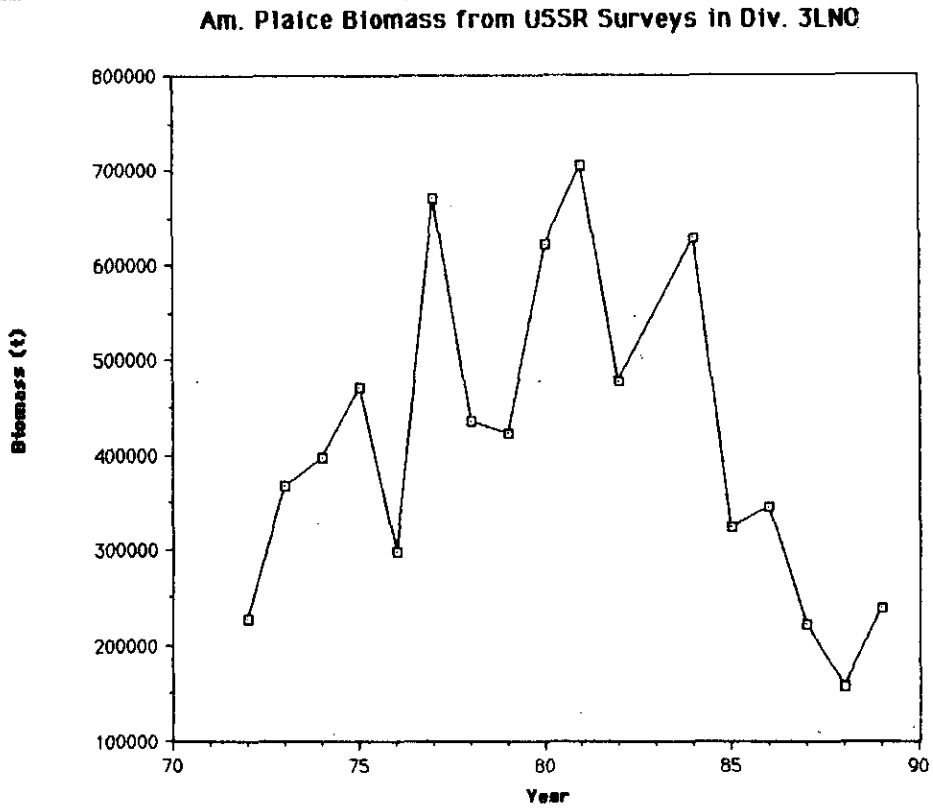

Fig. 12. Div. 3LNO biomass estimates of Am. plaice from spring-summer surveys using a multiplicative model to estimate missing strata (no survey data available for 1983).