Northwest Atlantic Fisheries Organization

Serial No. N1940 NAFO SCR Doc. 91/56

SCIENTIFIC COUNCIL MEETING - JUNE 1991

Update of Abundance and Biomass Estimates of Witch Flounder in Divisions 3NO and Greenland halibut in Divisions 3KL from USSR Surveys in 1987-90

W. B. Brodie[1], A. K. Chumakov[2], and W. R. Bowering[1]

[1] Science Branch, Department of Fisheries and Oceans
P. O. Box 5667, St. John's, Newfoundland, Canada A1C 5X1

[2] Polar Research Institute of Marine Fisheries and Oceanography (PINRO)
6 Knipovich Street, Murmansk, 183763, USSR

Introduction

Bowering and Chumakov (1990) presented the results of USSR surveys in 1987-89 for Greenland halibut in Div. 3KL and witch flounder in Div. 3NO. The purpose was to document some survey data for these species in deep water areas where Canadian spring surveys generally have not covered, e.g., greater than 366 m in Div. 3L for G. halibut and greater than 366 m in Div. 3NO for witch flounder. This paper adds the information from the 1990 USSR survey and examines the trends since 1987.

Materials and Methods

USSR surveys have been conducted in Divs. 3KLMNO since 1972, and have used a stratified-random design (Fig. 1) since 1983. For this paper, results from 1987 to 1990 have been analyzed for G. halibut in Div. 3KL and witch flounder in Div. 3NO. Survey coverage was constant in all areas and years, so no model-based approaches were required to derive indices of abundance and biomass.

Results and Discussion

Greenland halibut

In Div. 3K, the estimates of abundance were variable, with the 1988 point being about double the average of the other 3 years (Table 1). The following table shows a comparison of these results with the Canadian survey results, which were obtained in the November--December period:

Year	1987	1988	1989	1990	Mean
Abundance from USSR surveys	126	277	177	127	177
Abundance from Canadian surveys	164	177	188	144	168

The biomass trends in 3K in the USSR surveys are similar (Table 2), although the increase in 1988 is not as pronounced and the 1990 point is lower than 1987. Canadian surveys show a gradual decline in biomass of about 25% from 1987 to 1990. Both USSR and Canadian surveys usually showed G. halibut to be most abundant in strata 622-623 and strata 627 and 631 in Div. 3K.

For Div. 3L, the USSR survey results show considerable fluctuation, with the estimates in 1987 and 1989 being about 2.5-3 times the values in 1988 and 1990 (Tables 3, 4). This pattern was not seen in Canadian surveys, where both abundance and biomass estimates show more stability and are higher than the USSR estimates in all years. This may suggest seasonal variability, given the difference in the timing of the surveys and the fact that neither fishes beyond 736 m, where this species is known to inhabit.

Witch flounder

In Div. 3N, both indices were relatively stable in 1987-89, but the 1990 value was about half the mean of the previous years (Tables 5, 6). Witch are most abundant in strata deeper than 366 m, where Canadian spring surveys have not covered in most years. The data also suggest that witch may be found beyond 731 m, where neither survey has operated.

In Div. 3Ø, witch are more abundant, given the wider slope areas in Div. 3Ø compared to Div. 3N. The USSR surveys indicate variability in the indices, with 1988 being the high point and 1990 the low in both series (Tables 7 and 8). These results also indicate changes in distribution between years, with little or no witch being found in the slope area around strata 336-338 in 1990. Such changes have been noted in the Canadian survey results by Bowering (1990), who observed that years of high biomass (1985 and 1986) were related to large catches of witch in this area.

References

Bowering, W. R. 1990. Witch flounder in Divisions 3NO. NAFO SCR Doc. 90/54, Ser. No. N1775, 6 p.

Bowering, W. R., and A. K. Chumakov. 1990. Estimates of abundance and biomass of witch flounder (Glyptocephalus cynoglossus) in Div. 3NO and Greenland halibut (Reinhardtius hippoglossoides) in Div. 3KL from USSR groundfish surveys during 1987-89. NAFO SCR Doc. 90/57, Ser. No. N1778, 7 p.

Table 1. Mean number per set of Greenland halibut from USSR spring--summer surveys in Division 3K (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
618	101-200	1455	-	-	-	-
619	101-200	1588	-	-	-	-
620	201-300	2709	10.33(6)	66.00(6)	2.00(6)	-
621	201-300	2859	45.83(6)	33.14(7)	5.33(6)	9.86(7)
622	401-500	632	236.33(3)	745.67(3)	559.67(3)	54.33(3)
623	301-400	1027	116.50(4)	236.00(3)	186.33(3)	12.00(3)
624	201-300	668	1.67(3)	18.33(3)	21.67(3)	1.75(4)
625	301-400	850	20.50(4)	333.75(4)	16.00(6)	84.00(4)
626	301-400	919	123.67(3)	333.75(4)	295.20(5)	165.00(4)
627	401-500	1194	348.20(5)	756.20(5)	735.00(5)	680.60(5)
628	301-400	1085	91.75(4)	105.00(4)	85.00(5)	35.75(4)
629	301-400	495	177.33(3)	115.00(4)	98.50(4)	32.33(3)
630	301-400	544	77.00(3)	195.67(3)	60.33(3)	45.67(3)
631	401-500	1202	214.33(3)	515.00(3)	301.67(3)	337.75(4)
632	201-300	447	1.00(3)	6.33(3)	6.00(3)	0.33(3)
633	301-400	2179	7.86(7)	31.25(8)	19.00(4)	9.63(8)
634	201-300	1618	2.00(6)	5.00(4)	5.25(4)	7.00(5)
635	201-300	1274	7.50(4)	7.60(5)	8.60(5)	5.40(5)
636	201-300	1455	5.60(5)	13.60(5)	7.00(5)	1.40(5)
637	201-300	1132	3.67(3)	6.83(6)	6.17(6)	4.60(5)
638	301-400	2059	19.11(9)	30.20(5)	18.57(7)	29.60(5)
639	301-400	1463	7.20(5)	12.00(5)	15.83(6)	0.50(6)
640	401-500	198	28.25(4)	15.00(3)	13.50(4)	6.00(3)
641	501-750	584	79.00(3)	20.33(3)	0.00(3)	23.33(3)
642	751-1000	931	134.67(3)	256.00(3)	33.67(3)	21.33(3)
643	1001-1250	1266	-	-	-	-
644	1251-1500	954	-	-	-	-
645	401-500	204	5.00(3)	9.00(3)	2.00(3)	11.33(3)
646	501-750	333	11.00(3)	25.00(3)	3.33(3)	50.33(3)
647	751-1000	409	35.33(3)	48.25(4)	20.33(3)	28.00(3)
648	1001-1250	232	-	-	-	-
649	1251-1500	263	-	-	-	-
Total abundance (000s)			125,688	277,489	176,663	126,784

Table 2. Mean weight (kg) per set of Greenland halibut from USSR spring--summer surveys in Division 3K (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
618	101-200	1455	-	-	-	-
619	101-200	1588	-	-	-	-
620	201-300	2709	2.73(6)	4.88(6)	0.07(6)	-
621	201-300	2859	12.93(6)	8.20(7)	0.43(6)	1.01(7)
622	401-500	632	81.00(3)	310.07(3)	245.00(3)	14.67(3)
623	301-400	1027	30.00(4)	60.97(3)	41.43(3)	3.30(3)
624	201-300	668	0.17(3)	2.13(3)	1.63(3)	0.30(4)
625	301-400	850	10.50(4)	61.45(4)	3.93(6)	28.90(4)
626	301-400	919	60.00(3)	71.45(4)	140.32(5)	63.03(4)
627	401-500	1194	164.60(5)	305.42(5)	356.56(5)	306.48(5)
628	301-400	1085	31.75(4)	38.85(4)	23.28(5)	7.93(4)
629	301-400	495	80.00(3)	39.20(4)	21.85(4)	10.27(3)
630	301-400	544	22.93(3)	50.87(3)	15.97(3)	12.80(3)
631	401-500	1202	76.33(3)	198.33(3)	150.47(3)	146.78(4)
632	201-300	447	0.07(3)	1.00(3)	0.60(3)	0.03(3)
633	301-400	2179	3.74(7)	9.06(8)	4.10(4)	2.90(8)
634	201-300	1618	2.18(6)	2.10(4)	0.65(4)	2.00(5)
635	201-300	1274	1.52(4)	2.36(5)	1.38(5)	1.30(5)
636	201-300	1455	1.48(5)	2.90(5)	1.04(5)	0.30(5)
637	201-300	1132	1.40(3)	2.85(6)	2.50(6)	1.98(5)
638	301-400	2059	12.20(9)	8.04(5)	9.00(7)	14.56(5)
639	301-400	1463	7.26(5)	4.04(5)	5.80(6)	0.13(6)
640	401-500	198	32.10(4)	11.07(3)	11.75(4)	3.27(3)
641	501-750	584	89.00(3)	15.67(3)	0.00(3)	15.60(3)
642	751-1000	931	219.67(3)	276.30(3)	54.43(3)	18.60(3)
643	1001-1250	1266	-	-	-	-
644	1251-1500	954	-	-	-	-
645	401-500	204	4.67(3)	4.10(3)	2.17(3)	6.27(3)
646	501-750	333	12.23(3)	5.53(3)	4.03(3)	40.00(3)
647	751-1000	409	42.67(3)	36.30(4)	21.07(3)	26.40(3)
648	1001-1250	232	-	-	-	-
649	1251-1500	263	-	-	-	-
Biomass (t)			64,862	103,965	78,112	54,245

Table 3. Mean number of Greenland halibut per 30 minute set from USSR spring--summer surveys in Division 3L (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
328	93-183	1519	-	-	-	-
341	93-183	1574	2.00(3)	0.00(4)	2.00(3)	0.00(4)
342	93-183	585	-	-	-	-
343	93-183	525	-	-	-	-
344	184-274	1494	-	-	-	-
345	275-366	1432	75.33(3)	7.75(4)	44.00(4)	5.67(3)
346	275-366	865	8.00(3)	24.00(4)	12.00(3)	9.67(3)
347	184-274	983	14.25(4)	0.50(4)	2.17(6)	1.33(3)
348	93-183	2120	0.60(5)	0.33(6)	2.13(8)	0.50(4)
349	93-183	2114	0.80(5)	0.00(5)	0.17(6)	0.00(5)
350	57-91	2071	0.00(4)	0.00(5)	0.00(5)	0.00(4)
363	57-91	1780	0.00(6)	0.00(4)	0.00(4)	0.00(4)
364	93-183	2817	0.50(6)	0.14(7)	1.00(7)	0.20(5)
365	93-183	1041	0.25(4)	0.00(4)	1.33(3)	0.33(3)
366	184-274	1394	4.75(4)	0.50(4)	0.20(5)	0.00(4)
368	275-366	334	1.33(3)	2.75(4)	17.50(4)	3.33(3)
369	184-274	961	3.67(3)	0.00(3)	4.67(3)	0.00(5)
370	93-183	1320	0.20(5)	0.33(3)	0.20(5)	0.00(4)
371	57-91	1121	0.00(4)	0.00(4)	0.00(3)	0.00(4)
372	57-91	2460	0.00(5)	0.00(4)	0.00(5)	0.00(5)
384	57-91	1120	0.00(4)	0.00(3)	0.00(4)	0.00(4)
385	93-183	2356	0.00(5)	0.00(5)	0.60(5)	0.00(5)
386	185-274	983	4.75(4)	4.50(4)	15.50(4)	0.25(4)
387	275-366	718	3.33(3)	2.67(3)	17.20(5)	5.00(3)
388	275-366	361	5.33(3)	12.33(3)	22.25(4)	6.33(3)
389	185-274	821	6.00(4)	5.75(4)	27.75(4)	5.75(4)
390	93-183	1481	0.00(5)	0.25(4)	1.20(5)	0.75(4)
391	185-274	282	15.33(3)	16.33(3)	20.67(3)	2.67(3)
392	275-366	145	13.00(3)	30.67(3)	60.33(3)	2.75(4)
729	367-549	186	24.67(3)	13.67(3)	14.33(3)	13.33(3)
730	550-731	170	4.67(3)	3.33(3)	3.00(3)	0.00(3)
731	367-549	216	7.00(3)	1.67(3)	11.67(3)	4.00(3)
732	550-721	231	16.33(3)	11.67(3)	7.00(3)	1.33(3)
733	367-549	468	2.75(4)	0.67(3)	13.00(4)	17.00(3)
734	550-731	228	48.00(3)	3.00(3)	0.00(3)	2.00(3)
735	367-549	272	11.75(4)	9.50(4)	20.00(4)	5.67(3)
736	550-731	175	23.00(3)	21.00(3)	23.00(3)	49.00(3)
Total abundance (000s)			14,207	5,309	14,204	4,036

Table 4. Mean weight (kg) of Greenland halibut per 30 minute set from USSR spring--summer surveys in Division 3L (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
328	93-183	1519	-	-	-	-
341	93-183	1574	1.00(3)	0.00(4)	0.60(3)	0.00(4)
342	93-183	585	-	-	-	-
343	93-183	525	-	-	-	-
344	184-274	1494	-	-	-	-
345	275-366	1432	14.33(3)	1.93(4)	21.90(4)	2.47(3)
346	275-366	865	4.33(3)	8.93(4)	6.87(3)	5.27(3)
347	184-274	983	1.80(4)	0.08(4)	0.45(6)	0.37(3)
348	93-183	2120	0.02(5)	0.02(6)	0.44(8)	0.10(4)
349	93-183	2114	0.24(5)	0.00(5)	0.02(6)	0.00(5)
350	57-91	2071	0.00(4)	0.00(5)	0.00(5)	0.00(4)
363	57-91	1780	0.00(6)	0.00(4)	0.00(4)	0.00(4)
364	93-183	2817	0.03(6)	0.07(7)	0.19(7)	0.02(5)
365	93-183	1041	0.03(4)	0.00(4)	0.07(3)	0.07(3)
366	184-274	1394	2.53(4)	0.43(4)	0.12(5)	0.00(4)
368	275-366	334	0.67(3)	2.03(4)	10.83(4)	1.30(3)
369	184-274	961	1.03(3)	0.00(3)	3.27(3)	0.00(5)
370	93-183	1320	0.12(5)	0.37(3)	0.16(5)	0.00(4)
371	57-91	1121	0.00(4)	0.00(4)	0.00(3)	0.00(4)
372	57-91	2460	0.00(5)	0.00(4)	0.00(5)	0.00(5)
384	57-91	1120	0.00(4)	0.00(3)	0.00(4)	0.00(4)
385	93-183	2356	0.00(5)	0.00(5)	0.04(5)	0.00(5)
386	185-274	983	0.73(4)	1.22(4)	7.30(4)	0.17(4)
387	275-366	718	1.57(3)	1.30(3)	6.20(5)	1.87(3)
388	275-366	361	1.53(3)	4.63(3)	8.20(4)	2.50(3)
389	185-274	821	1.67(4)	1.83(4)	12.48(4)	1.98(4)
390	93-183	1481	0.00(5)	0.05(4)	0.40(5)	0.25(4)
391	185-274	282	5.33(3)	4.70(3)	6.67(3)	1.20(3)
392	275-366	145	5.33(3)	7.40(3)	17.97(3)	1.18(4)
729	367-549	186	16.67(3)	12.37(3)	5.83(3)	5.30(3)
730	550-731	170	2.67(3)	3.20(3)	2.57(3)	0.00(3)
731	367-549	216	5.67(3)	1.03(3)	6.27(3)	1.80(3)
732	550-721	231	12.33(3)	6.73(3)	3.17(3)	0.93(3)
733	367-549	468	1.48(4)	0.17(3)	4.60(4)	6.87(3)
734	550-731	228	68.00(3)	1.43(3)	0.00(3)	0.90(3)
735	367-549	272	11.75(4)	7.50(4)	11.68(4)	3.37(3)
736	550-731	175	20.00(3)	16.07(3)	12.77(3)	31.53(3)
Biomass (t)			5012	2170	6364	1838

Table 6. Mean weight (kg) of witch flounder per 30 minute set from USSR spring--summer surveys in Division 3N (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
357	275-366	164	18.90(4)	9.07(3)	11.70(6)	0.22(4)
358	185-274	225	3.20(5)	3.43(3)	7.73(9)	0.50(5)
359	93-183	421	0.00(4)	0.00(4)	0.00(5)	0.05(4)
360	57-91	2992	0.00(5)	0.00(5)	0.06(11)	0.00(6)
361	57-91	1853	0.00(4)	0.00(4)	0.00(4)	0.30(4)
362	57-91	2520	0.00(5)	0.00(4)	0.00(4)	0.20(5)
373	57-91	2520	0.00(5)	0.00(4)	0.00(5)	0.00(5)
374	57-91	931	0.00(4)	0.00(3)	0.00(4)	0.00(4)
375	<56	1593	0.00(4)	0.00(3)	0.00(4)	0.00(4)
376	<56	1499	0.00(4)	0.00(4)	0.00(4)	0.00(4)
377	93-183	100	0.00(3)	0.00(3)	0.00(4)	0.00(3)
378	185-274	139	3.80(3)	0.50(3)	0.00(4)	0.00(3)
379	275-366	106	8.67(3)	2.83(3)	3.55(4)	0.00(3)
380	275-366	116	1.00(3)	0.87(3)	3.32(5)	0.00(3)
381	185-274	182	0.00(2)	0.00(3)	0.13(4)	0.00(4)
382	93-183	647	0.00(3)	0.00(4)	0.00(7)	0.00(3)
383	57-91	674	0.00(4)	0.00(4)	0.00(3)	0.00(3)
723	367-549	155	38.25(4)	9.03(3)	9.48(5)	4.07(3)
724	550-731	124	3.00(3)	8.60(3)	6.03(4)	22.37(3)
725	367-549	105	22.67(3)	24.03(3)	24.60(4)	1.70(3)
726	550-731	72	20.00(3)	7.27(3)	12.70(3)	16.40(3)
727	367-549	160	9.00(3)	15.85(4)	21.50(6)	2.97(3)
728	550-731	156	11.00(3)	21.50(3)	16.64(5)	9.07(3)
Biomass (t)			1341	1016	1177	567

Table 5. Mean number of witch flounder per 30 minute set from USSR spring--summer surveys in Division 3N (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
357	275-366	164	20.50(4)	15.00(3)	20.17(6)	0.25(4)
358	185-274	225	4.60(5)	4.67(3)	15.44(9)	0.60(5)
359	93-183	421	0.00(4)	0.00(4)	0.00(5)	0.25(4)
360	57-91	2992	0.00(5)	0.00(5)	0.09(11)	0.00(6)
361	57-91	1853	0.00(4)	0.00(4)	0.00(4)	0.25(4)
362	57-91	2520	0.00(5)	0.00(4)	0.00(4)	0.20(5)
373	57-91	2520	0.00(5)	0.00(4)	0.00(5)	0.00(5)
374	57-91	931	0.00(4)	0.00(3)	0.00(4)	0.00(4)
375	<56	1593	0.00(4)	0.00(3)	0.00(4)	0.00(4)
376	<56	1499	0.00(4)	0.00(4)	0.00(4)	0.00(4)
377	93-183	100	0.00(3)	0.00(3)	0.00(4)	0.00(3)
378	185-274	139	6.00(3)	1.33(3)	0.00(4)	0.00(3)
379	275-366	106	13.00(3)	6.33(3)	5.75(4)	0.00(3)
380	275-366	116	1.00(3)	1.33(3)	4.80(5)	0.00(3)
381	185-274	182	0.00(2)	0.00(3)	0.25(4)	0.00(4)
382	93-183	647	0.00(3)	0.00(4)	0.00(7)	0.00(3)
383	57-91	674	0.00(4)	0.00(4)	0.00(3)	0.00(3)
723	367-549	155	58.50(4)	15.33(3)	15.20(5)	11.00(3)
724	550-731	124	9.33(3)	25.00(3)	17.75(4)	42.67(3)
725	367-549	105	29.00(3)	54.67(3)	57.25(4)	4.00(3)
726	550-731	72	47.00(3)	18.33(3)	29.67(3)	44.00(3)
727	367-549	160	14.33(3)	24.25(4)	42.83(6)	3.67(3)
728	550-731	156	19.00(3)	40.00(3)	31.20(5)	20.33(3)
Total abundance (000s)			2058	1953	2349	1121

Table 7. Mean number of witch flounder per 30 minute set from USSR spring--summer surveys in Division 3Ø (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
329	93-183	1721	0.25(4)	0.00(4)	0.00(4)	0.00(3)
330	57-91	2089	0.00(5)	0.00(5)	0.00(5)	0.00(6)
331	57-91	456	0.00(3)	3.33(3)	0.00(3)	0.00(3)
332	93-183	1047	27.50(4)	17.75(4)	6.50(4)	16.50(4)
333	185-274	151	4.67(3)	8.67(3)	2.20(5)	2.33(3)
334	275-366	92	0.00(3)	5.33(3)	0.25(4)	13.33(3)
335	275-366	58	3.33(3)	14.33(3)	9.67(3)	2.00(4)
336	185-274	121	35.67(3)	44.50(4)	4.67(6)	2.33(3)
337	93-183	948	14.33(3)	62.00(4)	15.25(4)	0.00(4)
338	57-91	1898	8.33(3)	10.20(5)	7.00(5)	0.33(3)
339	93-183	585	0.00(3)	0.00(3)	0.00(3)	0.00(3)
340	57-91	1716	0.00(4)	0.00(3)	0.14(7)	0.25(4)
351	57-91	2520	0.00(5)	0.00(5)	0.00(5)	0.00(4)
352	57-91	2580	0.00(4)	1.17(6)	1.50(6)	0.80(5)
353	57-91	1282	0.00(3)	13.20(5)	8.00(4)	1.33(3)
354	93-183	474	5.00(3)	13.67(3)	3.75(4)	1.00(2)
355	185-274	103	3.67(3)	10.75(4)	27.00(4)	201.00(4)
356	275-366	61	37.67(3)	1.33(3)	91.25(4)	66.33(3)
717	367-549	93	1.00(4)	0.67(3)	0.33(3)	0.00(3)
718	550-731	111	7.00(3)	2.33(3)	4.67(3)	0.00(3)
719	367-549	76	1.00(3)	14.67(3)	1.00(3)	2.00(3)
720	550-731	105	5.50(2)	7.00(3)	1.33(3)	0.67(3)
721	367-549	76	160.33(3)	37.00(3)	82.50(4)	20.00(3)
722	550-731	93	5.33(3)	2.00(3)	7.67(3)	7.33(3)
Total abundance (000s)			5972	9992	4907	3718

Table 8. Mean weight (kg) of witch flounder per 30 minute set from USSR spring--summer surveys in Division 3Ø (number of successful sets in brackets).

Stratum	Depth range (m)	Stratum area (sq. n. mi.)	1987	1988	1989	1990
329	93-183	1721	0.17(4)	0.00(4)	0.00(4)	0.00(3)
330	57-91	2089	0.00(5)	0.00(5)	0.00(5)	0.00(6)
331	57-91	456	0.00(3)	1.83(3)	0.00(3)	0.00(3)
332	93-183	1047	18.25(4)	8.78(4)	3.65(4)	9.85(4)
333	185-274	151	3.00(3)	4.83(3)	0.84(5)	1.40(3)
334	275-366	92	0.00(3)	3.40(3)	0.08(4)	8.10(3)
335	275-366	58	2.00(3)	9.13(3)	5.30(3)	1.42(4)
336	185-274	121	23.67(3)	25.15(4)	1.72(6)	0.97(3)
337	93-183	948	8.73(3)	38.97(4)	5.78(4)	0.00(4)
338	57-91	1898	8.00(3)	8.82(5)	4.10(5)	0.40(3)
339	93-183	585	0.00(3)	0.00(3)	0.00(3)	0.00(3)
340	57-91	1716	0.00(4)	0.00(3)	0.07(7)	0.30(4)
351	57-91	2520	0.00(5)	0.00(5)	0.00(5)	0.00(4)
352	57-91	2580	0.00(4)	1.08(6)	1.53(6)	0.78(5)
353	57-91	1282	0.00(3)	10.74(5)	6.40(4)	1.40(3)
354	93-183	474	2.67(3)	7.73(3)	1.33(4)	0.70(2)
355	185-274	103	2.00(3)	5.60(4)	14.10(4)	119.43(4)
356	275-366	61	23.00(3)	0.97(3)	53.40(4)	40.40(3)
717	367-549	93	0.75(4)	0.37(3)	0.10(3)	0.00(3)
718	550-731	111	1.83(3)	0.53(3)	1.67(3)	0.00(3)
719	367-549	76	0.90(3)	9.43(3)	0.77(3)	0.83(3)
720	550-731	105	1.00(2)	3.23(3)	0.37(3)	0.23(3)
721	367-549	76	143.00(3)	24.73(3)	52.35(4)	10.87(3)
722	550-731	93	3.33(3)	1.20(3)	3.07(3)	4.80(3)
Biomass (t)			4370	6636	2868	2372